



## Original Article

# Comparison of the efficacy of transforaminal and interlaminar radicular block techniques for treating lumbar disk hernia<sup>☆</sup>



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## ABSTRACT

**Objective:** To compare the interlaminar and transforaminal block techniques with regard to the state of pain and presence or absence of complications.

**Method:** This was a randomized double-blind prospective study of descriptive and comparative nature, on 40 patients of both sexes who presented lumbar sciatic pain due to central-lateral or foraminal disk hernias. The patients had failed to respond to 20 physiotherapy sessions, but did not present instability, as diagnosed in dynamic radiographic examinations. The type of block to be used was determined by means of a draw: transforaminal (group 1; 20 patients) or interlaminar (group 2; 20 patients).

**Results:** Forty patients were evaluated (17 males), with a mean age of 49 years. There was a significant improvement in the state of pain in all patients who underwent radicular block using both techniques, although the transforaminal technique presented better results than the interlaminar technique.

**Conclusion:** Both techniques were effective for pain relief and presented low complication rates, but the transforaminal technique was more effective than the interlaminar technique.

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## Comparação da eficácia das técnicas transforaminal e interlaminar de bloqueio radicular feito no tratamento de hérnia de disco lombar

## RESUMO

**Objetivo:** Comparar a técnica de bloqueio interlaminar com a de bloqueio transforaminal, quanto ao quadro algico e à presença ou não de complicações.

**Método:** Estudo prospectivo, de caráter descritivo e comparativo, duplo-cego e randomizado, em que são sujeitos 40 pacientes, de ambos os sexos, portadores de lombociatalgia por hérnia de disco, do tipo centro-lateral ou foraminal, sem resposta a 20 sessões de fisioterapia

## Palavras-chave:

Bloqueio nervoso

Deslocamento do disco

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e sem instabilidade, diagnosticada em exame de radiografia dinâmica. O tipo de bloqueio, transforaminal (grupo 1) ou interlaminar (grupo 2), a ser feito foi determinado por meio de sorteio e constituiu 20 pacientes do grupo 1 e 20 do grupo 2.

**Resultados:** Foram avaliados 40 pacientes, 17 do sexo masculino, média de 49 anos, nos quais houve melhoria significativa do quadro algico em todos os submetidos ao bloqueio radicular em ambas as técnicas, embora a técnica transforaminal apresentasse melhores resultados quando comparada com a interlaminar.

**Conclusão:** Ambas as técnicas são eficazes no alívio da dor e apresentam baixa taxa de complicação, mas a transforaminal foi mais eficaz do que a interlaminar.

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## Introduction

Lumbar disk hernia consists of displacement of the pulpous nucleus contained in the intervertebral disk through the fibrous ring. This displacement may lead to compression and irritation of the lumbar nerve roots and dural sac, which are characterized clinically by the pain known as sciatic pain.<sup>1</sup>

The etiology of sciatic pain is multifactorial. It can be caused by mechanical compression of the intervertebral disk and by the release of inflammatory and nociceptive mediators coming from the pulpous nucleus.<sup>2-8</sup> It has been estimated that 2-3% of the population has lumbar disk hernias, with prevalence of 4.8% among men and 2.5% among women over the age of 35 years. Furthermore, it is the commonest diagnosis among degenerative alterations of the lumbar spine and the main cause of surgery.<sup>1</sup>

The initial treatment for disk hernia in most cases is conservative. Surgical treatment is exceptional and is reserved only for cases of lack of success from appropriate conservative treatment, progressive neurological deficit or cauda equina syndrome.<sup>1,9</sup> Among the various techniques that have been described in the literature, minimally invasive surgical procedures are now valued more highly because of their lower tissue aggression, shorter hospital stay, lower anesthetic risk and earlier return to work activities.<sup>1,8-10</sup>

Root block is a good option among the minimally invasive techniques for treating lumbar disk hernia. This makes it possible to reduce the inflammatory response, improve the state of pain, reduce the consumption of analgesics, maintain work activities and eliminate the need for surgery, among most individuals.<sup>8,11-13</sup>

For patients who are refractory to appropriate conservative treatment, in an attempt to postpone or even to avoid surgery, root block can be indicated. This can be done using interlaminar and transforaminal techniques, or caudally (via the sacral hiatus).<sup>1,14,15</sup>

However, only a few studies in the literature have compared the interlaminar and transforaminal techniques with a view to determining which of these is safer and more effective. We conducted the present study with the aim of clarifying these doubts, so as to make a significant contribution toward alleviating the symptoms caused by disk hernias.

## Method

Forty patients were evaluated through a double-blind randomized prospective study.

The sample selection took into consideration the following inclusion criteria: the patients needed to present lumbar sciatic pain secondary to disk hernia, with posterolateral, foraminal or extraforaminal location, which could be either limited to that location or extend beyond it, without any response to 20 physiotherapy sessions, and without any instability diagnosed in dynamic radiographic examinations of the lumbar spine. We took instability to be situations of vertebral plateau angles greater than 18° and excursions of more than 3 mm on dynamic lumbar radiographs in lateral view.<sup>16</sup>

Patients were excluded if they presented lumbar sciatic pain with causes other than disk hernia, or if their pain responded to conservative treatment consisting of 20 physiotherapy sessions, or if they presented dynamic instability on radiographs.

A visual analog scale (VAS) was applied to all the patients before and after receiving the block.<sup>4,6,17</sup> The decision on which block technique would be used was reached by means of a draw. In this, the number 1 represented the transforaminal technique and 2, the interlaminar technique.

The block using the transforaminal technique was applied with the patients positioned in ventral decubitus, with a pillow under the abdomen. All the patients received only one level of block. We used a fluoroscopic device to obtain an anteroposterior image and to be able to identify the desired level of the spine, followed by an oblique ipsilateral Scotty-dog view. The six o'clock position on the pedicle was marked out and this received an infiltration of 1% lidocaine using a needle of caliber 25 and 1.5 inches in length. A Tuohy needle of caliber 22 and 3.5 inches in length was directed towards the spine under intermittent fluoroscopic guidance in the neural foramen, such that the tip would rest in the triangle formed by the nerve root medially, the bone pedicle superiorly and the lateral margin of the foramen laterally. The position of the needle was confirmed through observation of the flow of 2 mL of the contrast medium ioversol (68%) with 320 mg/mL of concentrated iodine, injected into each level. Once the placement had been confirmed, a solution of total volume 10 mL, consisting of 3 mL of betamethasone phosphate (40 mg/mL),

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