

Percutaneous Lumbopelvic Fixation for Spinopelvic Dissociation: A Safer, Cost-Effective Alternative to Open Surgery

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INTRODUCTION:

Spinopelvic dissociation is a rare and complex injury often encountered in polytrauma patients. Traditional open lumbopelvic fixation, while effective, is associated with substantial morbidity, including significant blood loss and surgical site infections. With advancements in minimally invasive techniques, percutaneous lumbopelvic fixation has emerged as a potential alternative. This study compares clinical and economic outcomes between open and percutaneous fixation strategies.

METHODS:

A retrospective review was conducted of adult patients treated for spinopelvic dissociation with lumbopelvic fixation at a Level I trauma center between 2012 and 2024. Patients were categorized by surgical approach (open versus percutaneous). Collected variables included patient demographics, fracture classification using the AOSpine sacral system, and operative metrics such as time, estimated blood loss, and operating room costs. Postoperative outcomes included surgical site infection, radiographic alignment, and hospital length of stay. Comparisons between groups were performed using Fisher's exact test for categorical variables and ANOVA for continuous variables, with significance defined as $p \leq 0.05$.

RESULTS:

A total of 48 patients were included (21 open, 27 percutaneous). Baseline demographics and injury severity were comparable between groups. The percutaneous group demonstrated significantly reduced blood loss (82 mL vs. 679 mL; $p < 0.01$), shorter operative time (168 min vs. 284 min; $p < 0.01$), and lower incidence of surgical site infection (0% vs. 19%; $p = 0.03$). No significant differences were observed in hospital length of stay ($p = 0.63$), radiographic alignment, or follow-up duration. The percutaneous cohort had significantly lower operative room costs (\$23,743 vs. \$35,097; $p = 0.01$).

DISCUSSION AND CONCLUSION:

Percutaneous lumbopelvic fixation offers a safe and cost-effective alternative to the traditional open approach for managing spinopelvic dissociation. This technique significantly reduces intraoperative morbidity without compromising radiographic or short-term clinical outcomes. In appropriately selected patients, a percutaneous approach may facilitate faster recovery and reduce resource utilization.