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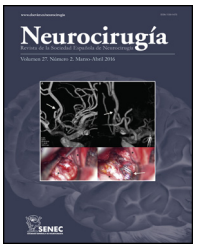

Clinical Research

Long term radiological outcomes of unstable thoraco-lumbar fractures without neurological deficit☆

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ABSTRACT

Objective: To analyse the radiological outcomes in the long term of unstable thoraco-lumbar fractures.

Material and methods: Retrospective review of 100 patients with unstable thoracolumbar fractures treated with posterolateral fusion and short screw fixation for compression and flexion-distraction type fractures, and long segment posterior fixation for fractures-dislocations or more than one vertebra fractured, between 2000 and 2010 at three different hospital centres. Six radiological parameters were measured annually during a 4-year period: Fracture angle, kyphotic deformity, sagittal index, percentage of compression, degree of displacement and deformation angle.

Results: A total of 100 patients were included with a median age of 36.4 years and a median follow-up period of 7.2 years. Fracture angle rose from 11.6° to 14.5° (increase of 25%), kyphotic deformity from 14.5° to 16.7° (increase of 15.17%), sagittal index from 8.7 to 10.8 (increase of 24.13%), percentage of compression from 31.8% to 36.5% (increase of 6.88%), degree of displacement from 2.8 mm to 4.6 mm (increase of 14.77%) and deformation angle from 19.7° to 21.4° (increase of 8.62%).

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Discussion: All the radiological parameters studied lost correction throughout the 48 months of follow-up, being the fracture angle the most affected one. Nevertheless, the greatest loss of correction occurs in the first postoperative year, stabilising the parameters afterwards over the 4 years of follow up. We routinely recommend the measurement of all previous parameters for the follow up of unstable thoracolumbar fractures.

Evolución radiológica a largo plazo de las fracturas inestables toracolumbares sin clínica neurológica

Palabras clave:
Radiología
Columna torácica y lumbar
Cifosis
Instrumentación

R E S U M E N

Objetivo: Analizar la evolución radiológica de las fracturas inestables toracolumbares a largo plazo.

Material y métodos: Serie retrospectiva de 100 casos con fracturas inestables toracolumbares sin clínica neurológica tratadas con artrodesis posterolateral e instrumentación corta en el caso de fracturas por compresión y flexión-distracción e instrumentación larga para las fracturas-luxaciones o a más de un nivel entre el 2000 y 2010 en 3 hospitales diferentes. Se midieron 6 parámetros radiológicos anualmente durante un período de 4 años: ángulo fractuario, deformidad cifótica, índice sagital, porcentaje de compresión, grado de desplazamiento y ángulo de deformación.

Resultados: Se incluyeron un total de 100 pacientes de 36,4 años de media con un período de seguimiento medio de 7,2 años. El ángulo fractuario pasó de 11,6° a 14,5° (incremento del 25%), la deformidad cifótica de 14,5° a 16,7° (incremento del 15,17%), el índice sagital de 8,7 a 10,8 (incremento del 24,13%), el porcentaje de compresión del 31,8% al 36,5% (incremento del 6,88%), el grado de desplazamiento de 2,8 mm a 4,6 mm (incremento del 14,77%) y el ángulo de deformación de 19,7° a 21,4° (incremento del 8,62%).

Discusión: Todos los parámetros radiológicos estudiados perdieron corrección a lo largo de los 48 meses de seguimiento, siendo el ángulo fractuario el más marcado. Sin embargo, la mayor parte de la pérdida de corrección ocurre en el primer año postoperatorio, estabilizándose los parámetros posteriormente hasta los 4 años de seguimiento. Recomendamos la medición de todos los parámetros previos de rutina para el seguimiento de las fracturas inestables toracolumbares.

Introduction

Thoracolumbar spine fractures and dislocations are complex lesions that often occur in young people, usually as a result of high-energy traumas such as road traffic accidents and falls.[1–3]

Neurological injuries can occur in 15–40% of these fractures[4,5] and over 30% of patients may develop chronic pain that leads to limitations in activities of daily living and difficulty returning to work.[1,6,7] As a result, the adequate management of these fractures is essential.

The surgical treatment of this type of injury has gained popularity in recent years, although there is controversy regarding the optimal approach (anterior, posterior or combined) for unstable fractures.[2,8]

In the majority of studies conducted to date, radiological follow-up is based on two parameters: kyphotic deformity and percentage of compression.[9–11] In this study, we intend to perform a more exhaustive form of radiological follow-up, analysing the radiological evolution of unstable thoracolumbar fractures without neurological deficits treated with posterior instrumentation and arthrodesis by means of six measurements. Our hypothesis is that there are parameters that have not traditionally been studied which may lose correction throughout the follow-up of these fractures, and which may be important when making clinical and surgical decisions.

Material and methods

A multicentre retrospective study was conducted on a series of patients presenting unstable non-osteoporotic thoracolumbar spine fractures with no associated neurological deficits, who underwent surgery between January 2000 and December 2010 (mean follow-up of 7.2 years). During this retrospective study, the surgically-treated unstable thoracolumbar