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Percutaneous Lumbopelvic Fixation as a Stabilization Strategy in a Pediatric Trauma Patient

Introduction

This case study presents the performance of a lumbopelvic fixation (LPF) procedure using a triangular osteosynthesis construct in a pediatric patient who sustained trauma as the pedestrian of a motor vehicle collision. Lumbopelvic fixation is indicated in complex fractures that result in complete dissociation of the lumbar spine from the sacrum and pelvis, allowing for early stabilization and advancement of weight bearing. Although well established in adults, LPF using triangular osteosynthesis is not often utilized or reported in the pediatric population.

Case

The patient is a 13-year-old female who suffered a displaced left sacral fracture, minimally displaced right sacral fracture, and bilateral sacroiliac joint injuries after being struck by a motor vehicle. She initially underwent trans-sacral trans-iliac fixation, followed in a staged fashion by lumbopelvic fixation using a triangular osteosynthesis construct, to allow for early weight bearing. She suffered no intraoperative complications and tolerated the procedure well. Progress in weight-bearing as tolerated with crutches was observed over 8 weeks, with full weight-bearing achieved within 6 months.

Discussion/Conclusion

Lumbopelvic fixation with triangular osteosynthesis is a safe and effective stabilization strategy, but remains rarely indicated in pediatric trauma patients, due to higher collagen content and the presence of developing growth plates in pediatric patients' bones. Healing and ossification after LPF may be achieved in shorter time frames than in adults. This case demonstrates the successful application of triangular osteosynthesis in a pediatric patient and highlights its potential role in select cases of severe pelvic ring injury.