

## Clinical Outcome and Survival of Total Hip Arthroplasty After Acetabular Fracture: A Case-Control Study

*Zachary Morison, MSc; Dirk Jan Moojen, MD; Aaron Nauth, MD; Jeremy Hall, MD; Michael D. McKee, MD; James P. Waddell, MD; Emil H. Schemitsch, MD; St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada*

**Background/Purpose:** Acetabular fractures are complex intra-articular injuries that occur in a bimodal distribution, typically in younger patients involved in high-energy blunt trauma and in older patients with low-energy falls in the setting of osteoporosis. Although modern fracture management techniques allow for near-anatomic reduction of these fractures, the incidence of posttraumatic arthritis is 20%-30% and total hip arthroplasty (THA) may be required. Many factors play a role in the outcomes of THA after acetabular fracture including age, management of the initial fracture, fracture pattern, and the amount of displacement. The aim of this study was to investigate the long-term clinical and radiographic results in patients who have undergone THA after an acetabular fracture as compared to patients who underwent THA for primary hip osteoarthritis.

**Methods:** This retrospective case-control study compared findings of patients who underwent THA after acetabular fracture versus a matched cohort of patients who had received a primary THA for nontraumatic osteoarthritis. 80 patients were identified from those who presented with an acetabular fracture between January 1, 1987 and March 31, 2011 at a Level I trauma center and who subsequently underwent THA. The second cohort of patients was matched for date of operation, age, gender, and type of implant to control for their confounding effects on outcomes. The primary outcome measurements were revision and complication rates. All patients who were treated for acetabular fracture (both operatively and nonoperatively) and subsequently underwent THA for posttraumatic arthritis were screened for inclusion in the study.

**Results:** The cohort of acetabular fracture patients included 55 male and 25 female patients with a mean age of 52 years (range, 25-85) and mean follow-up of 8.1 years (range, 2-23 years). The majority of acetabular fractures were treated by open reduction and internal fixation (ORIF) (74%), while 23% were treated nonoperatively and 3% had an acute THA. The mean time between the initial treatment of the acetabular fracture and the THA was 6.2 years (SD, 5.5 years) for patients after ORIF and 5.8 years (SD, 12.9 years) for patients after nonoperative treatment ( $P = 0.941$ ). The number of revisions for patients with THA after acetabular fracture was 24/80 (30%) as compared to the matched cohort with 12/80 (15%) ( $P = 0.038$ ). There was a significant difference in the time from the initial THA to the revision between patients with previous acetabular fracture (7.7 years; SD, 5.1 years) and the matched cohort (12.8 years; SD, 5.9 years;  $P = 0.015$ ). Patients with previous acetabular fracture had a 6.25% rate of infection and a 10% dislocation rate compared to no infections and a 2.5% dislocation rate in the matched group. The functional outcome was assessed using a standardized hip score and was found to be significantly higher in the matched cohort than the acetabular fracture group at 1 year postoperative and at the most recent follow-up ( $P < 0.01$ ).

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**Conclusion:** Patients with a prior acetabular fracture had a THA revision rate that was significantly higher than the matched cohort and also required a revision THA 5 years earlier than those without a prior acetabular fracture. This case-control study substantiates a higher complication rate and impaired function in patients who have undergone THA after an acetabular fracture.