New Techniques and Emerging Evidence #NT6
Clinical Cases, Solutions, and Novel Techniques

The Use of Curved Implants in Pelvic Ring Surgery: Early Positive Outcomes of a Multicenter Experience

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Purpose: The goals of operative stabilization for pelvic ring injuries include restoration of bony anatomy, early mobilization, and resuscitation. Percutaneous fixation of pelvic fractures can be challenging due to variability in pelvic morphology. Recent advances in surgical technique offer flexible implants to traverse non-linear osseous fixation paths in the pelvis. In this study, we describe the indications, postoperative outcomes, and complications in a series of patients with pelvic ring injuries treated with a flexible implant.

Methods: A retrospective review of patients at 3 Level I trauma centers treated with flexible intramedullary fixation for pelvic ring and acetabular fractures was performed. Patient demographics, mechanism of injury, fracture pattern, associated injuries, operative time, blood loss, perioperative complications, post-hospitalization disposition, and weightbearing status were recorded.

Results: 111 patients from 3 Level I trauma centers were included. 99 patients followed up in clinic. Follow-up periods ranged from 10 to 126 weeks. Mean age at surgery was 64.9 years (range, 22-101). 67 patients were female (60.4%). 81.1% of patients were White and 8.1% Black. 60 pelvic fractures (54.1%) occurred via low energy and 51 (45.9%) through a high-energy event. The most common injury patterns were lateral compression (LC)1 (27%) and LC2 (24%). Average operative time was 101.5 minutes (range, 22-403). Mean estimated blood loss was 151 cc. Mean length of stay was 10 days. 90 patients (81.1%) were made weightbearing as tolerated postoperatively. 35% of patients were discharged home, 64% to inpatient rehabilitation. There were 4 intraoperative (2 malpositioned implants, 1 broken implant, 1 bladder rupture) and 6 postoperative complications (2 nerve palsies, 1 wound breakdown, 2 infections, 1 nonunion). 44 patients (39.6%) were walking unassisted, 8 (7.2%) with a cane, and 33 (29.7%) with a walker at their last follow-up.

Conclusion: Patients treated with flexible intramedullary fixation for pelvic ring juries had less than 10% complication rate across 3 Level I trauma centers. Immediate full weightbearing in these complex injury patterns is safe with limited concern for implant failure or need for revision surgery when utilizing a curved implant that follows the patient's osseous fixation pathways.