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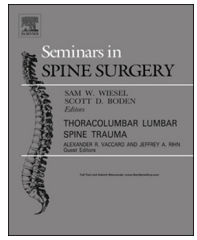

# Adult measures of general health-related quality of life after thoracolumbar trauma

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ABSTRACT

*Study design:* Systematic review.
*Objective:* The aim of the present review is to assess the main outcomes of patients who underwent interventions to treat thoracolumbar fracture.
*Summary of background data:* In the literature, the parameters most commonly used to assess treatment success have been radiographic measurements, evolution of the kyphosis curve, and subjective parameters such as pain scores. Measures of quality of life and function, such as the Short-form 36 (SF36), Short-form 12 (SF12), and Oswestry Disability Index (ODI) protocols, as well as the Roland–Morris Disability Questionnaire, are more frequently used and helpful to evaluate the effectiveness (benefits and harms) of treatment.
*Methods:* This study is a literature review of studies that assess the quality of life and function of patients with thoracolumbar fracture.
*Results:* The search strategy resulted in 111 published studies. Based on the analysis of the titles of these studies, 52 were selected for abstract evaluation. After evaluating the abstracts, 25 were included in the present review.
*Conclusion:* The use of assessment questionnaires that utilize subjective parameters should be encouraged and increasingly used to aid in the selection of the therapeutic modalities that will provide the best clinical–functional outcomes, and a quality of life as close to normal as possible.
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## 1. Introduction

Spine fractures are becoming more common in large urban centers. The involvement of the thoracolumbar spine is very common, with an annual incidence ranging from 30 to 90 per 100,000 people.[1] The thoracolumbar transition accounts for approximately 40–60% of spine fractures, the cervical spine accounts for 30%, and the upper thoracic and lower lumbosacral regions combined account for 10–30%.[2,3]

The majority of the affected patients are young and male, and among the most common causes are car accidents, high falls, injury from firearm projectiles, and sports injuries.[1,4–6]

Thoracolumbar fractures result in neurological deficit in 8–35% of cases, depending primarily on the predominant causal factor, which directly influences the mechanism of injury. Thoracolumbar fractures associated with neurological deficits lead to major changes not only to the life of those patients but also to their families.[7] These lesions have a great social and financial impact due to the long process of rehabilitation and the loss of productivity that directly affect the patients' quality of life in the short and long term.[8]

The main forces acting on the vertebral spine are axial compression, lateral compression, flexion, extension, distraction, shear, and rotation. There are also mechanisms of combined forces, and the most common are flexion–rotation and flexion–distraction. The axial compression force usually results in burst fractures; flexion results in compression fractures; lateral compression results in asymmetric or lateral

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compression fractures; and shear leads to fracture-dislocation lesions, Chance-type flexion–distraction fractures, and varied patterns of flexion–rotation fractures.

The aims of treatment are primarily to maintain or restore spinal alignment, to provide stability to the spine, and to preserve neurological function, thus contributing to early mobilization and rehabilitation for a better quality of life.

Conservative treatment is usually indicated in cases of relatively stable fractures and when there is no neurological involvement. Other parameters used to prescribe conservative treatment are as follows: kyphotic deformity of less than 20°, diameter of the channel of at least 50% of the original size, and anterior vertebral height of at least 50% of the posterior vertebral height.[9]

Surgical interventions are indicated for patients with neurological deficit and unstable fractures, which are identified through the spine fracture classifications, such as those of Denis and the AO/ASIF.[10,11] The specific surgical approach to be used remains controversial. The goal of treatment is to achieve as stable a fixation as possible with the lowest number of fused vertebrae, thus preventing a possible post-traumatic progression of deformity, with decompression of the spinal canal and nerve roots, thus facilitating neurological recovery.

The existing techniques for a posterior approach include the use of hooks, rods, wires, and/or screws. The systems of hooks and rods usually require a large degree of fusion, which affects mobility. Fusion with interspinous or sublaminar wires is rarely used in patients with traumatic fractures. The use of pedicle screws is currently the most common approach.[12]

The selection of surgical approach should take into account, above all, which approach yields a faster recovery and provides a quality of life as close to normal as possible.

The success of treatment, whether conservative or surgical, can be measured in various ways. In the literature, the parameters most commonly used have been radiographic measurements, evolution of the kyphosis curve, and subjective parameters such as pain scores. Measures of quality of life and function such as the Short-form 36 (SF36), Short-form 12 (SF12), and Oswestry Disability Index (ODI) protocols, as well as the Roland–Morris Disability Questionnaire, are more frequently used and are helpful to evaluate the effectiveness (benefits and harms) of treatment.[13–16]

## 2. Objective

The aim of the present review is to assess the main outcomes of patients who underwent interventions to treat thoracolumbar fracture.

## 3. Methods

### 3.1. Study design

This study is a literature review of studies that assess the quality of life and function of patients with thoracolumbar fracture.

### 3.2. Types of studies included

Systematic reviews, randomized or quasi-randomized controlled clinical trials, nonrandomized clinical trials, cohort studies, case series, and cross-sectional studies of thoracolumbar spine injuries, as well as studies of therapeutic methods and associated outcomes such as consolidation, pain, functional improvement, and quality of life, were included.

The search was restricted to studies published in English.

### 3.3. Participants

Studies that evaluated adult patients with a diagnosis of traumatic fracture of the thoracolumbar spine excluding insufficiency fractures, osteoporosis, tumor, multiple traumas, multiple fractures, and infections were included.

### 3.4. Types of intervention

Studies that evaluated surgical interventions, conservative treatments, and expectant treatment for traumatic fractures of the thoracolumbar spine were included.

### 3.5. Types of outcome evaluated

The outcomes of interest for this review were as follows: quality of life measures related to health assessed through satisfaction questionnaires and specific questionnaires such as the SF36 and SF12, and functional improvement assessed by the Oswestry Disability Index (ODI) and the Roland–Morris Disability Questionnaire.

## 4. Mapping of evidence

### 4.1. Electronic searches

The electronic databases searched were MEDLINE through PubMed (1966 to June 2012) and the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library 2012, volume 5).

The search terms and all synonyms used are described in Appendix 1.

### 4.2. Selection of studies

Two authors (P.R.A. and P.H.I.P.) independently selected and assessed potentially eligible studies using a standardized form. Any disagreement was resolved by discussion and, when necessary, the opinion of a third author (LMRR).

### 4.3. Extraction of data

Two reviewing authors (P.R.A. and P.H.I.P.) used a standardized data extraction form to independently collect data including study design, participants, type of trauma, methods, interventions, and outcomes. Disagreements were resolved by a third reviewing author (L.M.R.R.).

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