

# Clinical and Radiographic Outcomes After Multimodal Surgical Stabilization of Thoracolumbar Fractures: A Retrospective Analysis

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## Introduction

Spine fractures of the thoracic and lumbar area are common injuries that can result in significant disability, deformity and neurological deficits. In unstable fractures, controversies exist regarding the surgical approach and outcome of patients after treatment. In this study, we report the clinical and radiographic outcomes of open posterior stabilization, percutaneous posterior stabilization and combined circumferential stabilization of thoracolumbar fractures based on a retrospective data analysis.

## Methods

Forty one consecutive patients with unstable fractures of the thoracic and lumbar spine (T1-L5) were included. Average follow-up was 12 months. Patients who underwent surgical treatment with open posterior stabilization, posterior percutaneous stabilization, and combined circumferential fixation were evaluated for perioperative neurological status (ASIA Impairment Scale), spinal deformity, pain, and complications.

## Results

There were no significant differences between the patients' age, gender, and cause of injury across the three treatment groups. Five out of twelve (42%) of patients with neurological injury at baseline improved one or more ASIA Impairment scale grades following surgery. One patient showed post-surgical neurological deterioration due to epidural hematoma. Surgery was associated with a statistically significant reduction in pain ( $P < 0.05$ ) and kyphotic angle ( $P < 0.05$ ). Postoperative complications occurred in three of patients (3 of 41; 7.3%). One early surgical complication was noticed in percutaneous posterior stabilization group due to epidural hematoma. Two late surgical complications were noticed in the open posterior approach group. In one, the patient developed a wound infection and in the other, instrumentation failure occurred.

## Conclusions

Satisfactory neurological and functional outcomes were achieved in majority of patients with spine fractures who underwent different surgical interventions. Within the limitation of a retrospective study and low volume of cases, we found that circumferential instrumentation, open posterior instrumentation, and

## Learning Objectives

This retrospective study, will provide a helpful guideline about advantages and limitations of three different surgical treatments for thoracic and lumbar spine traumatic fractures. As long as review of different types of surgical treatment options, we can get familiar with post-operative complications.

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