



## FUNCTIONAL OUTCOME OF LAMINECTOMY AND DISCECTOMY IN LUMBAR INTERVERTEBRAL DISC PROLAPSE

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**ABSTRACT** The aim of this study was to assess the functional outcome of laminectomy and discectomy for lumbar inter vertebral disc prolapse. This prospective study was done on 33 patients with lumbar disc herniation diagnosed by MRI meeting the inclusion and exclusion criteria who came to orthopaedic department of Government Medical college, Thrissur between June 11, 2016 and June 10, 2017 were surgically treated by laminectomy and discectomy. Post operatively clinical follow-up was done until 6 months and functional outcome were measured using Oswestry disability index Score. The incidence of lumbar inter vertebral disc prolapse was most common in between age group of 41-50 years with 39.39% (n=13), and was high in males with 55% (n=18). Neurological deficit was seen with motor deficit of 40% (n=13) more than sensory deficit 27% (n=9). Mean ODI scores pre-operatively was 46.60 while there is significant improvement in post-operative score at 6th month with 28.48 and functional outcome by percentage change in ODI scores showed excellent results in 61% (n=20) cases, good in 24% (n=8), fair in 12% (n=4) and poor in 3% (n=1)

**KEYWORDS :** Disc prolapse; Lumbar disc herniation; Laminectomy and Discectomy; Functional outcome; Oswestry disability index.

### INTRODUCTION

Inter vertebral disc disease [1,2] and disc herniation[3,4] are most prominent in the third and fourth decades of life causing low back ache and leg pain. The Annulus fibrosus is the outer wall of the disc which become weakened causing the inner disc material the nucleus pulposus, to get pushed out. This is called disc herniation/prolapse. The usual presentation of lumbar disc herniation is of repetitive low back pain, which gets relieved by rest. This pain suddenly increases, by a flexion of spine, with the appearance of leg pain. Most radiating pain caused by nerve root compression due to herniated disc material is more than back pain. Surgical treatment is warranted when there is imminent cauda equina syndrome, neurological deficit or the pain is for longer duration without cure in conservative management.

Though micro discectomy is the most common surgical treatment for ruptured/herniated disc of lumbar spine still open discectomy is considered 'Gold Standard' surgical treatment of herniated discs.

### MATERIALS AND METHODS

This prospective descriptive study was done on 33 patients with lumbar disc herniation diagnosed by MRI meeting the inclusion and exclusion criteria who came to orthopaedic department of Government Medical college, Thrissur between June 11, 2016 and June 10, 2017 were surgically treated by laminectomy and discectomy.

Inclusion criteria was patients of both sexes with disc prolapse in one or more level, with neurological deficit or cauda equina syndrome and failed conservative treatments.

Exclusion criteria were patients who had previous spinal surgeries, local skin infection.

The following data were obtained for all study patients after informed written consent including age, sex, occupation, nature of pain, side of involvement, associated neurological deficit and/or co-morbidities.

After proper history taking, clinical examination, radio logical work up and MRI of lumbo-sacral spine to assess the degree of disc prolapse, as a part of pre-operative work up using Oswestry Low back pain Disability Index (ODI) Questionnaire[5,6] initial patient score is assessed.

On admission of patients a detailed history and Preliminary blood investigations including complete hemogram, liver function test, random/fasting blood sugar, renal function tests, serum electrolytes, blood grouping and typing along with screening for viral markers were done. Radio graph of lumbar spine in both frontal and lateral view, chest radio graphs along with electrocardiogram were taken. Blood arranged for intra/ post operative period after cross matching. The spine marker radio graph were taken on the pre-

operative day, Operative site prepared, adequate intravenous fluids were given and patient was kept nil per oral the previous night.

Patient were reviewed at 6<sup>th</sup>, 12<sup>th</sup>, 24<sup>th</sup> week and on each review, the Oswestry Low Back Pain Disability Index was calculated

### OBSERVATION AND RESULTS

33 Patients of lumbar disc herniation treated by laminectomy and discectomy were studied in the prescribed period and following observations were made. Out of 33 patients in the study, 55% (n=18) were males and 45% (n=15) were females. Age of the patients ranged from 33 to 70 years, with a mean age of 49.09 years. The disc herniation was most commonly seen in age group of 41-50 with 39.39% (n=13). Disc herniation was most commonly seen in L4-L5 vertebra with 73% (n=24), followed by L5-S1 with 15% (n=5). The least common was L2-L3. There were no cases at L1-L2 Level. Sciatica is seen in right side in 49% (n=16) patients, 36% (n=12) had left sided radicular pain and bilaterally in 15% (n=5). 22 Patients had neurological deficit of which 40% (n=13) cases had motor deficit while 27% (n=9) had sensory deficit. Straight leg raising test is positive in 91% (n=30) cases and was negative in 9% (n=3) cases. Out of 33 patients only 12% (n=4) had cauda equina syndrome. Out of 33 patients, one had post-operative urinary retention, one patient had superficial infection and one patient developed new-onset neurological deficit post-surgery. Out of 33 patients, 61% (n=20) had no pain, 24% (n=8) patients had mild pain, 12% (n=4) had moderate pain. Out of 33 patients, 61% (n=20) had normal work and level of activity, 24% (n=8) returned to modified work while 12% (n=4) were still unemployed and 1 patient had restricted activity.

The mean ODI score was calculated pre operatively and post operatively at 6 weeks, 3<sup>rd</sup> and 6<sup>th</sup> month respectively. The mean Pre-operative ODI Score was 46.60. At 1<sup>st</sup> month mean ODI score was 35.33 with 24.18 % significant change whereas at 6<sup>th</sup> month it was 28.48 with 38.88% significant change from pre-operative score.

**Table 1 - Mean Odi Score**

PERIOD	MEAN ODI SCORE
PRE-OPERATIVE	46.60
6 WEEKS	35.33
3 MONTHS	32.06
6 MONTHS	28.48

**Table 2 - ODI SCORE CHANGE IN PERCENTAGE (%)**

ODI SCORE CHANGE IN PERCENTAGE (%)	NO OF PATIENTS	PERCENTAGE (%)
0-10	1	3
11-20	4	12
21-30	8	24
>31	20	61
TOTAL	33	100

Based on percentage change between pre-operative and post-operative ODI score at 6<sup>th</sup> month. Out of 33 patients, 61% (n=20) cases had excellent outcome, 24% (n=8) cases had good outcome while 12% (n=4) cases had fair outcome and 3% (n=1) case had poor outcome.

**Table 3 - Functional Outcome**

FUNCTIONAL OUTCOME	NUMBER OF PATIENTS	PERCENTAGE (%)
EXCELLENT	20	61
GOOD	8	24
FAIR	4	12
POOR	1	3
TOTAL	33	100

This study was comparable with other studies in the following aspects. The average age incidence in this study conducted on 33 patients were 49.09 years ranging from 33 years to 70 years. The most common age group being 41-50 years (39.39%). The results were similar to that found in study by Sidram V et al.[7] which were 45.9 years.

Percentage of male in our study was 55% and that of female was 45% the male to female ratio was 1.22:1, there were similar results in the study conducted by Sidram V et al [7] with 1.56:1 whereas in the study conducted by Yorimitsu E et al. [8] it was 1.88:1.

Most common level of disc prolapse in our study was L4-L5 with 73% and L5-S1 with 15% together they constitute 88%. There were similar results found in the study by Sidram V et al. [7] With L4-L5 and L5-S1 together constituting about 94%. Similar results were obtained in Brandenberg and traynelis et al. [9] with 90%.

In our study 16 patients had right sided radicular pain constituting 49% whereas 5 patients had bilateral radicular pain constituting 15%. In the study conducted by Mittal A et al. [10] 47.5% had radicular pain on the left side with 15% bilaterally.

SLRT was positive in 30 patients comprising of 91%. Mittal A et al. [10] also showed similar results with 90% and Sidram v et al. [7] showed same results with 91%.

Neurological deficit was seen in 22(67%) patients. 13(40%) patients had motor deficit, while 9(27%) patients had sensory deficit. Similar results were seen in Sidram V et al. [7] with 47% motor deficit and 26% showing parasthesia.

Complications was seen in 3(9%) patients, which were similar to Sidram V et al.[7] With 10% operative and post operative complications. Mittal A et al.[10] also showed similar complication rate of 7.5%.

Mean ODI Scores were 46.60% pre-operatively, at 6 months it was 28.48% and there was a significant reduction only in first 6 weeks 35.33%, there after the reduction was minimal. Hakkinen A et al.[11] Also showed similar mean ODI scores at 6 month and 1 year.

Based on percentage change (%) [12] in pre-operative ODI score and post operative score at 6<sup>th</sup> month, 61% (n=20) cases showed excellent results where as 24.24% (n=8) cases showed good results. The results were similar to Sidram V et al. [7] where 73% had excellent results and 22.5% had good results.

## CONCLUSION

Incidence of low back ache due to disc herniation is most common in middle aged men. Appropriate patient selection, proper surgical skill and technique and clinical follow up is required for better functional outcome. Patient's with neurological deficit had better functional outcome than those without any neurological deficit. Patient's with more Pre-operative ODI score had better functional outcome. Rate of complications are less if proper surgical skill and techniques are followed. Fallacies of our study is that it was conducted in a small sample size and a short term follow up.

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