



Original Article

Evaluation of the quality of life after vertebroplasty to treat compressive osteoporotic fractures^{☆,☆☆}



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ABSTRACT

Objective: with increasing life expectancy around the world, fractures due to osteoporosis have become more common and the expenditure for treating them has also increased. The aim here was to evaluate the improvement in pain and quality of life among patients with compressive osteoporotic vertebral fractures undergoing vertebroplasty.

Methods: eighteen patients with 27 fractured vertebrae underwent vertebroplasty and were evaluated using the Oswestry 2.0 limitations questionnaire before the operation and 24 h and six months after the operation.

Results: there was a 75% improvement in pain and quality of life, going from a mean preoperative Oswestry of 40% to 10% 24 h after the operation and 9% six months after the operation ($p \leq 0.05$).

Conclusion: vertebroplasty is effective in managing compressive osteoporotic vertebral fractures, with improvement in pain and quality of life in the immediate postoperative period and over the medium term.

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Avaliação da qualidade de vida após vertebroplastia em fraturas osteoporóticas compressivas

RESUMO

Objetivo: com o aumento da expectativa de vida no mundo, as fraturas por osteoporose se tornaram mais frequentes e aumentaram também os gastos no tratamento. Avaliar a melhoria na dor e na qualidade de vida de pacientes com fraturas vertebrais osteoporóticas compressivas submetidos a vertebroplastia.

Palavras-chave:

Vertebroplastia

Fraturas da coluna vertebral

Qualidade de vida

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Métodos: foram submetidos à vertebroplastia 18 pacientes com 27 vértebras fraturadas e avaliados pelo questionário de limitações de Oswestry 2.0 de forma pré-operatória, 24 horas e seis meses no pós-operatório.

Resultados: melhoria de 75% da dor e na qualidade de vida, com Oswestry médio pré-operatório de 40%, em 24 horas de 10% e após seis meses da cirurgia, de 9%. ($p \leq 0,05$).

Conclusão: a vertebroplastia é efetiva no manejo das fraturas vertebrais osteoporóticas por compressão e melhora a dor e a qualidade de vida dos pacientes no pós-operatório imediato e médio prazo.

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Introduction

Osteoporosis is defined as a disease characterized by low bone mass and deterioration of the bone tissue microarchitecture, which gives rise to increased fragility and consequently greater risk of developing fractures.¹ Dequeker et al.² conducted radiological studies on Egyptian mummies from approximately 2000 BC and demonstrated occurrences of vertebral fractures related to osteoporosis.

In the United States, US\$ 20 billion/year is spent on 1.3 million fractures attributed to osteoporosis, of which 500,000 are in the spine.³ The treatment for compressive osteoporotic vertebral fractures is generally clinical, with analgesia, early walking, vests and anti-reabsorptive medications for osteoporosis, with the aims of avoiding new fractures and diminishing pain and morbidity-mortality.

At the end of the 1990s, Jensen et al.⁴ and Deramond et al.⁵ indicated vertebroplasty for treating compressive osteoporotic vertebral fractures that had not improved through clinical treatment. This method was originally described by Galibert et al.⁶ in 1987, for treating vertebral tumors.

The objective of our study was to evaluate the improvement in pain and quality of life among patients with compressive osteoporotic vertebral fractures who underwent the technique of vertebroplasty following failure of conservative treatment.

Materials and methods

Eighteen patients with 27 vertebrae affected by compressive osteoporotic vertebral fractures were evaluated between February 2003 and September 2004.

The patients selected for vertebroplasty presented one or more compressive osteoporotic vertebral fractures, with significant pain even after 60 days of clinical treatment consisting of analgesics, non-steroid anti-inflammatory drugs (NSAIDs), opioids, calcitonin, alendronate, calcium, vitamin D and vests and belts for the spine.

Radiography and magnetic resonance imaging (MRI) (with T1/T2/STIR weighted signals) were performed before the operation and radiography and computed tomography (CT) were performed after the operation, on all the patients. MRI showed hypersignal in STIR images, with bone edema in the fractured and painful vertebral body.

All the patients underwent general anesthesia. The routes used for vertebroplasty were posterolateral and

transpedicular, using Jamshid needles and bone cement (polymethylmethacrylate), with 10% barium sulfate for intra-operative viewing by means of fluoroscopy. All the patients were followed up for at least six months after the procedure.

The exclusion criteria were the presence of a compromised medullary canal, infection, coagulation disorders, collapses greater than 90%, fractures of the posterior wall of the vertebra and old fractures that were negative on MRI.

To evaluate the improvement in pain and quality of life, the questionnaire of the Oswestry Disability Index (ODI) (version 2.0) was used during the week preceding the vertebroplasty and 24 h and six months after the procedure.

The statistical test used for comparing the ODI scores was the nonparametric Wilcoxon test, and results were taken to be significant when $p \leq 0.05$.

Results

Two men and 16 women were evaluated, with an age range from 50 to 79 years (mean of 64.5), who underwent vertebroplasty due to compressive osteoporotic vertebral fractures (Figs. 1 and 2).

A total of 27 vertebrae were affected: 18 lumbar (L1 to L4) and nine thoracic (T8 to T12). One patient was affected at four levels, one at three levels, four at two levels and 12 at one level. We observed two complications among the cases operated: one case of collapse of an adjacent level, three weeks after the vertebroplasty; and one case of extravasation of cement from L3, with left-side radicular compression. Decompression via a posterior route was performed, with arthrodesis from L2 to L4 using a pedunculated screw (Figs. 3 and 4).

In relation to pain and quality of life, the mean preoperative ODI score was 40% (± 4) and this changed to 10% (± 5) within the first 24 h, thus showing a 75% improvement of pain ($p \leq 0.05$). When the ODI score was measured six months later, it was observed that the pain-free condition had been maintained over the medium term, with a mean value of 9% (± 5) (Fig. 5).

Discussion

Osteoporosis is a chronic osteometabolic disease with multifactorial causes. It usually has an asymptomatic course, with progressive loss of resistance and bone quality, thereby leading to greater propensity to fractures. Improvement of social conditions, better access to healthcare and better

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