

# Efficacy of Lumbar Disc Fenestration and Microdiscectomy in Terms of Leg Pain Relief in Patient Having Sciatica due to Lumbar Disc Herniation

SOHAIL AMIR<sup>1</sup>, MAIMOONA QADIR<sup>2</sup>, SHAHER BANO<sup>3</sup>

## ABSTRACT

**Aim:** To assess the relief of leg pain after fenestration and microdiscectomy in patients having sciatica due to lumbar disc herniation

**Methods:** One hundred fifteen patients who had single level disc herniation meeting the inclusion criteria had undergone fenestration and discectomy between September 2015 to February 2017 in the Department of Neurosurgery Naseer Teaching Hospital, Peshawar. Leg pain was assessed both Pre-operative and Post-operative using Dennis Pain Scale. Findings were documented and analyzed with SPSS version 20.0

**Results:** 115 patients were studied, out of which 83(72.17%) were male and 32(27.8%) were female. The age distribution was from 18 to 60 years with mean age  $38.18 \pm 9.23$ . In our study 80(69.3%) male and 29(25.2%) female had complete relief of leg pain while in 3(2.6%) male and 3(2.6%) female pain was not relieved. In our study the majority of patients presented in Dennis Pain Scale 4 and complete relief of leg pain at 5<sup>th</sup> post-operative day was achieved in 98(85%)

**Conclusion:** Microdiscectomy is one of the safe and effective procedures for lumbar disc herniation. Patient leg pain improved with acceptable complication rate. This procedure is simple, does not need much expertise in instrumentation and technique and can be performed even in small centers.

**Keywords:** lumbar disc herniation, fenestration, microdiscectomy, leg pain

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## INTRODUCTION

Lumbar disc herniation (LDH) is a common complaint among adults with degenerated lumbar intervertebral disc<sup>1,2,3,4</sup>. Patients with lumbar disc disease frequently suffer from continuous back pain, leg pain and weakness. The degeneration of the disc results from many factors and most commonly occurs at L4-L5 and L5-S1 level<sup>5</sup>.

Of all the patients presenting with low back pain, sciatica due to intervertebral disc prolapse is responsible for 4-6%<sup>6</sup>. Patients will characteristically complain of paraesthesia and numbness in respective dermatome and weakness and depressed reflexes in respective myotome<sup>7</sup>. Straight leg raising test (SLR) is used for clinical diagnosis of this condition. SLR is very sensitive of disc herniation resulting in root compression, which ultimately needs surgery<sup>8</sup>. Gold standard investigation is MRI due to its visualization of soft tissue better than CT Scan<sup>9</sup>.

Attempts have been done to treat this condition both conservatively and surgically. Conservative measures include patient education, analgesic, muscle relaxant, physiotherapy and ultimately surgery if they fail<sup>10</sup>.

The standard surgical procedure for LDH is laminectomy and discectomy. The technique of lumbar discectomy has undergone significant modification and in 1934 Love described removal of herniated disc and introduced interlaminar fenestration or microdiscectomy for treatment of LDH. This technique is less time consuming, with lesser blood loss, minimum post-operative complications and it doesn't compromise stability of spine compared to laminectomy<sup>11,12</sup>. However the success rate of fenestration and microdiscectomy for disc prolapse are equal to standard laminectomy with lower complication rate<sup>13</sup>.

This study was conducted to determine the efficacy of microdiscectomy and fenestration in terms of leg pain relief in patients with sciatica due to LDH. The result of this study will be shared with other neurosurgeons in order to draw conclusion regarding effectiveness of this procedure.

## MATERIAL AND METHODS

This descriptive cross-sectional study was conducted at the Department of Neurosurgery, Naseer Teaching Hospital, Peshawar from September 2015 to February 2017, after approval from hospital ethical committee. Written informed consent was taken from all patients.

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<sup>1</sup>Assist. Prof. Neurosurgery, Naseer Teaching Hospital Peshawar

<sup>2</sup>Registrar Gynaecology unit, Khyber Teaching Hospital Peshawar.

<sup>3</sup>WMO, DHQ Hospital, Kasur

Correspondence to Dr. Sohail Amir Email: dr.sohailamir@gmail.com Cell: 03325723653, 03219181303

One hundred and fifteen patient were recruited in study. All patients of either gender and age presented through outpatient department or referred from other hospital clinically and radiological diagnosed lumbar disc prolapsed at single level with progressive neurological deficit or sciatica (unilateral or bilateral), failed to respond to conservative treatment for more than 03 months were included in the study. While patients with recurrent disc herniation, lumbar disc prolapse with discitis, evidence of lumbar canal stenosis, presence of any other associated spine pathology, previous history of any spine surgery, central disc prolapsed or far lateral disc prolapse compressing nerve root were excluded from our study.

Detailed history and clinical examination was done in all patients, Straight leg raising test (SLT-t) 60 degrees or less was considered as sciatica, absent or diminished knee or ankle jerk considered as significant neurological sign, MRI Lumbosacral spine done in all patients.

After general anesthesia the patients were put in prone position, after scrubbing and drapping midline incision given in skin, unilateral subperiosteal dissection done, fenestration made if needed lower 3<sup>rd</sup> part of upper lamina or upper 3<sup>rd</sup> of lower lamina was cut to enlarge fenestration for clear view. Ligamentum flavum removed with magnifying loupes root identified and retracted medially, disc removed and wound closed in layers.

The severity of leg pain was measured by using Dennis Pain Scale as under:

P1	No pain
P2	Some time minimal pain: no need for medication
P3	Moderate pain, can do daily routine activity, use medication off and on.
P4	Moderate to severe Pain. Restricted daily activity
P5	Constant, severe pain, bed or chair bound. Use pain medication

Efficacy of disc excision was measured by improvement in Dennis Pain Scale on 5<sup>th</sup> post-operative day. Data was analyze using SPSS version 20.0 and presented in form of tables

## RESULT

One hundred and fifteen patients were studied, out of which 83(72.17%) were male and 32(27.8%) were female. The age distribution was from 18 to 60 years with mean age 38.18±9.23. In our study 80(69.3%) males and 29(25.2%) females had complete relief of leg pain while in 3(2.6%) male and 3(2.6%) female pain was not relieved. In our study 90(78.2%) patients had SLR between 30-60 degrees, followed by 0-30 degrees 14(12.17%) and 60-90 degree

11(9.5%). In our study the majority of patients presented in Dennis Pain Scale 4 and complete relief of leg pain at 5<sup>th</sup> post operatively day was achieved in 98(85%) (Table 1).

In our study the most common complication was superficial wound infection 6(5.21%) followed by dural tear 5(4.34%), Discitis 4(3.47%), Cerebrospinal fluid leak 2(1.73) and one patient had foot drop (Table 2)

Table 1: Post-operative complications.

Complications	Frequency	%age
Superficial wound infection	6	5.2
Dural tear	5	4.34
Discitis	4	3.47
Foot droop	1	0.86

Table 2: Pre and post operative Dennis Pain Scale.

Preop Dennis Pain Scale			Postop Dennis pain scale		
Scale	Fre-quency	%age	Scale	Fre-quency	%age
P1			P1	98	85
P2			P2	11	9.5
P3	23	20	P3	6	5.2
P4	72	62.6	P4		
P5	20	17	P5		

## DISCUSSION

Low back pain due to Lumbar disc herniation (LDH) contribute to morbidity and economic loss. Clinically significant sciatica due to LDH occurs in 4-6% of population<sup>5</sup>. Conventional laminectomy and discectomy was the most frequent and popular approach for removal of disc for a long time, however with the advent of modern Neurosurgery, use of microscope, operating loupes fenestration was introduced for the first time by LOVE in 1934<sup>9</sup>.

Fenestration has certain advantages over the conventional laminectomy in respect of early post operative mobility, early return to work, low incidence of post operative back pain, less operative time and less complication rate<sup>14</sup>. However the success rate of both procedures ranges from 40-90%<sup>13</sup>.

In our study 90(78.2%) patients presented with SLR between 30-60 degrees, followed by 0-30 degrees 14(12.17%) and 60-90 degree 11(9.5%). Similar study was done by Zahid et al who studied 225 cases and concluded mostly 77.3% had SLR between 30-60 degree<sup>15</sup>. In our study leg pain relief in 95% of patients similar result obtained by Shoab et al. studied on 100 patients who concluded 97% patient had leg pain relief after microdiscectomy through fenestration in patient with LDH<sup>16</sup>.

In our study 98(85%) had no leg pain after surgery and only 6(5.2%) had pain that do not restrict

their normal routine activity and relieved with medication. These finding correlate well with study done by Riaz et al. who studied 109 patients and concluded 90(82.57%) had no pain while 5(4.56%) relived with medication<sup>17</sup>.

We had total of 19(16.66%) patient with operative complication of which superficial wound infection was most common (5.2%) followed by dural tear and discitis in 5% and 3.4% respectively. None of the patient had post-operative mortality all the complications were managed conservatively except one patient with CSF leak which was explored and repaired. Almost similar findings were observed by Khattak et al, and Zahid et al<sup>9,15</sup>.

Our study however has got certain limitation as well. It was confined to limited number of patients with a short follow up period. Secondly, only Naseer Teaching Hospital was taken as the study place. Inclusion of other hospitals from same locality could have given better idea about the effectiveness of this procedure in terms of leg pain relief.

## CONCLUSION

Minimally invasive microdiscectomy through fenestration provides early Post operative mobilization and early return to job and this procedure can be well performed by majority of neurosurgeon even in small peripheral centers.

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