

Cup-Cage Construct for Treatment of Severe Acetabular Bone Loss in Revision Total Hip Arthroplasty: Midterm Clinical and Radiographic Outcomes

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Abstract : Background: Acetabular reconstruction in the context of massive acetabular bone loss is challenging. In rare scenarios where the extent of bone loss precludes shell placement (cup-cage), reconstruction at our center consisted of a cage combined with highly porous metal augments. This study evaluates survivorship, complications, and functional outcomes using this technique. Methods: A total of 131 cup-cage implants (129 patients) were included in our retrospective review of revisions of total hip arthroplasty from January 2003 to January 2022. Among these cases, 100/131 (76.3%) were women, the mean age at surgery time was 68.7 years (range, 29.0 to 92.0; SD, 12.4), and the mean follow-up was 7.7 years (range, 0.02 to 20.3; SD, 5.1). Kaplan-Meier survivorship analysis was conducted with failure defined as revision surgery and/or failure of the cup-cage reconstruction. Results: A total of 30 implants (23%) reached the study endpoint involving all-cause revision. Overall survivorship was 74.8% at 10 years and 69.8% at 15 years. Reasons for revision included infection 12/131 (9.1%), dislocation 10/131 (7.6%), aseptic loosening of cup and/or cage 5/131 (3.8%), and aseptic loosening of the femoral stem 2/131 (1.5%). The mean LLD improved from 12.2 ± 15.9 mm to 3.9 ± 11.8 ($p < 0.05$). The horizontal and vertical hip centres on plain film radiographs were significantly improved ($p < 0.05$). Functionally, there was a decrease in the number of patients requiring the use of gait aids, with fewer patients (34, 25.9%) using a cane, walker, or wheelchair post-operatively compared to pre-operatively (58, 44%). There was a significant increase in the number of independent ambulators from 24 to 47 (36%). Conclusion: The cup-cage construct is a reliable treatment option for the treatment of various acetabular defects. There are favourable survivorship, clinical and radiographic outcomes, with a satisfactory complication rate.

Keywords : revision total hip arthroplasty, acetabular defect, pelvic discontinuity, trabecular metal augment, cup-cage

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