Unstable Pelvic Fractures in Women of Childbearing Age: Birth Canal Distortion and Implications on Delivery of Subsequent Pregnancy

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Purpose: Unstable pelvic fracture is a major injury. Women of childbearing age with such an injury are prone to unique complications including obstetric concerns. Altered pelvic birth canal diameter may complicate normal labor, yet no clear recommendations for labor method or necessity of hardware removal is found for this group of patients. Our purpose is to evaluate if unstable pelvic fractures cause birth canal distortion and its impact on delivery method in childbearing-age women.

Methods: Women with pelvic ring injuries treated operatively between 2005 and 2020 at a Level I trauma center were identified. Exclusion criteria were females aged under 16 years or above 50. Data regarding mechanism of injury, associated injuries, neurological deficit, fixation method, and reoperation were collected and analyzed. Information regarding pregnancies and delivery method was collected by electronic hospital/general practitioner records. Fractures were classified according to the Young-Burgess classification. Birth canal pelvic diameter measurements were performed based on reconstructed images from CT and radiographs: transverse diameter (TD), interspinous distance (ISD), and intertuberous diameter (ITD) were measured. Symmetry was assessed by measuring left and right TD with respect to the midline.

Results: 81 women were included in the study. Average age at injury was 26.1 years (range, 16-47). Mechanism of injury was motor vehicle collision (38), pedestrian versus car (16), and fall from height (21). 70 fractures were classified as lateral compression (LC) 1-3, 6 as anterior posterior compression (APC) Injuries, and 5 as combined mechanism. All patients but 2 had fixation of the posterior element of the fracture with sacroiliac screws, and 71 patients underwent anterior fixation (48 external fixation, 13 retropubic screw, and 10 plate fixation). After injury pelvic asymmetry averaged 1.56 cm (0.2-2.9), and postoperatively asymmetry averaged 0.28 (0-1.3). Postoperatively TD increased by 1.9 cm (12.7 cm to 14.6 cm), ITD by 2.8 cm (9.1 to 11.9), and ISD by 2.5 cm (8.2 to 10.7). 24 women became pregnant, out of whom 14 underwent normal vaginal delivery. Cesarean sections were planned in all but one who was emergent, during attempted vaginal delivery. Hardware was removed in 3 of the patients that had vaginal delivery and in one that delivered by Cesarean section.

Conclusion: After unstable pelvic fracture, distortion of birth canal is to be expected in young women. Operative intervention restores asymmetry and pelvic obliquity. Fixation of the posterior elements with sacroiliac screws does not have a negative impact on vaginal delivery.