Lumbar disk herniation: How far should efforts go to minimally invasive procedure?

ABSTRACT

Background: Minimally invasive surgery (MIS) of lumbar disk herniation allows avoiding less of a mess in crossing structures, reducing muscular and cutaneous scarring, postoperative pain, lengthy recovery times, and the rate of infection. The aim of this study is to explain our experience in MIS of disc herniation. We compare the outcome of three different surgical techniques used for the treatment of lumbar disc herniation.

Materials and Methods: A total of 1147 patients have been operated from July 2008 to December 2015 for lumbar disk herniation by posterior endoscopic approach. Three hundred and seventy-nine patients underwent discectomy and herniectomy (DH), 557 patients have been operated by herniectomy (H), and 211 patients underwent only bone decompression (BD).

Results: The results show 80.10%, 82.06%, and 84.02% excellent outcome, respectively, in BD, DH, and BD techniques.

Conclusion: Analysis of the data demonstrates that the results obtained are equivalent and comparable in different used techniques for the treatment of disc herniation, we do not need to perform discectomy in all cases in a systematic way.

Keywords: Endoscopic surgery, lumbalgia, lumbar disc herniation, minimally invasive surgery, sciatalgia

INTRODUCTION

Minimally invasive surgery (MIS) of lumbar disk herniation allows the same procedure to be performed as in the open surgery without sacrificing the appliance efficiency of the procedure in terms of decompression of nerve root. MIS can provide access to a target-herniated disc-avoiding less of a mess in crossing structures, reducing muscular and cutaneous scarring, postoperative pain, lengthy recovery times, and the rate of infection. Beyond the above benefits, the endoscopic procedure provides to a surgeon a great magnification. The latter offers a safer surgery with lower risk to nerve injury.

This procedure allows a new opportunity to the surgeon to decrease as far as possible the extent of surgery. In MIS of lumbar disk herniation, from experience, we have learned that when a lumbar nerve root is compressed, it does not beat with heart pulsation. Therefore, our criteria for achieving surgical procedure are nerve root and dural sheet pulsation which means the nerve root releasing. We realized that in the vast majority of cases, the nerve root pulsation means the pain disappears. Consequently, for the treatment of disc herniation, we do not need to perform discectomy in all cases in a systematic way. In this study, we explain our experience in the surgical treatment of disc herniation and compare the outcome of three different surgical techniques used for the treatment of lumbar disc herniation.

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MATERIALS AND METHODS

A total of 1147 patients have been operated from July 2008 to December 2015 for lumbar disk herniation by posterior endoscopic approach. Patients operated by transforaminal approach for foraminal and extraforaminal disc herniation and patients had two levels of disc herniation have not been included in the study. In the 1st year, we used to perform discectomy systematically. Since 2011, we have changed our strategy and did not carry out discectomy in all patients. Therefore, in 557 patients, we performed only herniectomy, and in 211 patients, we achieved bone compression. The average age of patients was 42.4 (21–75) years. We operated 607 male patients and 540 female patients (female/male ratio = 1/1.12); 559 patients had an L5-S1 disk herniation, 523 patients had L4-L5, 54 patients had an L3-L4 disk herniation, seven patients had an L2-L3, and four patients had an L1-L2 herniated disk.

RESULTS

The patients were visited in outpatient control 6 weeks, 12 weeks, 6 months, 1 year, and 2 years after surgery. The outcomes were evaluated by Macnab criteria. In 2 years after surgery, 920 patients had excellent outcomes (80.21%), 119 patients had good outcomes (10.37%), 58 patients had fair outcomes (5.06%), and 50 patients had poor outcomes (4.36%). Tables 3-5 show the patients outcome according to used technique and date of outpatient control. Table 6 demonstrates the rate of recurrence 1 and 2 years after surgery according to used technique.

DISCUSSION

Analysis of the data collected at the level of various techniques illustrates that there is no significant difference for outcome. Six months after surgery, we had 78.67% of excellent outcome with bone decompression (BD) technique as against 81.79% with discectomy and herniectomy (DH) and 83.66 with herniectomy (H) technique. One year after surgery, we had 78.20% with BD technique as against 81.79% with DH and 82.94% with H technique. The rate of recurrence was only insignificantly higher in BD technique after 1 year compared with the
two other techniques. This rate was tending to equalize 2 years after surgery.

As stated above, our criteria for achieving surgical procedure are nerve root and dural sheet pulsation which means the nerve root releasing. Experience has shown us that to obtain nerve root pulsation, we need neither to perform herniectomy systematically nor to perform discectomy in the vast majority of cases. We can merely content to perform BD to release the pain in a considerable number of cases. Consequently, we prefer using the least invasive technique. This is all the more important as an invasive discectomy may lead to chronic low back pain, in the short, medium, and long term.\textsuperscript{[1‑5]} Several previous studies incriminated the role of posterior longitudinal ligament (PLL) in lumbar back pain generation. However, patients claim to have relieved their sciatica and lumbalgia thanks to BD even without opening PLL.\textsuperscript{[6‑17]} These results evoke that mechanical role of nerve compression is greater than PLL stretching in lumbar back pain generation in symptomatic disc herniation. As Kojima \textit{et al.} concluded the role and distribution of the nerve fibers and terminals in the PLL and in pain generation is not clear.\textsuperscript{[17]}

CONCLUSION

In MIS of lumbar disk herniation, from experience, we have learned that when a lumbar nerve root is compressed, it does not beat with heart pulsation. Therefore, our criteria for achieving surgical procedure are nerve root and dural sheet pulsation which means the nerve root releasing. Consequently, for the treatment of disc herniation, we do not need to perform discectomy in all cases in a systematic way.

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Conflicts of interest
There are no conflicts of interest.

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