

## Our Outcomes and Opinions in 33 Cases of Thoracolumbar Fractures Treated by Transpedicle Instruments (Classic Treatment)

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### ABSTRACT

*Unstable thoracolumbar fracture (vertebromedullary traumatic lesion) is often the cause of poor sequelae, in lumbar pain caused by changes in the physiological sagittal profile, and sequelae of a neurologic nature. Thus, the concept of instability is further defined. The authors present 33 cases of burst type thoracolumbar fractures treated by transpedicle instrumentation using the following systems: MVF, Omega 21. Follow-up was obtained after from 1 to 9 years. Results were: clinical-radiographic criteria (1. fusion, 2. deformity, 3. pain, 4. neurologic function). There was remodeling of the spinal cord canal in cases operated on. The authors conclude that a correct evaluation of instability of burst fractures and the consequent treatment of choice (transpedicle fixation) allows for a high favourable index of the functional capacity in these patients.*

### Keywords

Thoracolumbar fractures, Opinions, Outcomes, Classic Treatment.

### Introduction

Opinions continue to differ as to the choice of surgical treatment for thoracolumbar lesions. Methods of pedicle fixation theoretically offer mechanical advantages because they allow for the use of short assemblies. Our long term review may confirm this progress in methods of instrumentation for the treatment of thoracolumbar fractures.

### Materials and Methods

Our review is based on 33 cases followed up after from 1 to 9 years. There were 27 males and 6 females. Mean aged was 32 years, ranging from 18 to 54 years. The most frequent cause was a road-related accident in 21 cases (63,7%), followed by a work related accident in 6 cases (18,2%), attempted suicide in 3 cases (9%) and 2 patients (6%) the cause of trauma was uncertain, and there was one sports-related trauma (3%). The importance of road-related accidents is influenced by tourism: 4 cases out of 21 involved foreigners (Chinese, 1, Arab, 3). The site of the vertebral lesion was 1 level in 10 cases (66,6%), multiple levels in 13 cases (Figure 1). Neurologic evaluation incomplete lesion in 29 patients

(87,8%); complete lesion in 4 patients (12,1%).

Type of fracture: fracture-dislocation (caused by flexion rotation) in 6 cases; fracture due to compression in 27 cases (burst injury of the vertebral body). Associated lesions: 13 cases (39,3%). Nearly all were injuries of the lower limb: astragalus, calcaneus, cotyle, etc.

The period of time between trauma and surgery was within 6 hours in 25 patients, within 48 hours in 3 patients, within 7 days in 2 patients, and after 30 days in 1. It our opinion that surgery should be performed as soon as possible.

Indications for reduction and stabilization with internal fixation (transpedicle instrumentation) by posterior approach: 1. fracture-dislocation; 2. fracture caused by compression, burst injury of the vertebral body: posterior dislocation of the bone fragments, occupying more than 50% of the vertebral canal; 3. progressive neurologic deficit; 4. wedge fracture of the vertebral body equal to more than 50%.

Our therapeutic strategy includes: posterior surgery; 1. reduction of the fracture deformity (anatomical realignment), preoperative

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and intraoperative (reduction maneuver with instrumentation). 2. A limited number of patients were submitted to decompression and release of the nervous structures (laminectomy not enlarged). In incomplete lesions, to remove the anterior fragment (stenosis element of the vertebral canal). In some cases, there may be retraction of the dura, which must be repaired. 3. Systematic stabilization of the vertebral canal: transpedicle instrumentation (Omega 21) and posterolateral fusion which was not systematic with autologous grafting, when ligamentous lesions are associated. Decompression during reduction (laminectomy) in 10 cases, and fusion of the entire area of instrumentation in 25 cases.

Method of pedicle fixation that we used: MVF in steel, between 1998 and 2004 in 18 cases; allospine system in titanium from 2004 to 2005, in 6 cases; Omega 21 in titanium from 2005 to present, currently preferred by us, in 9 cases. The Omega 21 fixator has a specific feature: the multidirectional component that allows for assembly with non-aligned screw. We currently prefer to instrument the fractured vertebra with transpedicular screws, if the fracture lines run below the pedicle.

## Results

The results of posterior surgery are evaluated based on the following clinical-radiographic criteria: 1. fusion, 2. deformity, 3. neurologic function, 4. pain. Fusion was achieved in all of these cases. Radiographic vertebral deformity: the reduction obtained is maintained well after 1 year (table III). Long-term pain (Gertzbein criteria): grade I (severe) no cases; grade II (moderate), no cases; grade III (mild) in 3 cases; grade IV (no pain), in 30 cases.

Evaluation of neurologic results: patients with complete spinal cord injury (4 cases) did not present with any changes. Patients with incomplete spinal cord injury (29 cases) obtained improvement equal to 1 degree in 15 cases, 2 degrees in 10 cases, and remained

unchanged in 4 cases.

Complications: breakage of the screws in 2 cases, infections healed in 1 case; erroneous position of the screws in none of the cases. Number of screws that we used in 33 cases, transpedicle: 202. Vertebral fixators removed for breakage of the screw in 4 cases, for infection in 2 cases, for pain 1 [1-3].

## Conclusion

Remodelling of the vertebral canal in time is better than the initial postoperative reduction obtained.

In incomplete neurologic lesions stabilization entrusted to the transpedicle instrumentation reveals better neurologic recovery as compared to conservative treatment (one or two Asis-Frankel grades).

The method of pedicle fixation known as Omega 21 has proven to be effective for the following reasons: 1. it has mechanical advantages because it allows for shorter assemblies to be used; 2. the multidirectional component eliminates the poor alignment of the screws; 3. this method is not characterized by any specific complications; 4. it has provided excellent clinical results in time.

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