

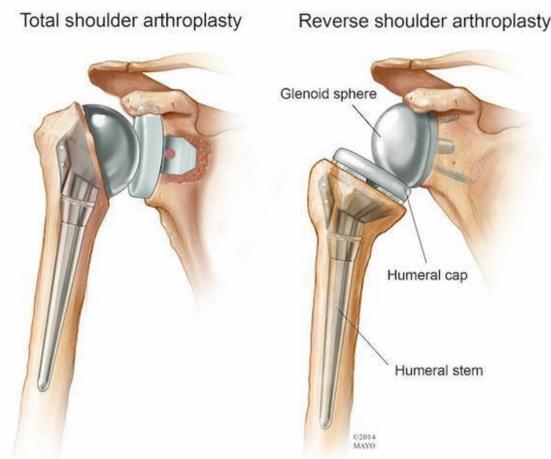
Complications after reverse shoulder arthroplasty lessening over time: A retrospective review of complications

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Background and Purpose

- Professor Paul Grammont first introduced the concept of reverse shoulder arthroplasty (RSA) in France in the mid-1980s.
- Traditionally, RSA was indicated for older patients (>70 years old) with shoulder arthritis, an irreparable rotator cuff tear, pain, and minimal shoulder function (i.e. cuff tear arthropathy).
- RSA has now gained popularity for expanded indications, such as proximal humerus fracture, arthritis with glenoid deformity, and failed hemiarthroplasty or anatomic total shoulder arthroplasty.
- The goal of this study was to compare types and rates of complications after RSA over time at a single tertiary referral center.
- Our hypothesis was that the types and rates of complications have shown a statistically significant reduction over time.



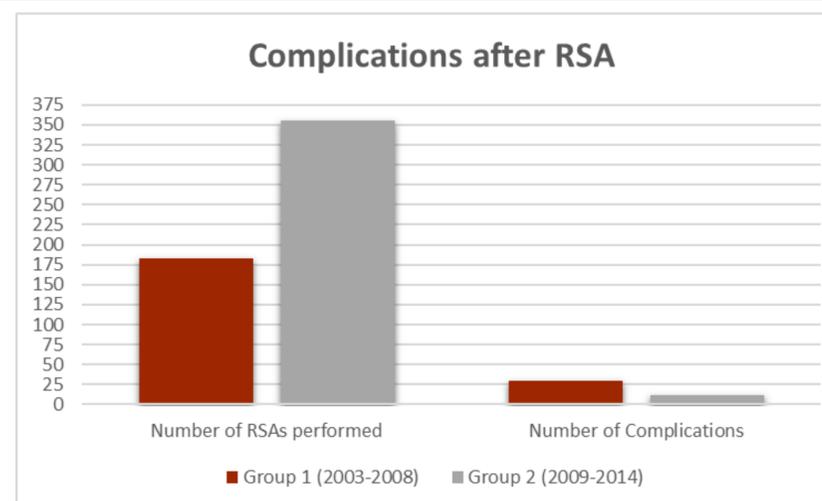
Materials and Methods

- Two six-year consecutive series of patients who underwent RSA were included.
- Group 1 consisted of 183 shoulders with RSA performed between 2003 and 2008.
- Group 2 consisted of 355 shoulders with RSA performed between 2009 and 2014.
- Patient demographics, preoperative diagnosis, and post-operative data, such as range of motion and patient reported outcome measures were collected at the minimum two-year follow up.

Results

- Mean age at time of surgery was 68.4 and 69.9 years for Group 1 and Group 2, respectively.
- Pre-operative diagnoses included primary cuff arthropathy, irreparable cuff tears, failed hemiarthroplasty and total shoulder arthroplasty, complex proximal humeral fracture, rheumatoid arthritis with deficient cuff, and avascular necrosis.
- Most common pre-operative diagnosis in both groups was cuff tear arthropathy.
- Comorbidities such as smoking, diabetes, rheumatoid arthritis, lupus, and obesity had no association with complications.
- Group 1 had an overall complication rate of 16%; Infection (5%), instability (3%), and mechanical component failure (3%) were most common.
- Group 2 had an overall complication rate of 3.4%; Instability (1%) and infection (.58%) were most common.
- Statistically significant difference (p-value < 0.0001) in overall complication rate between the two groups.

Complication	Group 1	Group 2
Instability	5/183 (3%)	3/355 (1%)
Infection**	9/183 (5%)	2/355 (.56%)
Mechanical Component Problem**	5/183 (3%)	1/355 (.28%)
Miscellaneous/Other Combined	11/183 (6%)	6/355 (1.7%)



Discussion

- The cause of complications after RSA is likely multifactorial, but the incidence seems to be lessening over time.
- Complications have been shown to decrease with increasing surgeon experience and volume.¹
- Infection remains a concern after RSA compared to anatomic TSA due to increased implant surface, a larger dead space, patient factors, and the complexity of some of the indications.²
- Some of the reduction in complications may be related to a change in implant design. For example, early designs had a very medial center of rotation (COR) leading to bone-implant impingement, scapular notching, and instability.^{1, 3}

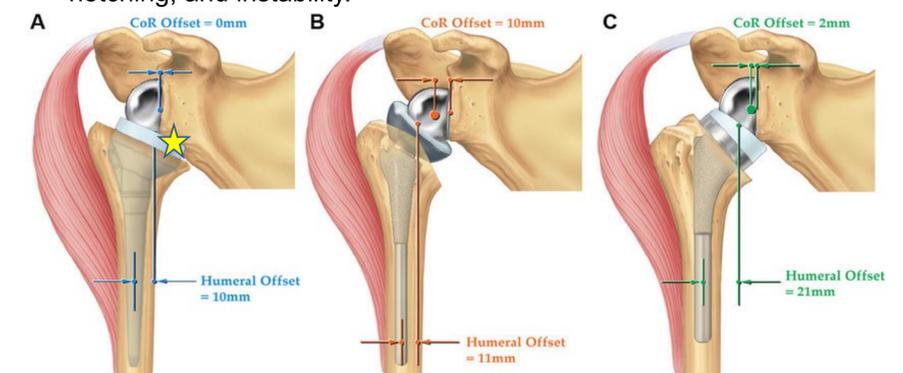


Figure 1 Drawings showing the differences among 3 different types of reverse total shoulder arthroplasty and the location of both the center of rotation (CoR) and the relative lateral displacement of the humerus based on the design of the implant: Grammont Delta III Reverse Shoulder; Depuy, Warsaw, IN (medial glenoid and medial humerus) (A); RSP Reverse Shoulder; DJO Surgical, Austin, TX (lateral glenoid and medial humerus) (B); and Equinox Reverse Shoulder (medial glenoid and lateral humerus) (C). Reprinted from: Routman HD, Flurin PH, Wright T, Zuckerman J, Hamilton M, Roche C. Reverse shoulder arthroplasty prosthesis design classification system. Bull Hosp Jt Dis 2015;73(Suppl 1):S5-14. With permission.

Conclusion

- A significant reduction in complication rate was found over time.
- Infection and instability remain the most common complications, while implant failure seems to be lessening.
- Insight about outcomes and complications of RSA for various pre-operative diagnoses may help physicians communicate realistic expectations to patients for their recovery.
- Longer-term follow-up studies with joint registries may help reduce the incidence of specific and overall complications after RSA.

References

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