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 by 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 postoperative 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.
- Preoperative 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 preoperative 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 < .0001) in overall complication rate between the two groups.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Group 1</th>
<th>Group 2</th>
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</thead>
<tbody>
<tr>
<td>Instability</td>
<td>5/183 (3%)</td>
<td>3/355 (1%)</td>
</tr>
<tr>
<td>Infection**</td>
<td>9/183 (5%)</td>
<td>2/355 (.56%)</td>
</tr>
<tr>
<td>Mechanical Component Problem**</td>
<td>5/183 (3%)</td>
<td>1/355 (.28%)</td>
</tr>
<tr>
<td>Miscellaneous/Other Combined</td>
<td>11/183 (6%)</td>
<td>6/355 (1.7%)</td>
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</tbody>
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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.
- 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.
- 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.

Conclusions

- 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 preoperative 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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** = statistically significant difference (p-value < .05)  ⭐ = Area of impingement with a Grammont (medialized COR) design