

Original research article

# A Comparative Study of Conservative Treatment Versus Discectomy For Management Of Lumbar Intervertebral Disc Prolapse

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**Background & Objectives:** This clinical study includes sixty cases of intervertebral disc prolapse in age group of 20 to 80 years, irrespective of sex, with clinical symptoms, signs and radiological evidence treated either conservatively or surgically with discectomy in the Department of Orthopaedics at Nil Ratan Sircar Medical College. All cases were followed up and functional results were analysed with primary objective to study the clinical presentations & evaluate outcomes of both conservative and surgical management and secondary objective to compare the results of both modes of treatment.

**Methods:** Out of 60 patients included in the study, 30 were treated conservatively & another 30 underwent standard discectomy in the Department of Orthopaedics at Nil Ratan Sircar Medical college, Study duration of Two Years. The short-term follow-up results in patients who were followed up for a minimum of 6 months after treatment were evaluated by using the Japanese Orthopaedic Association scoring system through direct examinations and questionnaires.

**Results:** Prevalence of disc prolapse was in age group of 20-50 years, while peak incidence between 30-40 years of age. Incidence of disc prolapse in males was almost twice as much as in females (in our series 65% male cases were noted). 56.67% cases had disc prolapse at L4-L5 level, which being the commonest site of disc prolapsed followed by L5-S1 41.67% and 1.67% at L3-L4 level.

**Conclusion:** With the execution of appropriate selection criteria and appropriate pre & posttreatment planning, a good to excellent outcome was seen in nearly 97% in surgical study. In conservatively treated group, 90% patients showed fair to good result. Therefore lumbar discectomy is still a simple, safe & effective treatment with rapid relief for patient while conservative treatment if given to properly selected cases also gives effective results. Patients undergoing surgery for lumbar disc herniation achieved greater improvement than nonoperatively treated patients in all primary and secondary outcomes.

**Keywords:** Disc herniation, Laminectomy and Discectomy, conservative and surgical treatment outcome

**Introduction**

Back pain, the ancient curse is now appearing as a modern epidemic. Humans have been plagued by back and leg pain since the beginning of recorded history 80% of the population is affected by this symptom at sometime of life. Impairments of the back and spine are

ranked as the most frequent cause of limitation of activities in people of all age groups. Lumbar discs are responsible for well over 90% of all organic symptoms attributable to low backache. Clearly lumbar disc herniation is a significant medical and social problem. What is less clear is the efficacy of treatment and type of treatment to choose. Either conservative or surgical treatment is followed which requires a careful and detailed approach in the anticipation, prevention and management of orthopaedic complications that are a part of surgery of the spine for discogenic disease. The incidence of back pain appears to be constant. Efforts are being made to decrease the risk factors. Unfortunately, the cost of medical care and claims for disability appears to be rising. However at present the claims of disability in India appear to be negligible, that too in rural setup we have never come across the patient having employment disability claim. One word of caution in treating a home keeping women is that one should always rule out psychogenic cause of pain especially when patient contemplates surgery. Discogenic pain is one of the causes out of innumerable causes of low back pain. In our country where the protected water supply is yet a long way to achieve especially in rural people Fluorosis may be a cause of disc degeneration and ligamentous calcification which needs a thorough and in depth study at a bigger level. In absence of parameters for the diagnosis of Fluorosis and lack of facilities to monitor blood samples, urine samples and biochemical investigations to prove it, thus, Fluorosis is only hypothesis and many cases of discogenic pain could also be preceded by Fluorosis. With the basic understanding of disease process, new diagnostic techniques, refinements in conservative treatment and discectomy, improvements in surgical instrumentation revealed that surgical removal of the offending disc herniation is reasonably safe procedure with satisfactory results. Mortality of this surgery is almost negligible. In this dissertation, we have tried to analyze the efficacy and clinical outcome of lumbar disc prolapse managed either by conservative treatment or open disc surgery.

## **Objectives**

### **Primary**

To study the clinical presentations of patients with intervertebral disc prolapse.

To evaluate outcomes of both conservative and surgical management.

### **Secondary**

To compare the results of conservative and surgical management.

## **Materials and methods**

A prospective study Patients are followed up periodically postoperatively or following conservative management. Patients presenting with signs and symptoms of Intervertebral Disc Prolapse, to the Department of Orthopaedics, at Nil Ratan Sircar Medical college, Study duration of Two Years.

### **Inclusion criteria:**

All patients in the age group of 20 to 80yr with prolapse of intervertebral disc, clinical symptoms and signs, and radiological evidence.

### **Exclusion criteria:**

Patients with intervertebral disc prolapse associated with

\*Structural scoliosis ,

\*Spondylolysis, Congenital anomalies, Developmental dysplasia, Infections of spine specific or nonspecific, Cauda Equina syndrome, Failed back syndrome, Disc herniations at multiple levels, Tumours of lumbar spine

All patients admitted at Nil Ratan Sircar Medical College And Hospital, after meeting

inclusion and exclusion criteria are taken up. A detailed history and clinical examination done, based on which patients were either conservatively or surgically treated with discectomy after obtaining written informed consent for risk and complication involved in operative procedure.

Patient is treated by complete bed rest with pelvic traction with weight around 8 to 10 kg, in hospital for a minimum period of three weeks followed by week to ten days of gradual mobilization is instituted if patient has substantial relief of pain and no paraspinal muscle spasm. .

### Lumbosacral Corset & Brace

It functions as an abdominal binder that in turn supports the back. Given to patient after initial period of 2 weeks bed rest and traction.

### Exercises were advised only after acute symptoms of disc herniation wave off.

Flexion exercises (Williams Flexion exercises) – to reduce lumbar lordosis.



**Figure 1: Patient placed on Spinal Frame**

Back is painted with betadine solution, spirit and draped. Infiltration of paraspinal and subcutaneous tissue with 1,500,000 epinephrine 2 to 3 drops with normal saline is done, this helps in providing haemostasis. A midline skin incision over spinous process centering the affected disc level is put extending down into the subcutaneous tissue, lumbodorsal fascia and supraspinous ligament.

### Results

The study includes a total of 60 patients. 30 were operated for lumbar disc herniation by laminectomy and discectomy and 30 patients were treated conservatively. All patients were available for follow-up for this prospective analysis. The minimum follow-up duration was 6 months. The age of the patients varied from 31 – 65 years with the mean age of 45.32 years. The age of the females varied from 31 – 65 years (mean 46.46 years) and age of the males varied from 31– 65 years (mean 44.58 years).

**Table 1: Age Distribution**

Age in years	Conservatively treated		Surgically treated	
	No of patients	%	No of patients	%
21-30	0	0	0	0

31-40	7	23.33	23	76.7
41-50	4	13.33	7	23.3
51-60	15	50	0	0
61-70	4	13.33	0	0
Total	30	100	30	100

In our study there was highest incidence of disc prolapse i.e 30(50%) in patients of 31-40 yr age. Maximum patients 15(30%) in conservatively treated group were in age group of 51-60 yr & in surgically treated group maximum patients 23(76.7%) were of 31-40yr age.

**Table 2: Distribution of Symptoms**

Symptoms	Conservatively Treated		Surgically Treated	
	No of patients	%	No of patients	%
Low backache	30	100	30	100
Radicular pain	30	100	30	100
Weakness	13	43.33	16	53.33
<b>Paraesthesia</b>	10	33.33	20	66.67

All cases came with complaints of low backache and radicular pain. Among the conservatively treated group, 12 (40%) patients had sudden onset pain while lifting heavyweights or bending forwards or doing household activities. The remaining 18(60%) had insidious onset of pain. The duration of symptoms varied from 1 month to 5 years with the mean duration of 3.8 months. Among the surgically treated group, 9 (30%) patients had sudden onset pain while lifting heavy weights or bending forwards or doing household activities.

**Table 3: Distribution of JOA score pre-treatment**

JOA - Pre Treatment Score	Conservatively Treated		Surgically Treated	
	No of patients	%	No of patients	%
0 – 5	3	20	10	33.33
6 – 10	27	80	20	66.67
11 – 15	0	0	0	0

Out of 30 patients in conservatively treated group majority of patients 27(90%) had a pretreatment JOA score of 6-10 & in surgically treated group 20(66.67%) had pretreatment JOA score of 6-10.

**Table 4: Distribution of level of lumbar disc prolapse**

Level of Prolapse	Conservatively Treated		Surgically Treated	
	No of patients	%	No of patients	%
L3 – L4	1	3.33	0	0
L4 – L5	16	53.33	18	60
L5 – S1	13	43.33	12	40

MRI scan was done for all the patients in conservatively treated group and it showed central/para-central disc herniation in 18 patients (60%) and lateral disc in 40% with commonest level being the L4–L5. MRI scan was also done for all the patients in the surgically treated group to know the level of lumbar disc prolapse and the commonest level being the L4 – L5.

**Table 5: Distribution of type of prolapse**

Type of Prolapse	Conservatively treated		Surgically Treated	
	No of patients	%	No of patients	%
Protrusion	24	80	21	70
Extrusion	3	10	6	20
Sequestration	3	10	3	10

Majority of patients both in conservatively 24(80%) & surgically treated 21(70%) groups were found to have disc prolapsed in stage of protrusion, confirmed by MRI.

**Table 6: Distribution of complication – Surgically Treated**

Complication	No of patients	%
Superficial woundinfection	0	0
Dural tear	1	3

The average surgical time was 65 minutes (45 to 135 minutes). Patient was mobilized on the second post operative day with a lumbo-sacral corset. No case of superficial wound infection was noted. One case of dural tear noted, recovered with foot end elevation of the bed and antibiotics and analgesics.

**Table 7: Correlation with Neurological deficits**

Outcome	Conservative Group		Surgical Group	
	Deficit Present	Deficit Absent	Deficit Present	Deficit Absent
Poor	1	2	0	0
Fair	9	4	1	0
Good	10	4	26	1
Excellent	0	0	1	1

In our study patients, both in surgical and conservative group showed good result. This was seen in 26(86.67%) cases with deficits present before treatment in surgical group and in 10(33.33%) cases with deficits present before treatment in conservative group.

### Discussion

Low backache is a major public health problem in the rural areas. It causes suffering and distress to patients and their families, and affects a large number of people. As its distribution is worldwide in nature, it eats away many valuable work hours of the individual and also directly or indirectly places an enormous economic burden on the society. Prolapse intervertebral disc occurs in about 5 – 10% of all low backache patients and is a common cause of sciatica. Disc prolapse alters disc height and the mechanics of the rest of the spinal column, possibly adversely affecting the behavior of other spinal structures such as muscles and ligaments. The standard treatment of lumbar disc prolapse has been surgical excision of the

disc or conservative treatment, though the methods vary. The first disc prolapse operation falsely accredited to Mixter and Barr had been conducted by Oppenheim and Krause in Berlin but interpreted it as an enchondroma of spinal disc. Mixter and Barr's<sup>1</sup> classical paper "Rupture of intervertebral disc with involvement of spinal canal" opened an era of systematic diagnosis and operative treatment of lumbar disc prolapse. Their approach showed the effectiveness of Laminectomy and Discectomy in its management and since then there has been an ever increasing enthusiasm to solve sciatica problems surgically by disc excision. Although minimally invasive operations such as percutaneous nucleotomy<sup>2,3</sup> and microendoscopic<sup>4</sup> discectomy have gained attention in recent years, standard discectomy is still the preferred management technique among the majority of surgeons, and its favorable outcomes and affordability have been reported. Although reported early results of surgical discectomy have shown success rates of over 90%,<sup>5,6</sup> discectomy can lead to unsatisfactory outcomes, such as recurrent or increased back and/or sciatic pain. The rate of recurrent disc herniation ranges from 3 – 20%<sup>7</sup> and it constitutes a major cause of failed back surgery syndrome. This implies that there are many factors which influence the outcome of lumbar disc surgery. Therefore emphasis should be on proper patient selection.<sup>5</sup> There is no substitute for a careful and accurate history and physical examination correlated with imaging studies. MRI / CT / Myelography have revolutionized the diagnosis of spinal disease by accurate visualization of all structures within the neural canal. In addition it offers the opportunity to outline the neural foramen and extraforaminal areas and thus guides the surgeon in planning the precise surgical correction, avoiding unnecessary exploration of uninvolved levels<sup>8</sup>. Other mode of treatment, "active" nonoperative treatment<sup>9</sup> is also used, except in patients with progressive neurologic deficit and cauda equina syndrome, both of which are indications for urgent decompression. Hence any surgical intervention without appropriate conservative therapy leads to unnecessary surgery and also a poor outcome.<sup>10</sup> There appears to be a significant deterioration with time after surgery. Some reports have noted that residual low back pain (LBP) and recurrent herniations were the major postoperative problems encountered. However results are favorable<sup>11,12</sup> when there is proper selection of cases, appropriate correlation between clinical presentation and imaging studies and valid indication for operative treatment of a patient who has herniation of a lumbar disc. Our conservative study showed a good result of 47%, fair result of 43% & poor outcome in 10% which is favourable and comparable to those studies of Patrick C A J Vroomen, which showed fair to good results in 93% cases, but results in our study was marginally on lower side probably due to low socioeconomic status of the society, psychological factors and low literacy rate. Nearly in all patients with good result, the pre-treatment low backache and sciatic symptoms were reported to be improved following both the procedures in our study which are comparable to other studies by Spengler et al. Results of this study showed a favorable outcome with laminectomy & discectomy for lumbar disc prolapse and are comparable to other techniques of discectomy.<sup>13,14</sup> In the present series it was observed that there was no case of post operative infection, 3% had dural tears, and there were no nerve root injuries and no mortality. In a series of 2503 patients, Sprangfort concluded that 2.2% had wound infections, 1.6% had dural tears, 0.8% had nerve root injuries and 0.1% had mortality.



**Figure 2: MRI showing L5-S1 disc prolapse**

### Conclusion

Back pain with radiation to legs is commonest presentation.

Males are more prone to disc prolapse (Male: Female 3:1) Pathology of disc degeneration is age related occurring more commonly between 30 to 50 years. Strenuous activity of daily living and occupation influence in the precipitation of disc prolapse. Exacerbations and remissions are common features. SLRT is constant reliable sign of nerve root irritation.

Pre treatment imaging is essential tool for confirmation and planning of treatment modality, always to be correlated with clinical findings. L4-L5 disc prolapse is commonest presentation in disc lesion. Patients undergoing surgery for lumbar disc herniation achieved greater improvement than nonoperatively treated patients in all primary and secondary outcomes. Outcome of results depends on duration of presentation, the adequacy of decompression, a sepsis, the nature of rehabilitation program following surgery, inherent stability of spine and patient's compliance.

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