

# Functional and Radiographical Outcomes of Reverse Shoulder Arthroplasty with a Minimum Follow Up of 10 Years

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## INTRODUCTION:

The use of reverse shoulder arthroplasty (RSA) is becoming increasingly more prevalent, partially due to the broadening indications for RSA and the aging population. However, few studies have been published reporting the long-term outcomes of RSA. This study aims to report the clinical, radiographic, and patient-reported outcomes of one manufacturer's reverse shoulder prosthesis, performed by a single surgeon and with a minimum follow up of 10 years.

## METHODS:

All RSA procedures performed by the senior author using the one manufacturer's prosthesis between 2005 and 2012 were identified. Patients were contacted and invited for a follow-up visit including clinical assessment, radiographs, and patient-reported outcome measure (PROM) questionnaires. On the most recent radiographic imaging scapular notching, heterotopic bone formation, radiolucency, stress shielding, and potential other complications were independently assessed by two authors in a standardized fashion, and all radiographs were discussed with the senior author. A Kaplan-Meier survival analysis was performed to determine the survival rate at the 10-year follow up.

## RESULTS:

Between 2005 and 2012, 120 patients meeting inclusion criteria were identified and contacted for follow up. Of these patients, 35 were deceased before reaching the 10-year follow up and 23 could not be reached. In total, 62 RSAs could be included in 60 patients (Figure 1). The cohort is described in tables 1 and 2. In total, 7 patients required a revision after a median of 3 years (IQR: 0.2-9.8; Table 3). The implant survival was 93% (95% confidence interval: 84-98; Figure 2). At final follow up, the median anterior elevation was 135° (IQR: 130°-160°), the median abduction was 120° (IQR: 100°-135°), and the median level reached with internal rotation was L5 (IQR: sacrum-L5). PROMs were collected in 47 patients (75%). At the final follow up, the median Auto-Constant score was 67 (IQR: 53-76), the median SSV was 80 (IQR: 70-90), and the median VAS for pain was 0.2 (IQR: 0-2; Table 4). In total, radiographs could be obtained in 25 patients (40%; Table 5). Scapular notching occurred in 10 patients (40%), which was classified as grade IV in 3 patients (12%). The glenoid component was considered at risk of loosening (notching grade IV or radiolucency grade IV or V) in 4 patients (16%; Figure 3). Ossification occurred in 10 patients (40%), and stress shielding in 2 patients (8%). Radiolucencies around the humeral component occurred in 24 patients (96%), 4 humeral components (16%) were considered at risk of loosening due to the grade or amount of radiolucency (grade IV or V, or radiolucencies occurring in >3 zones). Radiolucencies around the glenoid component occurred in 13 patients (52%).

## DISCUSSION AND CONCLUSION:

The long-term results of RSA with one manufacturer's prosthesis are positive, with sustained improvement in range of motion and PROM results, and a satisfactory survival rate. The radiographical analysis showed high prevalence of signs associated with loosening, which does not seem to translate to high revision rates or inferior results.

