

Study of Lumbar Vertebral Pedicle in Population of Bihar

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ABSTRACT

Introduction: Herniated disc, which is sometimes referred as slipped disc or ruptured disc, most often occurs in the lower back and is one of the most common cause of lower back pain (LBP) and leg pain (Sciatica). LBP is observed in 60-80% of people at a stage of their lives and this high percentage of people has LBP or leg pain caused by herniated or ruptured disc. Sometimes herniated disc become too painful, however many people feel much better with a week or month of nonsurgical treatment. A retrospective study of different types of herniated discs and duration of symptoms in patients with lumbar disc herniation, and a trial of longer conservative treatment to reduce the number of operations is done here. The study was done to determine whether noncontained and contained herniated discs have different clinical courses and to evaluate the results of the clinical trial of longer and vigorous conservative treatment.

Material and Methods: In the study, the medical history and intraoperative findings of 22 patients who had undergone herniotomy were reviewed. Study was done at Nalanda Medical College and Hospital, Patna between June 2015 and May 2016.

Results: In the study, patients with noncontained disc herniation had a shorter preoperative clinical course than those with contained disc herniation. It was rare for noncontained herniation to require surgery 4 months or more after the beginning of symptoms.

Conclusion: In our opinion patients with noncontained lumbar disc herniation can be treated conservatively without surgical intervention, if these patients are found in tolerable condition with the symptoms for the first 2 months.

Keywords: Disc herniation, contained, noncontained, lumbar, herniotomy.

INTRODUCTION

Before we proceed to discuss the topic, it would be good to discuss the spine, disc and its functioning. The spine is built up of a continuous series of 24 interconnected bones which is referred as "vertebrae." It is stacked one over the top of another. These bones connect to create a canal, which protects the spinal cord. Five vertebrae constitute the lower back and this is called lumbar spine. A series of strong connective tissues, which holds one vertebra over the other is called disc and acts as a cushion or shield between the vertebrae. The "annulus fibrosus" is a tough outer layer and the disc is made of it, and the "nucleus pulposus" is a gel-like centre. With growing age and older, centre of disc may begin to loose water content and may cause making the disc less effective as a cushion and may cause a displacement of the disc's centre through a crack in the outer layer, and referred to as herniated or ruptured disc. Mostly disc herniation occurs in the last two discs from bottom side of the lumbar spine just below the waist. Nerves in the spine may get pressed with lumbar herniated disc and may cause pain, numbness, tingling or weakness of the leg called "sciatica" which affects about 1-2% of people in age group of 30 to 50 years. Lower back pain may be due many other causes, how herniated lumbar disc may

be one of them.

Anatomically two different types of lumbar disc herniation are reportedly recognised, i.e. contained and noncontained.⁹ Contained discs are fully within an intact outer anulus or an outer anulus composed capsule of and the posterior longitudinal ligament are not in direct contact with epidural tissue. On the other side noncontained discs are in direct contact with epidural tissue.^{2,9} The possibility of a difference in clinical features between contained and noncontained disc herniation has been suggested by previous authors.^{5,6,12} In particular, Jonsson and Stromqvist reported that patients with noncontained disc herniation had a shorter preoperative history of symptoms than patients with contained herniation. In this report the preoperative clinical course duration between patients with contained and noncontained disc herniation are compared. The possibility of reducing the need for surgery in patients with noncontained disc herniation by administering longer conservative therapy is also discussed.

The study was done to determine whether noncontained and contained herniated discs have different clinical courses and to evaluate the results of the clinical trial of longer and vigorous conservative treatment. Further the study was aimed to know the possibility of a difference in clinical features between contained and non-contained disc herniation has been suggested previously.

MATERIAL AND METHODS

Study

36 herniotomies were performed in the authors' institution, i.e. Nalanda Medical College and Hospital, Patna between June 2015 and May 2016. The authors reviewed the charts of all patients. Provided charts had enough information about 22 cases, including symptoms duration before surgery along with herniated disc type. The preoperative clinical course duration was estimated from the day of beginning of severe leg pain to the day of surgery excluding prodromal (pre-existing) back pain. The average age of patients' was 43.2 years (range, 13±81 years). There were 13 male and 9 female. 21 patients had intracanal disc herniation, and 1 had extra for aminal herniation. In beginning all patients were given conservative treatment and when patients had cauda equina syndrome, progressive motor weakness, or intolerable symptoms, then only surgical treatment was indicated. However in this period we had no recommendation about the preferred minimum duration of

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conservative treatment.

In our surgical findings also the herniated discs were classified as contained or noncontained. When capsule was incised, the herniation was classified as contained.⁹ The number of surgeries of herniotomies and other spinal surgery performed in 1 year was calculated from June 2015 to May 2016 to show the influence of the authors' therapeutic protocol.

All patients who had hospitalization were interviewed and evaluated by using the assessment scale of the Japanese Orthopaedic Association (JOA). This system is composed of 3 parts: subjective symptoms, clinical signs, and restriction of activities in daily living. Each part contains a number of questions. In this study, we used part I, subjective symptoms (9 points), and part III, restriction of activities (14 points), a total of 23 points.

STATISTICAL ANALYSIS

Statistical significance was calculated with the use of *x* analysis. The controlled trial showed a statistically significant better result in the surgically treated group at the one-year follow-up examination. Observation is continued and at this stage no statistical significance can be explained.

RESULT

Herniotomy was indicated by severe leg pain in all but 1 patient; this 1 patient underwent surgery because of severe motor weakness. 15 of 22 herniotomies (68.2%) were performed within 2 months after the beginning of symptoms (Table-1). There were 15 contained and 9 noncontained herniation.

As the preoperative clinical course became longer, the rate of contained herniation became higher (Table-1). Although 6 herniations (66.7%) were noncontained in patients operated on before 1 month after beginning, only 1 of 3 (33.3%) was noncontained after 4 months, and none was noncontained in patients who had surgery 8 months or longer after beginning.

In 77.78% (7 of 9) of noncontained herniations, surgery was performed within 2 months, and in 98% it was performed within 4 months after beginning of symptoms. However, 46.7% of patients with contained herniations underwent surgery after 2 months after the beginning of symptoms.

5 patients (55.6%) of 9 with noncontained herniations underwent surgery within 1 month after the beginning of symptoms. Conversely, only 4 patients (20.0%) of 20 with contained hernias underwent surgery within 1 month.

DISCUSSION

In this study, it was rare for surgery to be performed 2 months or more after the beginning of symptoms in patients with noncontained herniations and extremely rare after 4 months. Thus, the authors hypothesized that symptoms in patients with noncontained disc herniation do not remain severe for more than 2 months. In this study, the number of herniotomies, especially those in patients with noncontained disc herniations,

was reduced under the authors' clinical protocol. One of the patients was treated without surgery, did well and had no severe complications. This may be considered as an indication that if a patient having symptoms of disc herniation may be treated conservatively for 2 months or more, surgical treatment may not be needed, but probably this would be in the case of patient with noncontained disc herniation. But in some patients' symptoms of contained herniation continues for longer and operative treatment becomes necessary even after 4 months from the beginning of symptoms.

The spontaneous disappearance or diminution of lumbar herniated discs in the spinal canal has been recognized with recent advances in imaging techniques; this could be an explanation for the relief of symptoms without surgery.^{3,7,10,11} Saal et al and Maigne et al^{7,10} reported that large herniations had the greatest tendency to decrease in size.^{7,10} Maigne et al postulated that such large herniations are probably sequestered herniations that have ruptured the outer fibers of the anulus and entered the epidural space.⁷

The study reported the presence of an absorptive reaction in sequestration type (noncontained) herniated disc tissue, characterized by neovascularization and the infiltration of macrophages.^{1,4} This phenomenon sometimes is observed in cases of contained herniation. However, it is considered to be less prominent than in the noncontained type.^{1,4}

In our opinion patients with noncontained lumbar disc herniation can be treated conservatively without surgical intervention, if these patients are found in tolerable condition with the symptoms for the first 2 months. But it is difficult enough to distinguish between the types of disc herniation even when using imaging studies.⁸ In fact, preoperative classification (contained or noncontained) based on magnetic resonance imaging findings sometimes did not match the operative findings in these two studies. Therefore, the authors recommend conservative treatment for all patients with lumbar disc herniation within 2 months after the beginning of their symptoms, except for patients with cauda equina syndrome or severe motor weakness. The authors recommend surgical treatment when the symptoms continue for 2 months or longer, or when patients have compelling reasons. So we agree with McCulloch that conservative treatment should not be prolonged for 3 months.⁹

Another possible reason for the shorter preoperative period observed in patients with noncontained disc herniation might be that these patients have had more aggressive symptoms than those with contained hernias, and thus that operative treatment was indicated earlier. However, many patients with noncontained hernias can be treated successfully with conservative methods, including anti-inflammatory drugs, epidural block, and selective nerve root block. Selective nerve root block was especially useful for treating the patients with severe sciatica, which was resistant to NSAIDs. It has been reported by Seal et al and

Type	1 month		2 months		4 months		6 months		8 months		Total	
Contained	3	(33.3%)	5	(62.5%)	4	(66.7%)	2	(66.7%)	3	(100%)	17	(59%)
Noncontained	6	(66.7%)	3	(37.5%)	2	(33.3%)	1	(33.3%)	0	(0%)	12	(41%)
Total	9	(100%)	8	(100%)	6	(100%)	3	(100%)	3	(100%)	29	(100%)

Between June 2015 and May 2016

Table-1: Herniated Disc Type and Duration From Beginning to Surgery

Maigne et al^{7,10} that in the case of large herniation, there had the greatest tendency to decrease in size and such large herniation are probably sequestered herniation that had ruptured the outer fibres of the annulus and entered the epidural space.

CONCLUSION

The author believes that patients with noncontained lumbar disc herniation can be treated conservatively; hence recommend conservative treatment to all the patients with lumbar disc herniation within two months after the beginning of their symptoms except for patient with cuda equina syndrome or acute motor weakness. The author also recommend surgical treatment when the symptoms continues for 2 months or more or patients have acute reasons. For a shorter period of surgical treatment in noncontained lumbar disc herniation, may be due to more aggressive symptoms. However many patients area successfully treated with conservative method, anti-inflammatory drugs, epidural block and selective nerve root block, in which the last one is especially useful in treating a patient with severe sciatica which is resistant to NSAIDs.

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