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Time to Conversion of Hemi/total Shoulder Arthroplasty to Reverse Total Shoulder Arthroplasty; A Systematic Review of Longevity and Factors Influencing Conversion

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Time to conversion of hemi/total shoulder arthroplasty to reverse total shoulder arthroplasty: A systematic review of longevity and factors influencing conversion

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Introduction

- The need for conversion to reverse total shoulder arthroplasty (RTSA) can be expected to increase given the number of primary total shoulder arthroplasty (TSA) performed among an increasingly active population
- The primary purpose of this study was to determine the average time from hemiarthroplasty (HA) and TSA to conversion RTSA
- The secondary purpose of this study was to determine the factors leading to conversion to RTSA

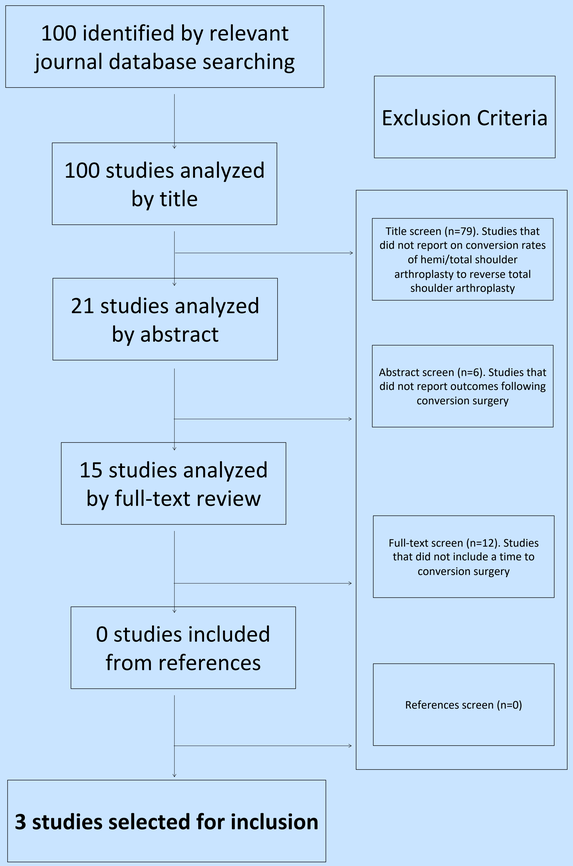
Methods

- This study was conducted in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement
- Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled Trials and PubMed (1980-present) and MEDLINE were searched in August 2019 using the terms: “(((total shoulder arthroplasty) OR total shoulder replacement) AND conversion"
- Inclusion criteria for articles were as follows: outcomes studies reporting of conversion of a HA or TSA to RTSA with a follow up of greater than 24 months, English language, and human studies

Results

- From the 100 studies that were initially retrieved, 3 ultimately satisfied the inclusion criteria

Figure 1. PRISMA flow diagram. Search and selection criteria.



- The weighted mean time to conversion of HA/TSA to RTSA was 36.8 months
- Rotator cuff failure was the indication for conversion in 66% of cases (65/99), while component loosening (glenoid or humeral stem) was the indication in 14% (14/99) of cases

Study	Level of Evidence	Patients (#)	Sex (M:F)	Mean Age	Mean Follow up	Outcome score
Williams et al. (23)	IV	17	6:11	70.3	37.4	Pain, VAS, ASES
Wieser et al. (22)	III	56	16:40	67	37	Constant and Murley
Castagna et al. (3)	III	26	9:17	73	32.3	Constant. EQ-VAS, ROM

Study	Initial Implant (HA vs TSA)	Indication for Conversion	Time to Conversion (months)	Implant System	Humeral stem retention	Complication rate
Williams et al. (23)	TSA: 10 HA: 7	Rotator cuff failure:10 Glenoid arthrosis: 2 Instability: 1 Trauma: 2 Other: 2	31.9	Biomet Reverse Comprehensive Shoulder System	100% (17/17) modular conversion with retained of humeral stem	6% (1/17) complication: Transient brachial plexus neuropraxia that resolved after 6 weeks
Wieser et al. (22)	TSA: 8 HA: 48	Rotator cuff failure: 29 Aseptic stem loosening: 8 Stem malposition: 8 Glenoid component failure: 6 Glenoid Erosion following HA: 5	38	Anatomical ShoulderTM Inverse/Reverse SystemTM (Zimmer)	77% (43/56) underwent humeral stem exchange. 23 % (13/56) retained humeral stem	44.6% (25/56): 14 intraoperative complications (fracture or radial nerve palsy), 11 postoperative complications (acromion fracture, glenoid loosening, infection, wound healing). 17.8% (10/56) reoperation rate (fracture, cement extrusion, glenoid loosening, infection, wound healing)
Castagna et al. (3)	TSA: 8 HA: 18	Rotator cuff failure: 26	TSA: 40 HA: 36	SMR modular system (Lima LTD)	100 % (26/26) retained humeral stem	None

Conclusion

- Time to conversion of HA/TSA to RTSA is reported to be 36.8 months on average
- The most common indication for conversion to RTSA was rotator cuff failure
- Evaluating pre-operative rotator cuff integrity is crucial when performing a primary HA or TSA

Acknowledgments

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