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# Traditional suburethral sling operations for urinary incontinence in women (Review)

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# TABLE OF CONTENTS

HEADER ..... 1
ABSTRACT ..... 1
PLAIN LANGUAGE SUMMARY ..... 2
SUMMARY OF FINDINGS ..... 4
BACKGROUND ..... 17
OBJECTIVES ..... 18
METHODS ..... 18
RESULTS ..... 21
Figure 1. ..... 22
Figure 2. ..... 25
Figure 3. ..... 28
Figure 4. ..... 29
DISCUSSION ..... 38
AUTHORS' CONCLUSIONS ..... 41
ACKNOWLEDGEMENTS ..... 42
REFERENCES ..... 43
CHARACTERISTICS OF STUDIES ..... 54
DATA AND ANALYSES ..... 97
Analysis 3.1. Comparison 3 Traditional suburethral sling operation versus drugs, Outcome 1 Number of continent women within 1 year (any definition). ..... 97
Analysis 3.2. Comparison 3 Traditional suburethral sling operation versus drugs, Outcome 2 Urge urinary symptoms, urgency urinary incontinence. ..... 98
Analysis 4.1. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 1 Number of continent women within 1 year (any definition). ..... 100
Analysis 4.2. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 2 Number of continent women at 1 to 5 years (any definition). ..... 100
Analysis 4.3. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 3 Repeat surgery for urinary incontinence. ..... 100
Analysis 4.4. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 4 Number of women cured after first year (women's observations). ..... 101
Analysis 4.5. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 5 Number of women satisfied (women's observations). ..... 101
Analysis 4.6. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 6 Number of women with urinary incontinence within first year (clinician's observations). ..... 101
Analysis 4.7. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 7 Urinary tract infection. ..... 102
Analysis 4.8. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 8 De novo detrusor overactivity (urodynamic diagnosis). ..... 102
Analysis 4.9. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 9 Voiding dysfunction. ..... 102
Analysis 6.1. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 1 Number of continent women within 1 year (any definition). ..... 104
Analysis 6.2. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 2 Number of continent women at 1 to 5 years (any definition). ..... 105
Analysis 6.3. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 3 CURE: number of women cured after first year (women's observations). ..... 105
Analysis 6.4. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 4 Length of hospital stay (hours). ..... 105
Analysis 6.5. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 5 Perioperative surgical complications. ..... 105
Analysis 6.6. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 6 Urinary urgency symptoms, urgency urinary incontinence. ..... 106
Analysis 6.7. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 7 Detrusor overactivity (urodynamic diagnosis). ..... 106
Analysis 6.8. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 8 Voiding dysfunction after 3 months. ..... 106

Analysis 7.1. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 1 Number of continent women within 1 year (any definition). 111
Analysis 7.2. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 2 Number of continent women at 1 to 5 years (any definition). 112
Analysis 7.3. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 3 Number of continent women after 5 years (any definition). 113
Analysis 7.4. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 4 Repeat surgery for urinary incontinence. 114
Analysis 7.5. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 5 Number of women cured after first year (women's observations). 114
Analysis 7.6. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 6 Number of women satisfied (women's observations). 115
Analysis 7.8. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 8 Number of women with urinary incontinence at 1 to 5 years (clinician's observations). 115
Analysis 7.9. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 9 Number of women with urinary incontinence after 5 years (clinician's observations). 116
Analysis 7.10. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 10 Duration of operation (minutes). 116
Analysis 7.11. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 11 Length of hospital stay (days). 117
Analysis 7.12. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 12 Time to catheter removal (days). 117
Analysis 7.14. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 14 Number of women requiring treatment for pelvic organ prolapse. 118
Analysis 7.15. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 15 Perioperative surgical complications. 118
Analysis 7.16. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 16 Bladder perforation. 119
Analysis 7.17. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 17 Urinary tract infection. 119
Analysis 7.18. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 18 Number of women with recurrent UTIs at > 5 years. 120
Analysis 7.19. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 19 Urinary urgency symptoms, urgency urinary incontinence. 120
Analysis 7.20. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 20 Detrusor overactivity (urodynamic diagnosis). 121
Analysis 7.21. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 21 Voiding dysfunction after 3 months. 122
Analysis 7.22. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 22 Long-term voiding dysfunction > 5 years. 122
Analysis 7.23. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 23 Condition-specific measures to assess quality of life. 123
Analysis 9.1. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 1 Number of continent women within 1 year (any definition). 129
Analysis 9.2. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 2 Number of continent women at 1 to 5 years (any definition). 129
Analysis 9.3. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 3 Number of continent women after 5 years (any definition). 130
Analysis 9.4. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 4 Repeat surgery for urinary incontinence. 130
Analysis 9.5. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 5 Number of women cured after first year (women's observations). 131
Analysis 9.6. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 6 Number of women improved or cured within 1 year (women's observations). 132
Analysis 9.7. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 7 Number of women improved or cured at 1 to 5 years (women's observations). 132

Analysis 9.8. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 8 Number of women improved or cured after 5 years (women's observations). 133
Analysis 9.9. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 9 Number of women satisfied (women's observations). 133
Analysis 9.10. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 10 Pad test of quantified leakage (mean weight of urine lost). 134
Analysis 9.11. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 11 Number of women with urinary incontinence within first year (clinician's observations). 134
Analysis 9.12. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 12 Number of women with urinary incontinence at 1 to 5 years (any definition) (clinician's observations). 135
Analysis 9.13. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 13 Duration of operation (minutes). 135
Analysis 9.14. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 14 Length of hospital stay (days). 136
Analysis 9.15. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 15 Time to catheter removal (days). 136
Analysis 9.16. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 16 Perioperative surgical complications. 137
Analysis 9.17. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 17 Bladder perforations. 138
Analysis 9.18. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 18 Urethral injury. 139
Analysis 9.19. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 19 Vaginal bleeding. 139
Analysis 9.20. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 20 Urinary tract infection. 139
Analysis 9.21. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 21 Voiding dysfunction. 139
Analysis 9.22. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 22 Urinary urgency symptoms, urgency urinary incontinence. 140
Analysis 9.23. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 23 De novo detrusor overactivity (urodynamic diagnosis). 141
Analysis 9.24. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 24 Long-term adverse effects (release of sling required). 142
Analysis 9.25. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 25 Long-term adverse effects (wound pain at 6 months). 142
Analysis 9.26. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 26 Long-term adverse effects (vaginal mesh or graft exposure). 143
Analysis 9.27. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 27 Condition-specific measures to assess quality of life: UDI-6. 144
Analysis 9.28. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 28 Condition-specific measures to assess quality of life: IIQ-7. 144
Analysis 10.1. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 1 Number of continent women at 1 to 5 years (any definition). 147
Analysis 10.2. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 2 Number of women cured after first year (women's observations). 147
Analysis 10.3. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 3 Number of women satisfied (women's observations). 148
Analysis 10.4. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 4 Number of women with urinary incontinence (clinician's observations) within first year. 148
Analysis 10.5. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 5 Bladder perforation. 148
Analysis 10.6. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 6 Urinary urgency symptoms, urgency urinary incontinence. 148
Analysis 10.7. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 7 Pain with intercourse (dyspareunia). 149

Analysis 10.8. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 8 Long-term adverse effects (vaginal mesh or graft exposure). 149
Analysis 10.9. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 9 Condition-specific measures to assess quality of life: IIQ score. 149
Analysis 11.1. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 1 Number of continent women within 1 year (any definition). 155
Analysis 11.2. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 2 Number of continent women at 1 to 5 years (any definition). 156
Analysis 11.3. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 3 Number of continent women after 5 years (any definition). 157
Analysis 11.4. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 4 Repeat surgery for urinary incontinence. 157
Analysis 11.5. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 5 Number of women cured after first year (women's observations). 157
Analysis 11.6. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 6 Number of women improved or cured within first year (women's observations). 158
Analysis 11.7. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 7 Number of women improved or cured at 1 to 5 years (women's observations). 158
Analysis 11.8. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 8 Number of women satisfied (women's observations). 158
Analysis 11.9. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 9 Pad test of quantified leakage (mean weight of urine lost) within 1 year. 159
Analysis 11.10. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 10 Pad test of quantified leakage (mean weight of urine lost) at 1 to 5 years. 159
Analysis 11.11. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 11 Duration of operation (minutes). 160
Analysis 11.12. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 12 Blood loss (mL). 160
Analysis 11.13. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 13 Length of hospital stay (days). 160
Analysis 11.14. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 14 Perioperative surgical complications. 161
Analysis 11.15. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 15 Bladder perforation. 161
Analysis 11.16. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 16 Urinary tract infection. 161
Analysis 11.17. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 17 Vaginal bleeding. 162
Analysis 11.18. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 18 Long-term adverse effects (wound pain). 162
Analysis 11.19. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 19 Voiding dysfunction. 162
Analysis 11.20. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 20 Urinary urgency symptoms, urgency urinary incontinence. 163
Analysis 11.21. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 21 Detrusor overactivity (urodynamic overactivity). 163
Analysis 11.22. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 22 Long-term adverse effects (release of sling required). 163
Analysis 11.23. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 23 Long-term adverse effects (vaginal mesh or graft exposure). 164
Analysis 11.24. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year). 164
Analysis 11.25. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 25 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years). 164
Analysis 12.1. Comparison 12 Traditional suburethral sling operation versus drugs, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations). 165

Analysis 12.2. Comparison 12 Traditional suburethral sling operation versus drugs, Outcome 2 Urge urinary symptoms, urgency urinary incontinence. 166
Analysis 13.1. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations). 168
Analysis 13.2. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 2 Number of women with urinary incontinence (worse, unchanged, or improved) after first year (women's observations). 168
Analysis 13.3. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 3 Number of women with urinary incontinence (clinician's observations) within first year. 168
Analysis 13.4. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 4 CURE: number of women cured after first year (women's observations). 169
Analysis 13.5. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 5 Voiding dysfunction. 169
Analysis 13.6. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 6 De novo detrusor overactivity (urodynamic diagnosis). 169
Analysis 13.7. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 7 Urinary tract infection. 169
Analysis 13.8. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 8 Repeat surgery for urinary incontinence. 170
Analysis 14.1. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 1 Number with incontinence (worse, unchanged, or improved) within first year (women's observations). 172
Analysis 14.2. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 2 Number with incontinence (worse, unchanged, or improved) after first year (women's observations). 172
Analysis 14.3. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 3 CURE: number of women cured after first year (women's observations). 173
Analysis 14.4. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 4 Length of hospital stay (hours). 173
Analysis 14.5. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 5 Perioperative surgical complications. 173
Analysis 14.6. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 6 Urge urinary symptoms, urgency urinary incontinence. 173
Analysis 14.7. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 7 Voiding dysfunction after 3 months. 174
Analysis 14.8. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 8 Detrusor overactivity (urodynamic diagnosis). 174
Analysis 15.1. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations). 180
Analysis 15.3. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations). 181
Analysis 15.5. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 5 Number of women with urinary incontinence (worse, unchanged, or improved) at > 5 years (women's observations). 181
Analysis 15.6. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 6 CURE: number of women cured at > 1 year (women's observations). 182
Analysis 15.7. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 7 Number of women not satisfied at > 5 years. 183
Analysis 15.10. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 10 Number of women with urinary incontinence (clinician's observations) at 1 to 5 years. 183
Analysis 15.11. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 11 Number of women with urinary incontinence (clinician's observations) at > 5 years. 184
Analysis 15.12. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 12 Duration of operation (minutes). 184
Analysis 15.13. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 13 Time to catheter removal (days). 185
Analysis 15.14. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 14 Length of hospital stay (days). 185
Analysis 15.16. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 16 Perioperative surgical complications. 186

Analysis 15.17. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 17 Bladder perforation. 186
Analysis 15.18. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 18 Urinary tract infection. 187
Analysis 15.19. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 19 Number of women with recurrent UTIs at > 5 years. 187
Analysis 15.20. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 20 Urge urinary symptoms, urgency urinary incontinence. 187
Analysis 15.21. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 21 Detrusor overactivity (urodynamic diagnosis). 188
Analysis 15.22. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 22 Voiding dysfunction after 3 months. 189
Analysis 15.23. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 23 Long-term voiding dysfunction > 5 years. 189
Analysis 15.24. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 24 Number of women requiring treatment for pelvic organ prolapse. 190
Analysis 15.25. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 25 Repeat surgery for urinary incontinence. 190
Analysis 15.26. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 26 Condition-specific measures to assess quality of life. 191
Analysis 16.1. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations). 197
Analysis 16.2. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 2 Number not improved (worse or unchanged) within first year (women's observations). 197
Analysis 16.3. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations). 198
Analysis 16.4. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 4 Number not improved (worse or unchanged) after first year (women's observations). 199
Analysis 16.5. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 5 Number of women with urinary incontinence after 5 years (women's observations). 200
Analysis 16.6. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 6 Number with incontinence not improved after 5 years (women's observations). 200
Analysis 16.7. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 7 CURE: number of women cured at > 1 year (women's observations). 200
Analysis 16.8. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 8 Repeat surgery for urinary incontinence. 201
Analysis 16.9. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 9 Number of women not satisfied. 201
Analysis 16.10. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 10 Pad test of quantified leakage (mean weight of urine loss). 202
Analysis 16.11. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 11 Number of women with urinary incontinence (clinician's observations) within first year. 202
Analysis 16.12. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 12 Number of women with urinary incontinence (clinician's observations) after first year. 203
Analysis 16.13. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 13 Duration of operation (minutes). 203
Analysis 16.14. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 14 Length of hospital stay (days). 204
Analysis 16.15. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 15 Time to catheter removal (days). 204
Analysis 16.16. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 16 Perioperative surgical complications. 205
Analysis 16.17. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 17 Bladder perforations. 206
Analysis 16.18. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 18 Urethral injury. 207

Analysis 16.19. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 19 Vaginal bleeding. 207
Analysis 16.20. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 20 Urinary tract infection. 207
Analysis 16.21. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 21 Voiding dysfunction. 207
Analysis 16.22. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 22 De novo detrusor urgency or urge symptoms. 208
Analysis 16.23. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 23 De novo detrusor overactivity (urodynamic diagnosis). 209
Analysis 16.24. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 24 Long-term adverse effects (release of sling required). 210
Analysis 16.25. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 25 Long-term adverse effects (wound pain at 6 months). 210
Analysis 16.26. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 26 Long-term adverse effects (vaginal mesh or graft exposure). 211
Analysis 16.27. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 27 Condition-specific measures to assess quality of life: UDI-6. 212
Analysis 16.28. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 28 Condition-specific measures to assess quality of life: IIQ-7. 212
Analysis 17.1. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 1 Number of women with urinary incontinence in the medium term (1 to 5 years). 215
Analysis 17.2. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 2 Number of women not satisfied within first year. 215
Analysis 17.3. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 3 Number of women with urinary incontinence (clinician's observations) within first year. 216
Analysis 17.4. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 4 CURE: number of women cured at > 1 year (women's observations). 216
Analysis 17.5. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 5 Bladder perforation. 216
Analysis 17.6. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 6 Urge urinary symptoms, urgency urinary incontinence. 216
Analysis 17.7. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 7 Pain with intercourse (dyspareunia). 217
Analysis 17.8. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 8 Long-term adverse effects (vaginal mesh or graft exposure). 217
Analysis 17.9. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 9 Condition-specific measures to assess quality of life: IIQ score. 217
Analysis 18.1. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations). 224
Analysis 18.2. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 2 Number not improved (worse or unchanged) within first year (women's observations). 224
Analysis 18.3. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations). 225
Analysis 18.4. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 4 Number not improved (worse or unchanged) after first year (women's observations). 225
Analysis 18.5. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 5 Number of women with urinary incontinence (worse, unchanged, or improved) after 5 years (women's observations). 226
Analysis 18.6. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 6 CURE: number of women with urinary incontinence > 1 year (women's observations). 226
Analysis 18.7. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 7 Number of women not satisfied. 226
Analysis 18.8. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 8 Pad test of quantified leakage (mean weight of urine loss) at 1 year. 227
Analysis 18.9. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 9 Pad test of quantified leakage (mean weight of urine loss) at 1 to 5 years. 227

Analysis 18.10. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 10 Duration of operation (minutes). 228
Analysis 18.11. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 11 Blood loss (mL). 228
Analysis 18.12. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 12 Length of hospital stay (days). 228
Analysis 18.13. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 13 Perioperative surgical complications. 229
Analysis 18.14. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 14 Bladder perforation. 229
Analysis 18.15. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 15 Urinary tract infection. 229
Analysis 18.16. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 16 Vaginal bleeding. 230
Analysis 18.17. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 17 Long-term adverse effects (wound pain). 230
Analysis 18.18. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 18 Voiding dysfunction. 230
Analysis 18.19. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 19 Long-term adverse effects (release of sling required). 231
Analysis 18.20. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 20 De novo detrusor urgency or urge symptoms or detrusor overactivity. 231
Analysis 18.21. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 21 Repeat surgery for urinary incontinence at first year. 232
Analysis 18.22. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 22 Long-term adverse effects (vaginal mesh or graft exposure). 232
Analysis 18.23. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 23 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year). 232
Analysis 18.24. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years). 233
ADDITIONAL TABLES 233
APPENDICES 241
WHAT'S NEW 245
HISTORY 245
CONTRIBUTIONS OF AUTHORS 246
DECLARATIONS OF INTEREST 246
SOURCES OF SUPPORT 246
DIFFERENCES BETWEEN PROTOCOL AND REVIEW 246
INDEX TERMS 247

[Intervention Review]

# Traditional suburethral sling operations for urinary incontinence in women

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## ABSTRACT

### Background

Stress urinary incontinence constitutes a significant health and economic burden to society. Traditional suburethral slings are surgical operations used to treat women with symptoms of stress urinary incontinence.

### Objectives

To assess the effectiveness of traditional suburethral sling procedures for treating stress urinary incontinence in women; and summarise the principal findings of relevant economic evaluations.

### Search methods

We searched the Cochrane Incontinence Specialised Register, which contains trials identified from the Cochrane Central Register of Controlled Trials (CENTRAL), as well as MEDLINE, MEDLINE In-Process, MEDLINE Epub Ahead of Print, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ClinicalTrials.gov, and the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP); we handsearched journals and conference proceedings (searched 27 February 2017) and the reference lists of relevant articles. On 23 January 2019, we updated this search; as a result, several additional reports of studies are awaiting classification.

### Selection criteria

Randomised or quasi-randomised trials that assessed traditional suburethral slings for treating stress or mixed urinary incontinence.

### Data collection and analysis

At least two review authors independently extracted data from included trials and assessed risk of bias. When appropriate, a summary statistic was calculated: risk ratio (RR) for dichotomous data, odds ratio (OR) for continence and cure rates that were expected to be high, and mean difference (MD) for continuous data. We adopted the GRADE approach to assess the quality of evidence.

### Main results

A total of 34 trials involving 3244 women were included. Traditional slings were compared with 10 other treatments and with each other.

We did not identify any trials comparing suburethral slings with no treatment or sham treatment, conservative management, anterior repair, or laparoscopic retropubic colposuspension. Most trials did not distinguish between women having surgery for primary or recurrent incontinence. One trial compared traditional slings with bladder neck needle suspension, and another trial compared traditional slings with single-incision slings. Both trials were too small to be informative.

***Traditional suburethral sling operation versus drugs***

One small trial compared traditional suburethral sling operations with oxybutynin to treat women with mixed urinary incontinence. This trial did not report any of our GRADE-specific outcomes. It is uncertain whether surgery compared with oxybutynin leads to more women being dry (83% vs 0%; OR 195.89, 95% confidence interval (CI) 9.91 to 3871.03) or having less urgency urinary incontinence (13% vs 43%; RR 0.29, 95% CI 0.09 to 0.94) because the quality of this evidence is very low.

***Traditional suburethral sling versus injectables***

One small trial compared traditional slings with suburethral injectable treatment. The impact of surgery versus injectables is uncertain in terms of the number of continent women (100% were dry with a traditional sling versus 71% with the injectable after the first year; OR 11.57, 95% CI 0.56 to 239.74), the need for repeat surgery for urinary incontinence (RR 0.52, 95% CI 0.05 to 5.36) or the occurrence of perioperative complications (RR 1.57, 95% CI 0.29 to 8.49), as the quality of evidence is very low.

***Traditional suburethral sling versus open abdominal retropubic colposuspension***

Eight trials compared slings with open abdominal retropubic colposuspension. Moderate-quality evidence shows that the traditional suburethral sling probably leads to more continent women in the medium term (one to five years) (69% vs 59% after colposuspension: OR 1.70, 95% CI 1.22 to 2.37). High-quality evidence shows that women were less likely to need repeat continence surgery after a traditional sling operation than after colposuspension (RR 0.15, 95% CI 0.05 to 0.42). We found no evidence of a difference in perioperative complications between the two groups, but the CI was very wide and the quality of evidence was very low (RR 1.24, 95% CI 0.83 to 1.86).

***Traditional suburethral sling operation versus mid-urethral slings***

Fourteen trials compared traditional sling operations and mid-urethral sling operations. Depending on judgements about what constitutes a clinically important difference between interventions with regard to continence, traditional suburethral slings are probably no better, and may be less effective, than mid-urethral slings in terms of number of women continent in the medium term (one to five years) (67% vs 74%; OR 0.67, 95% CI 0.44 to 1.02; n = 458; moderate-quality evidence). One trial reported more continent women with the traditional sling after 10 years (51% vs 32%: OR 2.22, 95% CI 1.07 to 4.61). Mid-urethral slings may be associated with fewer perioperative complications (RR 1.74, 95% CI 1.16 to 2.60; low-quality evidence).

***One type of traditional sling operation versus another type of traditional sling operation***

Nine trials compared one type of traditional sling operation with another. The different types of traditional slings, along with the number of different materials used, mean that trial results could not be pooled due to clinical heterogeneity. Complications were reported by two trials - one comparing non-absorbable Goretex with a rectus fascia sling, and the second comparing Pelvicol with a rectus fascial sling. The impact was uncertain due to the very low quality of evidence.

**Authors' conclusions**

Low-quality evidence suggests that women may be more likely to be continent in the medium term (one to five years) after a traditional suburethral sling operation than after colposuspension. It is very uncertain whether there is a difference in urinary incontinence after a traditional suburethral sling compared with a mid-urethral sling in the medium term. However, these findings should be interpreted with caution, as long-term follow-up data were not available from most trials. Long-term follow-up of randomised controlled trials (RCTs) comparing traditional slings with colposuspension and mid-urethral slings is essential. Evidence is insufficient to suggest whether traditional suburethral slings may be better or worse than other management techniques. This review is confined to RCTs and therefore may not identify all of the adverse effects that may be associated with these procedures.

A brief economic commentary (BEC) identified three eligible economic evaluations, which are not directly comparable due to differences in methods, time horizons, and settings. End users of this review will need to assess the extent to which methods and results of identified economic evaluations may be applicable (or transferable) to their own setting.

## PLAIN LANGUAGE SUMMARY

**Traditional suburethral sling operations for urinary incontinence in women**

**Review question**

How do traditional slings compare with other surgical or conservative treatments for women with stress urinary incontinence (SUI)?

**Background**

A traditional suburethral sling operation is one of the surgical options for treating women with SUI. Stress urinary incontinence is loss (leakage) of urine when coughing, laughing, sneezing, or exercising. It may be due to damage to the muscles that hold up the bladder neck or damage to their nerves, which often occurs during childbirth. When stress urinary incontinence occurs together with an urge to empty the bladder that is difficult to defer (urgency urinary incontinence (UUI)), this is known as mixed urinary incontinence (MUI). The traditional suburethral sling operation aims to hold up the bladder neck with a strip of material that may be biological (made from human or animal tissue) or made of non-absorbable synthetic plastic (mesh/tape).

**How up-to-date is this review?**

The evidence is current to 27 February 2017. A further search on 23 January 2019 was not fully incorporated into the review.

**Study characteristics**

We found 34 randomised controlled trials (RCTs) involving 3244 women that compared traditional slings with drugs or other types of surgery (colposuspension, mid-urethral slings, bladder neck needle suspension, single-incision slings (mini-slings); one type of traditional sling with another; and traditional slings with injectables. All trials included women with SUI, but some also involved women with UUI, who are said to have MUI.

We did not find any studies comparing suburethral slings with no treatment or sham treatment, conservative management such as pelvic floor exercises, anterior repair, or laparoscopic colposuspension.

**Study funding sources**

Few trialists reported who had funded their work.

**Key results**

Surgery appears to work better than drugs for treating urinary incontinence. Some evidence suggests that women had less leakage with traditional slings in the medium term (one to five years) compared with those undergoing colposuspension (a major abdominal operation), and fewer needed repeat surgery in one trial. However, information about adverse effects is lacking. It is not clear whether traditional slings were better or worse than mid-urethral slings (synthetic tape) in the medium term, but one small trial showed that women who had a traditional sling might have less leakage 10 years later. It is not clear whether traditional slings were better or worse than injectable treatment, bladder neck needle suspension, or mini-slings. We found insufficient information about different types of slings compared with each other, except that slings made of porcine dermis (Pelvicol) were more likely to fail than other materials. Slings made of non-absorbable synthetic Goretex involved more complications.

**Quality of the evidence**

Many trials were small and used different ways of measuring success, which made combining information difficult. The quality of evidence for most outcomes was judged to be low or very low. This means that most of our conclusions about traditional slings are uncertain.

**Authors' conclusions**

Some evidence suggests that women had less leakage with traditional slings in the medium term (one to five years) compared with those undergoing colposuspension (a major abdominal operation), and fewer needed repeat surgery in one trial. Evidence on comparison of traditional suburethral slings with other treatments is insufficient. Three eligible economic evaluations reported similar results, but they are not directly comparable because of differences in their methods. This review is confined to randomised controlled trials (RCTs) and therefore may not identify all of the adverse effects that may be associated with these procedures.

**Summary of findings for the main comparison. Traditional suburethral sling operation versus no treatment or sham operation**

| **Traditional suburethral sling operation versus no treatment or sham operation** | | | | | | |
|---|---|---|---|---|---|---|
| **Patient or population:** women with urinary incontinence<br>**Settings:** secondary care<br>**Intervention:** sling<br>**Comparison:** no treatment or sham treatment | | | | | | |
| **Outcomes** | **Illustrative comparative risks* (95% CI)** | | **Relative effect (95% CI)** | **Number of participants (studies)** | **Quality of the evidence (GRADE)** | **Comments** |
| | **Assumed risk** | **Corresponding risk** | | | | |
| | **No treatment or sham treatment** | **Sling** | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | | | | Not reported |
| **Repeat surgery for urinary incontinence** | | | | | | Not reported |
| **Perioperative surgical complications** | | | | | | Not reported |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

**Summary of findings 2. Traditional suburethral sling operation versus conservative management**

**Traditional suburethral sling operation versus conservative management**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** conservative treatment

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Conservative treatment | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | | | | Not reported |
| **Repeat surgery for urinary incontinence** | | | | | | Not reported |
| **Perioperative surgical complications** | | | | | | Not reported |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

## Summary of findings 3. Traditional suburethral sling operation versus drugs

**Traditional suburethral sling operation versus drugs**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** drugs

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Drugs | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | | | | Not reported |
| **Repeat surgery for urinary incontinence** | | | | | | Not reported |
| **Perioperative surgical complications** | | | | | | Not reported |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

## Summary of findings 4. Traditional suburethral sling operation versus injectables

**Traditional suburethral sling operation versus injectables**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** injectable

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Injectable | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | 714 per 1000 | 967 per 1000 (583 to 998) | **OR 11.57** (0.56 to 239.7) | 43 (1 study) | ⊕⊖⊖⊖ **very low**[a,b] | **252 more women**, per 1000, with traditional sling (131 fewer to 284 more) |
| **Repeat surgery for urinary incontinence - urodynamic stress incontinence (only)** | **91 per 1000** | **47 per 1000** (5 to 487) | **RR 0.52** (0.05 to 5.36) | 43 (1 study) | ⊕⊖⊖⊖ **very low**[a,b] | **44 fewer women**, per 1000, with traditional sling (86 fewer to 396 more) |
| **Perioperative surgical complications** Urinary tract infection - stress urinary incontinence (symptoms only) | **91 per 1000** | **143 per 1000** (26 to 772) | **RR 1.57** (0.29 to 8.49) | 43 (1 study) | ⊕⊖⊖⊖ **very low**[a,b] | **52 more women**, per 1000, with traditional sling (65 fewer to 681 more) |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; OR: odds ratio; RR: risk ratio.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

[a]Downgraded one level due to serious risk of bias (unclear for sequence generation, allocation concealment, and blinding) and two levels for imprecision (95% CI very wide, 0.56 to 239.74; crosses line of no effect).

[b]Downgraded two levels due to very serious imprecision: single trial with small sample size.

## Summary of findings 5. Traditional suburethral sling operation versus anterior repair

**Traditional suburethral sling operation versus anterior repair**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** anterior repair

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Anterior repair | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | | | | Not reported |
| **Repeat surgery for urinary incontinence** | | | | | | Not reported |
| **Perioperative surgical complications** | | | | | | Not reported |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

## Summary of findings 6. Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal)

**Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal)**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** bladder neck needle suspension

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Bladder neck needle suspension | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | 700 per 1000 | 900 per 1000<br>(435 to 991) | **OR 3.86**<br>0.33 to 45.57 | 20<br>(1 study) | ⊕⊖⊖⊖<br>**very low**[a] | **200 more women**, per 1000, with traditional sling<br>(265 fewer to 291 more) |
| **Repeat surgery for urinary incontinence** | | | | | | Not reported |
| **Perioperative surgical complications - urodynamic stress incontinence (only)** | **200 per 1000** | **900 per 1000**<br>(256 to 1000) | **RR 4.5**<br>(1.28 to 15.81) | 20<br>(1 study) | ⊕⊖⊖⊖<br>**very low**[a] | **700 more women**, per 1000, with traditional sling<br>(56 fewer to 2962 more) |
| **Long-term adverse effects** | | | | | | Not reported |
| **Condition-specific quality of life** | | | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; OR: odds ratio; RR: risk ratio.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

[a]Downgraded two levels for risk of bias (evidence comes from a single trial that was judged to be unclear for allocation concealment and blinding) and two levels for imprecision (95% CI very wide).

**Summary of findings 7. Traditional suburethral sling operation versus open abdominal retropubic colposuspension**

**Traditional suburethral sling operation versus open abdominal retropubic suspension**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** open abdominal retropubic suspension

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Open abdominal retropubic suspension | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | 589 per 1000 | 711 per 1000 (638 to 774) | **OR 1.70** (1.22 to 2.37) | 687 (4 RCTs) | ⊕⊕⊕⊖ **moderate**[a] | **120 more dry women,** per 1000, with traditional sling (47 more to 186 more) |
| **Repeat surgery for urinary incontinence-stress urinary incontinence (symptoms only)** | **119 per 1000** | **18 per 1000** (6 to 50) | **RR 0.15** (0.05 to 0.42) | 450 (1 RCT) | ⊕⊕⊕⊕ **high** | **101 fewer women having repeat continence surgery**, per 1000, with traditional sling (113 fewer to 69 fewer) |
| **Perioperative surgical complications** | **95 per 1000** | **118 per 1000** (79 to 178) | **RR 1.24** (0.83 to 1.86) | 792 (4 studies) | ⊕⊖⊖⊖ **very low**[b] | **23 more women**, per 1000, with traditional sling (16 fewer to 82 more) |
| **Long-term adverse effects** Number of women with recurrent UTIs at > 5 years | **92 per 1000** | **94 per 1000** (52 to 167) | **RR 1.02** (0.57 to 1.82) | 453 (1 study) | ⊕⊕⊖⊖ **low**[c] | **2 more women**, per 1000, with traditional sling (39 fewer to 75 more) |
| **Condition-specific quality of life** Health status measures - Incontinence Impact Questionnaire (IIQ) | Mean IIQ score in the | Mean condition-specific quality of life in the intervention groups was | | 453 (1 study) | ⊕⊖⊖⊖ **low**[d] | Another trial reported no evidence of a difference between colposuspension groups and |

| | | | |
|---|---|---|---|
| | control group was 44.8 | **1.7 higher** (11.96 lower to 15.36 higher) | sling groups in IIQ and UDI scores but reported no actual numbers |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; IIQ: Incontinence Impact Questionnaire; OR: odds ratio; RCT: randomised controlled trial; RR: risk ratio; UDI: Urogenital Distress Inventory.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

[a]Downgraded one level due to serious risk of bias (unclear randomisation and allocation concealment in two of the smaller trials), but the trial carrying 90% of weight in the meta-analysis was judged to have low risk of selection bias.
[b]Downgraded one level for risk of bias (sequence generation was unclear in one-fourth of trials and allocation concealment was unclear in three-quarters of trials taking part in the meta-analysis; participants were not blinded) and one level for imprecision (95% confidence interval was very wide).
[c]Downgraded two levels for imprecision (95% confidence interval was very wide; 0.57 to 1.82).
[d]Downgraded two levels for risk of bias (sequence generation and allocation concealment were judged to be "low risk"; blinding of participants was judged to be "high risk") and two levels for imprecision (95% confidence interval was very wide; -11.96 to 15.36).

### Summary of findings 8. Traditional suburethral sling operation versus laparoscopic colposuspension

**Traditional suburethral sling operation versus laparoscopic colposuspension**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** laparoscopic procedures

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Laparoscopic procedures | Sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | | | | Not reported |

| | | | | |
|---|---|---|---|---|
| **Repeat surgery for urinary incontinence** | | | | Not reported |
| **Perioperative surgical complications** | | | | Not reported |
| **Voiding dysfunction** | | | | Not reported |
| **Long-term adverse effects** | | | | Not reported |
| **Condition-specific quality of life** | | | | Not reported |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

## Summary of findings 9. Traditional suburethral sling operation versus a mid-urethral sling or tape

**Traditional suburethral sling operation versus a mid-urethral sling or tape**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** traditional sling
**Comparison:** minimally invasive sling operation

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Minimally invasive sling operation | Traditional sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | 737 per 1000 | 652 per 1000 (552 to 741) | **OR 0.67** (0.44 to 1.02) | 445 (6 RCTs) | ⊕⊕⊕⊖ **moderate**[1] | **85 fewer women,** per 1000, with traditional sling |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | (185 fewer to 4 more) |
| **Repeat surgery for urinary incontinence - urodynamic stress incontinence (only)** | One trial reported the numbers of women having repeat continence surgery at 10-year follow-up: traditional sling: 0/67; mid-urethral sling: 2/69 | | | 136 (1 study) | ⊕⊕⊖⊖ **low**[2] | |
| **Perioperative surgical complications** | **193 per 1000** | **336 per 1000** (224 to 502) | **RR 1.74** (1.16 to 2.6) | 293 (4 studies) | ⊕⊕⊖⊖ **low**[3] | **143 more women**, per 1000, with traditional sling (31 more to 309 more) |
| **Long-term adverse effects** Release of sling required | **25 per 1000** | **62 per 1000** (21 to 181) | **RR 2.53** (0.87 to 7.35) | 326 (3 studies) | ⊕⊖⊖⊖ **very low**[4] | **38 more women**, per 1000, with traditional sling (3 fewer to 157 more) |
| **Condition-specific quality of life** IIQ-7 - stress urinary incontinence (symptoms only) | Mean IIQ-7 score in the control group was 24.4 | Mean condition-specific quality of life score in the intervention groups was **0.6 higher** (10.17 lower to 11.37 higher) | | 63 (1 study) | ⊕⊖⊖⊖ **very low**[5] | Eight other trials reported some measure of QoL but the data were unsuitable for met-analysis. Overall, there was no evidence of a difference between groups in QoL scores |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; IIQ-7: Incontinence Impact Questionnaire Short Form; OR: odds ratio; QoL: quality of life; RCT: randomised controlled trial; RR: risk ratio.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

[1]Downgraded one level due to serious risk of bias: 2/6 trials had high risk of selection bias.
[2]Downgraded two levels due to very serious imprecision: single study with small sample size.
[3]Downgraded two levels for risk of bias (sequence generation and allocation concealment were high or unclear risk in all four trials taking part in the meta-analysis).
[4]Downgraded two levels for risk of bias (sequence generation and allocation concealment were high or unclear risk in two of three trials taking part in the meta-analysis) and two levels for imprecision (95% confidence interval was very wide: 0.87 to 7.35).
[5]Downgraded two levels for risk of bias (sequence generation was judged to be high risk, and allocation concealment was judged to be low risk; outcome data were incomplete) and two levels for imprecision (95% confidence interval was very wide: -10.17 to 11.37).

## Summary of findings 10. Traditional suburethral sling operation versus a single-incision sling (mini-sling)

**Traditional suburethral sling operation versus a single-incision sling (mini-sling)**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** sling
**Comparison:** another type of sling

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | **886 per 1000** | **886 per 1000**<br>(641 to 971) | **OR 1.00**<br>(0.23 to 4.36) | 70<br>(1 study) | ⊕⊖⊖⊖<br>**very low**[a,b] | **0 fewer women**, per 1000, with traditional sling<br>(245 fewer to 86 more) |
| **Repeat surgery for urinary incontinence** | | | | | | not reported |
| **Perioperative surgical complications -** bladder perforation | **0 per 1000** | **0 per 1000**<br>(0 to 0) | **RR 3**<br>(0.13 to 71.22) | 70<br>(1 study) | ⊕⊖⊖⊖<br>**very low**[a,b] | |
| **Long-term adverse effects** | | | | | | not reported |
| **Condition-specific quality of life**<br>IIQ | Mean IIQ score in the control group was 42.7 | Mean condition-specific quality of life score in the intervention groups was **50.2 higher** (2.23 higher to 12.77 higher) | | 70<br>(1 study) | ⊕⊖⊖⊖<br>**very low**[a,b] | Based on mean IIQ score, quality of life was worse in the traditional sling group compared with the mini-sling group |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; IIQ: Incontinence Impact Questionnaire; OR: odds ratio; RR: risk ratio.

GRADE Working Group grades of evidence.
**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

[a]Downgraded two levels due to very serious risk of bias: unclear randomisation and inadequate blinding.
[b]Downgraded two levels due to very serious imprecision: single trial, small sample size, wide 95% confidence intervals.

### Summary of findings 11. One type of traditional sling operation versus another traditional sling operation

**One type of traditional sling operation versus another type of traditional sling operation**

**Patient or population:** women with urinary incontinence
**Settings:** secondary care
**Intervention:** one type of traditional sling
**Comparison:** another type of traditional sling

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | Number of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | | |
| | Another type of traditional sling | One type of traditional sling | | | | |
| **Number of continent (dry) women (any definition) in the medium term (1 to 5 years)** | | | Not estimable | 749 (7 studies) | ⊕⊝⊝⊝ **very low**[1] | **Results not pooled** (Analysis 11.2) |
| **Repeat surgery for urinary incontinence at first year**<br>Fascial sling vs Pelvicol sling | **196 per 1000** | **8 per 1000**<br>(0 to 119) | **RR 0.04**<br>(0.00 to 0.61) | 113 (1 study) | ⊕⊕⊝⊝[2] **low** | **188 fewer women**, per 1000, with fascial sling<br>(0 fewer to 76 fewer) (Analysis 11.4 |
| **Perioperative surgical complications** | | | Not estimable | 239 (3 studies) | ⊕⊝⊝⊝ **very low**[3] | **Results not pooled** (Analysis 11.14) |
| **Long-term adverse effects**<br>Vaginal mesh or graft exposure | | | Not estimable | 421 (3 studies) | ⊕⊝⊝⊝ **very low**[4] | **Results not pooled** (Analysis 11.23) |
| **Condition-specific quality of life**<br>ICI-Q short form UI score at 1 to 5 years | | | Not estimable | 282 (1 study) | ⊕⊝⊝⊝ **very low**[5] | **Results not pooled*** (Analysis 11.25) |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; ICI-Q: International Consultation on Incontinence Questionnaire; RR: risk ratio; UI: urinary incontinence.

GRADE Working Group grades of evidence.

**High quality:** further research is very unlikely to change our confidence in the estimate of effect.
**Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
**Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
**Very low quality:** we are very uncertain about the estimate.

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[1]Downgraded two levels for imprecision (Analysis 11.2) and two levels for heterogeneity, as the trials used different materials for the traditional sling procedure.
[2]Downgraded two levels for imprecision (Analysis 11.4)
[3]Downgraded one level for risk of bias (sequence generation was judged to be at low risk of bias in two of three trials and unclear in the third trial; allocation concealment was unclear in two of three trials). Blinding (performance bias and detection bias) was judged to be unclear (two of three) or high risk (one of three). Downgraded two levels for heterogeneity, as the trials used three different materials for the traditional sling procedure, and one level for inconsistency, as 95% CIs did not overlap (Analysis 11.14).
[4]Downgraded two levels for heterogeneity, as the trials used four different materials for the traditional sling procedure, and one level for imprecision, as the 95% CIs were very wide (Analysis 11.23).
[5]Downgraded two levels for heterogeneity, as the trials used three different materials for the traditional sling procedure, and one level for inconsistency, as 95% CIs did not overlap (Analysis 11.25).
* Data from two other trials were identified and are reported narratively in the text. These two trials did not report their data in a form suitable for meta-analysis

# BACKGROUND

## Description of the condition

Urinary incontinence (UI) in women is a distressing condition that influences the physical, psychological, and social well-being of affected individuals with considerable impact on women, carers, and health services (NICE 2013). Prevalence of urinary incontinence varies widely in different studies due to differences in definition and population but ranges from 8% to 45%, with stress urinary incontinence the most common type (Agarwal 2017). The prevalence of urinary incontinence increases with age, parity, smoking, and body mass index (BMI) (Amaral 2015; Lasserre 2009).

The International Continence Society defines urinary incontinence as involuntary loss of urine (Haylen 2010). Stress (urinary) incontinence (SUI) refers to involuntary loss of urine on effort or physical exertion (e.g. sporting activities), or on sneezing or coughing (Haylen 2010). Two mechanisms for stress incontinence are recognised: hypermobility or significant displacement of the urethra and bladder neck during exertion, and intrinsic urethral sphincter deficiency (Blaivas 1988). Among women, these mechanisms may co-exist (O'Donnell 1994). Few clinical trials have distinguished between the two conditions, probably because no standardised and validated test is available to date (Abrams 2006; Blaivas 1988; McGuire 1993; McGuire 2004), and they are not defined by recognised terminology (Haylen 2010). Women whose incontinence may be due to either of these two mechanisms will be considered together in this review.

The diagnosis of urodynamic stress incontinence (USI) requires urodynamic investigation to exclude detrusor overactivity, in addition to history-taking, physical examination, use of frequency/volume charts, and urine analysis. Some study authors have described women with only symptoms of stress incontinence (diagnosis made on clinical evaluation without urodynamics). Women with stress incontinence, both with and without urodynamic investigation, will be included in this review.

Urgency urinary incontinence (UUI) is the symptom of involuntary leakage of urine accompanied or immediately preceded by a sudden strong desire (urgency) to void that is difficult to delay. The woman has a sensation of urgency because the bladder is contracting too strongly. Detrusor overactivity (DO) is a urodynamic diagnosis characterised by occurrence of involuntary detrusor (bladder muscle) contractions. When a neurological cause is known, the term neurogenic detrusor overactivity is used. Idiopathic detrusor overactivity denotes absence of any identified cause (Haylen 2010). Women with both these symptoms and the urodynamic diagnosis of detrusor overactivity will be included in the review only if they have co-existing and predominant stress urinary incontinence (mixed urinary incontinence (MUI)).

Women with mixed incontinence included in this review will have symptoms of stress and urgency urinary incontinence (diagnosed clinically), or urodynamic stress incontinence and detrusor overactivity (diagnosed via urodynamics).

Stress urinary incontinence is associated with various direct and indirect economic costs. For example, one USA-based study found that women about to undergo Burch or fascial sling surgery for SUI had mean out-of-pocket costs (for supplies, laundry, and dry cleaning) equivalent to $19 USD (SD = 30) per week in today's terms (2019 USD; converted from 2012 USD - Shemilt 2010 - at baseline) (Subak 2014). The women who participated in this study had an average (mean) age of 53 years (SD = 10) and an average (mean) baseline frequency of urinary UI episodes of 23 per week (SD = 21); 48% had undergone prior non-surgical treatment for UI, and 16% had undergone prior surgery for UI. Another study estimated that in a single year (2012) in Spain alone, a national total of over 350,000 quality-adjusted life-years were lost due to UI among women 60 years of age and older (Villoro 2016).

## Description of the intervention

Treatments for SUI include conservative, mechanical, pharmacological, and surgical interventions.

- Conservative treatment centres on physical methods, including pelvic floor muscle training, electrical stimulation, biofeedback, and use of weighted cones.
- Mechanical devices that prevent or reduce urinary leakage are available, such as metal plugs/patches and urethral and vaginal inserts.
- Drug therapies, principally oestrogens and less often alpha-adrenergic agents, can be used. A trial of conservative therapy is generally undertaken before surgery is undertaken.

These interventions are the topic of separate Cochrane Reviews.

Surgical procedures to remedy stress incontinence generally aim to lift and support the outlet of the bladder neck (urethrovesical junction). There is disagreement, however, regarding the precise mechanism by which continence is achieved. The choice of procedure is often influenced by co-existent problems, surgeons' and/or women's preferences, and physical features of the person affected.

Numerous surgical methods have been described, but essentially they fall into nine categories.

- Open abdominal retropubic suspension (e.g. colposuspension (Burch), Marshall-Marchetti-Krantz (MMK)) (Lapitan 2017).
- Laparoscopic retropubic suspension (Dean 2017).
- Vaginal anterior repair (anterior colporrhaphy) (Glazener 2017a).
- Traditional suburethral slings (current review).
- Mid-urethral slings (retropubic or transobturator tapes) (Ford 2017).
- Single-incision slings (mini-slings) (Nambiar 2017).
- Bladder neck needle suspensions (Glazener 2017b).
- Periurethral injections (Kirchin 2017).
- Artificial sphincters.

This review will concentrate on traditional suburethral sling operations.

## How the intervention might work

The aim of the suburethral sling operation is to restore or enhance the patient's urethral support during sudden movement, such as that associated with coughing or sneezing. This is a achieved by lifting and supporting the urethrovesical junction with autologous or synthetic material. A traditional suburethral sling operation requires a combined abdominal and vaginal approach. Strips of material are tunnelled under the urethra and are attached to the

rectus muscle or to the ileopectineal ligaments. The materials used for slings may be biological or synthetic.

Autologous biological materials include rectus fascia, fascia lata, pubococcygeal muscle, vaginal wall, aponeurosis, and pyramidalis fascia. Exogenous biological materials include ox fascia and porcine dermis (Pelvicol). Synthetic materials include Teflon, Mersilene tape in a silicon tube, lyodura, polytetrafluoroethylene (Goretex), Marlex mesh, and Silastic.

A modification of the suburethral sling procedure is the 'minimally invasive' mid-urethral synthetic polypropylene mesh (sling/tape) applied via the retropubic or transobturator route. In this operation, a tape is inserted under the mid-urethra with trocars but without fixation of free ends of the tape. This can be done with the patient under general or local anaesthesia (Smith 2002). These procedures have been considered in a separate Cochrane Review (Ford 2017). Only traditional sling operations using an open abdominal approach and suture fixation are included in this review.

### Why it is important to do this review

The wide variety of surgical treatments for urinary incontinence suggests lack of consensus as to which procedure is best. The most robust evidence is likely to come from consideration of all well-designed randomised controlled trials (RCTs). Hence, an easily accessible, periodically updated, comprehensive systematic review of such trials is needed to identify optimal practice and to highlight gaps in the evidence base. The findings of this review, taken in context with the findings of other continence surgery reviews, will provide women and their caregivers with the most robust evidence available to enable them to make an informed decision about whether to have surgery and, if so, what type.

## OBJECTIVES

To assess the effectiveness of traditional suburethral sling procedures for treating stress urinary incontinence in women; and summarise the principal findings of relevant economic evaluations.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

Randomised or quasi-randomised controlled trials of women with stress incontinence (urodynamic diagnosis) or symptoms of stress or mixed urinary incontinence (clinical diagnosis), in which at least one trial arm involves traditional suburethral sling procedures.

#### Types of participants

Adult women with SUI due to hypermobility and/or intrinsic sphincter deficiency, diagnosed clinically or with urodynamics, or with mixed urinary incontinence. Classification of diagnoses will be accepted as defined by the trialists.

#### Types of interventions

At least one arm of a study must involve traditional suburethral sling procedures to treat stress or mixed urinary incontinence. Comparison interventions may include other surgical techniques and non-surgical interventions. The following comparisons were made for traditional suburethral sling procedures (abdominal and vaginal).

1. Traditional suburethral sling operation versus no treatment or sham operation.
2. Traditional suburethral sling operation versus conservative management (e.g. pelvic floor muscle training, electrical stimulation, cones, biofeedback).
3. Traditional suburethral sling operation versus drugs.
4. Traditional suburethral sling operation versus injectables.
5. Traditional suburethral sling operation versus anterior repair.
6. Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal).
7. Traditional suburethral sling operation versus open abdominal retropubic colposuspension.
8. Traditional suburethral sling operation versus laparoscopic colposuspension.
9. Traditional suburethral sling operation versus a mid-urethral sling or tape.
10. Traditional suburethral sling operation versus a single-incision sling (mini-sling).
11. One type of traditional sling operation versus another type of traditional sling operation.

#### Types of outcome measures

Outcome measures used in this review were selected on the basis of their relevance to clinical cure or improvement in incontinence. We regard the principal measures of effectiveness as the proportion of women whose incontinence was cured following surgery and the proportion of women whose incontinence was improved.

##### *Primary outcomes*

- Urinary incontinence
  - Number of continent (dry) women in the short term (less than 12 months), medium term (one to five years), and long term (longer than five years) as defined by women's report, quantified measures, clinician's observations, or combined measures (as defined by trialists; Table 1)
  - Number of women who have had repeat continence surgery

##### *Secondary outcomes*

- Women's observations
  - Number of women cured at one year or later (women's observations)
  - Number of women improved (cured or improved) in the short term (less than 12 months), medium term (one to five years), and long term (longer than five years)
  - Number of women satisfied
- Quantification of symptoms
  - Pad changes over 24 hours (from self-reported number of pads used)
  - Incontinent episodes over 24 hours (from self-completed bladder chart)
  - Pad test of quantified leakage (mean weight of urine loss)
- Clinician's observations
  - Numbers of women with urinary incontinence (clinician's observation) in the short term (less than 12 months), medium term (one to five years), and long term (longer than five years)

- Surgical outcome measures
  - Duration of operation
  - Length of hospital stay
  - Time to return to normal activity level
  - Blood loss
- Further treatment
  - Number of women requiring treatment for pelvic organ prolapse
- Adverse events
  - Perioperative surgical complications
  - Bladder perforation
  - Urinary tract infection
  - Urinary urgency symptoms, urgency urinary incontinence
  - Detrusor overactivity (urodynamic overactivity)
  - Voiding dysfunction (with or without urodynamic confirmation)
  - Long-term adverse effects such as mesh exposure, pelvic pain, dyspareunia, or release of sling
- Quality of life
  - Condition-specific measures to assess quality of life (e.g. Bristol Female Lower Urinary Tract Symptoms questionnaire (BFLUTS)) (Jackson 1996)
  - General health status measures (e.g. Short Form 36) (Ware 1993)

#### Main outcomes for 'Summary of findings' tables

We adopted the GRADE method for assessing the quality of evidence for the following five outcomes.

- Number of continent (dry) women (any definition) in the medium term (1 to 5 years)
- Repeat surgery for urinary incontinence.
- Perioperative surgical complications.
- Long-term adverse effects such as mesh exposure, pain, and dyspareunia.
- Condition-specific quality of life.

#### Definition of cure and urinary incontinence

After discussion, the review authors agreed to add another outcome: women's report of cure of urinary incontinence. We identified the definitions of cure and incontinence used in each individual included trial (Table 1). However, only 14 trials used women's report of cure or incontinence to determine cure. The remainder used quantitative methods (such as whether pads were wet or dry, questionnaire scores, or diaries) (seven trials), clinician-observed or -reported urine leakage (11 trials), or a combined definition without reporting the elements separately (10 trials). Some trials did report incontinence in more than one way. We therefore decided to use as our primary outcome the number of continent (dry) women, with any method used to measure or report urinary incontinence, but we added a further outcome of 'cure' as reported by women at 12 months or later.

## Search methods for identification of studies

We did not impose language or other restrictions on any of these searches.

### Electronic searches

#### *Search for clinical effectiveness studies*

We drew on the search strategy developed for Cochrane Incontinence. We identified relevant trials from the Cochrane Incontinence Specialised Register. For more details of the search methods used to build the Specialised Register, please see the Group's webpages, where details of the Register's development (from inception) and of the most recent searches performed to populate the Register can be found. To summarise, the Register contains trials identified by searching the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, MEDLINE In-Process, MEDLINE Epub Ahead of Print, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ClinicalTrials.gov, and WHO ICTRP, and by handsearching journals and conference proceedings. Many of the trials in the Cochrane Incontinence Specialised Register are also contained in CENTRAL.

The date of the last fully incorporated search was 27 February 2017.

A further updated search was conducted on 23 January 2019, the results of which were not fully incorporated into the review.

The terms used to search the Cochrane Incontinence Specialised Register are given in Appendix 1.

For previous versions of this review, one of the review authors performed extra literature searches. These are described in Appendix 2.

#### *Search for economic evaluations*

We performed additional searches of the following databases for the brief economic commentary (BEC).

- MEDLINE on Ovid SP (1 January 1946 to week 5 July 2018), searched on 10 August 2018.
- Embase on Ovid SP (1 January 1980 to week 32 2018), searched on 10 August 2018.
- National Health Service Economic Evaluation Database (NHS EED) on Ovid SP (first quarter 2016), searched on 6 April 2017 (this database is no longer updated by the producer).

Search strategies used for the BEC are given in Appendix 3.

### Searching other resources

We searched the reference lists of relevant articles for other possibly relevant trials.

## Data collection and analysis

### Selection of studies

At least two review authors evaluated the appropriateness of including reports of all possibly eligible studies without prior consideration of the results. We retrieved the reports of potentially eligible trials in full. We resolved any differences of opinion by discussion between the review authors.

### Data extraction and management

At least three review authors undertook data extraction independently using a standard form containing pre-specified outcomes. When data may have been collected but not reported, we sought clarification from the trialists.

Any differences of opinion related to study inclusion, data extraction, or risk of bias assessment were resolved by discussion among the review authors and, when necessary, were referred to a fourth review author for arbitration. We conducted the review using the standard Cochrane RevMan software.

### Assessment of risk of bias in included studies

Each review author independently assessed risk of bias using Cochrane's 'Risk of bias' tool as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). The following questions were assessed and reported in the 'Risk of bias' tables.

- Was the random sequence adequately generated (selection bias)?
- Was allocation adequately concealed (selection bias)?
- Were the participants or caregivers (performance bias) or outcome assessors (detection bias) blinded?
- Were incomplete outcome data adequately addressed (attrition bias)?

We judged studies to be at low risk of bias if the method of blinding was adequate, or if lack of blinding could not have affected the results or could not be avoided. Each element was assessed as having low risk, high risk, or unclear risk of bias (the latter usually when no information was supplied).

### Measures of treatment effect

When appropriate, we calculated a combined estimate of treatment effect across similar studies for each pre-specified outcome, using risk ratios (RRs) for dichotomous data and mean differences (MDs) for continuous outcomes, along with 95% confidence intervals (CIs) when possible. For categorical (dichotomous) outcomes, the numbers reporting an outcome were related to the numbers at risk in each group to derive a risk ratio (RR). We have, however, used the odds ratio (OR) when reporting the number of continent or cured women, as event rates were expected to be high. For continuous variables, we used means and standard deviations to derive a mean difference (MD). We undertook a fixed-effect approach to the analysis unless we noted evidence of heterogeneity across studies.

### Unit of analysis issues

We analysed studies with multiple treatment groups by treating each pair of arms as a separate comparison, as appropriate. Studies based on a non-standard design, such as cross-over trials and cluster-randomised trials, would have been analysed as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011).

### Dealing with missing data

We included data as they were reported. If women's subjective reporting of (cure of) urinary incontinence was not provided, we used the objective clinician's observations or other measures of urine leakage as surrogate data to maximise information available for the primary outcome - the number of continent (dry) women (Table 1 shows data used). We did not contact authors of trials for missing data or further details for this version of the review.

### Assessment of heterogeneity

We investigated differences between trials when apparent from visual inspection of the results, or when statistically significant heterogeneity was demonstrated, by using the $Chi^2$ test at the 10% probability level or assessment of the $I^2$ statistic (Higgins 2003). If we found no obvious reason for the heterogeneity (after consideration of populations, interventions, outcomes, and settings of individual trials), or if heterogeneity persisted despite removal of outlying trials, we used a random-effects model.

### Assessment of reporting biases

We would have examined publication bias through a funnel plot if 10 or more studies had been included in a meta-analysis.

### Data synthesis

We sought data on the number of participants with each outcome event by allocated treated group, irrespective of compliance and whether or not the participant was later thought to be ineligible or otherwise excluded from treatment or follow-up, to allow an intention-to-treat (ITT) analysis when possible. We defined an ITT analysis to mean that all participants were analysed in their randomised groups whether or not they received the allocated intervention. We used the Mantel-Haenszel statistical method for meta-analysis. We used a fixed-effect approach to the analysis, unless we found evidence of heterogeneity across studies, in which case we adopted a random-effects model. We used a narrative review of eligible studies when statistical synthesis of data from than one study was not possible or was considered not appropriate.

### Subgroup analysis and investigation of heterogeneity

We grouped trial data by type of incontinence: urodynamic stress incontinence based on a urodynamic diagnosis, or stress or mixed urinary incontinence based on symptom classification. It is unclear whether there is a clinical difference between women who had SUI alone (diagnosed by urodynamics to exclude concomitant detrusor contractions, which might be indicative of overactive bladder or urgency urinary incontinence) and women whose diagnosis of SUI was based on their report of symptoms alone. Women who have MUI (stress plus urgency) may have a worse outcome than those with SUI alone. We wished to explore whether different interventions had a differential effect among women with different types of incontinence. Quantitative synthesis was done when more than one eligible study was identified.

We also planned to examine whether findings would vary among women with primary versus recurrent SUI, or with presence or absence of prolapse, but this was not possible due to lack of information provided by the included trials.

In addition, we examined whether biological materials were associated with different outcomes compared with synthetic materials used for traditional sling arms in a separate comparison (comparison 11). It is biologically feasible that biological materials might be reabsorbed by the body tissues and thus might not be as long-lasting as non-absorbable synthetic materials.

### Sensitivity analysis

We would have carried out sensitivity analysis based on eligibility criteria, such as by including and excluding results from abstract-

only publications or quasi-randomised trials, if we had identified enough trials.

#### *'Summary of findings' tables and assessing the quality of evidence*

The GRADE Working Group strongly recommends including up to seven outcomes in 'Summary of findings' tables in a systematic review (Guyatt 2011a; Guyatt 2011b; Guyatt 2013a; Guyatt 2013b). We classified the primary and secondary outcomes in the Types of outcome measures as 'critical', 'important', or 'not important' for decision-making from the patient's perspective, and we used this hierarchy to decide which outcomes should be included in the 'Summary of findings' tables. We also made judgements about which adverse events may be important to patients.

We implemented the GRADE method for assessing the quality of evidence.

#### *Incorporating economics evidence*

Following the search outlined under Search methods for identification of studies, we developed a brief economic commentary (BEC) to summarise the availability and principal findings of full economic evaluations that compare traditional sling operations for urinary incontinence in women (Shemilt 2019). This BEC encompasses full economic evaluations (i.e. cost-effectiveness analyses, cost-utility analyses, and cost-benefit analyses), conducted alongside or based upon one or more RCTs included in the main review of intervention effects. This commentary focuses on the extent to which principal findings of eligible economic evaluations indicate that an intervention might be judged favourably or unfavourably from an economic perspective when implemented in different settings.

## RESULTS

### Description of studies

#### Results of the search

We screened a total of 582 records produced by the literature search for this fourth update and retrieved 167 full-text articles that appeared to meet the eligibility criteria for this review. After assessing the full-text articles, we identified 115 reports of 34 included studies and 50 reports of 38 excluded studies. Additionally, we found reports of two ongoing studies (Hilton 2000; Zhu 2014). The flow of literature through the assessment process can be seen in Figure 1.

**Figure 1. PRISMA study flow diagram - search for clinical effectiveness studies.**

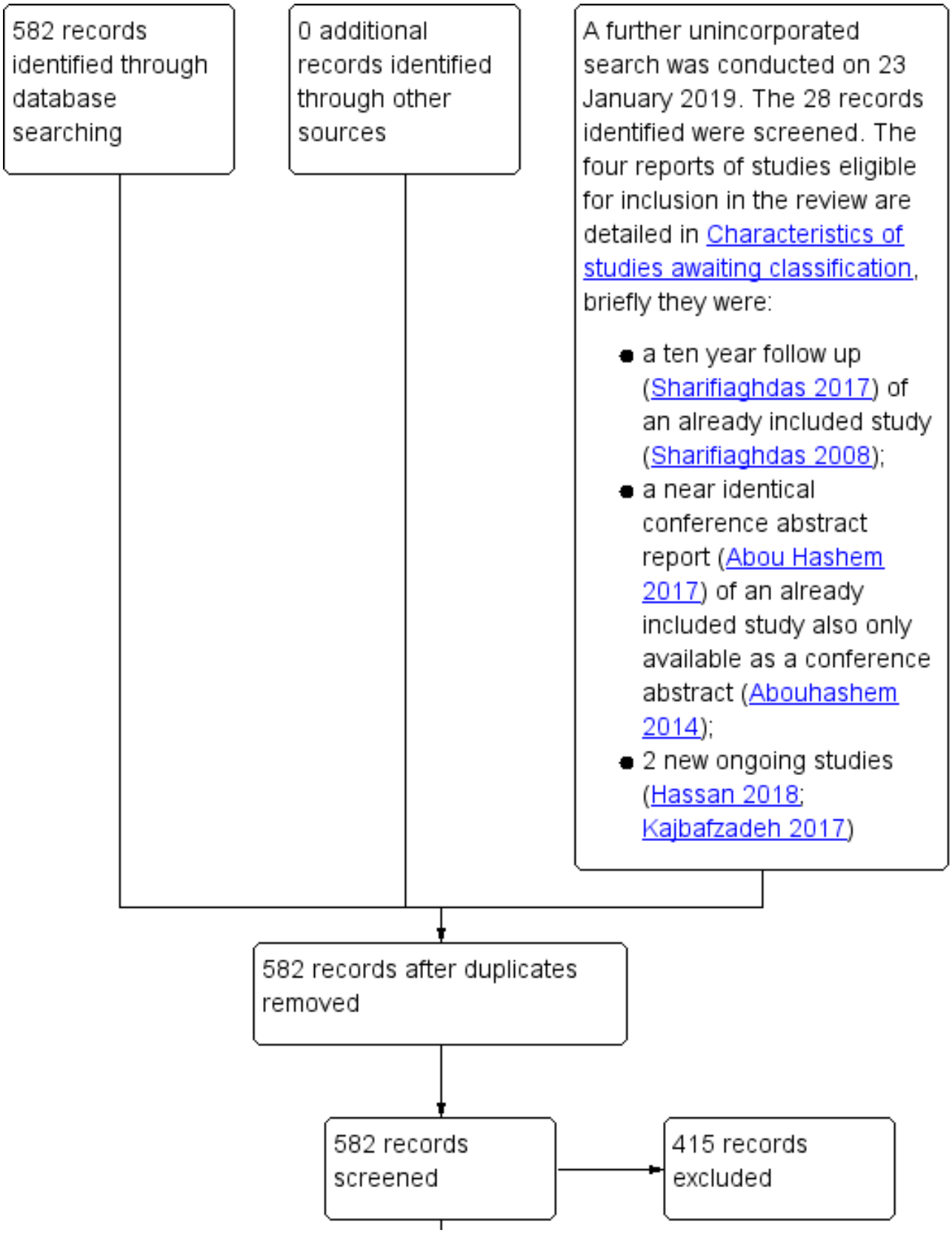
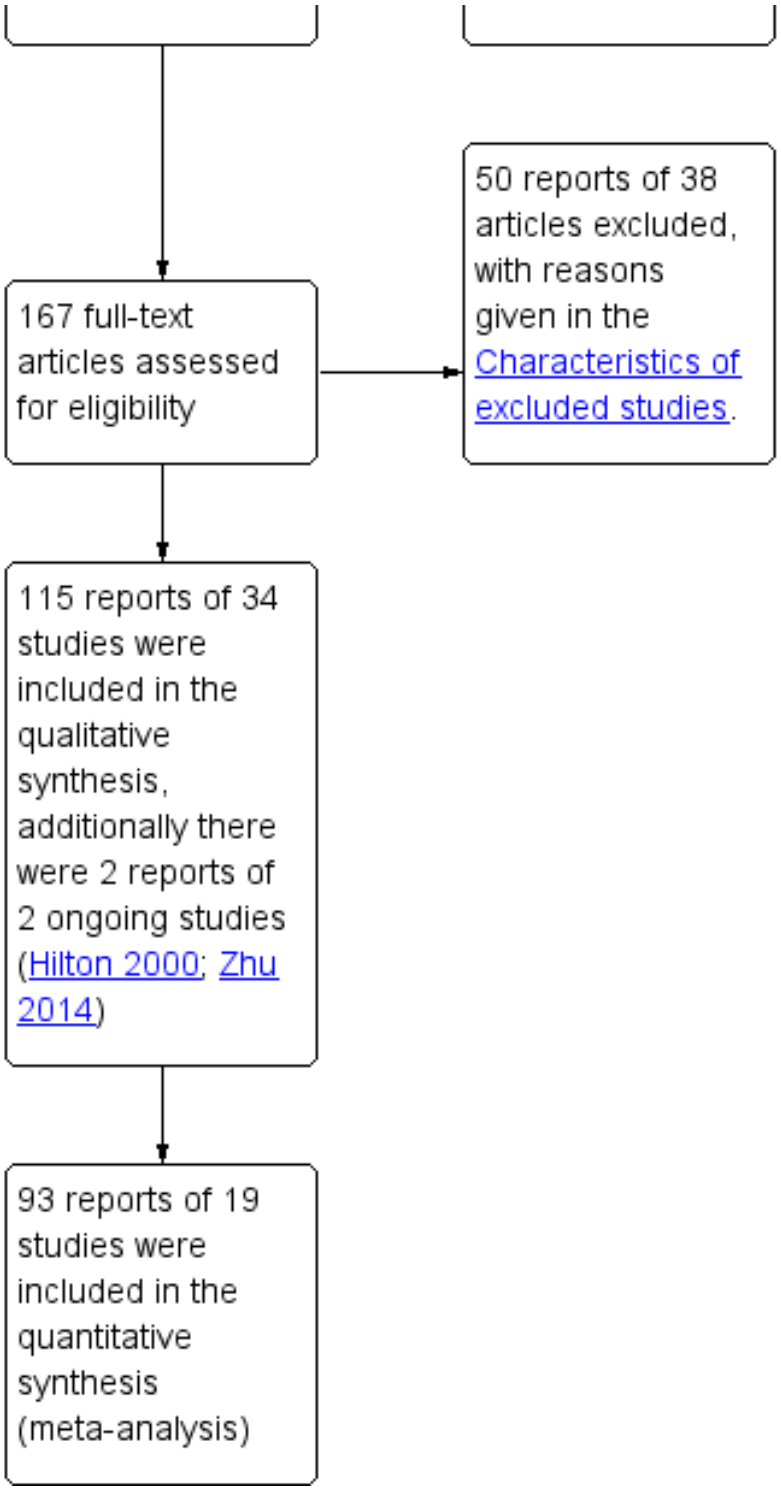


**Figure 1. (Continued)**



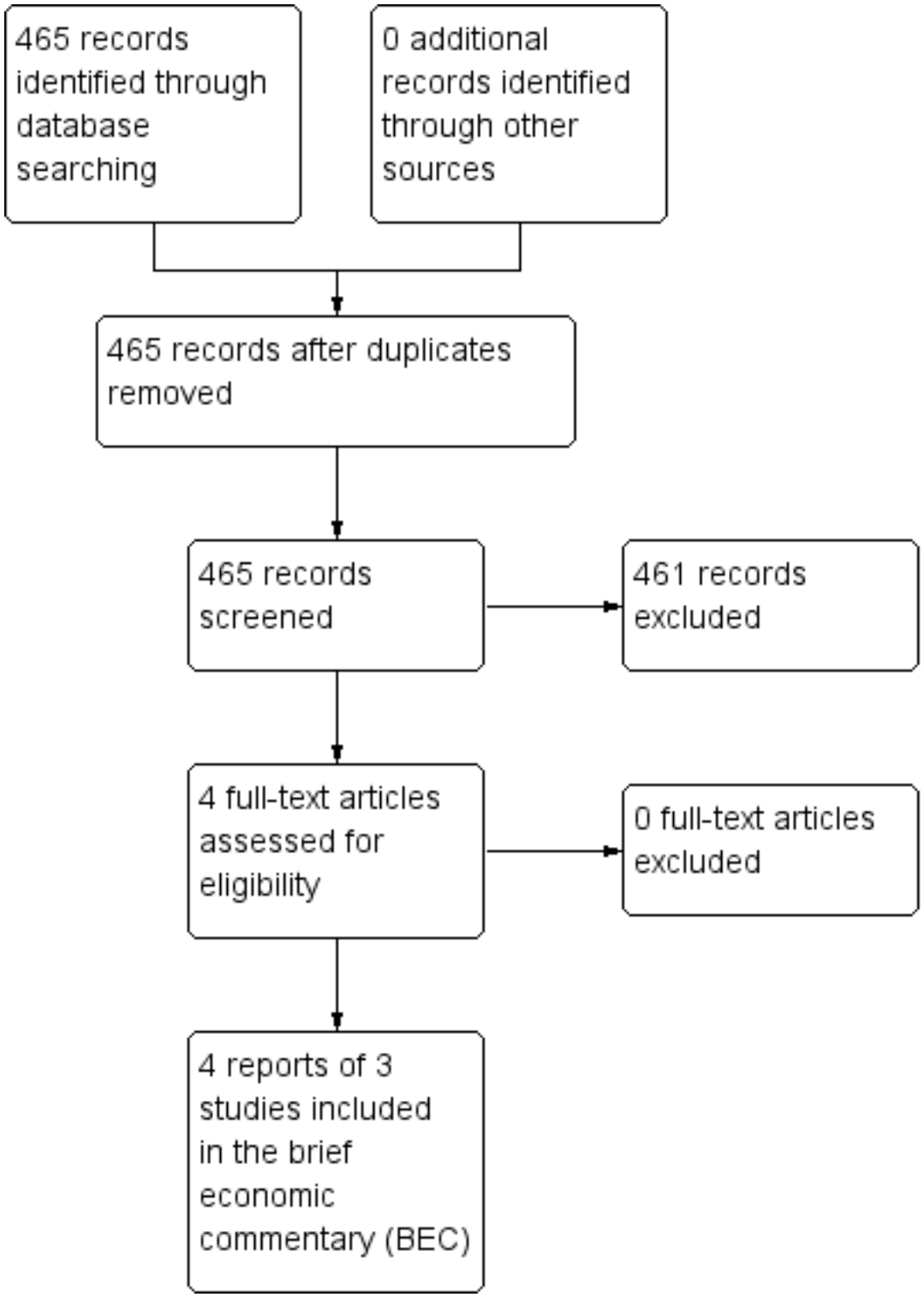

For this update, eight new trials were included (Abouhashem 2014; Al-Azzawi 2014; Choe 2000; Helmy 2012; Okulu 2013; Sharifiaghdas 2015; Teleb 2011; Zargham 2013). A further four have been updated with new information (Albo 2007; Amaro 2007; Guerrero 2008; Wadie 2005). In total, the review now contains 34 included trials, 38 excluded trials, and two ongoing studies.

A further updated search of the Cochrane Incontinence Specialised Register was conducted on 23 January 2019. This search was not fully incorporated into the review. A total of 28 records retrieved by the search were screened. Four reports of trials were eligible for inclusion in the review - for transparency, all four eligible reports have been added to Studies awaiting classification, and details can be found under Characteristics of studies awaiting classification.

In brief, the authors of Sharifiaghdas 2008 published a 10-year update in 2017, but the data have not yet been added to the review (Sharifiaghdas 2017). Abou Hashem 2017 served as another report of the already included study (Abouhashem 2014); however, this appears to be exactly the same conference abstract as the one included study report (also a conference abstract); no new details or data are available in this additional report. Two new ongoing studies were also identified (Hassan 2018; Kajbafzadeh 2017), but their data have not yet been added to the review.

Our search for economic evaluations produced a total of 465 titles and abstracts to be screened, from which we selected four reports of three economic evaluations for further assessment (Berman 1997; Kilonzo 2004; Kumar 2017). The flow of literature through the assessment process is shown in Figure 2.

**Figure 2. PRISMA study flow diagram - search for economic evaluations for the BEC.**




**Included studies**

We included a total of 34 RCTs, reporting data on outcomes of 3244 women, with sample sizes ranging from 20 to 655 participants. Three trials are quasi-randomised (Choe 2000; Kondo 2006; Zargham 2013), and two are multi-arm trials (Bai 2005; Guerrero 2008). With the exception of Albo 2007 and Sand 2000, the included trials were small and had short follow-up.

***Participants***

Inclusion criteria were not always clearly defined. Ten trials included women (some or all) with stress-predominant MUI, both

stress and urgency (Al-Azzawi 2014; Barbalias 1997; Basok 2008; Kondo 2006; Okulu 2013; Osman 2003; Sand 2000; Song 2004; Teleb 2011; Zargham 2013). Two trials involved women with self-reported or predominant SUI (Albo 2007; Wadie 2005). All others were restricted to women with a urodynamic diagnosis of stress incontinence (USI, previously known as genuine stress incontinence). Data from two trials were insufficient, with only abstracts available (Abouhashem 2014; Helmy 2012). All trials included both pre-menopausal and postmenopausal women, but none included women who were treated with hormone replacement therapy. One study was restricted to women with vaginal narrowing due to atrophic vaginitis or previous surgical scars (Hilton 1989).

#### Previous continence surgery status

Two trials included only women without previous interventions for incontinence (Henriksson 1978; Silva Filho 2006), and another included only women who had recurrent incontinence after a previous vaginal hysterectomy and at least one anterior repair (Enzelsberger 1996). The others included women with both primary and recurrent SUI but did not report outcome data separately according to previous continence surgery.

#### Presence or absence of pelvic organ prolapse

This information was not routinely reported in the included trials, and when it was, data were not reported separately.

### *Interventions*

Fifteen materials were used for the traditional sling procedure across 34 studies.

#### Autologous biological materials

- Autologous dermal graft patch (Shin 2001)
- Autologous fascia lata (Song 2004)
- Autologous rectus fascia (Abouhashem 2014; Al-Azzawi 2014; Albo 2007; Amaro 2007; Bai 2005; Barbalias 1997; Demirci 2001; Guerrero 2008; Helmy 2012; Kondo 2006; Lucas 2000; Maher 2005; Osman 2003; Pacetta 2005; Sharifiaghdas 2008; Sharifiaghdas 2015; Silva Filho 2006; Tcherniakovsky 2009; Teleb 2011; Viseshsindh 2003; Wadie 2005)
- Autologous vaginal wall sling (Choe 2000; Teleb 2011; Viseshsindh 2003; Zargham 2013)

#### Other biological materials

- Cadaveric fascia lata (Basok 2008; Shin 2001)
- Fortaperm (Pacetta 2005)
- Lyphohilised dura matter (Enzelsberger 1996)
- Porcine dermis, also known as Pelvicol (Arunkalaivanan 2003; Guerrero 2008; Hilton 1989, Teixeira 2008)

#### Synthetic non-absorbable materials

- Goretex sling operation (Barbalias 1997)
- Polytetrafluoroethylene - PTFE (Sand 2000)
- Polytetrafluoroethylene impregnated with silver diacetate and chlorhexidine; Antimicrobial Mycromesh (Choe 2000)
- Teflon sling (Henriksson 1978)
- Ultrapro mesh: synthetic monofilament combined mesh, non-absorbable with absorbable coating (Okulu 2013)
- Prolene or prolene light mesh (Okulu 2013; Teleb 2011)
- Vypro mesh: semi-absorbable multi-filament mesh (Okulu 2013)

One trial, reported in abstract form, did not mention the type of material used for the suburethral sling (Fischer 2001).

### *Comparators*

The 34 included trials reported the following comparisons.

- One compared traditional suburethral sling operations with oxybutynin for treating women with mixed urinary incontinence (Osman 2003).
- One compared traditional suburethral sling operations with suburethral injectable treatment (Maher 2005).
- One compared traditional suburethral sling operations with bladder neck needle suspension (Hilton 1989).
- Eight compared traditional suburethral sling operations with open abdominal retropubic colposuspension (Albo 2007; Bai 2005; Demirci 2001; Enzelsberger 1996; Fischer 2001; Helmy 2012; Henriksson 1978; Sand 2000). There were no useable data in one of the trials identified in the updated search (Helmy 2012), and one trial was updated with new information (Albo 2007).
- Fifteen trials compared traditional suburethral sling operations with mid-urethral sling operations (Abouhashem 2014; Al-Azzawi 2014; Amaro 2007; Arunkalaivanan 2003; Bai 2005; Basok 2008; Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Silva Filho 2006; Song 2004; Tcherniakovsky 2009; Teixeira 2008; Wadie 2005; Zargham 2013). Of these, three were added to this comparison in this version of the review (Abouhashem 2014; Al-Azzawi 2014; Zargham 2013), but one did not provide any useable data (Abouhashem 2014). One trial did not provide data after the first week (Al-Azzawi 2014), and further data were identified for three trials (Amaro 2007; Guerrero 2008; Wadie 2005).
- One compared a traditional suburethral sling with a single-incision sling (mini-sling) (Sharifiaghdas 2015).
- Nine trials compared one type of traditional suburethral sling with another (Barbalias 1997; Choe 2000; Guerrero 2008; Lucas 2000; Okulu 2013; Pacetta 2005; Shin 2001; Teleb 2011; Viseshsindh 2003). Of these, three are new to this comparison for this version of the review (Choe 2000; Okulu 2013; Teleb 2011), and one trial was updated with further data (Guerrero 2008).

No trials compared suburethral slings with anterior repair, laparoscopic retropubic colposuspension, or artificial sphincters.

There were seven non-traditional sling comparators across 25 studies.

- Anticholinergic (Osman 2003).
- Intravaginal slingplasty (Basok 2008).
- Mid-urethral sling (Abouhashem 2014; Al-Azzawi 2014; Amaro 2007; Arunkalaivanan 2003; Bai 2005, Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Silva Filho 2006; Song 2004; Tcherniakovsky 2009; Teixeira 2008; Wadie 2005; Zargham 2013).
- Retropubic colposuspension: Burch colposuspension (Albo 2007; Bai 2005; Demirci 2001; Enzelsberger 1996; Fischer 2001; Helmy 2012; Osman 2003; Sand 2000); Marshall-Marchetti-Krantz (Henriksson 1978).
- Stamey bladder neck (needle) suspension (Hilton 1989).

- Transurethral Macroplastique (injectable material) (Maher 2005).
- Single-incision sling (mini-sling) (Sharifiaghdas 2015).

One trial was designed to study an anticholinergic agent (oxybutynin) in comparison with surgery (Burch or sling) for women with MUI (Osman 2003). It was possible to extract only the data from sling surgery in comparison with medical treatment for inclusion in the analysis.

***Outcome measures (definition of incontinence)***

Outcome measures were not reported in a standardised fashion (Table 1).

- Fourteen trials used women's self-report of cure or absence of incontinence to define urinary incontinence.
- Seven trials used quantitative methods (such as based on wet or dry pads, questionnaire scores, or diaries).
- Eleven trials used clinician-observed or -reported urine leakage (such as the stress test, or at urodynamics).
- Ten trials used a combined definition without reporting the elements separately.

The primary outcome was the number of continent (dry) women using at least one of these definitions of urine leakage (32/34 trials). If woman-reported leakage alone or clinician-observed leakage was reported separately, those were also reported in separate outcomes. Only two trials did not report any measure of urine leakage (Al-Azzawi 2014; Teixeira 2008).

***Follow-up***

Trials varied in their reports of initial and long-term follow-up, reporting data on outcomes of 3244 women at last follow-up.

- Ten trialists presented their results at three- and/or six- and/or nine-month assessment (Bai 2005; Choe 2000; Fischer 2001; Henriksson 1978; Osman 2003; Silva Filho 2006; Sand 2000; Song 2004; Teleb 2011; Viseshsindh 2003).
- One trial followed up women to one year and beyond but did not provide any outcome data after the first week, such that cure data were not useable (Al-Azzawi 2014).
- Eleven trials presented follow-up at around one year (Arunkalaivanan 2003; Basok 2008; Demirci 2001; Guerrero 2008; Lucas 2000; Maher 2005; Pacetta 2005; Sharifiaghdas 2008; Sharifiaghdas 2015; Shin 2001; Tcherniakovsky 2009).
- Eleven trials described follow-up between one and five years (Albo 2007; Amaro 2007; Arunkalaivanan 2003; Barbalias 1997; Enzelsberger 1996; Hilton 1989; Kondo 2006; Okulu 2013; Teixeira 2008; Wadie 2005; Zargham 2013).
- Three trials have now reported data on the outcomes of 892 women at the last follow-up at five years or later (Albo 2007; Guerrero 2008; Sand 2000).

For more details about the characteristics of these trials, please see Characteristics of included studies.

**Excluded studies**

In total, 38 studies were excluded. For further details, please see Characteristics of excluded studies.

- Seventeen trials compared mid-urethral or variant sling procedures with each other or with other operations (Amat 2007; Chong 2003; Corcos 2001; Darai 2007; Gamble 2010; Halaska 2001; Han 2001; Kocjancic 2008; Liapis 2002; Lim 2005; Naumann 2006; Oremus 2010; O'Sullivan 2000; Palomba 2008; Seo 2007; Ward 2002a; Yoo 2007). Mid-urethral sling and open colposuspension procedures are considered in other Cochrane Reviews (Ford 2017; Lapitan 2017).
- Eleven studies were not randomised (Atherton 2000; Brandt 2009; Bruschini 2005; Debodinance 1994; Giri 2004; Giri 2006; Hung 2001; Ishenko 1999; Kuo 2001; Obrink 1978; Schostak 2001).
- There was uncertainty regarding the population included in two trials (Aurunkalaivanan 2001; Barrington 2003).
- Five trials included some participants who did not have SUI (Debodinance 1993; Goldberg 2001; Kwon 2002; Meschia 2001; Trezza 2001).
- Three trials were excluded for other reasons: Choe 2001 randomised women to having urodynamic evaluation or not; Wang 1999 randomised women to different types of anaesthetic; Lemieux 1991 compared clamping and non-clamping of catheters after incontinence surgery.

## Risk of bias in included studies

Risk of bias findings for the included trials are summarised in Figure 3 and Figure 4.

**Figure 3. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.**

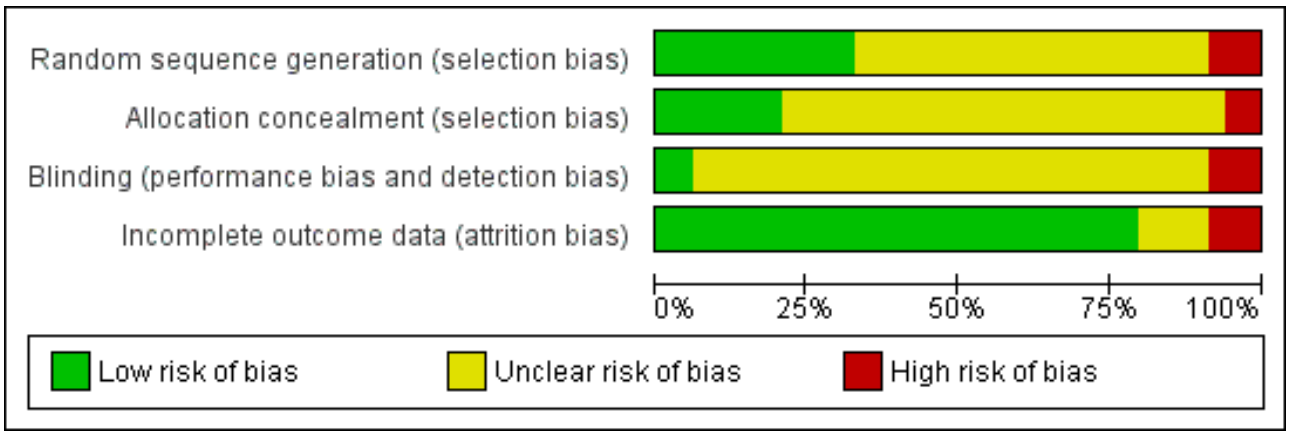


**Figure 4. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.**

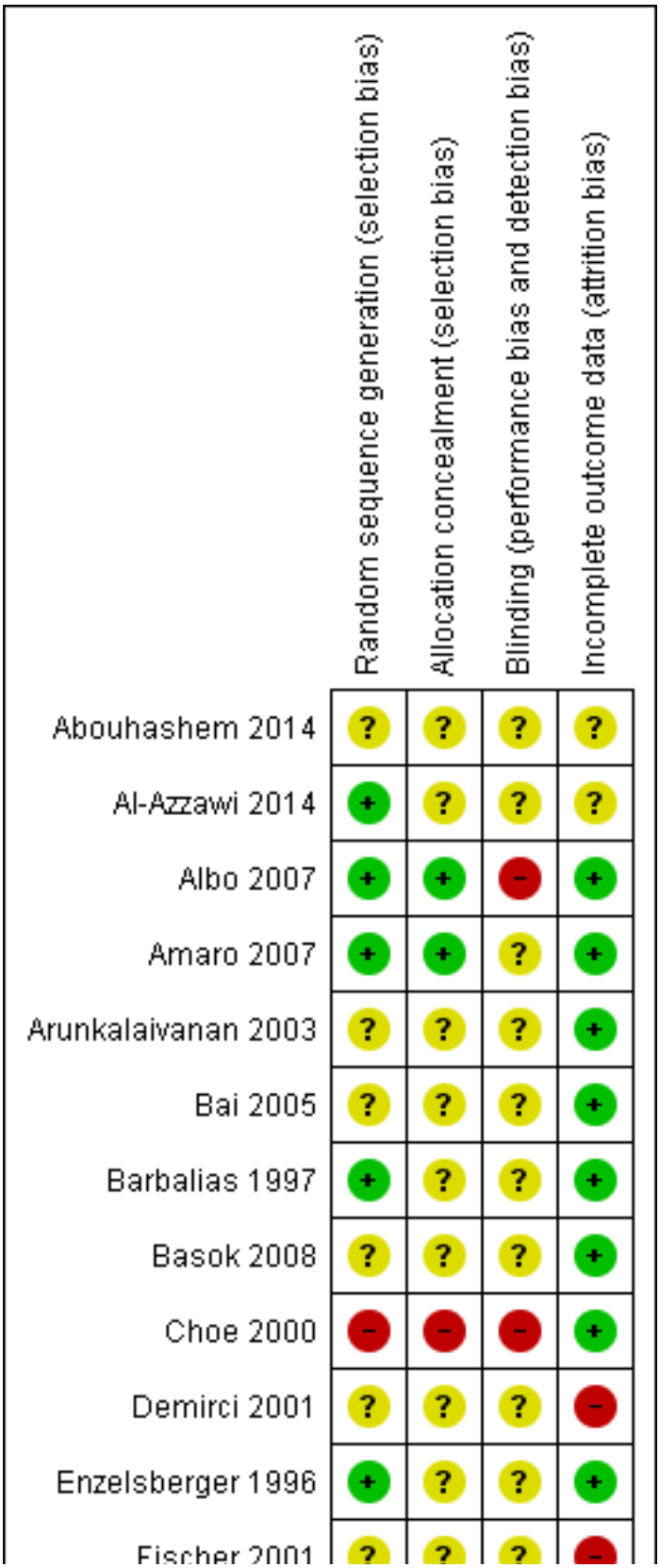


**Figure 4. (Continued)**

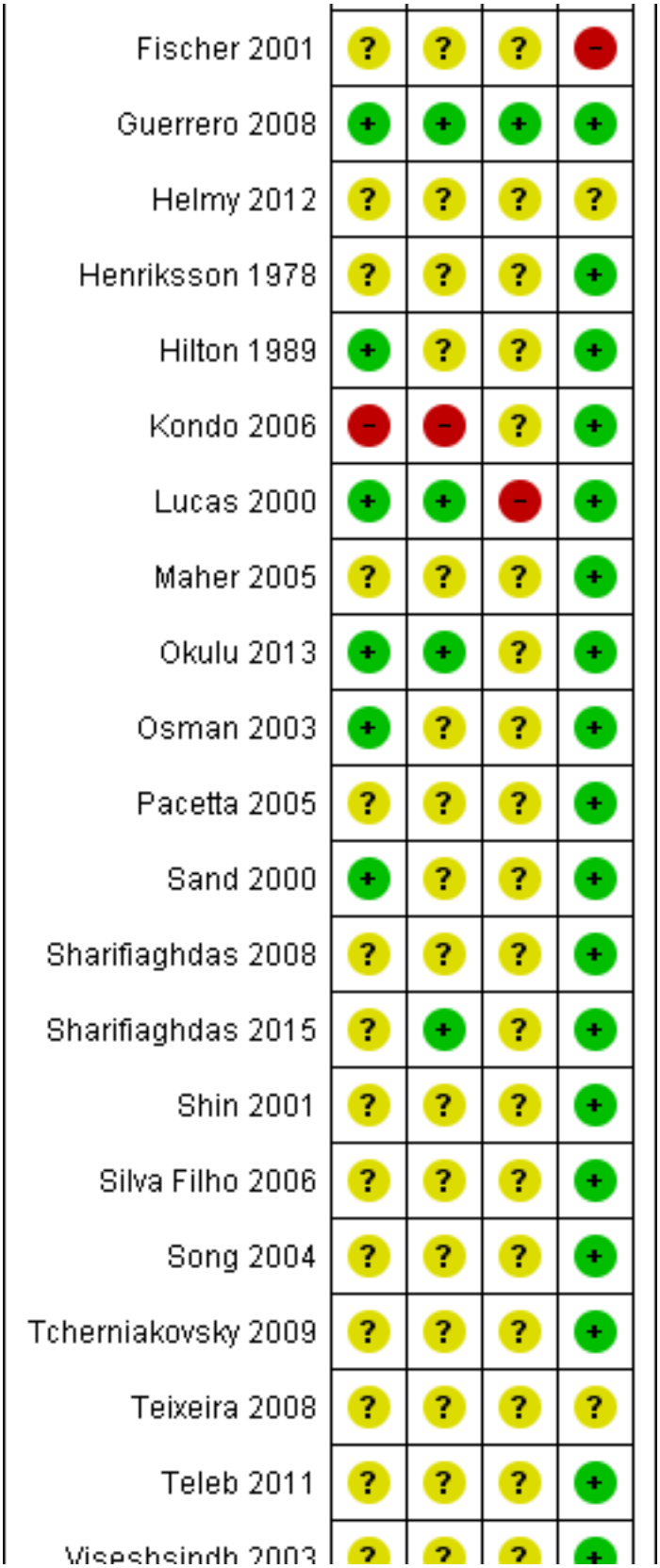
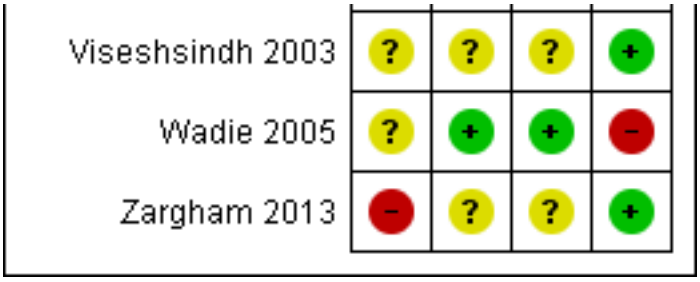


**Figure 4. (Continued)**




### Allocation

#### *Adequate sequence generation*

Eight trials used an adequate method of sequence generation (Al-Azzawi 2014; Albo 2007; Amaro 2007; Barbalias 1997; Guerrero 2008; Okulu 2013; Osman 2003; Sand 2000). Two trials used randomisation charts to generate the randomisation sequence without providing further information about the process (Enzelsberger 1996; Hilton 1989). Nevertheless, these were judged to be adequate. In one of these trials, one woman was randomised to one arm of the study and was compared with two women randomised to the other intervention (Barbalias 1997).

Sequence generation was inadequate in three trials, which were therefore categorised as quasi-randomised trials. Kondo 2006 used date of birth with even dates assigned to one group and odd dates to the other. In two trials, women were randomised in alternate fashion (Choe 2000; Zargham 2013).

In the remainder, women were stated to be randomised but no other details of the process were provided.

#### *Allocation concealment*

The reported method of concealment of randomisation was secure in seven trials (Albo 2007; Amaro 2007; Guerrero 2008; Lucas 2000; Okulu 2013; Sharifiaghdas 2015; Wadie 2005). Allocation concealment was unknown for most of the remaining trials, as study authors did not record it. Another trial used sealed opaque envelopes but made no mention of numbering and thus was judged as unclear for allocation concealment (Sharifiaghdas 2008).

Inadequate allocation concealment was noted in three quasi-randomised trials (Kondo 2006; Choe 2000; Zargham 2013).

### Blinding

Masking of women or surgeons was not reported in most trials, but this is difficult to achieve in surgical trials. Only two trials attempted or reported blinding of participants or care providers (Guerrero 2008; Wadie 2005). Third party outcome assessment was not performed in any of the trials.

### Incomplete outcome data

Most trials had complete outcome data at follow-up, or losses were evenly distributed between randomised groups, and this was unlikely to have a significant effect on the final analysis. Two trials did not account for losses at follow-up, which might potentially have been a source of bias (Demirci 2001; Fischer 2001). One trial had a differential dropout at two years' follow-up (Wadie 2005).

### Other potential sources of bias

#### *Comparability of groups at baseline*

Baseline comparisons between groups were provided in 19 trials (Albo 2007; Arunkalaivanan 2003; Bai 2005; Basok 2008; Choe 2000; Demirci 2001; Enzelsberger 1996; Hilton 1989; Kondo 2006; Lucas 2000; Maher 2005; Okulu 2013; Sand 2000; Sharifiaghdas 2008; Song 2004; Tcherniakovsky 2009; Teleb 2011; Wadie 2005; Zargham 2013). Henriksson 1978 stated that the two groups were comparable without supplying data, and the remainder did not mention baseline comparisons between groups.

Although we did not formally assess 'selective reporting' or 'other bias' (other than comparability of groups at baseline, as above), we had no concerns for these two domains across studies.

## Effects of interventions

See: **Summary of findings for the main comparison** Traditional suburethral sling operation versus no treatment or sham operation; **Summary of findings 2** Traditional suburethral sling operation versus conservative management; **Summary of findings 3** Traditional suburethral sling operation versus drugs; **Summary of findings 4** Traditional suburethral sling operation versus injectables; **Summary of findings 5** Traditional suburethral sling operation versus anterior repair; **Summary of findings 6** Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal); **Summary of findings 7** Traditional suburethral sling operation versus open abdominal retropubic colposuspension; **Summary of findings 8** Traditional suburethral sling operation versus laparoscopic colposuspension; **Summary of findings 9** Traditional suburethral sling operation versus a mid-urethral sling or tape; **Summary of findings 10** Traditional suburethral sling operation versus a single-incision sling (mini-sling); **Summary of findings 11** One type of traditional sling operation versus another traditional sling operation

### Comparison 1. Traditional suburethral sling operation versus no treatment or sham operation

No trials were identified.

### Comparison 2. Traditional suburethral sling operation versus conservative management

No trials were identified.

### Comparison 3. Traditional suburethral sling operation versus drugs

One trial included 75 women with MUI treated with surgery (either Burch colposuspension (n = 24) or rectus fascia sling (n =

26)) or oxybutynin (an anticholinergic drug treatment for urinary incontinence, overactive bladder, and detrusor overactivity - not for stress incontinence; n = 25)) (Osman 2003). The type of surgery was selected according to Valsalva leak point pressure (VLPP) - those with VLPP of less than 90 cm of water had rectus fascia sling, and those with VLPP of more than 90 cm of water had Burch colposuspension.

Results for the surgically managed group were similar to those for the subgroup having slings. Due to small sample sizes, the data were too few to be reliable, and we therefore compared only data from oxybutynin versus sling patients in tables (Table 2).

### Comparison 4. Traditional suburethral sling operation versus injectables

Maher 2005 compared slings (n = 21) with injectable Macroplastique (n = 22). Based on very low-quality evidence, we are uncertain about the impact of surgery versus injectables in terms of the number of continent women (100% were dry with a traditional sling vs 71% with the injectable after the first year; odds ratio (OR) 11.57, 95% confidence interval (CI) 0.56 to 239.74; Analysis 4.2), the need for repeat surgery for urinary incontinence (risk ratio (RR) 0.52, 95% CI 0.05 to 5.36; Analysis 4.3), or perioperative complications such as urinary tract infection (RR 1.57, 95% CI 0.29 to 8.49; Analysis 4.7).

Due to the small size of the trial, the data were too few to be reliable (Summary of findings 4; Table 2).

### Comparison 5. Traditional suburethral sling operation versus anterior repair

No trials were identified.

### Comparison 6. Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal)

Only one trial compared porcine dermis sling with Stamey needle suspension (Hilton 1989). This was a small trial with only 10 women in each arm. The women were unsuitable for abdominal colposuspension (the study author's preferred procedure) because they had vaginal narrowing secondary to previous interventions or atrophic vaginitis. Thus they constitute a population of women with SUI who are not typical of the majority. All women had USI. Groups were comparable for age, parity, previous interventions, and hormonal status. Follow-up was reported at 3 months and at 24 months.

Due to the small size of the trial, the data were too few to be reliable (Summary of findings 6; Table 2).

### Comparison 7. Traditional suburethral sling operation versus open abdominal retropubic colposuspension

Eight trials compared slings with open abdominal retropubic colposuspension (Albo 2007; Bai 2005; Demirci 2001; Enzelsberger 1996; Fischer 2001; Helmy 2012; Henriksson 1978; Sand 2000). One of these trials provided no data (Helmy 2012). The extent to which the trials could be considered together was limited because of differences in procedures compared, populations studied, outcomes assessed, and length of follow-up. Two trials involved a pubovaginal sling technique using autologous rectus fascia (Albo 2007; Demirci 2001). One trial used a lyodura sling (Enzelsberger 1996). Another trial used the Zoedler sling made of Teflon (Henriksson 1978). Still another trial used the Gortex type (Sand 2000). These were all biological materials except in two trials (Henriksson 1978; Sand 2000). Fischer 2001 did not specify the sling material used.

Only two of these trials reported follow-up for longer than five years and presented both short-term and long-term data in two full reports (Albo 2007; Sand 2000).

#### *Primary outcomes*

##### Number of continent (dry) women

##### Short term

Data from four trials suggested no evidence of a difference in the likelihood of being continent within a year after treatment when comparing slings to open abdominal colposuspension (OR 2.70, 95% CI 0.69 to 10.55; n = 147; Analysis 7.1) (Bai 2005; Fischer 2001; Henriksson 1978; Sand 2000).

##### Medium term

Moderate-quality evidence from four trials show that women were more likely to be continent between one and five years after surgery with slings compared with open abdominal colposuspension (OR 1.70, 95% CI 1.22 to 2.37; n = 687; Analysis 7.2; Summary of findings 7) (Albo 2007; Bai 2005; Demirci 2001; Enzelsberger 1996).

##### Long term

At five years post surgery and beyond, evidence from two trials suggests that women were more likely to be continent after surgery with slings than after open abdominal colposuspension (OR 1.55, 95% CI 1.06 to 2.27; n = 190; Analysis 7.3) (Albo 2007; Sand 2000).

##### Number of women who had repeat continence surgery

High-quality evidence from one trial shows that the risk of required repeat continence surgery was lower after traditional slings compared to after open abdominal colposuspension (RR 0.15, 95% CI 0.05, 0.42; n = 450; Analysis 7.4; Summary of findings 7) (Albo 2007).

#### *Secondary outcomes*

##### Women's observations

##### Number of women cured at one year or later (women's observations)

Data from three trials suggest that women undergoing surgery with slings were more likely to report subjective cure than women having open abdominal colposuspension (OR 1.56, 95% CI 1.07 to 2.28; n = 221; Analysis 7.5) (Albo 2007; Demirci 2001; Sand 2000).

##### Number of women improved

This was not reported.

##### Number of women satisfied

Data from one trial indicate that more women were likely to be satisfied with surgery with slings than with open abdominal colposuspension (RR 1.14, 95% CI 1.02 to 1.27; n = 352; Analysis 7.6) (Albo 2007).

##### Quantification of symptoms

This was not reported.

**Clinician's observations**

**Number of women with urinary incontinence (clinician's observations)**

Short term

This was not reported.

Medium term and long term

Researchers found no evidence of a difference between slings and open abdominal colposuspension in the numbers of women with urinary incontinence at one to five years (RR 0.88, 95% CI 0.59 to 1.31; n = 626; Analysis 7.8) (Albo 2007; Demirci 2001; Enzelsberger 1996). Depending on judgements about what constitutes a clinically important difference between interventions with regard to continence, traditional suburethral slings are probably no worse, and may be slightly more effective, than colposuspension beyond five years (RR 0.90, 95% CI 0.80 to 1.01, n = 461; Analysis 7.9) (Albo 2007; Sand 2000).

**Surgical outcome measures**

**Duration of operation**

One trial was too small to reliably detect a difference in operating times between slings (61 minutes) and open abdominal colposuspension (55 minutes) (mean difference (MD) 6.02, 95% CI -0.52 to 12.56; Analysis 7.10) (Demirci 2001). Moreover, the difference in the duration of operation time observed was too small to be of clinical importance.

**Length of hospital stay/time to catheter removal**

Data from three trials suggest that women undergoing surgery with slings had longer hospital stays than women having open abdominal colposuspension (MD 2.03 days, 95% CI 1.47 to 2.59; n = 137; Analysis 7.11) (Demirci 2001; Enzelsberger 1996; Sand 2000). This may have been due in part to a difference in the time of catheter use after surgery (women in the sling group used a sling for eight days longer (MD) after sling than after colposuspension; 95% CI 6.84 to 9.18, n = 108; Analysis 7.12). However, it is unclear if this was due to the procedures themselves or to differences in hospital policies.

**Time to return to normal activity level**

This was not reported.

**Blood loss**

This was not reported.

**Further treatment**

Three trials reported that significantly more women required treatment for a new or recurrent prolapse after open colposuspension (12/282; 4.3%) compared to after a sling procedure (2/277; 0.7%; RR 0.20, 95% CI 0.05 to 0.77; n = 559; Analysis 7.14) (Albo 2007; Demirci 2001; Enzelsberger 1996). However, trial authors provided no information about subsequent surgery for prolapse in any trial.

**Adverse events**

**Perioperative surgical complications**

Four trials reported similar numbers of perioperative complications in the groups (47/394; 12% vs 38/398; 10%; RR 1.24, 95% CI 0.83 to 1.86; n = 792; low-quality evidence; Analysis 7.15; Summary of findings 7) (Albo 2007; Demirci 2001; Enzelsberger 1996; Sand 2000).

**Bladder perforation**

One large trial reported significantly lower risk of bladder perforation with the sling procedure (RR 0.20, 95% CI 0.04 to 0.91; Analysis 7.16) (Albo 2007).

**Urinary tract infection**

Researchers reported significantly more urinary tract infections with the sling procedure soon after surgery compared with colposuspension (RR 1.50, 95% CI 1.33 to 1.70; n = 655; Analysis 7.17). However, the risk of recurrent urinary tract infection (UTI) was not statistically different at five years or later (RR 1.02, 95% CI 0.57 to 1.82; n = 453; low-quality evidence; Analysis 7.18; Summary of findings 7) (Albo 2007).

**Urinary urgency symptoms; urgency urinary incontinence**

Two trials reported data on de novo urgency symptoms or incontinence: the evidence was insufficient to identify whether there was a difference between sling and colposuspension groups (RR 1.10, 95% CI 0.74 to 1.64; Analysis 7.19) (Albo 2007; Enzelsberger 1996).

**Detrusor overactivity (urodynamic overactivity)**

Evidence from four small trials was insufficient to show whether there was a difference in detrusor overactivity between sling and colposuspension groups (RR 1.42, 95% CI 0.52 to 3.87; Analysis 7.20) (Bai 2005; Demirci 2001; Enzelsberger 1996; Sand 2000).

**Voiding dysfunction (with or without urodynamic confirmation)**

Pooled data from five trials show that significantly more women had voiding dysfunction after sling (13% vs 2% after open colposuspension; RR 6.08, 95% CI 3.10 to 11.95; moderate-quality evidence; Analysis 7.21) (Albo 2007; Bai 2005; Demirci 2001; Enzelsberger 1996; Sand 2000). One trial reported long-term voiding dysfunction at five years or later (Albo 2007). Very few women still reported this complication (seven after sling vs one after colposuspension).

**Long-term adverse effects**

This was not reported.

**Quality of life**

Data were reported in different formats; thus meta-analysis was not possible.

One trial reported quality of life scores at over five years (Albo 2007). Women reported better quality of life after the sling surgery on one scale (Urogenital Distress Inventory (UDI)) (MD -10, 95% CI -18.91 to -1.09) but no difference on another scale (Incontinence Impact Questionnaire (IIQ)) (MD 1.70, 95% CI -11.96 to 15.36; very low-quality evidence; Summary of findings 7).

One trial reported no significant difference in IIQ and UDI scores between the colposuspension group and the sling group, although actual numbers were not reported (Fischer 2001).

### Comparison 8. Traditional suburethral sling operation versus laparoscopic colposuspension

No trials were identified.

### Comparison 9. Traditional suburethral sling operation versus mid-urethral sling or tape

Fifteen trials addressed this comparison (Abouhashem 2014; Al-Azzawi 2014; Amaro 2007; Arunkalaivanan 2003; Bai 2005; Basok 2008; Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Silva Filho 2006; Song 2004; Tcherniakovsky 2009; Teixeira 2008; Wadie 2005; Zargham 2013). Two new trials were added in this update (Abouhashem 2014; Zargham 2013). However, one of the new trials did not provide any useable data (Abouhashem 2014). Three trials were updated (Amaro 2007; Guerrero 2008; Wadie 2005).

#### *Primary outcomes*

##### Number of continent (dry) women

##### Short term

Data from 11 trials suggest there was no evidence of a difference between traditional slings and mid-urethral slings in the likelihood of being continent within one year (73% vs 75%; OR 0.94, 95% CI 0.67 to 1.32; n = 841; Analysis 9.1) (Amaro 2007; Arunkalaivanan 2003; Bai 2005; Basok 2008; Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Song 2004; Tcherniakovsky 2009; Wadie 2005; Zargham 2013).

##### Medium term

Depending on judgements about what constitutes a clinically important difference between interventions with regard to continence, traditional suburethral slings are probably no better, and may be less effective, than mid-urethral slings in terms of number of women continent in the medium term (one to five years). However, the results were not statistically significant (67% vs 74%, OR 0.67, 95% CI 0.44 to 1.02; n = 458; moderate-quality evidence); Analysis 9.2; Summary of findings 9) (Amaro 2007; Arunkalaivanan 2003; Bai 2005; Guerrero 2008; Kondo 2006; Zargham 2013).

##### Long term

Data from one small trial suggest that women undergoing traditional sling operations were nearly twice as likely to be continent at five years after traditional sling surgery as women who had received a mid-urethral sling (51% vs 32%; OR 2.22, 95% CI 1.07 to 4.61; n = 124; Analysis 9.3) (Guerrero 2008).

##### Number of women who had repeat continence surgery

Low-quality evidence from one trial reported the numbers of women having repeat continence surgery; no women in either arm required repeat surgery (traditional sling: 0/67; mid-urethral sling: 0/69; Analysis 7.4; Summary of findings 9) (Guerrero 2008). By 10 years, 2 of 63 women still being followed-up after a mid-urethral sling had required repeat continence surgery compared to none in the traditional sling group.

#### *Secondary outcomes*

##### Women's observations

##### Number of women cured after the first year (women's observations)

Four trials provided no evidence of a difference between traditional slings and mid-urethral slings in the likelihood of cure at one year or later (OR 1.06, 95% CI 0.65 to 1.72; n = 337; Analysis 9.5) (Amaro 2007; Arunkalaivanan 2003; Guerrero 2008; Kondo 2006).

##### Number of women improved or cured

Trials provided no evidence of a difference between traditional slings and mid-urethral slings in the likelihood of improvement or cure:

- within one year (OR 1.33, 95% CI 0.74 to 2.39; n = 425; Analysis 9.6) (Arunkalaivanan 2003; Basok 2008; Guerrero 2008);
- at one to five years (OR 0.76, 95% CI 0.31 to 1.87; n = 264; (Analysis 9.7) (Arunkalaivanan 2003; Guerrero 2008); or
- after five years (OR 1.13, 95% CI 0.51 to 2.54; n = 124; Analysis 9.8) (Guerrero 2008).

##### Number of women satisfied

No evidence suggests a difference between traditional slings and mid-urethral slings in the likelihood of women being satisfied (RR 1.09, 95% CI 0.89 to 1.33; n = 163; Analysis 9.9) (Amaro 2007; Guerrero 2008).

##### Quantification of symptoms

##### Pad changes over 24 hours (from self-reported number of pads used)

This was not reported.

##### Incontinent episodes over 24 hours (from self-completed bladder chart)

This was not reported.

##### Pad test of quantified leakage (mean weight of urine loss)

One small trial reported the mean weight of urine on a pad test (Silva Filho 2006). Data show less incontinence in the traditional sling group compared with the mid-urethral sling group (MD -31.00 grams, 95% CI -57.53 to -4.47; n = 20; Analysis 9.10).

##### Clinician's observations

##### Number of women with urinary incontinence

Short term

Clinician-reported incontinence within one year, defined as complete absence of urinary leakage during a cough-stress test, was assessed in two small trials (Kondo 2006; Sharifiaghdas 2008), which provided no evidence of a difference between the two groups (RR 1.29, 95% CI 0.45 to 3.71; Analysis 9.11).

One trial further addressed objective cure after the first year, but again the evidence was insufficient to reveal whether there was a difference between groups, as the confidence interval was wide (RR 1.72, 95% CI 0.82 to 3.61; n = 44; Analysis 9.12) (Kondo 2006).

##### Surgical outcome measures

##### Duration of operation

Traditional suburethral sling operations took significantly longer to complete (MD 57.08 minutes, 95% CI 54.67 to 59.49; Analysis 9.13). There was statistically significant heterogeneity that could not be explained by differences in populations, interventions, or settings of the individual trials. This heterogeneity persisted even after sensitivity analysis was performed. This excludes the largest trial, which showed a much longer operating time for the traditional

sling operation than was seen in the other trials (Song 2004). It also excludes another trial in which women also had concomitant prolapse surgery in both arms, and in the mid-urethral sling arm, an additional mesh kit was used to repair the prolapse (Zargham 2013). Because of heterogeneity in trials that included women with MUI, some of whom also had concomitant prolapse surgery, a sensitivity analysis was performed excluding the four trials (Al-Azzawi 2014; Kondo 2006; Song 2004; Zargham 2013). The mean difference in operative time was 44 minutes longer for traditional sling surgery (95% CI 40 to 48; analysis not shown).

#### Length of hospital stay and duration of catheterisation

In four small trials, the length of hospital stay was longer after traditional sling operations (RR 0.74 days, 95% CI 0.55 to 0.93; Analysis 9.14) (Al-Azzawi 2014; Kondo 2006; Silva Filho 2006; Zargham 2013). Two trials reported no evidence of a difference between groups in length of time to catheter removal (MD 0.11 days, 95% -0.07 to 0.30; Analysis 9.15) (Kondo 2006; Wadie 2005).

#### Time to return to normal activity level

This was not reported.

#### Blood loss

This was not reported.

#### Further treatment

This was not reported.

#### Adverse events

#### Perioperative complications

Low-quality evidence from four trials was insufficient to identify whether risk of perioperative complications was higher after traditional sling operations (49/148; 33.1% vs 28/145; 19.3% after a mid-urethral sling; RR 1.74, 95% CI 1.16 to 2.60; n = 293; Analysis 9.16; Summary of findings 9) (Arunkalaivanan 2003; Kondo 2006; Tcherniakovsky 2009; Zargham 2013).

#### Bladder perforation

Evidence from 10 RCTs shows that traditional slings may have fewer bladder perforations compared with mid-urethral slings. However, whilst there is no evidence of a statistical difference in the number of bladder perforations, the confidence interval may rule out clinically important reductions for mid-urethral slings (17/414; 4.1% vs 30/430; 6.9%; RR 0.59, 95% CI 0.34 to 1.01; n = 844; Analysis 9.17) (Al-Azzawi 2014; Arunkalaivanan 2003; Bai 2005; Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Song 2004; Tcherniakovsky 2009; Wadie 2005; Zargham 2013).

#### Urinary tract infection

Trials provided no evidence of a difference between traditional slings and mid-urethral slings in the number of women with urinary tract infections (RR 1.00, 95% CI 0.22 to 4.49; n = 50; Analysis 9.20) (Zargham 2013).

#### Urinary urgency symptoms; urgency urinary incontinence

Combined results from four trials were insufficient to show whether there was a difference between traditional slings and mid-urethral slings in the number of women with urinary urgency symptoms (RR 1.50, 95% CI 0.58 to 3.88; Analysis 9.22) (Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Zargham 2013).

#### Detrusor overactivity (urodynamic overactivity)

Data from four trials suggest higher risk of detrusor overactivity after traditional sling operations than after mid-urethral sling operations (RR 2.61, 95% CI 1.17 to 5.84; n = 325; Analysis 9.23) (Al-Azzawi 2014; Bai 2005; Basok 2008; Wadie 2005). This was principally due to the higher weighting given to the largest trial (Basok 2008).

#### Voiding dysfunction

Very low-quality evidence from eight trials suggests no difference between traditional slings and mid-urethral slings in the number of women with voiding dysfunction (RR 1.34, 95% CI 0.85 to 2.12; n = 629; Summary of findings 9) (Al-Azzawi 2014; Arunkalaivanan 2003; Bai 2005; Guerrero 2008; Kondo 2006; Sharifiaghdas 2008; Wadie 2005; Zargham 2013).

#### Long-term adverse effects

Wound pain

Three trials reported that more women had long-term wound pain in the traditional sling groups (17/126 vs 2/131; RR 6.40, 95% CI 1.94 to 21.12; n = 257; Analysis 9.25) (Al-Azzawi 2014; Guerrero 2008; Wadie 2005).

Mesh exposure

Evidence from five trials was insufficient to reveal whether there was a difference in vaginal exposure (RR 0.28, 95% CI 0.05 to 1.65; n = 348; Analysis 9.26) (Al-Azzawi 2014; Guerrero 2008; Tcherniakovsky 2009; Wadie 2005; Zargham 2013). Only four cases of mesh exposure (from 177 women) were reported in the mid-urethral sling group compared with none among 171 women in the traditional sling arms. The five trials all used a biological graft as traditional sling material.

Release of sling

Very low-quality evidence from three trials suggests no difference between traditional slings and mid-urethral slings in the numbers of women requiring release of sling (11/164; 6.7% vs 4/162; 2.5%: RR 2.53, 95% CI 0.87 to 7.35; n = 326; Analysis 9.24; Summary of findings 9) (Arunkalaivanan 2003; Guerrero 2008; Kondo 2006).

#### Other adverse effects

One trial further reported urethral injury alone, which suggests no evidence of a difference between groups (RR 0.36, 95% CI 0.02 to 8.39) (Kondo 2006).

Finally, one small trial reported vaginal bleeding and UTI (Analysis 9.19; Analysis 9.20) (Zargham 2013). Results show no significant difference in the risk of vaginal bleeding (RR 1.67, 95% CI 0.45 to 6.24).

#### Quality of life

Quality of life (QoL) was assessed in nine trials (Amaro 2007; Arunkalaivanan 2003; Basok 2008; Guerrero 2008; Kondo 2006; Okulu 2013; Sharifiaghdas 2008; Silva Filho 2006; Wadie 2005). Data were reported in different ways; thus meta-analysis was not possible and individual results are reported below. *In this section, results are reported qualitatively according to how trialists reported their findings. Therefore, use of 'statistically significant' is as reported*

*in the trials - not as interpreted by the review authors - and we have not changed this.*

- Amaro 2007 used the Portuguese version of King's Health Questionnaire (KHQ), reporting no statistically significant differences between groups in general health condition; impact of incontinence; role, physical, and social limitations; personal relationships; emotions; sleep; and severity perception of urinary incontinence at 36 months.
- A 10-point questionnaire-based assessment was used by Arunkalaivanan 2003. The mean score was 8.03 for mid-urethral synthetic suburethral slings and 8.05 for traditional slings, with a median score of 9 for both groups.
- A subjective 10-point patient satisfaction questionnaire was used by Basok 2008, which provided no evidence of a difference between groups, with satisfaction rates of 82% and 87.5% with the traditional sling and the mid-urethral sling, respectively.
- Trialists found no significant difference in any domain of the Bristol Female Lower Urinary Tract Symptom (BFLUTS) score, as assessed in Guerrero 2008.
- Statistically significant improvement was noted postoperatively on the IIQ Short Form (IIQ-7) and the UDI Short Form (UDI-6) within both groups, but no significant difference in the degree of improvement was evident between groups (Kondo 2006).
- One study assessed quality of life using the ICIQ-Short form score. While there was improvement from baseline in all groups, there were no significant differences between randomised groups (Okulu 2013).
- IIQ score was also used by Sharifiaghdas 2008 to determine subjective cure. Means were reported as 44.3 (range 35.2 to 61.5) for the mid-urethral procedure and 48.5 (range 38.5 to 69.7) for the sling operation (P = 0.46). A score less than 50 represents good quality of life, between 50 and 70 moderate quality of life, and greater than 70 poor quality of life. There was no significant difference in QoL between groups; 15 (72%) in the mid-urethral group and 20 (55%) in the sling group were satisfied with the operation (P = 0.3, as reported by trialists).
- The KHQ was used in Silva Filho 2006 to show significantly greater improvement in those who underwent the traditional suburethral sling operation in the following domains: general health perception; physical, social, and role limitations; emotions and severity measures. There were no significant differences in incontinence impact, personal relationships, sleep, and energy domains.
- In one small trial (Wadie 2005), researchers reported UDI-6 and IIQ-7 scores, which show no statistically significant differences between trial arms (Analysis 9.27;Analysis 9.28

**Comparison 10. Traditional suburethral sling operation versus single-incision sling (mini-sling)**

One small trial compared a rectus fascia pubovaginal traditional sling with a single-incision sling (mini-sling; Ophira) and included women with urodynamically diagnosed stress urinary incontinence (USI) (Sharifiaghdas 2015).

Due to the small size of the trial, the data were too few to be reliable (Table 2).

**Comparison 11. One type of traditional sling operation versus another type of traditional sling operation**

Nine trials addressed this comparison (Barbalias 1997; Choe 2000; Guerrero 2008; Lucas 2000; Okulu 2013; Pacetta 2005; Shin 2001; Teleb 2011; Viseshsindh 2003). Three of these were newly added in this update (Choe 2000; Okulu 2013; Teleb 2011). One was updated (Guerrero 2008).

The traditional slings in this comparison used the following materials to suspend the urethra.

- Autologous biological materials: rectus fascial sling (Barbalias 1997; Guerrero 2008; Lucas 2000; Teleb 2011); dermal graft patch (Shin 2001); tissue removed from the vaginal wall (Choe 2000; Teleb 2011; Viseshsindh 2003).
- Other biological materials: cadaveric fascia lata (Shin 2001); Fortaperm porcine collagen matrix (Pacetta 2005); Pelvicol (Guerrero 2008).
- Synthetic materials: Goretex (Barbalias 1997); antimicrobial MycroMesh (Choe 2000); Vypro, Ultrapro, and Prolene (Okulu 2013); Prolene (Teleb 2011).

Some trials compared three different materials: these have been presented as pair-wise comparisons. One trial compared the same material (autologous rectus fascia) but with different lengths of the material used (Lucas 2000). It is not possible to pool data from any of these trials because different materials were compared, and each individual trial was too small for findings to be conclusive.

***Primary outcomes***

**Number of continent (dry) women**

**Short term**

Five trials reported the number of continent women within the first year after surgery (Guerrero 2008; Lucas 2000; Okulu 2013; Pacetta 2005; Viseshsindh 2003). A total of 437 women studied within the first 12 months after surgery showed similar incontinence rates between traditional sling operations using biological or synthetic materials. However, the confidence intervals were wide (Analysis 11.1).

**Medium term**

Seven trials reported the number of continent women from one to five years after surgery (Barbalias 1997; Choe 2000; Guerrero 2008; Lucas 2000; Okulu 2013; Shin 2001; Teleb 2011). Again, it is not possible to pool any of these trials because different materials were compared. With one exception, none of the comparisons suggest any evidence of a difference between different materials. One small trial suggests that women were more likely to be continent with autologous fascial sling operations than with Pelvicol graft (OR 3.29, 95% 1.41 to 7.69; n = 113; Analysis 11.2.1; Summary of findings 11) (Guerrero 2008). This effect was evident early and led to premature closure of the Pelvicol arm.

**Long term**

One trial measured continence rates at six years after surgery and found no evidence of a difference between a standard (long) sling and a short sling (31/73 and 35/69 continent women, respectively) (OR 0.72, 95% CI 0.37 to 1.39, n = 142; Analysis 11.3) (Lucas 2000).

#### Number of women who had repeat continence surgery

One trial reported the number of women requiring repeat continence surgery at 1 year and at 10 years (Guerrero 2008). Only women who received the biological material Pelvicol required any repeat surgery (9/46; 20%; RR 0.04, 95% CI 0.00 to 0.61; Analysis 11.4; Summary of findings 11) compared to 0 of 67 women in the rectus fascia group requiring repeat surgery 10 years later. This was statistically significant in favour of the traditional sling with rectus fascia; as a result, Pelvicol is no longer used in traditional sling surgery.

### *Secondary outcomes*

#### Women's observations

#### Number of women cured at one year or later (women's observations)

Three trials reported women's perception of cure of incontinence (Guerrero 2008; Lucas 2000; Shin 2001). Only one reported any evidence of a difference between groups; fascial slings were significantly better than Pelvicol slings (OR 3.29, 95% CI 1.41 to 7.69; Analysis 11.5.1) (Guerrero 2008).

#### Number of women improved

Short term

Three trials reported women's perception of improvement within one year (Barbalias 1997; Guerrero 2008; Pacetta 2005). Only one reported a difference between groups; women having fascial slings were more likely to perceive themselves as improved compared to women having Pelvicol slings (69/73 vs 33/34; OR 6.27, 95% CI 1.88 to 20.94; Analysis 11.6.1) (Guerrero 2008).

Medium term

Four trials reported women's perception of improvement after one year (Barbalias 1997; Guerrero 2008; Shin 2001; Teleb 2011). Only one reported a difference between groups; women having fascial slings were more likely to perceive themselves as improved compared to women having Pelvicol slings (60/67 vs 28/46; RR 1.47, 95% CI 1.15 to 1.88; Analysis 11.7.1) (Guerrero 2008).

Long term

This was not reported.

#### Number of women satisfied

Three trials reported satisfaction, but results could not be combined and individually, numbers were too small to be conclusive (Analysis 11.8) (Choe 2000; Guerrero 2008; Okulu 2013). Study authors provided no evidence of a difference between groups in any comparison.

#### Quantification of symptoms

Two trials reported data on mean weight of urine on a pad test (Analysis 11.9) (Lucas 2000; Okulu 2013).

In the short term, trials provided no reliable evidence of a difference between groups (Analysis 11.9), but after one year, one trial showed that Ultrapro was better than both Vypro and Prolene light for this outcome (Analysis 11.10) (Okulu 2013).

#### Clinician's observations

This was not reported.

#### Surgical outcome measures

#### Duration of operation

The duration of operation for the traditional long length sling procedure was significantly longer in one trial, which compared long and short lengths of autologous fascia (MD 8 minutes, 95% CI 3 to 13; Analysis 11.7) (Lucas 2000). In another trial comparing three materials, duration of operation was shortest for Prolene (36 minutes), intermediate for anterior vaginal wall patch (42 minutes), and longest when rectus sheath was used as a sling (52 minutes) (Analysis 11.11) (Teleb 2011). However, it is unclear whether these differences in operating time would be enough to be clinically important.

#### Length of hospital stay

Length of hospital stay was reported in one trial (Teleb 2011). Hospital stay was longest for women having the anterior rectus sheath sling compared to women with the other two materials (Analysis 11.13).

#### Time to return to normal activity level

This was not reported.

#### Blood loss

Blood loss was significantly less with Prolene compared to the other two materials (Analysis 11.12) (Teleb 2011).

- Anterior rectus sheath sling versus prolene strip: MD 32.00 mL, 95% CI 7.14 to 56.86; n = 24.
- Anterior rectus sheath sling versus anterior vaginal wall patch: -20.00 mL, 95% CI -46.93 to 6.93; n = 20.
- Prolene strip versus anterior vaginal wall patch: MD -52.00 mL, 95% CI -77.41 to -26.59; n = 20.

However, total differences in volumes of blood lost were small, and their clinical importance is uncertain.

#### Further treatment

This was not reported.

#### Adverse events

#### Perioperative surgical complications

The three trials that reported any perioperative complications could not be combined because different materials were compared (Barbalias 1997; Lucas 2000; Viseshsindh 2003). More complications were reported with the use of synthetic non-absorbable Goretex in one trial (RR 0.05, 95% CI 0.00 to 0.80; Analysis 11.14.2) (Barbalias 1997). In the other trial, evidence was insufficient to show whether there was a difference between two biological slings (RR 1.14, 95% CI 0.78 to 1.66; Analysis 11.14.1; Summary of findings 11) (Lucas 2000). There were no perioperative complications in the third trial between the two groups (Viseshsindh 2003).

#### Bladder perforation

Three trials reported the number of bladder perforations (Guerrero 2008; Lucas 2000; Teleb 2011), showing no evidence of a difference between groups in any comparison (Analysis 11.15).

#### Urinary tract infection

Two trials reported the number of women with urinary tract infection (Choe 2000; Lucas 2000), providing no evidence of a difference between groups in any comparison (Analysis 11.16).

#### Urinary urgency symptoms; urgency urinary incontinence

Three trials reported the number of women with urgency symptoms (Barbalias 1997; Lucas 2000; Okulu 2013), revealing no evidence of a difference between groups in any comparison (Analysis 11.20).

#### Detrusor overactivity (urodynamic overactivity)

One trial reported 4 of 33 women in the autologous dermal graft patch group with de novo detrusor overactivity compared with 5 of 20 in the cadaveric fascia lata group (RR 0.48, 95% CI 0.15 to 1.60; n = 53; Analysis 11.21) (Shin 2001).

#### Voiding dysfunction (with or without urodynamic confirmation)

Six trials reported the number of women with voiding dysfunction (Choe 2000; Guerrero 2008; Lucas 2000; Okulu 2013; Teleb 2011; Viseshsindh 2003), showing no evidence of a difference between groups in any comparison (Analysis 11.19).

#### Long-term adverse effects

One trial reported the number of women with wound pain: 2 of 61 and 0 of 38 in the fascial sling and Pelvicol groups, respectively (RR 3.15, 95% CI 0.16 to 63.80; n = 99; Guerrero 2008). The same trial also reported 2 of 61 and 1 of 38 women requiring release of sling (RR 1.25, 95% CI 0.12 to 13.28; n = 99).

Two women in one trial reported long-term scar pain after a rectus fascial sling compared to none in the Pelvicol group; there were no graft exposures in either group (Guerrero 2008). In another trial, when participants all received a different type of synthetic mesh, five instances of mesh exposure were reported among 141 women in the three mesh groups (Okulu 2013). One trial of a synthetic versus a biological material reported no mesh exposures (Analysis 11.23; Summary of findings 11) (Choe 2000).

#### Other adverse effects

One trial reported 1 of 20 women with vaginal bleeding after anterior wall vaginal sling compared with 0 of 20 in the biosynthetic mesh group (RR 3.00, 95% CI 0.13 to 69.52; n = 40) (Choe 2000).

#### Quality of life

Data were reported in different ways; thus meta-analysis was not possible (Summary of findings 11).

- Lucas 2000 showed significant improvement in average scores for the UDI-6 (reported P = 0.007) and the IIQ-7 (P = 0.002) when compared with baseline. Scores between groups were similar.
- Pacetta 2005 evaluated women using the Incontinence Quality of Life questionnaire (I-QOL), reporting improvement from 45 at baseline to 97 at one year in the autologous fascia group, and from 39 to 92 in the Fortaperm group.
- Okulu 2013 used the International Consultation on Incontinence Questionnaire (ICIQ) Short Form urinary incontinence scale to compare three synthetic meshes. Ultrapro was better than Prolene light, which was better than Vypro, in the short term and in the medium term (Analysis 11.24; Analysis 11.25).

# DISCUSSION

The main systematic review of effects is discussed below but we sought to supplement this review by identifying economic evaluations that compared traditional suburethral sling operations with any of the other main categories of surgical methods listed in the background section. Identifed economic evaluations have been summarised in a brief economic commentary. A supplementary search in Ovid NHS EED, MEDLINE, and Embase identified two such economic evaluations. Details of the search strategies are given in Appendix 3.

## Summary of main results

We included 34 trials involving 3244 women. Traditional slings were compared with 10 other treatments and with each other; but we did not identify any trial comparing suburethral slings with no treatment or sham treatment, conservative management, anterior repair, or laparoscopic retropubic colposuspension. One trial compared traditional slings with bladder neck needle suspension (Summary of findings 6), and another trial compared traditional slings with single-incision slings (Summary of findings 10). Both trials were too small to be informative.

### Traditional suburethral sling operation versus drugs

One small trial comparing traditional slings with oxybutynin for women with mixed urinary incontinence did not report any of the outcomes used in the 'Summary of findings' tables. However, it is uncertain whether surgery compared with oxybutynin leads to more women being dry (83% vs 0%; odds ratio (OR) 195.89, 95% confidence interval (CI) 9.91 to 3871.03) or having less urgency urinary incontinence (13% vs 43%; risk ratio (RR) 0.29, 95% CI 0.09 to 0.94) (Summary of findings 3).

### Traditional suburethral sling operation versus injectables

Based on very low-quality evidence from one small trial, we are uncertain about the impact of surgery versus injectables in terms of the numbers of continent women (100% were dry with a traditional sling vs 71% with the injectable after the first year; OR 11.57, 95% CI 0.56 to 239.74) or the need for repeat surgery for urinary incontinence (RR 0.52, 95% CI 0.05 to 5.36) or the occurrence of perioperative complications (RR 1.57, 95% CI 0.29 to 8.49) (Summary of findings 4).

### Traditional suburethral sling operation versus open abdominal retropubic colposuspension

Eight trials compared slings with open abdominal retropubic colposuspension. Moderate-quality evidence shows that traditional suburethral sling probably leads to more continent women in the medium term (one to five years) (69% vs 59% after colposuspension: OR 1.70, 95% CI 1.22 to 2.37). High-quality evidence indicates that women were less likely to need repeat continence surgery after a traditional sling than after colposuspension (RR 0.15, 95% CI 0.05 to 0.42). We found no evidence of a difference in perioperative complications between the two groups, but the CI was very wide and the quality of evidence was very low (RR 1.24, 95% CI 0.83 to 1.86; Summary of findings 7).

### Traditional suburethral sling operation versus mid-urethral sling operation

Fourteen trials addressed the comparison between traditional sling operations and mid-urethral sling operations. Depending on judgements about what constitutes a clinically important difference between interventions with regard to continence, traditional suburethral slings are probably no better, and may be less effective, than mid-urethral slings in terms of number of women continent in the medium term (one to five years) (67% vs 74%; OR 0.67, 95% CI 0.44 to 1.02; n = 458; moderate-quality evidence). One trial reported more continent women with the traditional sling after 10 years (51% vs 32%; OR 2.22, 95% CI 1.07 to 4.61), but this finding needs to be replicated in other trials. Mid-urethral slings may be associated with fewer perioperative complications (RR 1.74, 95% CI 1.16 to 2.60; low-quality evidence; Summary of findings 9).

### One type of traditional sling operation versus another type of traditional sling operation

Nine trials compared one type of traditional sling with another. A number of different materials were used such as porcine dermis, lyophilised dura mater, fascia lata, vaginal wall, autologous dermis, and rectus fascia. Study results could not be pooled due to clinical heterogeneity, as different materials or types of traditional slings were used. Complications were reported by two trials - one comparing non-absorbable Goretex with a rectus fascia sling, and the second comparing Pelvicol with a rectus fascial sling. The impact was uncertain due to the very low quality of evidence (Summary of findings 11).

## Overall completeness and applicability of evidence

Historically, traditional suburethral sling procedures were used for women who had recurrent stress incontinence (after a previous failed continence operation). However, the current review includes both women with new and recurrent incontinence, without reporting the results separately. These operations are designed to restore normal urethrovesical junction support by mechanically compressing or kinking the proximal urethra.

Evidence related to the primary outcome - urinary continence - was available in one form or another for most trials to determine the effectiveness of traditional suburethral sling operations for treatment of urinary incontinence. However, study findings were consistent regardless of which method of ascertainment of continence was used (urine leakage using any definition, women's report, clinician's observation, combinations of these, or quantification methods such as pad test weights). More long-term data are now available, suggesting that traditional slings may be equally as effective or more effective than other currently available surgical treatments (such as colposuspension and mid-urethral slings). However, most trials did not provide sufficient information to adequately judge risk of bias; therefore most trials had to be judged to be at "unclear risk of bias" due to inadequate reporting.

None of the included trials contained all relevant patient-reported outcomes. More data on pain after different procedures (both postoperative and long-term) and time to return to 'normal' daily living following surgery would have been useful. In particular, reporting on medium- and long-term adverse effects and the need for repeat continence surgery in the long term is not available but this information would be essential for informed decision-making.

This Cochrane Review is limited to randomised controlled trials (RCTs) only. As adverse events were relatively rare and/or may not have been reported, it is not possible to infer accurate information about their frequency or type.

The importance of having a range of surgical options is that a woman can choose the procedure that she is most comfortable with, for example, trading off efficacy for the chance of having fewer adverse effects or a more minimally invasive procedure. Traditional slings appear to be as, if not more, effective than both colposuspension and mid-urethral slings but without the risks perceived to be associated with synthetic mesh.

This Cochrane Review may not be applicable to clinicians everywhere. High-income nations have been increasingly using mid-urethral procedures with synthetic materials as first-line treatment for stress urinary incontinence for about 20 years but because the safety of these operations has been called into question, this practice may decrease in the future. Use of traditional suburethral operations, which appear to be just as effective, might be reserved for countries where new technology is not available or is too expensive. For women who wish to avoid the possible complications of synthetic materials, biological materials such as rectus fascia (but not porcine dermis) seem as effective as synthetic mid-urethral slings.

When possible, data were analysed in subgroups according to clinical characteristics of the type of incontinence (urodynamic stress incontinence, stress incontinence symptoms, or mixed urinary incontinence). Study findings were similar regardless of how incontinence was originally diagnosed. Because information was not available on this basis, it was not possible to determine if any type of surgery was more effective for women who had undergone previous failed continence surgery. Further analysis according to clinical characteristics of women, such as primary versus recurrent stress urinary incontinence and presence or absence of prolapse, was not possible due to lack of information. It might also be useful to look at possible differences according to intrinsic urethral sphincter deficiency versus urethral hypermobility (although there is no current clinical support for the use of these terms; Abrams 2006), obesity, ethnicity, vaginal delivery versus C-section, or experience of the surgeon. These might make the findings of this review more generalisable. However, most trials have not reported these characteristics.

Quality of life, emotional well-being, and social implications were poorly reported, or they were assessed by a variety of instruments, thus precluding meta-analysis. These outcomes are of great importance to women and to decision-makers.

Two searches have been conducted since the last fully incorporated search (9 October 2017 and 23 January 2019). Four studies are awaiting classification: Abou Hashem 2017; Hassan 2018; Kajbafzadeh 2017; Sharifiaghdas 2017. Of these, two are ongoing trials (Hassan 2018; Kajbafzadeh 2017), one is a second but identical publication of an included trial with no useable data (Abou Hashem 2017; Abouhashem 2014, respectively), and one is a 10-year update of an already included trial (Sharifiaghdas 2017; Sharifiaghdas 2008, respectively).

## Quality of the evidence

Quality of evidence plays a crucial role in our confidence in the estimate of effect. Most GRADE-specific outcomes were judged to be of "low" or "very low" quality. This indicates that when more evidence becomes available, the estimate of effect is likely to be changed, or that any estimate of effect is very uncertain. In this systematic review, we assessed the methodological flaws of the included trials using trial reports. Therefore, our judgement of risk of bias and quality of evidence was influenced by reporting.

Although trial authors stated that their trials were randomised, most reports did not give sufficient detail about the method of sequence generation or concealment of allocation. Ten trials used an adequate randomisation method. Blinding of surgeons or women was generally not possible, but only two trials reported that outcomes were assessed by a nurse who was blinded to allocation. The total number of women enrolled was 3244, but some trials recruited only 10 women per arm. In addition, several types of slings were compared with different interventions, meaning that different materials had to be grouped together for comparison. Thus the numbers in each comparison were small, and the confidence intervals were wide; therefore several outcomes were downgraded due to imprecision.

Study populations varied, including women with and without previous surgery, and one study included only women who were deemed not suitable for another procedure (Hilton 1989). Although most study participants had urodynamic stress incontinence, some trials included women with mixed urinary incontinence. Baseline comparability of groups was not reported in all trials. Several trials assessed different types of sling in comparison with autologous rectus fascia, suggesting that the latter was considered as the 'standard' comparator.

Although eight trials used open abdominal retropubic colposuspension as the comparator, each used a different type of sling, and three followed up on women for only six months. Fourteen trials used a mid-urethral sling as the comparator as this has arguably become the gold standard procedure for continence surgery in many countries.

In general, most trials reported different outcome measures, often poorly. The principal measure of effectiveness used in most studies was the proportion of women with incontinence following surgery. Few researchers have considered other outcomes, such as activities of daily living and quality of life. Few have addressed general health status, repeat incontinence surgery, later prolapse surgery, or time to return to normal activity level. Satisfaction with and acceptability of the treatment were also seldom addressed but are important factors for choice of management.

## Potential biases in the review process

All relevant databases were searched and no language restriction was imposed during the search process, which enabled as many potentially eligible trials as possible to be included. Some reports of trials may not be published; therefore the full extent of the data may not have been captured. To account for any potential bias in the review process, data extraction and risk of bias assessment were performed by at least two independent review authors.

Although most trials reported the outcomes that they mentioned in their methods sections, none reported all outcomes of interest for this review, including, in many cases, the primary outcomes of urinary incontinence and repeat continence surgery (Figure 4).

The review sought to use rigorous methods of synthesis throughout and has sought to identify statistical evidence of differences between interventions. For some comparisons, no statistical evidence of a difference was identified but examination of the confidence intervals produced indicate that clinically important differences may be unlikely. Such conclusions require judgements about the magnitude of the minimum (clinically) important difference. Such judgements might be contested.

## Agreements and disagreements with other studies or reviews

No other comparable systematic reviews of RCTs have addressed the specific use of traditional slings for treating women with stress urinary incontinence.

### Brief economic commentary

To supplement the main systematic review, we looked for economic evaluations that compared traditional suburethral slings with a variety of surgical interventions for treating women with stress urinary incontinence.

Three studies, selected from a search carried out on 10 August 2018, provided a cost analysis (Berman 1997), a cost-utility analysis (Kilonzo 2004), and another cost-utility analysis (Kumar 2017).

The comparative cost analysis by Berman 1997 used data from a retrospective observational study carried out in the United States, which compared traditional suburethral retropubic sling procedures with transurethral collagen injections in women with stress urinary incontinence. This study included a total of 14 women across both arms, each of whom had had stress urinary incontinence and had undergone an average of 1.1 procedures between December 1993 and October 1995. The retrospective analysis found that the traditional sling had an average operating room time of 186 minutes and required an average hospital stay of 2.9 days. The total cost per patient was on average $16,229 (in 2019 International Dollars; $10,381 in 1995 USD). The collagen treatment was on average less costly ($P < 0.001$) with an average cost in 2019 International Dollars of $7810 (or $4996 in 1995 USD). Average procedure time for the collagen injections was 57 minutes, and no time was spent as a hospital inpatient. A high percentage of costs for the traditional sling study arm involved those for the physician (33%) and operating room (36%), and costs for the collagen arm included collagen (40%) and physician fees (22%). Postoperative care for the traditional sling cost $1927 2019 International Dollars ($1,233 1995 USD), which was almost twice the cost of the collagen injection - $980 in 2019 International Dollars ($627 in 1995 USD).

Before the procedure, there was no evidence of a difference in the occurrence of incontinence between groups. However, the average number of pads decreased after the procedure from 4.7 to 1.4 and from 5.2 to 2.3 for traditional sling and collagen injection, respectively ($P = 0.049$).

Women were followed up for 15 months post surgery, and 71.4% of those in the traditional sling arm were symptom-free compared with 26.7% in the collagen injection arm ($P = 0.05$), with 85% from the traditional sling arm having minimal or no incontinence (using one pad or no pads daily).

Despite lower costs associated with the collagen injection, the traditional sling arm showed better overall improvement and had lower reoperation rates. The study author concluded that the traditional sling might be more cost-effective when compared with collagen injection.

A cost-utility analysis using a Markov model compared the mid-urethral sling with open abdominal retropubic colposuspension, laparoscopic colposuspension, the traditional suburethral retropubic sling, and injectables (Kilonzo 2004). This study provides a summary of work presented in the technology assessment review conducted for the UK's National Institute for Clinical Excellence (NICE) (Cody 2003). Study authors utilised clinical data from a systematic review of RCTs conducted up to mid-2003 (Lapitan 2003; Moehrer 2002; Ward 2002b), and these results were based on economic modelling for a time horizon of up to 10 years; all costs were originally reported in UK pounds for 2001 and were adjusted to international dollars for 2019.

This study assumed, based upon the findings of Cody 2003, that the traditional sling and open abdominal retropubic colposuspension had equivalent effectiveness. This contrasts with evidence from the current review showing that traditional slings are more effective (Summary of findings 7).

The cost for traditional slings was $2756 per woman (2019 International Dollars; £1340 2001 GBP), with operation time of 46 minutes and average hospital stay of 7.2 days. Mid-urethral slings cost $2176 (2019 International Dollars; £1058 2001 GBP) per woman, with an average hospital stay of 2.9 days and operation time of 30 minutes, but these costs were excluded. Open colposuspension cost $2676 per woman (2019 International Dollars; £1301 2001 GBP), with an operation time of 52 minutes and average hospital stay of 7.1 days, and laparoscopic colposuspension cost $2709 (2019 International Dollars; £1317 2001 GBP), with an operation time of 60 minutes and an average hospital stay of 4.6 days. A formal comparison of the cost-effectiveness of traditional slings versus any of the other interventions was not performed. However, Kilonzo 2004 estimated that there was an 86% probability that mid-urethral slings were cost-effective compared to open colposuspension, if society was willing to pay approximately $62,000 (2019 International Dollars; £30,000 2001 GBP) per quality-adjusted life-year (QALY) gained. Given the model assumptions (traditional slings being more costly and as effective as open colposuspension), by implication traditional slings would not in this evaluation be considered cost-effective compared with mid-urethral slings or open colposuspension.

A cost-utility analysis (Markov model) by Kumar 2017 compared the effectiveness of the traditional sling with Burch colposuspension. This study utilised data from published RCTs that included women 60 years of age and older with stress urinary incontinence, which compared the two procedures (Albo 2007; Bai 2005; Culligan 2003; Sand 2000). Follow-up from these studies varied from three months to 73 months. However, the model extrapolated follow-up of women for a time horizon of 16 years. The cost perspective was not explicitly stated but appears to be that of the US patient and healthcare provider based on captured costs (procedure costs and costs of caring for the patient with treatment failure for a year). These costs were originally reported in USD for 2015 and were converted to 2019 International Dollars.

Literature describing this cost-utility analysis shows that the cure rate for Burch colposuspension at 3 months, 12 months, 36 months, and 73 months was 90%, 87%, 49%, and 84.6%, respectively, and that for the traditional sling was 100% at 3 months and 73 months, 87.8% at 12 months, and 66% at 36 months. Studies reported that the overall cost of the traditional sling per woman was $8186 (2019 International Dollars; $7619 2015 USD) less than the overall cost of Burch colposuspension. The cost-utility analysis concluded that the traditional sling was more effective than Burch colposuspension based on the QALY gained. Women in the traditional sling arm (11.18 QALYs) had 0.99 QALYs more compared with those in the Burch colposuspension arm (10.19 QALYs), with an incremental cost per QALY of $8251 (2019 International Dollars; $7696 2015 USD). Kumar 2017 stated that it would be important to have published data from large-scale trials before a definitive recommendation could be provided.

Eligible economic evaluations were not directly comparable due to differences in methods, time horizons, and settings. We have not sought to determine the potential reasons why results differ between studies, nor have we conducted any critical appraisal. Consequently, we do not attempt to draw any firm or general conclusions regarding the relative costs or efficiency of traditional suburethral retropubic slings for surgical management of stress urinary incontinence compared with current alternatives.

## AUTHORS' CONCLUSIONS

### Implications for practice

Traditional sling procedures appeared to result in less urinary incontinence or need for repeat surgery for incontinence or prolapse and greater satisfaction in comparison to open retropubic colposuspension in the medium and long term. However, the long-term adverse event profile is still unclear. Traditional slings may be slightly less effective than mid-urethral slings in the medium term but may be more effective in the long term (based on only one trial). However, they had higher rates of adverse effects. This should be interpreted with some caution, as the quality of evidence in included studies was variable, follow-up was most often short, and randomised trials have inherent limitations in identifying complication rates.

The data were too scarce to address whether the types of suburethral slings tested were as effective as other sling materials, injectables, drugs, needle suspension, or single-incision slings. Limited evidence from one small trial suggests that slings made of non-absorbable synthetic Goretex led to more complications than slings made of biological rectus fascia. However, slings made of porcine dermis (Pelvicol) were less effective than rectus fascia or a mid-urethral sling in another trial.

The broader effects of suburethral slings could not be established because most trials did not include appropriate outcome measures, such as general health status and time to return to normal activity level, and follow-up was short in the majority of trials.

Evidence to clarify whether traditional suburethral slings may be better or worse than surgical or conservative management options, other than those reported in this review, is lacking.

### Implications for research

The methods used by trials and their appropriate reporting must be addressed in future research. Some evidence was limited by the poor quality and small numbers of included randomised trials. The CONSORT guidelines should be used to ensure adequate reporting. In the absence of RCTs that compare each method of continence surgery with other types, a network meta-analysis of all available RCTs would enable interventions to be compared indirectly with each other.

There is a need for additional trials of adequate power and better quality and reporting standards to assess the effectiveness of suburethral slings in comparison with other surgical techniques and different types of slings, and in specific situations, such as among women who have already had previous continence surgery, or those with concomitant prolapse. Long-term follow-up is paramount.

Future research on incontinence treatments should incorporate standardised, validated, and simple outcome measures - both woman-reported and clinician-observed. Outcomes should be relevant to women who have incontinence and are seeking treatment, taking their preferences into account, and policy makers should commission treatment to allow comparison between treatments. In particular, quality of life and psychological and economic outcomes should be incorporated. Surgical trials related to urinary incontinence should systematically address surgical morbidity outcomes, such as adverse perioperative and postoperative events, length of hospital stay, time to return to normal activities, development of urgency symptoms or detrusor overactivity, and especially the need for repeat surgery or alternative interventions.

To assess the efficacy and safety of these operations in the longer term, it is essential that trialists carry out and report their long-term follow-up data for proper evaluation of treatment for incontinence.

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The review was originally conceived and conducted by Carlos CB Bezerra and Homero Bruschini.

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* Indicates the major publication for the study

# CHARACTERISTICS OF STUDIES

## Characteristics of included studies *[ordered by study ID]*

### Abouhashem 2014

| | |
|---|---|
| Methods | Design: RCT |
| Participants | 56 consecutive women with SUI. Patients followed up for 5 years; 48/56 completed evaluation |
| Interventions | A: TVT<br>B: rectus sheath sling |
| Outcomes | Cure defined as no leakage of urine during stress test and urodynamic testing (clinician-reported)<br>A: 88.5%<br>B: 84.6%<br>Denominators for individual groups not provided |
| Notes | Abstract only; no useable data |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | No information |
| Allocation concealment (selection bias) | Unclear risk | No information |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | No information |

**Abouhashem 2014** *(Continued)*

| | | |
|---|---|---|
| Incomplete outcome data (attrition bias) All outcomes | Unclear risk | No information |

**Al-Azzawi 2014**

| | |
|---|---|
| Methods | Design: RCT<br><br>Setting: hospital in Iraq |
| Participants | N = 80<br><br>Women with main complaint of SUI (mixed group); BMI < 30 kg/m$^2$<br><br>Exclusion: mild UI (defined as 0 to 1 pad per day; a few drops of urine leaked on stress); cystocoele (anterior prolapse) > grade 1; active vaginal infection or UTI; neurogenic voiding dysfunction; significant postvoid residual urine volume (PVR); other bladder or urethral pathology or fistula<br><br>Recruitment: December 4 to July 12<br><br>Follow-up: 1 week; 1, 3, 6, and 12 months; yearly thereafter |
| Interventions | A (40): autologous rectus fascia sling<br><br>B (40): transobturator mid-urethral sling (TOT), synthetic polypropylene tape<br><br>Cystoscopy at time of surgery to exclude other pathology before surgery and to check for injury after insertion of sling or tape |
| Outcomes | Cure of SUI defined as significant dryness as perceived by the patient, no more use of pads, negative stress test, and acceptable voiding stream (combined primary outcome)<br><br>Cure at 1 week: A: 39/40; B: 38/40<br><br>No further data provided for cure at later follow-up, but trialists state, "there were no significant changes in the continence achieved throughout the follow-up period"<br><br>Operation time (mean minutes (SD) N): A: 80 (11.11) 40, B: 20 (4.44) 40<br><br>Hospital stay (mean days (SD) N): A: 2.8 (1.33) 40, B: 1.2 (0.44) 40<br><br>Adverse effects:<br><br>Intraoperative visceral injury (bladder perforation): A: 0/40, B: 0/40<br><br>Vaginal or urethral erosion: A: 0/40, B: 0/40<br><br>De novo detrusor overactivity: A: 2/40, B: 2/40<br><br>Other adverse effects:<br><br>Abdominal wound problems, pain, ooze, haematoma, infection: A: 8, B: 0<br><br>Foot drop: A: 1, B: 0<br><br>Groin and upper thigh pain: A: 0, B: 5<br><br>Voiding difficulty: A: 0, B: 1<br><br>Vaginal bleeding: A: 0, B: 1<br><br>Late PVR (postvoid residual): A: 3, B: 2 |

**Al-Azzawi 2014** *(Continued)*

| | |
|---|---|
| | Total other adverse effects: A: 12/40, B: 9/40<br><br>All complications described as "marginal, treated conservatively and comparable with other studies"<br><br>Further treatment required for urinary urgency with anti-muscarinic drugs: A: 3/40, B: 3/40 |
| Notes | |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Randomised using random numbers table but with no details on method of generation |
| Allocation concealment (selection bias) | Unclear risk | "were assigned randomly" – too little detail for assessment |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | No information |
| Incomplete outcome data (attrition bias)<br>All outcomes | Unclear risk | No information but full follow-up of all 80 women assumed |

**Albo 2007**

| | |
|---|---|
| Methods | Design: RCT by electronic treatment assignment; 2 arms; unblinded.<br><br>Setting: multi-centre; tertiary referral centres; USA<br>Follow-up at 24 months; analysis with intention-to-treat<br><br>SISTER trial |
| Participants | N = 655<br>4 ineligible after randomisation (3 Burch, 1 sling); 1 did not undergo allocated treatment. Only 520 assessed at end of trial (255 Burch, 265 sling)<br><br>Symptom-based diagnosis of SUI, confirmed by standard stress test. A few women had DO at baseline as well (A: 16/243, B: 25/239) (MUI), but we have classified the trial as in women with predominant SUI<br><br>Inclusion: documented pure or predominant symptom of SUI for ≥ 3 months, positive standardised urinary stress test<br><br>Exclusion: age < 21 years, non-ambulatory status, pregnancy, current cancer chemotherapy or radiotherapy, systemic disease affecting bladder function, urethral diverticulum, prior augmentation cystoplasty or artificial urethral sphincter, recent pelvic surgery<br><br>Groups similar in age, ethnic group, marital status, BMI, vaginal deliveries, hormone treatment, smoking, mixed UI, POP, UDS, concomitant surgery |
| Interventions | A (326): sling<br><br>B (329): Burch<br><br>Burch as modified by Tanagho<br><br>Sling procedure using autologous rectus fascia at level of the bladder neck and proximal urethra |

**Albo 2007** *(Continued)*

| | |
|---|---|
| | Interventions standardised across centres |
| Outcomes | Number with overall success, number with SUI-specific success, pad test, number of incontinence episodes in a 3-day voiding diary, POP, adverse events, voiding dysfunction (use of a catheter), postoperative UUI<br><br>Overall success defined as no self-reported symptoms of UI, no incontinence on 3-day diary, negative stress test, no re-treatment<br><br>SUI-specific success defined as no symptoms, negative stress test, and no re-treatment for SUI (combined outcome)<br><br>All outcomes reported at 2 years' follow-up<br><br>Failure (composite symptoms, self-report of UI or on diary, or surgical re-treatment) at 24 months: A: 101/265, B: 130/255 (used as surrogate for subjective UI)<br><br>Failure (pad test, objective) at 24 months: A: 37/265, B: 38/255<br><br>Complications at 24 months:<br><br>Number of women with any complications: A: 206/326, B: 156/329<br><br>Number of women with serious adverse events: A: 42/326, B: 32/329<br><br>Number of women with bleeding: A: 8/326, B: 5/329<br><br>Number of women with any voiding dysfunction: A: 46/326, B: 7/329<br><br>Number of women with voiding dysfunction requiring surgical revision: A: 20/326, B: 0/329<br><br>Postoperative cystitis (UTI): A: 247/326, B: 166/329<br><br>Bladder perforation: A: 2/326, B: 10/329<br><br>5-year outcomes (Brubaker 2012):<br><br>Enrolled 482 women: A: 243, B: 239<br><br>5-year FU completed by A: 183, B: 174, but data from more women reported for different outcomes<br><br>Failure (self-reported UI) at 5 years: A: 130/224, B: 158/229 (woman-reported)<br><br>Composite failure rate (self-report of UI or on diary, or surgical re-treatment): A: 153/221, B: 161/212<br><br>Surgical re-treatment for UI: A: 4/223, B: 27/227<br><br>Prolapse treatment: A: 1/224, B: 5/229<br><br>Not satisfied: A: 31/182, B: 46/170<br><br>UDI score (mean (SD) N): A: 40.2 (45.8) 224, B: 50.2 (50.9) 229<br><br>IIQ score (mean (SD) N): A: 44.8 (79.6) 224, B: 43.1 (68.2) 229<br><br>Adverse events (number): A: 37/224, B: 38/229<br><br>Adverse events (number of women): A: 22/224, B: 23/229<br><br>Number of women with UTI (included in AE above): A: 21/224, B: 21/229<br><br>Urgency urinary incontinence (new or persistent): A: 36/224, B: 36/229<br><br>Voiding dysfunction: A: 7/224, B: 1/229 |
| Notes | Full text with several other reports in full text and abstract form |

**Albo 2007** *(Continued)*

| | |
|---|---|
| | 5-year data published in 2012<br><br>For some outcomes, denominator assumed to be those who supplied subjective information about continence status |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Use of permuted block randomisation schedule with stratification according to clinical site |
| Allocation concealment (selection bias) | Low risk | Randomisation was performed in the operating room after anaesthesia induction |
| Blinding (performance bias and detection bias)<br>All outcomes | High risk | Patients were aware of study group assignments postoperatively. Independent data and safety monitoring board oversaw progress, interim results, and safety of the study |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | 135 women were lost to follow-up at 2 years: 61 from the sling group and 74 from Burch failed to attend clinic. At 5 years, 243 and 239 women were followed up<br><br>To allow for attrition and missed visits, 655 women had been recruited following power calculation |

**Amaro 2007**

| | |
|---|---|
| Methods | Design: RCT of autologous fascial sling with TVT; single-blind<br><br>Follow-up assessment carried out at 1, 6, 12, and 36 months |
| Participants | Women with involuntary detrusor contractions or pre-existing bladder outlet obstruction (BOO) during urodynamic study were excluded (USI) |
| Interventions | A (21): autologous fascial sling<br><br>B (20): TVT |
| Outcomes | Cure rates (defined as complete dryness with no usage of pads (woman-reported)), operative room time, postoperative analgesia, complications, time of hospital stay, postoperative catheterisation, time to return to normal activities. 60-minute pad test was used and QoL was evaluated with a validated Portuguese version of King's Health Questionnaire<br><br>Incontinent at 6 months: A: 9/21, B: 6/20<br><br>Incontinent at 12 months: A: 9/21, B: 7/20<br><br>Mean operative time (minutes): A: 70, B: 33<br><br>Mean dosage of analgesia (milligrams): A: 142, B: 85<br><br>Bladder injuries: A: 1, B: 2<br><br>Mean hospital stay (hours): A: 24, B: 24<br><br>Mean postoperative catheterisation (hours): A: 24, B: 24<br><br>Time to return to normal activity (days): A: 30, B: 30 |

**Amaro 2007** *(Continued)*

| | |
|---|---|
| | 36-month outcomes:<br>1 patient died in each group: A: 1/21, B: 1/20<br>Satisfaction rates at 36 months: dissatisfied: A: 4/20, B: 8/19<br>*QoL on King's Health Questionnaire at 36 months*:<br>Domain of KHQ (median)<br>General health score: A: 50, B: 50<br>Incontinence impact score: A: 33.34, B: 0<br>Role limitation score: A: 0, B: 0<br>Physical limitation score: A: 0, B: 0<br>Social limitation score: A: 5.56, B: 0<br>Personal relationship score: A: 0, B: 0<br>Emotions score: A: 0, B: 0<br>Sleep score: A: 25, B: 0<br>Severity perception of UI: A: 16.67, B: 26.57<br>De novo urgency at 36 months: A: 8/20, B: 8/19 |
| Notes | Abstract and poster, 36-month outcome paper |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Randomisation followed a blind raffle where procedures (TVT and sling) were written on small pieces of paper, which were folded and placed into a closed box |
| Allocation concealment (selection bias) | Low risk | The box was opened just before surgery, when the medical team found out which procedure would be performed |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | "Single-blinded" mentioned in abstract, but no description given |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | All outcome data assessed; no women lost to follow-up |

**Arunkalaivanan 2003**

| | |
|---|---|
| Methods | Design: RCT; randomisation method unclear. Patient demographics were well reported. Procedures were standardised<br>Follow-up at 2 to 6 months, 12 months, and 24 months (median 12 months) |
| Participants | 142 women with urodynamically proven SUI were recruited. Women with detrusor instability were excluded. Groups were comparable |

**Arunkalaivanan 2003** *(Continued)*

| | |
|---|---|
| Interventions | A (74): Pelvicol<br>B (68): TVT |
| Outcomes | Outcome measures: cure of incontinence was defined as quality of life (QoL) improvement of 90% and/or patient-determined continent status as dry (woman-reported) (subjective, questionnaire-based; pad used - not weighed), levels of morbidity and impact on quality of life, and symptom severity<br>Failure at 12 months (incontinence): A: 8/74, B: 10/68<br>Not improved at 12 months: A: 6/74, B: 4/68<br>Failure at 36 months (incontinence): A: 12/68, B: 7/60<br>Not improved at 36 months: A: 5/68, B: 4/60<br>Complications: any complications: A: 17/74, B: 13/68; any voiding dysfunction: A: 8/74, B: 6/68; retention up to 6 weeks A: 6/74, B: 1/68; release of sling required A: 5/74, B: 2/68; bladder perforations: A: 0/74, B: 0/68 |
| Notes | Surgery was offered only after conservative therapy had proved unsuccessful |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No patients lost to follow-up at 12 months. All outcome data assessed. At 36 months, in the Pelvicol arm, 2 patients died and 4 were lost to follow-up; in the TVT arm, 1 died and 7 were lost to follow-up. Statistical analysis failed to detect significant differences |

**Bai 2005**

| | |
|---|---|
| Methods | Design: RCT. Method not described; 3 arms; blinding not mentioned<br>Setting: Ob&Gyne; South Korea<br>Unclear if intention-to-treat<br>Follow-up at 1 year with assessments at 3, 6, and 9 months |
| Participants | Urodynamics confirmed; no mixed incontinence<br>Groups comparable as to age, parity, BMI, menopausal status, MUCP, VLPP, functional urethral length, and peak flow rates at baseline<br>Inclusion: USI grades 1 and 2 |

**Bai 2005** *(Continued)*

| | |
|---|---|
| | Exclusion: grade III incontinence, detrusor overactivity, UTI, ISD, POP > grade II |
| Interventions | A (28): sling<br>B (33): Burch<br>C (31): TVT<br><br>Sling procedure used a pubovaginal sling with autologous rectus muscle fascia |
| Outcomes | Number cured (3, 6, 12 months); complication rate (number with idiopathic detrusor overactivity, hesitancy, urinary retention)<br><br>Cure defined as absence of subjective complaints of leakage and absence of urinary leakage on stress test<br><br>Not cured (6 months): A: 2/28, B: 3/33, C: 2/31<br><br>Not cured (12 months): A: 2/28, B: 4/33, C: 4/31<br><br>De novo detrusor overactivity: A: 0/28, B: 3/33, C: 0/31<br><br>Voiding dysfunction: A: 2/28, B: 1/33, C: 4/31 |
| Notes | TVT technique according to Ulmsten<br><br>All procedures performed by 1 surgeon |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned. |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Barbalias 1997**

| | |
|---|---|
| Methods | Design: RCT<br><br>Follow-up at 6 months and 30 months; all women available at follow-up<br><br>Women allocated to 1 of 2 interventions by a computer-generated random numbers table at a 2:1 ratio |
| Participants | 48 consecutive women. Inclusion and exclusion criteria not clearly stated, but some patients with mixed incontinence |
| Interventions | A (32): rectus fascia sling<br><br>B (16): Goretex sling operation |

**Barbalias 1997** *(Continued)*

| | |
|---|---|
| Outcomes | Cure defined as complete freedom from SUI (clinician-assessed) or improved (persistence or recurrence of SUI, but at lesser intensity)<br><br>Failure rates at 6 months: A: 6/32, B: 2/16<br><br>Failure rates at 30 months: A:11/32, B: 2/16<br><br>Complications: B: 2 cases of erosion of sling and 3 other cases of recurrent UTI |
| Notes | Pre-operative characteristics reported but no comparisons between groups made; statistical analysis reported for urodynamic parameters before and after operation. No other statistical comparison between groups reported. Some patients with mixed incontinence, but results not stratified by group or by type of incontinence |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Computer-randomised numbers, assigning 2 successive numbers to the fascial group and the following number to the Goretex group |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Basok 2008**

| | |
|---|---|
| Methods | Design: RCT. Details of randomisation not given; 2 arms<br><br>Follow-up: 12 months |
| Participants | 139 women randomised. Baseline comparisons made: number of patients, mean age (years), mean daily pad usage, mean parturition, mean BMI, mixed urinary incontinence. No statistical differences<br><br>Inclusion criteria: stress urinary incontinence due to urethral hypermobility<br><br>Exclusion criteria: patients with ISD, uterine prolapsed, rectocoele, enterocoele, grade III or IV cystocoele<br><br>Concomitant urgency urinary incontinence was present in some women; mixed urinary incontinence was present in 49 patients (73%) in the fascia lata sling group and in 44 patients (61%) in the intravaginal slingplasty group |
| Interventions | A (67): cadaveric fascia lata<br><br>B (72): intravaginal slingplasty |
| Outcomes | Objective cure rate was evaluated by the pad test, and patient satisfaction rate was assessed by a subjective questionnaire. Cure and improvement were defined as a totally dry patient and 1 pad/d, respectively. Usage of more than 1 pad/d was accepted as surgical failure. The sum of cure and improvement rates was conceded as a total success rate |

**Basok 2008** *(Continued)*

| | |
|---|---|
| | Other outcomes measured were mean operating time, bladder perforation, urinary retention, erosion, sling revision, haematoma, persistent urgency urinary incontinence, defective vaginal wall, de novo detrusor overactivity<br><br>Total success: A: 79.0%, B: 70.8%<br><br>Satisfaction at 12 months: A: 82.0%, B: 87.5%<br><br>Incontinence at 12 months: A: 32/67, B: 38/72<br><br>Not improved at 12 months: A: 14/67, B: 21/72<br><br>Daily mean pad usage (SD): A: 4.1 (3.5), B: 2.9 (1.7)<br><br>Operative time: A: 50 minutes, B: 25 minutes<br><br>Adverse events: de novo detrusor overactivity: A: 15/67, B: 5/72; bladder perforation: A: 3/67, B: 8/72; urinary retention: A: 8/67, B: 8/72; vaginal erosion: A: 0/67, B: 0/72; sling revision: A: 2/67, B: 0/72 |
| Notes | Pre-operative evaluation of all patients included urogynaecological history, previous pelvic surgery, voiding diary, parturition, and daily pad usage<br><br>Abstract indicated that QoL was significantly improved in the study; full article showed that measurement was carried out by patient satisfaction questionnaire. No comment was made on validity or reliability of this questionnaire |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Choe 2000**

| | |
|---|---|
| Methods | Design: quasi-RCT. Patients randomised in alternate fashion to mesh or vaginal wall group<br><br>Mean follow-up: 22 months (12 to 27 months) |
| Participants | 40 women with stress or mixed urinary incontinence and vaginal prolapse underwent implantation of transvaginal sling and vaginal reconstruction from 1997 to 1998<br><br>Pre-operative investigations included urodynamic studies, cystoscopy, cough-stress test, cotton swab test, and detailed pelvic examination with patients supine and standing<br><br>Groups were not significantly different with respect to mean age, parity, weight, and pre-operative pad use, although the biosynthetic mesh group was younger and heavier. Of the entire cohort, 65% of mesh and 86% of vaginal graft groups had undergone previous vaginal operations (P > 0.05) |

**Choe 2000** *(Continued)*

| | |
|---|---|
| | Concomitant prolapse: A: 14/20 (70%), B: 18/20 (90%) |
| Interventions | A (20): antimicrobial MycroMesh (1-mm polytetrafluoroethylene mesh patch impregnated with silver diacetate and chlorhexidine (biosynthetic mesh); average patch size 3.5 × 1.5 cm<br><br>B (20): autologous vaginal wall sling using a free patch of vaginal skin (biological graft) soaked in antibiotic until ready for use<br><br>Single transverse suprapubic abdominal incision and polytetrafluoroethylene sutures attached to mesh or graft edges and secured abdominally by tying down across midline anterior to the rectus fascia<br><br>Concomitant surgery:<br><br>None: A: 6/20, B: 2/20<br><br>Cystocoele repair: A: 6/20, B: 8/20<br><br>Cystocoele and rectocoele repair: A: 3/20, B: 6/20<br><br>Cystocoele and rectocoele repair + enterocoele or sacrospinous fixation: A: 3/20, B: 2/20<br><br>Hysterectomy: A: 2/20, B: 2/20 |
| Outcomes | Routine follow-up with cough-stress test, cotton swab test, and voiding trial was performed on postoperative day 7<br><br>Urine loss during cough-stress test was defined as persistent (objective) stress incontinence: clinician-reported<br><br>Additional follow-up was done at 1, 3, and every 6 months. At each follow-up visit, cough-stress test and cotton swab test were performed at speculum examination to detect recurrent stress incontinence and vaginal wall prolapse<br><br>Stress incontinence was considered cured if objective loss of urine was not demonstrated and patients did not report involuntary loss of urine during physical activity (combined outcome)<br><br>Mean time to suprapubic tube removal, days (range): A: 9 (1 to 21); B: 10 (1 to 35)<br><br>Mean postvoid residual volume, millilitres (range): A: 13 (0 to 60); B: 14 (0 to 50)<br><br>Mean time to resumption of normal activity in weeks (range): both groups 3.5 weeks (2 to 4 weeks)<br><br>Postoperative early complications:<br><br>Blocked suprapubic tube: A: 3/20; B: 0/20<br><br>Abdominal wound infection: A: 4/20, B: 2/20<br><br>Urinary tract infection: A: 1/20, B: 0/20<br><br>Bleeding (intraoperative blood transfusion): A: 0/20, B: 1/20<br><br>Vaginitis: A: 1/20, B: 1/20<br><br>Transient de novo urgency incontinence resolved after 3 months: A: 1/8, B: 1/7<br><br>Late complications:<br><br>Urethral erosion: A: 0/20, B: 0/20<br><br>Voiding dysfunction (‘urethral obstruction’): A: 0/20, B: 0/20<br><br>Resolution of pre-operative urgency incontinence: A: 8/12, B: 7/13<br><br>Recurrent stress incontinence: A: 1/20, B: 6/20 |

**Choe 2000** *(Continued)*

| | |
|---|---|
| | Postoperative satisfaction:<br><br>Dissatisfied (same or worse symptoms): A: 0/20, B: 4/20 (due to recurrent stress incontinence and recurrent prolapse (cystocoele)) |
| Notes | |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | High risk | Randomised in alternate fashion |
| Allocation concealment (selection bias) | High risk | Randomised in alternate fashion |
| Blinding (performance bias and detection bias)<br>All outcomes | High risk | Women in the mesh arm (A) signed a consent form stating that they were receiving a biosynthetic material |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No dropouts reported |

**Demirci 2001**

| | |
|---|---|
| Methods | Design: RCT. No details of allocation method given<br><br>Follow-up at 12 months. Not all women available for follow-up |
| Participants | 46 women recruited, 23 in each arm of the study. 34 women available for follow-up; reasons for loss to follow-up not reported. Inclusion and exclusion criteria well defined |
| Interventions | A (23): rectus fascia sling<br><br>B (23): Burch colposuspension |
| Outcomes | Cure defined as dry, symptom-free (subjective based on history and objective on ultrasonography to assess bladder neck mobility)<br><br>Failure rate ('surgical' – assume objective clinician-reported at 1 year): A: 0/17, B: 1/17<br><br>Dry (symptom-free patients at 1 year; assume woman-reported): A: 16/17, B: 15/17<br><br>Operating time (mean minutes (SD) N): A: 60.66 (8.63) 15, B: 54.64 (9.29) 14 (women having concomitant hysterectomy excluded)<br><br>Length of hospital stay (mean days (SD) N): A: 5.93 (1.38) 15, B: 5.42 (1.28) 14 (women having concomitant hysterectomy excluded)<br><br>UTI: A: 1/15, B: 2/14<br><br>Late complications (1-year follow-up):<br><br>A: 1 detrusor instability, 3 suprapubic pain, 1 dyspareunia<br><br>B: 1 detrusor instability, 2 dyspareunia, 2 genital prolapse (1 cystocoele, 1 enterocoele) |

**Demirci 2001** *(Continued)*

| | |
|---|---|
| Notes | Ultrasonography for measurement of bladder neck mobility was tested in both groups pre-operatively and postoperatively, showing significant improvement but no significant differences between groups |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | High risk | 12 women missing and lost to follow-up; reason not reported. No mention of whether loss had impact on final analysis |

**Enzelsberger 1996**

| | |
|---|---|
| Methods | Design: RCT. Women allocated to 1 of 2 interventions by open random numbers chart<br><br>Follow-up at 32 to 48 months; all women available for follow-up |
| Participants | 72 women recruited, 36 in each arm of the study<br><br>Inclusion criteria: all patients with GSI (urodynamic and sonographic diagnosis) had a vaginal hysterectomy and at least 1 previous anterior repair; 57 were postmenopausal without hormone replacement therapy<br><br>Exclusion criteria: urinary tract infection, unstable bladder, voiding difficulty and severe cystocoele and/or rectocoele. Groups were comparable for age, weight, parity, menopausal status, previous surgery, and time of follow-up |
| Interventions | A (36) group II: lyophilised dura mater sling operation<br><br>B (36) group I: modified Burch colposuspension (2 pairs of sutures instead of 3) |
| Outcomes | Cure defined as dry, symptom-free without objective urine loss during stress with bladder filled to 300 mL or positive urethral closure pressure during stress provocation<br><br>Failure rate at follow-up at 32 to 48 months: A: 3/36, B: 5/36<br><br>Urodynamic results reported before and at follow-up: reported longer hospital stay and suprapubic catheter permanence for A. Equal frequency pyrexia and bladder laceration<br><br>Late complications:<br><br>Enterocoele or rectocoele: A: 1/36, B: 5/36<br><br>Voiding difficulty A: 5/36, B: 1/36; both differences statistically significant<br><br>Other problems not statistically significant: urgency urinary incontinence (A: 6/36, B: 3/36) |

**Enzelsberger 1996** *(Continued)*

| | |
|---|---|
| | Four patients reported in control because of residual urine for B. Equally good results on sonographic investigation at follow-up |
| Notes | |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Random number chart: even numbers underwent colposuspension; odd numbers underwent sling procedure |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Fischer 2001**

| | |
|---|---|
| Methods | Design: RCT. Details not given<br>Follow-up at 6 months |
| Participants | 22 women with intrinsic sphincter deficiency, 11 in each arm |
| Interventions | A (11): suburethral sling<br>B (11): Burch retropubic urethropexy |
| Outcomes | Subjective cure assessed using comparison between pre-operative and postoperative Incontinence Impact Questionnaire (IIQ), Urinary Distress Inventory (UDI) (measured)<br>Objective cure by stress test; voiding dysfunction by urodynamic assessment if incontinence seen (clinician-assessed)<br>Success rate reported as follows: A: 100% (11/11), B: 77.8% (7/9), P = 1<br>Mean postoperative IIQ and UDI scores not significantly different |
| Notes | Abstract only<br>Aim to evaluate prognostic value of urethral electrodiagnosis<br>Two patients in the Burch group were found to have recurrent UVJ hypermobility or displacement and were not included in the final analysis<br>A high proportion of excluded women were found to have end-stage urethral neuropathy |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|

**Fischer 2001** *(Continued)*

| | | |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | High risk | Two patients in the Burch group were found to have recurrent UVJ hypermobility, were considered surgical failures, and were excluded from final analysis. Insufficient information to judge whether appropriately addressed |

**Guerrero 2008**

| | |
|---|---|
| Methods | Design: RCT (3 arms). Computer-generated randomisation schedule used for each centre and for each individual surgeon. Remote telephone randomisation undertaken by independent CRU; type of sling faxed on the morning of the operation. Patients were not told which sling they had, although they could not be blinded to Pfannenstiel incision; research nurses collecting data were not told what procedure the women had undergone<br><br>Setting: 4 centres<br><br>Follow-up at 6 months and 1 year; 85% available for follow-up at 1 year |
| Participants | 201 women randomised (mean age 52 years) to Pelvicol-50, TVT-72, autologous sling-79<br><br>Inclusion criteria: women requiring primary surgical treatment for urodynamic USI following failed conservative treatment<br><br>Exclusion criteria: previous surgery for SUI, neurological disease, pelvic organ prolapse > stage 2, detrusor overactivity, or bladder hypocompliance on urodynamic assessment |
| Interventions | A (79): autologous fascial sling from rectus (sling-on-a-string)<br><br>B (50): Pelvicol (randomisation to this arm halted half way through the trial) 12 × 2 cm Pelvicol graft<br><br>C (72): TVT (Gynecare)<br><br>Dropout at 12 months: A: 12; B: 4; C: 3; no explanation for differential dropout from group A |
| Outcomes | Success and improvement rates described but method of assessment not defined<br><br>Other outcome measures included operative details, complications, dry/improved rates, quality of life assessment, catheterisation, and re-operation rates<br><br>Theatre time, minutes, mean (range): A: 54 (25 to 140); B: 36 (17 to 70); C: 35 (14 to 120)<br><br>Length postop stay, days, median (range): A: 4 (1 to 22), B: 4 (1 to 12), C: 2 (1 to 10)<br><br>Incontinent at 6 months: A: 38/73, B: 25/45, C: 35/71<br><br>Incontinent at 12 months: A: 35/67, B: 36/46, C: 31/69<br><br>Not improved at 6 months: A: 4/73, B: 12/45, C: 6/71<br><br>Not improved at 12 months: A: 7/67, B: 18/46, C: 5/69<br><br>Re-operation rate: A: 0/67, B: 9/46, C: 0/69 |

**Guerrero 2008** *(Continued)*

| | |
|---|---|
| | Self-catheterisation at 12 months: A: 0/67, B: 0/46, C: 0/69<br><br>Adverse effects:<br><br>Bladder injury: A: 2/79, B: 1/50, C: 4/72<br><br>Urethrolysis (release of tape): A: 1/67, B: 0/46, C: 1/69<br><br>10-year follow-up:<br><br>162 women available at 10 years (A: 61, B: 38, C: 63)<br><br>Incontinence at 10 years: A: 30/61, B: 32/38, C: 43/63<br><br>Not improved at 10 years: A: 15/61, B: 16/38, C: 17/63<br><br>Satisfaction: A: 43/61, B: 20/38, C: 44/63<br><br>Recommend to a friend: A: 46/61, B: 25/38, C: 53/63<br><br>Reoperation rate for SUI at 10 years: A: 0/61, B: 5/38, C: 2/63<br><br>Other gynaecological surgery: A 7/61, B 4/38, C 5/63<br><br>De novo urgency: A: 0/61, B: 0/38, C: 1/63<br><br>Self-catheterisation: A: 4/61, B: 0/38, C: 3/63<br><br>Sling release: A: 2/61, B: 1/38, C: 2/63<br><br>(long-term voiding dysfunction at 10 years: A: 6/61, B: 1/38, C: 5/63)<br><br>Tape/graft exposure: A: 0/61, B: 0/38, C: 1/63<br><br>Scar pain: A: 2/61, B: 0/38, C: 0/63 |
| Notes | High re-operation rates (1 in 5) in Pelvicol group (group B), so arm closed. Study closed at 6 years before target number reached. Interim analysis after first 50 patients in each group<br><br>Although there was no mention of how success rate was assessed in the abstract, on contacting a listed author, we were informed that figures were patient-reported<br><br>Interim analysis showed that women randomised to Pelvicol (group B) had significantly poorer outcomes; therefore this arm was dropped and the trial was continued as a 2-arm RCT<br><br>Study closed after 6 years due to failure to recruit target numbers and high re-operation rate |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Computer-generated randomisation schedule used for each centre and for each individual surgeon |
| Allocation concealment (selection bias) | Low risk | Remote telephone randomisation undertaken by the independent CRU; type of sling faxed on the morning of the operation |
| Blinding (performance bias and detection bias) All outcomes | Low risk | Patients were not told which sling they had, although they could not be blinded to Pfannenstiel incision; research nurses collecting data were not told what procedure the women had undergone |
| Incomplete outcome data (attrition bias) | Low risk | No differential dropout (although group B was stopped early due to poor outcomes) |

**Guerrero 2008** *(Continued)*

All outcomes

**Helmy 2012**

| | |
|---|---|
| Methods | Design: RCT; randomised prospective study |
| Participants | 482 women with urinary incontinence<br>Inclusion and exclusion criteria not defined |
| Interventions | A: fascial sling<br>B: Burch urethropexy |
| Outcomes | Continence rates: defined as no urinary leakage in a 3-day voiding diary, no self-reported stress incontinence symptoms, and no stress incontinence surgical treatment (combined outcome)<br>Continence rates:<br>3 years: A: 30.8%, B: 24.1%<br>Satisfaction rates:<br>5 years: A: 83%, B: 73%<br>Adverse event rates (follow-up period not specified):<br>A: 9%, B: 10%<br>Number of women with adverse events: A: 22; B: 23 |
| Notes | Abstract only; no useable data |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | No information available |
| Allocation concealment (selection bias) | Unclear risk | No information available |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | No information available |
| Incomplete outcome data (attrition bias)<br>All outcomes | Unclear risk | No information available |

**Henriksson 1978**

| | |
|---|---|
| Methods | Design: RCT. Details not given<br>Follow-up at 4 to 6 months |

**Henriksson 1978** *(Continued)*

| | |
|---|---|
| Participants | 30 women randomised, 15 in each arm of the study, all with genuine stress incontinence. All age groups of patients given but menopausal status not reported<br><br>Exclusion criteria: cystocoele, uterine prolapse, urgency urinary incontinence, neurogenic bladder, urinary tract infection |
| Interventions | A (15): Teflon sling (Zoedler urethroplasty)<br><br>B (15): MMK urethrocystopexy |
| Outcomes | Cure defined as complete freedom from SUI (subjective and objective demonstrations) (combined outcome). All patients in both groups cured. Complications not reported. Main differences observed in stress closing pressure of urethra, which became positive after surgery in both groups |
| Notes | Groups stated similar, but no comparisons made at baseline. Short follow-up |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Hilton 1989**

| | |
|---|---|
| Methods | Design: RCT. Women allocated to 1 of 2 interventions by random tables<br><br>Follow-up at 2, 3, 12, and 24 months. All women available at follow-up |
| Participants | 20 women recruited, 10 in each arm of the study<br><br>Inclusion criteria: GSI (urodynamic diagnosis), vaginal narrowing, postsurgical scar, unsuitable for colposuspension<br><br>Groups comparable for age, parity, and number of previous surgical incontinence procedures. Menopausal status not reported<br><br>Exclusion criteria: not stated |
| Interventions | A (10): porcine dermis sling operation<br><br>B (10): Stamey bladder neck (needle) suspension |
| Outcomes | Cure stated as objective (urodynamic diagnosis, pad test (clinician-reported)) at 3 months' and as subjective (woman-reported) at 24 months' follow-up<br><br>Failure rates at 3 months: A: 1/10, B: 2/10 |

**Hilton 1989** *(Continued)*

| | |
|---|---|
| | Failure rates at 24 months: A: 1/10, B: 3/10<br><br>Differences not statistically significant at 3 and 24 months<br><br>Postoperative complications: A: 9/10, B: 2/10 (operative blood loss, pyrexia, infective complications, suprapubic catheter permanence)<br><br>Hospital stay: A: 20 (12.9), B: 7 (0.3)<br><br>Late complications not reported<br><br>Voiding problems at 3 months: A: 4/10, B:2/10<br><br>Detrusor instability: A: 2/10, B: 1/10<br><br>Urgency urinary incontinence: A: 5/10, B: 3/10<br>No difference in frequency of uninhibited detrusor contractions, residual volume, and maximum voiding pressure<br><br>Peak flow significantly reduced for A, although higher than 15 mL/s |
| Notes | Pad test at 12 and 24 months stated but not reported |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Random numbers chart |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Kondo 2006**

| | |
|---|---|
| Methods | Design: quasi-RCT. Randomisation by date of birth method; 2 arms. Odd days assigned to TVT arm, even days to PVS<br><br>Follow-up: 3, 12, and 24 months |
| Participants | 63 women who complained of SUI were recruited: 3 eventually declined to undergo surgery; therefore a total of 60 women (29 PVS, 31 TVT) with urodynamic stress or mixed incontinence were included<br><br>Diagnosis was made by a cough-stress test, a 60-minute pad-weighing test, and urodynamic studies |
| Interventions | A (29): PVS<br><br>B (31): TVT |
| Outcomes | Primary outcome measure was cure of SUI. Subjective cure was consistent with complete dryness or a few drops of water with strong exercises (assumed to be woman-reported) |

**Kondo 2006** *(Continued)*

| | |
|---|---|
| | Objective cure was defined as complete absence of leakage during cough-stress test with 250 or 300 mL of water in the bladder (clinician-reported)<br><br>Other outcome measures (6-parameter analysis) were operation time, numbers of analgesics required in a perioperative period, changes in haematocrit, length of a Foley catheter, and length of stay<br><br>Not cured at 24 months (subjective): A: 7/21, B: 4/23<br><br>Not cured at 24 months (objective): A: 11/21, B: 7/23<br><br>Operative time, mean minutes (SD) N: A: 87.1 (13.3) 21, B: 43.9 (17.3) 23<br><br>Length of hospital stay, mean (SD): A: 9.2 (0.9), B: 9.2 (0.6) days<br><br>Time to catheter removal, mean (SD): A: 1.4 (0.5), B: 1.3 (0.1) days<br><br>Complications:<br><br>All complications: A: 11/29, B: 9/31<br><br>Bladder perforation: A: 7/29, B: 7/31<br><br>Urethral injury: A: 0/29, B: 1/31<br><br>Subcutaneous haematoma: A: 0/29, B: 1/31<br><br>Voiding dysfunction: A: 4/29, B: 0/31<br><br>Release of sling surgery: A: 4/29, B: 0/31<br><br>De novo detrusor urgency: A: 3/29, B: 2/31 |
| Notes | Follow-up at 24 months. Women who underwent concomitant surgery (5 PVS, 8 TVT) and/or had revision surgery were excluded from the 6-parameter analysis because extra interventions made comparison difficult. Subjects for assessment were reduced to 23 women in the TVT group and 21 in the PVS group<br><br>Data updated from new publication |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | High risk | Date of birth method |
| Allocation concealment (selection bias) | High risk | Date of birth |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | No mention |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | Similar loss across groups at follow-up: 72% remained in sling arm and 74% in Burch arm |

**Lucas 2000**

| | |
|---|---|
| Methods | Design: RCT. Women allocated to each arm by a central telephone randomisation system. Not blinded - operation obvious to all medical and nursing personnel<br><br>Setting: 3 hospitals<br><br>Follow-up at 3, 6, and 12 months |
| Participants | 165 women randomly assigned to 2 groups. Baseline demographics and symptoms were similar: age, height, weight, symptom years, previous surgery, number and type of concurrent problems between groups<br><br>Inclusion criteria: patients older than 18 years; urodynamically proven SUI<br><br>Exclusion criteria: evidence of neurological disease; urodynamic evidence of detrusor instability and hypocompliance |
| Interventions | A (81): standard sling insertion (long)<br><br>B (84): sling on a string (short) |
| Outcomes | Primary outcome was to compare QoL scores in both groups over time. Success rate was measured by recurrence of stress leakage as reported on patient questionnaire (woman-reported)<br><br>Secondary outcomes were measured by patient quality of life, clinical indicators (such as immediate postoperative complications, time to first void, pad tests), administrative indicators, pain scores, and patient satisfaction<br><br>Patient satisfaction at 12 months: A: 57/73, B: 62/82<br><br>Stress leakage at 12 months: A: 14/72, B: 16/72<br><br>Stress leakage at 3 years: A: 35/75, B: 30/70<br><br>Stress leakage at 6 years: A: 42/73, B: 34/69<br><br>De novo urgency: A: 6/81, B: 2/84<br><br>Pad test volumes (mL): A: 7.71, B: 4.61, P = 0.56<br><br>Mean operative time, minutes (range): A: 62 (38 to 135), B: 54 (25 to 140), P = 0.001 (P used to calculate SD: 15.33 in each group)<br><br>Mean blood loss (mL): A: 274 (50 to 800), B: 230 (50 to 700), P = 0.07<br><br>Length of stay (days): A: 6.48, B: 6.73<br><br>Voiding dysfunction 12 months: A: 19/81, B: 17/84<br><br>Re-admission within 3 months: A: 19/79, B: 9/83<br><br>Surgery to release sling: A: 1/81, B: 4/84<br><br>Further continence surgery: A: 2/56, B: 5/69<br><br>Pain at 3 months: A: 52/78, B: 42/82<br><br>Adverse effects:<br><br>Perioperative surgical complications: A: 34/81, B: 31/84<br><br>Bladder perforation: A: 2/81, B: 3/84<br><br>UTI: A: 10/81, B: 6/84 |

**Lucas 2000** *(Continued)*

| | |
|---|---|
| Notes | Detailed outcome measures at 3, 6, and 12 months were provided. Both groups showed improvement in quality of life with no significant statistical differences between allocated operations<br><br>46 patients had previously undergone 1 or more forms of incontinence surgery<br><br>Data were updated from new publication |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Computer-generated randomisation schedule |
| Allocation concealment (selection bias) | Low risk | Remote telephone randomisation |
| Blinding (performance bias and detection bias)<br>All outcomes | High risk | Not blinded; operation performed obvious to all medical and nursing personnel involved in the assessment |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | Ouctome data analysed according to randomised group, per protocol, and best possible. Twenty-one women lost to follow-up by 12 months, 23 lost by 3 years. Similar losses from each arm unlikely to affect the final analysis. Actual numbers with outcomes reported |

**Maher 2005**

| | |
|---|---|
| Methods | Design: RCT of pubovaginal sling vs Macroplastique<br><br>Intention-to-treat analysis performed<br><br>Follow-up: 6 months, 1 year |
| Participants | 45 women randomised. 1 from each arm lost to follow-up by 1 year<br><br>Inclusion criteria: women with USI and ISD diagnosed by MUCP ≤ 20 cm $H_2O$ who failed to respond to conservative treatment<br><br>Exclusion criteria: required prolapse surgery, had undergone a sling procedure, were unsuitable for general anaesthesia<br><br>Baseline comparison included age (years), BMI ($kg/m^2$), menopause status, parity, previous surgery (abdominal hysterectomy, vaginal hysterectomy/repair, retropubic continence surgery, needle suspension) |
| Interventions | A (22): pubovaginal sling<br><br>B (23): transurethral Macroplastique |
| Outcomes | Subjective success: no or occasional (less than once a week) stress incontinence (woman-reported)<br><br>Objective success: no leakage due to SUI on repeat urodynamic study (clinician-reported)<br><br>Other outcome measures included voiding dysfunction, patient satisfaction, operating time, blood loss, inpatient days, duration of catheterisation, time to resume normal activities<br><br>Incontinent within 1 year: A: 2/21, B: 5/22, P = 0.41 |

**Maher 2005** *(Continued)*

| | |
|---|---|
| | Incontinent after 1 year: A: 0/13, B: 4/14, P = 0.1<br>Incontinent within 1 year (objective): A: 4/21, B: 20/22, P ≤ 0.0001<br>Patient satisfaction (self-reported at 6 months): A: 7/21, B: 13/22, P = 0.41<br>Patient satisfaction (self-reported at 5 years): A: 9/13, B: 4/14, P = 0.057<br>Operative time, minutes (range): A: 60 (25 to 105), B: 22 (10 to 41), P ≤ 0.0001<br>Length of hospital stay, days (range): A: 4 (3 to 81), B: 1 (1 to 2), P ≤ 0.0001<br>Time to normal activity, weeks (range): A: 4 (0 to 42), B: 28 (0 to 35), P ≤ 0.0001<br>Time to catheter removal, days (range): A: 5 (2 to 42), B: 1 (0 to 7), P ≤ 0.0001<br>Further continence surgery: A: 1/21, B: 2/22<br>Complications:<br>UTI: A: 3/21, B: 2/22<br>De novo detrusor overactivity: A: 1/21, B: 0/22<br>Voiding dysfunction: A: 4/21, B: 1/22 |
| Notes | Tertiary referral centres<br>Macroplastique (uroplasty, Minneapolis, Minnesota, USA) is a vulcanised silicone microimplant (poly-diamethylsiloxane) suspended in a povidone gel designed to provide urethral bulking for treatment of SUI |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Computer randomisation software; no description given |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | Ouctome data analysed according to randomised group. One woman in each group failed to return or complete any review. Actual numbers with outcomes reported |

**Okulu 2013**

| | |
|---|---|
| Methods | Design: RCT: randomised prospective study |
| Participants | 144 women<br>Inclusion criteria: incontinence, clinical and/or urodynamic diagnosis of SUI, positive stress test |

**Okulu 2013** *(Continued)*

| | |
|---|---|
| | Exclusion criteria: urodynamic MUI, detrusor overactivity, > 200 mL postvoid residual urine, contraindication to anaesthesia, pelvic organ prolapse, pregnancy, neurogenic bladder, bladder outlet obstruction, urinary fistula, active UTI, vaginal infection<br><br>Some women had failed previous continence surgery, hysterectomy; some were post menopause |
| Interventions | A (48): broad-based double-forced sling using Vypro mesh (semi-absorbable multi-filament)<br><br>B (48): broad-based double-forced sling using Ultrapro mesh (synthetic combined mesh, non-absorbable with absorbable coating, monofilament)<br><br>C (48): broad-based double-forced sling with Prolene light mesh (non-absorbable, monofilament)<br><br>Meshes fixed with 2 polypropylene sutures to fascia of the rectus muscle |
| Outcomes | Cure defined as no pad use (measured):<br><br>6 months: A: 40/46, B: 44/48, C: 41/47<br><br>12 months: A: 41/46, B: 45/48, C: 41/47<br><br>48 months: A: 39/46, B: 44/48, C: 40/47<br><br>Incontinence rate: A: 6/46<br><br>ICIQ-SF score (higher is worse), mean (SD) N:<br><br>At 6 months: A: 3.1 (0.9) 46, B: 2.1 (0.8) 48, C: 2.7 (0.8) 47<br><br>At 12 months: A: 2 (0.7) 46, B: 1.2 (0.6) 48, C: 1.7 (0.4) 47<br><br>At 48 months: A: 2.1 (0.5) 46, B: 0.8 (0.5) 48, C: 1.5 (0.3) 47<br><br>24-hour pad test (grams), mean (SD) N:<br>6 months: A: 4.2 (6.4) 46, B: 2.7 (6.2) 48, C: 3.03 (5.8) 47<br><br>12 months: A: 2.1 (1.4) 46, B: 2 (1.1) 48, C: 2.4 (3.8) 47<br><br>48 months: A: 2.3 (1.1) 46, B: 1.3 (0.8) 48, C: 2.4 (1.1) 47<br><br>Number of pads used mean (SD) N:<br>At 6 months: A: 0.93 (0.5) 46, B: 0.83 (0.5) 48, C: 1.1 (0.8) 47<br><br>At 12 months: A: 0.62 (0.4) 46, B: 0.33 (0.2) 48, C: 0.94 (0.6) 47<br><br>At 48 months: A: 0.65 (0.3) 46, B: 0.2 (0.15) 48, C: 0.83 (0.54) 47<br><br>Voiding or storage symptoms: A: 9/46; B: 4/48; C: 7/47<br><br>Dissatisfaction rate: A: 9/46; B: 7/48; C: 9/47<br><br>Complications at 48 months:<br><br>Vaginal erosion: A: 2/46, B: 1/48, C: 2/47<br><br>Urethral erosion: A: 1/46, B: 0/48, C: 1/47<br><br>Suture granuloma: A: 3/46, B: 1/48, C: 3/47<br><br>Urine retention: A: 2/46, B: 2/48, C: 2/47<br><br>De novo urgency: A: 5/46, B: 2/48, C: 4/47 |
| Notes | |

**Okulu 2013** *(Continued)*

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | 'randomly allocated into three groups by centralised computerised system (1:1:1)' |
| Allocation concealment (selection bias) | Low risk | 'randomly allocated into three groups by centralised computerised system (1:1:1)' |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | No information |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No differential dropout; dropout rate is low |

**Osman 2003**

| | |
|---|---|
| Methods | Design: RCT (block randomisation technique). Selection criteria well reported<br>Follow-up reported at 6 months |
| Participants | 75 women with mixed incontinence symptoms and a negative cystometrogram for motor detrusor overactivity. All had proven stress urinary incontinence. No details on demographic data were reported<br>21 patients (anticholinergic) and 24 (sling) were available for follow-up |
| Interventions | A (50): surgery (Ai (24) Burch colposuspension, Aii (26) rectus fascia sling)<br>B (25): anticholinergic treatment |
| Outcomes | Patients were evaluated by SEAPI score (subjective and objective) and underwent urodynamic examination before and after treatment (combined outcome)<br>Cure for urge symptoms: Aii: 88%, B: 57%<br>Cure for SUI: Aii: 83%, B: 0 |
| Notes | Study was designed to investigate anticholinergic therapy in comparison with surgery. Patients allocated to surgery had a sling procedure if Valsalva leak point pressure was < 90 cm $H_2O$. We extracted only data on sling in comparison with anticholinergics |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Block randomisation |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias) | Unclear risk | Not mentioned |

**Osman 2003** *(Continued)*

| | | |
|---|---|---|
| All outcomes | | |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | Of 75 women randomised, 68 evaluated after 6 months. Four in anticholinergic arm and 3 in surgical arm lost. Insufficient information to determine whether appropriately addressed or not |

**Pacetta 2005**

| | |
|---|---|
| Methods | Design: RCT. Abstract. Randomisation 2:1. Two arms<br>Follow-up: 1 year |
| Participants | 34 women randomised. No mention of baseline comparison<br>Inclusion criteria: women 30 to 77 years old with SUI due to hypermobility or ISD underwent surgical correction |
| Interventions | A (10): autologous fascia<br>B (24): Fortaperm |
| Outcomes | Subjective patient evaluations included QoL questionnaire, incontinence diary, pain, and global outcome assessments (measured)<br>Objective outcome assessment was urine loss with a provocative pad test (clinician-reported)<br>Biopsies were taken at 1 year from FP implant sites adjacent to urethra for histology<br>Objective incontinence within first year: A: 1/10, B: 5/24<br>Not improved within first year (subjective): A: 0/10, B: 2/24 |
| Notes | Fortaperm is absorbable biomaterial composed of laminated sheets of purified porcine collagen matrix |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No missing outcome data |

**Sand 2000**

| | |
|---|---|
| Methods | Design: RCT by random numbers table |

**Sand 2000** *(Continued)*

| | |
|---|---|
| | Follow-up at 3 months and at 72.6 months (mean) |
| Participants | 36 women with genuine stress incontinence and maximum urethral closure pressure ≤ 20 cm $H_2O$. Groups comparable in terms of age, parity, and urodynamic variables, except for detrusor instability (> Burch vs sling) and residual volume (> Burch vs sling) |
| Interventions | A (17): PTFE sling operation<br>B (19): modified (overcorrection) Burch colposuspension |
| Outcomes | Cure defined as objective (urodynamic: clinician-reported separately) and subjective (history: woman-reported)<br>Number of continent women (short-term): A: 17/17, B: 17/19<br>Objective cure (long-term): A: 100%, 13/13, B: 86%, 13/15<br>Subjective cure (long-term): A: 84%, 11/13, B: 93%, 14/15<br>There were no statistically significant differences in outcome measures |
| Notes | First publication (2000) reported short-term follow-up and was considered the primary reference. Last publication (2003) reported long-term results |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Low risk | Random numbers table |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | Similar losses in both groups at long-term assessment |

**Sharifiaghdas 2008**

| | |
|---|---|
| Methods | Design: RCT of tension-free vaginal tape with autologous rectus fascia sling. Randomisation by sealed opaque envelopes<br>Follow-up: 1, 3, 6, and 12 months |
| Participants | 100 women randomised into 2 groups. However, only 61 followed up to 1 year. 16 lost due to distance and expense of travel - 12 were age-related and 11 occurred because of dissatisfaction with surgical result (6 sling, 5 TVT)<br>Inclusion criteria: history of USI, 1-hour pad test (> 2 grams of leakage), objective positive cough (effort or exertion), induced stress test, normal cystourethroscopy and urodynamic confirmation of SI, urethral hypermobility, competent bladder neck |

**Sharifiaghdas 2008** *(Continued)*

| | |
|---|---|
| | Exclusion criteria: history of more than 3 episodes of UTI in past 2 years, other gynaecological problems such as high-grade uterine prolapse, high-grade rectocoele and enterocoele, cystocoele ≥ grade 2, abnormal filling phase of urodynamic study, low flow rates (< 15 mL/s), residual urine of more than 100 mL, trabeculated bladder mucosa on cystourethroscopy, history of major pelvic trauma, fracture that might negatively affect urethral function<br><br>Women with mixed incontinence symptoms were included provided urodynamics showed normal capacity, normal compliance, and stable bladder<br><br>The 2 groups had similar characteristics with respect to age, parity, hysterectomy, previous incontinence surgery, sensory urgency incontinence, pre-operative IIQ score |
| Interventions | A (52): pubovaginal sling<br><br>B (48): TVT |
| Outcomes | Objective cure defined as negative cough-induced stress test with full bladder (at least 250 mL filled) in the lithotomy and standing positions (clinician-reported) and a 1-hour pad test ≤ 2 grams (measured)<br><br>Subjective cure defined by mean IIQ score in each group<br><br>Also assessed were type of anaesthesia, operative time, estimated blood loss, bladder penetration, and satisfaction with procedure<br><br>Incontinent within 1 year (stress test): A: 6/36, B: 3/25, P = 0.9<br><br>Incontinent within 1 year (1-hour pad test): A: 10/36, B: 6/25, P = 0.83<br><br>Patient satisfaction at 12 months: A: 20/36, B: 15/25<br><br>Operative time (minutes): A: 80 (50 to 180), B: 45 (30 to 70), P = 0.01<br><br>Length of hospital stay (days): A: 5 (3 to 7), B: 2 (1 to 5), P = 0.001<br><br>Time to catheter removal, days (range): A: 4.6 (3 to 6), B: 1.3 (1 to 5), P = 0.001<br><br>Complications:<br><br>De novo urgency symptoms: A: 8/36, B: 1/25<br><br>Voiding dysfunction: A: 11/36, B: 5/25<br><br>Bladder perforation: A: 2/36, B: 6/25, P = 0.05<br><br>Bleeding (> 250 mL): A: 1/36, B: 1/25, P = 1.00<br><br>Suprapubic incisional hernia after 8 months: A: 1/36, B: 1/25 |
| Notes | Procedures were performed by single surgeon<br><br>All patients were pre-operatively evaluated by physical examination, plain abdominal X-ray, urinary tract ultrasound, cystourethroscopy, and urodynamic study<br><br>Physical examination assessed degree of prolapse and basal lab tests (FBC, renal and liver function tests, serum electrolytes, urine analysis, culture)<br><br>Assumption was made that t-test was used for operative time, catheterisation, and hospital stay<br><br>10-year follow-up was published (Sharifiaghdas 2017), but data were not added to the review |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|

**Sharifiaghdas 2008** *(Continued)*

| | | |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned. |
| Allocation concealment (selection bias) | Unclear risk | Sealed opaque envelopes; no mention of numbering |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | All outcomes assessed in randomised groups. 39 patients lost to follow-up. Similar losses in each group |

**Sharifiaghdas 2015**

| | |
|---|---|
| Methods | Design: RCT<br>Setting: Shahid Labbafinejad Medical Centre, Iran<br>Follow-up: mean 13.8 months (SD 4.4), range 12 to 20<br>Follow-up at hospital visits at 1 week; 1, 3, 6, and 12 months after surgery |
| Participants | 72 women with main complaint of SUI unresponsive to conservative treatment, urethral hypermobility, positive cough-stress test; urodynamics in all women and DO excluded - therefore classes and USI<br>Exclusion criteria: persistent UTI, active UTI at surgery, urogynaecological malignancy, cystocoele (prolapse) ≥ grade 3, neurogenic bladder, abnormal filling or voiding, detrusor overactivity, low flow rate, residual urine > 100 mL, abnormal cystourethroscopy findings |
| Interventions | A (35): autologous rectus fascia pubovaginal sling<br>B (35): mini-sling (Ophira) |
| Outcomes | Cure defined as woman report of some degree of SUI at 1 year after surgery<br>Cure: A: 31/35, B: 31/35<br>Number of women satisfied: A: 25/35, B: 28/35<br>Number of women with UI: A: 4/35, B: 4/35<br>Objective UI (positive cough-stress test): A: 4/35, B: 4/35<br>IIQ score, mean (SD) N: A: 50.2 (11.1) 35, B: 42.7 (11.4) 35<br>Adverse effects:<br>Surgery for tape exposure: A: 0/35, B: 2/35<br>Adverse effects (dyspareunia, bladder perforation, urethral erosion, vaginal erosion/wound haematoma and/or infection: A: 21.6%, B: 2.9% (all treated conservatively with antibiotics, local care, or dressings)<br>Haematoma and/or infection: A: 8/35, B: 1/35<br>Dyspareunia: A: 3/35, B: 4/35<br>Bladder perforation: A: 1/35, B: 0/35 |

**Sharifiaghdas 2015** *(Continued)*

| | |
|---|---|
| | Vaginal erosion: A: 1/35, B: 2/35<br>Urgency incontinence: A: 5/35, B: 1/35<br>Obstructive voiding symptoms: A: 6/35, B: 1/35 (1 woman required urethral dilatation, but group is unknown)<br>UTI: A: 0, B: 0 |
| Notes | Groups were comparable at baseline, although sling group was younger |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Randomly assigned by envelope sealed cards |
| Allocation concealment (selection bias) | Low risk | Randomly assigned by envelope sealed cards |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | No information |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No loss to follow-up reported |

**Shin 2001**

| | |
|---|---|
| Methods | Design: RCT stated. Details not given in abstract of the trial<br>Follow-up after first year reported |
| Participants | 57 women with various types of SUI. Patient characteristics not reported |
| Interventions | A (33): autologous dermal graft patch<br>B (24): cadaveric fascia lata |
| Outcomes | Outcome measures reported were success rate (dry/improved) (method unspecified: assumed woman-reported), de novo detrusor instability<br>Success rate (dry or improved): A: 30/33 (91.6%), B: 22/24 (93.2%)<br>Dry: A: 25/33, B: 19/24<br>Improved (only): A: 5/33, B: 3/27<br>De novo detrusor instability: A: 4/33, B: 5/20<br>Voiding delay in first 30 days: A: 0/33, B: 1/24 |
| Notes | |

***Risk of bias***

**Shin 2001** *(Continued)*

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Insufficient information |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No missing outcome data (based on abstract) |

**Silva Filho 2006**

| | |
|---|---|
| Methods | Design: RCT of SAFYRE TOT with autologous pubovaginal sling. Randomisation method unclear<br>Follow-up: 6 months |
| Participants | 20 women (average age 52.5 ± 11.8 years) with both USI and SUI but without detrusor overactivity<br>The 2 groups had similar characteristics with respect to age, parity, BMI, menopausal status, presence of pelvic floor defects, and mean Valsalva leak point pressure in pre-operative UDS |
| Interventions | A (10): pubovaginal sling<br>B (10): SAFYRE TOT |
| Outcomes | Cure rates and intraoperative and postoperative morbidity. Women were declared objectively cured when they had a postoperative pad test ≤ 8 grams<br>All patients were pre-operatively evaluated by history, physical examination, quality of life questionnaire (King's Health Questionnaire), 24-hour pad weight test, 2-day voiding diary, and multi-channel urodynamic study that included uroflowmetry, postvoid residual volume measured by urethral catheter, and cystometrogram. Objective quantification of the severity of incontinence was done by mean stress leaking point pressure in the urodynamic study. Pre-operative measurements included type of anaesthesia, duration of surgery, intraoperative complications, occurrence of combined procedures, and hospital stay<br>At 6-month follow-up, aforementioned measurements were carried out excluding UDS<br>Postoperative pad test, mean (SD): A: 8.4 (16.44), B: 39.4 (39.53) grams, P = 0.01<br>Operative time, mean (SD): A: 69.5 (23.7), B: 21.1 (3.8) minutes, P < 0.001<br>Length of hospital stay, mean (SD): A: 44.4 (5.8), B: 28.8 (8.4) hours, P < 0.001 |
| Notes | SAFYRE consists of a monofilament polypropylene mesh between 2 silicone columns made of multiple cone-shaped soft tissue anchors. The 2 columns are fixed to the obturator muscle. Pubovaginal sling uses rectus fascia |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|

**Silva Filho 2006** *(Continued)*

| | | |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Song 2004**

| | |
|---|---|
| Methods | Design: RCT of TVT compared with autologous fascia lata pubovaginal sling<br>Setting: single centre |
| Participants | 67 women with SUI were randomised. Basline comparisons of age, menopausal status, parity, SUI, mixed incontinence, and intrinsic sphincter dysfunction were made<br>Inclusion criteria: type II to IV SUI, mixed SUI, intrinsic sphincter dysfunction, failed previous operations<br>Mixed incontinence was included in this study |
| Interventions | A (19): autologous fascia lata pubovaginal sling<br>B (48): TVT |
| Outcomes | Cure rates and operative morbidity<br>Damage to bladder, urinary retention, difficulty voiding<br>Incontinent at 3 months: A: 1/19, B: 3/48<br>Not improved at 3 months A: 0/19, B: 0/48<br>Operative time (SD): A: 125 (13), B: 27 (5) minutes<br>Mean length of hospital stay: A: 7.2, B: 1.8 days<br>Mean time to catheter removal: A: 5.3, B: 1 days<br>Complications:<br>Voiding dysfunction: A: 3/19, B: 3/48<br>Urinary retention: A: 2/19, B: 0/48<br>Bladder injury: A: 0/19, B: 2/48<br>Detrusor overactivity: A: 1/19, B: 3/48 |
| Notes | Follow-up on average was between 20 and 37 months. Cure rates were assessed at 3 months<br>Full text was translated from Chinese |

**Song 2004** *(Continued)*

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Unclear risk | Divided into 2 groups randomly (no details given, but numbers in groups unequal) |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No missing outcome data |

**Tcherniakovsky 2009**

| | |
|---|---|
| Methods | Design: RCT<br>Follow-up at 12 months |
| Participants | 41 women randomly distributed into 2 groups. Patients had similar baseline characteristics (age, BMI, parity, vaginal births, postmenopausal conditions, hormone replacement therapy, previous SUI surgery, genital prolapse, previous surgery/previous hysterectomy, disease duration)<br>Inclusion criteria: USI, confirmed through medical history, physical exam, and urodynamic investigation |
| Interventions | A (20): retropubic sling (aponeurotic sling)<br>B (21): SAFYRE TOT (synthetic transobturator) |
| Outcomes | Cure was defined as the reported absence of SUI and no urinary loss during effort manoeuvres (combined outcome) during 12-month follow-up re-evaluation<br>Failure at 12 months: A: 1/20, B: 2/21<br>Operative time, mean (SD): A: 59.7 (10.3), B: 12.8 (2.4) minutes<br>Time to catheter removal: A: 2, B: 1 day<br>Complications:<br>All complications: A: 12/20, B: 3/21<br>UTI: A: 2/20 B: 0/21<br>Bladder perforation: A: 1/20, B: 0/21<br>Urinary retention: A: 2/21, B: 3/20<br>Vaginal mesh erosion (isolated): A: 0/20, B: 1/21 |
| Notes | Physical exam specifically evaluated urinary loss through Valsalva maneuver and presence of other concurrent dystopia of pelvic floor (anterior, posterior, and apical), using POP-Q classification |

**Tcherniakovsky 2009** *(Continued)*

| | |
|---|---|
| | VLPP standardised in this study at 200 mL of vesical repletion<br><br>Urodynamic study performed on every patient included |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Patients "randomly distributed". No details provided |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | No missing outcome data |

**Teixeira 2008**

| | |
|---|---|
| Methods | Design: RCT. Details not given in abstract<br><br>Follow-up: 24 hours and 90 days |
| Participants | 42 patients were randomised (porcine collagen 21, polypropylene tapes 21)<br><br>Inclusion criteria: stress urinary incontinence |
| Interventions | A (21): porcine collagen<br><br>B (21): polypropylene tapes |
| Outcomes | No outcome measure relevant to this review<br><br>C-reactive protein and white blood count measured previous day and at 24 hours after surgery<br><br>Biopsy at 90 days post operation for local inflammatory markers (polymorphonuclear cells, mononuclear cells, giant cells, and neovascularisation) and collagen reaction (collagen amount, composition, and organisation) |
| Notes | Trial assessing systemic and local inflammatory responses with different sling materials |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | No details provided |
| Allocation concealment (selection bias) | Unclear risk | "blindly randomised" - no details provided |
| Blinding (performance bias and detection bias) | Unclear risk | Not mentioned |

**Teixeira 2008** *(Continued)*

| | | |
|---|---|---|
| All outcomes | | |
| Incomplete outcome data (attrition bias) All outcomes | Unclear risk | 2 patients with missing outcome data. No details provided on whether losses were similar in both groups or within a single arm of the trial |

**Teleb 2011**

| | |
|---|---|
| Methods | Design: prospective randomised study<br>All operations were performed by the same surgical team |
| Participants | 32 women with main complaint of SUI established by history, examination, and urodynamic evaluation<br>Exclusion criteria: neurological disease, overactive bladder, other causes and forms of incontinence (overflow or pure urge), recurrent SUI (after anti-incontinence procedure), any form of prolapse requiring surgery (only cases with grade 1 asymptomatic cysto-urethrocoele included) |
| Interventions | Transvaginal tension-free mid-urethral slings were used under the mid-urethra via a retropubic route<br>A (12): anterior rectus sheath sling harvested via 7-cm Pfannenstiel incision and with 0 Prolene suture placed at each end to be pulled up<br>B (12): 7 × 1.5-cm tailored Prolene strip with 0 Prolene sutures placed at each end to be used as a sling<br>C (8): rectangular anterior vaginal wall patch 5 × 1.5 cm harvested and placed under mid-urethra with Prolene sutures in the same manner |
| Outcomes | Cured defined as no leakage reported by patient or noticed at examination (at ˜ 18 months): A: 8/12, B: 9/12, C: 6/8<br>Improved defined as leakage occurring only with severe exertion unlike before surgery (at 3 months): A: 3/12, B: 2/12, C: 1/8<br>Failure: A: 1/12, B: 1/12, C: 1/8<br>Operative blood loss, mean (SD; range): A: 181.2 (33.1; 130 to 230), B: 149.2 (28.8; 100 to 200), C: 200.8 (28.1; 160 to 360)<br>Duration minutes, mean (SD; range): A 52.1 (4.4; 45 to 60), B 35.7 (3.4; 30 to 40), C 42.2 (4.5; 35 to 50)<br>Hospital stay (hours), mean (SD; range): A: 58 (12.3; 48 to 72), B: 33 (9; 24 to 48), C 36 (9.1; 24 to 48)<br>Adverse outcome: bladder perforation: A: 0/12, B:1/12, C: 1/8<br>Urinary retention: managed by urethral dilators: A: 0/12, B: 1/12, C: 0/8 |
| Notes | Mean follow-up was 18, 18.5, and 18 months in Groups A, B, and C. 11 patients completed 36 months of follow-up (A: 4, B: 4, C: 3) |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | No information |
| Allocation concealment (selection bias) | Unclear risk | No information |

**Teleb 2011** *(Continued)*

| | | |
|---|---|---|
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No differential dropout was reported at 18 months. Only 11/32 patients completed 36 months of follow-up. No outcome data were provided at 36 months |

**Viseshsindh 2003**

| | |
|---|---|
| Methods | Design: RCT. Method not clarified<br>Only short-term follow-up reported |
| Participants | 26 women with stress urinary incontinence |
| Interventions | A (15): fascial sling<br>B (11): vaginal wall sling |
| Outcomes | Measures of outcomes included SEAPI-QMN questionnaire, presence of SUI at postoperative period, urinary symptoms and hospital stay at 3 months (median follow-up 7 months):<br>SEAPI scores: decreased from 6.1 to 0.9 for B, from 6.3 to 0.8 for A<br>Persistent SUI: A: 1/15, B: 0/11<br>Urgency incontinence: A: 2/15, B: 1/11<br>Serious postoperative complications: A: 0/15, B: 0/11<br>Permanent urinary retention (voiding disorder): A: 0/15, B: 0/11 |
| Notes | All procedures performed by the same surgeon |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Insufficient information |
| Allocation concealment (selection bias) | Unclear risk | Not mentioned |
| Blinding (performance bias and detection bias) All outcomes | Unclear risk | Not mentioned |
| Incomplete outcome data (attrition bias) All outcomes | Low risk | No missing outcome data |

**Wadie 2005**

| | |
|---|---|
| Methods | Design: RCT. Randomisation by closed envelope delivered to surgeon by a third party. Procedures performed by 1 surgeon<br><br>Follow-up: 6 months |
| Participants | 63 women (mean age 47.8 years) with SUI were randomised; all had similar background characteristics (age, BMI, parity, grade of associated cystocoele)<br><br>Inclusion criteria: age > 21 years, predominant symptom of SUI, willing to give informed consent, life expectancy > 1 year, normal upper urinary tract, normal manual dexterity<br><br>Exclusion criteria: pelvic or vaginal surgery within 6 months, urgency urinary incontinence as predominant symptom, > grade 2 cystocoele, associated urethral pathology (e.g. diverticulum), associated bladder pathology (e.g. fistula, culture-proven, active UTI)<br><br>12 lost to follow-up; no information about which group |
| Interventions | A (25): autologous fascial sling (harvested from rectus sheath)<br><br>B (28): TVT<br><br>Concomitant surgery: grade 2 or 3 cystocoele or rectocoele (27)<br><br>Median follow-up: 54 (± 21.9) (range 24 to 102 months) |
| Outcomes | Cure defined as complete dryness with no usage of pad and negative cough-stress test<br><br>Not cured at 6 months: A: 2/25, B: 2/28<br><br>Operative time, mean (SD) N: A: 68 (23) 25, B: 48 (25) 28 minutes<br><br>Time to catheter removal, mean (SD) N: A: 6.6 (5.3) 25, B: 4.3 (2.6) 28 days<br><br>Complications:<br><br>Bladder perforation: A: 1/25, B: 2/28<br><br>De novo detrusor overactivity at 6 months: A: 1/23, B: 0/24<br><br>Stitch sinus at 1 week: A: 0/25, B: 1/28<br><br>Vaginal erosion: A: 0/25, B: 0/28<br><br>Wound pain at 6 months: A: 7/25, B: 2/28<br><br>Voiding dysfunction: A: 7/25, B: 3/28<br><br>2-year results:<br><br>NB: denominators reported at 2 years were different from those reported at 6 months<br><br>Quality of life/condition-specific score:<br><br>UDI-6, mean (SD) N: A: 31.7 (16.9) 39; B: 24.4 (19.1) 24 (higher is worse)<br><br>IIQ-7, mean (SD) N: A: 24.4 (20.5) 39; B: 23.8 (21.6) 24 (higher is worse)<br><br>Female sexual function Index (FSFI): no reference to score cited; SD not given<br><br>Data on pain, satisfaction, lubrication, desire, arousal, and orgasm also provided but not used due to uncertainty about the instrument |
| Notes | |

**Wadie 2005** *(Continued)*

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | Unclear risk | Not mentioned |
| Allocation concealment (selection bias) | Low risk | Closed opaque envelopes held by a non-involved third party who revealed the allocation after patient was anaesthetised just before start of surgery |
| Blinding (performance bias and detection bias)<br>All outcomes | Low risk | Outcomes collected by nurse blinded to treatment allocation |
| Incomplete outcome data (attrition bias)<br>All outcomes | High risk | Differential dropout at 2 years |

**Zargham 2013**

| | |
|---|---|
| Methods | Design: quasi-randomised clinical trial<br><br>Setting: Isfahan University of Medical Sciences, Iran<br><br>Follow-up: 3 days and 18 days; 1, 6, 12, and 18 months |
| Participants | Inclusion criteria: 56 women with severe SUI or mixed urinary incontinence with predominant stress component and anterior vaginal wall prolapse (grade 1 to 3 prolapse based on half-way classification system)<br><br>Severity of SUI was diagnosed by ICIQ-SF or a positive 1-hour pad test (> 10 grams urine loss with a full bladder)<br><br>Exclusion criteria: active urinary tract infection; urolithiasis; neurogenic bladder; urogenital malignancy; high-grade rectocoele, enterocoele, or cystocoele; > POP stage 3<br><br>28 women (56%) had previous surgery: vaginal POP A: 12, B: 16; incontinence surgery A: 18, B: 21<br><br>Age, mean, years: A: 54.1, B: 55.9 |
| Interventions | A (26): anterior colporrhaphy (Kelly placation) and sling placement with a strip of anterior vaginal wall tied over rectus fascia and placed tension-free under the mid-urethra<br><br>B (30): TVT (craniocaudal, top-to-bottom, SPARC) with transvaginal tension-free self-fixing sling for mesh correction of anterior vaginal wall prolapse with a T-sling mesh kit (Herniamesh Company Polypropylene, Italy). Monofilament non-woven polypropylene with central portion of mesh absorbable - used for both SUI and cystocoele repair |
| Outcomes | Objective assessment via 48-hour frequency volume chart, 48-hour pad test, and standardised stress test<br><br>Surgery was considered successful when there was no postoperative SUI (patient was dry and stress test was negative) and postoperative cystocoele was less than grade 2<br><br>Objective and subjective cure rates were evaluated between 3 and 18 days, and 1, 6, 12, and 18 months after surgery (data extracted from graphs)<br><br>Cure at 18 months (from abstract): A: 54%, B: 72% |

**Zargham 2013** *(Continued)*

| | |
|---|---|
| | Subjective cure (graph 1):<br>12 months: A: 14/25, B: 19/25<br>18 months: A: 13/25, B: 18/25<br>Objective cure (graph 1):<br>12 months: A: 13/25, B: 20/25<br>18 months: A: 13/25, B: 20/25<br>Mean duration of operation, minutes (SD): A: 42 (20), B: 56 (24)<br>Mean duration of hospital stay, days (SD): A: 2.88 (0.94), B: 2.07 (0.92)<br>Any complications (from abstract): A: 9/25, B: 3/25<br>Short-term complications:<br>Vaginal bleeding: A: 5/25, B: 3/25<br>Haematoma: A: 0/25, B: 2/25<br>Bladder injury: A: 1/25, B: 2/25<br>Long-term complications (> 1 month):<br>Cystitis: A: 3/25, B: 3/25<br>Vaginal erosion: A: 0/25, B: 2/25<br>De novo urgency: A: 0/25, B: 2/25<br>Recurrence of SUI: A: 8/25, B: 1/25<br>Chronic urinary retention: A: 0/25, B: 4/25 |
| Notes | Denominators in the table are different from those in the text |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Random sequence generation (selection bias) | High risk | File number (assumed to be alternation by record number) |
| Allocation concealment (selection bias) | Unclear risk | Randomised into 2 groups |
| Blinding (performance bias and detection bias)<br>All outcomes | Unclear risk | No information |
| Incomplete outcome data (attrition bias)<br>All outcomes | Low risk | Only 1 patient reported as lost to follow-up, but data reported for 25 in each group (actual loss of 4 and 5) |

BMI: body mass index.
ISD: intrinsic sphincter dysfunction.
MMK: Marshall-Marchetti-Krantz.
PVR: postvoid residual.
RCT: randomised controlled trial.

SUI: stress urinary incontinence.
UDS: urodynamics.
USI: urodynamic stress incontinence.

**Characteristics of excluded studies** *[ordered by study ID]*

| Study | Reason for exclusion |
|---|---|
| Amat 2007 | RCT. One mid-urethral sling vs another |
| Atherton 2000 | Not an RCT: non-randomised |
| Aurunkalaivanan 2001 | We are not sure about the population studied; it could be the same population as Barrington 2003 and Arunkalaivanan 2003 (included in the review). We have written to study authors to clarify this point |
| Barrington 2003 | We are not sure about the population studied; it could be the same population as Arunkalaivanan 2001 and Arunkalaivanan 2003 (included in the review). We have written to study authors to clarify this point |
| Brandt 2009 | Not an RCT: prospective longitudinal study |
| Bruschini 2005 | Not an RCT: no comparator group |
| Choe 2001 | All participants were randomised to undergo or not undergo pre-operative urodynamic evaluation. They then had implantation of sub-urethral Mycromesh sling. Therefore this study analyses the impact on effectiveness of a sling if the diagnosis of SUI is made with or without urodynamic evaluation |
| Chong 2003 | All participants had a TVT operation and were randomised to division/no division of tape |
| Corcos 2001 | Participants were randomised to surgery or collagen injection, but those in the surgery arm were selected to sling by patient option. Three types of operations could be chosen in the surgery group: Burch, sling, or bladder neck suspension. Results were reported in terms of collagen vs surgery |
| Darai 2007 | RCT; comparators not of interest<br><br>One mid-urethral sling vs another |
| Debodinance 1993 | Not all participants had stress incontinence. Debodinance 2000 is a 10-year follow-up of the first published study. This is a comparative study between Bologna (a sling made of strips of vaginal wall) and Ingelman-Sundberg procedures (anterior colporrhaphy with pubococcygeum muscle) |
| Debodinance 1994 | Not clear how participants were allocated. Paper in French; needs translation |
| Gamble 2010 | RCT in women with low-pressure urethra but of TVT vs TOT (TOT described as 'bladder neck sling') |
| Giri 2004 | We are not sure about the population studied; it could be the same population as Giri 2006, which has been excluded as it was a non-randomised study. We have made attempts to contact study authors |
| Giri 2006 | Not an RCT; non-randomised |
| Goldberg 2001 | Prolapse surgery rather than incontinence surgery |
| Halaska 2001 | Study comparing transvaginal tape vs colposuspension |
| Han 2001 | Study comparing transvaginal tape vs colposuspension |

| Study | Reason for exclusion |
|---|---|
| Hung 2001 | Not clear how patients were allocated; we have written to study authors |
| Ishenko 1999 | Randomisation process and groups unclear ('randomised by age'). Excluded as attempts to contact study authors were unsuccessful and insufficient information was given in the abstract Interventions: vaginal hysterectomy, modified Pereyra procedure, anterior and posterior repair vs vaginal hysterectomy, sling procedure with Mersilene mesh, anterior and posterior repair |
| Kocjancic 2008 | Study comparing transvaginal tape procedures; will be included in a separate review on self-fixing slings |
| Kuo 2001 | Comparison between rectus fascia and polypropylene mesh |
| Kwon 2002 | Not all patients had stress incontinence; all patients were treated for prolapse, but 1 group received concomitant transvaginal sling (processed fascia lata), 1 group received an alternate surgery for SUI, and the last group did not have SUI and received only treatment for prolapse |
| Lemieux 1991 | Interventions were for clamping vs non-clamping of catheters post anti-incontinence surgery |
| Liapis 2002 | Study comparing transvaginal tape vs colposuspension |
| Lim 2005 | Study comparing mid-urethral sling procedures |
| Meschia 2001 | Surgery for prolapse rather than incontinence |
| Naumann 2006 | This study is comparing tape procedures |
| O'Sullivan 2000 | Patients randomised to colposuspension or transvaginal tape. Reported outcome measures (collagen metabolism) not included in this review |
| Obrink 1978 | Not clear how patients were allocated. Request sent to study author October 2001 but no reply received |
| Oremus 2010 | RCT of injectables vs 3 types of surgery; not reported separately |
| Palomba 2008 | RCT of 3 different materials to carry out TOT; http://clinicaltrials.gov/show/NCT00744198 |
| Schostak 2001 | Unclear how patients were allocated. Bone anchoring used |
| Seo 2007 | One mid-urethral sling vs another |
| Trezza 2001 | Occult incontinence treated at the same time as prolapse repair performed |
| Wang 1999 | Randomised to different types of anaesthetic |
| Ward 2002a | Study comparing transvaginal tape vs colposuspension |
| Yoo 2007 | This study is comparing tape procedures |

RCT: randomised controlled trial.
SUI: stress urinary incontinence.
TOT: transobturator tape.
TVT: tension-free vaginal tape.

**Characteristics of studies awaiting assessment** *[ordered by study ID]*

### Abou Hashem 2017

| | |
|---|---|
| Methods | Please see Abouhashem 2014 |
| Participants | Please see Abouhashem 2014 |
| Interventions | Please see Abouhashem 2014 |
| Outcomes | Please see Abouhashem 2014 |
| Notes | Please note: this appears to be exactly the same abstract as the only report (a conference abstract) of the already included Abouhashem 2014. This study report was identified by the search conducted 23 January 2019, which has not been fully incorporated into this review |

### Hassan 2018

| | |
|---|---|
| Methods | |
| Participants | |
| Interventions | |
| Outcomes | |
| Notes | Ongoing trial. This study report was identified by the search conducted 23 January 2019, which has not been fully incorporated into this review |

### Kajbafzadeh 2017

| | |
|---|---|
| Methods | RCT. Single-blind trial. 'Randomly (computer-based) categorized into two groups' |
| Participants | 40 women aged 30 to 50 with proven pure type 3 SUI (USI) |
| Interventions | Acellular skin graft using tension-free vaginal tape (TVT) vs placement of synthetic mesh |
| Outcomes | Mean number of postsurgical problems and improvement in SUI |
| Notes | Ongoing trial<br>Start date: 08.12.2016 to 01.06.2018<br>Contact information: kajbafzd@sina.tums.ac.ir<br>This study report was identified by the search conducted 23 January 2019, which has not been fully incorporated into this review |

### Sharifiaghdas 2017

| | |
|---|---|
| Methods | |
| Participants | |
| Interventions | |

**Sharifiaghdas 2017** *(Continued)*

| | |
|---|---|
| Outcomes | |
| Notes | This is a report at 10 years of the already included Sharifiaghdas 2008 study. This study report was identified by the search conducted 23 January 2019, which has not been fully incorporated into this review |

RCT: randomised controlled trial.
SUI: stress urinary incontinence.
TVT: tension-free vaginal tape.
USI: urodynamic stress incontinence.

## Characteristics of ongoing studies *[ordered by study ID]*

**Hilton 2000**

| | |
|---|---|
| Trial name or title | A prospective randomised comparative trial of a tension-free vaginal tape (TVT) and fascial sling procedure for 'secondary' genuine stress incontinence |
| Methods | |
| Participants | 146 planned recruitment |
| Interventions | TVT vs fascial sling |
| Outcomes | No information |
| Starting date | |
| Contact information | |
| Notes | |

**Zhu 2014**

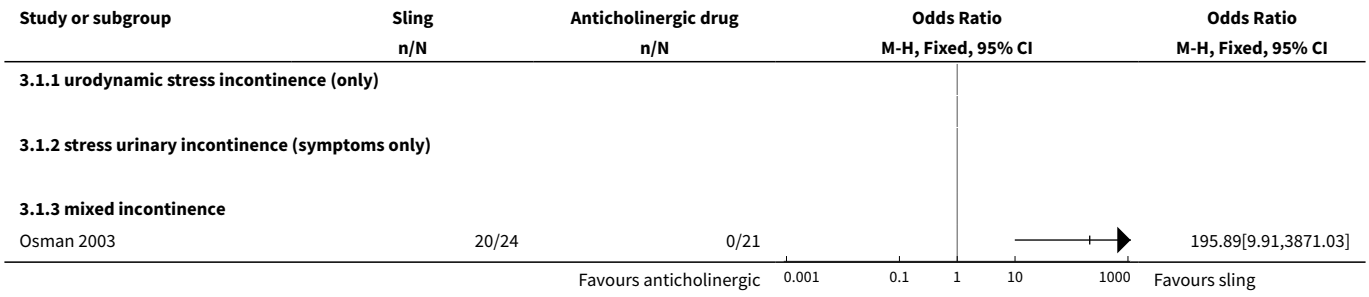
| | |
|---|---|
| Trial name or title | A multi-center, randomized, controlled clinical trial of the safety and efficacy of Regen sling treatment for female patients with stress urinary incontinence |
| Methods | Multi-centre, randomised, single-blind, positive parallel controlled, non-inferiority validation clinical trial: 'allocate random number to the patients in chronological order (random number allocation method: small to large' |
| Participants | Female patients with stress urinary incontinence |
| Interventions | Regen sling (high-biocompatibility polyvinylidene fluoride (PVDF)) vs transobturator sling TVT-O™ (Gynecare™, USA) |
| Outcomes | Anti-urinary incontinence effect; sexual life situation; vaginal tape erosion; improvement in patients' symptoms |
| Starting date | December 2014 to December 2015 |
| Contact information | tianquan@medprin.com; Professor Zhu Lan |
| Notes | |

## DATA AND ANALYSES

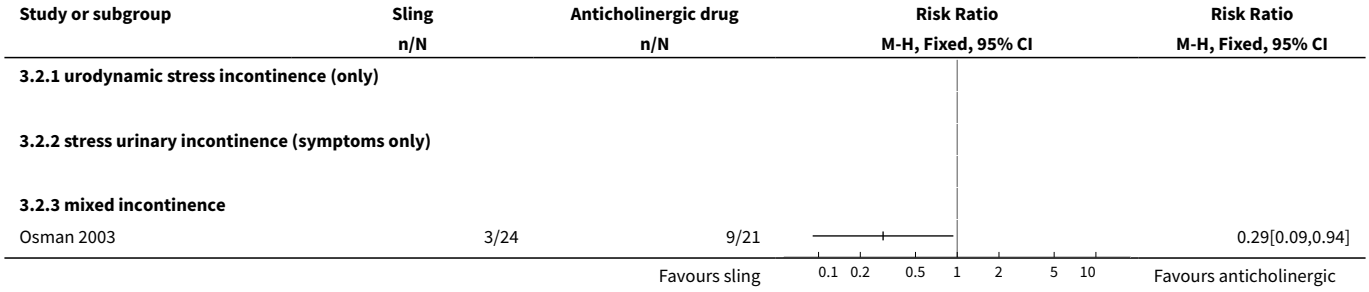
### Comparison 3. Traditional suburethral sling operation versus drugs

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Urge urinary symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

### Analysis 3.1. Comparison 3 Traditional suburethral sling operation versus drugs, Outcome 1 Number of continent women within 1 year (any definition).



**Analysis 3.2. Comparison 3 Traditional suburethral sling operation versus drugs, Outcome 2 Urge urinary symptoms, urgency urinary incontinence.**




## Comparison 4. Traditional suburethral sling operation versus injectables

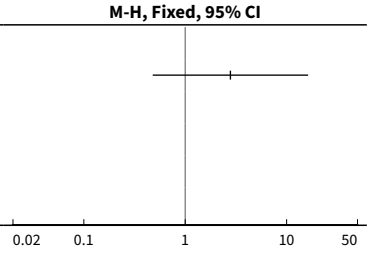
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of continent women at 1 to 5 years (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Number of women cured after first year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 4.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women satisfied (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Number of women with urinary incontinence within first year (clinician's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 De novo detrusor overactivity (urodynamic diagnosis) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Voiding dysfunction | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of partici-pants | Statistical method | Effect size |
|---|---|---|---|---|
| 9.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

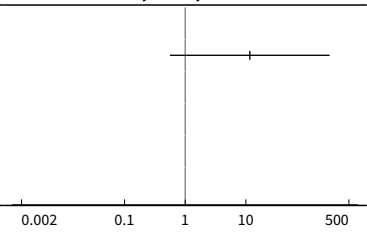
**Analysis 4.1. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 1 Number of continent women within 1 year (any definition).**

| Study or subgroup | Traditional sling n/N | Injectable n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **4.1.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 19/21 | 17/22 | | 2.79[0.48,16.33] |
| **4.1.2 stress urinary incontinence (symptoms only)** | | | | |
| **4.1.3 mixed urinary incontinence** | | | | |



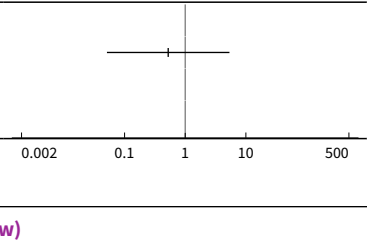

**Analysis 4.2. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 2 Number of continent women at 1 to 5 years (any definition).**

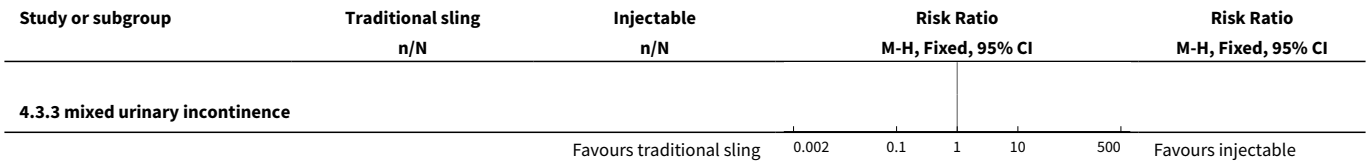
| Study or subgroup | Traditional sling n/N | Injectable n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **4.2.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 13/13 | 10/14 | | 11.57[0.56,239.74] |
| **4.2.2 stress urinary incontinence (symptoms only)** | | | | |
| **4.2.3 mixed urinary incontinence** | | | | |



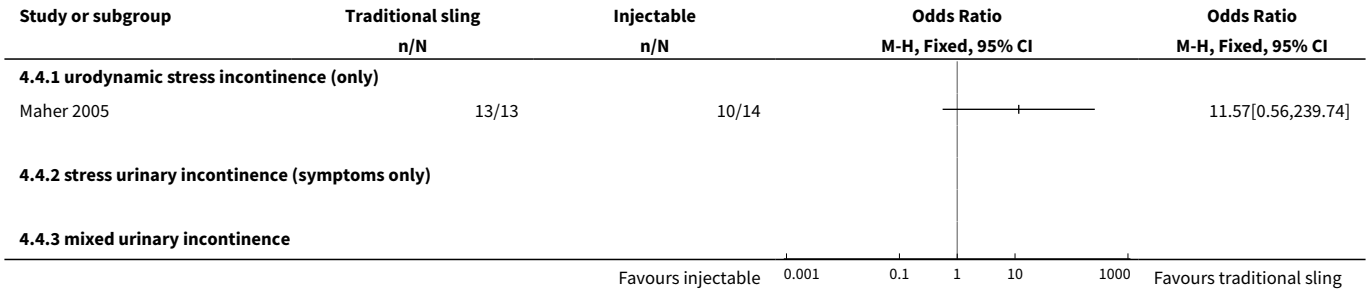

**Analysis 4.3. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 3 Repeat surgery for urinary incontinence.**

| Study or subgroup | Traditional sling n/N | Injectable n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **4.3.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 1/21 | 2/22 | | 0.52[0.05,5.36] |
| **4.3.2 stress urinary incontinence (symptoms only)** | | | | |

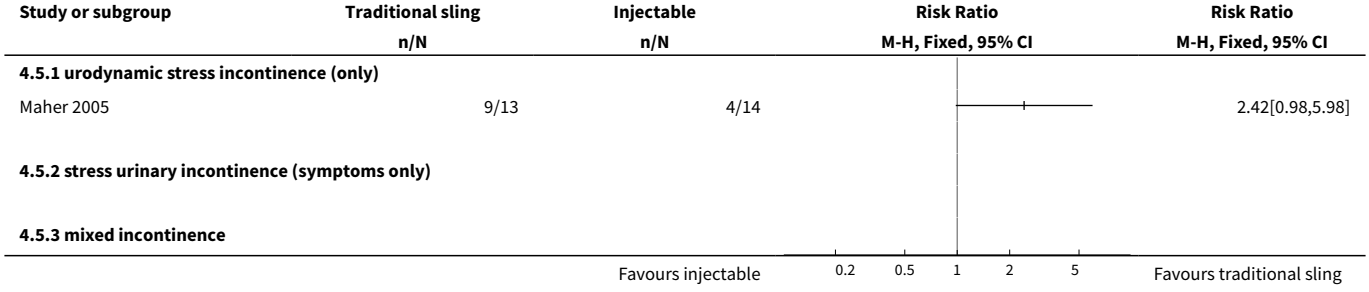




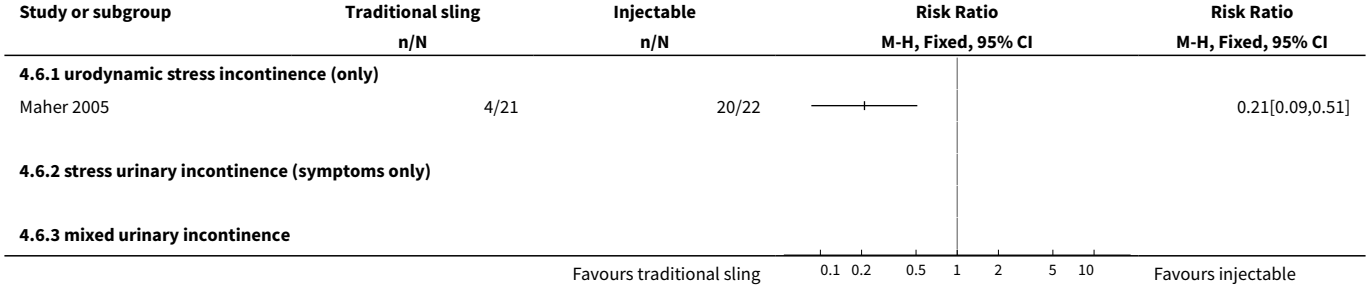

## Analysis 4.4. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 4 Number of women cured after first year (women's observations).



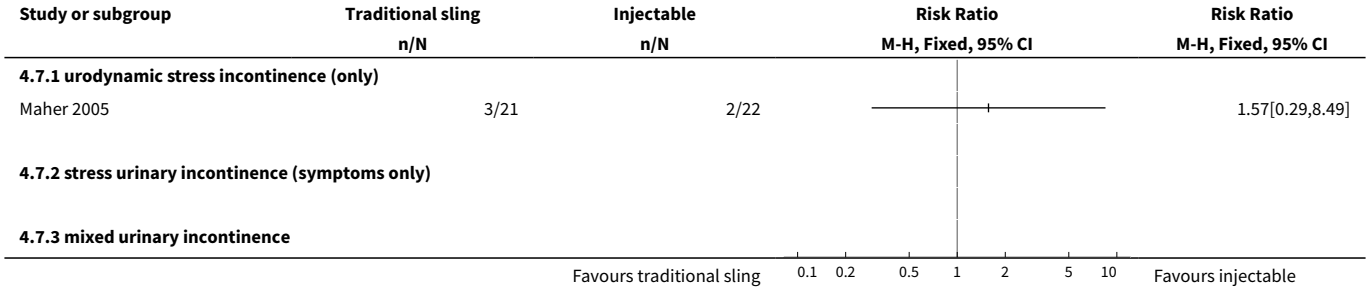

## Analysis 4.5. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 5 Number of women satisfied (women's observations).



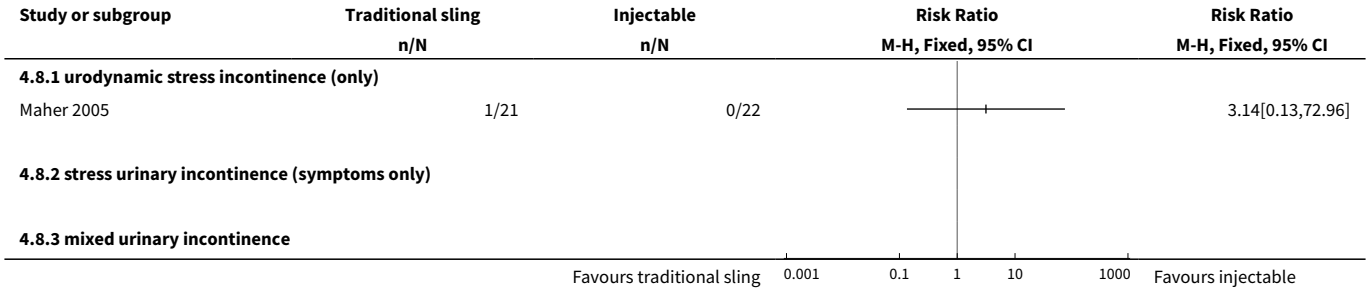

## Analysis 4.6. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 6 Number of women with urinary incontinence within first year (clinician's observations).



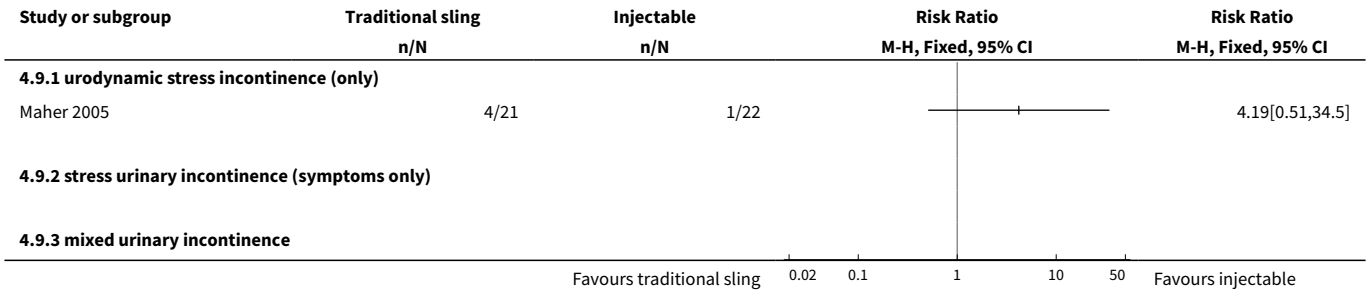
### Analysis 4.7. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 7 Urinary tract infection.




### Analysis 4.8. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 8 De novo detrusor overactivity (urodynamic diagnosis).




### Analysis 4.9. Comparison 4 Traditional suburethral sling operation versus injectables, Outcome 9 Voiding dysfunction.




## Comparison 6. Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal)

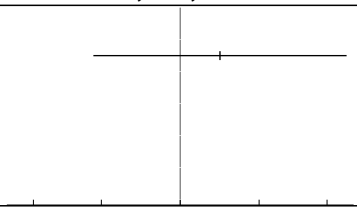
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of continent women at 1 to 5 years (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 CURE: number of women cured after first year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Length of hospital stay (hours) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Perioperative surgical complications | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Urinary urgency symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Detrusor overactivity (urodynamic diagnosis) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Voiding dysfunction after 3 months | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

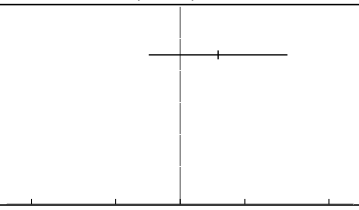
**Analysis 6.1. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 1 Number of continent women within 1 year (any definition).**

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **6.1.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 8/10 | | 2.25[0.17,29.77] |
| **6.1.2 stress urinary incontinence (symptoms only)** | | | | |
| **6.1.3 mixed incontinence** | | | | |



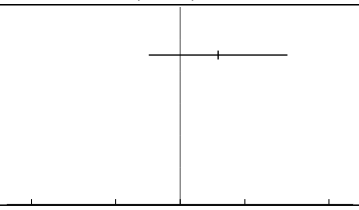
## Analysis 6.2. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 2 Number of continent women at 1 to 5 years (any definition).

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **6.2.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 7/10 | | 3.86[0.33,45.57] |
| **6.2.2 stress urinary incontinence (symptoms only)** | | | | |
| **6.2.3 mixed incontinence** | | | | |



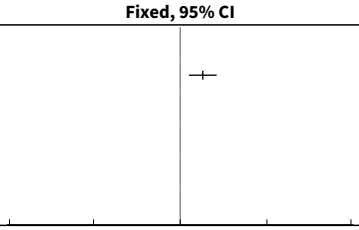

## Analysis 6.3. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 3 CURE: number of women cured after first year (women's observations).

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **6.3.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 7/10 | | 3.86[0.33,45.57] |
| **6.3.2 stress urinary incontinence (symptoms only)** | | | | |
| **6.3.3 mixed incontinence** | | | | |



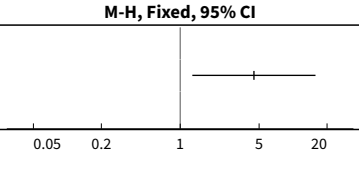

## Analysis 6.4. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 4 Length of hospital stay (hours).

| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Needle suspension N | Needle suspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **6.4.1 urodynamic stress incontinence (only)** | | | | | | |
| Hilton 1989 | 10 | 20 (12.9) | 10 | 7 (0.3) | | 13[5,21] |
| **6.4.2 stress urinary incontinence (symptoms only)** | | | | | | |
| **6.4.3 mixed incontinence** | | | | | | |

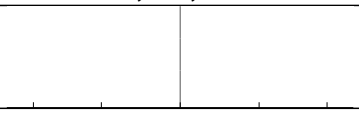



## Analysis 6.5. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 5 Perioperative surgical complications.

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **6.5.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 2/10 | | 4.5[1.28,15.81] |

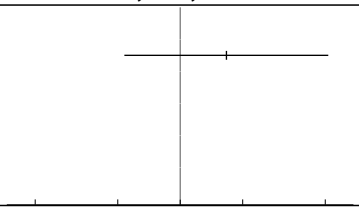


| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| 6.5.2 stress urinary incontinence (symptoms only) | | | | |
| 6.5.3 mixed incontinence | | | | |



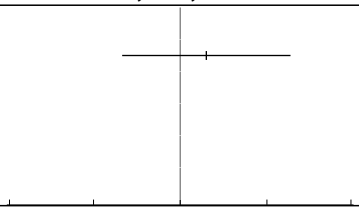

## Analysis 6.6. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 6 Urinary urgency symptoms, urgency urinary incontinence.

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| 6.6.1 urodynamic stress incontinence (only) | | | | |
| Hilton 1989 | 5/10 | 3/10 | | 1.67[0.54,5.17] |
| 6.6.2 stress urinary incontinence (symptoms only) | | | | |
| 6.6.3 mixed incontinence | | | | |



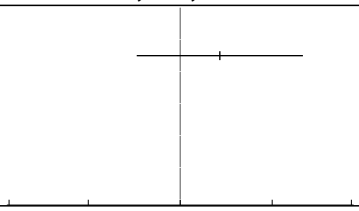

## Analysis 6.7. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 7 Detrusor overactivity (urodynamic diagnosis).

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| 6.7.1 urodynamic stress incontinence (only) | | | | |
| Hilton 1989 | 2/10 | 1/10 | | 2[0.21,18.69] |
| 6.7.2 stress urinary incontinence (symptoms only) | | | | |
| 6.7.3 mixed incontinence | | | | |




## Analysis 6.8. Comparison 6 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 8 Voiding dysfunction after 3 months.

| Study or subgroup | Traditional sling n/N | Needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| 6.8.1 urodynamic stress incontinence (only) | | | | |
| Hilton 1989 | 4/10 | 2/10 | | 2[0.47,8.56] |
| 6.8.2 stress urinary incontinence (symptoms only) | | | | |
| 6.8.3 mixed incontinence | | | | |



**Comparison 7. Traditional suburethral sling operation versus open abdominal retropubic colposuspension**

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 4 | 147 | Odds Ratio (M-H, Fixed, 95% CI) | 2.70 [0.69, 10.55] |
| 1.1 urodynamic stress incontinence (only) | 4 | 147 | Odds Ratio (M-H, Fixed, 95% CI) | 2.70 [0.69, 10.55] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of continent women at 1 to 5 years (any definition) | 4 | 687 | Odds Ratio (M-H, Fixed, 95% CI) | 1.70 [1.22, 2.37] |
| 2.1 urodynamic stress incontinence (only) | 3 | 167 | Odds Ratio (M-H, Fixed, 95% CI) | 1.84 [0.65, 5.24] |
| 2.2 stress urinary incontinence (symptoms only) | 1 | 520 | Odds Ratio (M-H, Fixed, 95% CI) | 1.69 [1.19, 2.39] |
| 2.3 mixed incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Number of continent women after 5 years (any definition) | 2 | 481 | Odds Ratio (M-H, Fixed, 95% CI) | 1.55 [1.06, 2.27] |
| 3.1 urodynamic stress incontinence (only) | 1 | 28 | Odds Ratio (M-H, Fixed, 95% CI) | 0.39 [0.03, 4.92] |
| 3.2 stress urinary incontinence (symptoms only) | 1 | 453 | Odds Ratio (M-H, Fixed, 95% CI) | 1.61 [1.09, 2.37] |
| 3.3 mixed incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women cured after first year (women's observations) | 3 | 515 | Odds Ratio (M-H, Fixed, 95% CI) | 1.56 [1.07, 2.28] |
| 5.1 urodynamic stress incontinence (only) | 2 | 62 | Odds Ratio (M-H, Fixed, 95% CI) | 0.93 [0.18, 4.89] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 5.2 stress urinary incontinence (symptoms only) | 1 | 453 | Odds Ratio (M-H, Fixed, 95% CI) | 1.61 [1.09, 2.37] |
| 5.3 mixed incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Number of women satisfied (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Number of women with urinary incontinence within first year (clinician's observations) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Number of women with urinary incontinence at 1 to 5 years (clinician's observations) | 3 | 626 | Risk Ratio (M-H, Fixed, 95% CI) | 0.88 [0.59, 1.31] |
| 8.1 urodynamic stress incontinence (only) | 2 | 106 | Risk Ratio (M-H, Fixed, 95% CI) | 0.54 [0.16, 1.86] |
| 8.2 stress urinary incontinence (symptoms only) | 1 | 520 | Risk Ratio (M-H, Fixed, 95% CI) | 0.94 [0.62, 1.42] |
| 8.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Number of women with urinary incontinence after 5 years (clinician's observations) | 2 | 461 | Risk Ratio (M-H, Fixed, 95% CI) | 0.90 [0.80, 1.01] |
| 9.1 urodynamic stress incontinence (only) | 1 | 28 | Risk Ratio (M-H, Fixed, 95% CI) | 0.23 [0.01, 4.37] |
| 9.2 stress urinary incontinence (symptoms only) | 1 | 433 | Risk Ratio (M-H, Fixed, 95% CI) | 0.91 [0.81, 1.02] |
| 9.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Duration of operation (minutes) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |

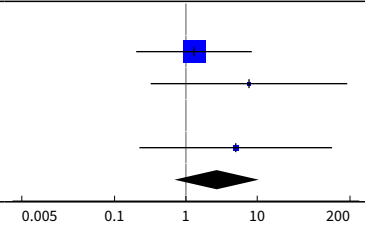
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 10.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.3 mixed incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Length of hospital stay (days) | 3 | 137 | Mean Difference (IV, Fixed, 95% CI) | 2.03 [1.47, 2.59] |
| 11.1 urodynamic stress incontinence (only) | 3 | 137 | Mean Difference (IV, Fixed, 95% CI) | 2.03 [1.47, 2.59] |
| 11.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12 Time to catheter removal (days) | 2 | 108 | Mean Difference (IV, Fixed, 95% CI) | 8.01 [6.84, 9.18] |
| 12.1 urodynamic stress incontinence (only) | 2 | 108 | Mean Difference (IV, Fixed, 95% CI) | 8.01 [6.84, 9.18] |
| 12.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Time to return to normal activity level | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14 Number of women requiring treatment for pelvic organ prolapse | 3 | 559 | Risk Ratio (M-H, Fixed, 95% CI) | 0.20 [0.05, 0.77] |
| 14.1 urodynamic stress incontinence (only) | 2 | 106 | Risk Ratio (M-H, Fixed, 95% CI) | 0.2 [0.04, 1.11] |
| 14.2 stress urinary incontinence (symptoms only) | 1 | 453 | Risk Ratio (M-H, Fixed, 95% CI) | 0.20 [0.02, 1.74] |
| 14.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15 Perioperative surgical complications | 4 | 792 | Risk Ratio (M-H, Fixed, 95% CI) | 1.24 [0.83, 1.86] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 15.1 urodynamic stress incontinence (only) | 3 | 137 | Risk Ratio (M-H, Fixed, 95% CI) | 0.85 [0.28, 2.52] |
| 15.2 stress urinary incontinence (symptoms only) | 1 | 655 | Risk Ratio (M-H, Fixed, 95% CI) | 1.32 [0.86, 2.04] |
| 15.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16 Bladder perforation | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 16.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 17.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18 Number of women with recurrent UTIs at > 5 years | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Urinary urgency symptoms, urgency urinary incontinence | 2 | 525 | Risk Ratio (M-H, Fixed, 95% CI) | 1.10 [0.74, 1.64] |
| 19.1 urodynamic stress incontinence (only) | 1 | 72 | Risk Ratio (M-H, Fixed, 95% CI) | 2.0 [0.54, 7.39] |
| 19.2 stress urinary incontinence (symptoms only) | 1 | 453 | Risk Ratio (M-H, Fixed, 95% CI) | 1.02 [0.67, 1.56] |
| 19.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 Detrusor overactivity (urodynamic diagnosis) | 4 | 203 | Risk Ratio (M-H, Fixed, 95% CI) | 1.42 [0.52, 3.87] |

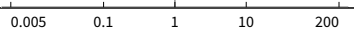
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 20.1 urodynamic stress incontinence (only) | 4 | 203 | Risk Ratio (M-H, Fixed, 95% CI) | 1.42 [0.52, 3.87] |
| 20.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21 Voiding dysfunction after 3 months | 5 | 853 | Risk Ratio (M-H, Fixed, 95% CI) | 6.08 [3.10, 11.95] |
| 21.1 urodynamic stress incontinence (only) | 4 | 198 | Risk Ratio (M-H, Fixed, 95% CI) | 4.48 [1.16, 17.36] |
| 21.2 stress urinary incontinence (symptoms only) | 1 | 655 | Risk Ratio (M-H, Fixed, 95% CI) | 6.63 [3.04, 14.47] |
| 21.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22 Long-term voiding dysfunction > 5 years | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 22.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23 Condition-specific measures to assess quality of life | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 23.1 Urinary Distress Index (UDI) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 Incontinence Impact Questionnaire (IIQ) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

**Analysis 7.1. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 1 Number of continent women within 1 year (any definition).**

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.1.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 26/28 | 30/33 | | 71.05% | 1.3[0.2,8.39] |
| Fischer 2001 | 11/11 | 7/9 | | 12.31% | 7.67[0.32,183.01] |
| Henriksson 1978 | 15/15 | 15/15 | | | Not estimable |
| Sand 2000 | 17/17 | 17/19 | | 16.63% | 5[0.22,111.86] |
| **Subtotal (95% CI)** | **71** | **76** | | **100%** | **2.7[0.69,10.55]** |

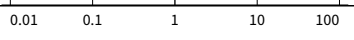


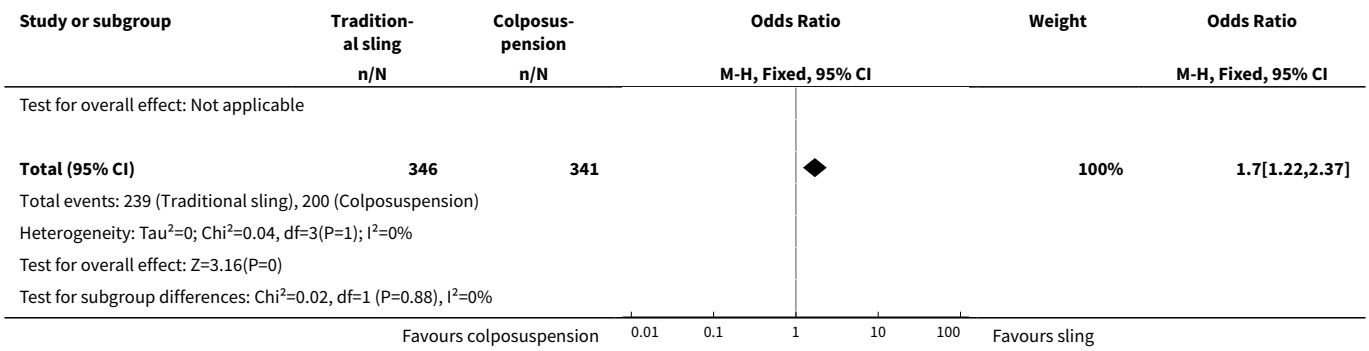
| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Total events: 69 (Traditional sling), 69 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=1.16, df=2(P=0.56); I²=0% | | | | | |
| Test for overall effect: Z=1.43(P=0.15) | | | | | |
| **7.1.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **7.1.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **71** | **76** | | **100%** | **2.7[0.69,10.55]** |
| Total events: 69 (Traditional sling), 69 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=1.16, df=2(P=0.56); I²=0% | | | | | |
| Test for overall effect: Z=1.43(P=0.15) | | | | | |
| Test for subgroup differences: Not applicable | | | | | |



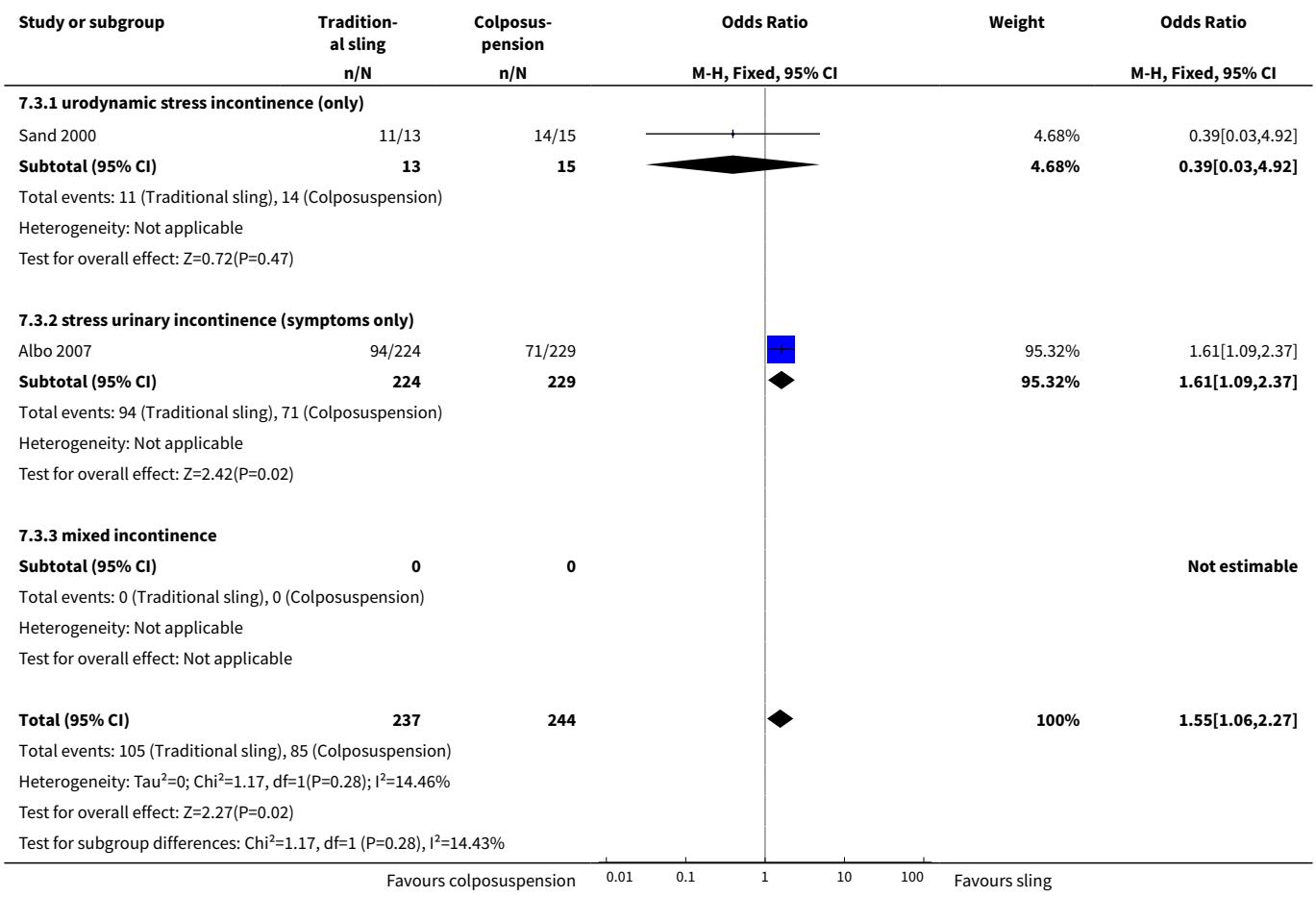

## Analysis 7.2. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 2 Number of continent women at 1 to 5 years (any definition).

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.2.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 26/28 | 29/33 | | 3.53% | 1.79[0.3,10.61] |
| Demirci 2001 | 16/17 | 15/17 | | 1.64% | 2.13[0.17,26.03] |
| Enzelsberger 1996 | 33/36 | 31/36 | | 4.79% | 1.77[0.39,8.06] |
| **Subtotal (95% CI)** | **81** | **86** | | **9.95%** | **1.84[0.65,5.24]** |
| Total events: 75 (Traditional sling), 75 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0.02, df=2(P=0.99); I²=0% | | | | | |
| Test for overall effect: Z=1.14(P=0.25) | | | | | |
| **7.2.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 164/265 | 125/255 | | 90.05% | 1.69[1.19,2.39] |
| **Subtotal (95% CI)** | **265** | **255** | | **90.05%** | **1.69[1.19,2.39]** |
| Total events: 164 (Traditional sling), 125 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.94(P=0) | | | | | |
| **7.2.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |



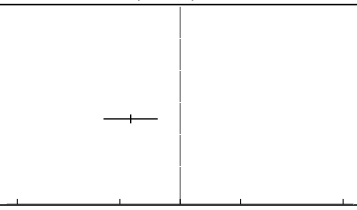



## Analysis 7.3. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 3 Number of continent women after 5 years (any definition).



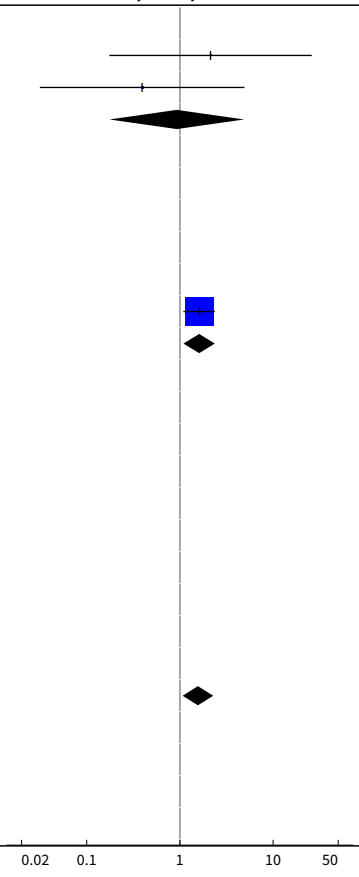
## Analysis 7.4. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 4 Repeat surgery for urinary incontinence.

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **7.4.1 urodynamic stress incontinence (only)** | | | | |
| **7.4.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 4/223 | 27/227 | | 0.15[0.05,0.42] |
| **7.4.3 mixed incontinence** | | | | |

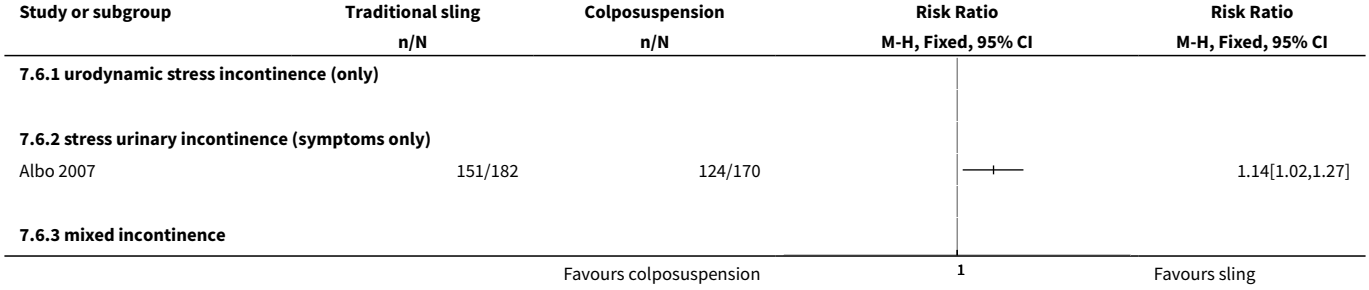



## Analysis 7.5. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 5 Number of women cured after first year (women's observations).

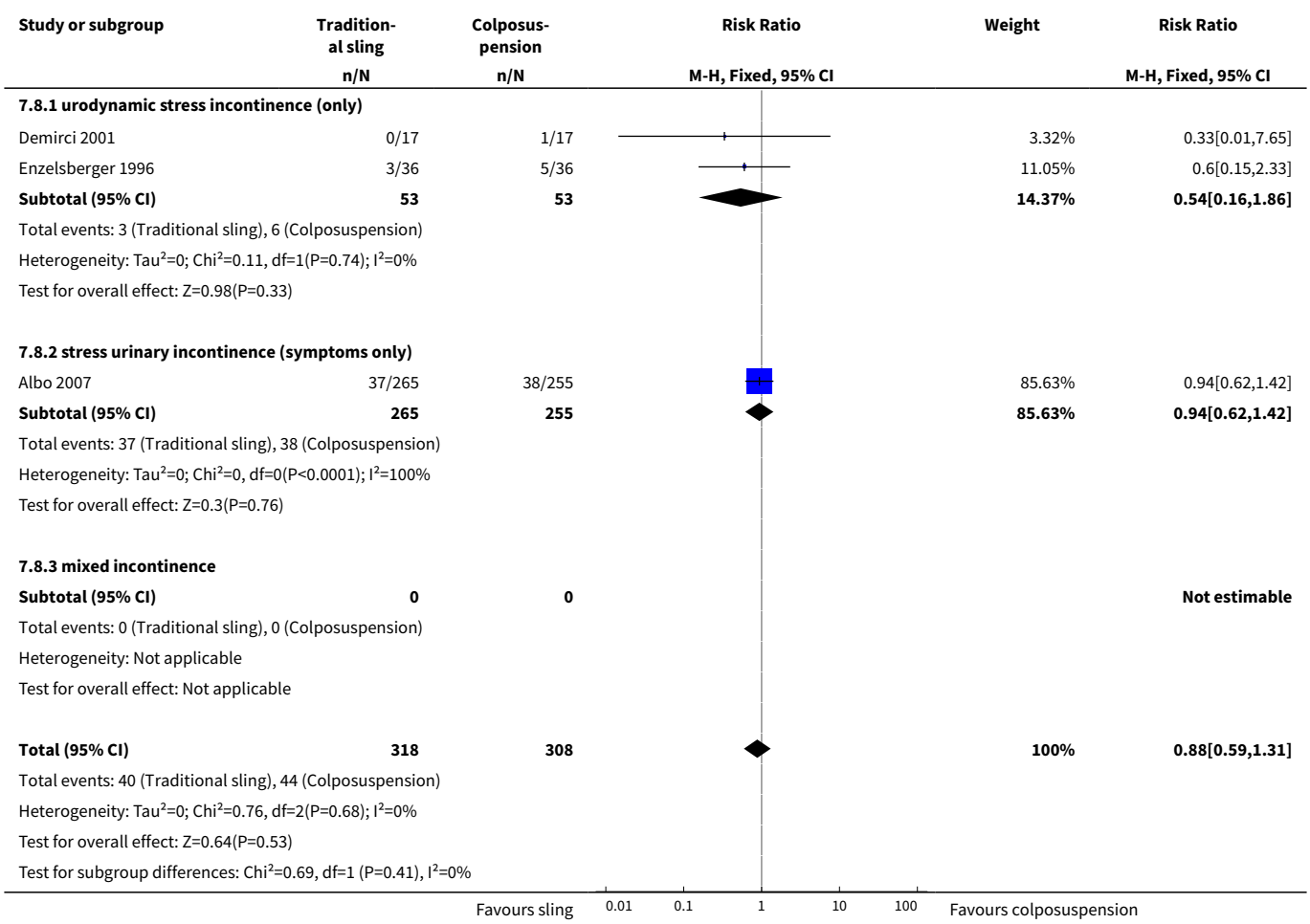
| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.5.1 urodynamic stress incontinence (only)** | | | | | |
| Demirci 2001 | 16/17 | 15/17 | | 2.02% | 2.13[0.17,26.03] |
| Sand 2000 | 11/13 | 14/15 | | 4.58% | 0.39[0.03,4.92] |
| **Subtotal (95% CI)** | **30** | **32** | | **6.61%** | **0.93[0.18,4.89]** |
| Total events: 27 (Traditional sling), 29 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2=0$; $Chi^2=0.87$, df=1(P=0.35); $I^2=0\%$ | | | | | |
| Test for overall effect: Z=0.09(P=0.93) | | | | | |
| **7.5.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 94/224 | 71/229 | | 93.39% | 1.61[1.09,2.37] |
| **Subtotal (95% CI)** | **224** | **229** | | **93.39%** | **1.61[1.09,2.37]** |
| Total events: 94 (Traditional sling), 71 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.42(P=0.02) | | | | | |
| **7.5.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **254** | **261** | | **100%** | **1.56[1.07,2.28]** |
| Total events: 121 (Traditional sling), 100 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2=0$; $Chi^2=1.23$, df=2(P=0.54); $I^2=0\%$ | | | | | |
| Test for overall effect: Z=2.33(P=0.02) | | | | | |
| Test for subgroup differences: $Chi^2=0.4$, df=1 (P=0.53), $I^2=0\%$ | | | | | |



## Analysis 7.6. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 6 Number of women satisfied (women's observations).

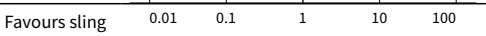



## Analysis 7.8. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 8 Number of women with urinary incontinence at 1 to 5 years (clinician's observations).



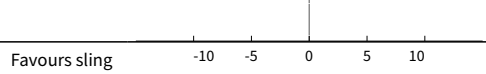
## Analysis 7.9. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 9 Number of women with urinary incontinence after 5 years (clinician's observations).

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.9.1 urodynamic stress incontinence (only)** | | | | | |
| Sand 2000 | 0/13 | 2/15 | | 1.4% | 0.23[0.01,4.37] |
| **Subtotal (95% CI)** | **13** | **15** | | **1.4%** | **0.23[0.01,4.37]** |
| Total events: 0 (Traditional sling), 2 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.98(P=0.33) | | | | | |
| **7.9.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 153/221 | 161/212 | | 98.6% | 0.91[0.81,1.02] |
| **Subtotal (95% CI)** | **221** | **212** | | **98.6%** | **0.91[0.81,1.02]** |
| Total events: 153 (Traditional sling), 161 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=0(P<0.0001); $I^2$=100% | | | | | |
| Test for overall effect: Z=1.56(P=0.12) | | | | | |
| **7.9.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **234** | **227** | | **100%** | **0.9[0.8,1.01]** |
| Total events: 153 (Traditional sling), 163 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.86, df=1(P=0.35); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.73(P=0.08) | | | | | |
| Test for subgroup differences: $Chi^2$=0.84, df=1 (P=0.36), $I^2$=0% | | | | | |



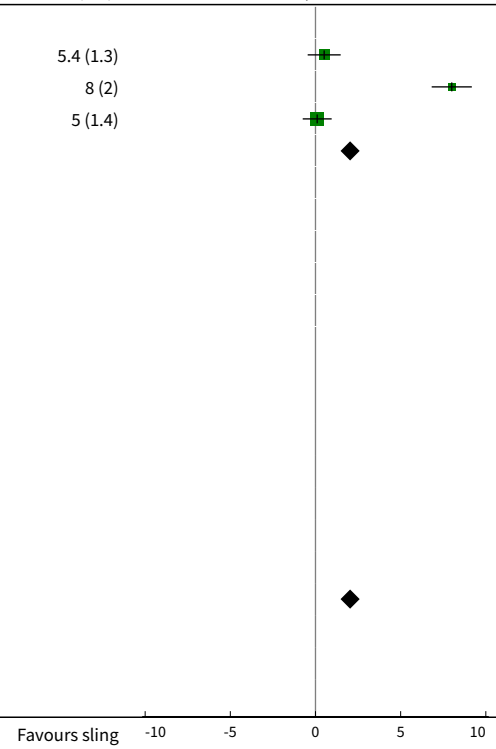

## Analysis 7.10. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 10 Duration of operation (minutes).

| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **7.10.1 urodynamic stress incontinence (only)** | | | | | | |
| Demirci 2001 | 15 | 60.7 (8.6) | 14 | 54.6 (9.3) | | 6.02[-0.52,12.56] |
| **7.10.2 stress urinary incontinence (symptoms only)** | | | | | | |
| **7.10.3 mixed incontinence** | | | | | | |



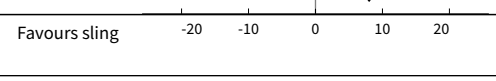
## Analysis 7.11. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 11 Length of hospital stay (days).

| Study or subgroup | Traditional sling N | Mean(SD) | Colposuspension N | Mean(SD) | Mean Difference Fixed, 95% CI | Weight | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|---|
| **7.11.1 urodynamic stress incontinence (only)** | | | | | | | |
| Demirci 2001 | 15 | 5.9 (1.4) | 14 | 5.4 (1.3) | | 33.62% | 0.51[-0.46,1.48] |
| Enzelsberger 1996 | 36 | 16 (3) | 36 | 8 (2) | | 22.72% | 8[6.82,9.18] |
| Sand 2000 | 17 | 5.1 (1.2) | 19 | 5 (1.4) | | 43.66% | 0.1[-0.75,0.95] |
| **Subtotal ***** | **68** | | **69** | | | **100%** | **2.03[1.47,2.59]** |
| Heterogeneity: $Tau^2$=0; $Chi^2$=127.99, df=2(P<0.0001); $I^2$=98.44% | | | | | | | |
| Test for overall effect: Z=7.1(P<0.0001) | | | | | | | |
| **7.11.2 stress urinary incontinence (symptoms only)** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **7.11.3 mixed incontinence** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **Total ***** | **68** | | **69** | | | **100%** | **2.03[1.47,2.59]** |
| Heterogeneity: $Tau^2$=0; $Chi^2$=127.99, df=2(P<0.0001); $I^2$=98.44% | | | | | | | |
| Test for overall effect: Z=7.1(P<0.0001) | | | | | | | |
| Test for subgroup differences: Not applicable | | | | | | | |

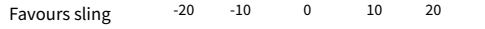



## Analysis 7.12. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 12 Time to catheter removal (days).

| Study or subgroup | Traditional sling N | Mean(SD) | Colposuspension N | Mean(SD) | Mean Difference Fixed, 95% CI | Weight | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|---|
| **7.12.1 urodynamic stress incontinence (only)** | | | | | | | |
| Enzelsberger 1996 | 36 | 15 (3) | 36 | 7 (2) | | 99.27% | 8[6.82,9.18] |
| Sand 2000 | 17 | 23.3 (24.4) | 19 | 13.8 (16.5) | | 0.73% | 9.5[-4.27,23.27] |
| **Subtotal ***** | **53** | | **55** | | | **100%** | **8.01[6.84,9.18]** |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.05, df=1(P=0.83); $I^2$=0% | | | | | | | |
| Test for overall effect: Z=13.38(P<0.0001) | | | | | | | |
| **7.12.2 stress urinary incontinence (symptoms only)** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **7.12.3 mixed incontinence** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **Total ***** | **53** | | **55** | | | **100%** | **8.01[6.84,9.18]** |

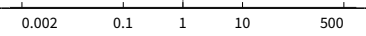


| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Weight | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|---|
| Heterogeneity: Tau²=0; Chi²=0.05, df=1(P=0.83); I²=0% | | | | | | | |
| Test for overall effect: Z=13.38(P<0.0001) | | | | | | | |
| Test for subgroup differences: Not applicable | | | | | | | |



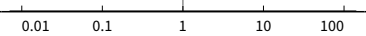

## Analysis 7.14. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 14 Number of women requiring treatment for pelvic organ prolapse.

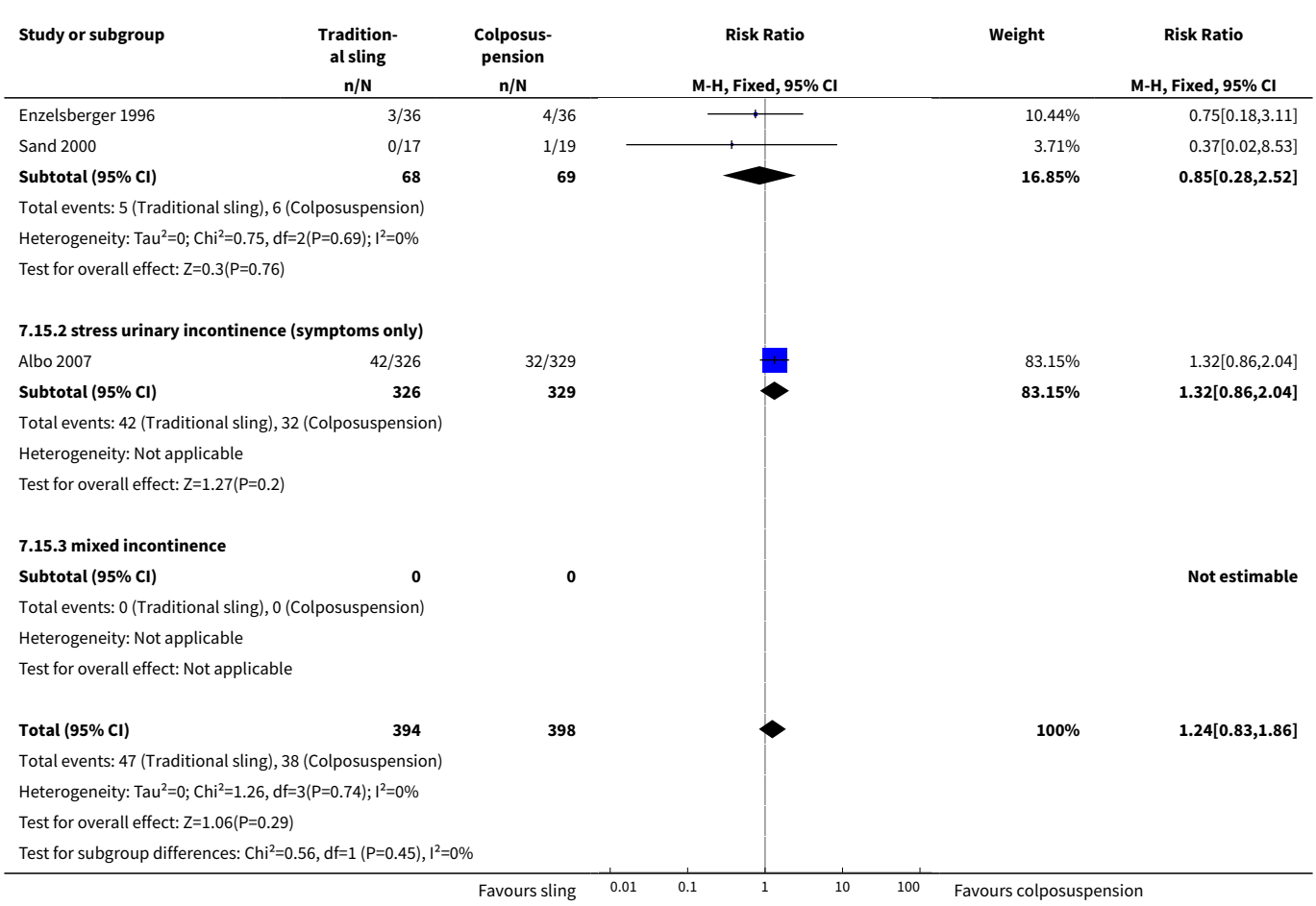
| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.14.1 urodynamic stress incontinence (only)** | | | | | |
| Demirci 2001 | 0/17 | 2/17 | | 20.09% | 0.2[0.01,3.88] |
| Enzelsberger 1996 | 1/36 | 5/36 | | 40.18% | 0.2[0.02,1.63] |
| **Subtotal (95% CI)** | **53** | **53** | | **60.27%** | **0.2[0.04,1.11]** |
| Total events: 1 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0, df=1(P=1); I²=0% | | | | | |
| Test for overall effect: Z=1.84(P=0.07) | | | | | |
| **7.14.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 1/224 | 5/229 | | 39.73% | 0.2[0.02,1.74] |
| **Subtotal (95% CI)** | **224** | **229** | | **39.73%** | **0.2[0.02,1.74]** |
| Total events: 1 (Traditional sling), 5 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=1.45(P=0.15) | | | | | |
| **7.14.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **277** | **282** | | **100%** | **0.2[0.05,0.77]** |
| Total events: 2 (Traditional sling), 12 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0, df=2(P=1); I²=0% | | | | | |
| Test for overall effect: Z=2.35(P=0.02) | | | | | |
| Test for subgroup differences: Chi²=0, df=1 (P=0.99), I²=0% | | | | | |



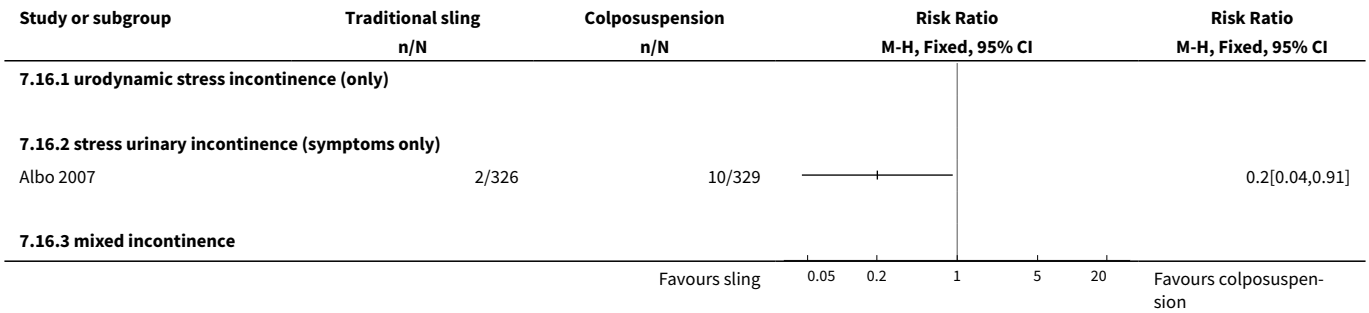

## Analysis 7.15. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 15 Perioperative surgical complications.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.15.1 urodynamic stress incontinence (only)** | | | | | |
| Demirci 2001 | 2/15 | 1/14 | | 2.7% | 1.87[0.19,18.38] |

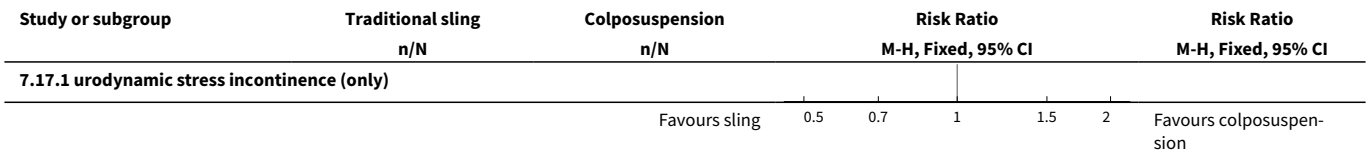


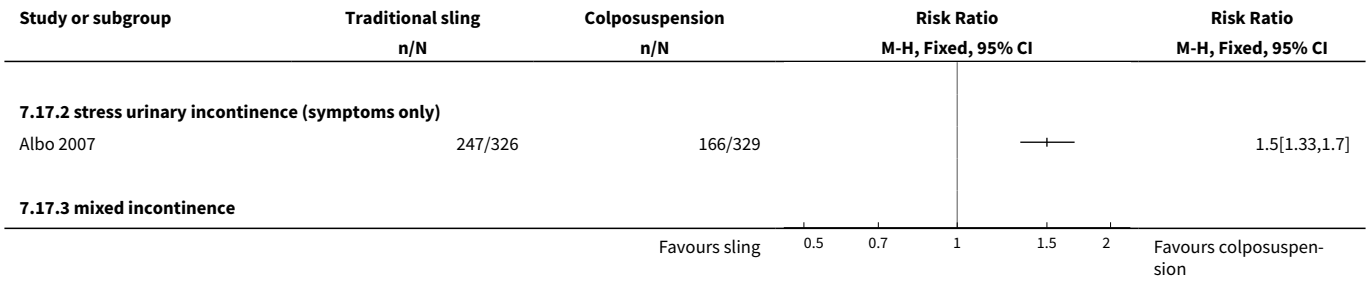



## Analysis 7.16. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 16 Bladder perforation.

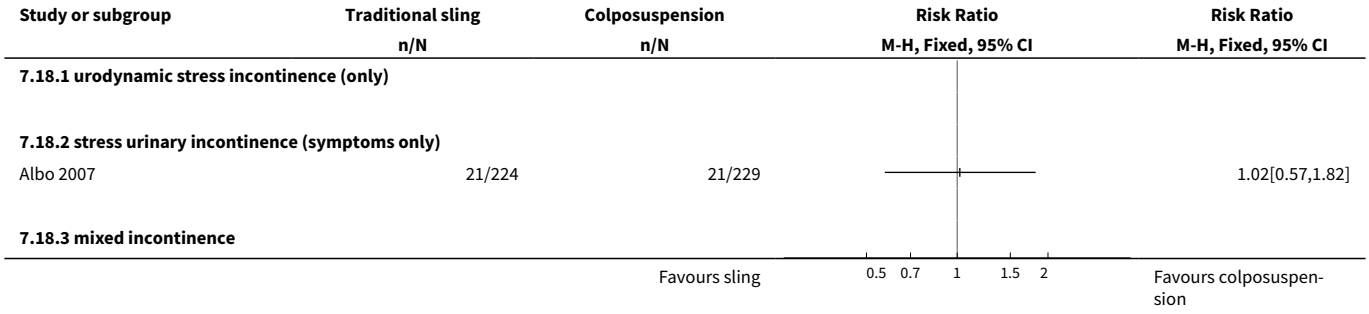



## Analysis 7.17. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 17 Urinary tract infection.

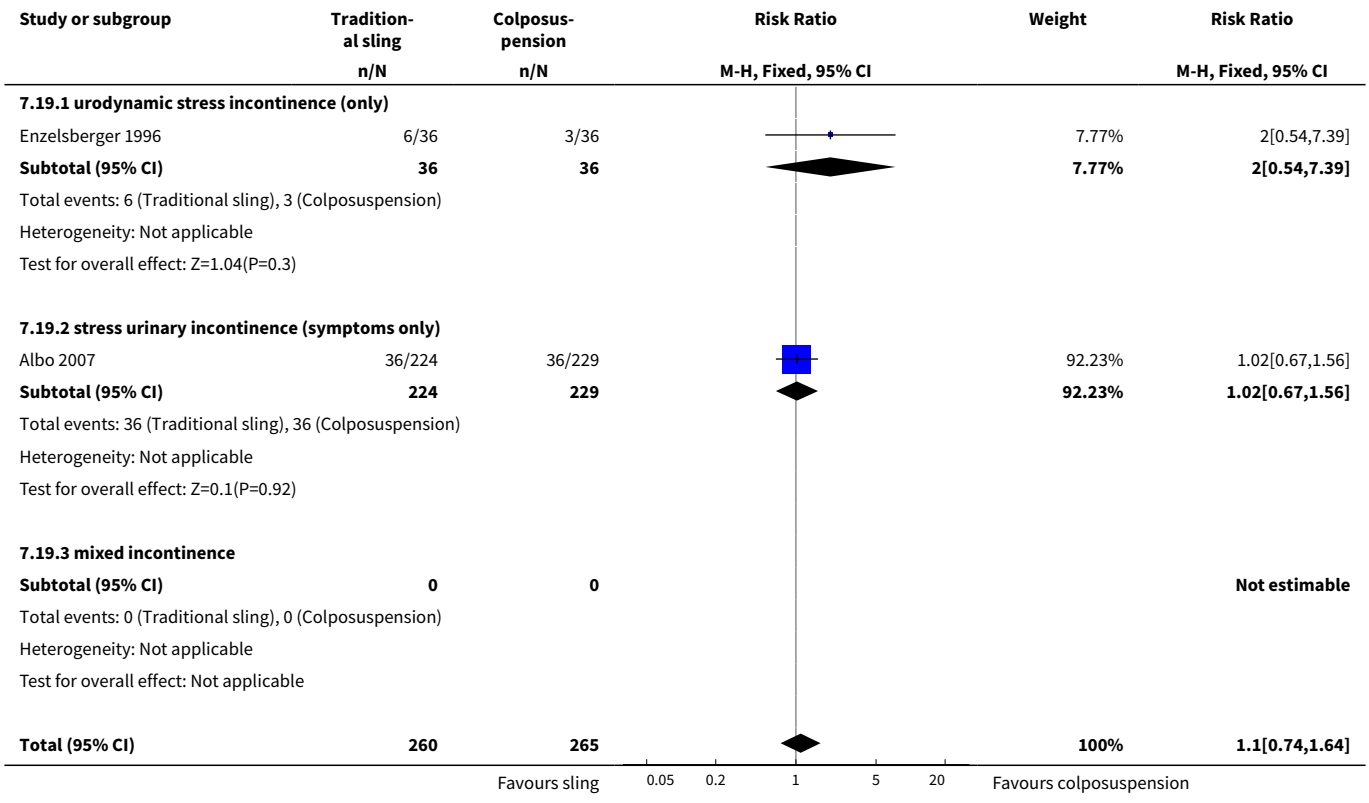





## Analysis 7.18. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 18 Number of women with recurrent UTIs at > 5 years.




## Analysis 7.19. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 19 Urinary urgency symptoms, urgency urinary incontinence.



| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Total events: 42 (Traditional sling), 39 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0.92, df=1(P=0.34); I²=0% | | | | | |
| Test for overall effect: Z=0.46(P=0.65) | | | | | |
| Test for subgroup differences: Chi²=0.92, df=1 (P=0.34), I²=0% | | | | | |

Favours sling 0.05 0.2 1 5 20 Favours colposuspension

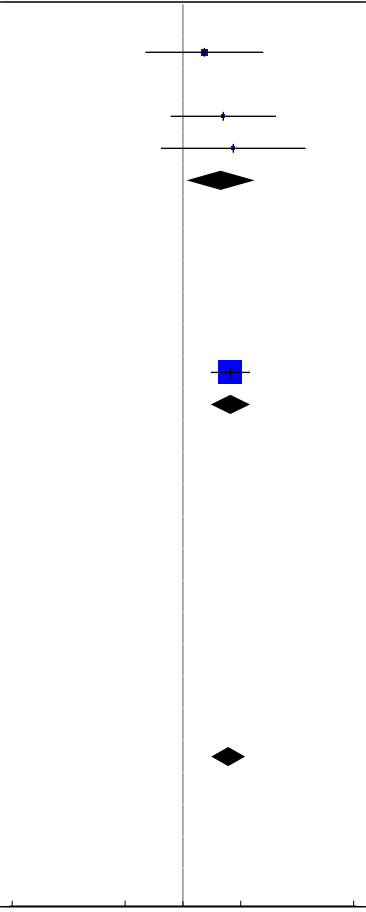
## Analysis 7.20. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 20 Detrusor overactivity (urodynamic diagnosis).

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.20.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 0/28 | 3/33 | | 52.25% | 0.17[0.01,3.11] |
| Demirci 2001 | 1/17 | 1/17 | | 16.22% | 1[0.07,14.72] |
| Enzelsberger 1996 | 3/36 | 1/36 | | 16.22% | 3[0.33,27.5] |
| Sand 2000 | 4/17 | 1/19 | | 15.32% | 4.47[0.55,36.19] |
| **Subtotal (95% CI)** | **98** | **105** | | **100%** | **1.42[0.52,3.87]** |
| Total events: 8 (Traditional sling), 6 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=3.71, df=3(P=0.29); I²=19.23% | | | | | |
| Test for overall effect: Z=0.69(P=0.49) | | | | | |
| **7.20.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **7.20.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **98** | **105** | | **100%** | **1.42[0.52,3.87]** |
| Total events: 8 (Traditional sling), 6 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=3.71, df=3(P=0.29); I²=19.23% | | | | | |
| Test for overall effect: Z=0.69(P=0.49) | | | | | |
| Test for subgroup differences: Not applicable | | | | | |

Favours sling 0.002 0.1 1 10 500 Favours colposuspension

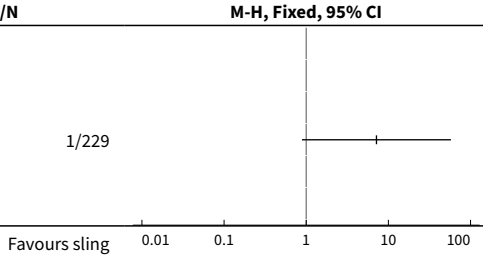
## Analysis 7.21. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 21 Voiding dysfunction after 3 months.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **7.21.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 2/28 | 1/33 | | 9.8% | 2.36[0.23,24.64] |
| Demirci 2001 | 0/17 | 0/17 | | | Not estimable |
| Enzelsberger 1996 | 5/36 | 1/36 | | 10.67% | 5[0.61,40.7] |
| Sand 2000 | 3/15 | 0/16 | | 5.17% | 7.44[0.42,132.95] |
| **Subtotal (95% CI)** | **96** | **102** | | **25.64%** | **4.48[1.16,17.36]** |
| Total events: 10 (Traditional sling), 2 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.42, df=2(P=0.81); $I^2$=0% | | | | | |
| Test for overall effect: Z=2.17(P=0.03) | | | | | |
| **7.21.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 46/326 | 7/329 | | 74.36% | 6.63[3.04,14.47] |
| **Subtotal (95% CI)** | **326** | **329** | | **74.36%** | **6.63[3.04,14.47]** |
| Total events: 46 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=0(P<0.0001); $I^2$=100% | | | | | |
| Test for overall effect: Z=4.75(P<0.0001) | | | | | |
| **7.21.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **422** | **431** | | **100%** | **6.08[3.1,11.95]** |
| Total events: 56 (Traditional sling), 9 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.73, df=3(P=0.87); $I^2$=0% | | | | | |
| Test for overall effect: Z=5.24(P<0.0001) | | | | | |
| Test for subgroup differences: $Chi^2$=0.24, df=1 (P=0.62), $I^2$=0% | | | | | |

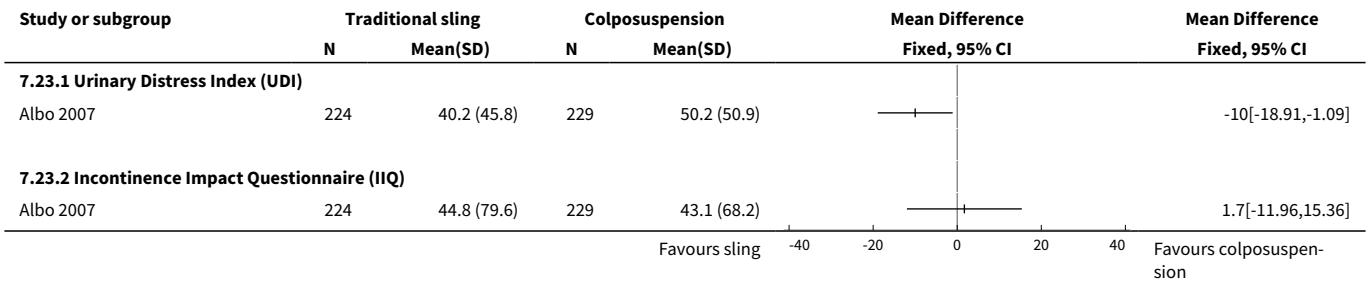



## Analysis 7.22. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 22 Long-term voiding dysfunction > 5 years.

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **7.22.1 urodynamic stress incontinence (only)** | | | | |
| **7.22.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 7/224 | 1/229 | | 7.16[0.89,57.69] |
| **7.22.3 mixed incontinence** | | | | |



**Analysis 7.23. Comparison 7 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 23 Condition-specific measures to assess quality of life.**




## Comparison 9. Traditional suburethral sling operation versus mid-urethral sling or tape

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 11 | 841 | Odds Ratio (M-H, Fixed, 95% CI) | 0.94 [0.67, 1.32] |
| 1.1 urodynamic stress incontinence (only) | 5 | 427 | Odds Ratio (M-H, Fixed, 95% CI) | 0.97 [0.60, 1.56] |
| 1.2 stress urinary incontinence (symptoms only) | 1 | 53 | Odds Ratio (M-H, Fixed, 95% CI) | 0.88 [0.12, 6.79] |
| 1.3 mixed urinary incontinence | 5 | 361 | Odds Ratio (M-H, Fixed, 95% CI) | 0.91 [0.55, 1.51] |
| 2 Number of continent women at 1 to 5 years (any definition) | 6 | 458 | Odds Ratio (M-H, Fixed, 95% CI) | 0.67 [0.44, 1.02] |
| 2.1 urodynamic stress incontinence (only) | 4 | 364 | Odds Ratio (M-H, Fixed, 95% CI) | 0.77 [0.47, 1.25] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed urinary incontinence | 2 | 94 | Odds Ratio (M-H, Fixed, 95% CI) | 0.42 [0.17, 1.04] |
| 3 Number of continent women after 5 years (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 4.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women cured after first year (women's observations) | 4 | 337 | Odds Ratio (M-H, Fixed, 95% CI) | 1.06 [0.65, 1.72] |
| 5.1 urodynamic stress incontinence (only) | 3 | 293 | Odds Ratio (M-H, Fixed, 95% CI) | 1.21 [0.72, 2.03] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed urinary incontinence | 1 | 44 | Odds Ratio (M-H, Fixed, 95% CI) | 0.42 [0.10, 1.72] |
| 6 Number of women improved or cured within 1 year (women's observations) | 3 | 425 | Odds Ratio (M-H, Fixed, 95% CI) | 1.33 [0.74, 2.39] |
| 6.1 urodynamic stress incontinence (only) | 2 | 286 | Odds Ratio (M-H, Fixed, 95% CI) | 1.06 [0.43, 2.64] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed urinary incontinence | 1 | 139 | Odds Ratio (M-H, Fixed, 95% CI) | 1.56 [0.72, 3.39] |
| 7 Number of women improved or cured at 1 to 5 years (women's observations) | 2 | 264 | Odds Ratio (M-H, Fixed, 95% CI) | 0.76 [0.31, 1.87] |
| 7.1 urodynamic stress incontinence (only) | 2 | 264 | Odds Ratio (M-H, Fixed, 95% CI) | 0.76 [0.31, 1.87] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed urinary incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Number of women improved or cured after 5 years (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 9 Number of women satisfied (women's observations) | 2 | | Risk Ratio (M-H, Fixed, 95% CI) | Subtotals only |
| 9.1 urodynamic stress incontinence (only) | 2 | 163 | Risk Ratio (M-H, Fixed, 95% CI) | 1.09 [0.89, 1.33] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed urinary incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Pad test of quantified leakage (mean weight of urine lost) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 10.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.3 mixed urinary incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Number of women with urinary incontinence within first year (clinician's observations) | 2 | 105 | Risk Ratio (M-H, Fixed, 95% CI) | 1.29 [0.45, 3.71] |
| 11.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.3 mixed urinary incontinence | 2 | 105 | Risk Ratio (M-H, Fixed, 95% CI) | 1.29 [0.45, 3.71] |
| 12 Number of women with urinary incontinence at 1 to 5 years (any definition) (clinician's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 12.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Duration of operation (minutes) | 7 | 355 | Mean Difference (IV, Fixed, 95% CI) | 57.08 [54.67, 59.49] |
| 13.1 urodynamic stress incontinence (only) | 2 | 61 | Mean Difference (IV, Fixed, 95% CI) | 46.91 [42.31, 51.52] |
| 13.2 stress urinary incontinence (symptoms only) | 1 | 53 | Mean Difference (IV, Fixed, 95% CI) | 20.0 [7.08, 32.92] |

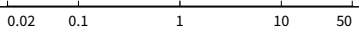
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 13.3 mixed urinary incontinence | 4 | 241 | Mean Difference (IV, Fixed, 95% CI) | 62.96 [60.07, 65.86] |
| 14 Length of hospital stay (days) | 4 | 194 | Mean Difference (IV, Fixed, 95% CI) | 0.74 [0.55, 0.93] |
| 14.1 urodynamic stress incontinence (only) | 1 | 20 | Mean Difference (IV, Fixed, 95% CI) | 0.65 [0.39, 0.91] |
| 14.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.3 mixed urinary incontinence | 3 | 174 | Mean Difference (IV, Fixed, 95% CI) | 0.83 [0.56, 1.10] |
| 15 Time to catheter removal (days) | 2 | 113 | Mean Difference (IV, Fixed, 95% CI) | 0.11 [-0.07, 0.30] |
| 15.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.2 stress urinary incontinence (symptoms only) | 1 | 53 | Mean Difference (IV, Fixed, 95% CI) | 2.3 [0.01, 4.59] |
| 15.3 mixed urinary incontinence | 1 | 60 | Mean Difference (IV, Fixed, 95% CI) | 0.10 [-0.09, 0.29] |
| 16 Perioperative surgical complications | 4 | 293 | Risk Ratio (M-H, Fixed, 95% CI) | 1.74 [1.16, 2.60] |
| 16.1 urodynamic stress incontinence (only) | 2 | 183 | Risk Ratio (M-H, Fixed, 95% CI) | 1.73 [1.01, 2.96] |
| 16.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16.3 mixed urinary incontinence | 2 | 110 | Risk Ratio (M-H, Fixed, 95% CI) | 1.74 [0.94, 3.21] |
| 17 Bladder perforations | 10 | 844 | Risk Ratio (M-H, Fixed, 95% CI) | 0.59 [0.34, 1.01] |
| 17.1 urodynamic stress incontinence (only) | 3 | 334 | Risk Ratio (M-H, Fixed, 95% CI) | 0.74 [0.19, 2.86] |
| 17.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 0.56 [0.05, 5.81] |
| 17.3 mixed urinary incontinence | 6 | 457 | Risk Ratio (M-H, Fixed, 95% CI) | 0.56 [0.30, 1.03] |
| 18 Urethral injury | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Vaginal bleeding | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 19.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 20.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21 Voiding dysfunction | 8 | 629 | Risk Ratio (M-H, Fixed, 95% CI) | 1.34 [0.85, 2.12] |
| 21.1 urodynamic stress incontinence (only) | 3 | 325 | Risk Ratio (M-H, Fixed, 95% CI) | 1.22 [0.60, 2.46] |
| 21.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 2.61 [0.76, 9.03] |
| 21.3 mixed urinary incontinence | 4 | 251 | Risk Ratio (M-H, Fixed, 95% CI) | 1.18 [0.58, 2.40] |
| 22 Urinary urgency symptoms, urgency urinary incontinence | 4 | 295 | Risk Ratio (M-H, Fixed, 95% CI) | 1.50 [0.58, 3.88] |
| 22.1 urodynamic stress incontinence (only) | 1 | 124 | Risk Ratio (M-H, Fixed, 95% CI) | 0.34 [0.01, 8.29] |
| 22.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.3 mixed urinary incontinence | 3 | 171 | Risk Ratio (M-H, Fixed, 95% CI) | 1.81 [0.65, 5.06] |
| 23 De novo detrusor overactivity (urodynamic diagnosis) | 4 | 325 | Risk Ratio (M-H, Fixed, 95% CI) | 2.61 [1.17, 5.84] |
| 23.1 urodynamic stress incontinence (only) | 1 | 59 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 stress urinary incontinence (symptoms only) | 1 | 47 | Risk Ratio (M-H, Fixed, 95% CI) | 3.13 [0.13, 73.01] |
| 23.3 mixed urinary incontinence | 2 | 219 | Risk Ratio (M-H, Fixed, 95% CI) | 2.57 [1.12, 5.92] |
| 24 Long-term adverse effects (release of sling required) | 3 | 326 | Risk Ratio (M-H, Fixed, 95% CI) | 2.53 [0.87, 7.35] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 24.1 urodynamic stress incontinence (only) | 2 | 266 | Risk Ratio (M-H, Fixed, 95% CI) | 1.68 [0.50, 5.66] |
| 24.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.3 mixed urinary incontinence | 1 | 60 | Risk Ratio (M-H, Fixed, 95% CI) | 9.6 [0.54, 170.84] |
| 25 Long-term adverse effects (wound pain at 6 months) | 3 | 257 | Risk Ratio (M-H, Fixed, 95% CI) | 6.40 [1.94, 21.12] |
| 25.1 urodynamic stress incontinence (only) | 1 | 124 | Risk Ratio (M-H, Fixed, 95% CI) | 5.16 [0.25, 105.36] |
| 25.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 3.92 [0.90, 17.15] |
| 25.3 mixed urinary incontinence | 1 | 80 | Risk Ratio (M-H, Fixed, 95% CI) | 17.0 [1.01, 284.96] |
| 26 Long-term adverse effects (vaginal mesh or graft exposure) | 5 | 348 | Risk Ratio (M-H, Fixed, 95% CI) | 0.28 [0.05, 1.65] |
| 26.1 urodynamic stress incontinence (only) | 2 | 165 | Risk Ratio (M-H, Fixed, 95% CI) | 0.35 [0.04, 3.24] |
| 26.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 26.3 mixed urinary incontinence | 2 | 130 | Risk Ratio (M-H, Fixed, 95% CI) | 0.2 [0.01, 3.97] |
| 27 Condition-specific measures to assess quality of life: UDI-6 | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 7.30 [-2.00, 16.60] |
| 27.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 27.2 stress urinary incontinence (symptoms only) | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 7.30 [-2.00, 16.60] |
| 27.3 mixed urinary incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 28 Condition-specific measures to assess quality of life: IIQ-7 | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 0.60 [-10.17, 11.37] |
| 28.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 28.2 stress urinary incontinence (symptoms only) | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 0.60 [-10.17, 11.37] |
| 28.3 mixed urinary incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

## Analysis 9.1. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 1 Number of continent women within 1 year (any definition).

| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **9.1.1 urodynamic stress incontinence (only)** | | | | | |
| Amaro 2007 | 12/21 | 14/20 | | 9.02% | 0.57[0.16,2.07] |
| Arunkalaivanan 2003 | 66/74 | 58/68 | | 9.59% | 1.42[0.53,3.84] |
| Bai 2005 | 26/28 | 29/31 | | 2.89% | 0.9[0.12,6.83] |
| Guerrero 2008 | 35/73 | 36/71 | | 27.89% | 0.9[0.47,1.72] |
| Tcherniakovsky 2009 | 19/20 | 19/21 | | 1.36% | 2[0.17,23.96] |
| **Subtotal (95% CI)** | **216** | **211** | | **50.75%** | **0.97[0.6,1.56]** |
| Total events: 158 (Traditional sling), 156 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.61, df=4(P=0.81); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.14(P=0.89) | | | | | |
| **9.1.2 stress urinary incontinence (symptoms only)** | | | | | |
| Wadie 2005 | 23/25 | 26/28 | | 2.88% | 0.88[0.12,6.79] |
| **Subtotal (95% CI)** | **25** | **28** | | **2.88%** | **0.88[0.12,6.79]** |
| Total events: 23 (Traditional sling), 26 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.12(P=0.91) | | | | | |
| **9.1.3 mixed urinary incontinence** | | | | | |
| Basok 2008 | 35/67 | 34/72 | | 22.98% | 1.22[0.63,2.38] |
| Kondo 2006 | 19/21 | 21/23 | | 2.8% | 0.9[0.12,7.07] |
| Sharifiaghdas 2008 | 30/36 | 22/25 | | 6.35% | 0.68[0.15,3.03] |
| Song 2004 | 18/19 | 45/48 | | 1.97% | 1.2[0.12,12.31] |
| Zargham 2013 | 14/25 | 19/25 | | 12.27% | 0.4[0.12,1.35] |
| **Subtotal (95% CI)** | **168** | **193** | | **46.37%** | **0.91[0.55,1.51]** |
| Total events: 116 (Traditional sling), 141 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=2.7, df=4(P=0.61); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.36(P=0.72) | | | | | |
| **Total (95% CI)** | **409** | **432** | | **100%** | **0.94[0.67,1.32]** |
| Total events: 297 (Traditional sling), 323 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=4.33, df=10(P=0.93); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.36(P=0.72) | | | | | |
| Test for subgroup differences: $Chi^2$=0.03, df=1 (P=0.98), $I^2$=0% | | | | | |



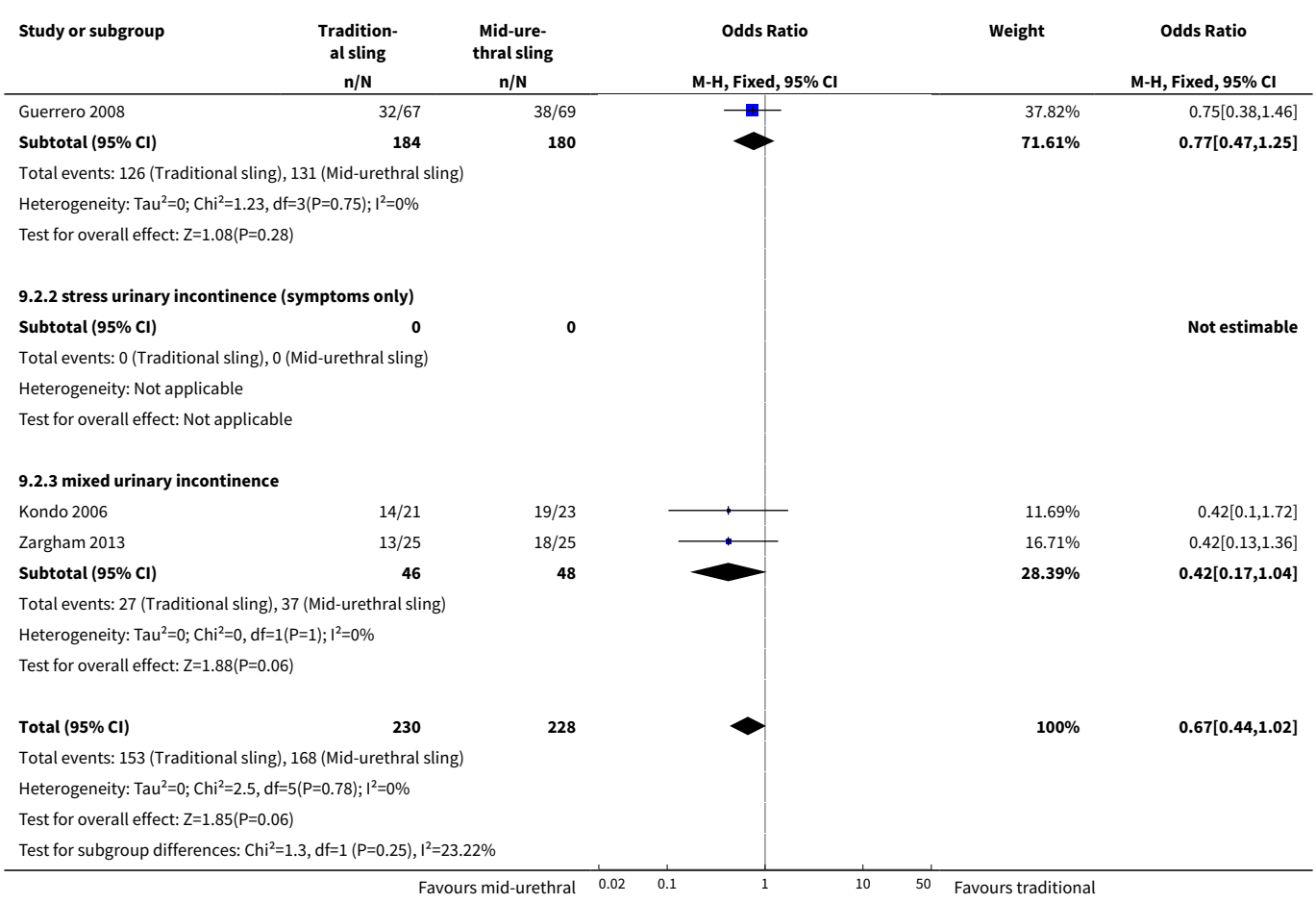

Favours mid-urethral | Favours traditional

## Analysis 9.2. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 2 Number of continent women at 1 to 5 years (any definition).

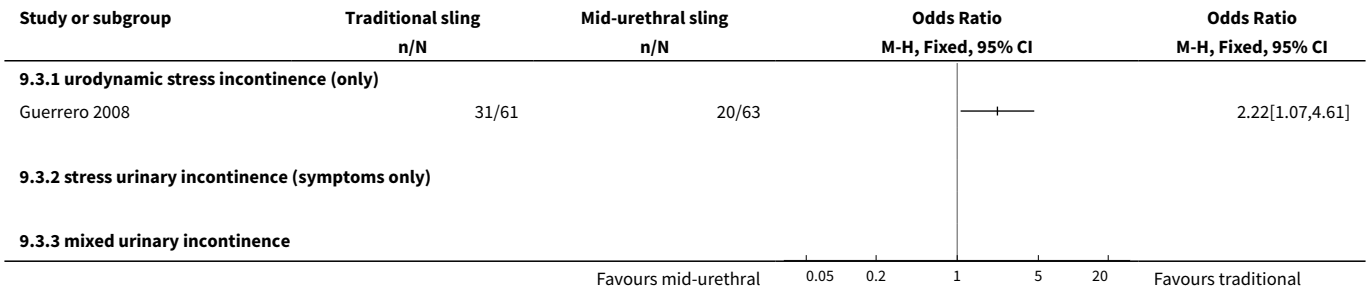
| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **9.2.1 urodynamic stress incontinence (only)** | | | | | |
| Amaro 2007 | 12/21 | 13/20 | | 11.04% | 0.72[0.2,2.53] |
| Arunkalaivanan 2003 | 56/68 | 53/60 | | 19.21% | 0.62[0.23,1.68] |
| Bai 2005 | 26/28 | 27/31 | | 3.54% | 1.93[0.32,11.43] |



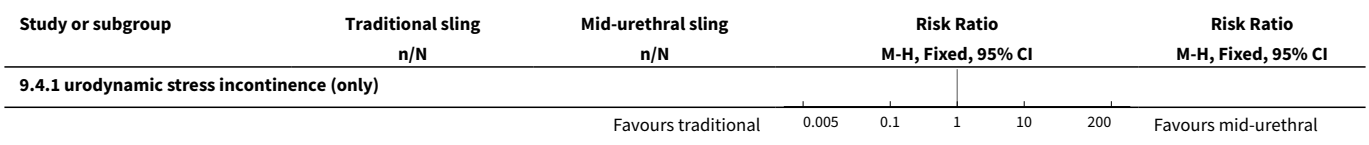

Favours mid-urethral | Favours traditional

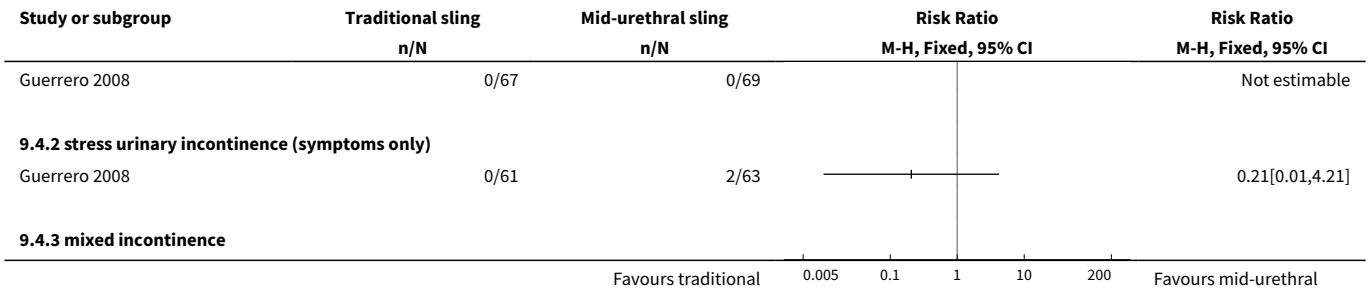



## Analysis 9.3. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 3 Number of continent women after 5 years (any definition).

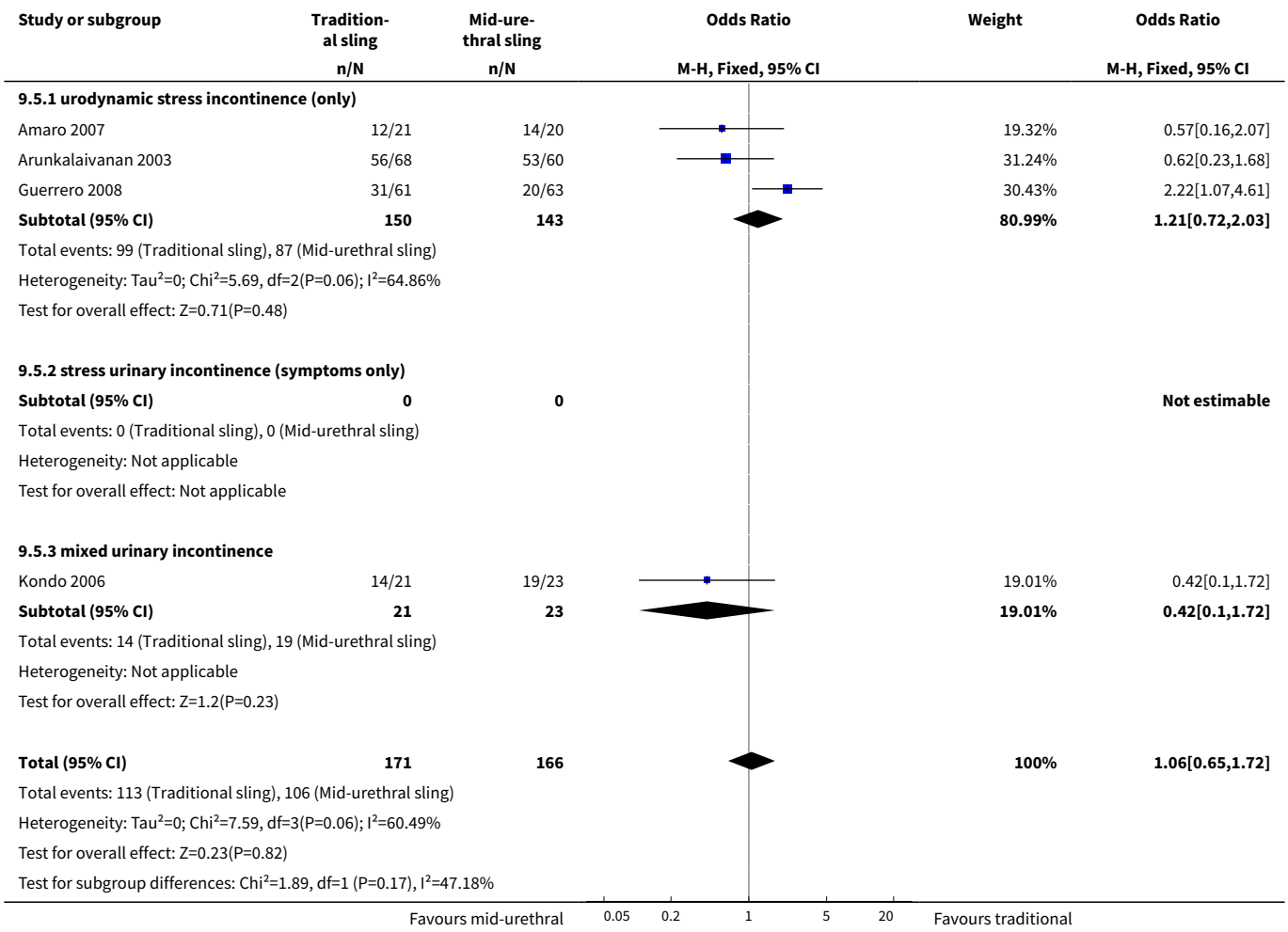



## Analysis 9.4. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 4 Repeat surgery for urinary incontinence.



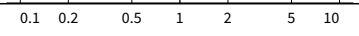



## Analysis 9.5. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 5 Number of women cured after first year (women's observations).



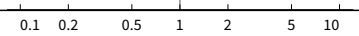
## Analysis 9.6. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 6 Number of women improved or cured within 1 year (women's observations).

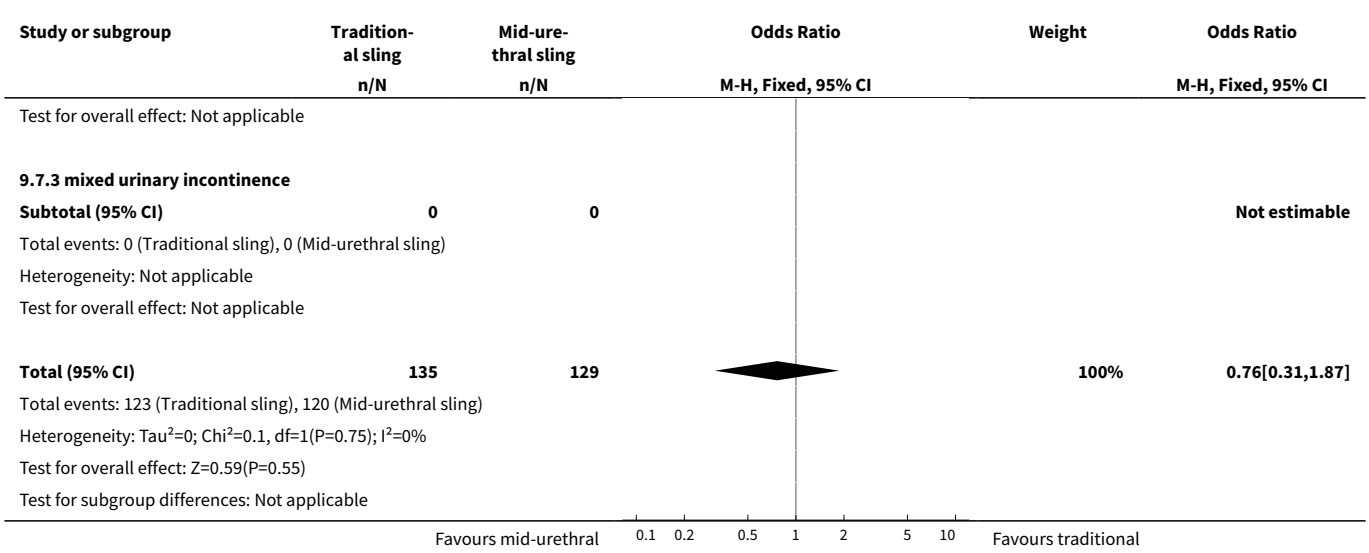
| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **9.6.1 urodynamic stress incontinence (only)** | | | | | |
| Arunkalaivanan 2003 | 68/74 | 64/68 | | 28.03% | 0.71[0.19,2.63] |
| Guerrero 2008 | 69/73 | 65/71 | | 18.72% | 1.59[0.43,5.9] |
| **Subtotal (95% CI)** | **147** | **139** | | **46.75%** | **1.06[0.43,2.64]** |
| Total events: 137 (Traditional sling), 129 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.73, df=1(P=0.39); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.13(P=0.9) | | | | | |
| **9.6.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **9.6.3 mixed urinary incontinence** | | | | | |
| Basok 2008 | 53/67 | 51/72 | | 53.25% | 1.56[0.72,3.39] |
| **Subtotal (95% CI)** | **67** | **72** | | **53.25%** | **1.56[0.72,3.39]** |
| Total events: 53 (Traditional sling), 51 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=0(P<0.0001); $I^2$=100% | | | | | |
| Test for overall effect: Z=1.12(P=0.26) | | | | | |
| **Total (95% CI)** | **214** | **211** | | **100%** | **1.33[0.74,2.39]** |
| Total events: 190 (Traditional sling), 180 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.12, df=2(P=0.57); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.94(P=0.35) | | | | | |
| Test for subgroup differences: $Chi^2$=0.39, df=1 (P=0.53), $I^2$=0% | | | | | |



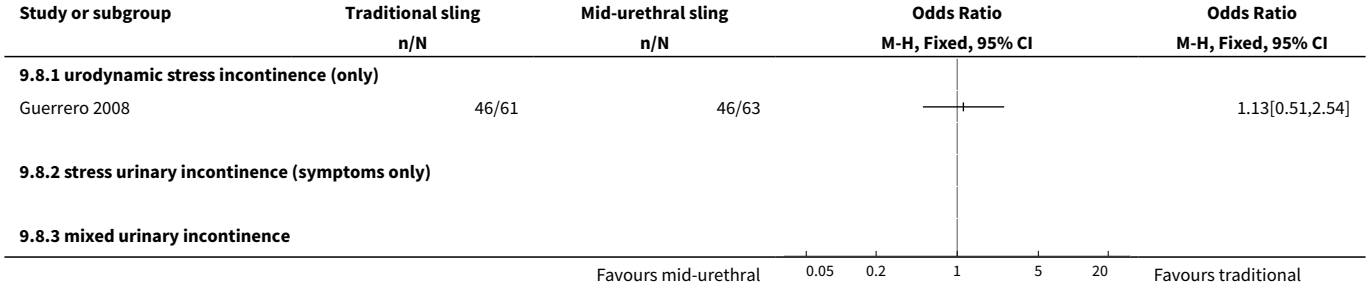

## Analysis 9.7. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 7 Number of women improved or cured at 1 to 5 years (women's observations).

| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Odds Ratio M-H, Fixed, 95% CI | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **9.7.1 urodynamic stress incontinence (only)** | | | | | |
| Arunkalaivanan 2003 | 63/68 | 56/60 | | 39.91% | 0.9[0.23,3.52] |
| Guerrero 2008 | 60/67 | 64/69 | | 60.09% | 0.67[0.2,2.22] |
| **Subtotal (95% CI)** | **135** | **129** | | **100%** | **0.76[0.31,1.87]** |
| Total events: 123 (Traditional sling), 120 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.1, df=1(P=0.75); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.59(P=0.55) | | | | | |
| **9.7.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |

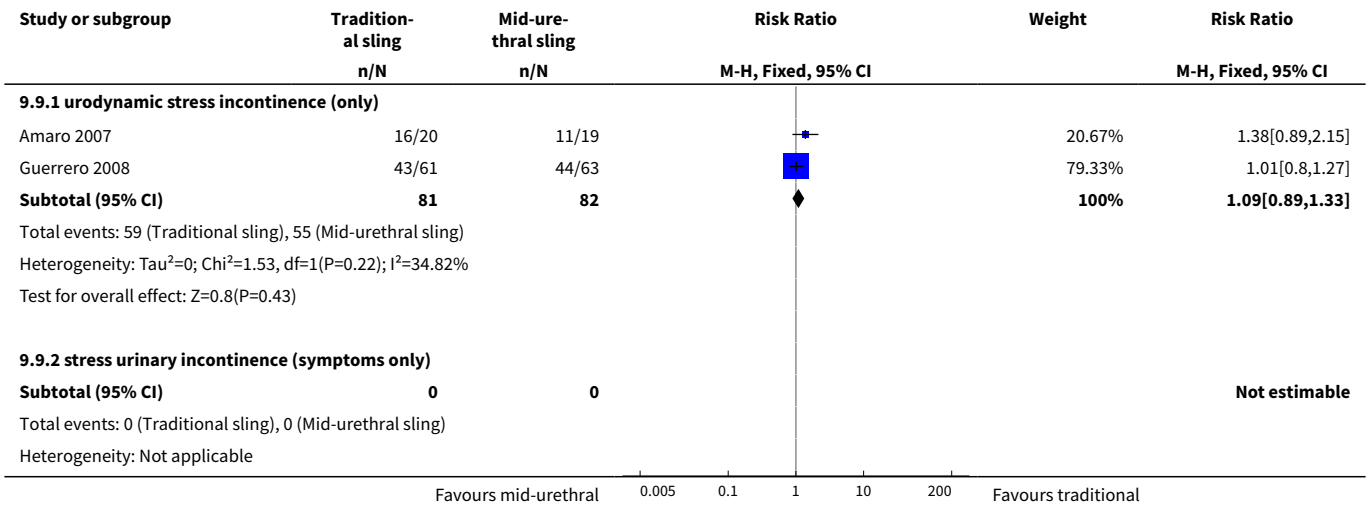


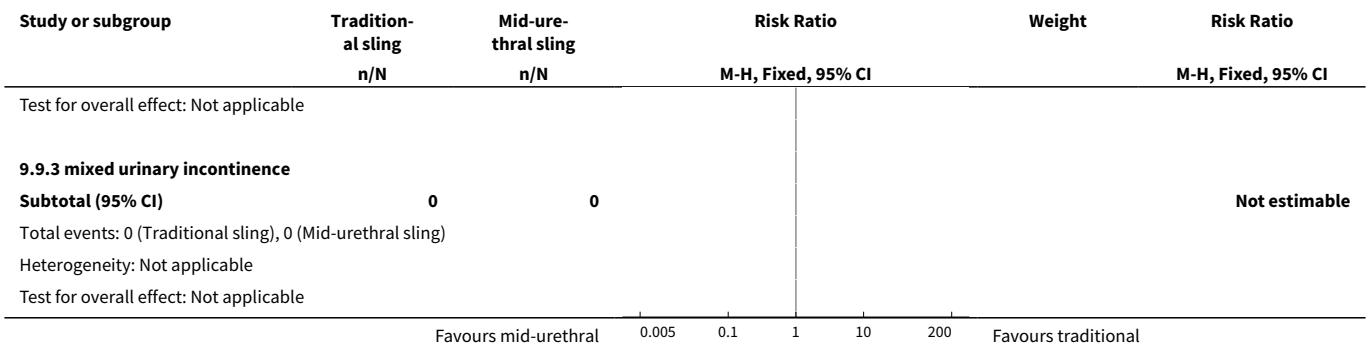



## Analysis 9.8. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 8 Number of women improved or cured after 5 years (women's observations).

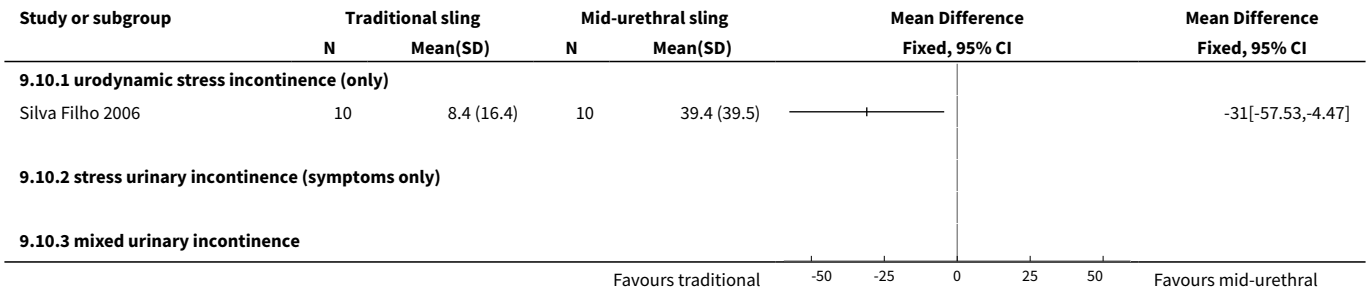



## Analysis 9.9. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 9 Number of women satisfied (women's observations).

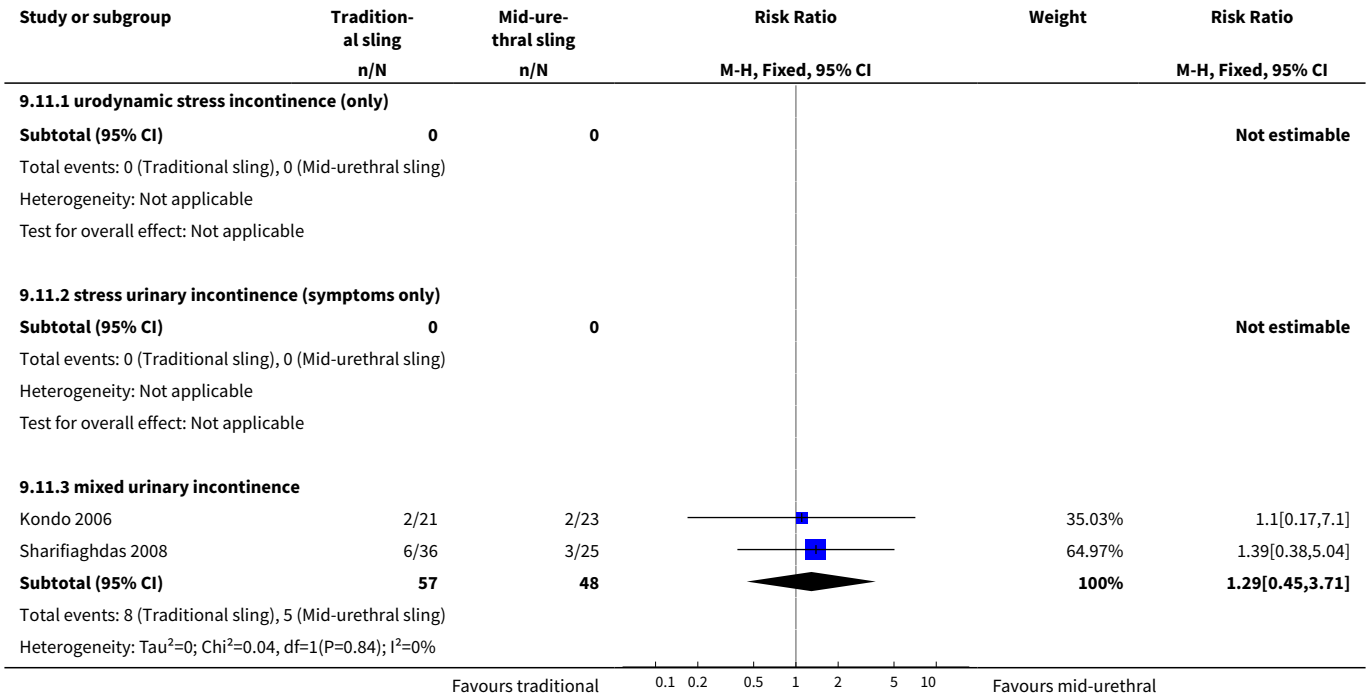


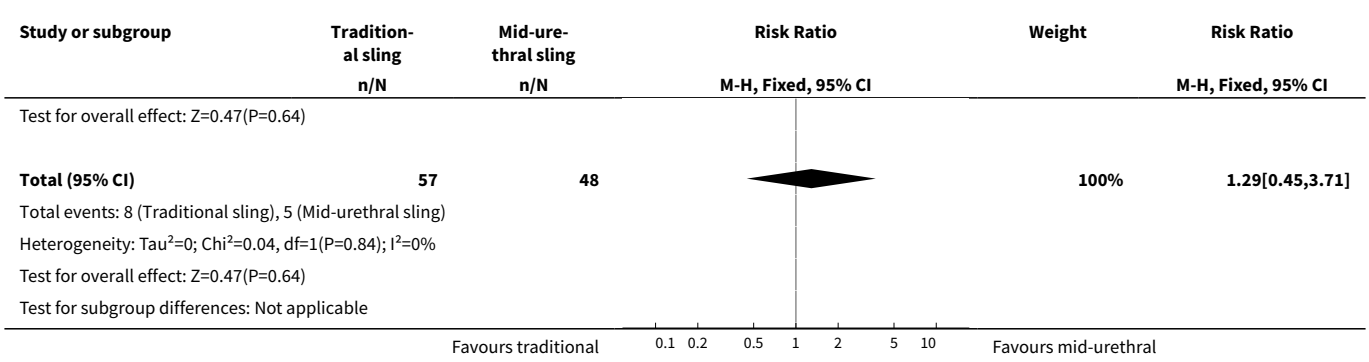



## Analysis 9.10. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 10 Pad test of quantified leakage (mean weight of urine lost).

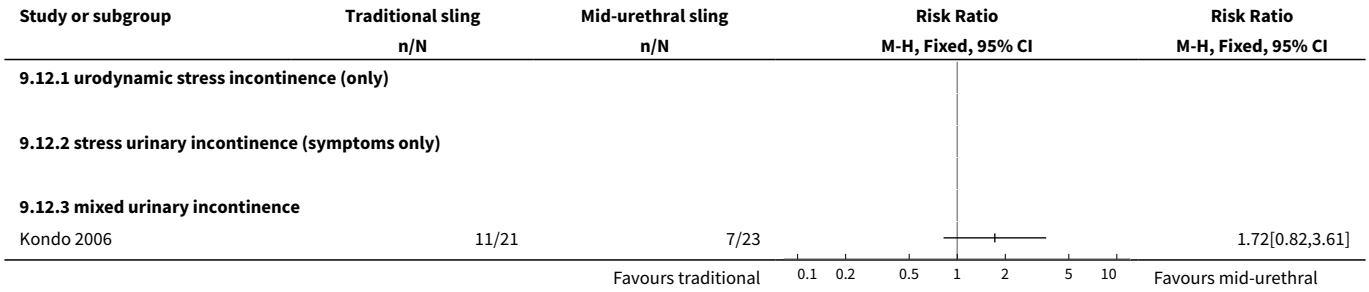



## Analysis 9.11. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 11 Number of women with urinary incontinence within first year (clinician's observations).

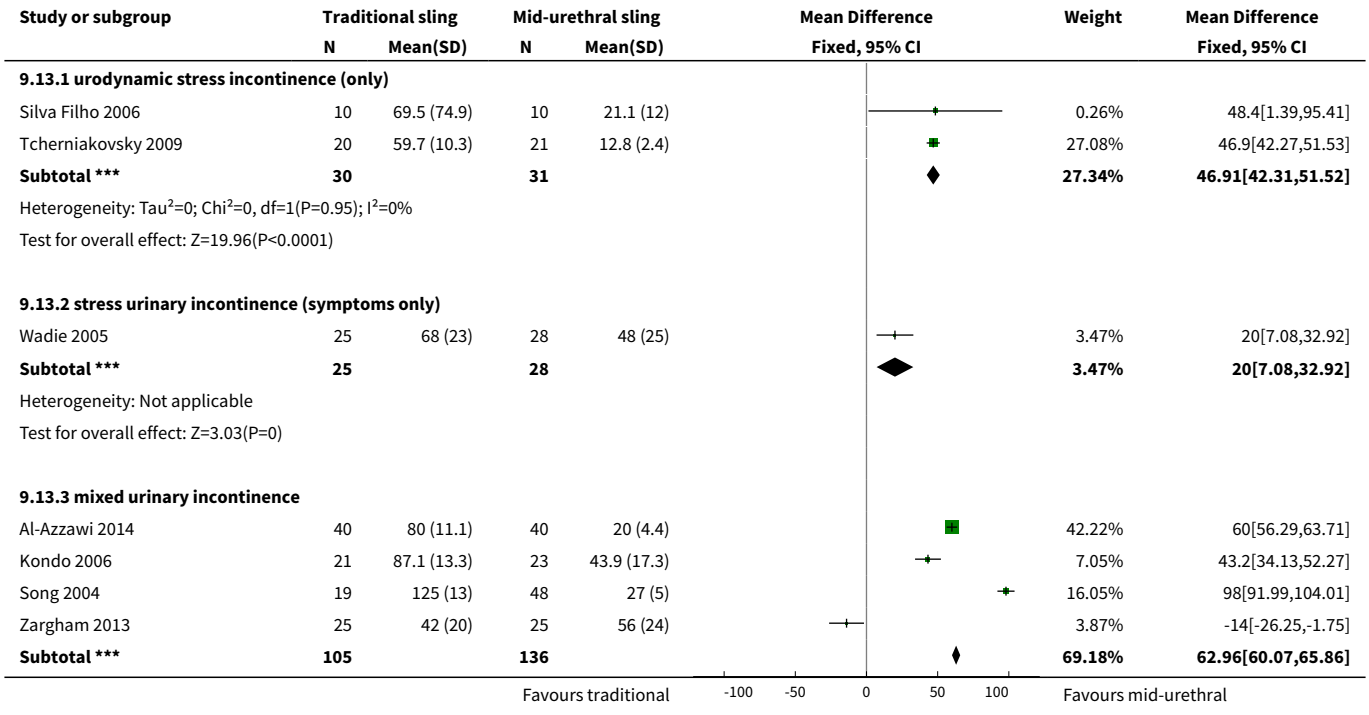


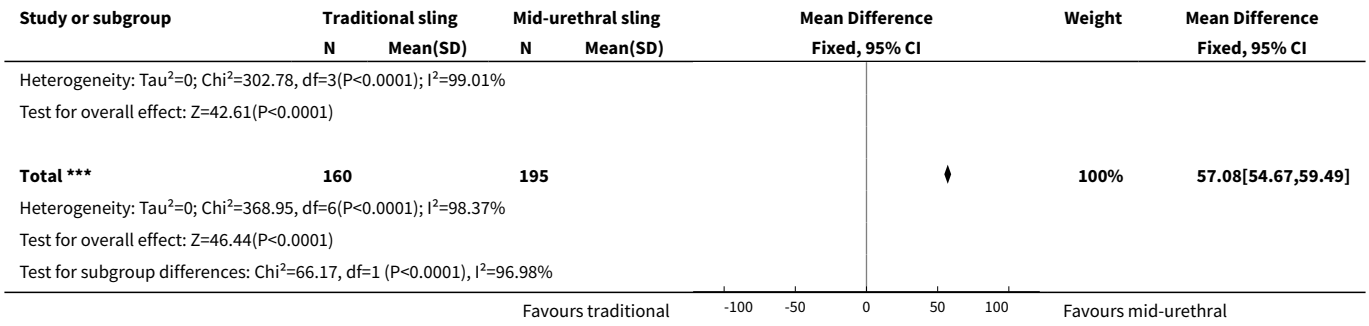



## Analysis 9.12. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 12 Number of women with urinary incontinence at 1 to 5 years (any definition) (clinician's observations).

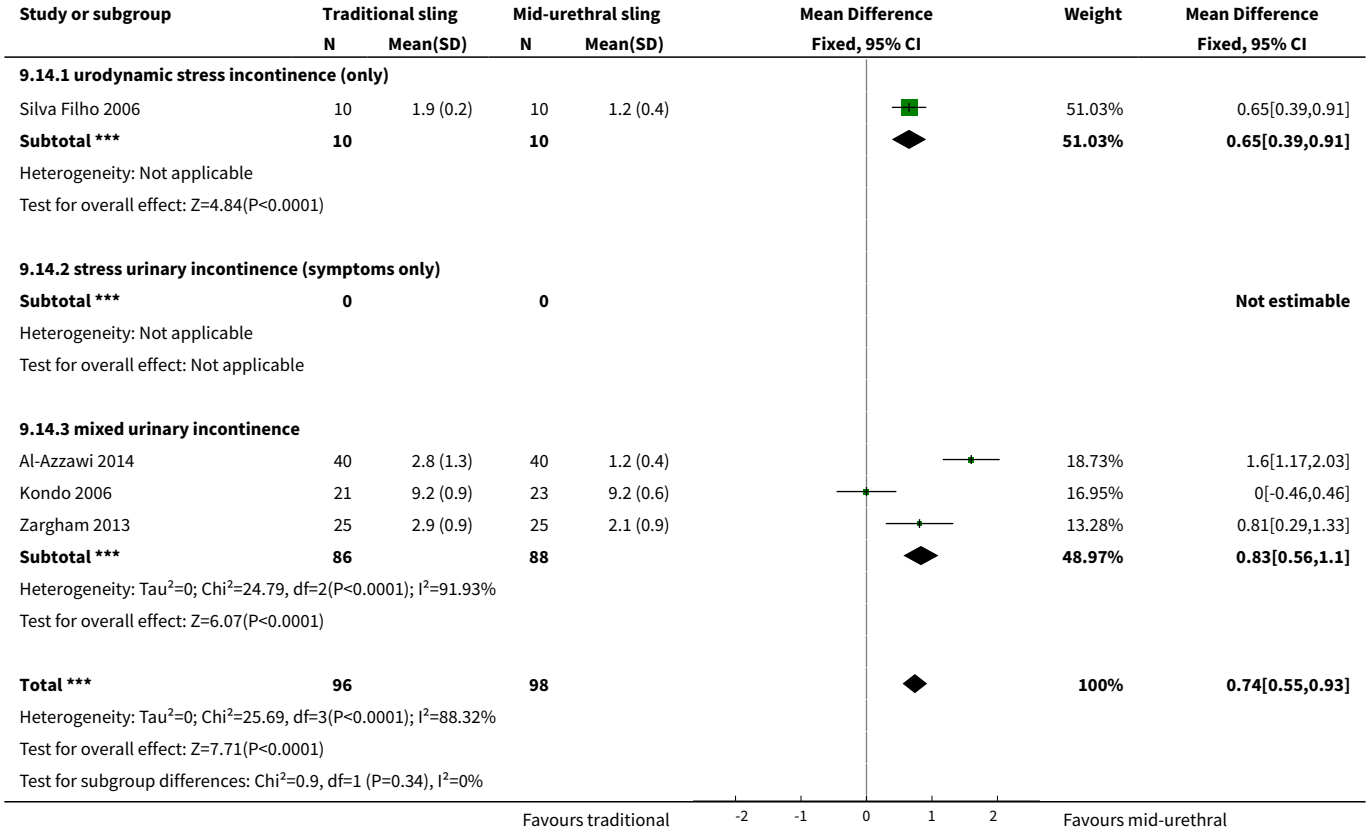



## Analysis 9.13. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 13 Duration of operation (minutes).

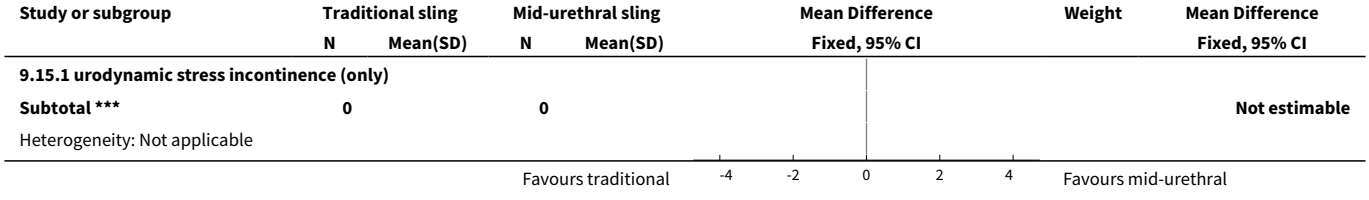


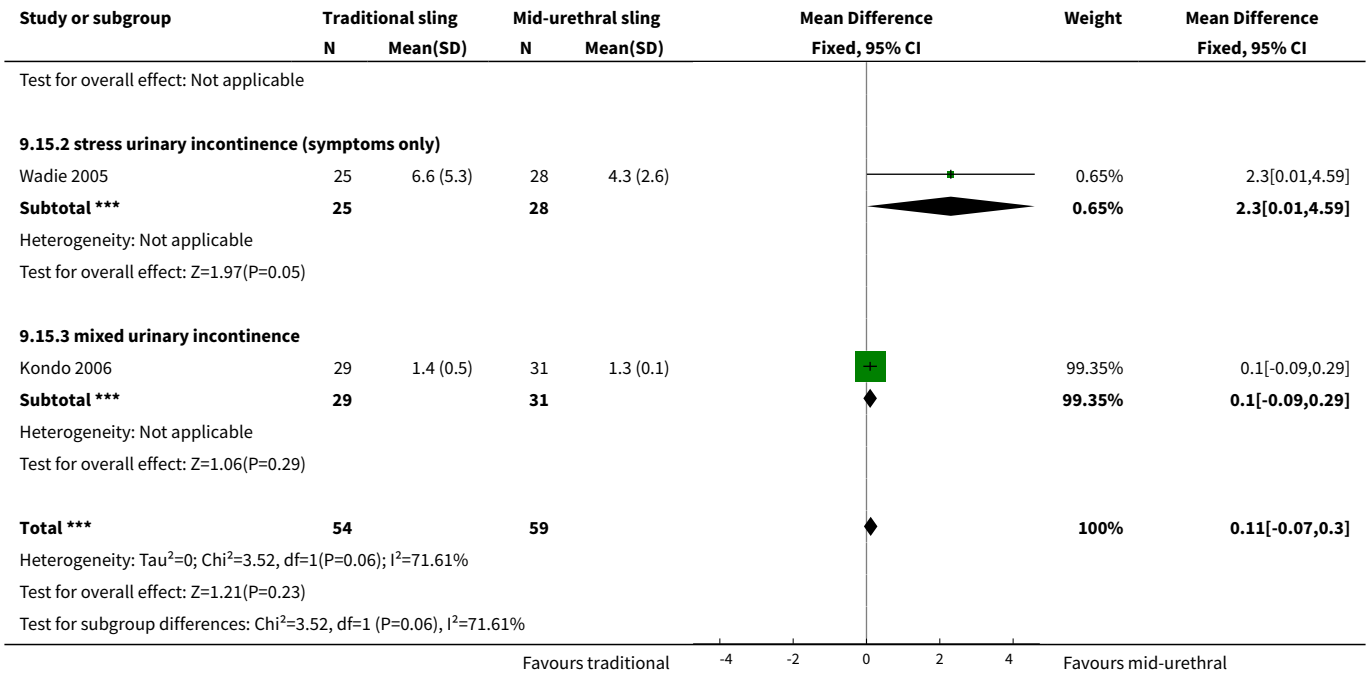



## Analysis 9.14. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 14 Length of hospital stay (days).

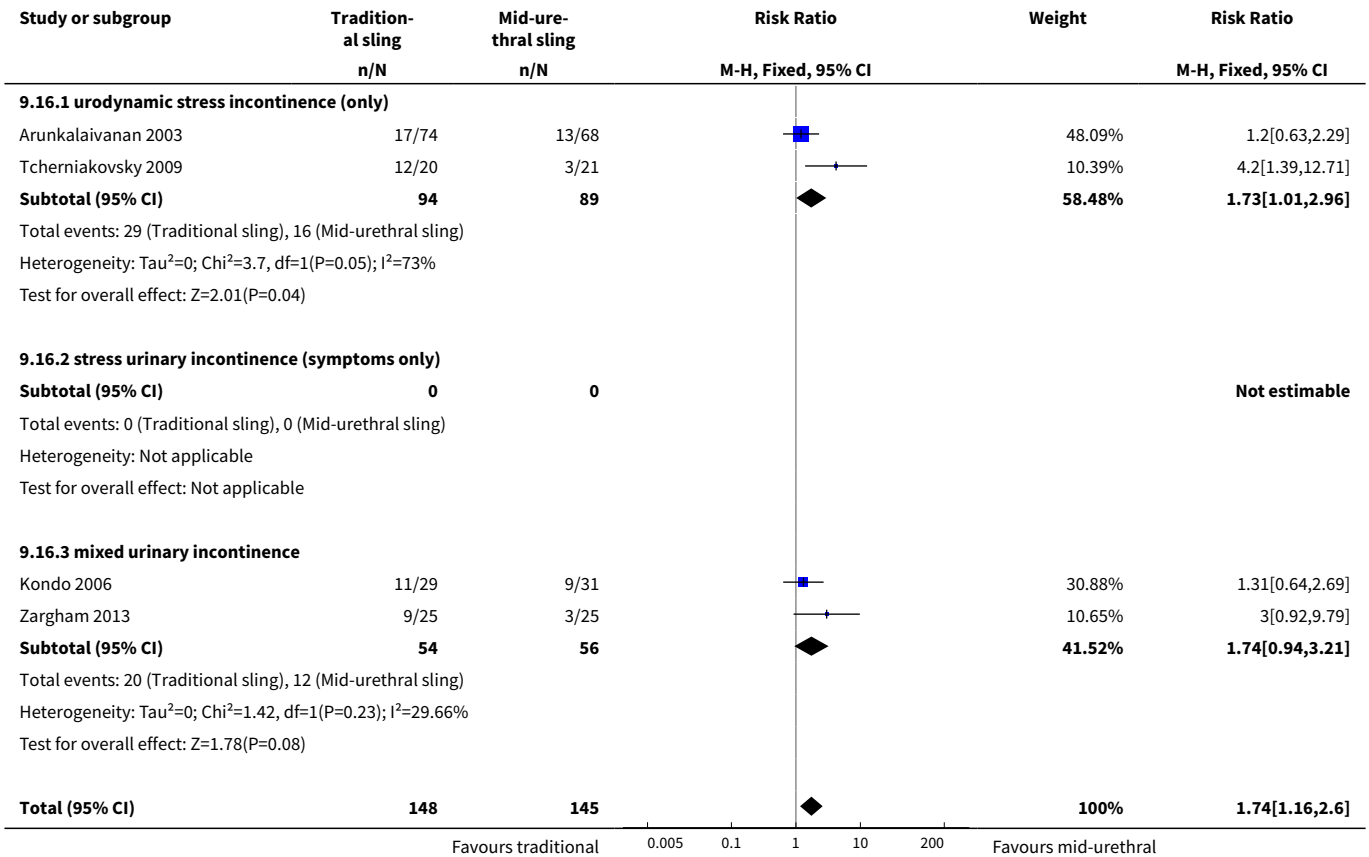



## Analysis 9.15. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 15 Time to catheter removal (days).

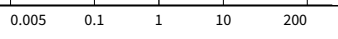





## Analysis 9.16. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 16 Perioperative surgical complications.



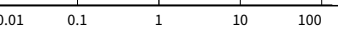
| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Total events: 49 (Traditional sling), 28 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=5.12, df=3(P=0.16); I²=41.46% | | | | | |
| Test for overall effect: Z=2.68(P=0.01) | | | | | |
| Test for subgroup differences: Chi²=0, df=1 (P=0.99), I²=0% | | | | | |




Favours traditional — Favours mid-urethral

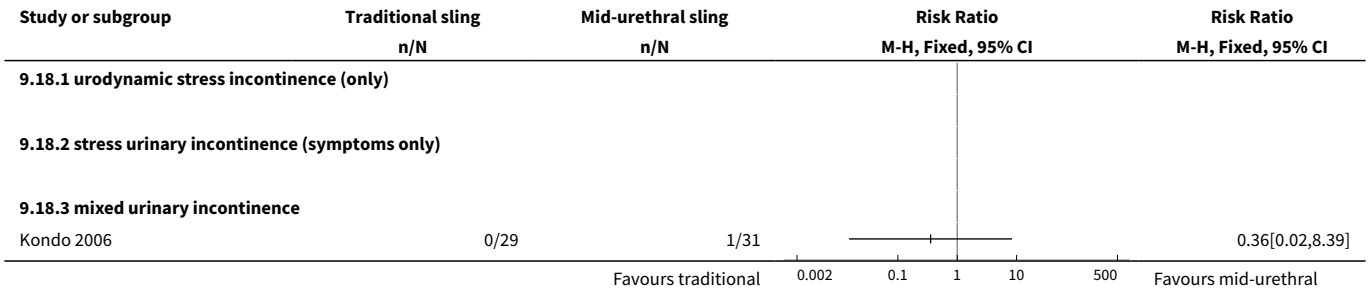
## Analysis 9.17. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 17 Bladder perforations.

| Study or subgroup | Tradition-al sling n/N | Mid-ure-thral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **9.17.1 urodynamic stress incontinence (only)** | | | | | |
| Arunkalaivanan 2003 | 0/74 | 0/68 | | | Not estimable |
| Guerrero 2008 | 2/79 | 4/72 | | 13.51% | 0.46[0.09,2.41] |
| Tcherniakovsky 2009 | 1/20 | 0/21 | | 1.58% | 3.14[0.14,72.92] |
| **Subtotal (95% CI)** | **173** | **161** | | **15.08%** | **0.74[0.19,2.86]** |
| Total events: 3 (Traditional sling), 4 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=1.14, df=1(P=0.29); I²=12.02% | | | | | |
| Test for overall effect: Z=0.44(P=0.66) | | | | | |
| **9.17.2 stress urinary incontinence (symptoms only)** | | | | | |
| Wadie 2005 | 1/25 | 2/28 | | 6.09% | 0.56[0.05,5.81] |
| **Subtotal (95% CI)** | **25** | **28** | | **6.09%** | **0.56[0.05,5.81]** |
| Total events: 1 (Traditional sling), 2 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.49(P=0.63) | | | | | |
| **9.17.3 mixed urinary incontinence** | | | | | |
| Al-Azzawi 2014 | 0/40 | 0/40 | | | Not estimable |
| Basok 2008 | 3/67 | 8/72 | | 24.89% | 0.4[0.11,1.46] |
| Kondo 2006 | 7/29 | 7/31 | | 21.83% | 1.07[0.43,2.67] |
| Sharifiaghdas 2008 | 2/36 | 6/25 | | 22.85% | 0.23[0.05,1.05] |
| Song 2004 | 0/19 | 1/48 | | 2.81% | 0.82[0.03,19.21] |
| Zargham 2013 | 1/25 | 2/25 | | 6.45% | 0.5[0.05,5.17] |
| **Subtotal (95% CI)** | **216** | **241** | | **78.83%** | **0.56[0.3,1.03]** |
| Total events: 13 (Traditional sling), 24 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=3.53, df=4(P=0.47); I²=0% | | | | | |
| Test for overall effect: Z=1.86(P=0.06) | | | | | |
| **Total (95% CI)** | **414** | **430** | | **100%** | **0.59[0.34,1.01]** |
| Total events: 17 (Traditional sling), 30 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=4.66, df=7(P=0.7); I²=0% | | | | | |
| Test for overall effect: Z=1.93(P=0.05) | | | | | |
| Test for subgroup differences: Chi²=0.13, df=1 (P=0.94), I²=0% | | | | | |

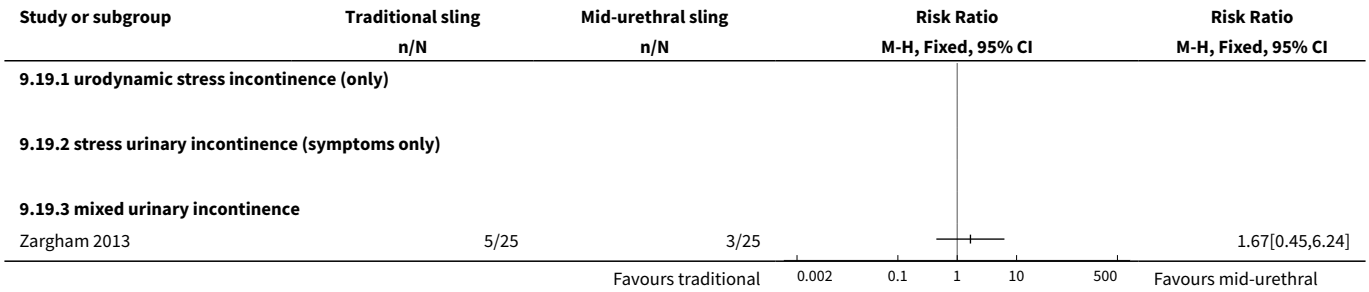



Favours traditional — Favours mid-urethral

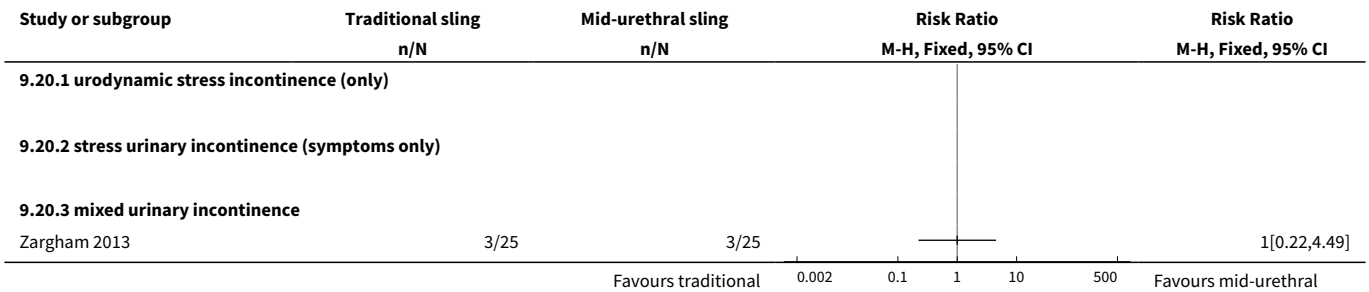
## Analysis 9.18. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 18 Urethral injury.



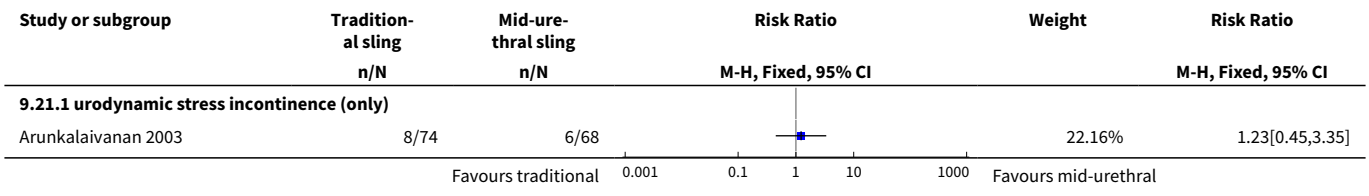

## Analysis 9.19. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 19 Vaginal bleeding.

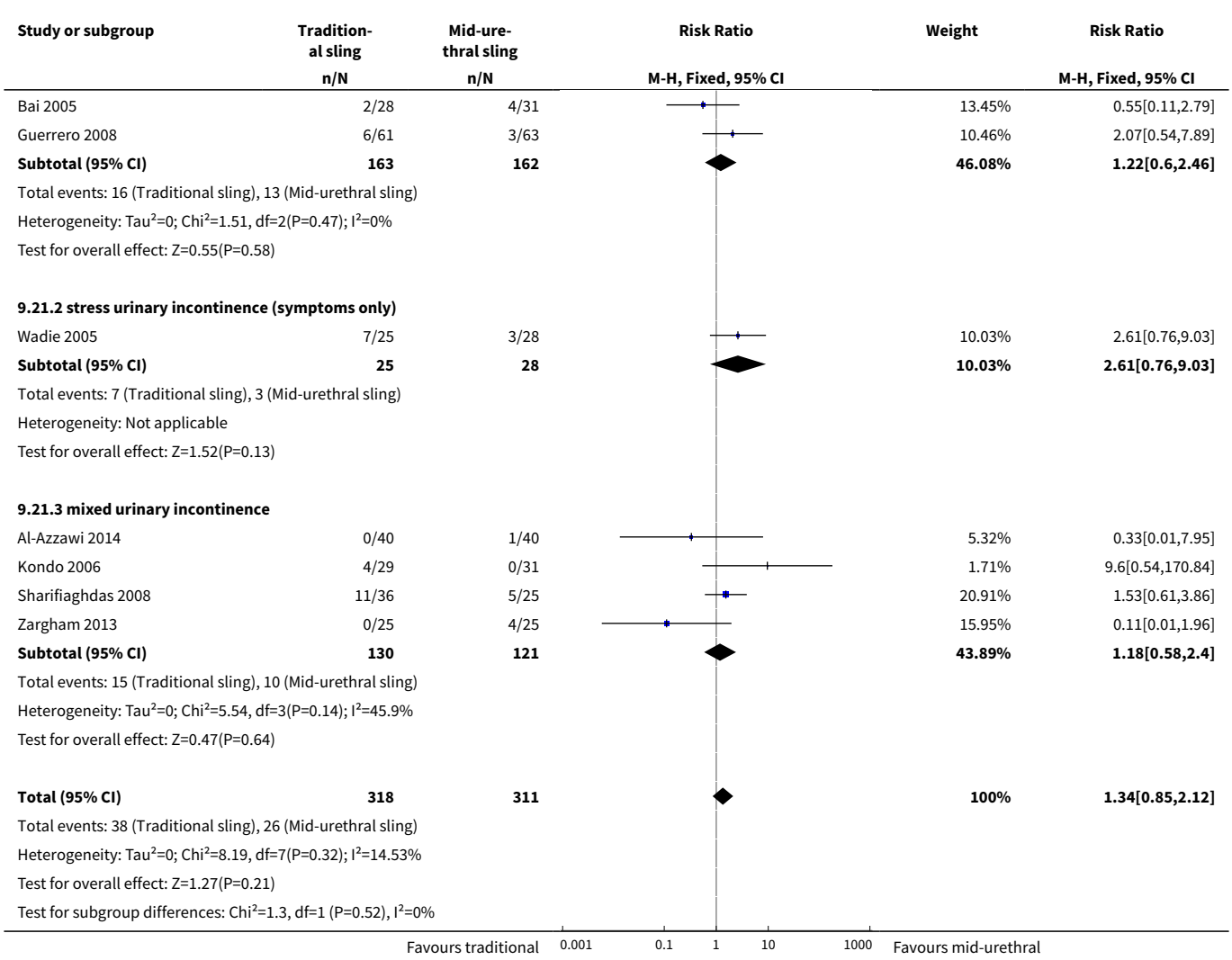



## Analysis 9.20. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 20 Urinary tract infection.

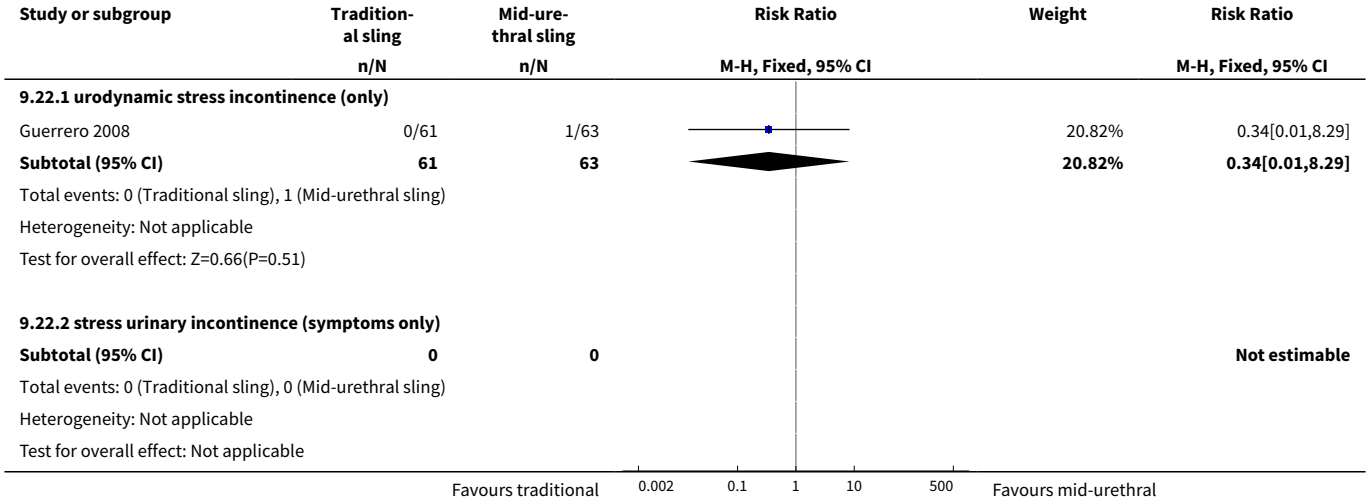


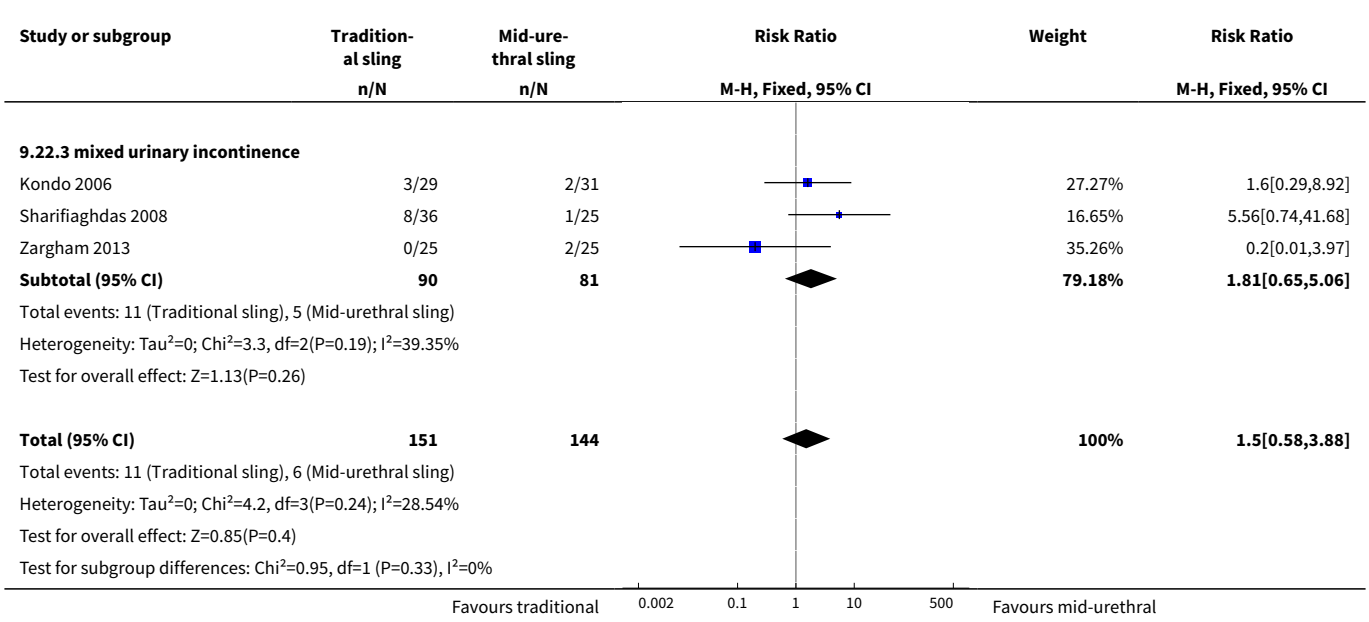

## Analysis 9.21. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 21 Voiding dysfunction.



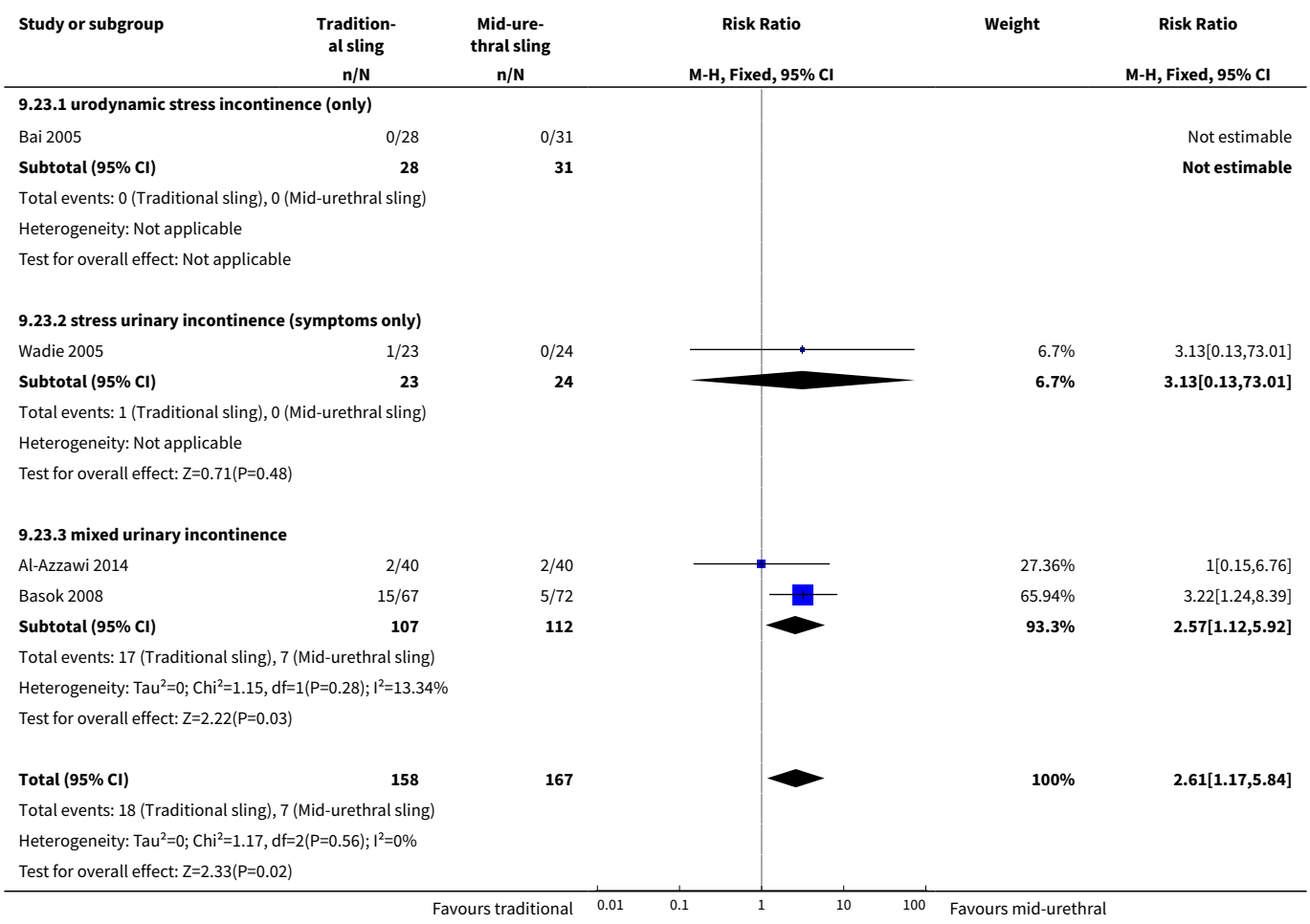


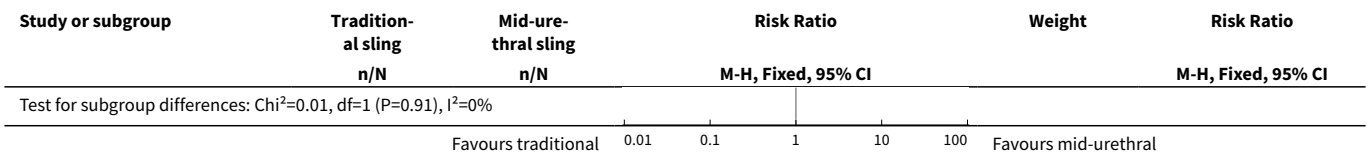

## Analysis 9.22. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 22 Urinary urgency symptoms, urgency urinary incontinence.



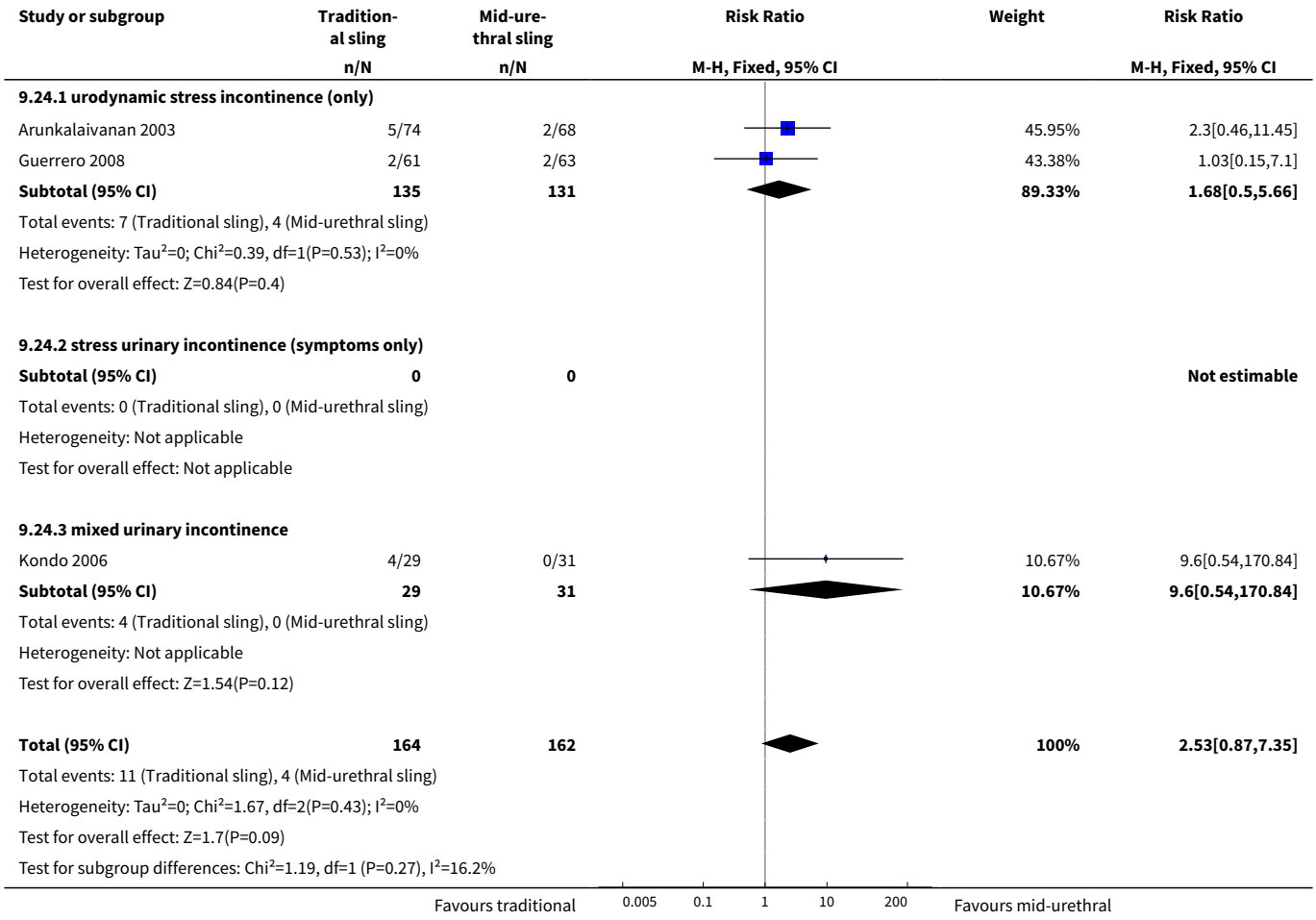



## Analysis 9.23. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 23 De novo detrusor overactivity (urodynamic diagnosis).

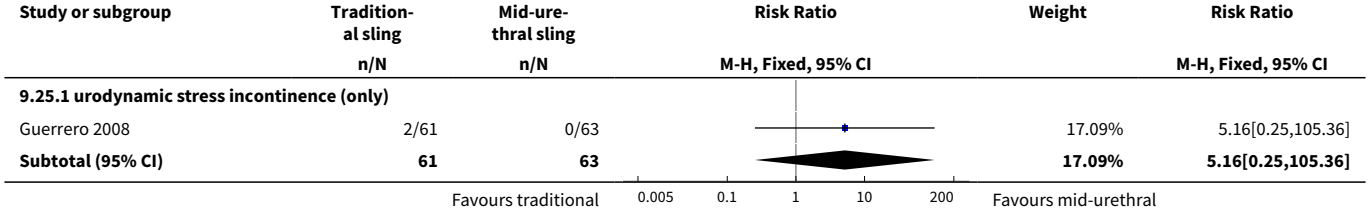


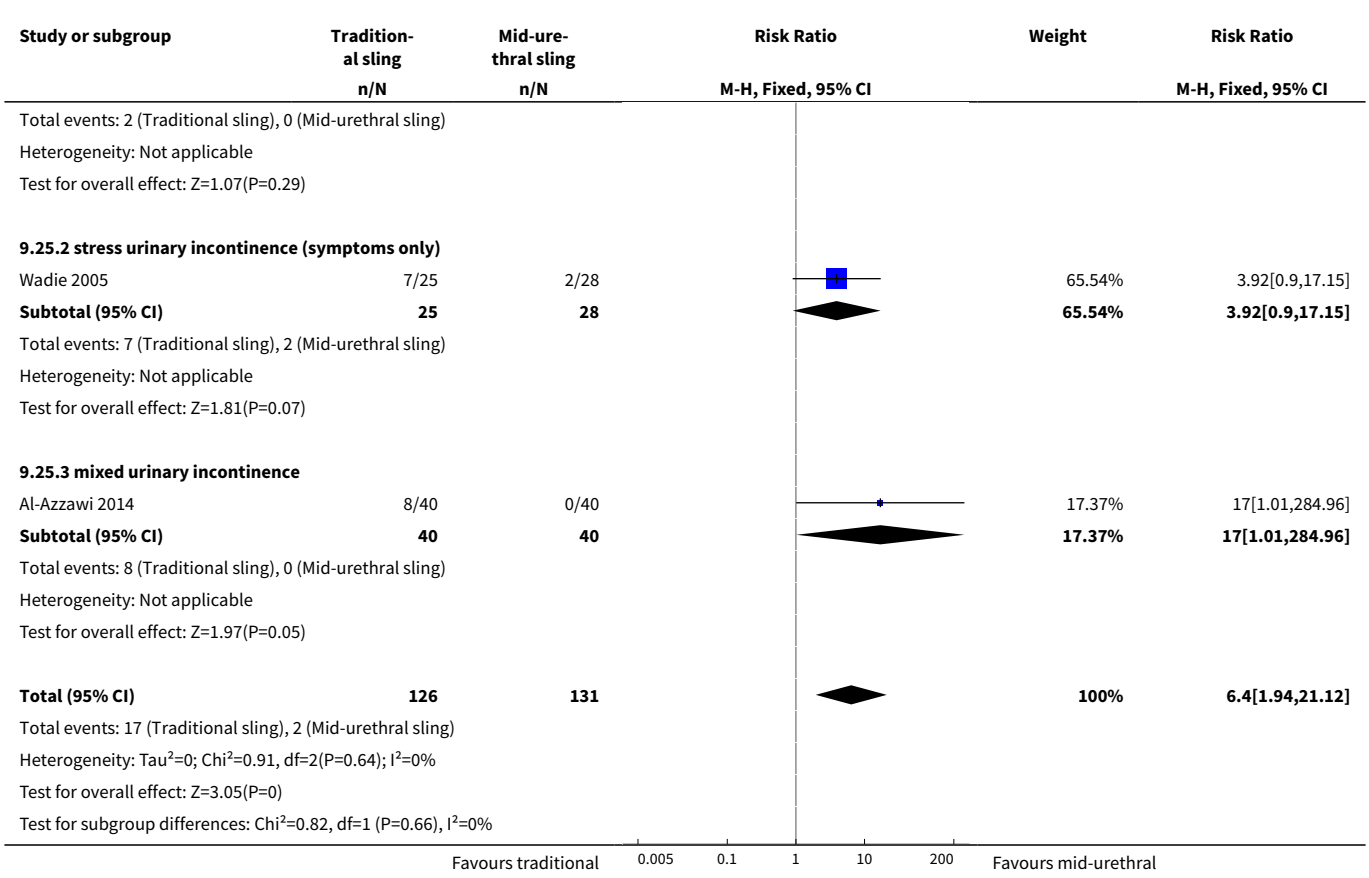



## Analysis 9.24. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 24 Long-term adverse effects (release of sling required).

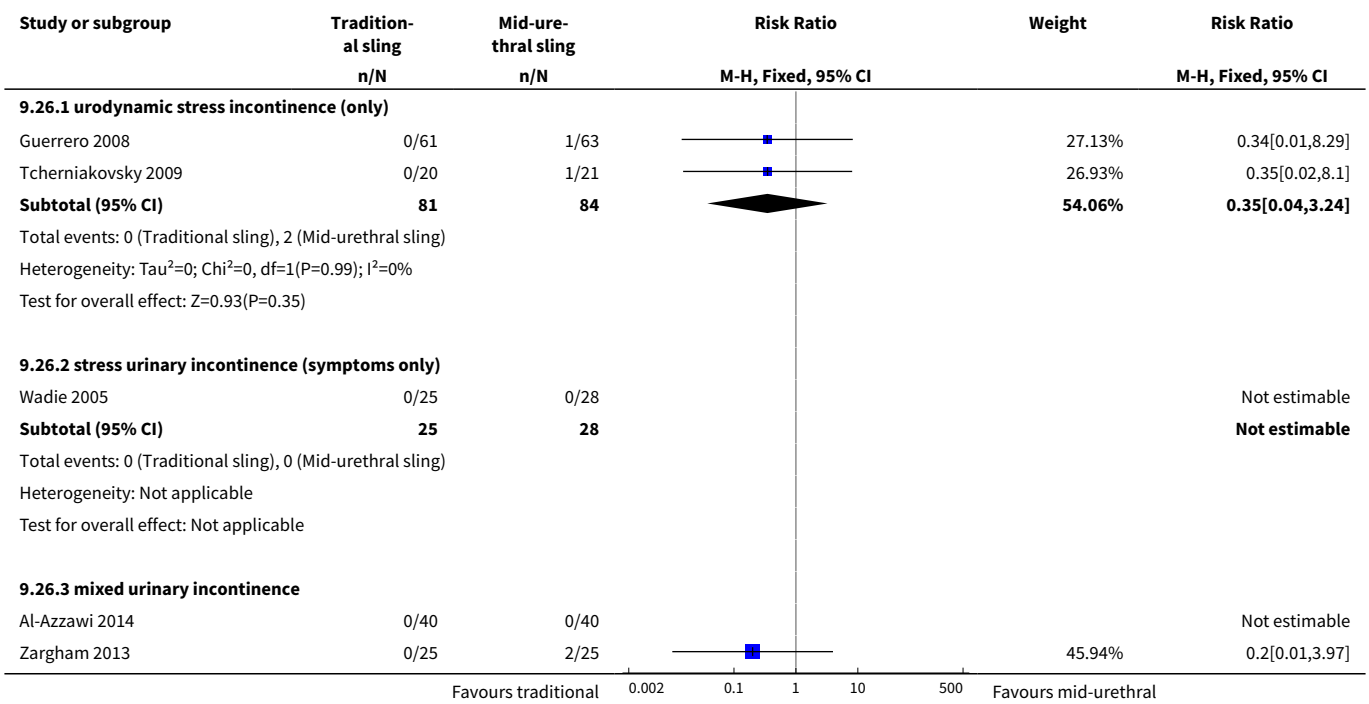


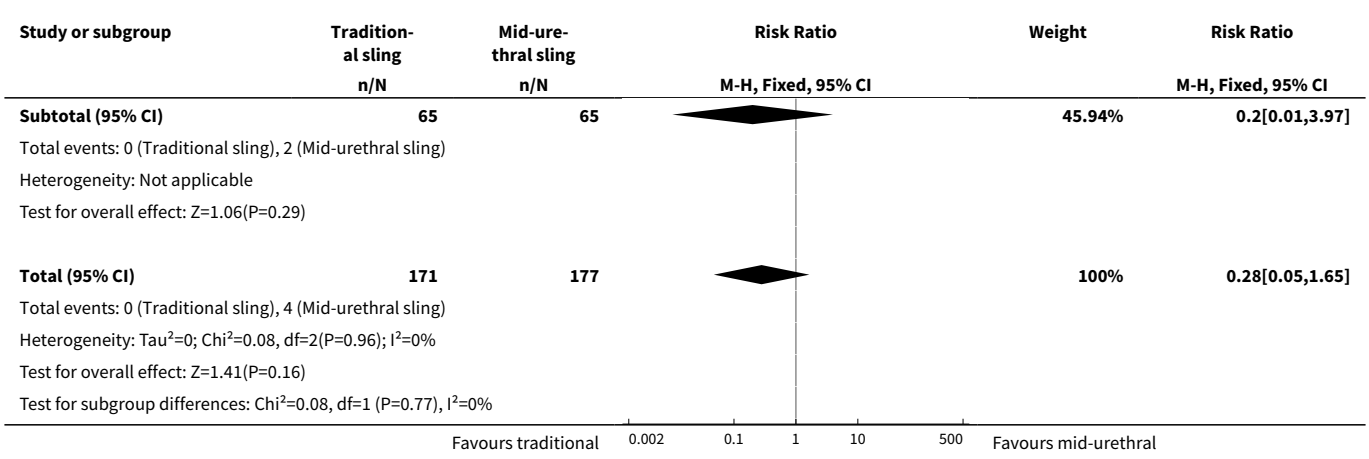

## Analysis 9.25. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 25 Long-term adverse effects (wound pain at 6 months).



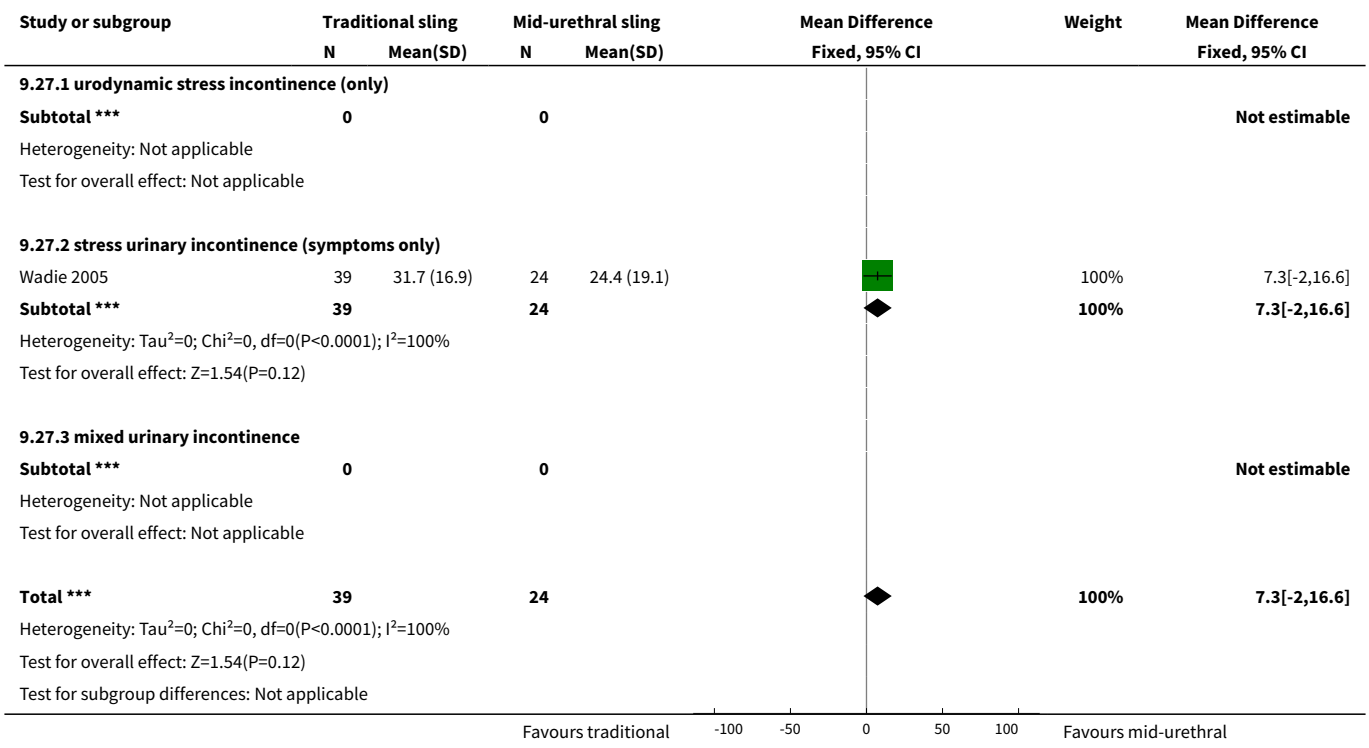



## Analysis 9.26. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 26 Long-term adverse effects (vaginal mesh or graft exposure).

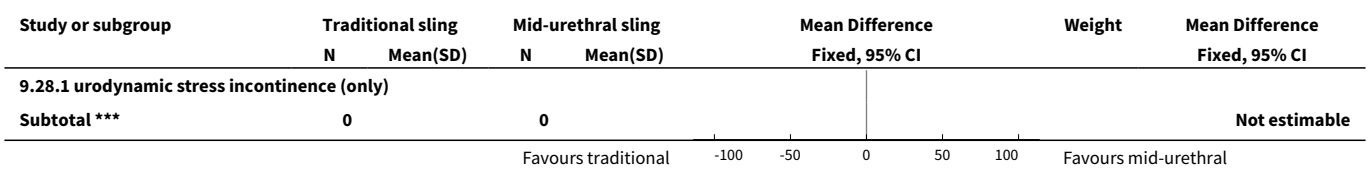


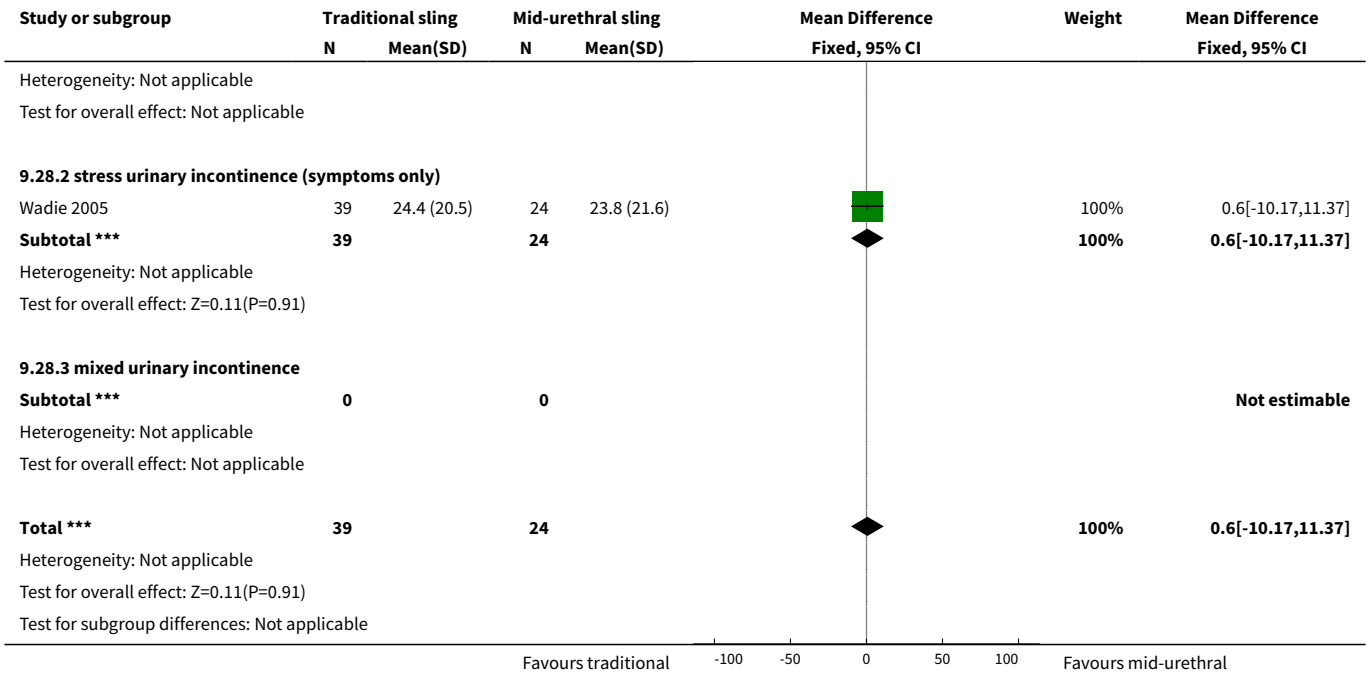



## Analysis 9.27. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 27 Condition-specific measures to assess quality of life: UDI-6.




## Analysis 9.28. Comparison 9 Traditional suburethral sling operation versus mid-urethral sling or tape, Outcome 28 Condition-specific measures to assess quality of life: IIQ-7.





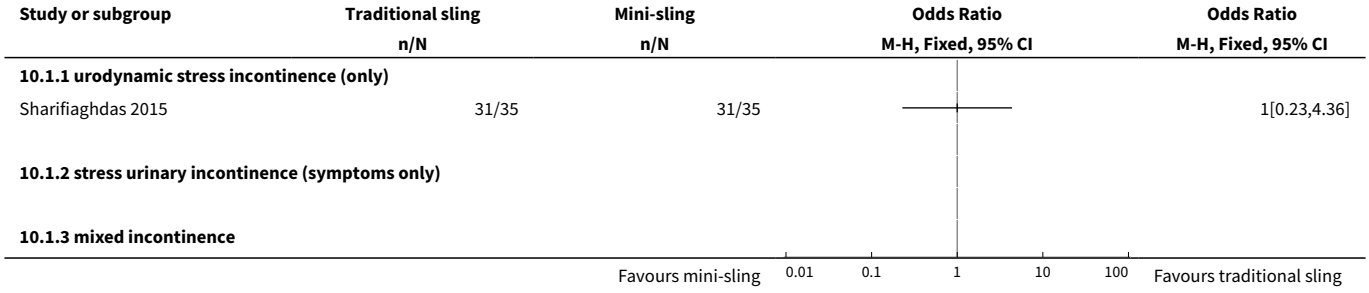

## Comparison 10. Traditional suburethral sling operation versus a single-incision sling (mini-sling)

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women at 1 to 5 years (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of women cured after first year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Number of women satisfied (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

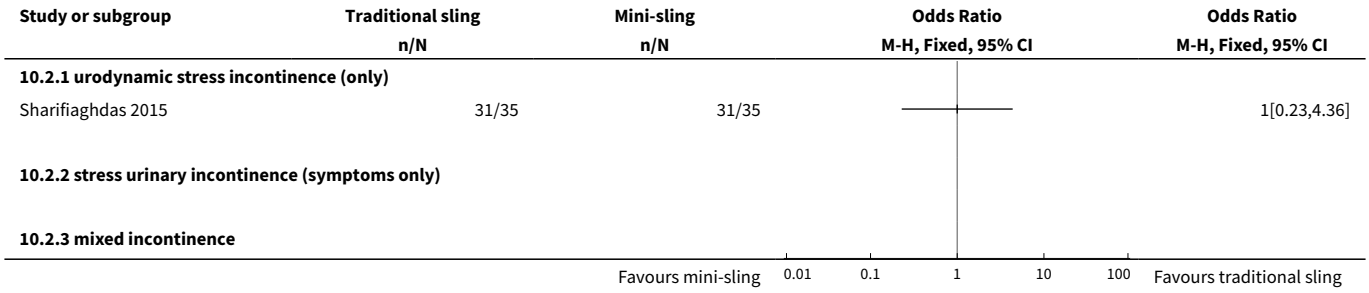
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 3.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Number of women with urinary incontinence (clinician's observations) within first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Bladder perforation | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Urinary urgency symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Pain with intercourse (dyspareunia) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Long-term adverse effects (vaginal mesh or graft exposure) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Condition-specific measures to assess quality of life: IIQ score | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 9.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed urinary incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

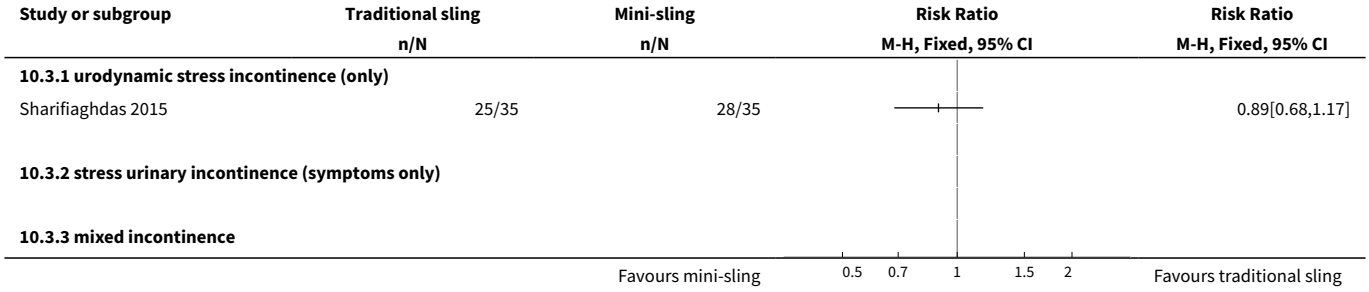
**Analysis 10.1. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 1 Number of continent women at 1 to 5 years (any definition).**



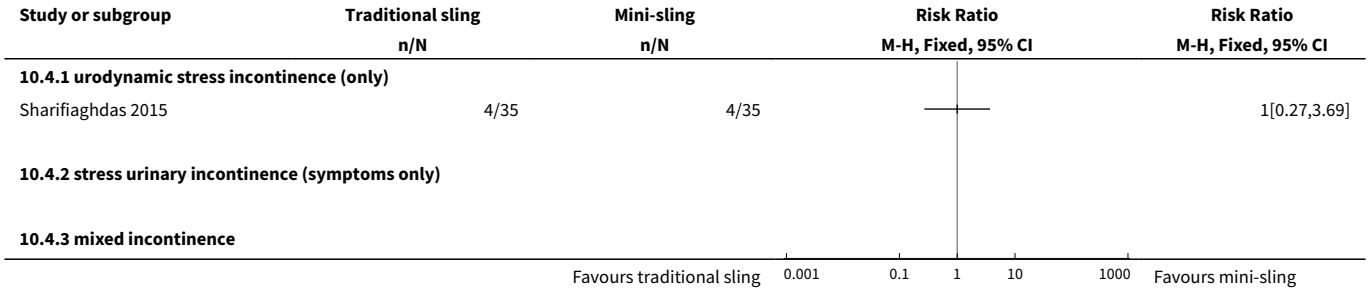

**Analysis 10.2. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 2 Number of women cured after first year (women's observations).**



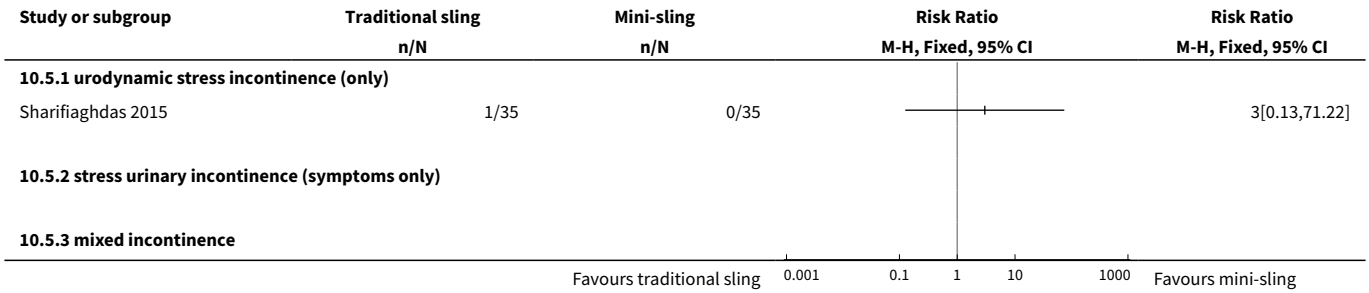
### Analysis 10.3. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 3 Number of women satisfied (women's observations).



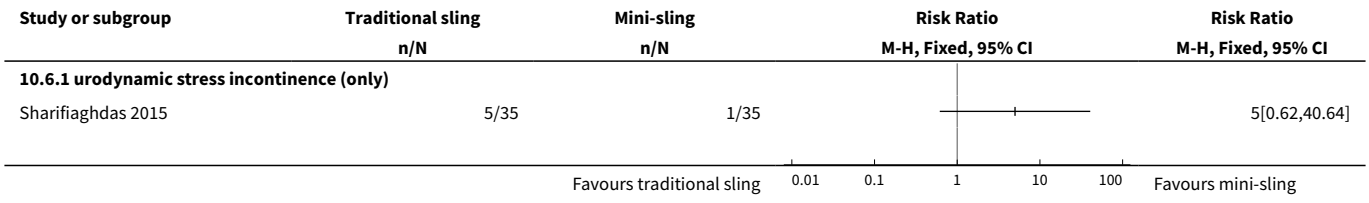

### Analysis 10.4. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 4 Number of women with urinary incontinence (clinician's observations) within first year.

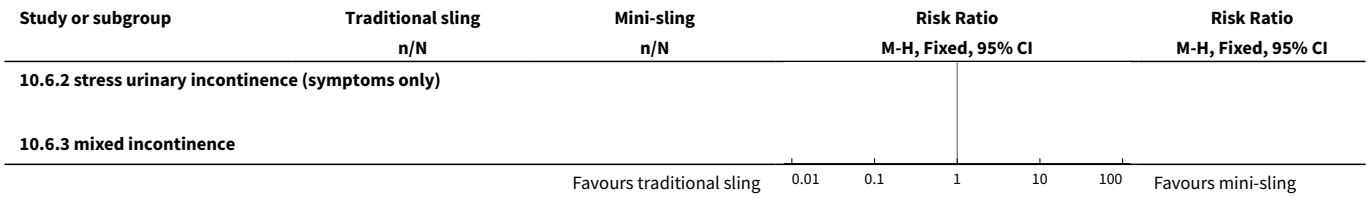



### Analysis 10.5. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 5 Bladder perforation.

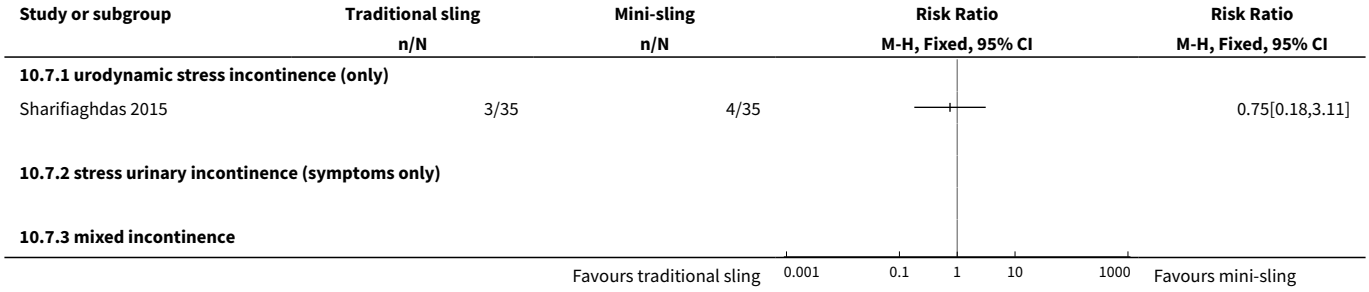



### Analysis 10.6. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 6 Urinary urgency symptoms, urgency urinary incontinence.

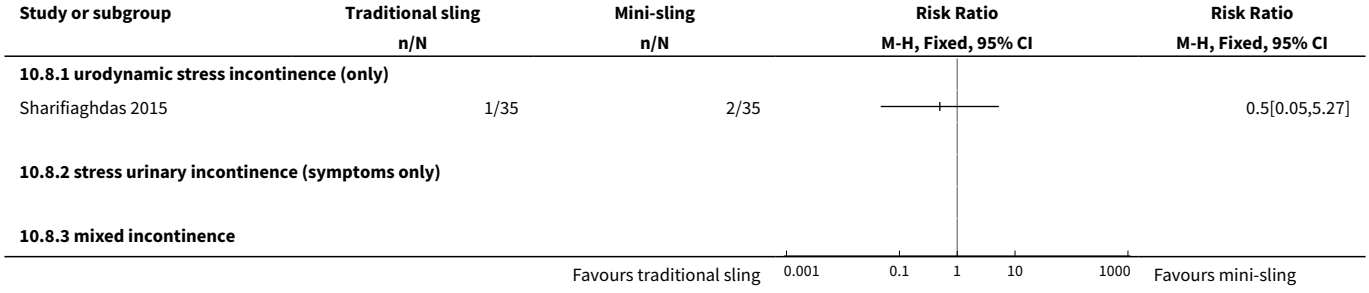




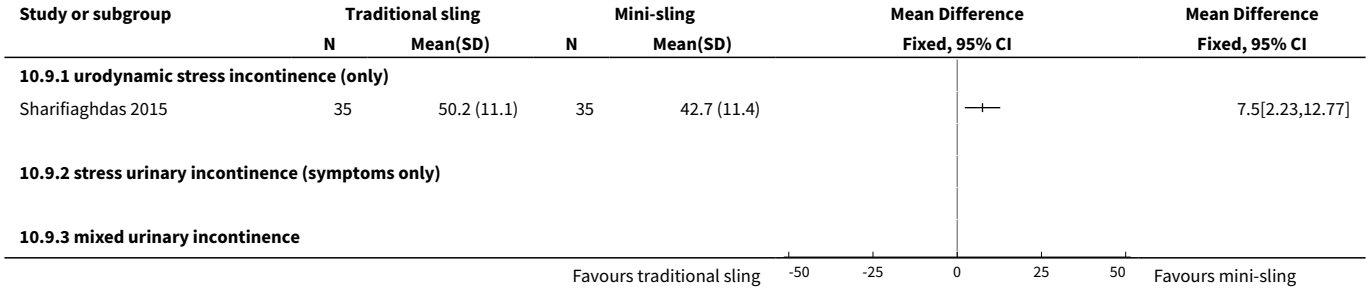

## Analysis 10.7. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 7 Pain with intercourse (dyspareunia).




## Analysis 10.8. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 8 Long-term adverse effects (vaginal mesh or graft exposure).




## Analysis 10.9. Comparison 10 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 9 Condition-specific measures to assess quality of life: IIQ score.



**Comparison 11. One type of traditional sling operation versus another type of traditional sling operation**

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of continent women within 1 year (any definition) | 5 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 fascial sling vs Pelvicol sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 standard sling vs short sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 autologous fascial sling vs Fortaperm sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.4 Vypro vs Ultrapro | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.5 Vypro vs Prolene light | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.6 Ultrapro vs Prolene light | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.7 fascial sling vs vaginal wall sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of continent women at 1 to 5 years (any definition) | 7 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 fascial sling vs Pelvicol sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 standard sling vs short sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.4 rectus fascia sling vs Goretex sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.5 Vypro vs Ultrapro | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.6 Vypro vs Prolene light | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.7 Ultrapro vs Prolene light | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.8 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.9 anterior rectus sheath sling vs Prolene strip | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.10 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.11 Prolene strip vs anterior vaginal wall patch | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 3 Number of continent women after 5 years (any definition) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 standard sling vs short sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women cured after first year (women's observations) | 3 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 fascial sling vs Pelvicol sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 standard sling vs short sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Number of women improved or cured within first year (women's observations) | 3 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 fascial sling vs Pelvicol sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 autologous fascial sling vs Fortaperm sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 rectus fascia sling vs Goretex sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Number of women improved or cured at 1 to 5 years (women's observations) | 4 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.4 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.5 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.6 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

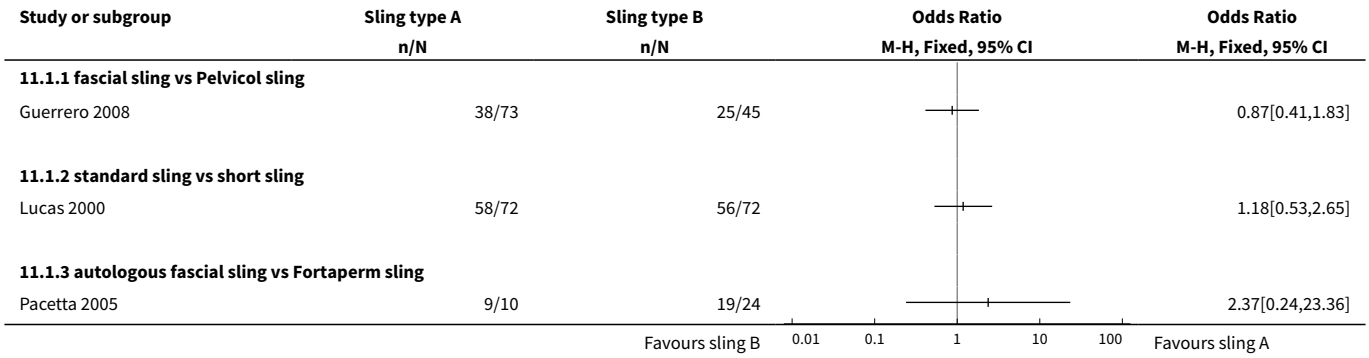
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 8 Number of women satisfied (women's observations) | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.5 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Pad test of quantified leakage (mean weight of urine lost) within 1 year | 2 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 9.1 standard sling vs short sling | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.4 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Pad test of quantified leakage (mean weight of urine lost) at 1 to 5 years | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 10.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Duration of operation (minutes) | 2 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 11.1 standard sling vs short sling | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.2 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.3 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.4 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12 Blood loss (mL) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 12.1 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

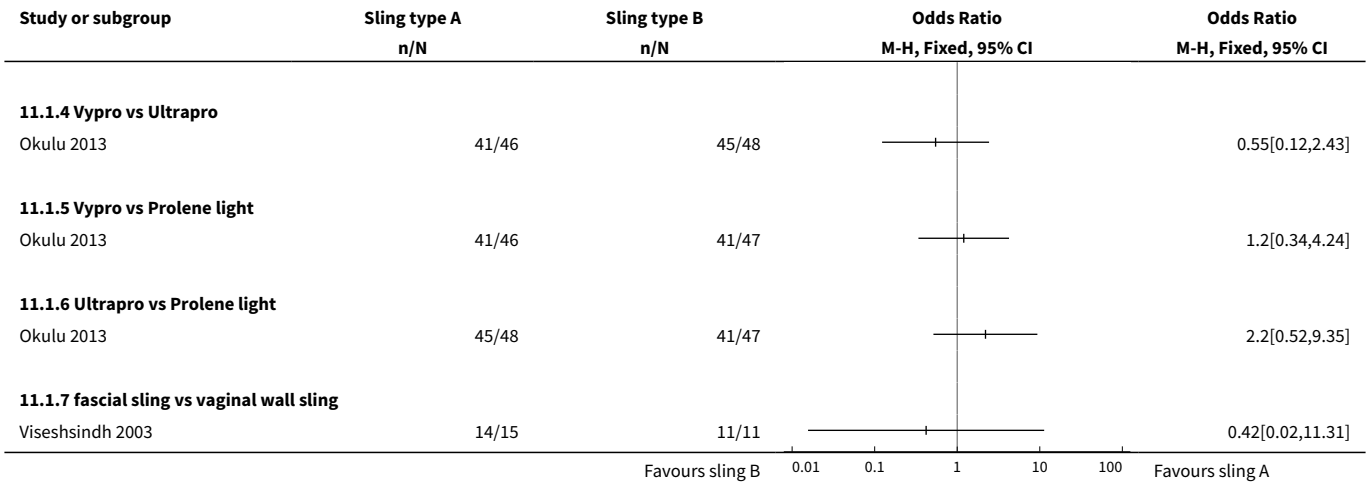
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 12.2 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Length of hospital stay (days) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 13.1 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.2 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.3 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14 Perioperative surgical complications | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 14.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.2 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.3 fascial sling vs vaginal wall sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15 Bladder perforation | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 15.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.2 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.3 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.4 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.5 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16 Urinary tract infection | 2 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 16.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16.2 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17 Vaginal bleeding | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 17.1 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 18 Long-term adverse effects (wound pain) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Voiding dysfunction | 6 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 19.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.2 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.3 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.4 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.5 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.6 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.7 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.8 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.9 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.10 fascial sling vs vaginal wall sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 Urinary urgency symptoms, urgency urinary incontinence | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 20.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.5 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21 Detrusor overactivity (urodynamic overactivity) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 21.1 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22 Long-term adverse effects (release of sling required) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |

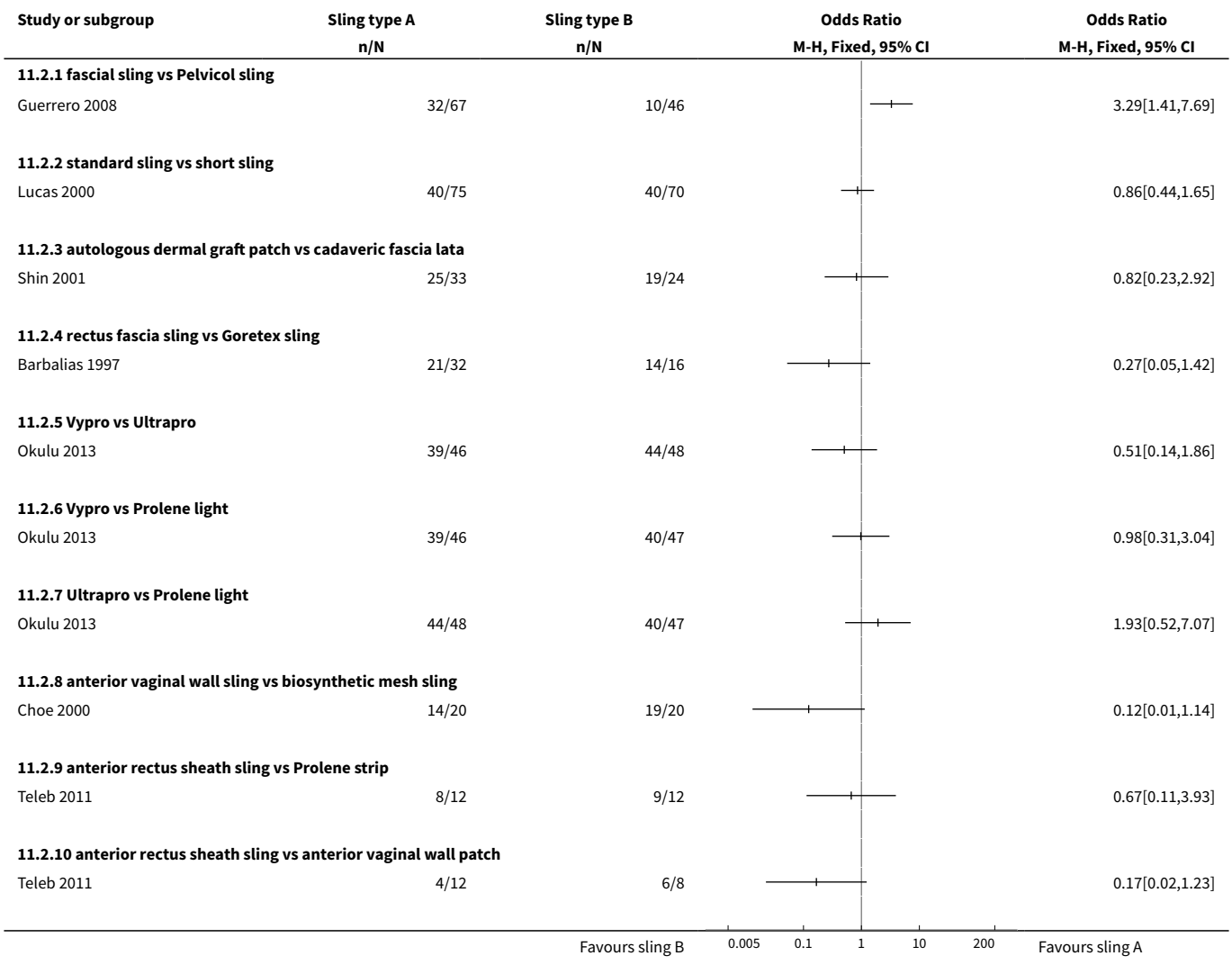
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 22.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23 Long-term adverse effects (vaginal mesh or graft exposure) | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 23.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.5 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 24.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 25.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

**Analysis 11.1. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 1 Number of continent women within 1 year (any definition).**

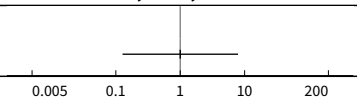





## Analysis 11.2. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 2 Number of continent women at 1 to 5 years (any definition).

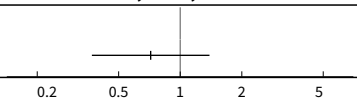


| Study or subgroup | Sling type A n/N | Sling type B n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.2.11 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 9/12 | 6/8 | | 1[0.13,7.89] |



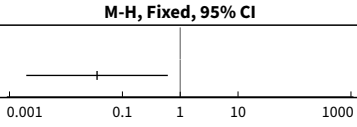

## Analysis 11.3. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 3 Number of continent women after 5 years (any definition).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.3.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 31/73 | 35/69 | | 0.72[0.37,1.39] |



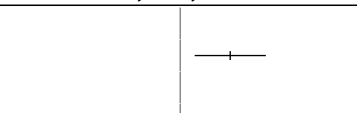

## Analysis 11.4. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 4 Repeat surgery for urinary incontinence.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.4.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 0/67 | 9/46 | | 0.04[0,0.61] |



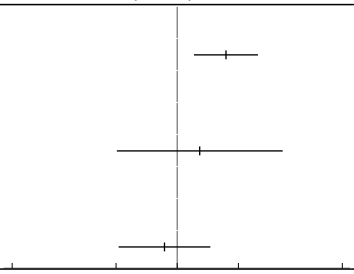

## Analysis 11.5. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 5 Number of women cured after first year (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.5.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 32/67 | 10/46 | | 3.29[1.41,7.69] |
| **11.5.2 standard sling vs short sling** | | | | |
| Lucas 2000 | 31/73 | 35/69 | | 0.72[0.37,1.39] |
| **11.5.3 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 19/24 | 25/33 | | 1.22[0.34,4.32] |



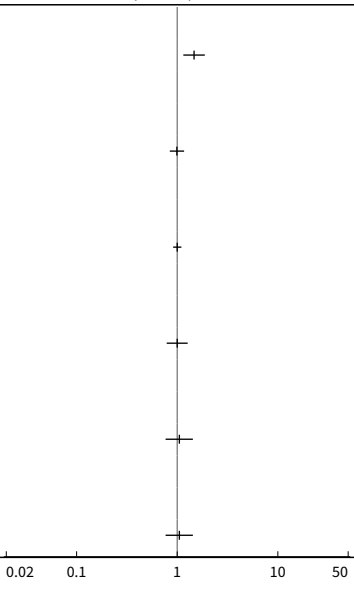
## Analysis 11.6. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 6 Number of women improved or cured within first year (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.6.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 69/73 | 33/45 | | 6.27[1.88,20.94] |
| **11.6.2 autologous fascial sling vs Fortaperm sling** | | | | |
| Pacetta 2005 | 10/10 | 22/24 | | 2.33[0.1,53.03] |
| **11.6.3 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 26/32 | 14/16 | | 0.62[0.11,3.48] |



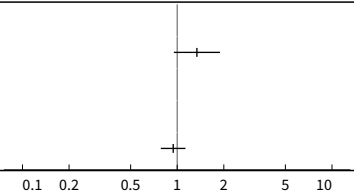

## Analysis 11.7. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 7 Number of women improved or cured at 1 to 5 years (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.7.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 60/67 | 28/46 | | 1.47[1.15,1.88] |
| **11.7.2 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 30/33 | 22/24 | | 0.99[0.84,1.17] |
| **11.7.3 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 32/32 | 16/16 | | 1[0.91,1.1] |
| **11.7.4 anterior rectus sheath sling vs Prolene strip** | | | | |
| Teleb 2011 | 11/12 | 11/12 | | 1[0.79,1.27] |
| **11.7.5 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 11/12 | 7/8 | | 1.05[0.77,1.43] |
| **11.7.6 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 11/12 | 7/8 | | 1.05[0.77,1.43] |

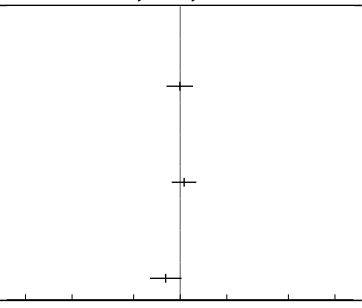



## Analysis 11.8. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 8 Number of women satisfied (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.8.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 43/61 | 20/38 | | 1.34[0.95,1.89] |
| **11.8.2 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 37/46 | 41/48 | | 0.94[0.78,1.13] |

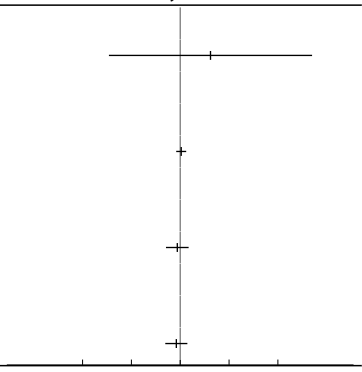


| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.8.3 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 37/46 | 38/47 | | 0.99[0.82,1.21] |
| **11.8.4 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 41/48 | 38/47 | | 1.06[0.88,1.27] |
| **11.8.5 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 16/20 | 20/20 | | 0.8[0.64,1.02] |



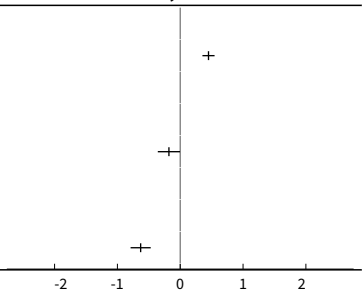

## Analysis 11.9. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 9 Pad test of quantified leakage (mean weight of urine lost) within 1 year.

| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.9.1 standard sling vs short sling** | | | | | | |
| Lucas 2000 | 81 | 7.7 (34.1) | 84 | 4.6 (34.1) | | 3.1[-7.3,13.5] |
| **11.9.2 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2.1 (1.4) | 48 | 2 (1.1) | | 0.1[-0.41,0.61] |
| **11.9.3 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2.1 (1.4) | 47 | 2.4 (3.8) | | -0.3[-1.46,0.86] |
| **11.9.4 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 2 (1.1) | 47 | 2.4 (3.8) | | -0.4[-1.53,0.73] |



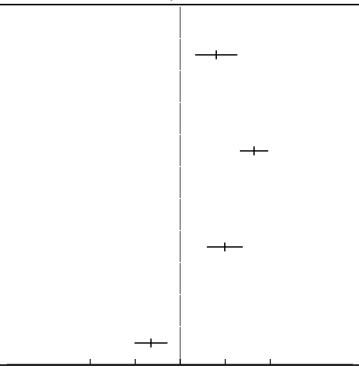

## Analysis 11.10. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 10 Pad test of quantified leakage (mean weight of urine lost) at 1 to 5 years.

| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.10.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 0.7 (0.3) | 48 | 0.2 (0.2) | | 0.45[0.35,0.55] |
| **11.10.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 0.7 (0.3) | 47 | 0.8 (0.5) | | -0.18[-0.36,-0] |
| **11.10.3 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 0.2 (0.2) | 47 | 0.8 (0.5) | | -0.63[-0.79,-0.47] |



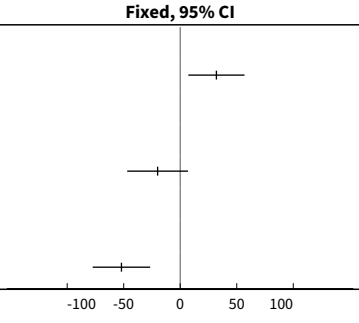
## Analysis 11.11. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 11 Duration of operation (minutes).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.11.1 standard sling vs short sling** | | | | | | |
| Lucas 2000 | 81 | 62 (15.3) | 84 | 54 (15.3) | | 8[3.32,12.68] |
| **11.11.2 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 52.1 (4.4) | 12 | 35.7 (3.4) | | 16.4[13.25,19.55] |
| **11.11.3 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 52.1 (4.4) | 8 | 42.2 (4.5) | | 9.9[5.91,13.89] |
| **11.11.4 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 35.7 (3.4) | 8 | 42.2 (4.5) | | -6.5[-10.16,-2.84] |



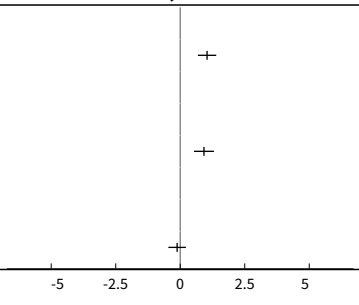

## Analysis 11.12. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 12 Blood loss (mL).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.12.1 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 181 (33) | 12 | 149 (29) | | 32[7.14,56.86] |
| **11.12.2 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 181 (33) | 8 | 201 (28) | | -20[-46.93,6.93] |
| **11.12.3 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 149 (29) | 8 | 201 (28) | | -52[-77.41,-26.59] |



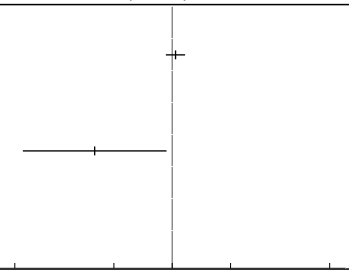

## Analysis 11.13. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 13 Length of hospital stay (days).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.13.1 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 2.4 (0.5) | 12 | 1.4 (0.4) | | 1.04[0.68,1.4] |
| **11.13.2 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 2.4 (0.5) | 8 | 1.5 (0.4) | | 0.92[0.53,1.31] |
| **11.13.3 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 1.4 (0.4) | 8 | 1.5 (0.4) | | -0.12[-0.46,0.22] |



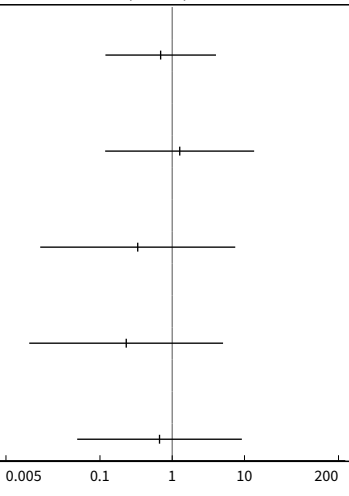
## Analysis 11.14. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 14 Perioperative surgical complications.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.14.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 34/81 | 31/84 | | 1.14[0.78,1.66] |
| **11.14.2 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 0/32 | 5/16 | | 0.05[0,0.8] |
| **11.14.3 fascial sling vs vaginal wall sling** | | | | |
| Viseshsindh 2003 | 0/15 | 0/11 | | Not estimable |



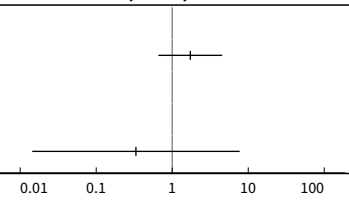

## Analysis 11.15. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 15 Bladder perforation.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.15.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 2/81 | 3/84 | | 0.69[0.12,4.03] |
| **11.15.2 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 2/79 | 1/50 | | 1.27[0.12,13.6] |
| **11.15.3 anterior rectus sheath sling vs Prolene strip** | | | | |
| Teleb 2011 | 0/12 | 1/12 | | 0.33[0.01,7.45] |
| **11.15.4 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 0/12 | 1/8 | | 0.23[0.01,5.05] |
| **11.15.5 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 1/12 | 1/8 | | 0.67[0.05,9.19] |



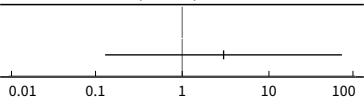

## Analysis 11.16. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 16 Urinary tract infection.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.16.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 10/81 | 6/84 | | 1.73[0.66,4.54] |
| **11.16.2 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 0/20 | 1/20 | | 0.33[0.01,7.72] |



## Analysis 11.17. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 17 Vaginal bleeding.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.17.1 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 1/20 | 0/20 | | 3[0.13,69.52] |

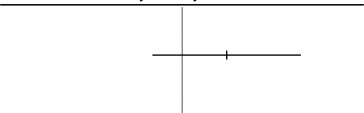



## Analysis 11.18. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 18 Long-term adverse effects (wound pain).

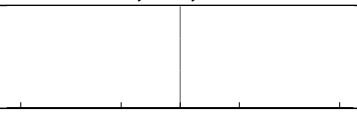
| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.18.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 2/61 | 0/38 | | 3.15[0.16,63.8] |


## Analysis 11.19. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 19 Voiding dysfunction.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.19.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 4/61 | 0/38 | | 5.66[0.31,102.29] |
| **11.19.2 standard sling vs short sling** | | | | |
| Lucas 2000 | 19/81 | 17/84 | | 1.16[0.65,2.07] |
| **11.19.3 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 2/46 | 2/48 | | 1.04[0.15,7.1] |
| **11.19.4 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 2/46 | 2/47 | | 1.02[0.15,6.95] |
| **11.19.5 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 2/48 | 2/47 | | 0.98[0.14,6.67] |
| **11.19.6 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 0/20 | 0/20 | | Not estimable |
| **11.19.7 anterior rectus sheath sling vs Prolene strip** | | | | |
| Teleb 2011 | 0/12 | 1/12 | | 0.33[0.01,7.45] |
| **11.19.8 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 0/12 | 0/8 | | Not estimable |
| **11.19.9 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 1/12 | 0/8 | | 2.08[0.09,45.45] |

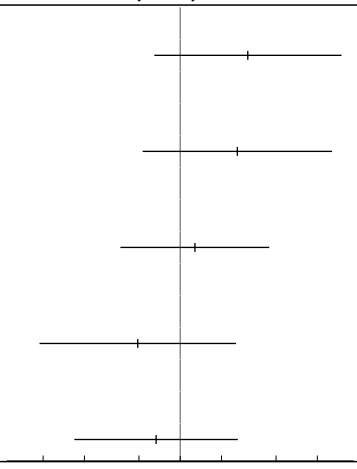


| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.19.10 fascial sling vs vaginal wall sling** | | | | |
| Viseshsindh 2003 | 0/15 | 0/11 | | Not estimable |



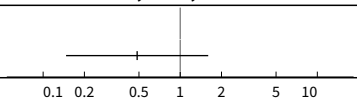

## Analysis 11.20. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 20 Urinary urgency symptoms, urgency urinary incontinence.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.20.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 6/81 | 2/84 | | 3.11[0.65,14.97] |
| **11.20.2 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 5/46 | 2/48 | | 2.61[0.53,12.78] |
| **11.20.3 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 5/46 | 4/47 | | 1.28[0.37,4.46] |
| **11.20.4 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 2/48 | 4/47 | | 0.49[0.09,2.55] |
| **11.20.5 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 4/32 | 3/16 | | 0.67[0.17,2.63] |



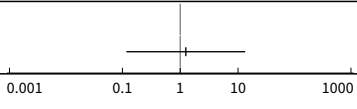

## Analysis 11.21. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 21 Detrusor overactivity (urodynamic overactivity).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.21.1 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 4/33 | 5/20 | | 0.48[0.15,1.6] |



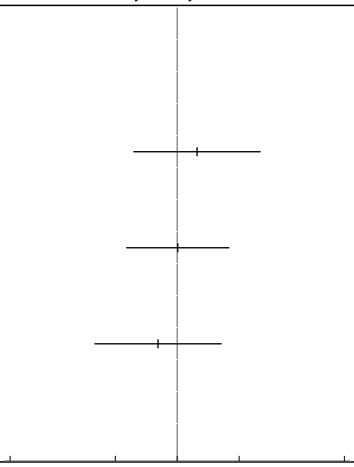

## Analysis 11.22. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 22 Long-term adverse effects (release of sling required).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.22.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 2/61 | 1/38 | | 1.25[0.12,13.28] |



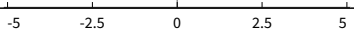
## Analysis 11.23. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 23 Long-term adverse effects (vaginal mesh or graft exposure).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **11.23.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 0/61 | 0/38 | | Not estimable |
| **11.23.2 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 2/46 | 1/48 | | 2.09[0.2,22.24] |
| **11.23.3 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 2/46 | 2/47 | | 1.02[0.15,6.95] |
| **11.23.4 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 1/48 | 2/47 | | 0.49[0.05,5.22] |
| **11.23.5 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 0/20 | 0/20 | | Not estimable |



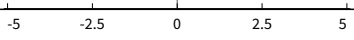

## Analysis 11.24. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year).

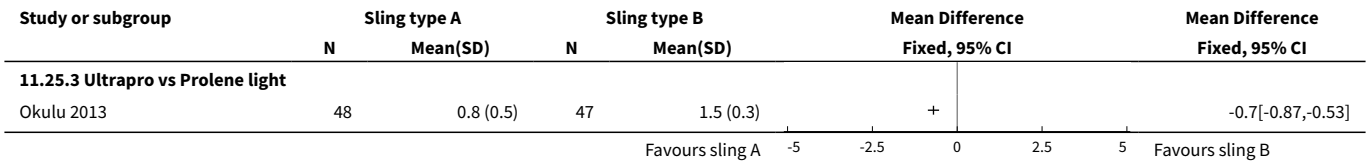
| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.24.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2 (0.7) | 48 | 1.2 (0.6) | | 0.8[0.54,1.06] |
| **11.24.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2 (0.7) | 47 | 1.7 (0.4) | | 0.3[0.07,0.53] |
| **11.24.3 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 1.2 (0.6) | 47 | 1.7 (0.4) | | -0.5[-0.7,-0.3] |




## Analysis 11.25. Comparison 11 One type of traditional sling operation versus another type of traditional sling operation, Outcome 25 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years).

| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **11.25.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2.1 (0.5) | 48 | 0.8 (0.5) | | 1.3[1.1,1.5] |
| **11.25.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2.1 (0.5) | 47 | 1.5 (0.3) | | 0.6[0.43,0.77] |

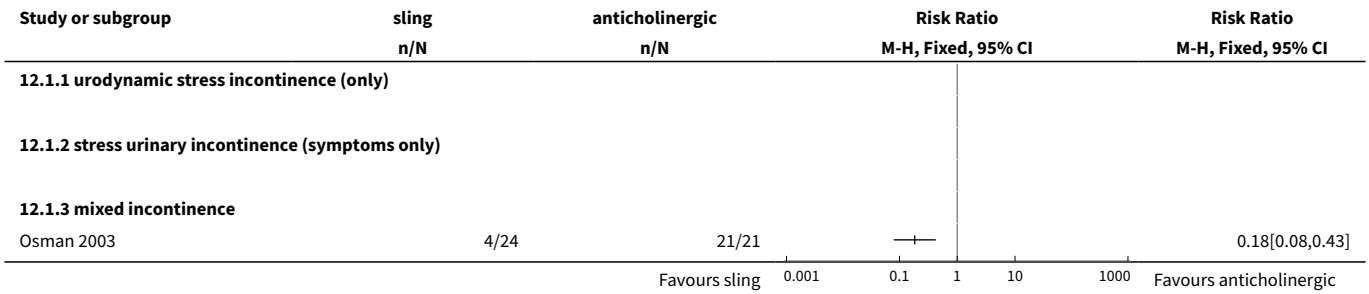




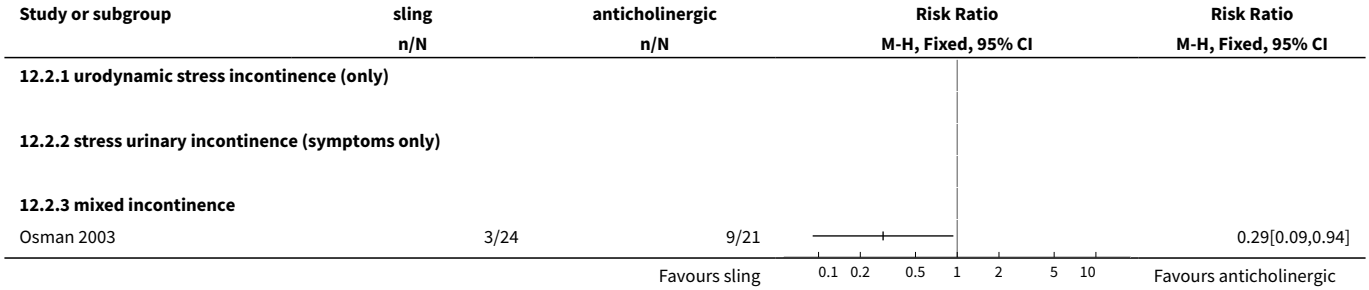

## Comparison 12. Traditional suburethral sling operation versus drugs

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Urge urinary symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

### Analysis 12.1. Comparison 12 Traditional suburethral sling operation versus drugs, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations).



**Analysis 12.2. Comparison 12 Traditional suburethral sling operation versus drugs, Outcome 2 Urge urinary symptoms, urgency urinary incontinence.**




## Comparison 13. Traditional suburethral sling operation versus injectables

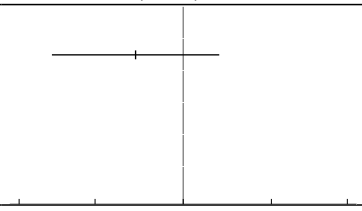
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of women with urinary incontinence (worse, unchanged, or improved) after first year (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Number of women with urinary incontinence (clinician's observations) within first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 3.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 CURE: number of women cured after first year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed urinary incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Voiding dysfunction | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 De novo detrusor overactivity (urodynamic diagnosis) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of partici-pants | Statistical method | Effect size |
|---|---|---|---|---|
| 8.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

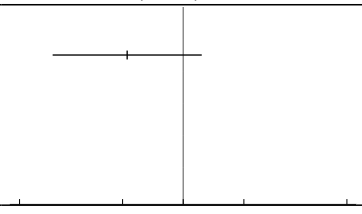
**Analysis 13.1. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations).**

| Study or subgroup | Traditional Sling n/N | Injectable n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **13.1.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 2/21 | 5/22 | | 0.42[0.09,1.93] |
| **13.1.2 stress urinary incontinence (symptoms only)** | | | | |
| **13.1.3 mixed urinary incontinence** | | | | |



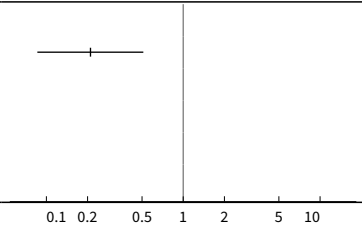

**Analysis 13.2. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 2 Number of women with urinary incontinence (worse, unchanged, or improved) after first year (women's observations).**

| Study or subgroup | Traditional Sling n/N | Injectable n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **13.2.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 0/13 | 4/14 | | 0.12[0.01,2.02] |
| **13.2.2 stress urinary incontinence (symptoms only)** | | | | |
| **13.2.3 mixed urinary incontinence** | | | | |

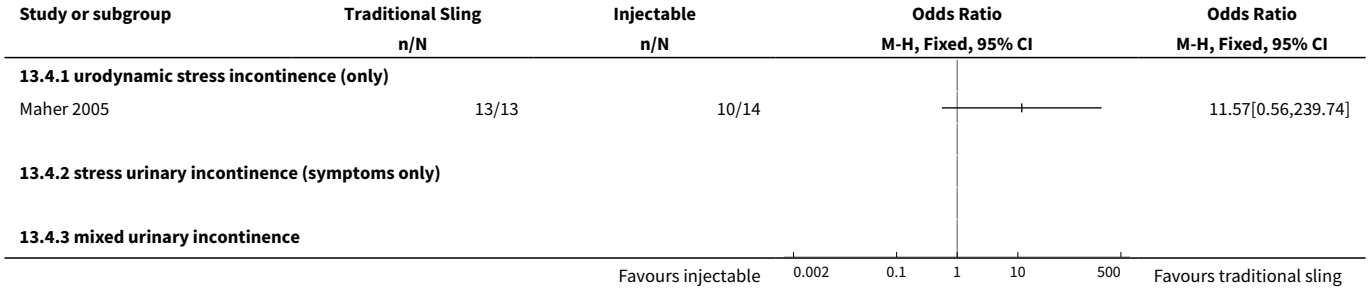



**Analysis 13.3. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 3 Number of women with urinary incontinence (clinician's observations) within first year.**

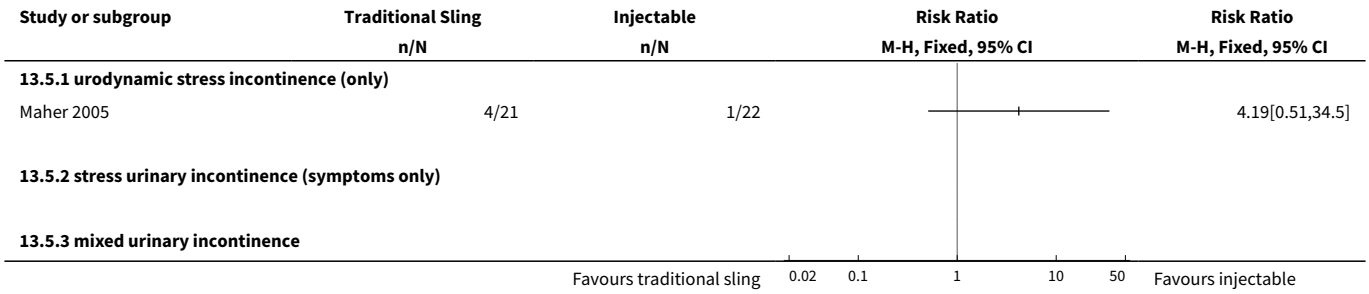
| Study or subgroup | Traditional Sling n/N | Injectable n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **13.3.1 urodynamic stress incontinence (only)** | | | | |
| Maher 2005 | 4/21 | 20/22 | | 0.21[0.09,0.51] |
| **13.3.2 stress urinary incontinence (symptoms only)** | | | | |
| **13.3.3 mixed urinary incontinence** | | | | |



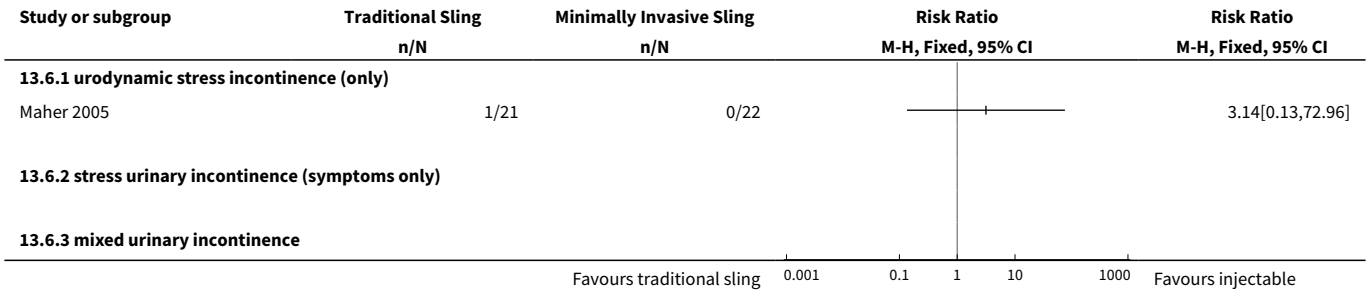
### Analysis 13.4. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 4 CURE: number of women cured after first year (women's observations).



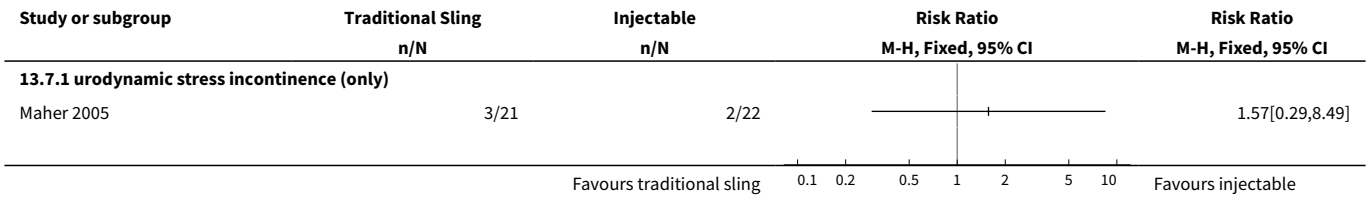

### Analysis 13.5. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 5 Voiding dysfunction.

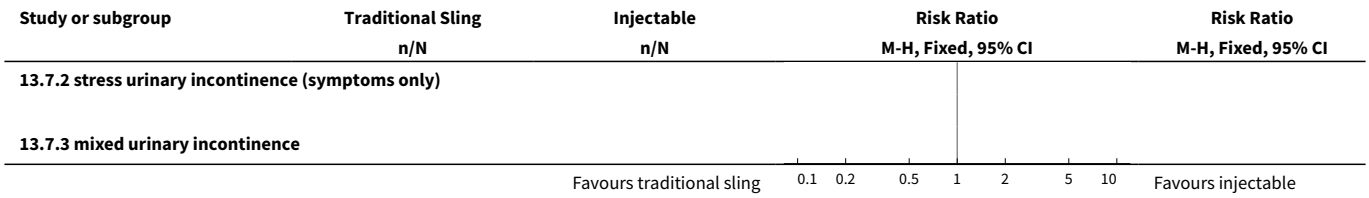



### Analysis 13.6. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 6 De novo detrusor overactivity (urodynamic diagnosis).

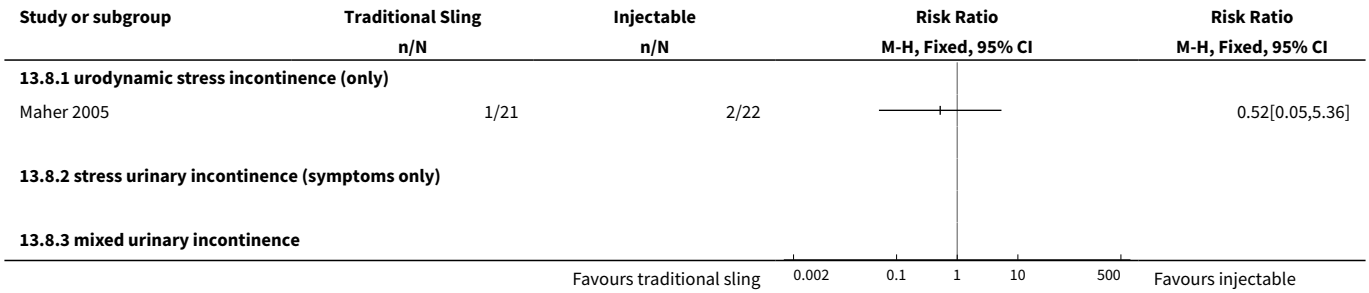



### Analysis 13.7. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 7 Urinary tract infection.






**Analysis 13.8. Comparison 13 Traditional suburethral sling operation versus injectables, Outcome 8 Repeat surgery for urinary incontinence.**




## Comparison 14. Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal)

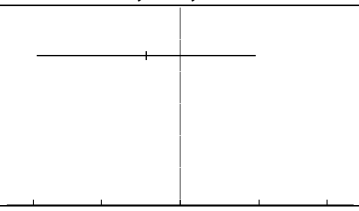
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number with incontinence (worse, unchanged, or improved) within first year (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number with incontinence (worse, unchanged, or improved) after first year (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 2.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 CURE: number of women cured after first year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Length of hospital stay (hours) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Perioperative surgical complications | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Urge urinary symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Voiding dysfunction after 3 months | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 7.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Detrusor overactivity (urodynamic diagnosis) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

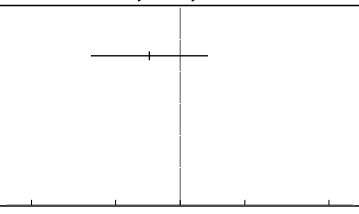
**Analysis 14.1. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 1 Number with incontinence (worse, unchanged, or improved) within first year (women's observations).**

| Study or subgroup | sling n/N | needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **14.1.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 1/10 | 2/10 | | 0.5[0.05,4.67] |
| **14.1.2 stress urinary incontinence (symptoms only)** | | | | |
| **14.1.3 mixed incontinence** | | | | |



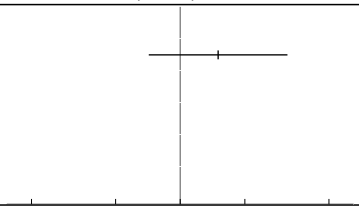

**Analysis 14.2. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 2 Number with incontinence (worse, unchanged, or improved) after first year (women's observations).**

| Study or subgroup | Favours sling n/N | needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **14.2.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 1/10 | 3/10 | | 0.33[0.04,2.69] |
| **14.2.2 stress urinary incontinence (symptoms only)** | | | | |
| **14.2.3 mixed incontinence** | | | | |



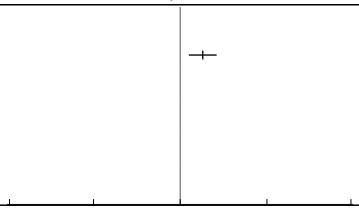
## Analysis 14.3. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 3 CURE: number of women cured after first year (women's observations).

| Study or subgroup | sling n/N | needle suspension n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **14.3.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 7/10 | | 3.86[0.33,45.57] |
| **14.3.2 stress urinary incontinence (symptoms only)** | | | | |
| **14.3.3 mixed incontinence** | | | | |



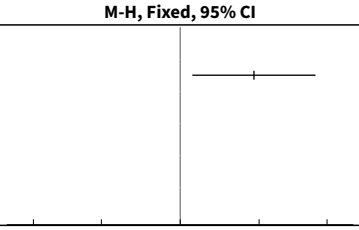

## Analysis 14.4. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 4 Length of hospital stay (hours).

| Study or subgroup | sling N | sling Mean(SD) | needle suspension N | needle suspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **14.4.1 urodynamic stress incontinence (only)** | | | | | | |
| Hilton 1989 | 10 | 20 (12.9) | 10 | 7 (0.3) | | 13[5,21] |
| **14.4.2 stress urinary incontinence (symptoms only)** | | | | | | |
| **14.4.3 mixed incontinence** | | | | | | |



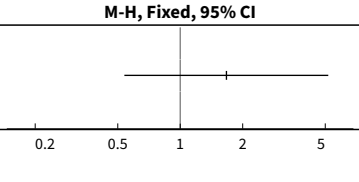

## Analysis 14.5. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 5 Perioperative surgical complications.

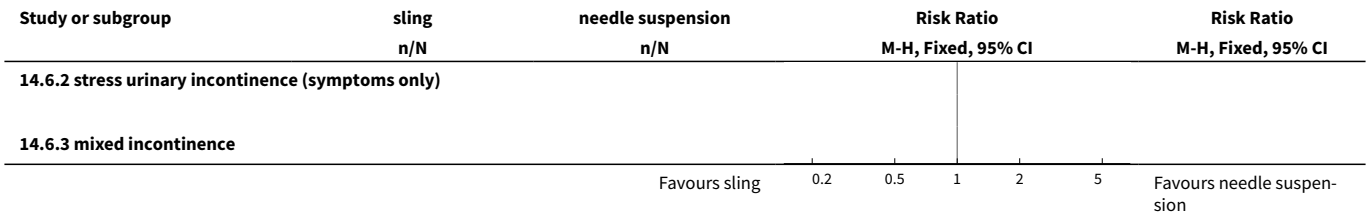
| Study or subgroup | sling n/N | needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **14.5.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 9/10 | 2/10 | | 4.5[1.28,15.81] |
| **14.5.2 stress urinary incontinence (symptoms only)** | | | | |
| **14.5.3 mixed incontinence** | | | | |



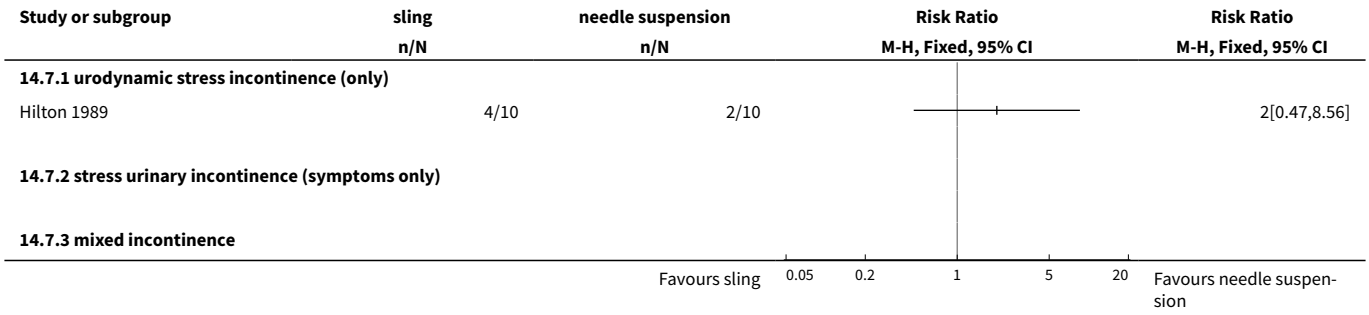

## Analysis 14.6. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 6 Urge urinary symptoms, urgency urinary incontinence.

| Study or subgroup | sling n/N | needle suspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **14.6.1 urodynamic stress incontinence (only)** | | | | |
| Hilton 1989 | 5/10 | 3/10 | | 1.67[0.54,5.17] |

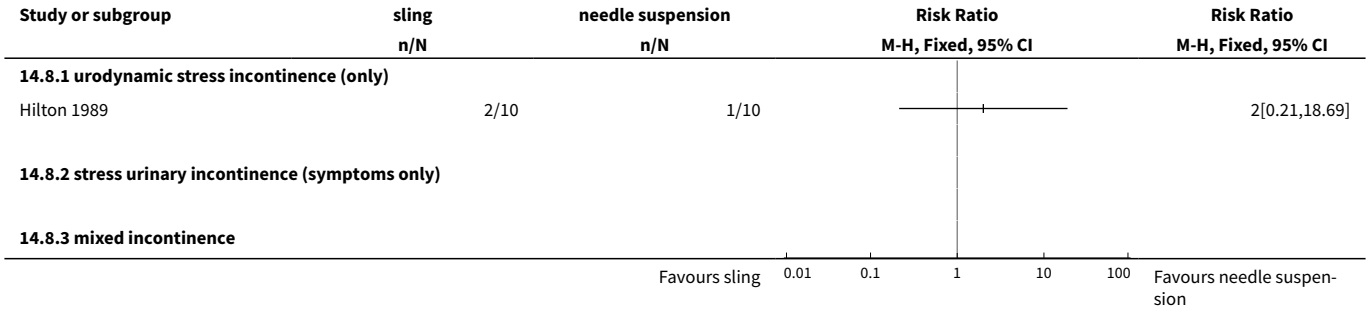





### Analysis 14.7. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 7 Voiding dysfunction after 3 months.




### Analysis 14.8. Comparison 14 Traditional suburethral sling operation versus bladder neck needle suspension (abdominal and vaginal), Outcome 8 Detrusor overactivity (urodynamic diagnosis).




## Comparison 15. Traditional suburethral sling operation versus open abdominal retropubic colposuspension

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations) | 4 | 147 | Risk Ratio (M-H, Fixed, 95% CI) | 0.40 [0.11, 1.41] |
| 1.1 urodynamic stress incontinence (only) | 4 | 147 | Risk Ratio (M-H, Fixed, 95% CI) | 0.40 [0.11, 1.41] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number not improved (worse or unchanged) within first year (women's observations) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations) | 4 | 687 | Risk Ratio (M-H, Fixed, 95% CI) | 0.73 [0.61, 0.89] |
| 3.1 urodynamic stress incontinence (only) | 3 | 167 | Risk Ratio (M-H, Fixed, 95% CI) | 0.58 [0.22, 1.49] |
| 3.2 stress urinary incontinence (symptoms only) | 1 | 520 | Risk Ratio (M-H, Fixed, 95% CI) | 0.75 [0.62, 0.91] |
| 3.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Number not improved (worse or unchanged) at 1 to 5 years (women's observations) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women with urinary incontinence (worse, unchanged, or improved) at > 5 years (women's observations) | 2 | 481 | Risk Ratio (M-H, Fixed, 95% CI) | 0.85 [0.74, 0.98] |
| 5.1 urodynamic stress incontinence (only) | 1 | 28 | Risk Ratio (M-H, Fixed, 95% CI) | 2.31 [0.24, 22.62] |
| 5.2 stress urinary incontinence (symptoms only) | 1 | 453 | Risk Ratio (M-H, Fixed, 95% CI) | 0.84 [0.73, 0.97] |
| 5.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 6 CURE: number of women cured at > 1 year (women's observations) | 3 | 515 | Odds Ratio (M-H, Fixed, 95% CI) | 1.56 [1.07, 2.28] |
| 6.1 urodynamic stress incontinence (only) | 2 | 62 | Odds Ratio (M-H, Fixed, 95% CI) | 0.93 [0.18, 4.89] |
| 6.2 stress urinary incontinence (symptoms only) | 1 | 453 | Odds Ratio (M-H, Fixed, 95% CI) | 1.61 [1.09, 2.37] |
| 6.3 mixed incontinence | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Number of women not satisfied at > 5 years | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Incontinent episodes over 24 hours | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Number of women with urinary incontinence (clinician's observations) within first year | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Number of women with urinary incontinence (clinician's observations) at 1 to 5 years | 2 | 592 | Risk Ratio (M-H, Fixed, 95% CI) | 0.90 [0.60, 1.34] |
| 10.1 urodynamic stress incontinence (only) | 1 | 72 | Risk Ratio (M-H, Fixed, 95% CI) | 0.6 [0.15, 2.33] |
| 10.2 stress urinary incontinence (symptoms only) | 1 | 520 | Risk Ratio (M-H, Fixed, 95% CI) | 0.94 [0.62, 1.42] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 10.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Number of women with urinary incontinence (clinician's observations) at > 5 years | 2 | 461 | Risk Ratio (M-H, Fixed, 95% CI) | 0.90 [0.80, 1.01] |
| 11.1 urodynamic stress incontinence (only) | 1 | 28 | Risk Ratio (M-H, Fixed, 95% CI) | 0.23 [0.01, 4.37] |
| 11.2 stress urinary incontinence (symptoms only) | 1 | 433 | Risk Ratio (M-H, Fixed, 95% CI) | 0.91 [0.81, 1.02] |
| 11.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12 Duration of operation (minutes) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 12.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 mixed incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Time to catheter removal (days) | 2 | 108 | Mean Difference (IV, Fixed, 95% CI) | 8.01 [6.84, 9.18] |
| 13.1 urodynamic stress incontinence (only) | 2 | 108 | Mean Difference (IV, Fixed, 95% CI) | 8.01 [6.84, 9.18] |
| 13.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14 Length of hospital stay (days) | 3 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 14.1 urodynamic stress incontinence (only) | 3 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.3 mixed incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15 Time to return to normal activity level | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.3 mixed incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

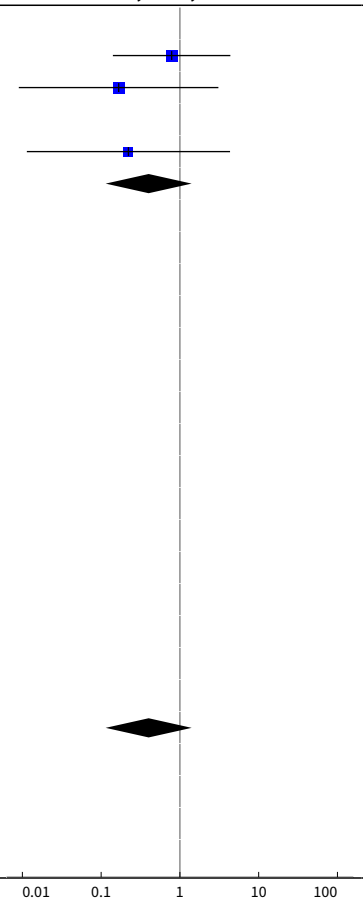
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 16 Perioperative surgical complications | 4 | 792 | Risk Ratio (M-H, Fixed, 95% CI) | 1.24 [0.83, 1.86] |
| 16.1 urodynamic stress incontinence (only) | 3 | 137 | Risk Ratio (M-H, Fixed, 95% CI) | 0.85 [0.28, 2.52] |
| 16.2 stress urinary incontinence (symptoms only) | 1 | 655 | Risk Ratio (M-H, Fixed, 95% CI) | 1.32 [0.86, 2.04] |
| 16.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17 Bladder perforation | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 17.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Number of women with recurrent UTIs at > 5 years | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 19.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 Urge urinary symptoms, urgency urinary incontinence | 2 | 525 | Risk Ratio (M-H, Fixed, 95% CI) | 1.10 [0.74, 1.64] |
| 20.1 urodynamic stress incontinence (only) | 1 | 72 | Risk Ratio (M-H, Fixed, 95% CI) | 2.0 [0.54, 7.39] |
| 20.2 stress urinary incontinence (symptoms only) | 1 | 453 | Risk Ratio (M-H, Fixed, 95% CI) | 1.02 [0.67, 1.56] |
| 20.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 21 Detrusor overactivity (urodynamic diagnosis) | 4 | 203 | Risk Ratio (M-H, Fixed, 95% CI) | 1.42 [0.52, 3.87] |
| 21.1 urodynamic stress incontinence (only) | 4 | 203 | Risk Ratio (M-H, Fixed, 95% CI) | 1.42 [0.52, 3.87] |
| 21.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22 Voiding dysfunction after 3 months | 5 | 853 | Risk Ratio (M-H, Fixed, 95% CI) | 6.08 [3.10, 11.95] |
| 22.1 urodynamic stress incontinence (only) | 4 | 198 | Risk Ratio (M-H, Fixed, 95% CI) | 4.48 [1.16, 17.36] |
| 22.2 stress urinary incontinence (symptoms only) | 1 | 655 | Risk Ratio (M-H, Fixed, 95% CI) | 6.63 [3.04, 14.47] |
| 22.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23 Long-term voiding dysfunction > 5 years | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 23.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24 Number of women requiring treatment for pelvic organ prolapse | 3 | 559 | Risk Ratio (M-H, Fixed, 95% CI) | 0.20 [0.05, 0.77] |
| 24.1 urodynamic stress incontinence (only) | 2 | 106 | Risk Ratio (M-H, Fixed, 95% CI) | 0.2 [0.04, 1.11] |
| 24.2 stress urinary incontinence (symptoms only) | 1 | 453 | Risk Ratio (M-H, Fixed, 95% CI) | 0.20 [0.02, 1.74] |
| 24.3 mixed incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 25.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25.2 stress urinary incontinence (symptoms only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 25.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 26 Condition-specific measures to assess quality of life | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 26.1 Urinary Distress Index (UDI) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 26.2 Incontinence Impact Questionnaire (IIQ) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

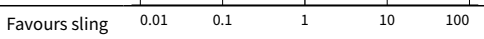
**Analysis 15.1. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations).**

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.1.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 2/28 | 3/33 | | 35.08% | 0.79[0.14,4.37] |
| Fischer 2001 | 0/11 | 2/9 | | 34.74% | 0.17[0.01,3.08] |
| Henriksson 1978 | 0/15 | 0/15 | | | Not estimable |
| Sand 2000 | 0/17 | 2/19 | | 30.17% | 0.22[0.01,4.33] |
| **Subtotal (95% CI)** | **71** | **76** | | **100%** | **0.4[0.11,1.41]** |
| Total events: 2 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.09, df=2(P=0.58); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.42(P=0.15) | | | | | |
| **15.1.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **15.1.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **71** | **76** | | **100%** | **0.4[0.11,1.41]** |
| Total events: 2 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.09, df=2(P=0.58); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.42(P=0.15) | | | | | |
| Test for subgroup differences: $Chi^2$=0, df=1 (P<0.0001), $I^2$=100% | | | | | |



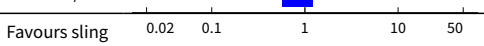
## Analysis 15.3. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations).

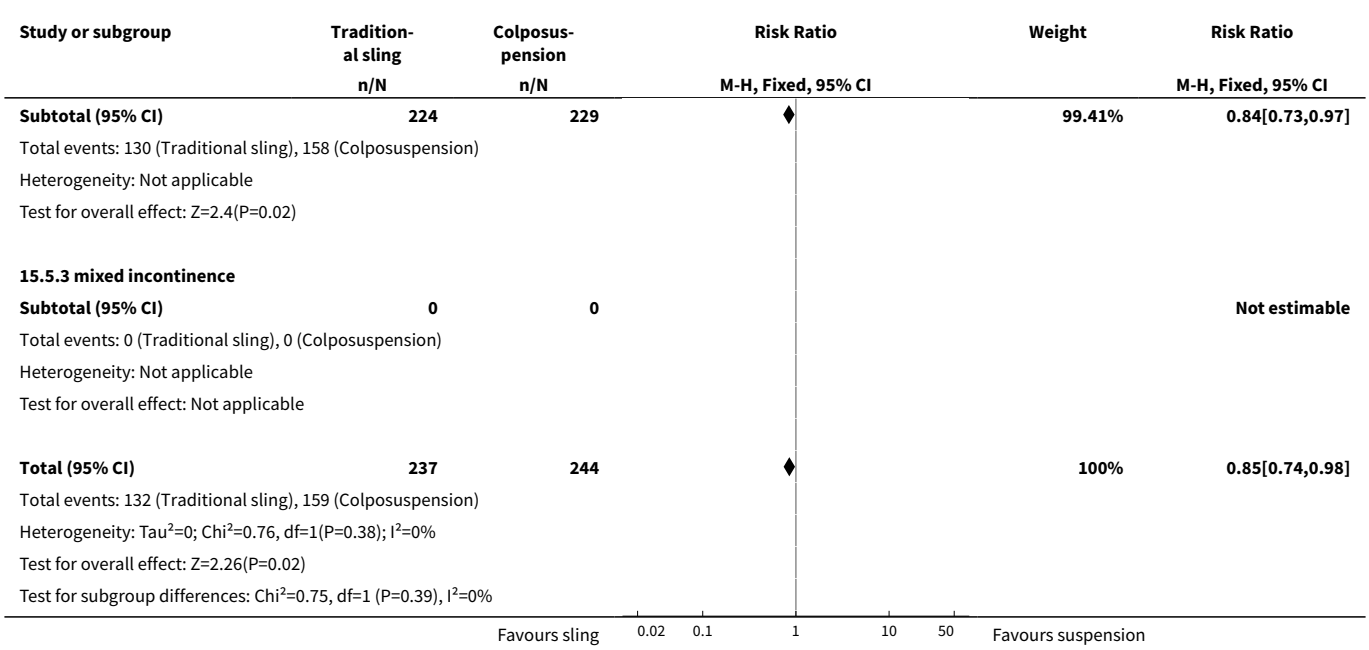
| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.3.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 2/28 | 4/33 | | 2.56% | 0.59[0.12,2.98] |
| Demirci 2001 | 1/17 | 2/17 | | 1.4% | 0.5[0.05,5.01] |
| Enzelsberger 1996 | 3/36 | 5/36 | | 3.49% | 0.6[0.15,2.33] |
| **Subtotal (95% CI)** | **81** | **86** | | **7.45%** | **0.58[0.22,1.49]** |
| Total events: 6 (Traditional sling), 11 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.02, df=2(P=0.99); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.14(P=0.26) | | | | | |
| **15.3.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 101/265 | 130/255 | | 92.55% | 0.75[0.62,0.91] |
| **Subtotal (95% CI)** | **265** | **255** | | **92.55%** | **0.75[0.62,0.91]** |
| Total events: 101 (Traditional sling), 130 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=2.92(P=0) | | | | | |
| **15.3.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **346** | **341** | | **100%** | **0.73[0.61,0.89]** |
| Total events: 107 (Traditional sling), 141 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.29, df=3(P=0.96); $I^2$=0% | | | | | |
| Test for overall effect: Z=3.14(P=0) | | | | | |
| Test for subgroup differences: $Chi^2$=0.27, df=1 (P=0.6), $I^2$=0% | | | | | |



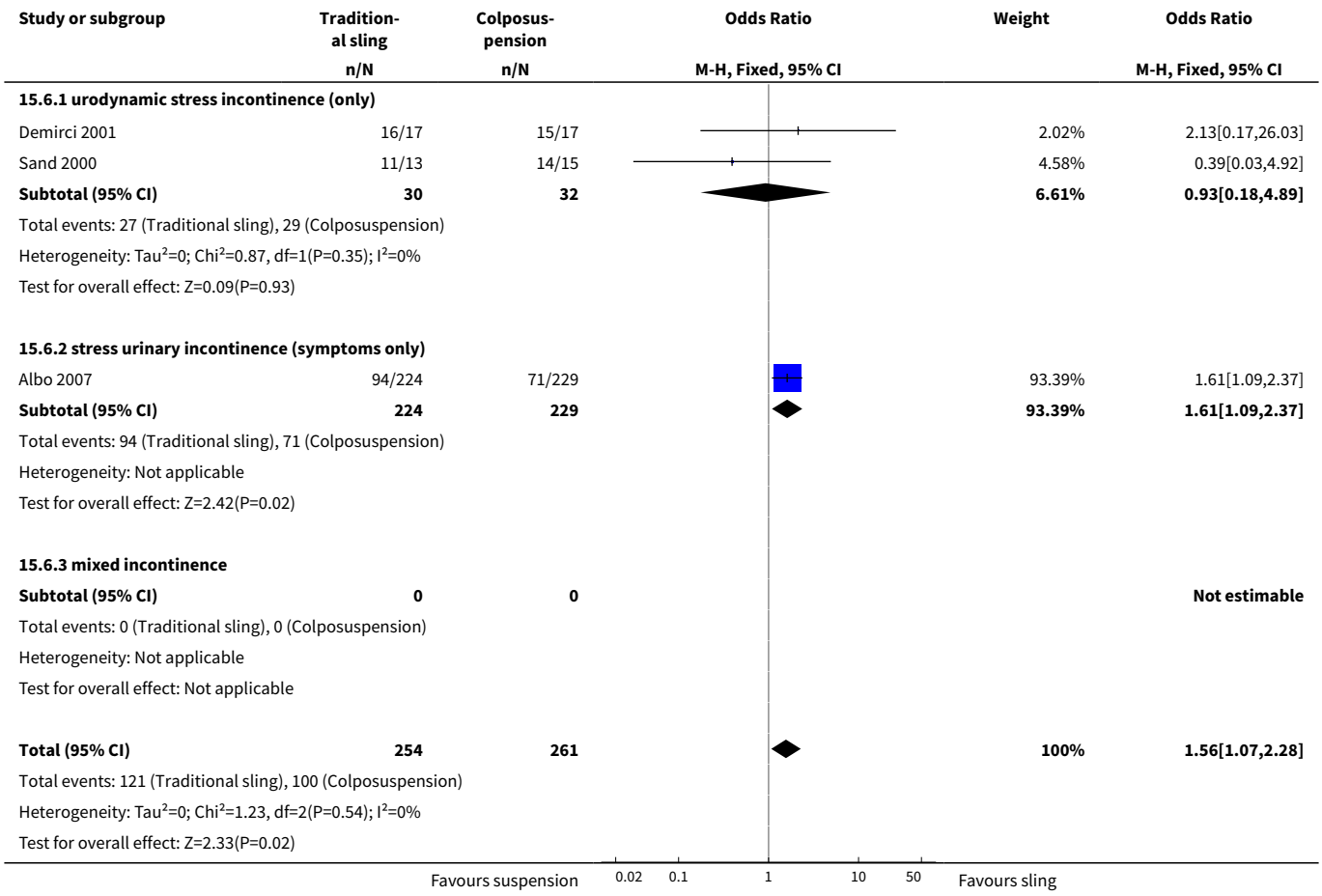

## Analysis 15.5. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 5 Number of women with urinary incontinence (worse, unchanged, or improved) at > 5 years (women's observations).

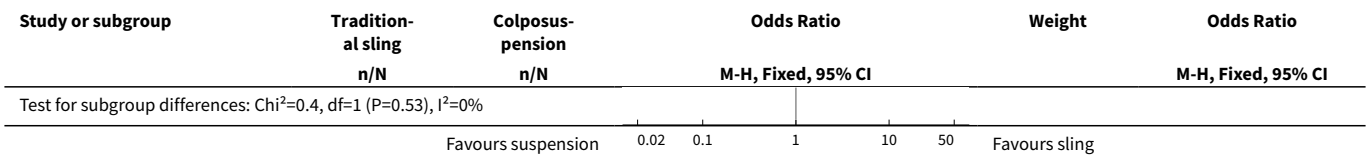
| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.5.1 urodynamic stress incontinence (only)** | | | | | |
| Sand 2000 | 2/13 | 1/15 | | 0.59% | 2.31[0.24,22.62] |
| **Subtotal (95% CI)** | **13** | **15** | | **0.59%** | **2.31[0.24,22.62]** |
| Total events: 2 (Traditional sling), 1 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.72(P=0.47) | | | | | |
| **15.5.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 130/224 | 158/229 | | 99.41% | 0.84[0.73,0.97] |



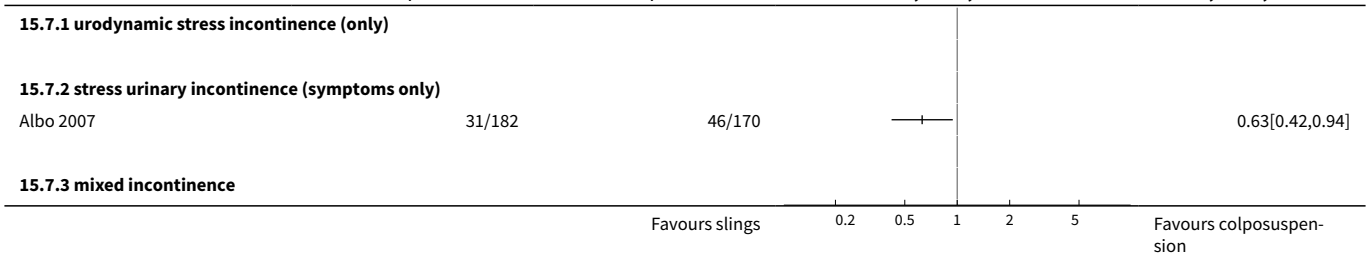



## Analysis 15.6. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 6 CURE: number of women cured at > 1 year (women's observations).

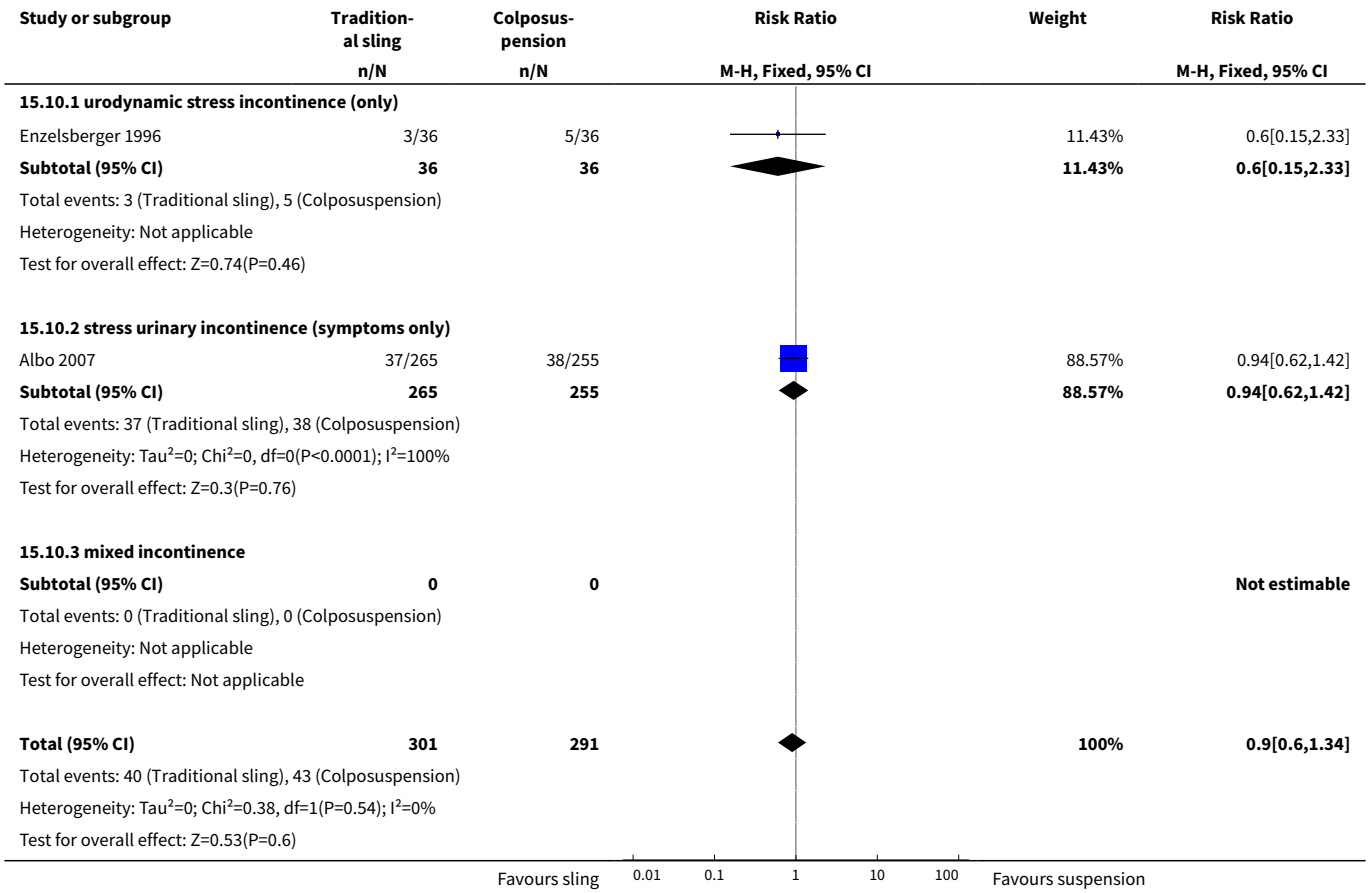





## Analysis 15.7. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 7 Number of women not satisfied at > 5 years.




## Analysis 15.10. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 10 Number of women with urinary incontinence (clinician's observations) at 1 to 5 years.



| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Test for subgroup differences: Chi²=0.38, df=1 (P=0.54), I²=0% | | | | | |

Favours sling 0.01 0.1 1 10 100 Favours suspension

## Analysis 15.11. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 11 Number of women with urinary incontinence (clinician's observations) at > 5 years.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.11.1 urodynamic stress incontinence (only)** | | | | | |
| Sand 2000 | 0/13 | 2/15 | | 1.4% | 0.23[0.01,4.37] |
| **Subtotal (95% CI)** | **13** | **15** | | **1.4%** | **0.23[0.01,4.37]** |
| Total events: 0 (Traditional sling), 2 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.98(P=0.33) | | | | | |
| **15.11.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 153/221 | 161/212 | | 98.6% | 0.91[0.81,1.02] |
| **Subtotal (95% CI)** | **221** | **212** | | **98.6%** | **0.91[0.81,1.02]** |
| Total events: 153 (Traditional sling), 161 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0, df=0(P<0.0001); I²=100% | | | | | |
| Test for overall effect: Z=1.56(P=0.12) | | | | | |
| **15.11.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **234** | **227** | | **100%** | **0.9[0.8,1.01]** |
| Total events: 153 (Traditional sling), 163 (Colposuspension) | | | | | |
| Heterogeneity: Tau²=0; Chi²=0.86, df=1(P=0.35); I²=0% | | | | | |
| Test for overall effect: Z=1.73(P=0.08) | | | | | |
| Test for subgroup differences: Chi²=0.84, df=1 (P=0.36), I²=0% | | | | | |

Favours sling 0.01 0.1 1 10 100 Favours suspension

## Analysis 15.12. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 12 Duration of operation (minutes).

| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **15.12.1 urodynamic stress incontinence (only)** | | | | | | |
| Demirci 2001 | 15 | 60.7 (8.6) | 14 | 54.6 (9.3) | | 6.02[-0.52,12.56] |
| **15.12.2 stress urinary incontinence (symptoms only)** | | | | | | |

Favours sling -10 -5 0 5 10 Favours suspension

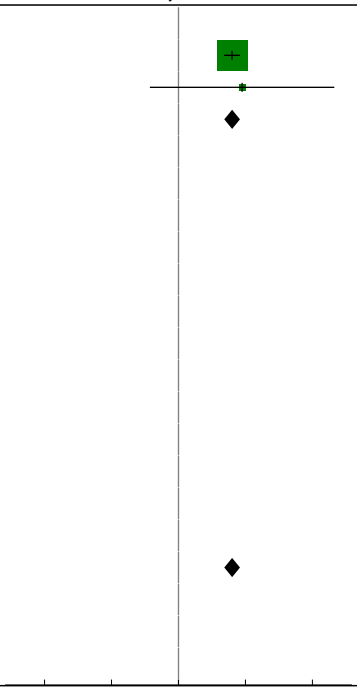
| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **15.12.3 mixed incontinence** | | | | | | |




Favours sling | Favours suspension

## Analysis 15.13. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 13 Time to catheter removal (days).

| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Weight | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|---|
| **15.13.1 urodynamic stress incontinence (only)** | | | | | | | |
| Enzelsberger 1996 | 36 | 15 (3) | 36 | 7 (2) | | 99.27% | 8[6.82,9.18] |
| Sand 2000 | 17 | 23.3 (24.4) | 19 | 13.8 (16.5) | | 0.73% | 9.5[-4.27,23.27] |
| **Subtotal ***** | **53** | | **55** | | | **100%** | **8.01[6.84,9.18]** |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.05, df=1(P=0.83); $I^2$=0% | | | | | | | |
| Test for overall effect: Z=13.38(P<0.0001) | | | | | | | |
| **15.13.2 stress urinary incontinence (symptoms only)** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **15.13.3 mixed incontinence** | | | | | | | |
| **Subtotal ***** | **0** | | **0** | | | | **Not estimable** |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Not applicable | | | | | | | |
| **Total ***** | **53** | | **55** | | | **100%** | **8.01[6.84,9.18]** |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.05, df=1(P=0.83); $I^2$=0% | | | | | | | |
| Test for overall effect: Z=13.38(P<0.0001) | | | | | | | |
| Test for subgroup differences: Not applicable | | | | | | | |



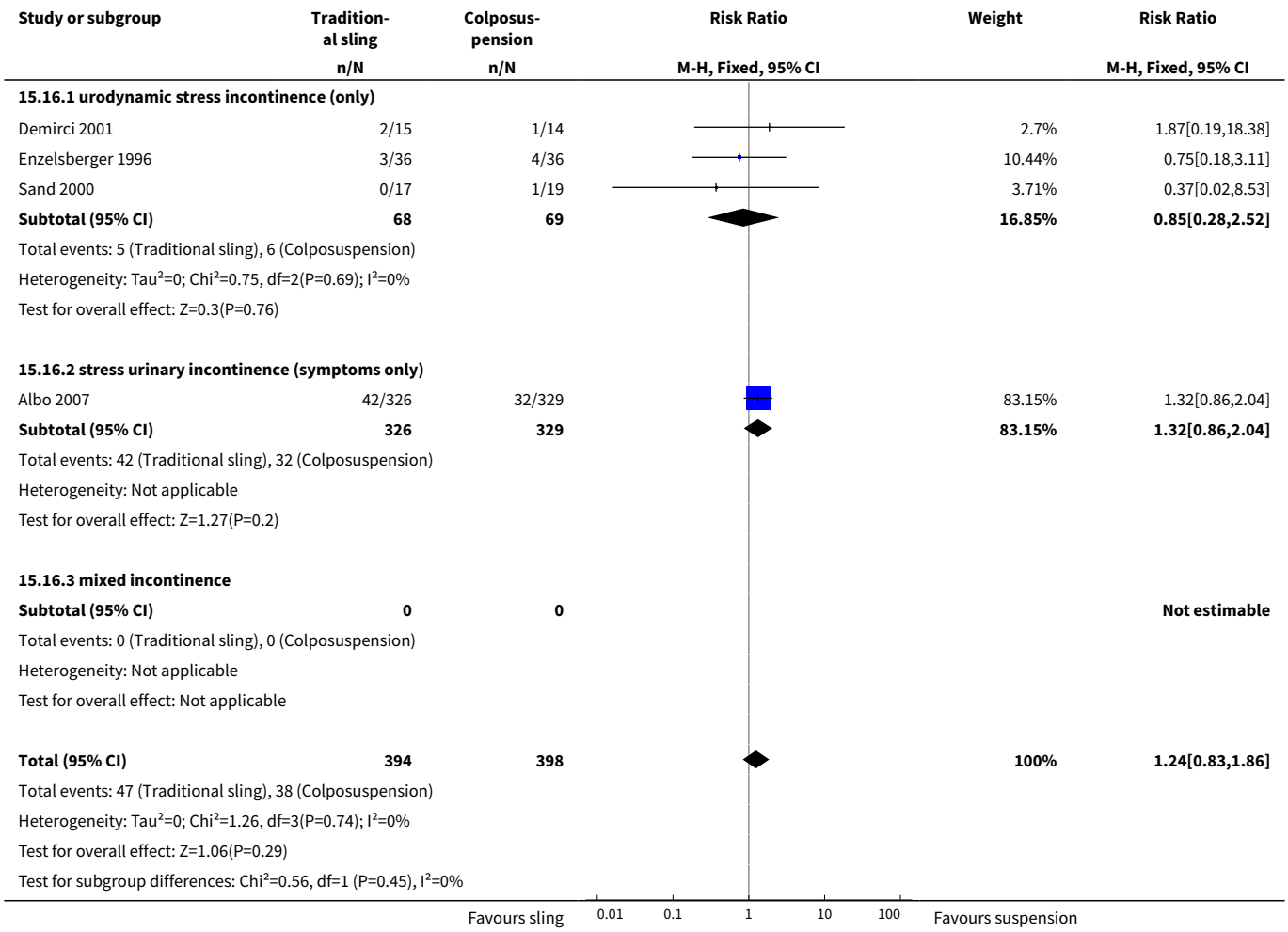

Favours sling | Favours suspension

## Analysis 15.14. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 14 Length of hospital stay (days).

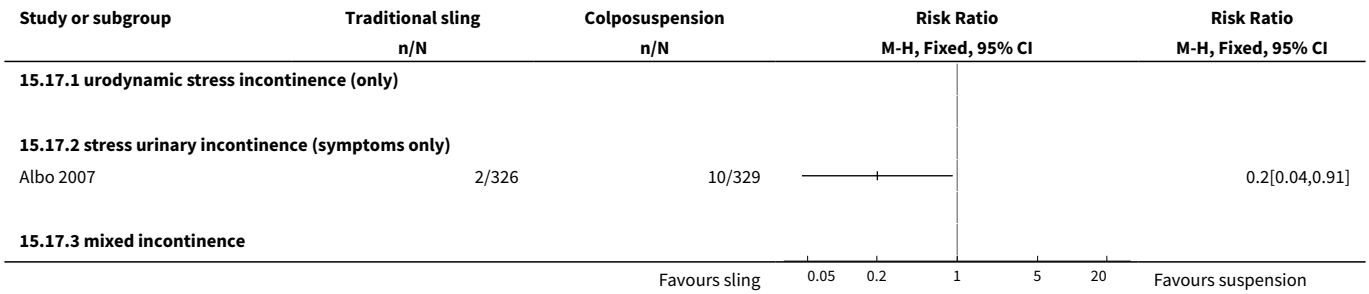
| Study or subgroup | Traditional sling N | Traditional sling Mean(SD) | Colposuspension N | Colposuspension Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **15.14.1 urodynamic stress incontinence (only)** | | | | | | |
| Demirci 2001 | 15 | 5.9 (1.4) | 14 | 5.4 (1.3) | | 0.51[-0.46,1.48] |
| Enzelsberger 1996 | 36 | 16 (3) | 36 | 8 (2) | | 8[6.82,9.18] |
| Sand 2000 | 17 | 5.1 (1.2) | 19 | 5 (1.4) | | 0.1[-0.75,0.95] |
| **15.14.2 stress urinary incontinence (symptoms only)** | | | | | | |
| **15.14.3 mixed incontinence** | | | | | | |


Favours sling | Favours suspension

## Analysis 15.16. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 16 Perioperative surgical complications.

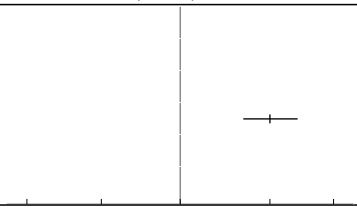



## Analysis 15.17. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 17 Bladder perforation.



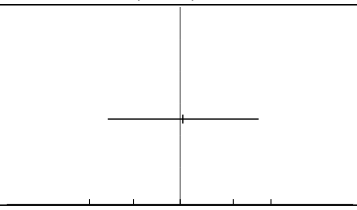
## Analysis 15.18. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 18 Urinary tract infection.

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **15.18.1 urodynamic stress incontinence (only)** | | | | |
| **15.18.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 247/326 | 166/329 | | 1.5[1.33,1.7] |
| **15.18.3 mixed incontinence** | | | | |



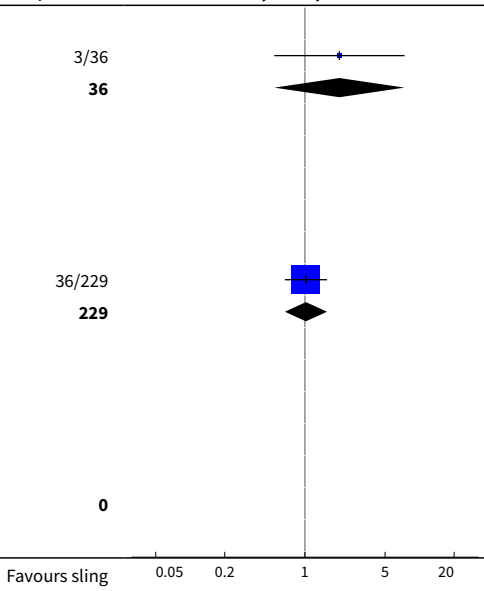

## Analysis 15.19. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 19 Number of women with recurrent UTIs at > 5 years.

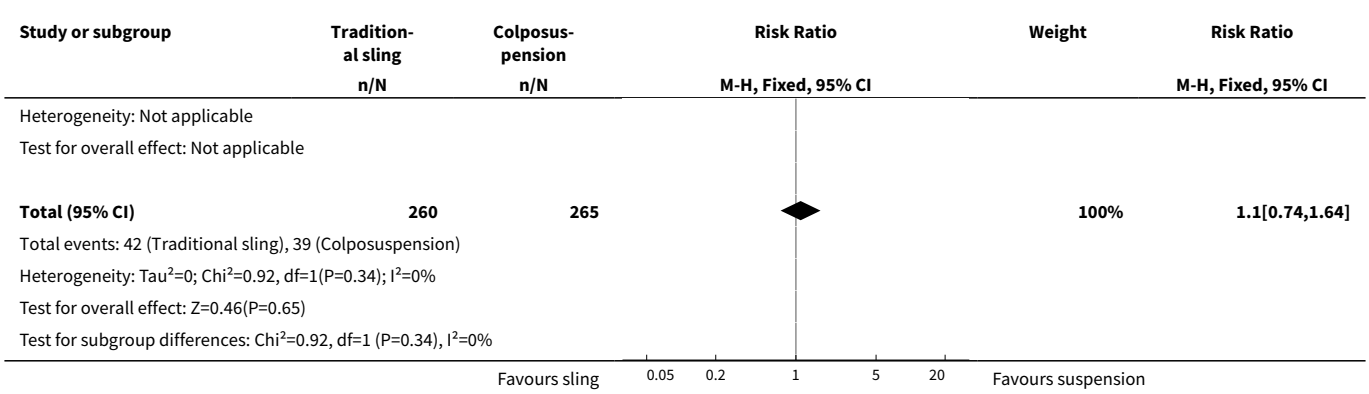
| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **15.19.1 urodynamic stress incontinence (only)** | | | | |
| **15.19.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 21/224 | 21/229 | | 1.02[0.57,1.82] |
| **15.19.3 mixed incontinence** | | | | |



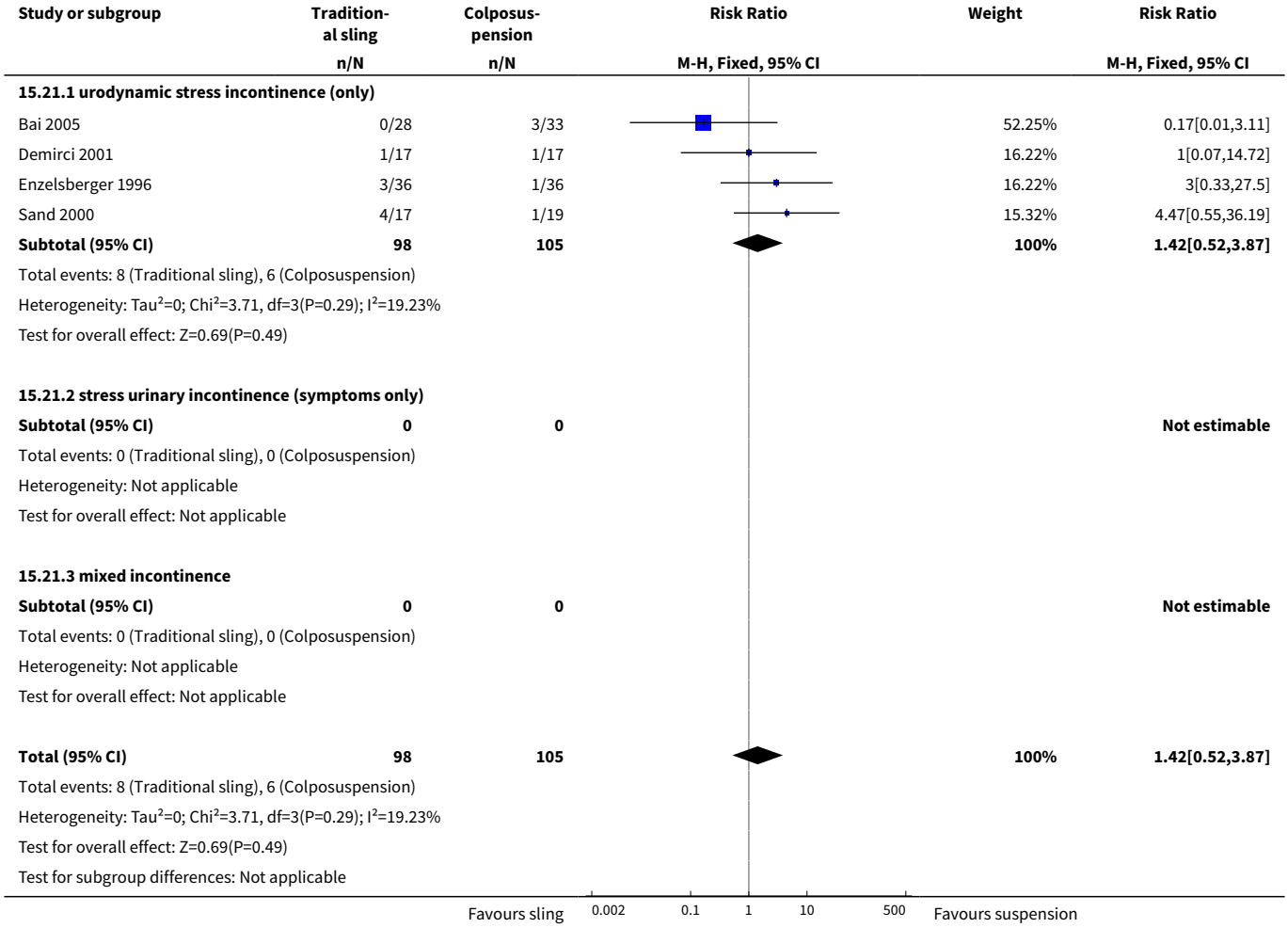

## Analysis 15.20. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 20 Urge urinary symptoms, urgency urinary incontinence.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.20.1 urodynamic stress incontinence (only)** | | | | | |
| Enzelsberger 1996 | 6/36 | 3/36 | | 7.77% | 2[0.54,7.39] |
| **Subtotal (95% CI)** | **36** | **36** | | **7.77%** | **2[0.54,7.39]** |
| Total events: 6 (Traditional sling), 3 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=1.04(P=0.3) | | | | | |
| **15.20.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 36/224 | 36/229 | | 92.23% | 1.02[0.67,1.56] |
| **Subtotal (95% CI)** | **224** | **229** | | **92.23%** | **1.02[0.67,1.56]** |
| Total events: 36 (Traditional sling), 36 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.1(P=0.92) | | | | | |
| **15.20.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |






## Analysis 15.21. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 21 Detrusor overactivity (urodynamic diagnosis).



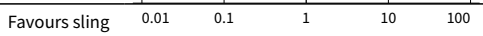
## Analysis 15.22. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 22 Voiding dysfunction after 3 months.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.22.1 urodynamic stress incontinence (only)** | | | | | |
| Bai 2005 | 2/28 | 1/33 | | 9.8% | 2.36[0.23,24.64] |
| Demirci 2001 | 0/17 | 0/17 | | | Not estimable |
| Enzelsberger 1996 | 5/36 | 1/36 | | 10.67% | 5[0.61,40.7] |
| Sand 2000 | 3/15 | 0/16 | | 5.17% | 7.44[0.42,132.95] |
| **Subtotal (95% CI)** | **96** | **102** | | **25.64%** | **4.48[1.16,17.36]** |
| Total events: 10 (Traditional sling), 2 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.42, df=2(P=0.81); $I^2$=0% | | | | | |
| Test for overall effect: Z=2.17(P=0.03) | | | | | |
| **15.22.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 46/326 | 7/329 | | 74.36% | 6.63[3.04,14.47] |
| **Subtotal (95% CI)** | **326** | **329** | | **74.36%** | **6.63[3.04,14.47]** |
| Total events: 46 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=0(P<0.0001); $I^2$=100% | | | | | |
| Test for overall effect: Z=4.75(P<0.0001) | | | | | |
| **15.22.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **422** | **431** | | **100%** | **6.08[3.1,11.95]** |
| Total events: 56 (Traditional sling), 9 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.73, df=3(P=0.87); $I^2$=0% | | | | | |
| Test for overall effect: Z=5.24(P<0.0001) | | | | | |
| Test for subgroup differences: $Chi^2$=0.24, df=1 (P=0.62), $I^2$=0% | | | | | |



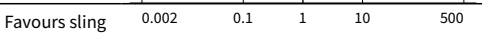

## Analysis 15.23. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 23 Long-term voiding dysfunction > 5 years.

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **15.23.1 urodynamic stress incontinence (only)** | | | | |
| **15.23.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 7/224 | 1/229 | | 7.16[0.89,57.69] |
| **15.23.3 mixed incontinence** | | | | |



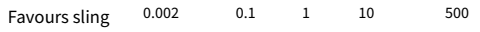
## Analysis 15.24. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 24 Number of women requiring treatment for pelvic organ prolapse.

| Study or subgroup | Tradition-al sling n/N | Colposus-pension n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **15.24.1 urodynamic stress incontinence (only)** | | | | | |
| Demirci 2001 | 0/17 | 2/17 | | 20.09% | 0.2[0.01,3.88] |
| Enzelsberger 1996 | 1/36 | 5/36 | | 40.18% | 0.2[0.02,1.63] |
| **Subtotal (95% CI)** | **53** | **53** | | **60.27%** | **0.2[0.04,1.11]** |
| Total events: 1 (Traditional sling), 7 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=1(P=1); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.84(P=0.07) | | | | | |
| **15.24.2 stress urinary incontinence (symptoms only)** | | | | | |
| Albo 2007 | 1/224 | 5/229 | | 39.73% | 0.2[0.02,1.74] |
| **Subtotal (95% CI)** | **224** | **229** | | **39.73%** | **0.2[0.02,1.74]** |
| Total events: 1 (Traditional sling), 5 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=1.45(P=0.15) | | | | | |
| **15.24.3 mixed incontinence** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditional sling), 0 (Colposuspension) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **Total (95% CI)** | **277** | **282** | | **100%** | **0.2[0.05,0.77]** |
| Total events: 2 (Traditional sling), 12 (Colposuspension) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0, df=2(P=1); $I^2$=0% | | | | | |
| Test for overall effect: Z=2.35(P=0.02) | | | | | |
| Test for subgroup differences: $Chi^2$=0, df=1 (P=0.99), $I^2$=0% | | | | | |

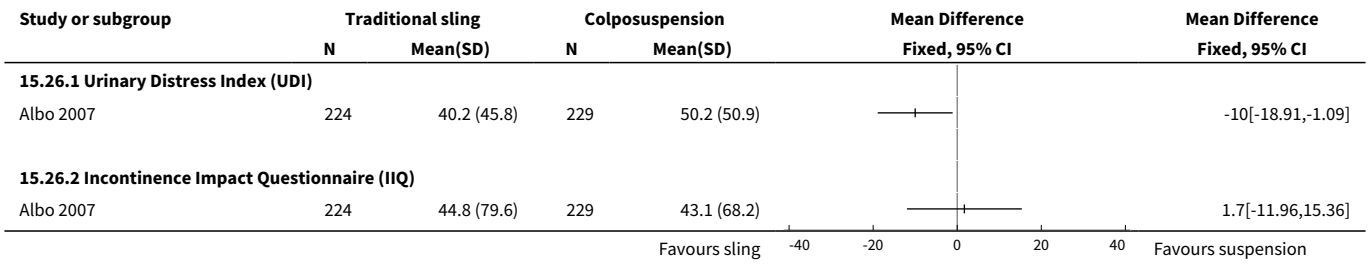



## Analysis 15.25. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 25 Repeat surgery for urinary incontinence.

| Study or subgroup | Traditional sling n/N | Colposuspension n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **15.25.1 urodynamic stress incontinence (only)** | | | | |
| **15.25.2 stress urinary incontinence (symptoms only)** | | | | |
| Albo 2007 | 4/223 | 27/227 | | 0.15[0.05,0.42] |
| **15.25.3 mixed incontinence** | | | | |



**Analysis 15.26. Comparison 15 Traditional suburethral sling operation versus open abdominal retropubic colposuspension, Outcome 26 Condition-specific measures to assess quality of life.**




## Comparison 16. Traditional suburethral sling operation versus a mid-urethral sling or tape

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations) | 11 | 841 | Risk Ratio (M-H, Fixed, 95% CI) | 1.04 [0.85, 1.28] |
| 1.1 urodynamic stress incontinence (only) | 5 | 427 | Risk Ratio (M-H, Fixed, 95% CI) | 1.02 [0.77, 1.36] |
| 1.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 1.12 [0.17, 7.37] |
| 1.3 mixed urinary incontinence | 5 | 361 | Risk Ratio (M-H, Fixed, 95% CI) | 1.06 [0.78, 1.42] |
| 2 Number not improved (worse or unchanged) within first year (women's observations) | 3 | 425 | Risk Ratio (M-H, Fixed, 95% CI) | 0.79 [0.49, 1.29] |
| 2.1 urodynamic stress incontinence (only) | 2 | 286 | Risk Ratio (M-H, Fixed, 95% CI) | 0.95 [0.40, 2.21] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed urinary incontinence | 1 | 139 | Risk Ratio (M-H, Fixed, 95% CI) | 0.72 [0.40, 1.29] |
| 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations) | 6 | 458 | Risk Ratio (M-H, Fixed, 95% CI) | 1.29 [0.98, 1.68] |
| 3.1 urodynamic stress incontinence (only) | 4 | 364 | Risk Ratio (M-H, Fixed, 95% CI) | 1.18 [0.87, 1.59] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed urinary incontinence | 2 | 94 | Risk Ratio (M-H, Fixed, 95% CI) | 1.79 [0.96, 3.31] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 4 Number not improved (worse or unchanged) after first year (women's observations) | 2 | 264 | Risk Ratio (M-H, Fixed, 95% CI) | 1.28 [0.56, 2.94] |
| 4.1 urodynamic stress incontinence (only) | 2 | 264 | Risk Ratio (M-H, Fixed, 95% CI) | 1.28 [0.56, 2.94] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed urinary incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women with urinary incontinence after 5 years (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Number with incontinence not improved after 5 years (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed urinary incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 CURE: number of women cured at > 1 year (women's observations) | 4 | 337 | Odds Ratio (M-H, Fixed, 95% CI) | 1.06 [0.65, 1.72] |
| 7.1 urodynamic stress incontinence (only) | 3 | 293 | Odds Ratio (M-H, Fixed, 95% CI) | 1.21 [0.72, 2.03] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | 0 | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed urinary incontinence | 1 | 44 | Odds Ratio (M-H, Fixed, 95% CI) | 0.42 [0.10, 1.72] |
| 8 Repeat surgery for urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

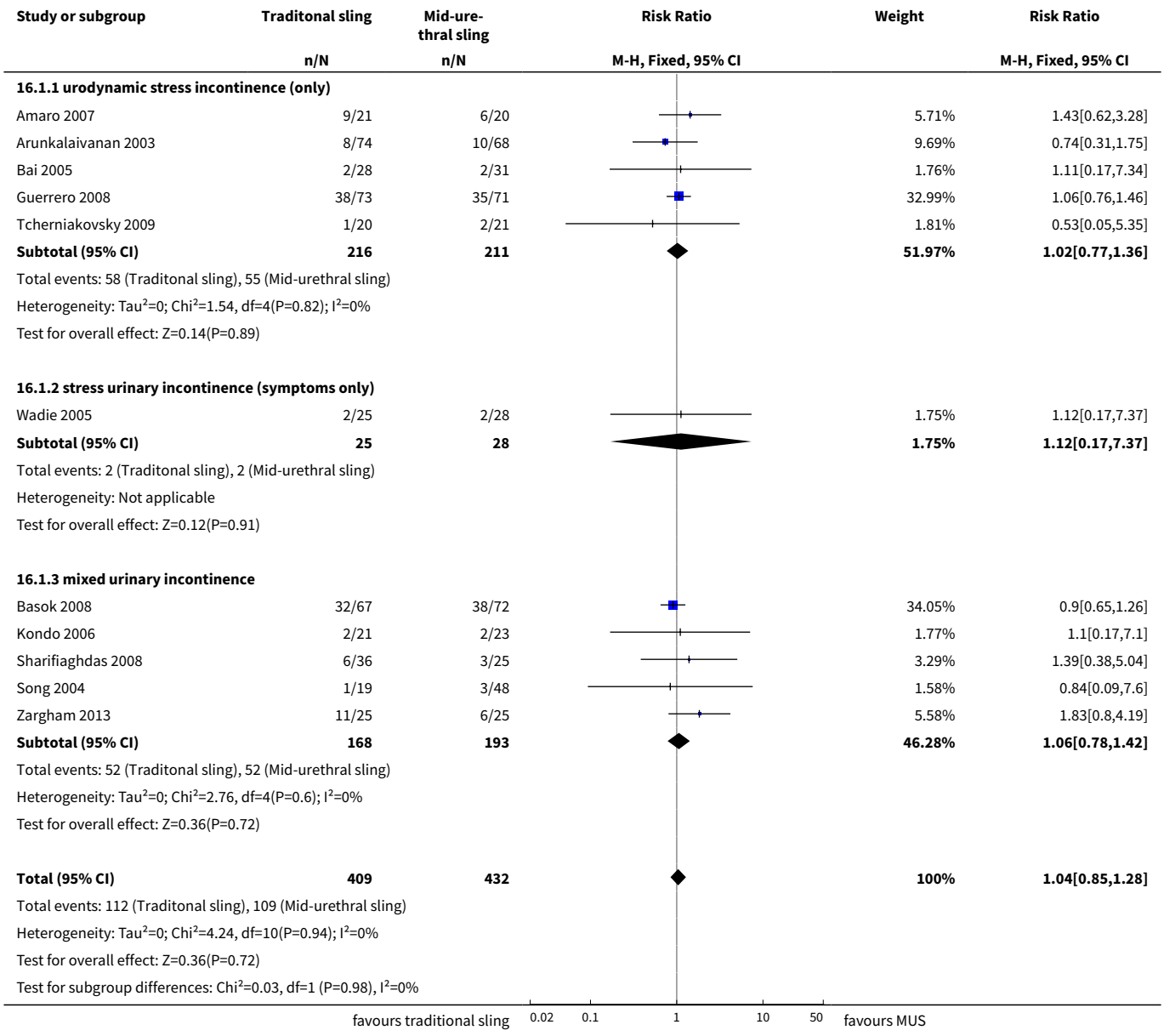
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Number of women not satisfied | 2 | | Risk Ratio (M-H, Fixed, 95% CI) | Subtotals only |
| 9.1 urodynamic stress incontinence (only) | 2 | 163 | Risk Ratio (M-H, Fixed, 95% CI) | 0.82 [0.51, 1.32] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed urinary incontinence | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Pad test of quantified leakage (mean weight of urine loss) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 10.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.3 mixed urinary incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Number of women with urinary incontinence (clinician's observations) within first year | 2 | 105 | Risk Ratio (M-H, Fixed, 95% CI) | 1.29 [0.45, 3.71] |
| 11.1 urodynamic stress incontinence (only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.3 mixed urinary incontinence | 2 | 105 | Risk Ratio (M-H, Fixed, 95% CI) | 1.29 [0.45, 3.71] |
| 12 Number of women with urinary incontinence (clinician's observations) after first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 12.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Duration of operation (minutes) | 7 | 355 | Mean Difference (IV, Fixed, 95% CI) | 57.08 [54.67, 59.49] |
| 13.1 urodynamic stress incontinence (only) | 2 | 61 | Mean Difference (IV, Fixed, 95% CI) | 46.91 [42.31, 51.52] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 13.2 stress urinary incontinence (symptoms only) | 1 | 53 | Mean Difference (IV, Fixed, 95% CI) | 20.0 [7.08, 32.92] |
| 13.3 mixed urinary incontinence | 4 | 241 | Mean Difference (IV, Fixed, 95% CI) | 62.96 [60.07, 65.86] |
| 14 Length of hospital stay (days) | 4 | 194 | Mean Difference (IV, Fixed, 95% CI) | 0.74 [0.55, 0.93] |
| 14.1 urodynamic stress incontinence (only) | 1 | 20 | Mean Difference (IV, Fixed, 95% CI) | 0.65 [0.39, 0.91] |
| 14.2 stress urinary incontinence (symptoms only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.3 mixed urinary incontinence | 3 | 174 | Mean Difference (IV, Fixed, 95% CI) | 0.83 [0.56, 1.10] |
| 15 Time to catheter removal (days) | 2 | 113 | Mean Difference (IV, Fixed, 95% CI) | 0.11 [-0.07, 0.30] |
| 15.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.2 stress urinary incontinence (symptoms only) | 1 | 53 | Mean Difference (IV, Fixed, 95% CI) | 2.3 [0.01, 4.59] |
| 15.3 mixed urinary incontinence | 1 | 60 | Mean Difference (IV, Fixed, 95% CI) | 0.10 [-0.09, 0.29] |
| 16 Perioperative surgical complications | 4 | 293 | Risk Ratio (M-H, Fixed, 95% CI) | 1.74 [1.16, 2.60] |
| 16.1 urodynamic stress incontinence (only) | 2 | 183 | Risk Ratio (M-H, Fixed, 95% CI) | 1.73 [1.01, 2.96] |
| 16.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 16.3 mixed urinary incontinence | 2 | 110 | Risk Ratio (M-H, Fixed, 95% CI) | 1.74 [0.94, 3.21] |
| 17 Bladder perforations | 10 | 844 | Risk Ratio (M-H, Fixed, 95% CI) | 0.59 [0.34, 1.01] |
| 17.1 urodynamic stress incontinence (only) | 3 | 334 | Risk Ratio (M-H, Fixed, 95% CI) | 0.74 [0.19, 2.86] |
| 17.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 0.56 [0.05, 5.81] |
| 17.3 mixed urinary incontinence | 6 | 457 | Risk Ratio (M-H, Fixed, 95% CI) | 0.56 [0.30, 1.03] |
| 18 Urethral injury | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

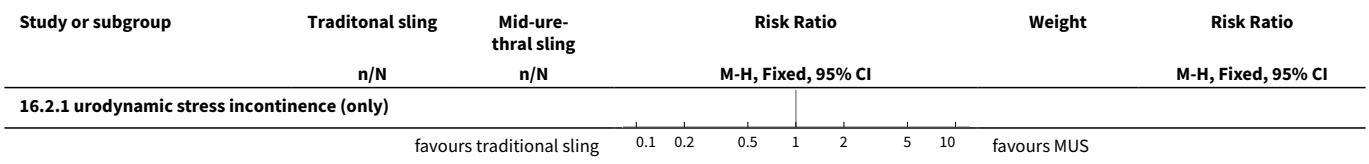
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 18.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Vaginal bleeding | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 19.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 Urinary tract infection | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 20.1 urodynamic stress incontinence (only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.3 mixed urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21 Voiding dysfunction | 8 | 629 | Risk Ratio (M-H, Fixed, 95% CI) | 1.34 [0.85, 2.12] |
| 21.1 urodynamic stress incontinence (only) | 3 | 325 | Risk Ratio (M-H, Fixed, 95% CI) | 1.22 [0.60, 2.46] |
| 21.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 2.61 [0.76, 9.03] |
| 21.3 mixed urinary incontinence | 4 | 251 | Risk Ratio (M-H, Fixed, 95% CI) | 1.18 [0.58, 2.40] |
| 22 De novo detrusor urgency or urge symptoms | 5 | 348 | Risk Ratio (M-H, Fixed, 95% CI) | 1.62 [0.66, 3.99] |
| 22.1 urodynamic stress incontinence (only) | 1 | 124 | Risk Ratio (M-H, Fixed, 95% CI) | 0.34 [0.01, 8.29] |
| 22.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 3.35 [0.14, 78.60] |
| 22.3 mixed urinary incontinence | 3 | 171 | Risk Ratio (M-H, Fixed, 95% CI) | 1.81 [0.65, 5.06] |
| 23 De novo detrusor overactivity (urodynamic diagnosis) | 4 | 325 | Risk Ratio (M-H, Fixed, 95% CI) | 2.61 [1.17, 5.84] |
| 23.1 urodynamic stress incontinence (only) | 1 | 59 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 stress urinary incontinence (symptoms only) | 1 | 47 | Risk Ratio (M-H, Fixed, 95% CI) | 3.13 [0.13, 73.01] |
| 23.3 mixed urinary incontinence | 2 | 219 | Risk Ratio (M-H, Fixed, 95% CI) | 2.57 [1.12, 5.92] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 24 Long-term adverse effects (release of sling required) | 3 | 326 | Risk Ratio (M-H, Fixed, 95% CI) | 2.53 [0.87, 7.35] |
| 24.1 urodynamic stress incontinence (only) | 2 | 266 | Risk Ratio (M-H, Fixed, 95% CI) | 1.68 [0.50, 5.66] |
| 24.2 stress urinary incontinence (symptoms only) | 0 | 0 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.3 mixed urinary incontinence | 1 | 60 | Risk Ratio (M-H, Fixed, 95% CI) | 9.6 [0.54, 170.84] |
| 25 Long-term adverse effects (wound pain at 6 months) | 3 | 257 | Risk Ratio (M-H, Fixed, 95% CI) | 6.40 [1.94, 21.12] |
| 25.1 urodynamic stress incontinence (only) | 1 | 124 | Risk Ratio (M-H, Fixed, 95% CI) | 5.16 [0.25, 105.36] |
| 25.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 3.92 [0.90, 17.15] |
| 25.3 mixed urinary incontinence | 1 | 80 | Risk Ratio (M-H, Fixed, 95% CI) | 17.0 [1.01, 284.96] |
| 26 Long-term adverse effects (vaginal mesh or graft exposure) | 5 | 348 | Risk Ratio (M-H, Fixed, 95% CI) | 0.28 [0.05, 1.65] |
| 26.1 urodynamic stress incontinence (only) | 2 | 165 | Risk Ratio (M-H, Fixed, 95% CI) | 0.35 [0.04, 3.24] |
| 26.2 stress urinary incontinence (symptoms only) | 1 | 53 | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 26.3 mixed urinary incontinence | 2 | 130 | Risk Ratio (M-H, Fixed, 95% CI) | 0.2 [0.01, 3.97] |
| 27 Condition-specific measures to assess quality of life: UDI-6 | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 7.30 [-2.00, 16.60] |
| 27.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 27.2 stress urinary incontinence (symptoms only) | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 7.30 [-2.00, 16.60] |
| 27.3 mixed urinary incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 28 Condition-specific measures to assess quality of life: IIQ-7 | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 0.60 [-10.17, 11.37] |
| 28.1 urodynamic stress incontinence (only) | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 28.2 stress urinary incontinence (symptoms only) | 1 | 63 | Mean Difference (IV, Fixed, 95% CI) | 0.60 [-10.17, 11.37] |
| 28.3 mixed urinary incontinence | 0 | 0 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

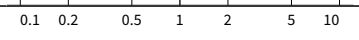
## Analysis 16.1. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations).




## Analysis 16.2. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 2 Number not improved (worse or unchanged) within first year (women's observations).



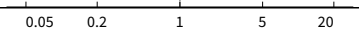
| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Arunkalaivanan 2003 | 6/74 | 4/68 | | 13.67% | 1.38[0.41,4.68] |
| Guerrero 2008 | 4/73 | 6/71 | | 19.95% | 0.65[0.19,2.2] |
| **Subtotal (95% CI)** | **147** | **139** | | **33.62%** | **0.95[0.4,2.21]** |
| Total events: 10 (Traditonal sling), 10 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=0.73, df=1(P=0.39); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.13(P=0.9) | | | | | |
| **16.2.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditonal sling), 0 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |
| **16.2.3 mixed urinary incontinence** | | | | | |
| Basok 2008 | 14/67 | 21/72 | | 66.38% | 0.72[0.4,1.29] |
| **Subtotal (95% CI)** | **67** | **72** | | **66.38%** | **0.72[0.4,1.29]** |
| Total events: 14 (Traditonal sling), 21 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=1.11(P=0.27) | | | | | |
| **Total (95% CI)** | **214** | **211** | | **100%** | **0.79[0.49,1.29]** |
| Total events: 24 (Traditonal sling), 31 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.01, df=2(P=0.6); $I^2$=0% | | | | | |
| Test for overall effect: Z=0.94(P=0.35) | | | | | |
| Test for subgroup differences: $Chi^2$=0.28, df=1 (P=0.6), $I^2$=0% | | | | | |



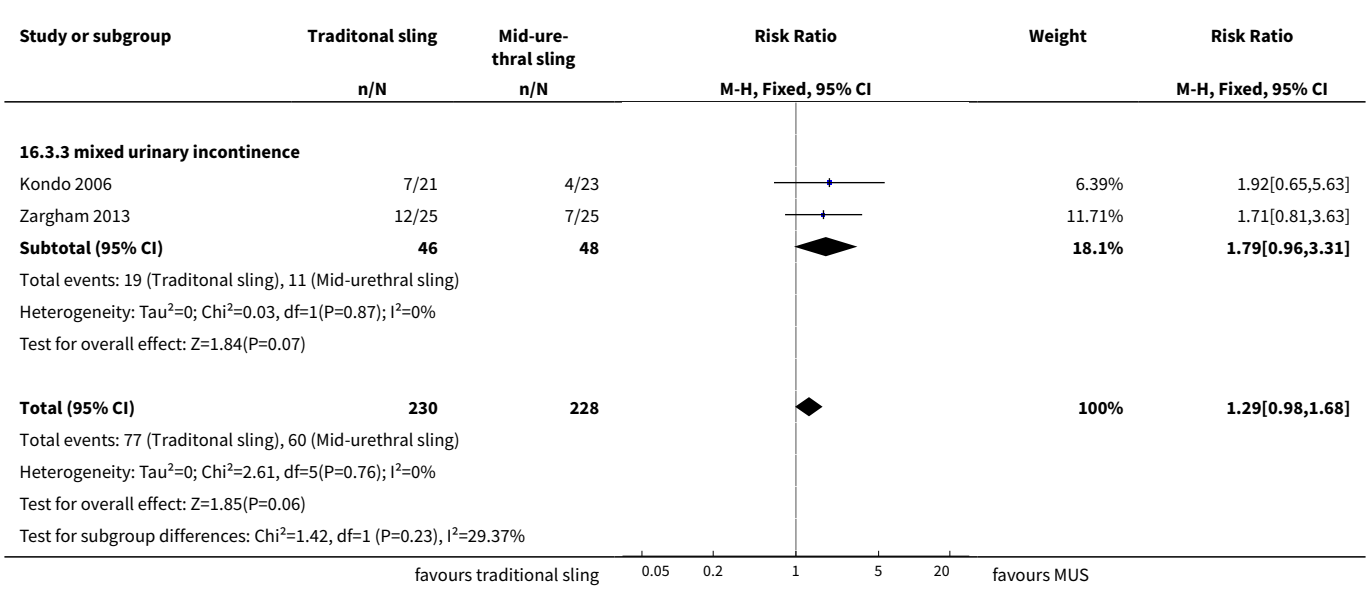

favours traditional sling — favours MUS

## Analysis 16.3. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations).

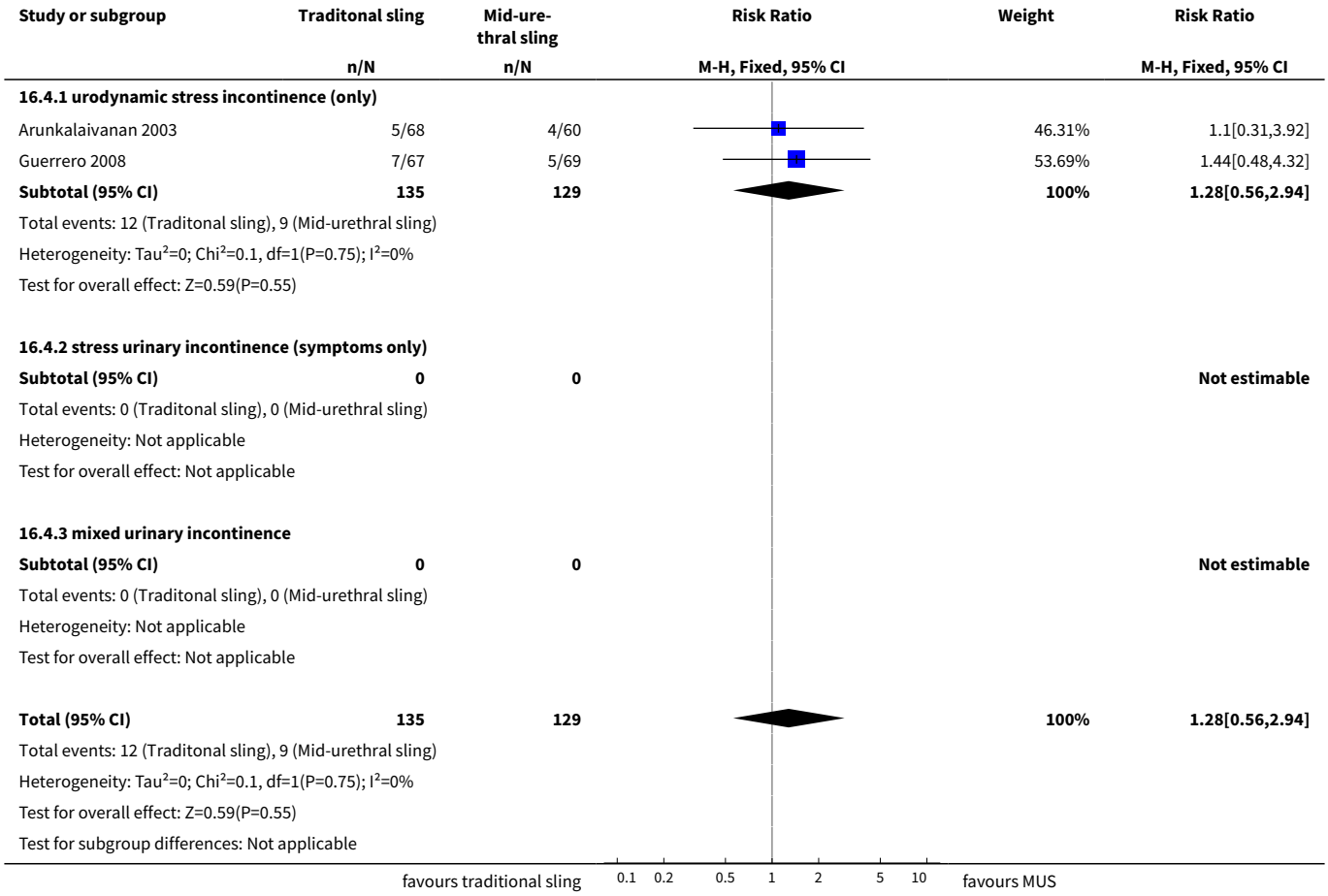
| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **16.3.1 urodynamic stress incontinence (only)** | | | | | |
| Amaro 2007 | 9/21 | 7/20 | | 12% | 1.22[0.56,2.66] |
| Arunkalaivanan 2003 | 12/68 | 7/60 | | 12.44% | 1.51[0.64,3.59] |
| Bai 2005 | 2/28 | 4/31 | | 6.35% | 0.55[0.11,2.79] |
| Guerrero 2008 | 35/67 | 31/69 | | 51.11% | 1.16[0.82,1.65] |
| **Subtotal (95% CI)** | **184** | **180** | | **81.9%** | **1.18[0.87,1.59]** |
| Total events: 58 (Traditonal sling), 49 (Mid-urethral sling) | | | | | |
| Heterogeneity: $Tau^2$=0; $Chi^2$=1.17, df=3(P=0.76); $I^2$=0% | | | | | |
| Test for overall effect: Z=1.07(P=0.28) | | | | | |
| **16.3.2 stress urinary incontinence (symptoms only)** | | | | | |
| **Subtotal (95% CI)** | **0** | **0** | | | **Not estimable** |
| Total events: 0 (Traditonal sling), 0 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Not applicable | | | | | |



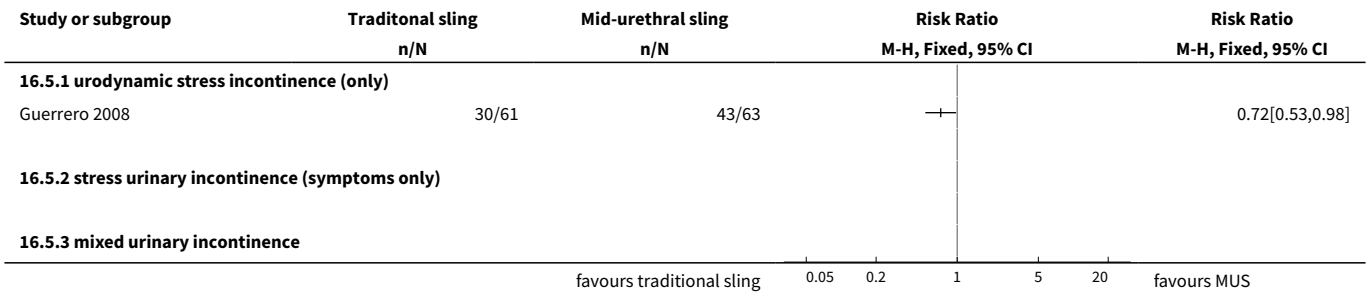

favours traditional sling — favours MUS



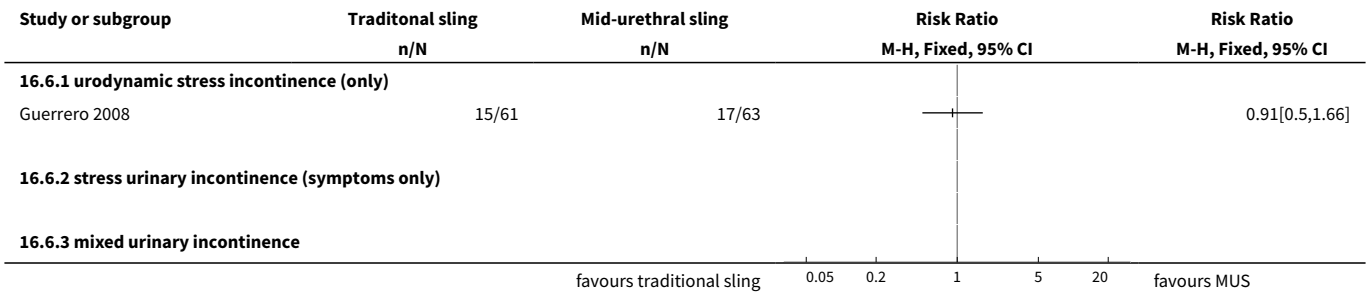

## Analysis 16.4. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 4 Number not improved (worse or unchanged) after first year (women's observations).



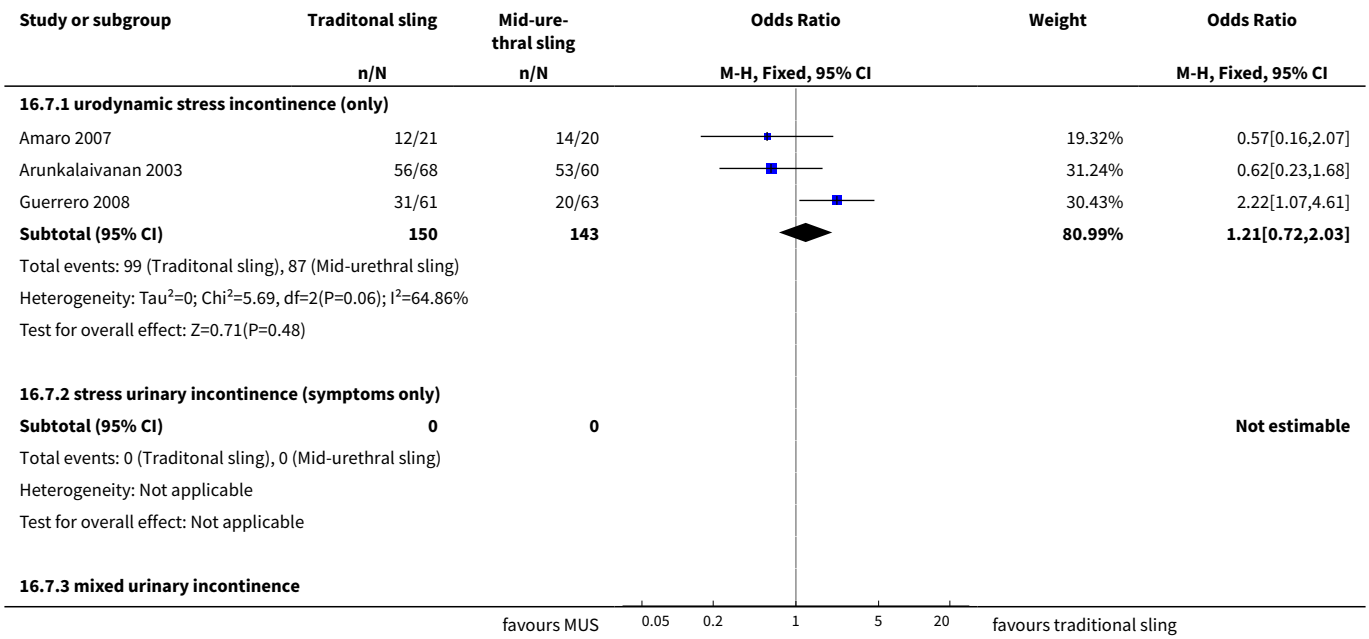
### Analysis 16.5. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 5 Number of women with urinary incontinence after 5 years (women's observations).

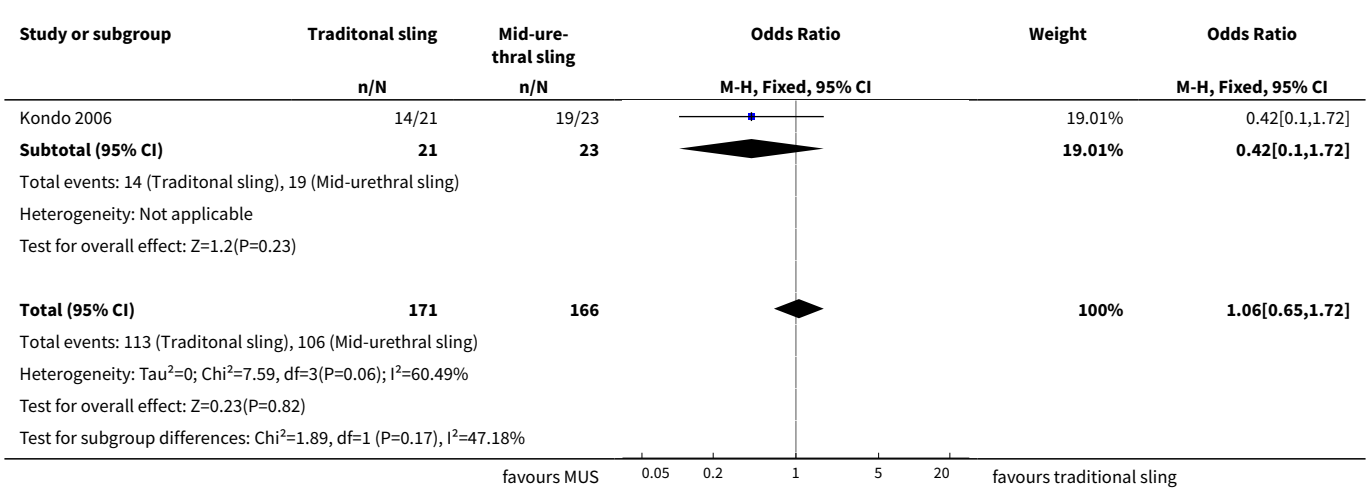



### Analysis 16.6. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 6 Number with incontinence not improved after 5 years (women's observations).

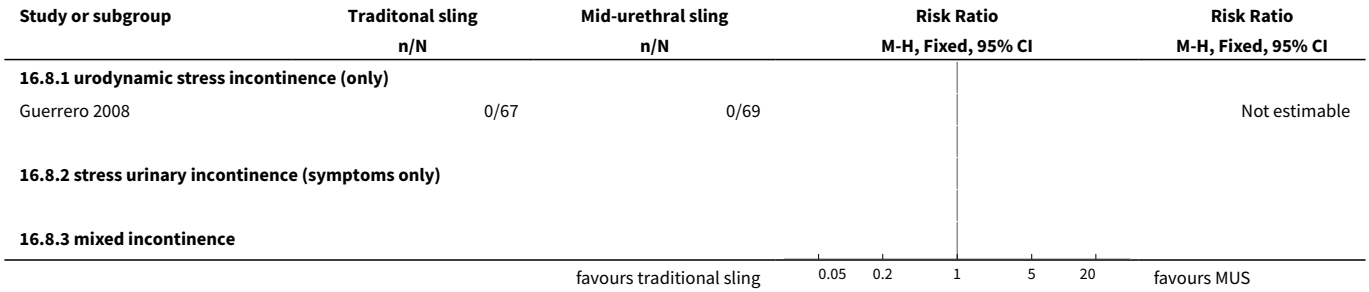



### Analysis 16.7. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 7 CURE: number of women cured at > 1 year (women's observations).

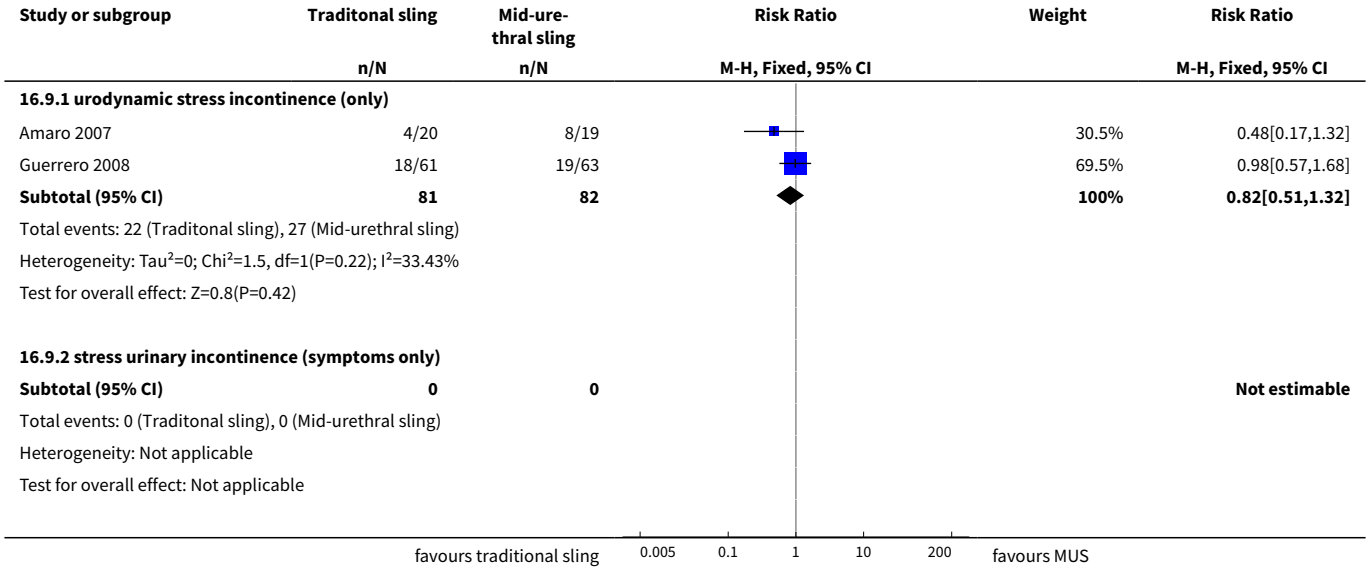


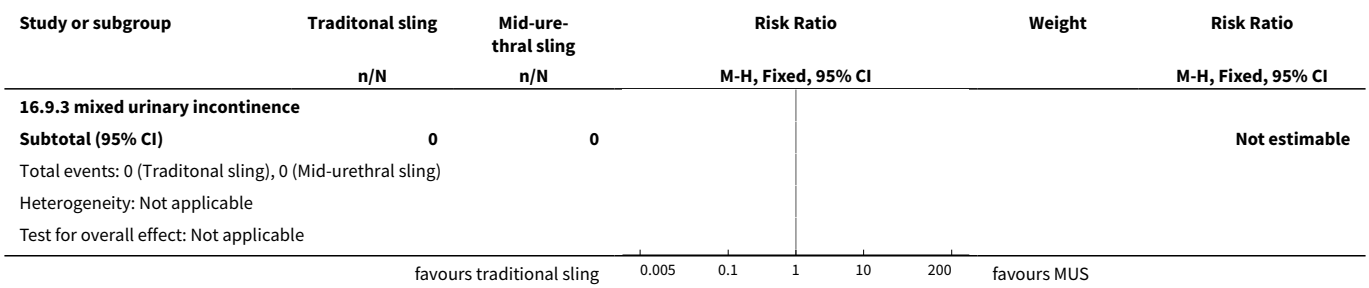



## Analysis 16.8. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 8 Repeat surgery for urinary incontinence.

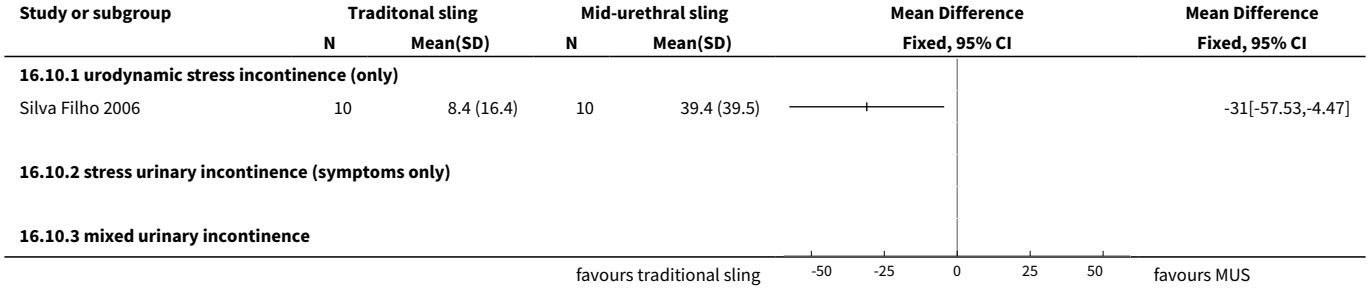



## Analysis 16.9. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 9 Number of women not satisfied.

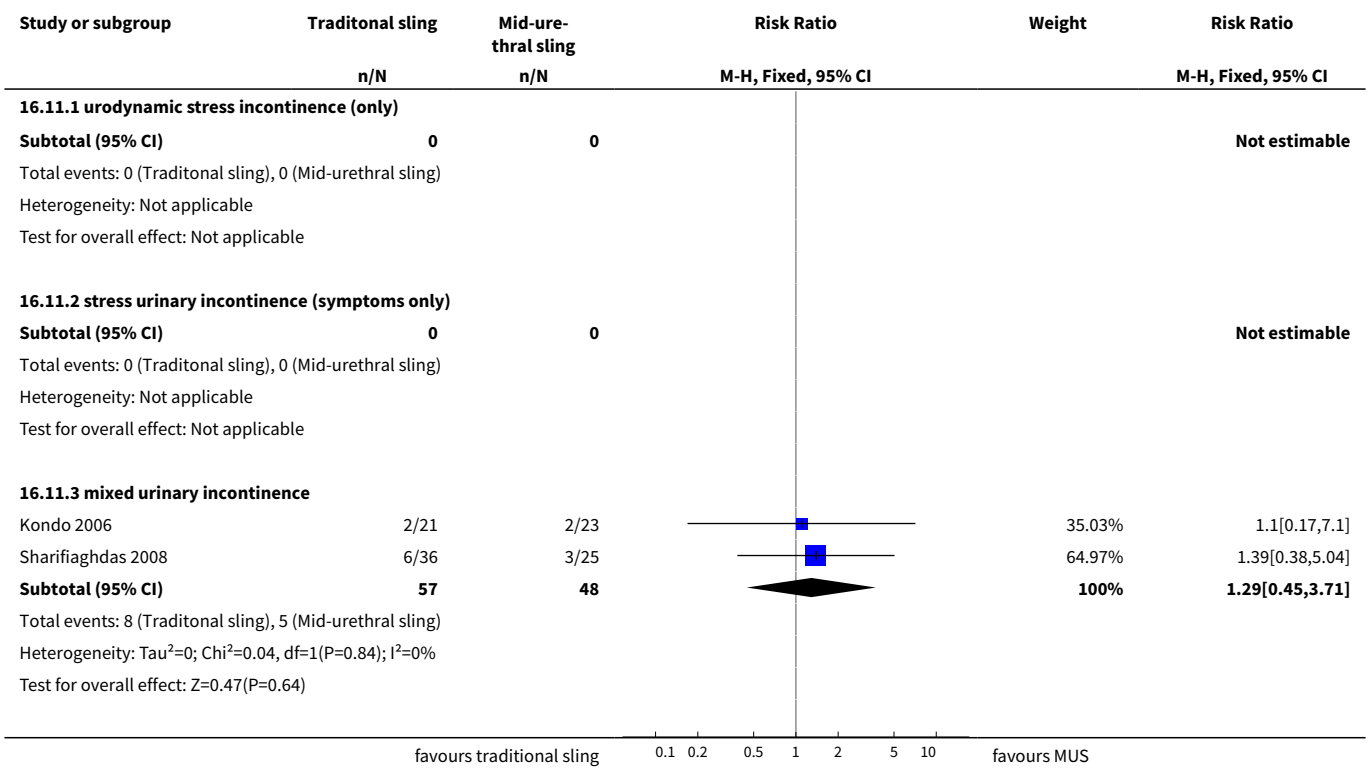


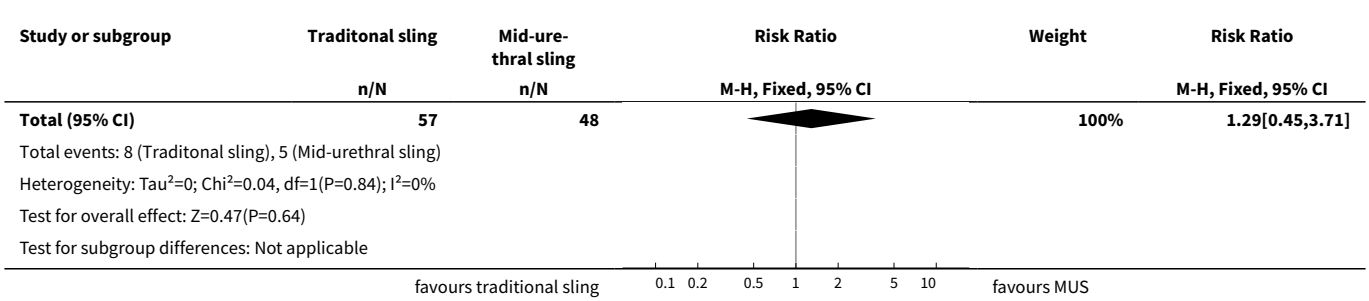



## Analysis 16.10. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 10 Pad test of quantified leakage (mean weight of urine loss).

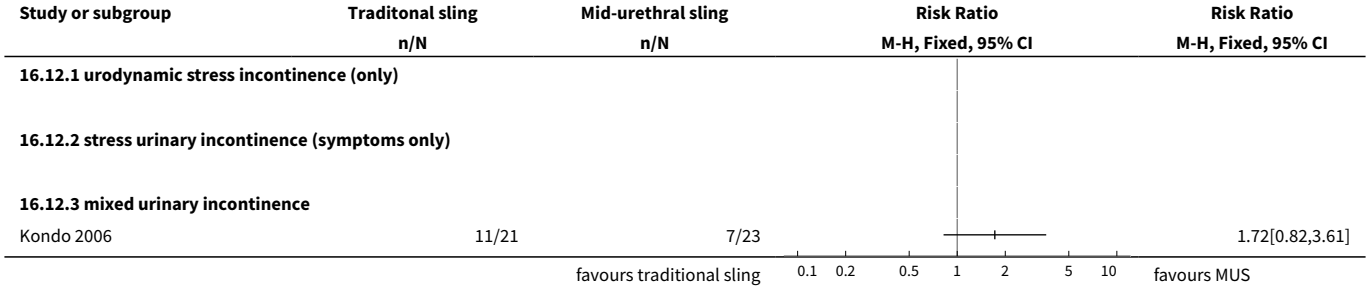



## Analysis 16.11. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 11 Number of women with urinary incontinence (clinician's observations) within first year.

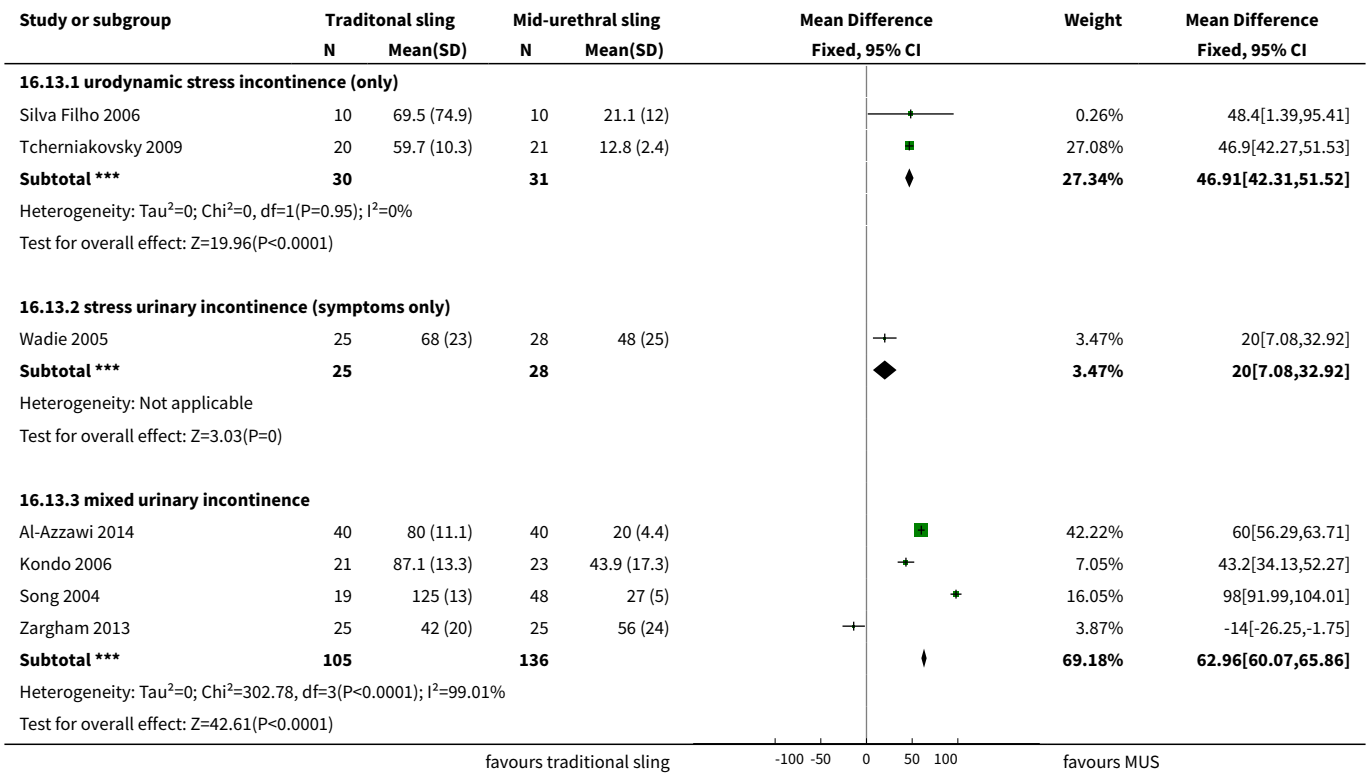


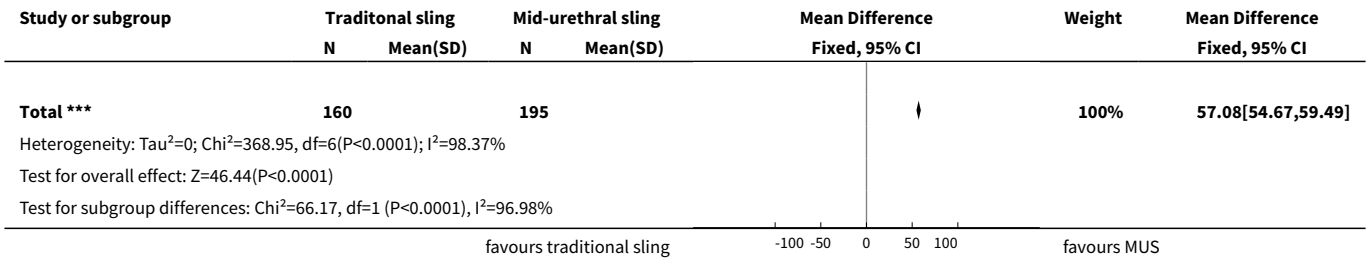



## Analysis 16.12. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 12 Number of women with urinary incontinence (clinician's observations) after first year.

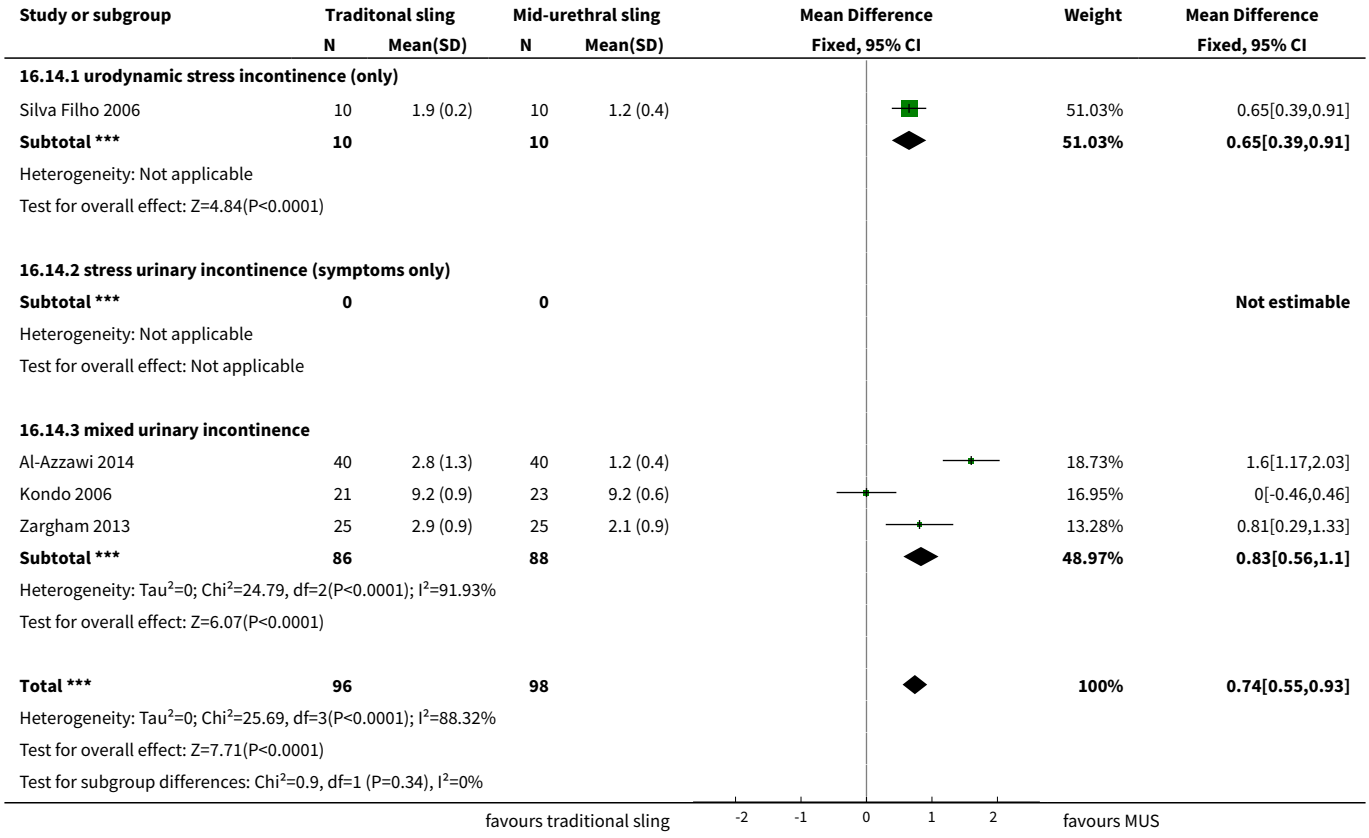



## Analysis 16.13. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 13 Duration of operation (minutes).

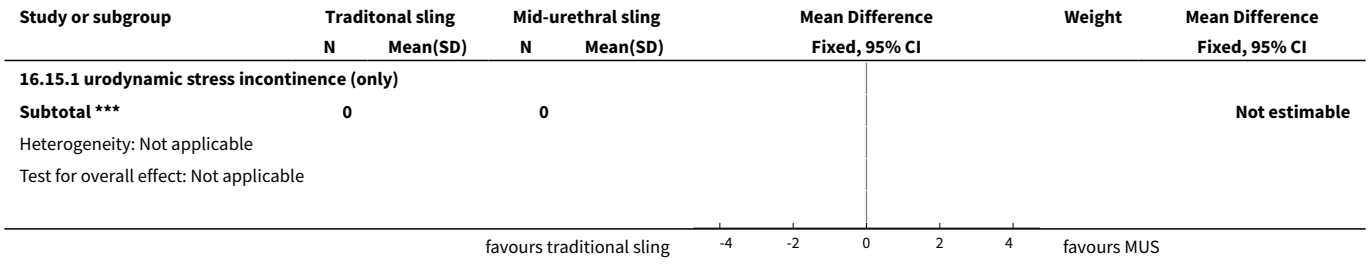


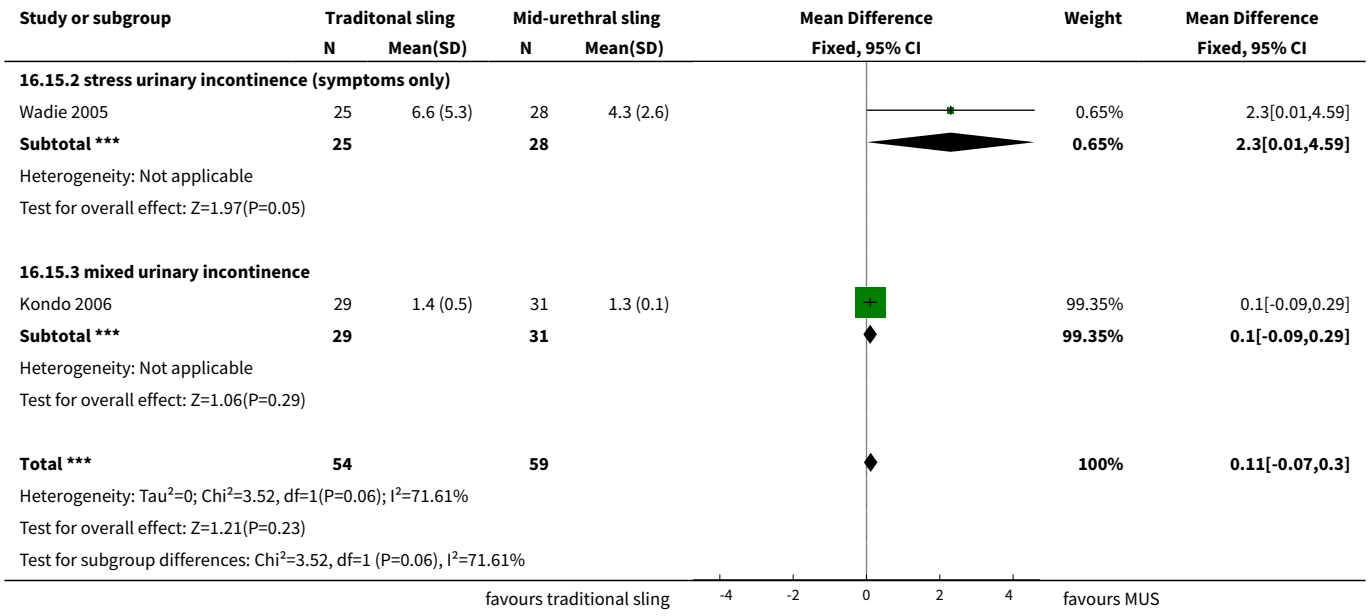



## Analysis 16.14. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 14 Length of hospital stay (days).

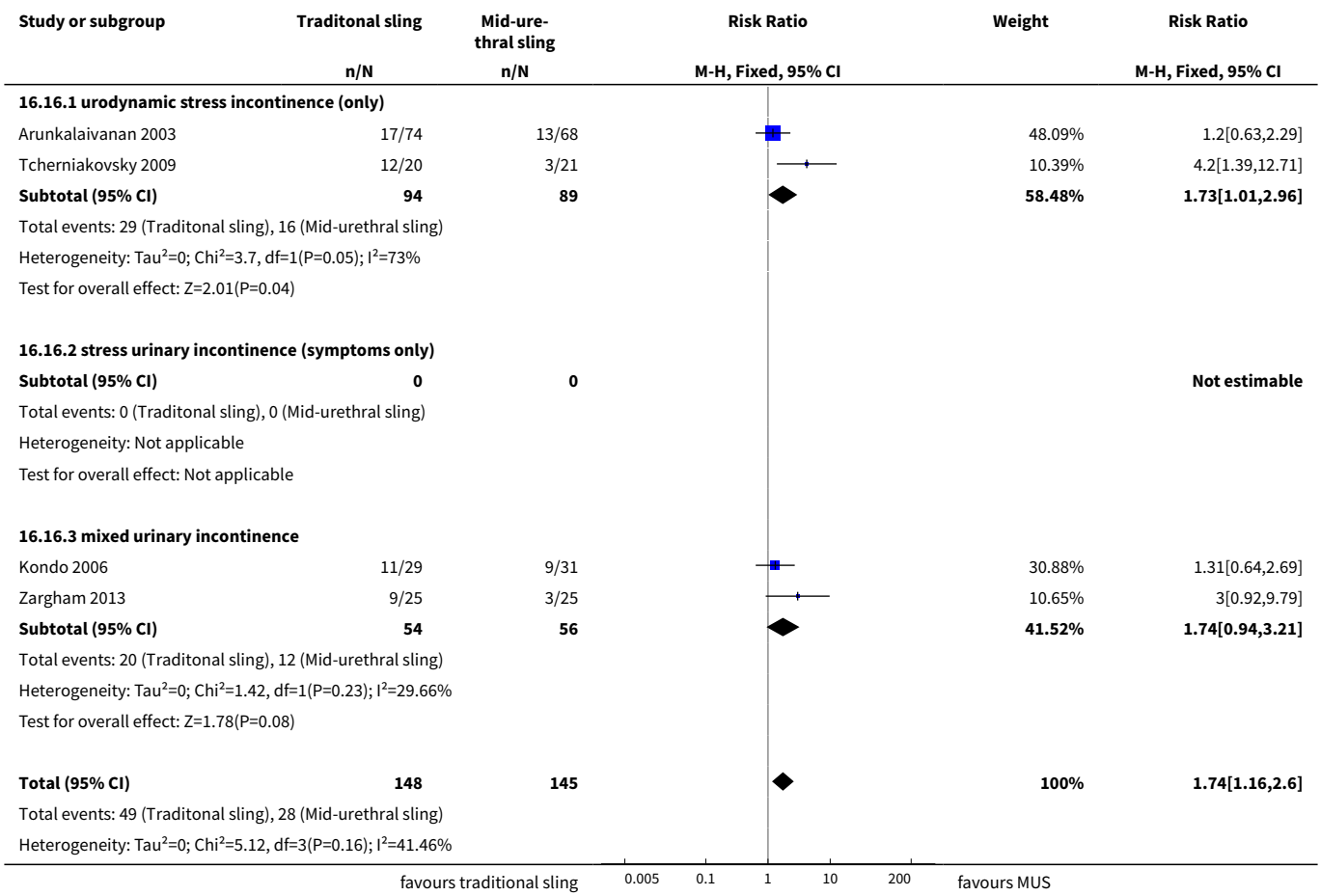



## Analysis 16.15. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 15 Time to catheter removal (days).






## Analysis 16.16. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 16 Perioperative surgical complications.



| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| Test for overall effect: Z=2.68(P=0.01) | | | | | |
| Test for subgroup differences: Chi²=0, df=1 (P=0.99), I²=0% | | | | | |

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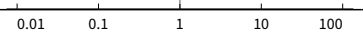
## Analysis 16.17. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 17 Bladder perforations.

| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **16.17.1 urodynamic stress incontinence (only)** | | | | | |
| Arunkalaivanan 2003 | 0/74 | 0/68 | | | Not estimable |
| Guerrero 2008 | 2/79 | 4/72 | | 13.51% | 0.46[0.09,2.41] |
| Tcherniakovsky 2009 | 1/20 | 0/21 | | 1.58% | 3.14[0.14,72.92] |
| **Subtotal (95% CI)** | **173** | **161** | | **15.08%** | **0.74[0.19,2.86]** |
| Total events: 3 (Traditonal sling), 4 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=1.14, df=1(P=0.29); I²=12.02% | | | | | |
| Test for overall effect: Z=0.44(P=0.66) | | | | | |
| **16.17.2 stress urinary incontinence (symptoms only)** | | | | | |
| Wadie 2005 | 1/25 | 2/28 | | 6.09% | 0.56[0.05,5.81] |
| **Subtotal (95% CI)** | **25** | **28** | | **6.09%** | **0.56[0.05,5.81]** |
| Total events: 1 (Traditonal sling), 2 (Mid-urethral sling) | | | | | |
| Heterogeneity: Not applicable | | | | | |
| Test for overall effect: Z=0.49(P=0.63) | | | | | |
| **16.17.3 mixed urinary incontinence** | | | | | |
| Al-Azzawi 2014 | 0/40 | 0/40 | | | Not estimable |
| Basok 2008 | 3/67 | 8/72 | | 24.89% | 0.4[0.11,1.46] |
| Kondo 2006 | 7/29 | 7/31 | | 21.83% | 1.07[0.43,2.67] |
| Sharifiaghdas 2008 | 2/36 | 6/25 | | 22.85% | 0.23[0.05,1.05] |
| Song 2004 | 0/19 | 1/48 | | 2.81% | 0.82[0.03,19.21] |
| Zargham 2013 | 1/25 | 2/25 | | 6.45% | 0.5[0.05,5.17] |
| **Subtotal (95% CI)** | **216** | **241** | | **78.83%** | **0.56[0.3,1.03]** |
| Total events: 13 (Traditonal sling), 24 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=3.53, df=4(P=0.47); I²=0% | | | | | |
| Test for overall effect: Z=1.86(P=0.06) | | | | | |
| **Total (95% CI)** | **414** | **430** | | **100%** | **0.59[0.34,1.01]** |
| Total events: 17 (Traditonal sling), 30 (Mid-urethral sling) | | | | | |
| Heterogeneity: Tau²=0; Chi²=4.66, df=7(P=0.7); I²=0% | | | | | |
| Test for overall effect: Z=1.93(P=0.05) | | | | | |
| Test for subgroup differences: Chi²=0.13, df=1 (P=0.94), I²=0% | | | | | |

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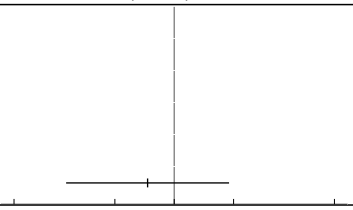
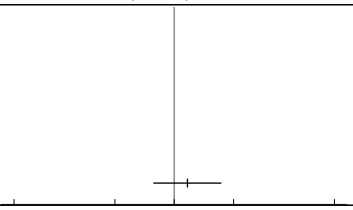
## Analysis 16.18. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 18 Urethral injury.

| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **16.18.1 urodynamic stress incontinence (only)** | | | | |
| **16.18.2 stress urinary incontinence (symptoms only)** | | | | |
| **16.18.3 mixed urinary incontinence** | | | | |
| Kondo 2006 | 0/29 | 1/31 | | 0.36[0.02,8.39] |



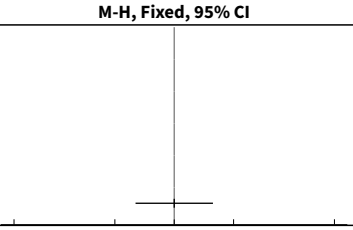

## Analysis 16.19. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 19 Vaginal bleeding.

| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **16.19.1 urodynamic stress incontinence (only)** | | | | |
| **16.19.2 stress urinary incontinence (symptoms only)** | | | | |
| **16.19.3 mixed urinary incontinence** | | | | |
| Zargham 2013 | 5/25 | 3/25 | | 1.67[0.45,6.24] |



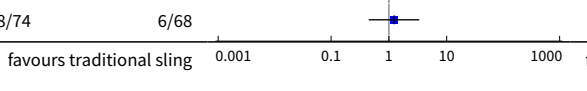

## Analysis 16.20. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 20 Urinary tract infection.

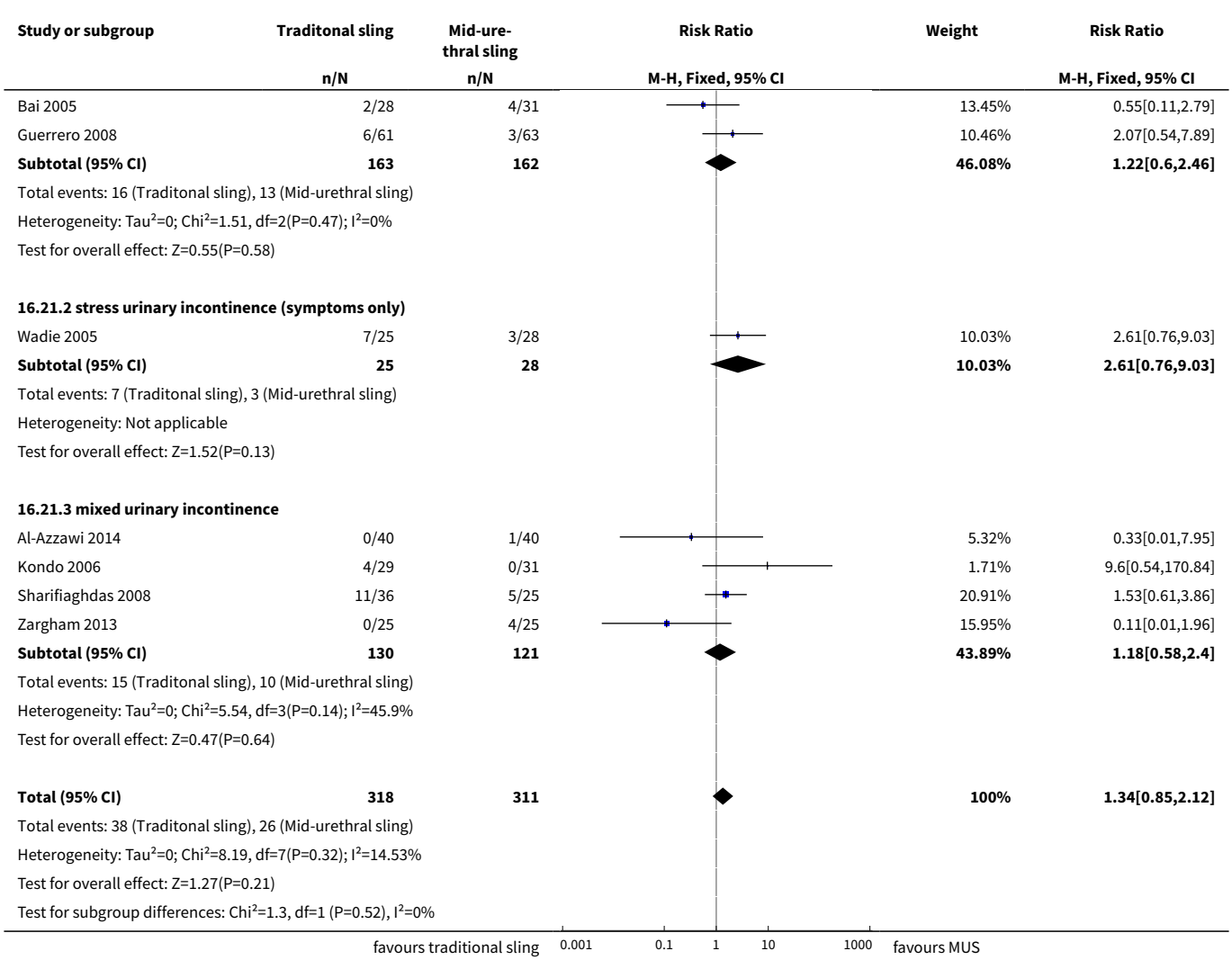
| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **16.20.1 urodynamic stress incontinence (only)** | | | | |
| **16.20.2 stress urinary incontinence (symptoms only)** | | | | |
| **16.20.3 mixed urinary incontinence** | | | | |
| Zargham 2013 | 3/25 | 3/25 | | 1[0.22,4.49] |



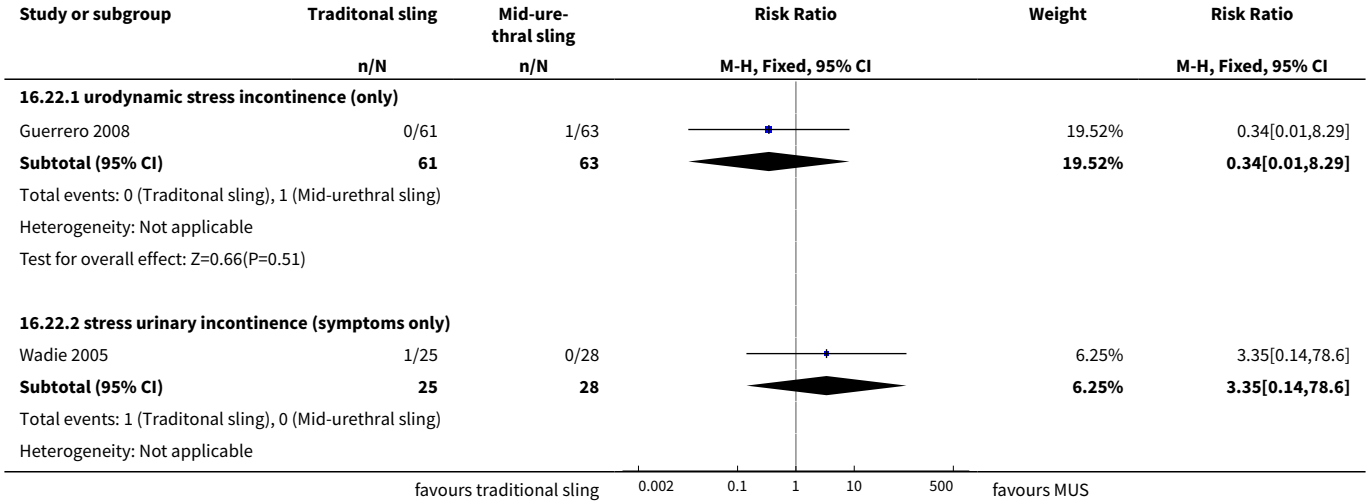

## Analysis 16.21. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 21 Voiding dysfunction.

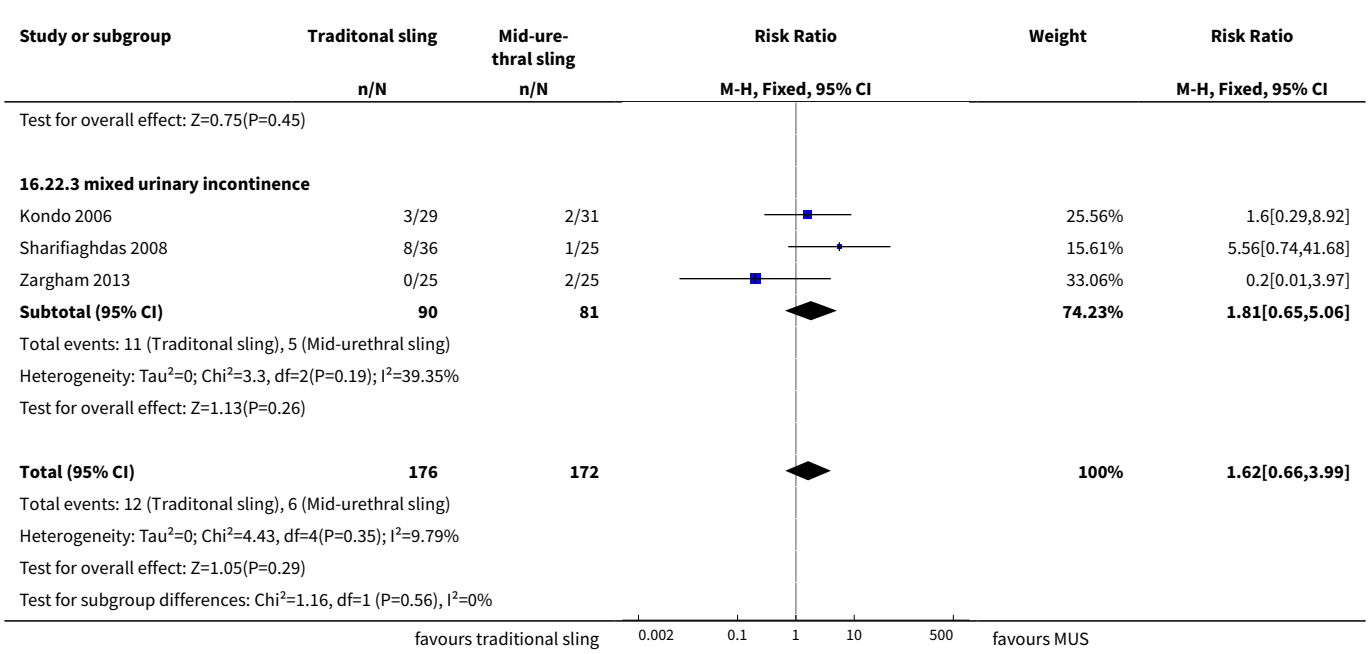
| Study or subgroup | Traditonal sling n/N | Mid-urethral sling n/N | Risk Ratio M-H, Fixed, 95% CI | Weight | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|
| **16.21.1 urodynamic stress incontinence (only)** | | | | | |
| Arunkalaivanan 2003 | 8/74 | 6/68 | | 22.16% | 1.23[0.45,3.35] |



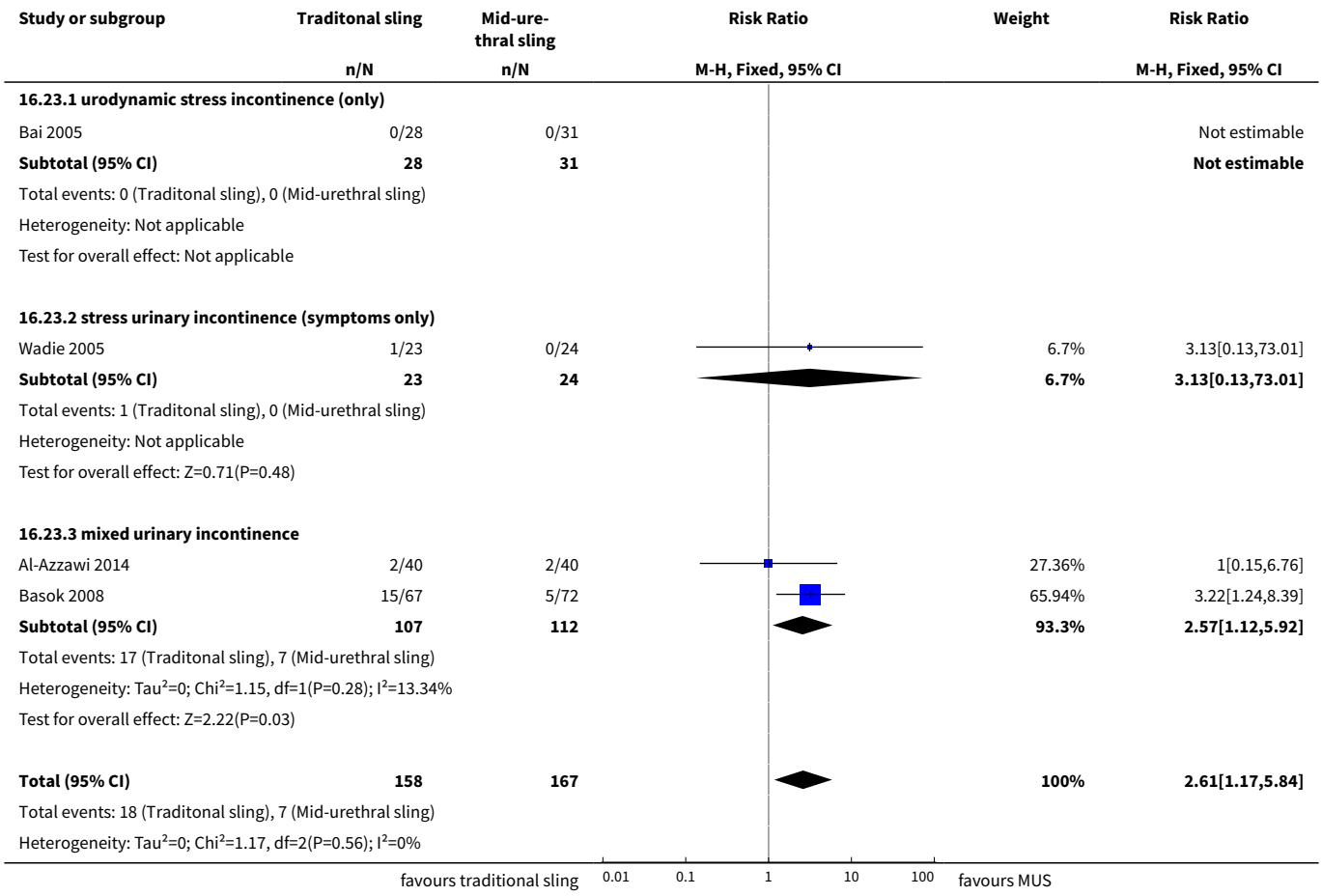


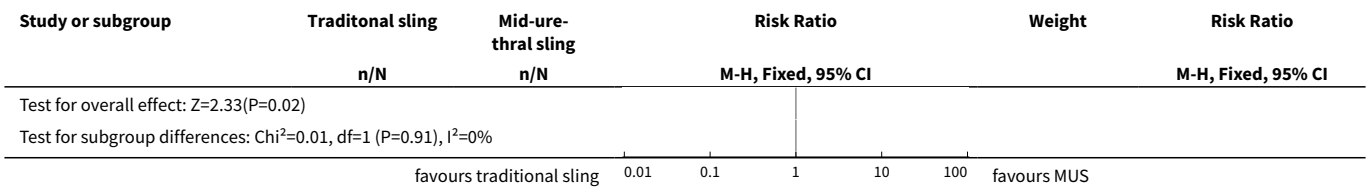

## Analysis 16.22. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 22 De novo detrusor urgency or urge symptoms.



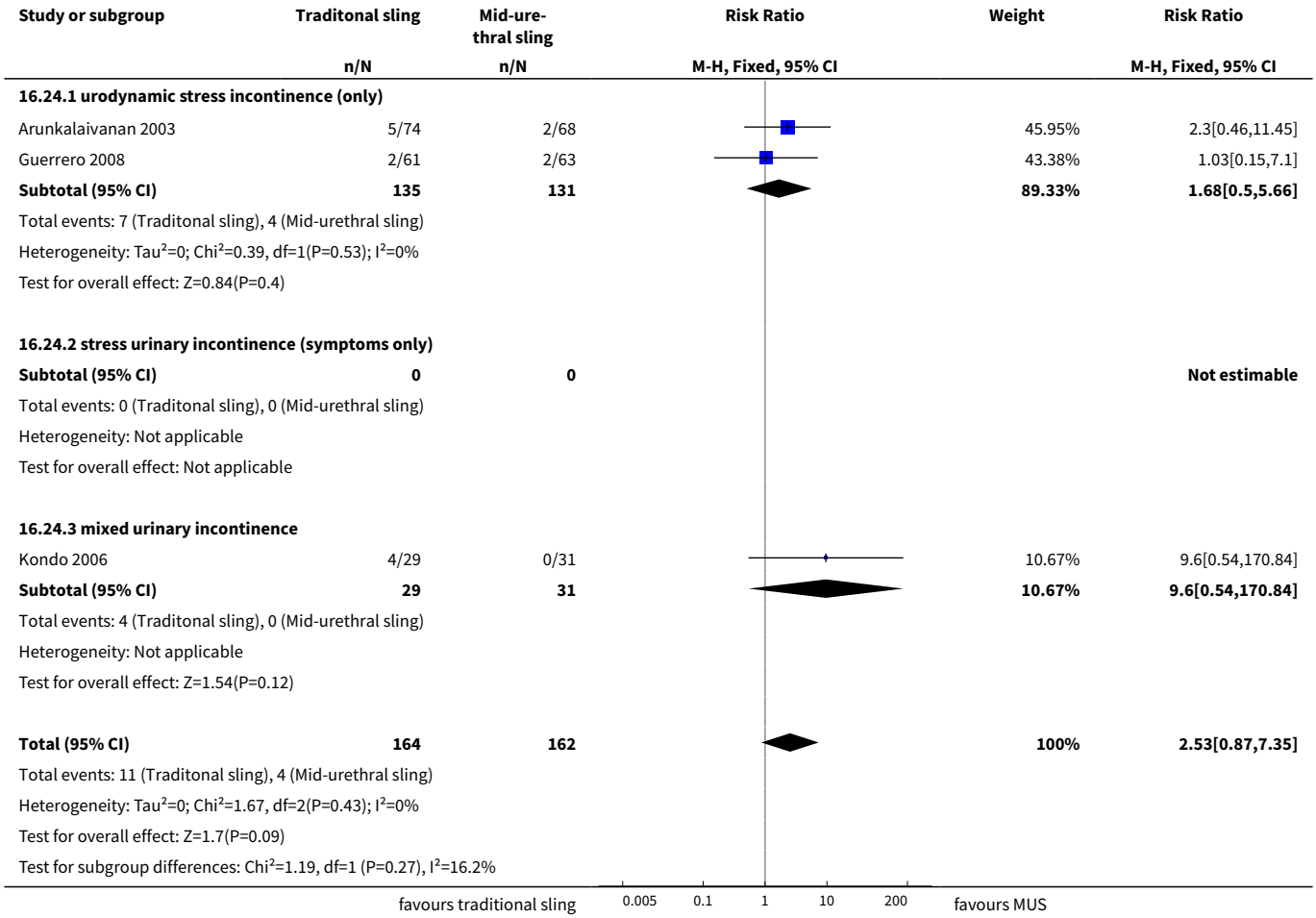



## Analysis 16.23. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 23 De novo detrusor overactivity (urodynamic diagnosis).

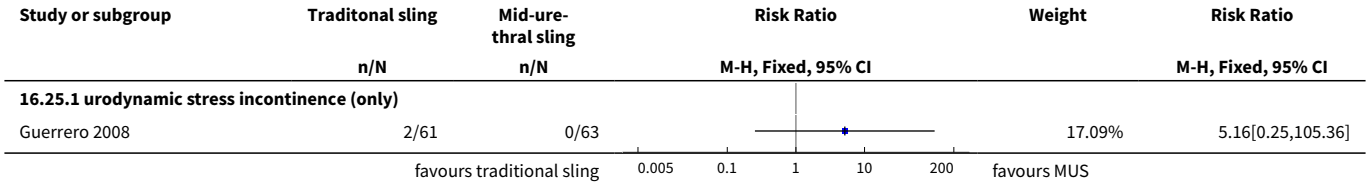


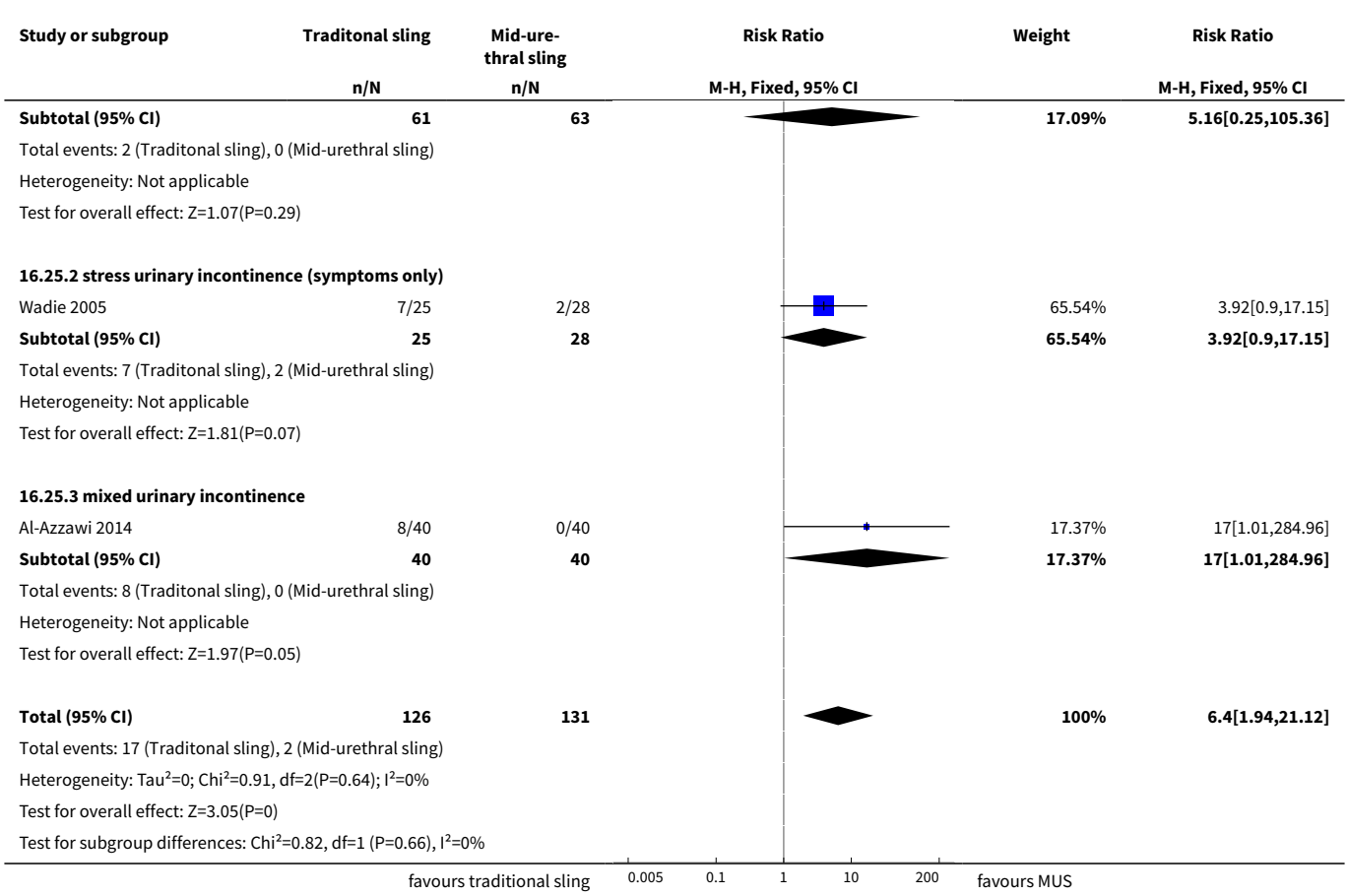



## Analysis 16.24. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 24 Long-term adverse effects (release of sling required).

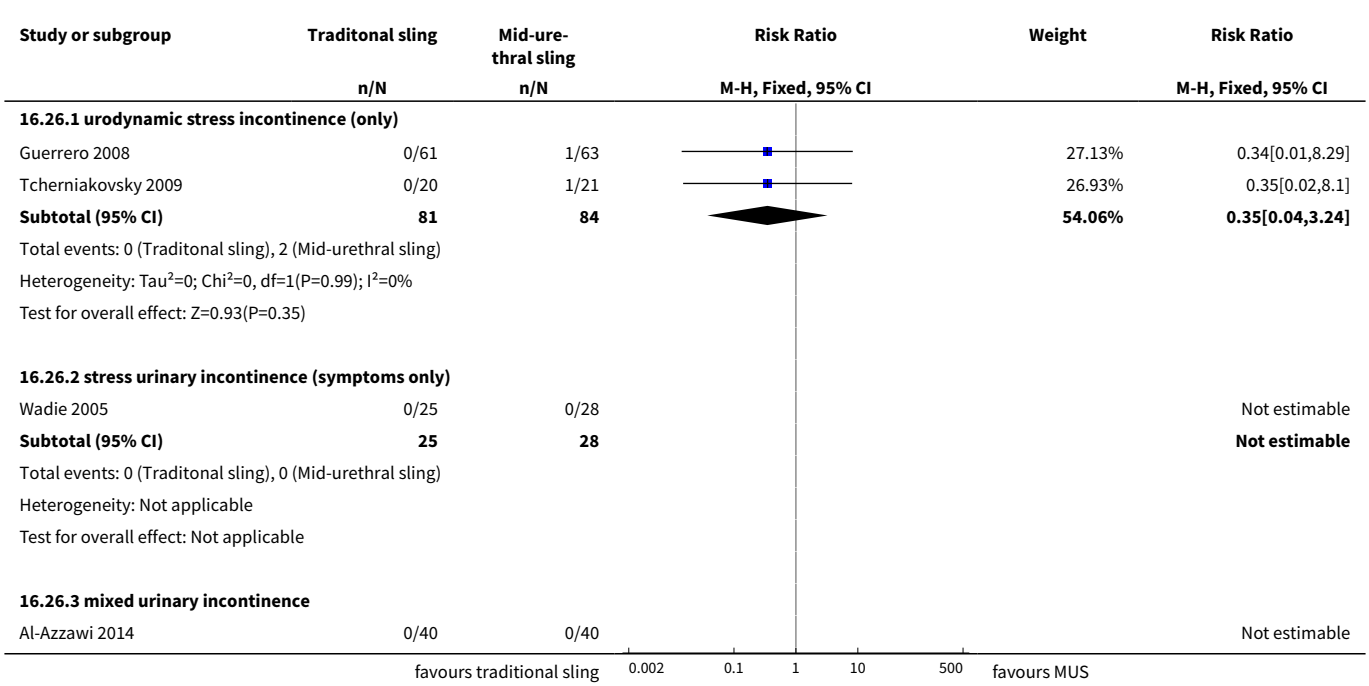


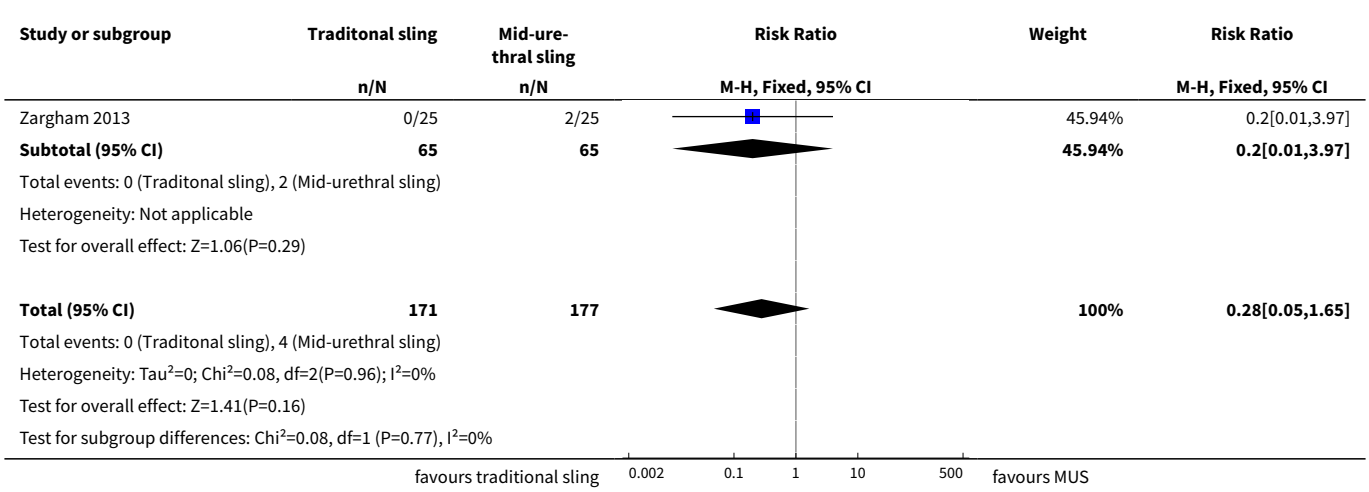

## Analysis 16.25. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 25 Long-term adverse effects (wound pain at 6 months).



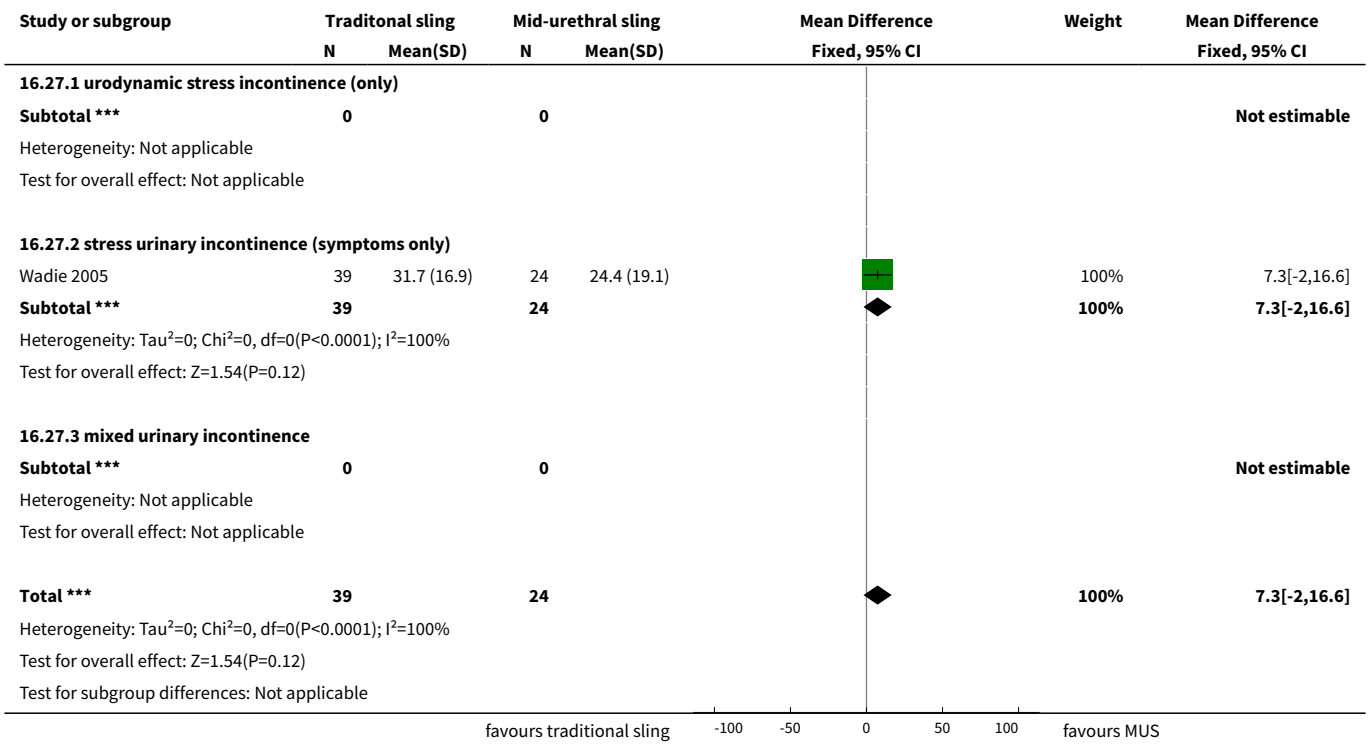



## Analysis 16.26. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 26 Long-term adverse effects (vaginal mesh or graft exposure).

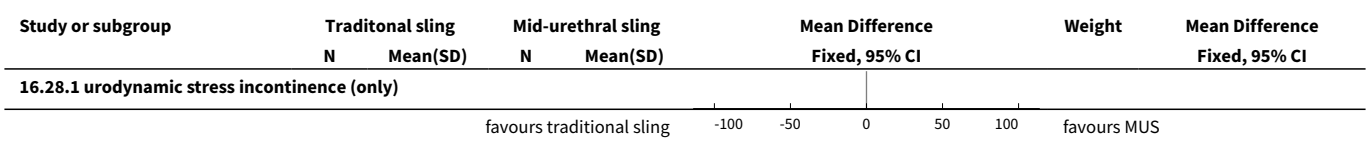


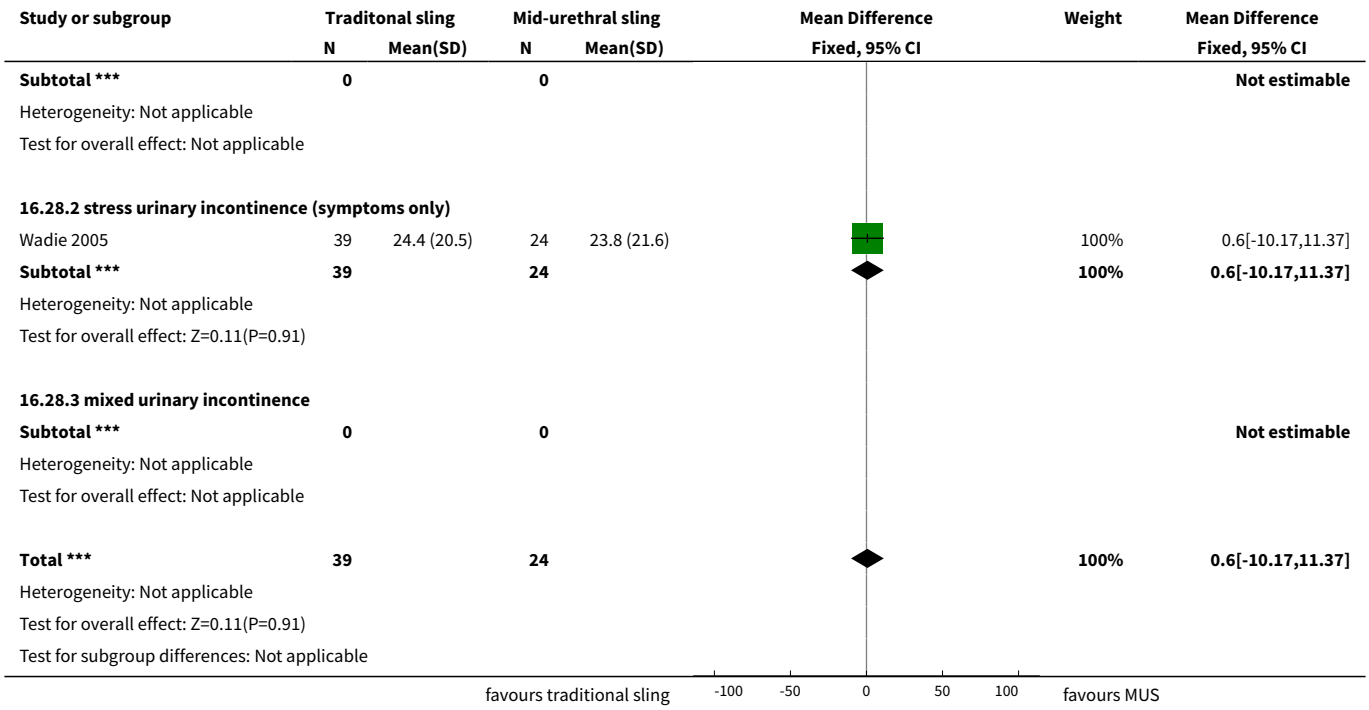



## Analysis 16.27. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 27 Condition-specific measures to assess quality of life: UDI-6.




## Analysis 16.28. Comparison 16 Traditional suburethral sling operation versus a mid-urethral sling or tape, Outcome 28 Condition-specific measures to assess quality of life: IIQ-7.






## Comparison 17. Traditional suburethral sling operation versus a single-incision sling (mini-sling)

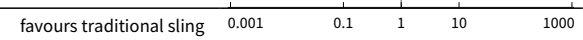
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence in the medium term (1 to 5 years) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number of women not satisfied within first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 3 Number of women with urinary incontinence (clinician's observations) within first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 CURE: number of women cured at > 1 year (women's observations) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 urodynamic stress incontinence (only) | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 stress urinary incontinence (symptoms only) | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 mixed incontinence | 0 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Bladder perforation | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 Urge urinary symptoms, urgency urinary incontinence | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7 Pain with intercourse (dyspareunia) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 8 Long-term adverse effects (vaginal mesh or graft exposure) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 8.1 urodynamic stress incontinence (only) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 stress urinary incontinence (symptoms only) | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 mixed incontinence | 0 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Condition-specific measures to assess quality of life: IIQ score | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 9.1 urodynamic stress incontinence (only) | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 stress urinary incontinence (symptoms only) | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 mixed urinary incontinence | 0 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

**Analysis 17.1. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 1 Number of women with urinary incontinence in the medium term (1 to 5 years).**

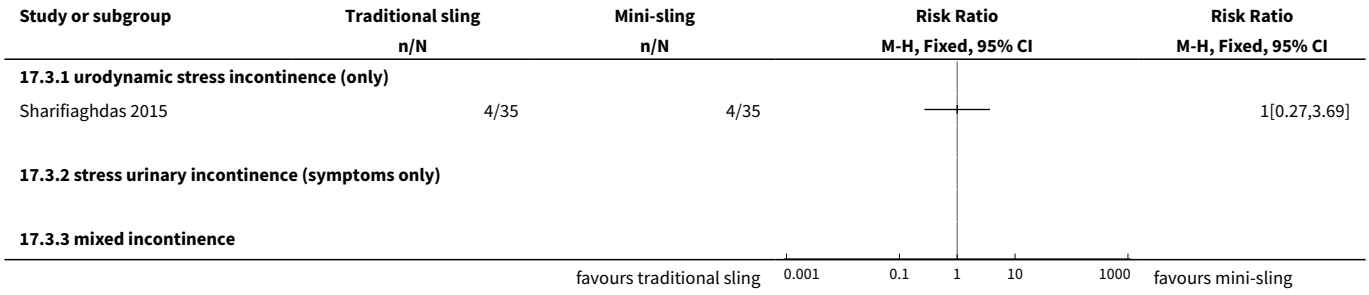
| Study or subgroup | Traditional sling n/N | Mini-sling n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **17.1.1 urodynamic stress incontinence (only)** | | | | |
| Sharifiaghdas 2015 | 4/35 | 4/35 | | 1[0.27,3.69] |
| **17.1.2 stress urinary incontinence (symptoms only)** | | | | |
| **17.1.3 mixed incontinence** | | | | |



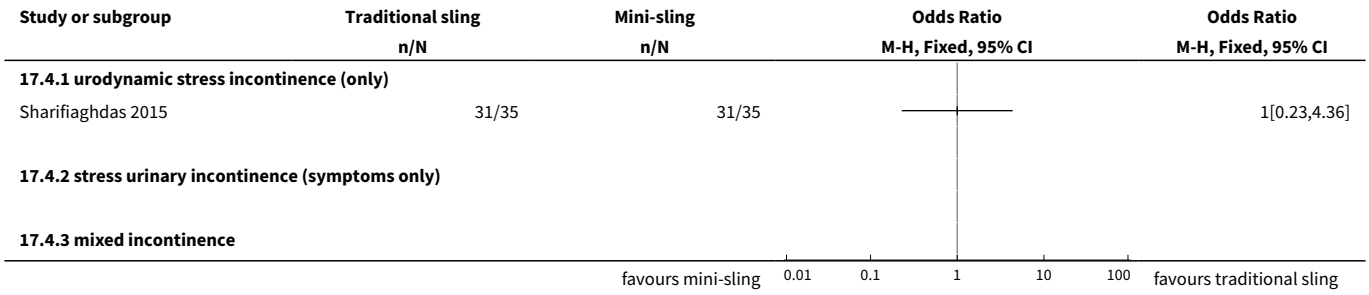

**Analysis 17.2. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 2 Number of women not satisfied within first year.**

| Study or subgroup | favours traditional sling n/N | Mini-sling n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **17.2.1 urodynamic stress incontinence (only)** | | | | |
| Sharifiaghdas 2015 | 10/35 | 7/35 | | 1.43[0.61,3.32] |
| **17.2.2 stress urinary incontinence (symptoms only)** | | | | |
| **17.2.3 mixed incontinence** | | | | |

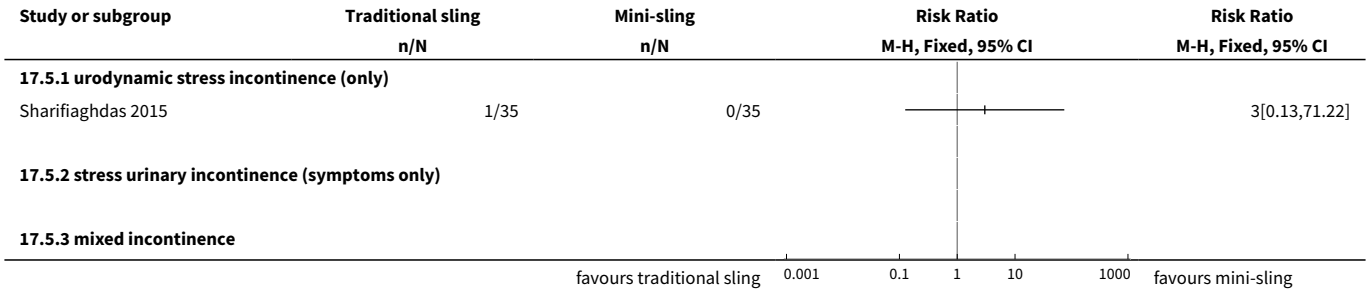
### Analysis 17.3. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 3 Number of women with urinary incontinence (clinician's observations) within first year.



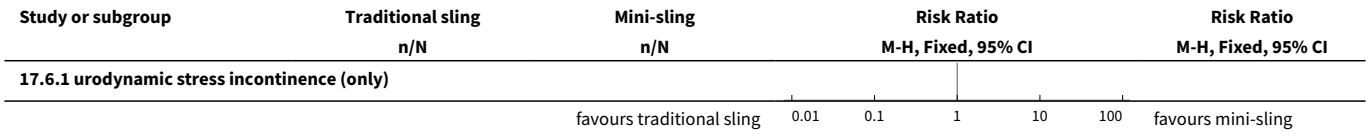

### Analysis 17.4. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 4 CURE: number of women cured at > 1 year (women's observations).

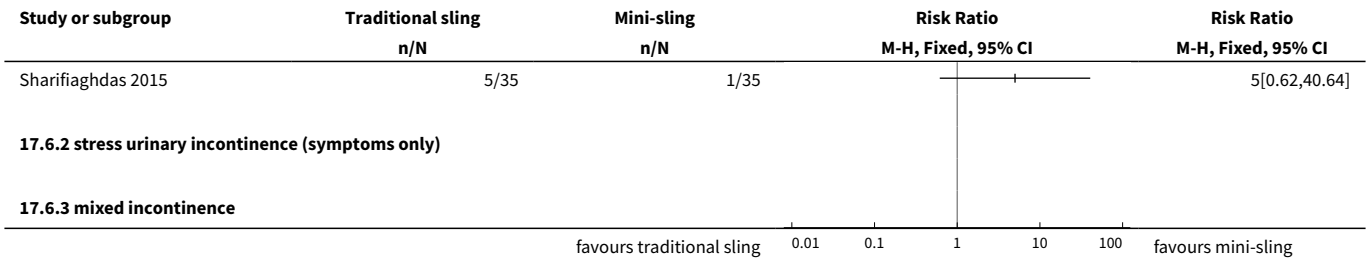



### Analysis 17.5. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 5 Bladder perforation.

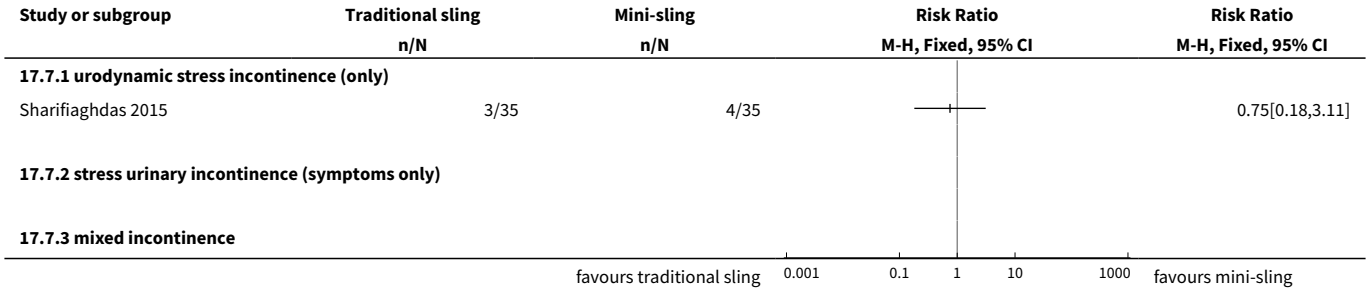



### Analysis 17.6. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 6 Urge urinary symptoms, urgency urinary incontinence.

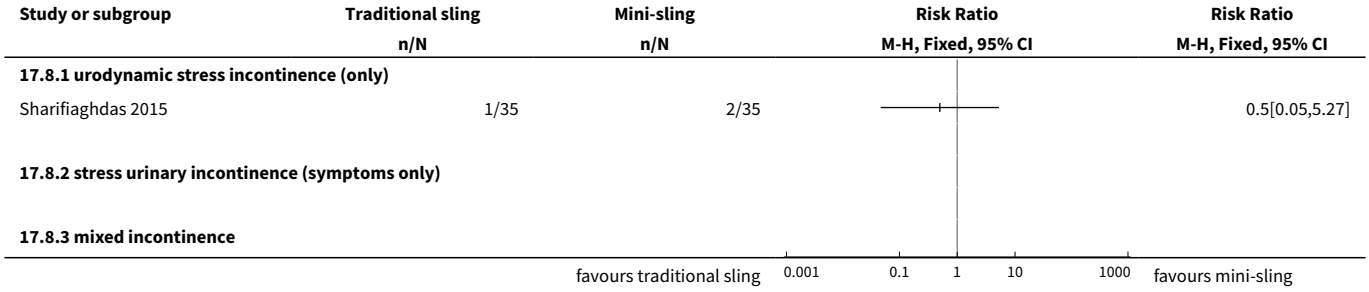




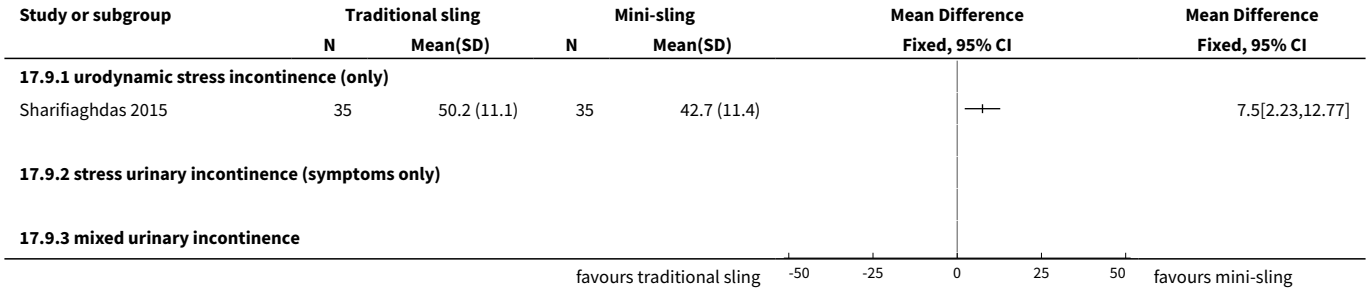

## Analysis 17.7. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 7 Pain with intercourse (dyspareunia).




## Analysis 17.8. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 8 Long-term adverse effects (vaginal mesh or graft exposure).




## Analysis 17.9. Comparison 17 Traditional suburethral sling operation versus a single-incision sling (mini-sling), Outcome 9 Condition-specific measures to assess quality of life: IIQ score.



**Comparison 18. One type of traditional sling operation versus another type of traditional sling operation**

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations) | 5 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 1.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.2 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.3 autologous fascial sling vs Fortaperm sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.4 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.5 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.6 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 1.7 fascial sling vs vaginal wall sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2 Number not improved (worse or unchanged) within first year (women's observations) | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 2.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.2 autologous fascial sling vs Fortaperm sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 2.3 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations) | 7 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 3.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.2 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.3 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.4 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.5 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.6 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 3.7 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.8 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.9 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.10 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 3.11 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4 Number not improved (worse or unchanged) after first year (women's observations) | 4 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 4.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.2 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.3 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.4 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.5 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 4.6 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Number of women with urinary incontinence (worse, unchanged, or improved) after 5 years (women's observations) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 5.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6 CURE: number of women with urinary incontinence > 1 year (women's observations) | 3 | | Odds Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 6.1 fascial sling vs Pelvicol sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.2 standard sling vs short sling | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 6.3 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Odds Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 7 Number of women not satisfied | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 7.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 7.5 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8 Pad test of quantified leakage (mean weight of urine loss) at 1 year | 2 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 8.1 standard sling vs short sling | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.2 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.3 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 8.4 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 Pad test of quantified leakage (mean weight of urine loss) at 1 to 5 years | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 9.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Duration of operation (minutes) | 2 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 10.1 standard sling vs short sling | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.2 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.3 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10.4 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11 Blood loss (mL) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 11.1 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

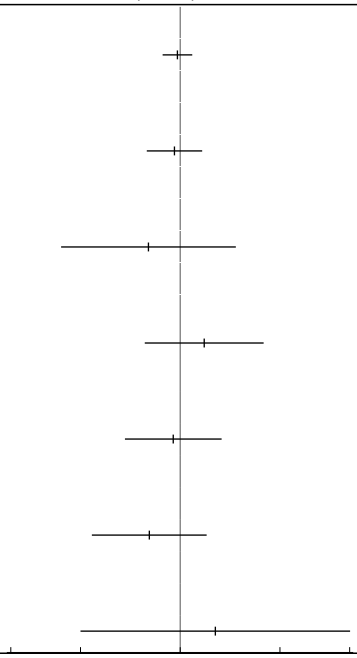
| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 11.2 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 11.3 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12 Length of hospital stay (days) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 12.1 anterior rectus sheath sling vs Prolene strip | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.2 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 12.3 Prolene strip vs anterior vaginal wall patch | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13 Perioperative surgical complications | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 13.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.2 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 13.3 fascial sling vs vaginal wall sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14 Bladder perforation | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 14.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.2 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.3 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.4 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 14.5 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15 Urinary tract infection | 2 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 15.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 15.2 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 16 Vaginal bleeding | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 16.1 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 17 Long-term adverse effects (wound pain) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 17.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18 Voiding dysfunction | 6 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 18.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.2 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.3 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.4 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.5 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.6 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.7 anterior rectus sheath sling vs Prolene strip | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.8 anterior rectus sheath sling vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.9 Prolene strip vs anterior vaginal wall patch | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 18.10 fascial sling vs vaginal wall sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 19 Long-term adverse effects (release of sling required) | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 19.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20 De novo detrusor urgency or urge symptoms or detrusor overactivity | 4 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 20.1 standard sling vs short sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 20.5 autologous dermal graft patch vs cadaveric fascia lata | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 20.6 rectus fascia sling vs Goretex sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 21 Repeat surgery for urinary incontinence at first year | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 21.1 Fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22 Long-term adverse effects (vaginal mesh or graft exposure) | 3 | | Risk Ratio (M-H, Fixed, 95% CI) | Totals not selected |
| 22.1 fascial sling vs Pelvicol sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.2 Vypro vs Ultrapro | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.3 Vypro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.4 Ultrapro vs Prolene light | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 22.5 anterior vaginal wall sling vs biosynthetic mesh sling | 1 | | Risk Ratio (M-H, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 23.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 23.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years) | 1 | | Mean Difference (IV, Fixed, 95% CI) | Totals not selected |
| 24.1 Vypro vs Ultrapro | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.2 Vypro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 24.3 Ultrapro vs Prolene light | 1 | | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |

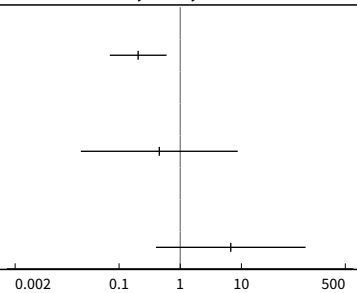
**Analysis 18.1. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 1 Number of women with urinary incontinence (worse, unchanged, or improved) within first year (women's observations).**

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.1.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 38/73 | 25/45 | | 0.94[0.67,1.32] |
| **18.1.2 standard sling vs short sling** | | | | |
| Lucas 2000 | 14/72 | 16/72 | | 0.88[0.46,1.66] |
| **18.1.3 autologous fascial sling vs Fortaperm sling** | | | | |
| Pacetta 2005 | 1/10 | 5/24 | | 0.48[0.06,3.61] |
| **18.1.4 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 5/46 | 3/48 | | 1.74[0.44,6.86] |
| **18.1.5 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 5/46 | 6/47 | | 0.85[0.28,2.6] |
| **18.1.6 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 3/48 | 6/47 | | 0.49[0.13,1.84] |
| **18.1.7 fascial sling vs vaginal wall sling** | | | | |
| Viseshsindh 2003 | 1/15 | 0/11 | | 2.25[0.1,50.54] |




**Analysis 18.2. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 2 Number not improved (worse or unchanged) within first year (women's observations).**

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.2.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 4/73 | 12/45 | | 0.21[0.07,0.6] |
| **18.2.2 autologous fascial sling vs Fortaperm sling** | | | | |
| Pacetta 2005 | 0/10 | 2/24 | | 0.45[0.02,8.71] |
| **18.2.3 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 6/32 | 0/16 | | 6.7[0.4,111.94] |



**Analysis 18.3. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 3 Number of women with urinary incontinence (worse, unchanged, or improved) at 1 to 5 years (women's observations).**

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.3.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 35/67 | 36/46 | | 0.67[0.51,0.88] |
| **18.3.2 standard sling vs short sling** | | | | |
| Lucas 2000 | 35/75 | 30/70 | | 1.09[0.76,1.57] |
| **18.3.3 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 8/33 | 5/24 | | 1.16[0.43,3.12] |
| **18.3.4 rectus fascia sling vs Goretex sling** | | | | |
| Barbalias 1997 | 11/32 | 2/16 | | 2.75[0.69,10.95] |
| **18.3.5 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 7/46 | 4/48 | | 1.83[0.57,5.83] |
| **18.3.6 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 7/46 | 7/47 | | 1.02[0.39,2.68] |
| **18.3.7 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 4/48 | 7/47 | | 0.56[0.18,1.79] |
| **18.3.8 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 6/20 | 1/20 | | 6[0.79,45.42] |
| **18.3.9 anterior rectus sheath sling vs Prolene strip** | | | | |
| Teleb 2011 | 4/12 | 3/12 | | 1.33[0.38,4.72] |
| **18.3.10 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 4/12 | 2/8 | | 1.33[0.32,5.64] |
| **18.3.11 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 3/12 | 2/8 | | 1[0.21,4.71] |




Favours sling A — Favours sling B

**Analysis 18.4. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 4 Number not improved (worse or unchanged) after first year (women's observations).**

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.4.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 7/67 | 18/46 | | 0.27[0.12,0.59] |
| **18.4.2 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 3/33 | 2/24 | | 1.09[0.2,6.03] |
| **18.4.3 rectus fascia sling vs Goretex sling** | | | | |


Favours sling A — Favours sling B

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| Barbalias 1997 | 0/32 | 0/16 | | Not estimable |
| **18.4.4 anterior rectus sheath sling vs Prolene strip** | | | | |
| Teleb 2011 | 1/12 | 1/12 | | 1[0.07,14.21] |
| **18.4.5 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 1/12 | 1/8 | | 0.67[0.05,9.19] |
| **18.4.6 Prolene strip vs anterior vaginal wall patch** | | | | |
| Teleb 2011 | 1/12 | 1/8 | | 0.67[0.05,9.19] |

Favours sling A 0.02 0.1 1 10 50 Favours sling B

## Analysis 18.5. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 5 Number of women with urinary incontinence (worse, unchanged, or improved) after 5 years (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.5.1 standard sling vs short sling** | | | | |
| Lucas 2000 | 42/73 | 34/69 | | 1.17[0.86,1.59] |

Favours sling A 0.2 0.5 1 2 5 Favours sling B

## Analysis 18.6. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 6 CURE: number of women with urinary incontinence > 1 year (women's observations).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Odds Ratio M-H, Fixed, 95% CI | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.6.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 32/67 | 10/46 | | 3.29[1.41,7.69] |
| **18.6.2 standard sling vs short sling** | | | | |
| Lucas 2000 | 31/73 | 35/69 | | 0.72[0.37,1.39] |
| **18.6.3 autologous dermal graft patch vs cadaveric fascia lata** | | | | |
| Shin 2001 | 19/24 | 25/33 | | 1.22[0.34,4.32] |

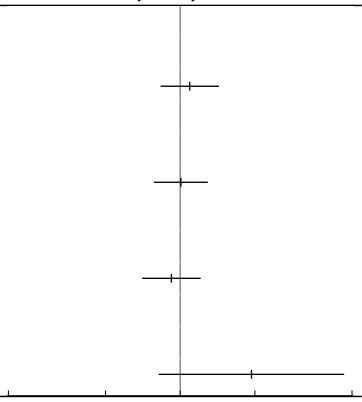
Favours sling B 0.02 0.1 1 10 50 Favours sling A

## Analysis 18.7. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 7 Number of women not satisfied.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.7.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 18/61 | 18/38 | | 0.62[0.37,1.04] |

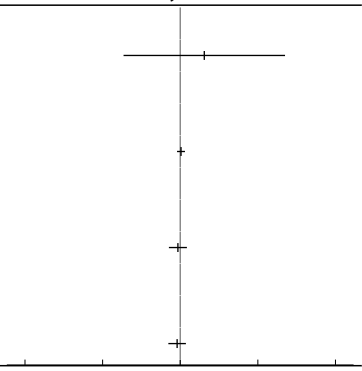
Favours sling A 0.005 0.1 1 10 200 Favours sling B

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.7.2 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 9/46 | 7/48 | | 1.34[0.54,3.3] |
| **18.7.3 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 9/46 | 9/47 | | 1.02[0.45,2.34] |
| **18.7.4 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 7/48 | 9/47 | | 0.76[0.31,1.88] |
| **18.7.5 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 4/20 | 0/20 | | 9[0.52,156.91] |



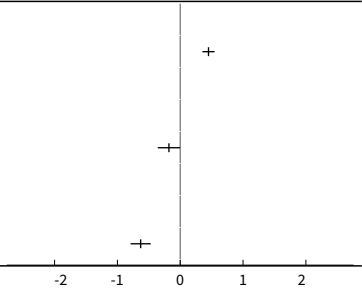

## Analysis 18.8. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 8 Pad test of quantified leakage (mean weight of urine loss) at 1 year.

| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.8.1 standard sling vs short sling** | | | | | | |
| Lucas 2000 | 81 | 7.7 (34.1) | 84 | 4.6 (34.1) | | 3.1[-7.3,13.5] |
| **18.8.2 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2.1 (1.4) | 48 | 2 (1.1) | | 0.1[-0.41,0.61] |
| **18.8.3 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2.1 (1.4) | 47 | 2.4 (3.8) | | -0.3[-1.46,0.86] |
| **18.8.4 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 2 (1.1) | 47 | 2.4 (3.8) | | -0.4[-1.53,0.73] |



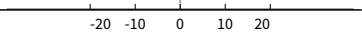

## Analysis 18.9. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 9 Pad test of quantified leakage (mean weight of urine loss) at 1 to 5 years.

| Study or subgroup | Sling type A N | Mean(SD) | Sling type B N | Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.9.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 0.7 (0.3) | 48 | 0.2 (0.2) | | 0.45[0.35,0.55] |
| **18.9.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 0.7 (0.3) | 47 | 0.8 (0.5) | | -0.18[-0.36,-0] |
| **18.9.3 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 0.2 (0.2) | 47 | 0.8 (0.5) | | -0.63[-0.79,-0.47] |



## Analysis 18.10. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 10 Duration of operation (minutes).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.10.1 standard sling vs short sling** | | | | | | |
| Lucas 2000 | 81 | 62 (15.3) | 84 | 54 (15.3) | | 8[3.32,12.68] |
| **18.10.2 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 52.1 (4.4) | 12 | 35.7 (3.4) | | 16.4[13.25,19.55] |
| **18.10.3 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 52.1 (4.4) | 8 | 42.2 (4.5) | | 9.9[5.91,13.89] |
| **18.10.4 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 35.7 (3.4) | 8 | 42.2 (4.5) | | -6.5[-10.16,-2.84] |




Favours sling A — Favours sling B

## Analysis 18.11. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 11 Blood loss (mL).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.11.1 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 181 (33) | 12 | 149 (29) | | 32[7.14,56.86] |
| **18.11.2 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 181 (33) | 8 | 201 (28) | | -20[-46.93,6.93] |
| **18.11.3 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 149 (29) | 8 | 201 (28) | | -52[-77.41,-26.59] |




Favours sling A — Favours sling B

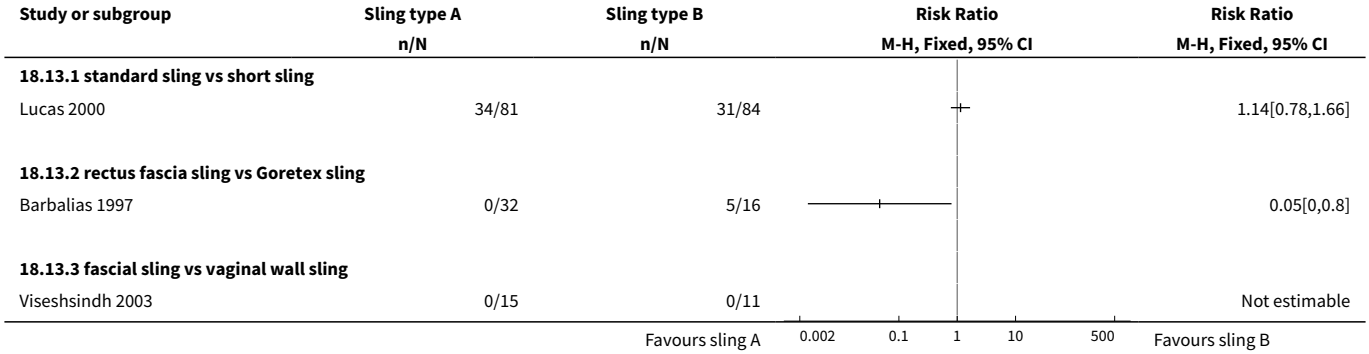
## Analysis 18.12. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 12 Length of hospital stay (days).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.12.1 anterior rectus sheath sling vs Prolene strip** | | | | | | |
| Teleb 2011 | 12 | 2.4 (0.5) | 12 | 1.4 (0.4) | | 1.04[0.68,1.4] |
| **18.12.2 anterior rectus sheath sling vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 2.4 (0.5) | 8 | 1.5 (0.4) | | 0.92[0.53,1.31] |
| **18.12.3 Prolene strip vs anterior vaginal wall patch** | | | | | | |
| Teleb 2011 | 12 | 1.4 (0.4) | 8 | 1.5 (0.4) | | -0.12[-0.46,0.22] |

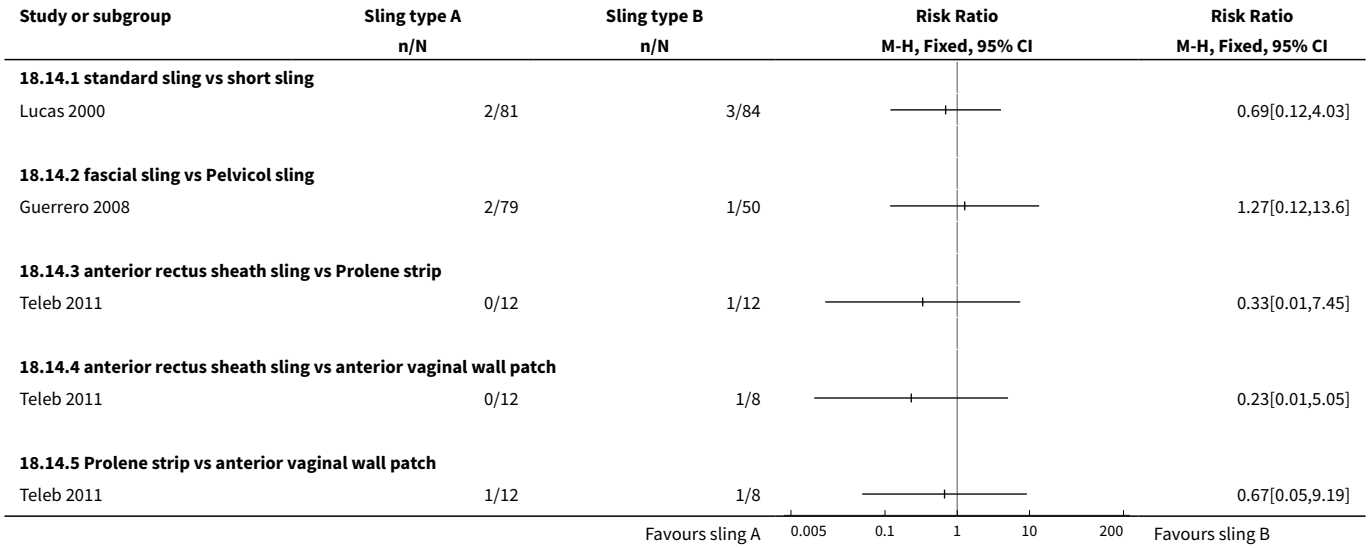



Favours sling A — Favours sling B

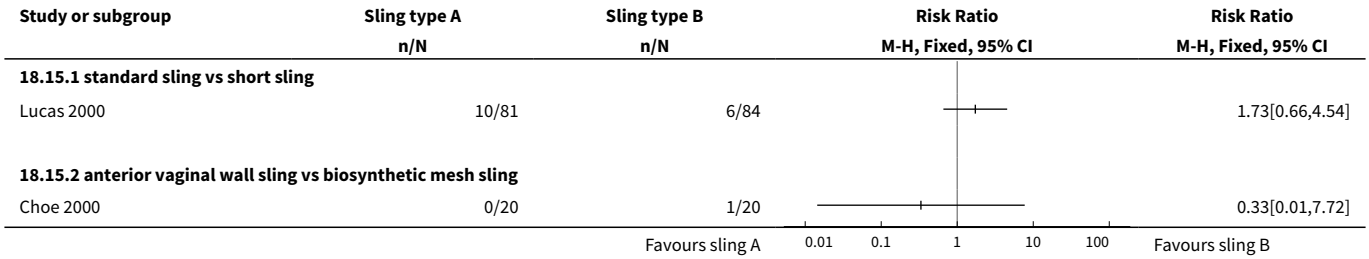
## Analysis 18.13. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 13 Perioperative surgical complications.



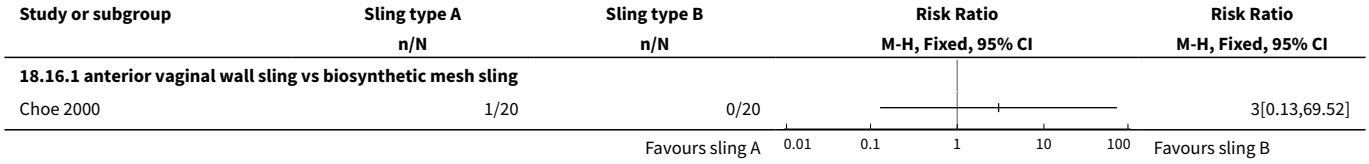

## Analysis 18.14. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 14 Bladder perforation.



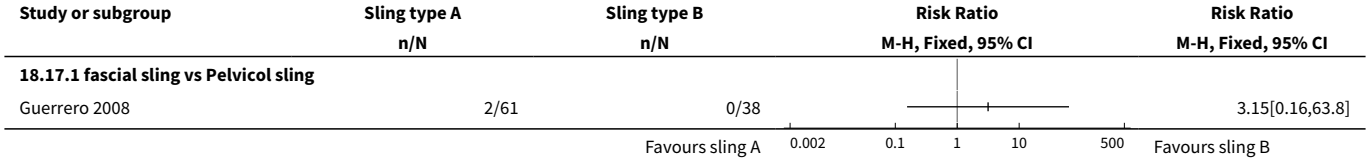

## Analysis 18.15. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 15 Urinary tract infection.



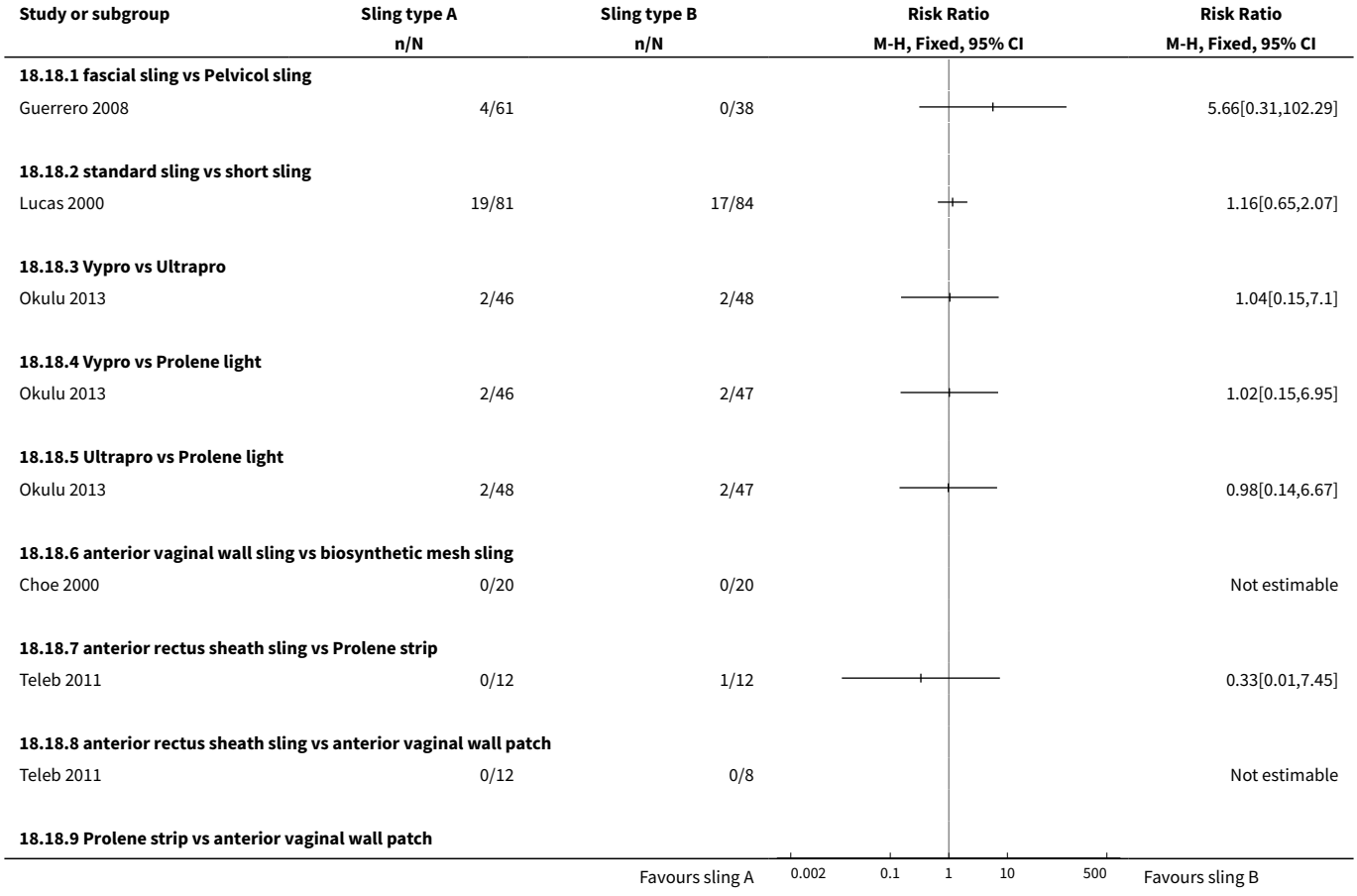
## Analysis 18.16. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 16 Vaginal bleeding.

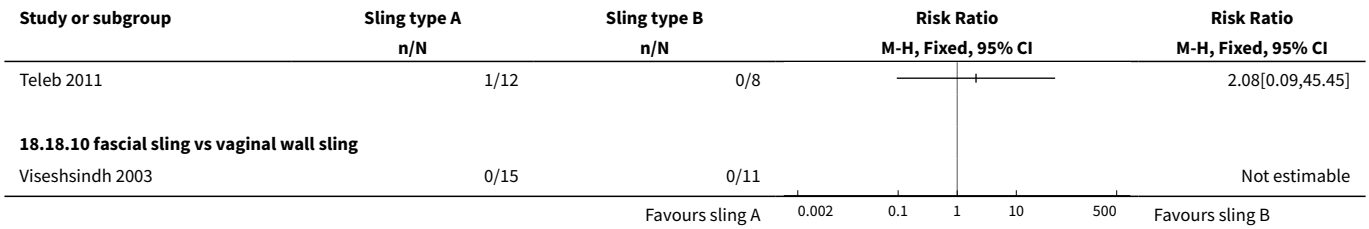



## Analysis 18.17. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 17 Long-term adverse effects (wound pain).

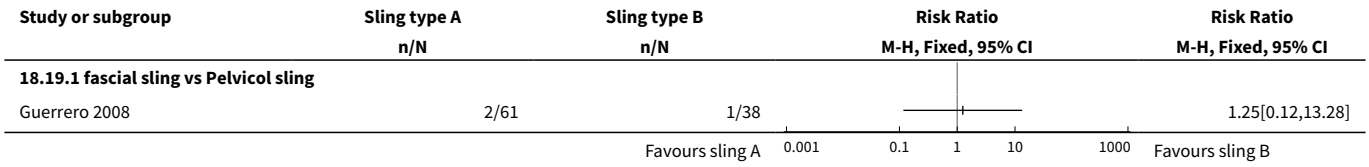



## Analysis 18.18. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 18 Voiding dysfunction.

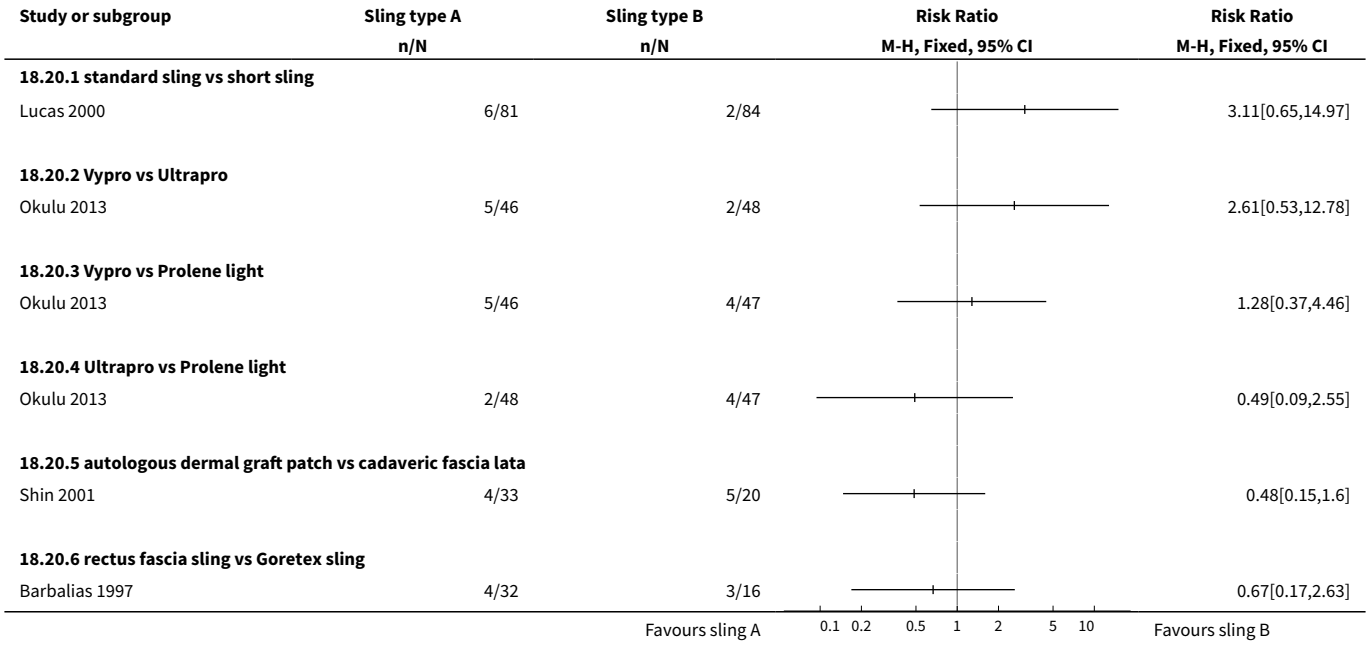





## Analysis 18.19. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 19 Long-term adverse effects (release of sling required).




## Analysis 18.20. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 20 De novo detrusor urgency or urge symptoms or detrusor overactivity.



### Analysis 18.21. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 21 Repeat surgery for urinary incontinence at first year.

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.21.1 Fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 0/67 | 9/46 | | 0.04[0,0.61] |

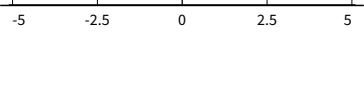

### Analysis 18.22. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 22 Long-term adverse effects (vaginal mesh or graft exposure).

| Study or subgroup | Sling type A n/N | Sling type B n/N | Risk Ratio M-H, Fixed, 95% CI | Risk Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|
| **18.22.1 fascial sling vs Pelvicol sling** | | | | |
| Guerrero 2008 | 0/61 | 0/38 | | Not estimable |
| **18.22.2 Vypro vs Ultrapro** | | | | |
| Okulu 2013 | 2/46 | 1/48 | | 2.09[0.2,22.24] |
| **18.22.3 Vypro vs Prolene light** | | | | |
| Okulu 2013 | 2/46 | 2/47 | | 1.02[0.15,6.95] |
| **18.22.4 Ultrapro vs Prolene light** | | | | |
| Okulu 2013 | 1/48 | 2/47 | | 0.49[0.05,5.22] |
| **18.22.5 anterior vaginal wall sling vs biosynthetic mesh sling** | | | | |
| Choe 2000 | 0/20 | 0/20 | | Not estimable |



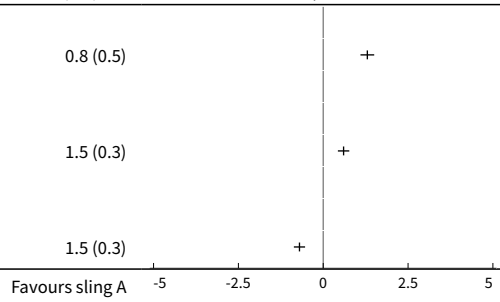

### Analysis 18.23. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 23 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 year).

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.23.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2 (0.7) | 48 | 1.2 (0.6) | | 0.8[0.54,1.06] |
| **18.23.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2 (0.7) | 47 | 1.7 (0.4) | | 0.3[0.07,0.53] |
| **18.23.3 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 1.2 (0.6) | 47 | 1.7 (0.4) | | -0.5[-0.7,-0.3] |



**Analysis 18.24. Comparison 18 One type of traditional sling operation versus another type of traditional sling operation, Outcome 24 Condition-specific measures to assess quality of life (ICI-Q short form UI score at 1 to 5 years).**

| Study or subgroup | Sling type A N | Sling type A Mean(SD) | Sling type B N | Sling type B Mean(SD) | Mean Difference Fixed, 95% CI | Mean Difference Fixed, 95% CI |
|---|---|---|---|---|---|---|
| **18.24.1 Vypro vs Ultrapro** | | | | | | |
| Okulu 2013 | 46 | 2.1 (0.5) | 48 | 0.8 (0.5) | | 1.3[1.1,1.5] |
| **18.24.2 Vypro vs Prolene light** | | | | | | |
| Okulu 2013 | 46 | 2.1 (0.5) | 47 | 1.5 (0.3) | | 0.6[0.43,0.77] |
| **18.24.3 Ultrapro vs Prolene light** | | | | | | |
| Okulu 2013 | 48 | 0.8 (0.5) | 47 | 1.5 (0.3) | | -0.7[-0.87,-0.53] |




## ADDITIONAL TABLES

**Table 1. Definitions of cure and urinary incontinence used in included trials**

| Trial ID | Definition of outcome | Notes |
|---|---|---|
| **WOMAN-REPORTED** | | |
| Albo 2007 | Overall success defined as no self-reported symptoms of UI, no incontinence on 3-day diary, negative stress test, no re-treatment (combined outcome). Failure (self-reported UI) at 5 years only (woman-reported) | Also combined outcome before 5 years |
| Amaro 2007 | Cure defined as complete dryness with no usage of pads (woman-reported) | |
| Arunkalaivanan 2003 | Cure of incontinence defined as a quality of life (QoL) improvement of 90% and/or patient-determined continent status as dry (woman-reported) | Questionnaire-based |
| Demirci 2001 | Dry (symptom-free) patients (woman-reported) | |
| Guerrero 2008 | Assessment of cure not defined. Data abstracted from this trial therefore assumed to be woman-reported | |
| Hilton 1989 | Cure stated as subjective (woman-reported) at 24 months' follow-up<br>Objective (urodynamic diagnosis, pad test (clinician-reported)) at 3 months | Also clinician-reported outcome at 3 months |
| Kondo 2006 | Subjective cure consistent with complete dryness or a few drops of water with strong exercises (assumed to be woman-reported) | Also separate clinician-reported outcome |
| Lucas 2000 | Success rate measured by recurrence of stress leakage as reported in patient questionnaire (woman-reported) | |
| Maher 2005 | Subjective success: no or occasional (less than once a week) stress incontinence (woman-reported) | Also separate clinician-reported outcome |

**Table 1. Definitions of cure and urinary incontinence used in included trials** *(Continued)*

| | | |
|---|---|---|
| Sand 2000 | Cure defined as subjective (history: woman-reported) | Also separate clinician-reported outcome |
| Sharifiaghdas 2015 | Cure defined as of some degree of SUI at 1 year after surgery (woman-reported) | |
| Shin 2001 | Success rate (dry) (method unspecified: assumed woman-reported) | |
| Song 2004 | Cure rate (method unspecified: assumed woman-reported) | |
| Viseshsindh 2003 | Stress urinary incontinence (method unspecified: assumed woman-reported) | |
| **QUANTITATIVE** | | |
| Basok 2008 | Cure = dry pads, improvement = 1 wet pad, failure ≥ 1 wet pad per day (quantitative) | Satisfaction separately measured by questionnaire |
| Fischer 2001 | Subjective cure assessed via comparison between pre-operative and postoperative Incontinence Impact Questionnaire (IIQ), Urinary Distress Inventory (UDI) (quantitative) | Also separate clinician-reported outcome |
| Okulu 2013 | Cure defined as no pad use (quantitative) | |
| Pacetta 2005 | Subjective improvement only; subjective patient evaluations included QoL questionnaire, incontinence diary, pain and global outcome assessments (quantitative) | Also separate clinician-reported outcome |
| Sharifiaghdas 2008 | Objective cure defined as 1-hour pad test ≤ 2 grams (quantitative) | Also separate clinician-reported outcome |
| Silva Filho 2006 | Women declared objectively cured when they had a postoperative pad test < 8 grams (quantitative) | |
| Zargham 2013 | Objective assessment via 48-hour frequency volume chart, 48-hour pad test, and standardised stress test. Surgery was considered successful when there was no postoperative SUI (patient was dry (quantitative)) | Also separate clinician-reported outcome |
| **CLINICIAN-REPORTED** | | |
| Abouhashem 2014 | No leakage of urine during stress test and urodynamic testing (clinician-reported) | |
| Barbalias 1997 | Cure defined as complete freedom from SUI (clinician-reported) | |
| Choe 2000 | Urine loss during cough-stress test defined as persistent stress incontinence (clinician-assessed) | |
| Fischer 2001 | Objective cure by stress test, voiding dysfunction by urodynamic assessment if incontinence seen (clinician-reported) | Also separate quantitative outcome |
| Hilton 1989 | Cure stated as objective (urodynamic diagnosis, pad test (clinician-reported)) at 3 months | Also woman-reported outcome at 24 months |

**Table 1. Definitions of cure and urinary incontinence used in included trials** *(Continued)*

| | | |
|---|---|---|
| Kondo 2006 | Objective cure defined as complete absence of leakage during cough-stress test with 250 or 300 mL of water in the bladder (clinician-reported) | Also separate woman-reported outcome |
| Maher 2005 | Objective success: no leakage due to SUI on repeat urodynamic study (clinician-reported) | Also separate woman-reported outcome |
| Pacetta 2005 | Objective outcome assessment: urine loss via a provocative pad test (clinician-reported) | Also separate quantitative outcome (improvement only) |
| Sand 2000 | Cure defined as objective (urodynamic: clinician-reported) | Also separate woman-reported outcome |
| Sharifiaghdas 2008 | Objective cure defined as negative cough-induced stress test with full bladder (≥ 250 mL filled) in lithotomy and standing positions (clinician-reported) | Also separate quantitative outcome |
| Zargham 2013 | Objective assessment via 48-hour frequency volume chart, 48-hour pad test, and standardised stress test. Surgery considered successful when stress test was negative (clinician-reported) and postoperative cystocoele was < grade 2 | Also separate quantitative outcome |
| **COMBINED WOMAN- AND CLINICIAN-REPORTED** | | |
| Albo 2007 | Overall success defined as no self-reported symptoms of UI, no incontinence on 3-day diary, negative stress test, no re-treatment (combined outcome). Failure (self-reported UI) at 5 years only (woman-reported) | Also woman-reported outcome at 5 years |
| Al-Azzawi 2014 | Cure of SUI defined as significant dryness as perceived by the patient, no more use of pads, negative stress test, and acceptable voiding stream (combined primary outcome) | However, no data after first week, so not useable |
| Bai 2005 | Cure defined as absence of subjective complaints of leakage and absence of urinary leakage on stress test (combined outcome) | |
| Enzelsberger 1996 | Cure defined as dry, symptom-free without objective urine loss during stress with bladder filled to 300 mL or positive urethral-closure pressure during stress provocation (combined outcome) | |
| Helmy 2012 | Continence defined as no urinary leakage on a 3-day voiding diary, no self-reported stress incontinence symptoms, and no stress incontinence surgical treatment (combined outcome) | |
| Henriksson 1978 | Cure defined as complete freedom from SUI (subjective and objective demonstrations) (combined outcome) | |
| Osman 2003 | Patients evaluated by SEAPI score (subjective and objective) after urodynamic examination before and after treatment (combined outcome) | |
| Tcherniakovsky 2009 | Cure defined as reported absence of SUI with no urinary loss during effort manoeuvres (combined outcome) | |
| Teleb 2011 | Cure defined as no leakage reported by the patient or noticed at examination (combined outcome) | |

**Table 1. Definitions of cure and urinary incontinence used in included trials** *(Continued)*

| | |
|---|---|
| Wadie 2005 | Cure defined as complete dryness with no usage of pad and negative cough-stress test (combined outcome) |

Trials that did not report cure rates.

☐ Teixeira 2008: this trial did not address efficacy because it was a trial of tissue (histological) reaction to different sling materials.

☐ Al-Azzawi 2014: this trial followed up women to one year and beyond but did not provide any outcome data after the first week.

**Table 2. Results for data from comparisons with single trials**

| | |
|---|---|
| **Comparison 3. Traditional suburethral sling operation versus drugs** | |
| Osman 2003 | Osman 2003 included 75 women with mixed urinary incontinence treated with surgery (either Burch colposuspension (n = 24) or rectus fascia sling (n = 26)) or oxybutynin (an anticholinergic drug treatment for urinary incontinence, overactive bladder, and detrusor overactivity - not for stress incontinence; n = 25) (Osman 2003). The type of surgery was selected according to Valsalva leak point pressure (VLPP) - those with VLPP < 90 cm of water had rectus fascia sling, and those with VLPP > 90 cm of water had Burch colposuspension)<br><br>Results for the surgically managed group were similar to those of the subgroup having slings. Due to small sample sizes, data were too few to be reliable; we therefore compared only data from oxybutynin versus sling patients provided in tables<br><br>**Primary outcomes**<br><br>*Number of continent (dry) women*<br><br>Data suggest that, within the first year, women were significantly more likely to be continent after undergoing surgery with slings than after treatment with oxybutynin (20/24; 83% vs 0/21; OR 195.89, 95% CI 9.91 to 3871.03; n = 45; Analysis 3.1)<br><br>*Number of women who have repeat continence surgery*<br><br>Not reported<br><br>**Secondary outcomes**<br><br>Fewer women had persistent urgency urinary incontinence after traditional sling surgery (3/24; 13% vs 9/21; 43% with oxybutynin; RR 0.29, 95% CI 0.09 to 0.94; n = 45; Analysis 3.2) |
| **Comparison 4. Traditional suburethral sling operation vs injectables** | |
| Maher 2005 | Maher 2005 compared slings (21) vs injectable Macroplastique (22) in 45 women. Due to the small size of the trial, the data were too few to be reliable<br><br>**Primary outcomes**<br><br>*Number of continent (dry) women*<br><br>Short-term: data from 1 small trial were too few to reliably identify evidence of a difference between traditional sling and injectables in the number of continent women within the first year (OR 2.79, 95% CI 0.48 to 16.33; n = 43; Maher 2005; Analysis 4.1)<br><br>Medium-term: Maher 2005 found no evidence of a difference between groups in the number of continent women after the first year (13/13; 100% continent with a traditional sling vs 10/14, 71% with the injectable; OR 11.57, 95% CI 0.56 to 239.74; n = 27; very low-quality evidence; Analysis 4.2; Summary of findings 4)<br><br>*Number of women who have repeat continence surgery* |

**Table 2. Results for data from comparisons with single trials** *(Continued)*

We found no evidence of a difference between groups in the numbers of women having repeat surgery for urinary incontinence (1 after traditional sling vs 2 after injectable: RR 0.52, 95% CI 0.05 to 5.36; n = 43; very low-quality evidence; Maher 2005; Analysis 4.3; Summary of findings 4)

**Secondary outcomes**

*Number of women cured at 1 year or later (women's observations)*

The trial was too small to reliably identify evidence of a difference between groups in the number of women cured after the first year (OR 11.57, 95% CI 0.56 to 239.74; n = 27; Analysis 4.4)

*Number of women improved*

Not reported

*Number of women satisfied*

Data from Maher 2005 were too few to identify a difference between groups in satisfaction rates at 6 months (P = 0.41) or at 5 years (RR 2.42, 95% CI 0.98 to 5.98; n = 27; Analysis 4.5)

*Quantification of symptoms*

Not reported

*Clinician's observations*

Data suggest there were more women with incontinence (clinician-observed) within the first year with injectables compared with the traditional sling: 4/21 vs 20/22 (RR 0.21, 95% 0.09 to 0.21; n = 43; Maher 2005; Analysis 4.6)

*Surgical outcome measures*

Injectables were quicker to perform, involved shorter hospital stay and time to catheter removal, and led to quicker return to normal activity than after traditional sling surgery, but the data were not suitable for meta-analysis (Maher 2005)

*Further treatment*

Not reported

*Adverse events*

*Perioperative surgical complications*

Not reported

*Bladder perforation*

Not reported

*Urinary tract infection*

Maher 2005 reported no evidence of a difference between traditional slings and injectables in the numbers of women with urinary tract infection (RR 1.57, 95% CI 0.29 to 8.49; very low-quality evidence; Analysis 4.7; Summary of findings 4)

*Urinary urgency symptoms, urgency urinary incontinence*

Not reported

*Detrusor overactivity (urodynamic overactivity)*

Maher 2005 reported no evidence of a difference between traditional slings and injectables in the numbers of women with de novo detrusor overactivity (RR 3.14, 95% CI 0.13 to 72.96; Analysis 4.8)

*Voiding dysfunction (with or without urodynamic confirmation)*

**Table 2. Results for data from comparisons with single trials** *(Continued)*

| | |
|---|---|
| | Maher 2005 reported no evidence of a difference between traditional slings and injectables in the numbers of women with voiding dysfunction (RR 4.19, 95% CI 0.51 to 34.50; Analysis 4.9)<br><br>*Long-term adverse effects*<br><br>Not reported<br><br>*Quality of life*<br><br>Maher 2005 reported a significant reduction in Incontinence Impact Questionnaire (IIQ) scores compared with baseline (P < 0.01) in both groups, although he provided no data |
| **Comparison 6. Traditional suburethral sling operation vs bladder neck needle suspension (abdominal and vaginal)** | |
| Hilton 1989 | Only 1 trial compared porcine dermis sling vs Stamey needle suspension (Hilton 1989). This was a small trial with only 10 women in each arm. The women were unsuitable for abdominal colposuspension (the study author's preferred procedure) because they had vaginal narrowing secondary to previous interventions or atrophic vaginitis. Thus they constitute a population of women with SUI who are not typical of the majority. All women had urodynamic stress incontinence. Groups were comparable for age, parity, previous interventions, and hormonal status. Follow-up was reported at 3 months and 24 months. Due to the small size of the trial, the data were too few to be reliable<br><br>**Primary outcomes**<br><br>*Number of continent (dry) women*<br><br>Short-term: within the first year after surgery, 1 small trial reported 9/10 and 8/10 continent women in the traditional sling and needle suspension groups, respectively (OR 2.25, 95% CI 0.17 to 29.77; n = 20; Hilton 1989; Analysis 6.1)<br><br>Medium-term: very low-quality evidence from 1 trial comparing slings vs bladder neck needle suspension suggested no evidence of a difference between groups in the likelihood of being continent at 2 years after surgery (OR 3.86, 95% CI 0.33 to 45.57; n = 20; Hilton 1989; Analysis 6.2; Summary of findings 6)<br><br>Long-term: not reported<br><br>*Number of women who have repeat continence surgery*<br><br>Not reported<br><br>**Secondary outcomes**<br><br>*Women's observations*<br><br>*Number of women cured at 1 year or later (women's observations)*<br><br>Evidence from 1 small trial comparing slings vs bladder neck needle suspension suggests no difference between groups in cure rates at 2 years after surgery (OR 3.86, 95% CI 0.33 to 45.57; n = 20; Hilton 1989)<br><br>*Quantification of symptoms*<br><br>Pad test at 12 months and 24 months stated but not reported (Hilton 1989)<br><br>*Clinician's observations*<br><br>Not reported<br><br>**Surgical outcome measures**<br><br>*Duration of operation*<br><br>Not reported |

**Table 2. Results for data from comparisons with single trials** *(Continued)*

| | |
|---|---|
| | *Length of hospital stay*<br><br>Sling group needed an indwelling catheter for longer and more adjuvant therapy, resulting in a longer stay in hospital than those with bladder neck needle suspension (MD 13 days longer, 95% CI 5 to 21; n = 20; Hilton 1989; Analysis 6.4)<br><br>*Time to return to normal activity level*<br><br>Not reported<br><br>*Blood loss*<br><br>Not reported<br><br>*Further treatment*<br><br>Not reported<br><br>*Adverse events*<br><br>*Perioperative surgical complications*<br><br>Nine of the 10 women who had sling operations had complications, compared with 2/10 who had needle suspension. These included pyrexia, blood loss, wound infection, and pulmonary embolus (RR 4.50, 95% CI 1.28 to 15.81; n = 20; very low-quality evidence; Hilton 1989; Analysis 6.5; Summary of findings 6)<br><br>*Bladder perforation*<br><br>Not reported<br><br>*Urinary tract infection*<br><br>Not reported<br><br>*Urinary urgency symptoms, urgency urinary incontinence*<br><br>At 3 months: sling: 5/10, needle suspension: 3/10 (Hilton 1989; Analysis 6.6)<br><br>*Detrusor overactivity (urodynamic overactivity)*<br><br>At 3 months: sling: 2/10, needle suspension: 1/10 (Hilton 1989; Analysis 6.7)<br><br>*Voiding dysfunction (with or without urodynamic confirmation)*<br><br>At 3 months: sling: 4/10, needle suspension: 2/10 (Hilton 1989; Analysis 6.8)<br><br>*Long-term adverse effects*<br><br>Not reported<br><br>*Quality of life*<br><br>Not reported |
| **Comparison 10. Traditional suburethral sling operation vs a single-incision sling (mini-sling)** | |
| Sharifiaghdas 2015 | One small trial compared a rectus fascia pubovaginal traditional sling vs a single-incision sling (mini-sling; Ophira) and included women with urodynamically diagnosed stress urinary incontinence (USI) (Sharifiaghdas 2015)<br><br>Due to the small size of the trial, the data were too few to be reliable<br><br>**Primary outcomes**<br><br>*Number of continent (dry) women* |

**Table 2. Results for data from comparisons with single trials** *(Continued)*

Short-term: not reported

Medium-term: exactly the same proportion of women were continent at 1 year after surgery (traditional sling: 31/35; mini-sling: 31/35; very low-quality evidence; Sharifiaghdas 2015; Analysis 10.1; Summary of findings 10)

Long-term: not reported

*Number of women who have repeat continence surgery*

Not reported

**Secondary outcomes**

*Women's observations*

*Cure*

For self-report of cure at 1 year after surgery, exactly the same proportion of women were cured (traditional sling: 31/35; mini-sling: 31/35; Sharifiaghdas 2015; Analysis 10.2)

*Number of women improved*

Not reported

*Number of women satisfied*

10/35 women in the traditional sling group and 7/35 in the mini-sling group reported that they were satisfied with their treatment at 1 year (RR 0.89, 95% CI 0.68 to 1.17; n = 70; Sharifiaghdas 2015; Analysis 10.3)

*Quantification of symptoms*

Not reported

*Clinician's observations*

The clinician's report of observed stress incontinence concurred with that reported by women - 4 in each group (RR 1.00, 95% CI 0.27 to 3.69; n = 70; Sharifiaghdas 2015)

*Surgical outcome measures*

Not reported

*Further treatment*

Not reported

*Adverse effects*

*Perioperative complications*

Not reported

*Bladder perforation*

One woman (of 35) had a bladder perforation in the traditional sling group compared with none (of 35) in the mini-sling group (very low-quality evidence; Sharifiaghdas 2008; Analysis 10.5; Summary of findings 10)

*Urinary tract infection*

Not reported

*Urinary urgency symptoms, urgency urinary incontinence*

**Table 2. Results for data from comparisons with single trials** *(Continued)*

| | |
|---|---|
| | More women in the traditional sling group reported urinary urgency incontinence (5/35) compared with the mini-sling group (1/35) (RR 5.00, 95% CI 0.62 to 40.64; n = 70; Sharifiaghdas 2015; Analysis 10.6) |
| | *Detrusor overactivity (urodynamic overactivity)* |
| | Not reported |
| | *Voiding dysfunction (with or without urodynamic confirmation)* |
| | Not reported |
| | *Long-term adverse effects* |
| | Dyspareunia: 3/35 and 4/35 in traditional sling and mini-sling groups, respectively, reported pain with intercourse (RR 0.75, 95% CI 0.18 to 3.11; n = 70; Sharifiaghdas 2008; Analysis 10.7) |
| | Tape or mesh exposure: 1 woman in the traditional sling group and 2 in the mini-sling group were found to have tape or mesh exposure (RR 0.50, 95% CI 0.05 to 5.27; n = 70; Sharifiaghdas 2008; Analysis 10.8) |
| | *Quality of life* |
| | Based on mean IIQ score, quality of life was lower in the traditional sling group compared with the mini-sling group (MD 7.50, 95% CI 2.23 to 12.77; very low-quality evidence; Analysis 10.9; Summary of findings 10) |

USI: urodynamically diagnosed stress urinary incontinence
VLPP: Valsalva leak point pressure

## APPENDICES

### Appendix 1. Search strategy for effectiveness studies - Cochrane Incontinence Specialised Register

The terms used to search the Cochrane Incontinence Specialised Register are given below:
(TOPIC.URINE.INCON*)
AND
({DESIGN.CCT*} OR {DESIGN.RCT*})
AND
({INTVENT.SURG.SLIN*} OR {INTVENT.SURG.SUBURETHRAL SLING.} OR {INTVENT.SURG.ABDO.SLING.})
(All searches were of the keyword field of EndNote 2018).

The date of the last fully incorporated search was: 27 February 2017. The date of the last search, which was not fully incorporated into the review, was 23 January 2019.

### Appendix 2. Details of extra literature searching performed for older versions of this review

For previous versions of this review (which covered all sling types) extra specific searches were performed by one of the review authors (Carlos Bezerra). These are detailed below.

Systematic searches of electronic bibliographic databases:

- PubMed - years searched: January 1966 to January 2000, date searched: 30 January 2000; and
- UK National Research Register - 2001, Issue 1, date searched: May 2001.

Search term used: TVT.

Handsearching of conference proceedings: Brazilian Congress of Urology Annual Meeting: 1991 to 2003 inclusive.

### Appendix 3. Search strategies for brief economic commentary

We performed additional searches for the brief economic commentary (BEC) in the following databases:

- MEDLINE on OvidSP (1 January 1946 to week 5 July 2018) searched on 10 August 2018;
- Embase on OvidSP (1 January 1980 to week 32 2018) searched on 10 August 2018; and
- NHS Economic Evaluation Database (NHS EED) on OvidSP (1st Quarter 2016) searched on 6 April 2017 (this database is no longer updated by the producer).

We used one search strategy in NHS EED (OvidSP) and two different search strategies on MEDLINE and Embase (OvidSP). Details of the searches run and the search terms used can be found below. The economic evaluation search filters used for MEDLINE and Embase are those developed by and available on the Centre for Reviews and Dissemination web pages.

**MEDLINE on OvidSP (1 January 1946 to week 5 July 2018) and Embase on OvidSP (1 January 1980 to week 32 2018) searched on 10 August 2018**

We used two different search strategies in MEDLINE and Embase (OvidSP) - these are given below.

***Search strategy 1:***

1. Economics, Pharmaceutical/ or Economics, Medical/ or Economics/ or Economics, Hospital/ or economics.mp. or Economics, Nursing/
2. exp "costs and cost analysis"/
3. "Value of Life"/
4. exp "fees and charges"/
5. exp budgets/
6. budget*.ti,ab.
7. cost*.ti.
8. (economic* or pharmaco?economic*).ti.
9. (price* or pricing*).ti,ab.
10. (cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
11. (financ* or fee or fees).ti,ab.
12. (value adj2 (money or monetary)).ti,ab.
13. ((energy or oxygen) adj cost).ti,ab.
14. (metabolic adj cost).ti,ab.
15. ((energy or oxygen) adj expenditure).ti,ab.
16. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
17. exp Urinary Incontinence/
18. ((stress* or mix* or urg* or urin*) adj3 incontinen*).tw.
19. Urodynamics/ or Urinary Incontinence, Stress/ or Urinary Incontinence/ or Suburethral Slings/ or mixed incontinence.mp. or Urinary Bladder/ or Urinary Incontinence, Urge/
20. 17 or 18 or 19
21. anterior vaginal repair*.tw.
22. 16 and 20 and 21
23. anterior colporrhaphy*.tw.
24. 21 or 23
25. 16 and 20 and 23
26. bladder neck needle suspension$.tw.
27. 16 and 20
28. 26 and 27
29. open abdominal retropubic colposuspension*.tw.
30. retropubic colposuspension*.tw.
31. burch colposuspension*.tw.
32. 29 or 30 or 31
33. 27 and 32
34. laparoscopic retropubic colposuspension*.tw.
35. laparoscopic colposuspension*.tw.
36. 34 or 35
37. 27 and 36
38. traditional suburethral retropubic sling procedure$*.tw.
39. traditional sling procedure$*.tw.
40. suburethral retropubic sling procedure$*.tw.
41. retropubic sling procedure$*.tw.
42. traditional suburethral sling*.tw.
43. Suburethral Slings/ or Urinary Incontinence, Stress/ or Urologic Surgical Procedures/
44. 27 and 43
45. 21 or 23 or 26 or 32 or 36 or 38 or 39 or 40 or 41 or 42
46. suburethral slings/

47. urological surgical procedures/
48. 45 or 46 or 47
49. 48 and 27
50. remove duplicates from 49

***Search strategy 2:***

1. economics.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
2. value of life.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
3. exp "costs and cost analysis"/
4. exp economics, hospital/
5. exp economics, medical/
6. economics, nursing.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
7. economics, pharmaceutical.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
8. exp "fees and charges"/
9. exp budgets/
10. budget*.ti,ab.
11. cost*.ti.
12. (economic* or pharmaco?economic*).ti.
13. (price* or pricing*).ti,ab.
14. (cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
15. (financ* or fee or fees).ti,ab.
16. (value adj2 (money or monetary)).ti,ab.
17. or/1-16
18. economics.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
19. value of life.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
20. exp "costs and cost analysis"/
21. exp economics, hospital/
22. exp economics, medical/23. economics, nursing.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
24. economics, pharmaceutical.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
25. exp "fees and charges"/
26. exp budgets/
27. budget*.ti,ab.
28. cost*.ti.
29. (economic* or pharmaco?economic*).ti.
30. (price* or pricing*).ti,ab.
31. (cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
32. (financ* or fee or fees).ti,ab.
33. (value adj2 (money or monetary)).ti,ab.
34. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33
35. ((energy or oxygen) adj cost).ti,ab.
36. (metabolic adj cost).ti,ab.
37. ((energy or oxygen) adj expenditure).ti,ab.
38. 34 or 35 or 36 or 37
39. urinary incontinence.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
40. ((stress$ or mix$ or urg$ or urin$) adj3 incontinen$).tw.
41. Urinary incontinence, stress.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
42. stress urinary incontinence*.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
43. 39 or 40 or 41 or 42
44. intervention surgery*.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
45. colporrhaphy.tw.
46. Bologna procedure*.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
47. Kelly-Kennedy.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
48. Marion Kelly.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
49. Diaphragmplasty.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
50. Vaginal urethrocystopexy.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
51. Cystocele repair.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
52. Kelly plication.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
53. anterior vaginal repair$.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
54. anterior colporrhaphy.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
55. 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54
56. 38 and 43 and 55

57. remove duplicates from 56
58. Bladder neck needle suspension$.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
59. 38 and 43 and 58
60. burch colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
61. open abdominal retropubic colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
62. Paravaginal defect repair.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
63. Marshall-Marchetti-Krantz.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
64. abdominal burch.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
65. abdominal colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
66. endopelvic Fascia Plication.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
67. 60 or 61 or 62 or 63 or 64 or 65 or 66
68. 38 and 43
69. 67 and 68
70. laparoscopic retropubic colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
71. laparoscopic colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
72. retropubic colposuspension.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
73. 70 or 71 or 72
74. 68 and 73
75. remove duplicates from 74
76. suburethral sling.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
77. abdominal sling.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
78. traditional sling procedure$*.tw.
79. suburethral sling procedure.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
80. 76 or 77 or 78 or 79
81. 68 and 80
82. remove duplicates from 81
83. mid$urethral sling.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
84. retropubic sling procedure$*.tw.
85. transobturator sling procedure$.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
86. 83 or 84 or 85
87. remove duplicates from 86
88. 68 and 87
89. TVT-Secur.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
90. mini-arc.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
91. ajust.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
92. needleless.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
93. solyx.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
94. single$incision sling$.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
95. miniarc.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
96. mini$sling.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
97. Ophira.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
98. Tissue Fixation System.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
99. 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98
100. 68 and 99
101. remove duplicates from 100
102. ((urethra$ or periurethra$ or transurethra$) adj3 (agent$ or bulk$ or injection$ or injectable$)).tw.
103. injection therapy.tw.
104. injectable$.tw.
105. (injectable$ adj2 agent$).tw.
106. (bulk$ adj3 agent$).tw.
107. Peri$urethral injection$.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
108. Autologous fat.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
109. Macroplastique.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
110. Calcium hydroxylapatite.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
111. Hyaluronic acid with dextranomer.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
112. Porcine dermal implant.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
113. Ethylene vinyl alcohol copolymer.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
114. Silicon particles.mp. [mp=ti, ab, ot, nm, hw, fx, kf, px, rx, ui, sy, tn, dm, mf, dv, kw, dq]
115. 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114
116. 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114
117. 68 and 115
118. 55 or 58 or 67 or 73 or 80 or 86 or 99 or 115

119. 118 and 38 and 43
120. remove duplicates from 119

**NHS EED (Ovid) (1st Quarter 2016)**

NHS Economic Evaluation Database (NHS EED) on OvidSP (1st Quarter 2016) searched on 6 April 2017. As this database is no longer updated by the producer, we did not perform further updates of this search as no new records would have been added.

We searched NHS EED using the following search strategy.

1. Urinary incontinence/
2. Urinary incontinence, stress/
3. ((stress$ or mix$ or urg$ or urin$) adj3 incontinen$).tw.
4. Colporrhaphy.tw.
5. Colpoperineoplast$.tw.
6. Sling procedure$.tw.
7. Sling$ procedure$.tw.
8. Bladder neck needle suspension$.tw.
9. Anterior vaginal repair$ .tw.
10. Or/1-9

## WHAT'S NEW

| Date | Event | Description |
|---|---|---|
| 21 January 2020 | New citation required but conclusions have not changed | Updated. Conclusions not changed. |
| 21 January 2020 | New search has been performed | For this update, published in 2020, the following changes were made.<br><br>1. The search was updated to February 2017 and 8 trials were newly included (Abouhashem 2014; Al-Azzawi 2014; Choe 2000; Helmy 2012; Okulu 2013; Sharifiaghdas 2015; Teleb 2011; Zargham 2013). A further search was conducted on 23 January 2019; as a result, several additional reports of studies are awaiting classification.<br>2. Additional reports for the following trials were identified: Albo 2007; Amaro 2007; Guerrero 2008; Wadie 2005, and extra data were added where appropriate.<br>3. The methods were substantially updated in line with current Cochrane standards. This includes assessment of risk of bias in included trials and assessment of the quality of the body of evidence via the GRADE approach.<br>4. The primary outcome was changed from 'Number of women with urinary incontinence' to 'Number of continent (dry) women', and a further outcome, 'Number of women cured', was added. |

## HISTORY

Protocol first published: Issue 3, 1999
Review first published: Issue 3, 2000

| Date | Event | Description |
|---|---|---|
| 8 December 2010 | New citation required but conclusions have not changed | A total of 13 new studies have been added. |

| Date | Event | Description |
|---|---|---|
| 30 July 2010 | New search has been performed | This is the second update of the review of traditional slings. 13 new RCTs have been added (Albo 2007; Amaro 2007; Bai 2005; Basok 2008; Guerrero 2008; Maher 2005; Pacetta 2005; Sharifiaghdas 2008; Silva Filho 2006; Song 2004; Tcherniakovsky 2009; Teixeira 2008; Wadie 2005), and 3 have been updated (Arunkalaivanan 2003; Kondo 2006; Lucas 2000). |
| 13 October 2008 | Amended | Review was converted to new review format. |
| 25 May 2005 | New citation required and conclusions have changed | Substantive amendments were made. The review was divided into 2 separate reviews: 1 on traditional suburethral sling operations (current review, updated) and another on suburethral self-fixing sling operations (to include the new TVT and SPARC procedures) to be prepared. The trials on TVT vs procedures other than traditional suburethral sling operations (4) were moved to the excluded trials list and will be included in the new review. Five new trials were included. |
| 13 February 2003 | New search has been performed | Minor updates were made; 5 studies were added. |
| 17 May 2001 | New citation required and conclusions have changed | This is the first update. |

## CONTRIBUTIONS OF AUTHORS

LS and CG updated the protocol and conducted the update of the review including screening, data abstraction, and updating of results and discussion. MO analysed and interpreted the results, assessed the quality of evidence (with LS), wrote the first draft of the abstract and plain language summary, and critically revised other sections of the review. HR updated a previous version of the review and contributed to this update by screening abstracts and commenting on the results, with assistance provided by JDC. PA conducted the brief economic commentary. All review authors contributed to writing the review.

## DECLARATIONS OF INTEREST

LS: none known.
HR: none known.
MIO: none known.
JDC: none known.
PA: none known.
CG: none known.

## SOURCES OF SUPPORT

### Internal sources

- No sources of support supplied

### External sources

- The National Institute for Health Research (NIHR), UK.

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## DIFFERENCES BETWEEN PROTOCOL AND REVIEW

For this update, published in 2020, the following changes were made.

- New comparison was added: traditional suburethral sling operation versus a single-incision sling (mini-sling). The mini-sling is a new procedure for surgical treatment of women with SUI, which differs significantly from the mid-urethral sling technique and is considered to be less invasive.
- Two new subgroup analyses were specified: primary versus recurrent SUI, and presence or absence of prolapse. These factors might be expected to affect the outcome and choice of surgery. We wished to explore whether different interventions had differential effects among women with these different clinical characteristics.
- Outcome measures were re-defined: primary outcomes were re-defined as numbers of continent (dry) women using any definition of urinary incontinence and the need for repeat continence surgery. An additional outcome of 'cure' as reported by women was added.
- We adopted the GRADE method for assessing the quality of evidence for those outcomes included in the 'Summary of findings' tables.
- A brief economic commentary was added.

## INDEX TERMS

### Medical Subject Headings (MeSH)

*Suburethral Slings [adverse effects] [economics]; Polytetrafluoroethylene [therapeutic use]; Randomized Controlled Trials as Topic; Treatment Outcome; Urinary Incontinence [drug therapy] [surgery]; Urinary Incontinence, Stress [drug therapy] [*surgery]

### MeSH check words

Adult; Female; Humans