

Moved to Poster 208**Minimally Invasive Implantation of a Curved Intramedullary Fixation Device Successfully Treated Pelvic and Acetabular Fractures***Amir M. Matityahu, MD; Joshua L. Gary, MD; Kelly A. Lefaiivre, MD; Kevin Murr, MD; Henry Sagi, MD; Benjamin Taylor, MD; Karl Van Osten, MD*

Purpose: A novel flexibly inserted and then rigidly fixed intramedullary (IM) implant that follows the curved corridors of the pelvis was used to treat pelvic and acetabular fractures. The primary objective of this study was to evaluate the first human experience of this curved IM implant for the treatment of pelvic and acetabular fractures.

Methods: In a prospective, multicenter, single-arm study, patients with a pelvic ring and/or acetabular fractures requiring fixation were eligible for the CurvaFix IM implant. Inclusion criteria were patients able to consent between 18 and 70 years old, unstable pelvic or displaced acetabular fracture that occurred within 14 days of procedure, and suitable candidate for screw fixation. Patients then underwent a percutaneous surgical procedure using standard fluoroscopic imaging. Parameters evaluated included type of fracture, implant location, time to ambulation, intraoperative complications with implantation, postoperative implant-related failures, and need for further surgery post-implantation. Patients were followed for up to 6 months.

Results: From September 2019 to February 2022, 26 patients were enrolled in the study. The average age was 48 years old (range, 20-77), 17 were male (65%). 23 of 26 patients (88%) were followed for an average of 4.7 months (range, 0-6 months). Two patients died in hospital unrelated to the procedure. One patient was lost to follow-up early. 18 of 23 patients (78%) were ambulating prior to discharge and 22 of 23 (96%) at 3 months. 28 implants were inserted. Implant locations included 16 sacral with 2 U-shaped sacral fractures, and 7 dysmorphic upper sacral segments, 5 ramus, 4 anterior column, 1 posterior column, and 2 iliac fractures. 24 of 26 patients (92%) received successful implantation. 27 of 28 implants (96%) maintained fracture stability. One implant backed out and was removed in a patient with osteopenia. This procedure was the first attempt for a novel approach for antegrade posterior column fixation and was deemed by the surgeon to be a combination of underestimation of proximal device transitional junction flexibility, inappropriate torque limiting, and trajectory.

Conclusion: The study demonstrated that implantation of a curved IM device was able to follow the intramedullary curvatures of the pelvis for successful fixation of appropriately chosen pelvic and acetabular fractures.