

## Does Injury Mechanism Influence Eventual Conversion to THA After Acetabular Fractures in Geriatric Patients?

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**Background/Purpose:** Geriatric acetabular fractures are increasing in prevalence in the US. Controversy exists regarding the optimal treatment of these injuries. Although open reduction and internal fixation (ORIF) is the preferred treatment for young patients, some advocate treatment with total hip arthroplasty (THA). Many surgeons believe that acetabular fractures sustained through a low-energy mechanism are more likely to fail after ORIF. Our hypothesis was that geriatric acetabular fractures sustained after low-energy falls are more likely to progress to THA than those sustained after high-energy mechanisms.

**Methods:** Between 2000 and 2008 all records from a single trauma center were reviewed for patients who were greater than 60 years old and who underwent operative treatment for acetabular fractures. During this time period all fractures were treated with ORIF and no patients received acute arthroplasty. There were 115 fractures in 115 patients. 64 patients sustained their injury from a high-energy mechanism, and 51 patients had low-energy mechanisms. High-energy mechanisms were defined as motor vehicle collisions, falls from height (greater than three steps), and bicycle or motorcycle accidents. All patients had a minimum of 2 years follow-up. Mean follow-up was 61 months (range, 24-97 months). Our primary outcome measure was aseptic failure, defined as conversion to THA after initial ORIF. Mean age at time of injury was 70 years (range, 60-91) in the high-energy cohort, and 69 years (range, 60-94) in the low-energy cohort. Fisher exact test was used for the analysis.

**Results:** There was a statistically significant increased rate of conversion to THA in the high-energy cohort (20%, 16/51) versus the low-energy cohort (5%, 3/51,  $P = 0.03$ ). The mean time to THA was 32 months (range, 5-67 months). There was one surgical site infection in the high-energy cohort, and no infections in the low-energy cohort (1.6% vs 0.0%,  $P = 1.0$ ).

**Conclusion:** In contrast to our hypothesis, we found that geriatric patients who sustain acetabular fractures from high-energy mechanisms may be more likely to fail after ORIF and require THA than those who sustained injury from low-energy falls. This contradicts the existing dogma that patients who sustain acetabular fracture from low-energy mechanisms, and presumably are therefore more debilitated and perhaps have worse quality bone than those who sustain high-energy injuries, will have an unacceptable failure rate with attempts at ORIF. Clinicians should be aware that low-energy mechanism alone does not appear to be an obvious contraindication to ORIF of geriatric acetabular fracture.