Outcomes of Femoral Head Allograft for the Management of Glenoid Bone Defects in Revision Reverse Shoulder Arthroplasty: a case-controlled study

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INTRODUCTION: 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 and compare them to a matched cohort based on the indication for surgery. Outcomes of patients who had successful glenoid reconstruction were compared to those that required a re-revision, and to a control group that was revised without the need for bone graft.
METHODS:
This was a retrospective review of data collected from 2009 to 2018. There were 36 patients in the bone graft group and 52 in the control group. All patients underwent revision to a reverse shoulder arthroplasty to manage a failed total shoulder arthroplasty (n = 29 and 11), hemi arthroplasty (n = 1 and 24), or reverse shoulder arthroplasty (n = 6 and 17). All patients had a minimum of 2 years of clinical follow up. The primary endpoint 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 patients with bone graft that did not require additional surgery, and to patients who were revised without the need for bone graft. Patients who required revisions for reasons other than recurrent baseplate failure were also recorded.
RESULTS:
5/36 (13.9%) patients had recurrent baseplate failure. Mean time to failure was 10.6 months. 3/5 had successful re-implantation of another baseplate. 2/5 were revised to a hemi arthroplasty after failure of their revisions. Preoperative ASES scores were 31 in the grafted patients that did not require re-revision, 39.4 in the grafted patients that required re-revision, and 32.5 in the control group. Final ASES scores were 63.5, 39.4, and 56.4 respectively. 1 patient required revision surgery not related to baseplate failure. There were no baseplate failures in the control group.
DISCUSSION AND CONCLUSION: The use of femoral head allograft to manage glenoid bone defects in the revision setting produces predictable improvement in functional outcomes that is not inferior to those in patients revised without bone graft. However, there is a 13.9% rate of baseplate failure.