

## **Percutaneous Screw Fixation of Pubic Symphysis Diastasis: It's Safe and Effective**

*John Larkin Eakin MD; Ishvinder S Grewal MBBS; Evan Fene MD; Ashoke Kasyap Sathy MD; Adam Jennings Starr MD*

UT Southwestern Med Ctr, Dallas, TX, United States

**Purpose:** Open reduction and plate fixation is considered the gold standard for treating pubic symphysis diastasis in pelvic ring injuries warranting operative intervention. Percutaneous techniques are commonly used to treat injuries in other parts of the pelvic ring, but these are not mainstream for symphyseal fixation in North America or Europe. Potential advantages of a percutaneous technique include less blood loss and lower risk of surgical site infection, especially in the morbidly obese or multiply injured patient. The hypothesis of this review is that percutaneous screw fixation of pubic symphysis diastasis results in low rates of failure equivalent to open reduction with plate fixation, as well as low intraoperative blood loss and postoperative surgical site infection.

**Methods:** A retrospective review was performed to identify all patients who underwent percutaneous fixation of pubic symphysis diastasis by 2 surgeons at an academic Level-I trauma center between November 1, 2015 and October 31, 2018. Symphyseal injuries were fixed with 1 or 2 partially or fully threaded 6.5 or 7.3-mm cannulated screws in a transverse or diagonal configuration. Associated posterior ring injuries were fixed percutaneously with transsacral and/or iliosacral screws. The primary outcome of interest was loss of reduction, defined as symphyseal diastasis greater than 15 mm on final AP pelvis radiograph. Secondary outcomes included blood loss, infection, vascular injury, and sexual or urologic dysfunction related to surgery.

**Results:** 29 patients met inclusion criteria. One patient died from a pulmonary embolus 8 days after fixation and 2 others were lost prior to first radiographic follow-up, leaving 26 patients (90%) available for analysis. Mean age was 41 years (range, 15-76), 23 patients (88%) were male, and mean body mass index (BMI) was 29.2 (range, 16.9-45.2). All patients except 1 (96%) underwent stabilization of the posterior ring with percutaneous screws. Mean radiographic follow-up was 10 months. Final mean symphyseal displacement was 9.0 mm. Three patients (12%) lost reduction, which was diagnosed at 3, 6, and 10 weeks. One underwent revision with open reduction and plate fixation, which also failed, and it was suspected the patient had a chronic diastasis after a prior pelvic ring injury treated nonoperatively. Mean operative time and blood loss were 126 minutes and 43 cm<sup>3</sup>, respectively. One patient (4%) had an infection, which occurred after union and resolved after hardware removal. No identifiable vascular or urologic injuries resulted from this technique. Two patients (8%) reported sexual dysfunction, both of which were a suspected result of the trauma.

**Conclusion:** Our results show percutaneous fixation of pubic symphysis diastasis achieves low rates of implant failure equivalent to open reduction with plate fixation, as well as low volumes of blood loss and rates of surgical site infection. Further study is needed to demonstrate any effect on sexual function.