



ORIGINAL ARTICLE

Safety and efficacy of kyphoplasty in the treatment of tumoral disease of the spine[☆]



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Received 27 September 2014; accepted 2 May 2015

KEYWORDS

Kyphoplasty;
Vertebral fracture;
Metastatic;
Myeloma

Abstract Vertebral fractures in oncology patients cause significant pain and disability, with decreased quality of life. The aim of the study is to assess the efficacy and safety of kyphoplasty in this type of vertebral fracture in the acute phase.

Materials and methods: A retrospective study was conducted on 75 consecutive oncology patients with 122 acute vertebral fractures, who underwent bilateral balloon kyphoplasty, with a mean follow-up of 11 months.

Results: Almost all (91%) of the patients improved their pain level. The mean improvement in the Visual Analogue Scale (VAS) was 4.28 points (preoperative value 7.49 [SD 1.19], postoperative 3.21 [SD 0.95]). Before surgery, 53% of patients needed major opioids (40 cases), and one month after surgery only 12% (9 patients) required them.

Quality of life determined by the Karnofsky index improved from 60.2 (SD 10) to 80.7 (SD 12.1). Cement leaks were found in 5.7% (7 cases), all without neurological repercussions. New fractures appeared in 11 patients. This subgroup showed a slight worsening of the initially acquired clinical improvement. No neurological or pulmonary complications related to surgical technique were found.

Conclusions: Kyphoplasty is an effective and safe for treating vertebral fractures in patients with cancer.

Level of evidence: Level IV.

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[☆] Please cite this article as: García-Maroto R, García-Coiradas J, Milano G, Cebrián JL, Marco F, López-Durán L. Seguridad y eficacia de la cifoplastia en el tratamiento de la enfermedad tumoral de la columna vertebral. Rev Esp Cir Ortop Traumatol. 2015;59:406–412.

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PALABRAS CLAVE

Cifoplastia;
Fractura vertebral;
Metástasis vertebral;
Mieloma

Seguridad y eficacia de la cifoplastia en el tratamiento de la enfermedad tumoral de la columna vertebral

Resumen Las fracturas vertebrales en pacientes oncológicos generan dolor e incapacidad, con limitación funcional y disminución de la calidad de vida. El objetivo del estudio es valorar la eficacia y seguridad de la cifoplastia en este tipo de fracturas vertebrales en el momento agudo.

Material y métodos: Estudio descriptivo retrospectivo de 75 pacientes oncológicos consecutivos con 122 fracturas vertebrales agudas, que fueron tratados mediante cifoplastia percutánea bilateral con balón, con un seguimiento medio de 11 meses.

Resultados: Se produjo mejoría del dolor en el 91% de los pacientes. La mejoría media en la Escala Visual Analógica (EVA) fue de 4,28 puntos (valor preoperatorio 7,49 [DE 1,19], postoperatorio 3,21 [DE 0,95]). Antes de la intervención necesitaban opioides mayores un 53% de los pacientes (40 casos) y al mes de la cirugía solo un 12% (9 pacientes).

La calidad de vida determinada por el índice de Karnofsky mejoró de 60,2 (DE 10) a 80,7 (DE 12,1). En un 5,7% de las cifoplastias (7 casos) se encontraron fugas de cemento, todas ellas sin repercusión neurológica. Aparecieron nuevas fracturas en un 14% de las cifoplastias (11 casos). Este subgrupo presentó un empeoramiento discreto de la mejoría clínica adquirida inicialmente. No encontramos ninguna complicación neurológica ni pulmonar relacionada con la técnica quirúrgica que no estuviera justificada por la evolución de la enfermedad.

Conclusiones: La cifoplastia constituye un procedimiento eficaz y seguro para el tratamiento de las fracturas vertebrales en pacientes con cáncer.

Nivel de evidencia: Nivel IV.

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Introduction

The skeletal system is the third most frequently affected organ by metastasis, following the lung and liver.¹ Studies conducted in oncological patients reflect that up to 70% of cancer patients suffer vertebral metastases throughout the course of their disease, of which only 14% are symptomatic.²⁻⁴

The increased prevalence of cancer worldwide and the extended life expectancy of these patients has meant an increase in the incidence of bone metastases.^{5,6} Vertebral metastases generally appear between the ages of 40 and 65 years,⁷ with their most frequent location being the spinal column (60–80%).^{8,9} Approximately 60% of vertebral tumoral lesions are secondary to breast, lung and prostate cancers and myeloma.^{10,11} On the other hand, the incidence of vertebral fractures due to compression is estimated at 24% of patients with multiple myeloma, 14% in the case of breast cancer, 6% in prostate cancer and 8% in lung cancer.¹² Thus, up to 50% of patients with myeloma present vertebral lesions, either by direct involvement or by fractures due to fragility.^{13,14}

The traditional treatment of vertebral fractures by compression, based on rest and reduction of activity, often entails an unfavourable clinical and mechanical situation, persistent pain and decreased quality of life.¹⁵ In pathological fractures linked to vertebral metastasis, radiotherapy does not protect from progressive collapse, does not achieve restoration of height, and does not treat the associated instability.¹⁶ In such cases, balloon kyphoplasty manages to reduce pain, restores the height of the vertebral body and

stabilises the spine, thus enabling an improvement in the level the activity of patients.¹⁷⁻¹⁹

The objective of our study was to describe the effectiveness and safety of kyphoplasty in vertebral fractures among patients with cancer in our experience (Figs. 1 and 2).

Materials and methods

We conducted a retrospective, descriptive study on 75 consecutive patients with metastasis or multiple myeloma affecting the spine who presented 122 acute vertebral fractures treated through kyphoplasty at our hospital between 2006 and 2012. The fractures in patients with multiple myeloma were assumed to be somehow linked to the tumoral disease.^{4,5} The diagnosis of vertebral fracture by acute compression was established by the presence of bone oedema in an MRI scan. We excluded from the study chronic fractures and those not subsidiary to treatment through balloon kyphoplasty due to involvement of the posterior wall or associated criteria of vertebral instability.²⁰ Kyphoplasty in patients with vertebral metastasis was indicated in type I, II and IV fractures according to the Harrington classification,²⁰ excluding those presenting neurological involvement, as well as in patients with intermediate scores (4–7 points) in the Tomita scale.²¹ Preoperative simple radiographs in 2 projections (anteroposterior and lateral) and centred on the affected vertebral level were obtained in all cases, as well as an MRI scan to specify the lesional level of the fracture, its acute character and the condition of the pedicles for the approach.^{5,22} The kyphoplasty was conducted with the

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