

Cage Modification For Ischial Screw Fixation: Cup-Cage Surgical Technique and Early Outcomes

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INTRODUCTION: Anti-protrusion cages are now designed for placement into a cup as opposed to directly on the bone. Placing the cup first allows for osseointegration for long-term biologic fixation while secondary use of the cage provides immediate mechanical stability. A modern titanium cage, designed to be used in this cup-first manner, has an inferior flange intended for intramedullary placement into the ischium, which is technically demanding and may result in ischial fracture. The authors describe their technique of cage modification to allow for ischial screw fixation instead of intramedullary flange placement and report their early clinical results.

METHODS: A highly porous acetabular shell is impacted into place and provisionally held with 2-3 screws into the ilium. The cage is modified using a high-speed metal cutting burr. Two screw holes are made into the proximal aspect of the inferior flange of the cage, and the distal aspect of the inferior flange is cut off to allow easier insertion (Figure 1). The cage is then inserted and fixed to the ischium through the previously made screw holes. The superior flange is then fixed to the ilium through the screw holes provided by the manufacturer (Figure 2). The backside of a polyethylene liner is then roughened with a burr and then cemented into the cage, ensuring that cement is interdigitated into the porous cup to unite it with the cage (Figure 3). The perioperative details and early postoperative outcomes of the authors initial 20 cases were obtained via chart review and reported.

RESULTS: The average patient age was 76, and 12 of 20 patients were male. There were 3 cases of total hip arthroplasty (THA) for acetabular malunion or fixation failure, 5 cases of revision THA for acute periprosthetic acetabular fracture or chronic discontinuity, and 12 cases of THA for acute acetabular fracture. Average surgical time was 225 minutes. 5 cases utilized no additional column fixation, 12 utilized 1 posterior column plate, and 3 utilized two posterior column plates. At an average follow-up of 6 months, there was one closed reduction for dislocation, two cases of postoperative foot drop that were improving with conservative treatment, no revision surgeries, and no radiographic signs of component loosening.

DISCUSSION AND CONCLUSION: The surgical technique and cage modification described shows promising results at early follow-up. This technique can be used for primary arthroplasty in the setting of acute acetabular fracture, conversion arthroplasty for acetabular malunion or fixation failure, and revision arthroplasty for acute periprosthetic fracture or chronic acetabular deficiency.

