

Title: Outcomes of Femoral Head Allograft for Management of Glenoid Bone Defects in Revision Reverse Shoulder Arthroplasty

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Background: Revision shoulder arthroplasty often requires management of glenoid bone defects. Options include using allograft, harvesting iliac crest autograft, or using augmented metal components. The purpose of this study is to report outcomes of revision shoulder arthroplasty requiring management of glenoid bone defects with femoral head allograft in a large cohort of patients using a single reverse shoulder implant system. Additionally, we compared outcomes of patients who had successful glenoid reconstruction to those that required a re-revision.

Methods: This was a retrospective review of data collected from 2009 to 2018. There were 43 patients. All patients underwent revision to a reverse shoulder arthroplasty to manage a failed total shoulder arthroplasty (n = 36), hemiarthroplasty (n = 2), or reverse shoulder arthroplasty (n = 5). All patients required bone grafting for glenoid defects using femoral head allograft. All patients had a minimum of 2 years of clinical follow up and 1 year of radiographic follow up. The primary outcome measure was survival of baseplate fixation. Secondary outcomes included range of motion and functional outcome scores. Patients that had recurrent baseplate failure and were re-revised were compared to those patients that did not require additional surgery. Patients who required revisions for reasons other than recurrent baseplate failure were also recorded.

Results: Thirty-seven of forty-three patients (86%) had survival of the baseplate fixation while 6/43 (14%) patients had recurrent baseplate failure. Mean time to second revision was 10.8 months. Of those requiring re-revision, 4/6 had successful re-implantation of another baseplate and 2/6 were revised to a hemiarthroplasty. Preoperative ASES scores were 31 in the patients that did not require re-revision, and 31 in the patients that required re-revision. Final ASES scores were 65 and 54, respectively. Additionally, 2 patients required another revision surgery not related to baseplate failure: one for instability and one for infection.

Conclusion: The use of femoral head allograft to manage glenoid bone defects in the revision setting to a reverse shoulder arthroplasty produces predictable improvement in functional outcomes without the morbidity associated with harvesting iliac crest autograft. However, 14% of patients will have additional glenoid sided failure requiring additional surgery. Patients that require a second revision have worse outcomes than those that do not.

Level of Evidence: III