

**The Short and Long-Term Trajectory of Recovery Following Acetabulum Fracture**

*Mark William Miller; Kelly A. Lefaiore, MD<sup>1</sup>; Pierre Guy, MD; Henry Broekhuysse, MD; Abdullah Mamun; Peter J. O'Brien, MD<sup>1</sup>*

*<sup>1</sup>University of British Columbia, Vancouver, British Columbia, CANADA*

**Purpose:** Acetabular fractures are major injuries that are associated with prolonged disability. Multiple stakeholders including the patient, surgeon, insurers, and hospital administration have an interest in the expected recovery following surgery. Although many publications describe outcomes and risk factors for poor prognosis, none, to our knowledge, map the trajectory of recovery following this injury. The purpose of this prospective cohort study is to outline the trajectory of recovery of operatively treated acetabular fractures from baseline to 5 years from the date of surgery.

**Methods:** Adult patients with acetabular fractures requiring surgical treatment were recruited to an orthopaedic trauma database at a Level I trauma center between June 2004 and August 2015. Patient-reported functional outcome was recorded using the Short Form-36 Physical Component Summary (SF-36 PCS). Data were collected at baseline, 6 months, 1 year, and 5 years from the date of surgery. Baseline information including age and injury type were recorded. The trajectory was mapped, and the means between time points were compared using paired t tests. The Minimal Clinically Important Difference (MCID) for each group was calculated, and the proportion of patients meeting this mark between each time point was recorded.

**Results:** The cohort was 148 patients with 56 (38%) simple fractures and 92 (62%) complex fractures. The group was predominately male (121), and had a mean age of 47.1 years. Mean SF-36 PCS scores improved for all patients between 6 and 12 months and between 1 and 5 years from surgery ( $P < 0.0001$ ). Improvement is steep between 6 and 12 months, and continues between 1 and 5 years at a flatter slope. The simple fracture group started at a higher functional level ( $P = 0.007$ ) and are at a higher level after 1 year ( $P = 0.008$ ). However, the complex group sees more improvement in the subsequent 4 years, and the groups are similar at 5 years ( $P = 0.7$ ). Neither group regains their baseline level of function after 5 years ( $P = 0.0001$ ). The MCID changes are also significant in both groups, in that 68% of patients have an MCID change between 6-12 months, and 64% do between 1 and 5 years.

**Conclusion:** This study demonstrates that patients with surgically treated acetabular fractures experience an initial sharp improvement, followed by steady improvement, in follow-up to 5 years postoperatively. The recovery following simple fracture patterns appears to occur earlier, and both groups end at a similar level. Despite the trajectory of recovery, patients do not return to their pre-morbid level of function at final follow-up.