13-Year Experience in External Fixation of the Pelvis: Complications, Reduction, and Removal

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Background/Purpose: External fixation (EF) of the pelvis together with sacroiliac (SI) screws is often employed as a definitive treatment for unstable disruptions of the pelvic ring in physiologically challenged patients. Previous studies of EF for pelvic ring injuries have reported a high incidence of complications, including infection rates of up to 50%. We reviewed the history of pelvic EF at our institution, including the utility of pelvic EF in maintaining reduction of the anterior ring and the risks of complications including readmission and infection. Finally, we reviewed the location of removal of these devices to evaluate the feasibility of removing a pelvic EF in a clinic setting.

Methods: We performed a retrospective chart review of patients who underwent anterior external fixation of the pelvis and SI screw placement for their pelvic ring injuries over a 13-year period at a Level I trauma center. The initial search of the database identified 195 patients. After excluding patients who did not survive their injuries, those who did not have adequate follow-up (minimum 2 months), and patients whose EF was not their definitive fixation, 130 patients met the inclusion criteria. These patients' charts were reviewed for age, sex, race, body mass index (BMI), duration of EF, location of EF removal, and associated injuries at initial presentation. Charts were also reviewed for any complications postoperatively, including the use of oral antibiotics for pin site concerns, presentation to an emergency department for EF concerns, readmissions, and unplanned reoperations on the pelvis. AP, inlet, and outlet radiographs of the pelvis were reviewed and measurements were made to quantify the symphysis diastasis and the vertical and posterior displacement of each hemi-pelvis relative to the contralateral side. From our cohort, 76 patients with radiographic follow-up of at least 2 months were identified and radiographs prior to EF removal and post removal were compared to evaluate for a loss of reduction, defined as a change of greater than 1 cm in one or more pelvic dimensions.

Results: 130 patients met the criteria of anterior EF of the pelvis and SI screw placement with a mean follow-up of 359 days. Mean duration of external fixation was 61 days. Of those patients undergoing EF, there were 14 patients (10.8%) who presented to an emergency department with issues related to the pelvic EF device, 7 (5.4%) of whom required readmission for deep infection. Of those requiring readmission, all were admitted for intravenous antibiotics and 6 (4.6%) required formal operative debridement. 13 patients (10.0%) had superficial pin site infections requiring oral antibiotics. Reduction was maintained in all patients (n = 76, average follow-up of 216 days) following removal of their pelvic EF with an average change in the symphysis diastasis, and anterior and posterior displacement of 1.2 mm, 3.9 mm, and 4.0 mm, respectively. 38 patients (30.2%) had their EF removed in clinic while the remaining 88 (69.8%) had them formally removed in the operating room.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.

Conclusion: We present the largest cohort of patients receiving prolonged EF of the pelvis with SI screws and the complications secondary to this treatment. While previous data suggest high complication rates in the definitive management of pelvic ring injuries with EF, data collected over a 13-year period suggest low complication rates while maintaining reduction of the pelvic ring. Additionally, we found that these devices could be reliably removed in a clinic setting, saving the additional time and expense associated with removing an EF in the operating room.

See pages 99 - 147 for financial disclosure information.