

A Study of Conservative versus Operative Management in Lumbar Disc Disease

Dr. Janak Rathod¹, Dr. Pradipkumar Ishvarbhai Paraliya², Dr. Vidit Pathak³

Abstract: Background: Chronic back pain is one of the greatest problem related to decreased quality of life of the Patient. 80% of the population is affected by this symptom at some time of life. We have tried to analyze the efficacy and clinical outcome of lumbar disc prolapse managed either by conservative treatment or open disc surgery. Aims & Objective: To study the clinical presentations of patients with intervertebral disc prolapse and to evaluate outcomes of both conservative and surgical management in Intervertebral disc disease in lumbar spine. Materials and Methods: This non-randomized prospective study was undertaken in the department of orthopaedic, Smimer Hospital, Surat, Gujarat, India. This study include data of 50 patients in which 25 treated with surgical intervention and 25 patient were treated conservatively. All patients were on follow up with minimum duration of 6 month. Results: conservatively treated group most patients (24) had only occasional low backache. Similarly, 24 had occasional tingling or leg pain. In surgically treated group 25 patients had complete relief/slight or occasional from backache or leg pain. Conclusion: Outcome of results depends on duration of presentation, the adequacy of decompression, aseptis, the nature of rehabilitation program following surgery, inherent stability of spine and patient's compliance. The long-term outcomes of surgery and conservative management though sometimes considered similar, but in short term, surgery provides the prospect of quicker relief.

Keywords: PIVD, Lumbar vertebral disc, conservative management, Laminectomy surgery

1. 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 some time 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.

Nonetheless, the surgical approach to disc hernias of more than six months of evolution, associated with degenerative discopathies that do not respond to conservative treatment, continues to be a challenge

In this Study, we have tried to analyze the efficacy and clinical outcome of lumbar disc prolapsed managed either by conservative treatment or open disc surgery in tertiary care hospital, SMIMER, Surat and comparing it with the available study reports.

2. Methods and Materials

The study includes a total of 50 patients. 25 were operated for lumbar disc herniation by laminectomy and discectomy and 25 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).

In our study there was highest incidence of disc prolapse i.e. 25(50%) in patients of 31-40 years age. Maximum patients 13(43.33%) in conservatively treated group were in age group of 51-60 yr. In surgically treated group maximum patients 19(76 %) were of 31-40-year age

Majority of patients had a positive SLRT along with neurological deficit. Patients with motor deficit of grade 4 and 3 were considered to have slightly decreased muscle strength and those with less than grade 3 were considered to have markedly reduced muscle strength.

Distribution of Rolando Morris score pre-treatment

Grades	Pre Treatment Score	Conservatively Treated		Surgically Treated	
		No of patients	%	No of patients	%
I	0 – 8	3	12	2	8
II	9 – 16	19	76	15	60
III	17 – 24	3	12	8	32
	Total	25	100	25	100

Out of 25 patients in conservatively treated group majority of patients 19(76%) had a pretreatment score of 9-16 & in surgically treated group 15(60%) had pretreatment score of 9-16.

MRI scan was done for all the patients in conservatively treated group and it showed central/para-central disc

herniation in 15 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.

Distribution of type of prolapse

Type of Prolapse	Conservatively treated		Surgically Treated	
	No of patients	%	No of patients	%
Protrusion	20	80	17	68
Extrusion	3	12	5	20
Sequestration	2	8	3	12

Majority of patients both in conservatively 20(80%) & surgically treated 17(68%) groups were found to have disc prolapsed in stage of protrusion, confirmed by MRI.

Distribution of complication– Surgically Treated

Complication	No of patients	%
Superficial wound infection	0	0
Dural tear	1	4

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.

Distribution of score post-treatment

Grades	Post Treatment Score	Conservatively Treated		Surgically Treated	
		No of patients	%	No of patients	%
I	0 – 8	19	76	25	100
II	9 – 18	6	24	0	0
III	19 – 24	0	0	0	0

Final outcome Score, in both conservative (76%) & surgically (100%) treated patient groups was found considerable improvement with both modes of treatment. However, improvement was significant in surgically treated group compared to conservatively treated group.

Distribution of Treatment outcome on basis of score

Treatment Outcome	Conservatively Treated		Surgically Treated	
	No of patients	%	No of patients	%
Excellent to Good	19	76	25	100
Fair	6	24	0	0
Poor	0	0	0	0

Treatment outcome on basis of score was found to be Excellent to good in 19(76%) of conservatively treated patients & Good to Excellent in 25(100%) of surgically treated patients. While 6(24%) patients showed fair outcome in conservatively treated group

Outcome of Pain Relief

Types of Pain	Conservatively Treated		Surgically Treated	
	Improved	Not Improved	Improved	Not Improved
Low Back Pain	24(96%)	1(4%)	25(100%)	0
Radicular leg pain	24(96%)	1(4%)	25(100%)	0

Nearly all the patients had low backache and radicular pain except 1 in conservatively treated group and all patients had low back and radicular pain relief following laminectomy and discectomy.

Outcome of Neurological deficits

	Total	Conservatively Treated		Surgically Treated	
		Improved	Not improved	Improved	Not improved
Motor	11	9	2	13	12
Sensory	15	11	4	17	15

In our series patients having motor deficits were 11 in conservative group and 13 in surgical group. Patients having sensory involvement were 15 in conservative and 17 in surgical group. Majority of the patients had neurological recovery except 3 following discectomy & 6 patients in conservatively treated group did not have full neurological recovery.

Symptoms at the final follow-up examination

Grades	Conservatively Treated Group	
	Low Backache	Leg Pain OR/& Tingling Numbness
1) Slight & Occasional	24	24
2) More Pain	1	1
3) Unbearable	0	0

Interpretation: conservative treatment have better improvement of back and leg pain in mean follow up of 6 months.

Grade	Surgically Treated Group	
	Low Back Ache	Leg Pain Or/& Tingling
1) Slight & Occasional	25	25
2) More Pain	0	0
3) Unbearable	0	0

Even though majority had low back pain relief, most had residual back pain. However, in conservatively treated group most patients (24) had only occasional low backache. Similarly, 24 had occasional tingling or leg pain. In surgically treated group 25 patients had complete relief/slight or occasional from backache or leg pain

The result of SLRT was negative in 93% of patient population at the final follow-up examination. Sensory and motor disturbances were present in 73.33% and 60%, respectively, of the entire surgically treated patients' group, before surgery and only 3.33% of the patients had motor disturbance, at the final follow-up examination.

In our conservative group excellent to good results were seen in 12 patients of less than 40 years and 7 patients of age more than 40 years. While in surgical group good to excellent results were seen in 15 patients less than 40 years and another 10 patients more than 40 years.

In our study patients with duration of symptoms less than 6 months gave better outcome in both conservative and operative groups.

3. Discussion

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's¹ 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^{2,3} and microendoscopic⁴ 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.⁵

Although reported early results of surgical discectomy have shown success rates of over 90%,^{5,6} 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%⁷ 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.⁵

Before embarking on a surgical procedure, it is essential to remember patient selection is crucial to contributing to a successful outcome. 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.⁸

Other mode of treatment, "active" no operative treatment 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.⁹

Long-term results have been less positive, with success rates of 40% to 79% over an extended period of followup.^{4,6} the most likely factors leading to variable results are patient selection, varying follow-up intervals, and differences in analyzing outcomes⁵. 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^{10, 11} 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.

In this study we have included 50 cases of lumbar intervertebral disc prolapse admitted to our hospital, fulfilling the inclusion criteria. Patients were divided into two groups i.e. conservative and surgical treatment groups on basis of signs, symptoms, age, affordability and willingness of patients for a particular treatment method. We have utilized Roland Morris Disability Questionnaire score to analyze the short-term results as it is simple to assess the patient's outcome. It also helps in correlating the results to various factors that might influence the outcome.

A good –to- excellent outcome was obtained in our short-term study in 92% and a fair outcome of 8% which are comparable to the short-term outcome studies of Weber et al and Spengler et al. This could probably be attributed to proper selection of cases, appropriate correlation between clinical assessments and imaging studies and a valid indication for surgical intervention.

Our conservative study showed a good to excellent result of 76% & Fair outcome in 24% which is favorable 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.¹³

4. Conclusion

Patients undergoing surgery for lumbar disc herniation achieved greater improvement than no operatively 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. The long-term outcomes of surgery and conservative management though sometimes considered similar, but in short term, surgery provides the prospect of quicker relief, which may translate into reduced economic cost. But the study showed that proper patient selection always carries a priority than the technique followed to manage.

The morbidity arising from lumbar disc protrusion is best treated in properly selected patients after thorough evaluation, by well-executed conservative treatment or discectomy, which are both rewarding and gratifying.

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