

New Techniques and Emerging Evidence #NT3

Clinical Cases, Solutions, and Novel Techniques

The Use of Curved Internal Fixation Devices in Adult Pelvic Fractures: Short-Term Clinical Outcomes

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Purpose: Fragility fractures of the pelvis (FFPs) are common and carry a significant 1-year mortality risk. Many are treated nonoperatively with weightbearing trial; however, operative fixation has shown decreased 1-year mortality as well as improved autonomy and ambulation. Open techniques are associated with increased complications compared to percutaneous procedures. Traditional fixation involves placing straight screws through curved osseous fixation pathways (OFPs) in the pelvis. Curvafix is a novel intramedullary device that can be percutaneously redirected along the irregular OFPs of the pelvis, which may allow for timely, minimally invasive stabilization of pelvic fractures. This descriptive case series aims to document short-term clinical outcomes and ambulation in patients who received curved intramedullary fixation for pelvic ring and acetabular fractures.

Methods: A retrospective chart review of patients who underwent pelvic/acetabular fixation with a curved internal fixation device by a single surgeon between January 1, 2021 and October 31, 2023 was performed. All patients previously failed weightbearing trial. Data was obtained from procedure through all postoperative follow-ups to assess operative indications, complications, and ambulation status.

Results: A total of 52 patients received percutaneous fixation with curved fixation device for pelvic/acetabular fractures (high-energy 59.6% and low-energy 40.4%) with mean follow-up of 3.8 months. Patients were 68.9 years (range, 22-101 years), female (61.5%), with mean Charlson Comorbidity Index of 4.2. Most commonly treated pelvic ring injury patterns were lateral compression (LC)1 (36.5%), LC2 (28.8%); acetabular fracture was anterior column (7.7%); sacral injury was isolated bilateral sacral ala fracture (7.7%). Seven patients were treated for combination pelvic ring and acetabular fractures. Mean procedure duration was 1.3 hours with mean blood loss of 157.6 cc. Median time (hours) to first inpatient ambulation was 26.7 hours (low-energy 25.2 hours vs high-energy 37.0 hours). Overall, 32 of 52 patients (61.5%) achieved baseline ambulatory status within an average of 57.6 days. There were 2 incidences of peri-implant failure, and 1 reoperation for implant removal due to mispositioning identified on the same day as initial fixation.

Conclusion: A curved internal fixation implant was successfully used to treat a range of pelvic ring/acetabular fractures, with early return to mobilization.