Porous Metal Augments for Severe Acetabular Bone Loss Show Excellent Results at Intermediate-term Follow-up

Colin Baker, Graham S Goh, Peter Aaron Gold, Saad Tarabichi[1], Paul Maxwell Courtney
[1]Rothman Orthopaedic Institute

INTRODUCTION: Acetabular bone loss in revision total hip arthroplasty (THA) poses a difficult challenge, with reconstruction cages, custom triflange cups, and porous metal augments commonly used with varying results. However, the lack of comparative studies has led to uncertainty regarding the optimal management of severe acetabular bone defects. This study aimed to compare the outcomes of porous metal augments with cages and triflanges in revision THA.

METHODS:

We reviewed a consecutive series of 180 patients who underwent revision THA with severe acetabular bone loss (Paprosky 3A, 3B, pelvic discontinuity) between 2008-2020. Patient demographics, surgical indication, and operative details were recorded. Endpoints included subsequent dislocations, reoperations, re-revisions, radiographic evidence of loosening, and functional outcomes. Failure was defined as aseptic revision of the acetabular reconstruction or radiographic evidence of loosening. Mean follow-up was 6.6±3.4 years (range 2–14 years).

RESULTS:

There were 141 patients who received augments and 39 with either reconstructive cages or triflange implants (40.6% 3A, 59.4 3B, 26% discontinuity). Overall survivorship was 92.3% in the augment group and 79.1% in the non-augment group (p=0.491). Survivorship free from aseptic acetabular revision was 93.2% and 93.0%, respectively (p=0.786). There was no difference in dislocation (7.8% vs. 10.3%, p=0.415) or periprosthetic joint infection rates (2.8% vs. 7.7%, p=0.165). Using Cox regression to control for demographic and operative variables, there was no difference in odds of failure between the groups (HR 0.638, p=0.578). In the subset of 47 pelvic discontinuity patients, survivorship free from aseptic revision was 88.0% vs. 88.9% (p=0.557).

DISCUSSION AND CONCLUSION:

Porous metal augments for reconstruction in patients with severe acetabular bone loss demonstrated excellent survivorship at mid-term follow-up, even in the most complex pelvic discontinuity cases. While results were promising compared to cages and triflanges, larger multicenter studies are needed to definitively determine if one reconstructive method is superior.

Figure 1. Kaplan-Meier survival analysis using failure as the endpoint.