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Effective Use of Surgery in Managing Mixed Incontinence

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Abstract

Surgery is a common intervention for stress incontinence and is also clearly an effective option for some patients with mixed incontinence, although success rates are lower in the latter indication. This may be partly due to a lack of clarity regarding terminology, which causes difficulties in predicting suitable patients and comparing clinical trial data. The presence of low-pressure detrusor overactivity may encourage a surgical approach. Women with mixed incontinence with a clearly positive stress test and urethral hypermobility will almost certainly have the stress incontinence element of the condition cured by surgery, but they may require ongoing antimuscarinic agents for urgency and related symptoms. It is important not to create unreasonable patient expectations and women with stress-predominant incontinence need to be aware of the small risk of emerging from surgery with new urgency-related symptoms. Advances in surgical techniques (e.g., use of tension-free vaginal tape) means more research is needed to establish which patients with mixed incontinence are most likely to benefit from surgical intervention.

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1. Introduction

Surgery is a common intervention for stress urinary incontinence (SUI) and is increasingly considered as an option for those with mixed urinary incontinence (MUI). However, success rates tend to be lower for those with mixed than with pure stress incontinence, and research is endeavouring to identify factors that will predict which patients with MUI are most likely to benefit from surgery [1,2].

As with other aspects of research on MUI, a lack of clarity related to definitions and terminology can make it difficult to assess and compare data from different trials.

Although the International Continence Society (ICS) has defined MUI on both a symptomatic and a urodynamic basis, much of the surgical literature has focused on a subgroup of patients with urodynamic stress incontinence plus detrusor overactivity without incontinence. Within this subgroup, additional issues arise. For example, is the stress incontinence or the detrusor overactivity the more prevalent problem and, in relation to detrusor overactivity, is it high-pressure, low-threshold or low-pressure, high-threshold overactivity? A review of the evidence suggests that all these factors may be important in determining patient selection.

2. Detrusor overactivity: no longer a contraindication for surgery

It is 20 yr since McGuire and Savastano showed that detrusor overactivity is not a contraindication to surgery for SUI [3], and Lockhart et al. demonstrated that patients with SUI and detrusor overactivity and pressure >25 cm H₂O tended to benefit more from surgery than those with lower levels [4].

In 1988, Langer et al. reported on a series of 30 women with combined SUI and detrusor overactivity undergoing colposuspension (modified Burch procedure) [5]. Postoperatively, only 1 of the 30 patients still had symptoms of SUI, and significant improvements were seen in detrusor overactivity. Preoperatively, 22 of 30 patients (73.3%) had symptoms of detrusor overactivity and this fell to 10 of 30 (33.3%) after surgery. Urodynamically, 60% of patients had normal cystometry after surgery, and >50% had a marked improvement in symptoms of detrusor overactivity. As a result, the authors concluded that surgery was a beneficial option for women with SUI and detrusor overactivity.

In 1989, Karram and Bhatia showed that medical and surgical management were equally effective in patients with SUI and urgency urinary incontinence (UUI) [6]. In a study of 52 women, 27 were treated primarily with retropubic urethropexy (modified Burch procedure) and 25 with various combinations of oxybutynin, imipramine, and oestrogen. Fifty-nine percent of patients treated surgically were cured and 22% improved compared with 32% cured with medical management and 28% markedly improved. Cure was defined as no symptoms of SUI or UUI, and improvement was defined as improvement in all symptoms and normal physical examination. The authors pointed out that they had been unable to identify any preoperative urodynamic criteria that consistently and accurately predicted surgical outcome.

Two-year follow-up of a further small series of 44 patients with SUI treated with the Burch procedure showed higher cure rates when patients did not have accompanying detrusor overactivity (95% vs. 75%, respectively) [7]. Once again, the authors were unable to find any cystometric parameter that consistently predicted outcome, but they concluded that the results in the group with MUI were sufficiently satisfactory to support the use of Burch colposuspension in MUI.

Some indication of how to predict which patients with MUI might respond best to surgery came from a study of 46 patients with urodynamically diagnosed SUI and detrusor overactivity who underwent Burch colposuspension [8]. SUI preceded urgency in 28 the

46 patients (61%), whereas urgency occurred first in 18 (39%). When SUI preceded UUI, the cure rate for surgery was 78.6% compared with 22.2% when UUI preceded SUI ($p < 0.001$). The authors calculated that patients with SUI as the primary presenting symptom who later develop UUI are 2.5 times more likely to be cured of UUI by Burch colposuspension than those whose primary presenting symptom is UUI. However, the Mixed Incontinence Effectiveness Research: Investigating Tolterodine (MERIT) study, a large randomised, placebo-controlled trial, did not reconfirm the prognostic role of symptoms sequence [9].

3. Experience with sling procedures

For many years the Burch procedure was the gold standard surgical intervention for SUI and MUI [10]. But, by the early 1990s, high success rates were being reported with the pubovaginal sling.

In 1999, Fulford et al. reported a 97% symptomatic cure rate with sling surgery in SUI and a 69% cure rate in patients with SUI and associated urgency syndrome [10]. Nearly all of those with urgency syndrome who had a successful outcome had a closed bladder neck at rest, and overall incompetence of the bladder neck at rest decreased from 57% to 18% ($p < 0.001$). Of 27 patients with persistent urgency syndrome postoperatively, 9 (41%) had an open bladder neck at rest compared to 4 of 50 (8%) without UUI ($p < 0.01$).

The authors concluded that bladder-neck closure was desirable, following pubovaginal sling surgery, especially in patients with urgency symptoms. However, the introduction of tension-free vaginal tape (TVT) surgery for SUI appears to have reduced the importance of bladder-neck closure for good outcomes.

Jeffrey et al. reported an objective cure rate of 89.3% with TVT in 88 women with SUI and 24 with MUI [11]. This compared with a subjective cure rate of 66%, the poorer result being attributed to the occurrence of new-onset urgency symptoms following surgery in some women. The authors suggested that this complication, often diagnosed at least 1 mo postoperatively, may have indicated a link between use of Prolene tape and local biologic changes.

Further support for TVT in MUI comes from a long-term study, with a mean follow-up of 4 yr, in 80 women with SUI and UUI concomitant with urethral relaxation or “premature micturition” reflex or both [12]. At long-term follow-up, 85% of patients were completely cured and 4% were significantly

improved. Surgery was considered a failure in only 11% of patients. However, these results need to be considered in the light of the fact that women with urodynamic evidence of UUI were excluded from the study, so the study was an investigation of symptomatic rather than urodynamic MUI.

Schrefferman et al. demonstrated the value of preoperative video urodynamics to identify patients whose urgency symptoms failed to respond to pubovaginal sling cystourethropexy [13]. Of 84 patients, 41 with motor urgency and 28 with sensory urgency had preoperative urgency symptoms. These resolved or improved in 75.6% of those with motor urgency and 71.4% of those with sensory urgency. Of the 41 patients with motor urgency, 23 had low-pressure overactivity that resolved or improved in all cases. This compared with 55.6% of patients with high-pressure urgency whose symptoms resolved.

The authors concluded that patients with low-pressure motor urgency are significantly more likely to experience resolution of urinary urgency symptoms following pubovaginal sling surgery than those with high-pressure motor urgency or sensory urgency.

4. Conclusions

Surgery is clearly an effective option for some patients with MUI. The presence of low-pressure detrusor overactivity may encourage a surgical approach.

A woman with MUI who has a clearly positive stress test, with urethral hypermobility, will almost certainly have the stress incontinence element of her condition cured by surgery. But she may still need to take antimuscarinic agents for her urgency and related symptoms.

We must be careful about raising patient expectations too high, and women with stress-predominant incontinence need to be aware of the small risk of emerging from surgery with new urgency-related symptoms.

In the light of continuing developments in surgical techniques, such as the increasing use of TVT, more research is needed to establish which patients with MUI are most likely to benefit from such surgical intervention.

Conflicts of interest

Member of advisory boards for Astellas, Pfizer, Boehringer, and UCB. Lecturer at symposia sponsored by Astellas, Pfizer and Pierre Fabre. Researcher for international research project sponsored by Gynecare.

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