Clinical and Radiological Outcome of Lumbopelvic Fixation in Unstable Isler Class II and III Sacral Fractures

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Purpose: Many sacral fractures can be treated nonoperatively. Unstable sacral fractures, usually as part of a pelvic ring injury and those with neurologic involvement, need surgical fixation. Iliosacral screws, tension band ilio-iliac plating, and transiliac bars can be used in sacral fractures not compromising the lumbosacral articulation (Isler I). Fractures entering the L5–S1 facets (Isler II) and those entering the lumbosacral spinal canal (Isler III) need lumbopelvic fixation for proper biomechanical stability. The purpose of this study was to evaluate clinical and radiologic outcomes of lumbopelvic fixation in unstable Isler class II and III sacral fractures.

Methods: A prospective cohort study was held at Ghurki Trust Teaching Hospital Lahore from January 2019 to December 2020. All patients with unstable Isler II and III sacral fractures were recruited for this study. Lumbopelvic fixation using a posterior triangular osteosynthesis (PTO) construct was performed in all patients. Patients were evaluated clinically and radiologically, including full lumbopelvic radiographs and 3D CT scans during the pre- and postoperative periods. Clinical parameters included a full neurologic examination, visual analog scale (VAS), and oxygen desaturation index (ODI).

Results: In total, 13 (8 males, mean age: 26 ± 9.4 years) patients were recruited for this study. All patients had unstable sacral fractures; seven had Isler II and six had Isler III fractures. Sacral fracture was part of a pelvic ring injury complex in 10 patients. Neurology was disturbed in nine patients. The mean follow up period was 20.1 ± 9.6 months. The mean preoperative VAS improved from 9.2 ± 2.4 to 2.2 ± 1.3 postoperatively, while the mean preoperative ODI improved from 86.5 ± 5.6 to 14.5 ± 5.1 postoperatively. Fracture healing was radiologically complete in all patients and none needed revision. Residual deformity was present in 33% of patients with no clinical import. Superficial surgical site infections (SSI) occurred in two patients who were treated uneventfully with antibiotics.

Conclusion: Lumbopelvic fixation is a useful procedure in the treatment of unstable Isler II and III sacral fractures with satisfactory clinical and radiologic outcomes.