

# SURGICAL OUTCOMES OF MICRODISCECTOMY IN LUMBAR INTERVERTEBRAL DISC PROLAPSE- A FOLLOW UP OBSERVATIONAL STUDY

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**Abstract: BACKGROUND AND PURPOSE:** Back pain is one most common orthopedic complaint which we see in our daily practise. Impairments of the back and spine are the most frequent cause of limitation of activities in people of all age groups and disabling for young subjects. Symptomatic Intervertebral Disc Prolapse occurs in 1-3 % of the subjects and variety of treatment options are proposed. Recently Microlumbar Discectomy has proven benefits in quality of life, reduction in pain scores and efficacy in International Research.

**MATERIAL AND METHODS:** This study is a Observational Follow up study, which included 28 subjects who were selected with MSU Criteria and Microdiscectomy surgery performed at our hospital.

Various variables from previous literature including Age distribution, Obese and overweight, Height, Occupation, Sex, Level of prolapse ,Smoking influence, Type of Prolapse.

The basic Aim of the study is to find How Efficacious is this surgery in Lumbar IVDP subjects and assessment is done at preoperative and postoperatively with VAS and JAO scores.

**RESULTS:** 37% patients were severely affected and 64.3% were moderately affected and post surgery, their score pattern improved significantly post surgery 96.4% patients have >90% improvement and 3.6% have only >50 improvement. (P value= < 0.001) 85.7% patients had improvement in neurology immediately and 6 months post surgery (P Value = <0.001)

**RESULTS AND CONCLUSION:**

The study showed Microdiscectomy is efficacious and it improved quality of life in patients with Lumbar IVDP There has been a lacuna in literature, regarding this procedure in our part of the world which highlights the significance of this study.

**Keywords:** IVDP, Lumbar, Microdiscectomy, Back Pain, JOA.

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## 1. INTRODUCTION AND LITERATURE REVIEW

Low Back Ache is one of the commonly encountered Orthopaedic Problems all around the world. Disc Prolapse, Degenerative Disc Disease is one of the common cause for the back ache.

About 20 % patients in 1000 population has disc Prolapse. This range increases to more than 50% in elderly above 50 years. 40% of population has some sort of Intervertebral Disc Disease in MRI which is alarming. Symptomatic Disc is the only concern and Clinical correlation with MRI is the most important step for the treating surgeon to decide.

It has been described disc protrusions and their relevance to sciatica and showed the effectiveness of operative treatment in 58 cases(1)

The rate of recurrent disc herniation ranges from 3 – 20%(3). 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 (2).

The sonographically guided periradicular injections are feasible and effective in treating lumbar unilateral radicular pain(5).

A Study by shengxiang(4), The study indicated that PELD assisted by O- arm navigation is safe, accurate, and efficient for the treatment of lumbar intervertebral disc herniation. It reshaped the learning curve of PELD, reduced the difficulty of surgery, and minimized radiation exposure to surgeons.

Patients who underwent surgery for a lumbar disc herniation achieved greater improvement than non-operatively treated patients in all primary and secondary outcomes except work status(9).

The main relevance of this study is, less research papers and outcomes are available in our part of the world and people still believe, surgical outcomes have bad results and have major complications. This research helps the treating surgeon and public to have a clarity regarding this condition and to clear their doubts.

## **2. MATERIALS AND METHODS**

### **STUDY SITE**

Cosmopolitan hospital a tertiary care centre, Department of Orthopaedic surgery.

### **STUDY POPULATION**

Patients undergoing microdiscectomy for lumbar intervertebral disc prolapse and followed for 6months from study date.

### **STUDY DESIGN**

An observational, cohort study follow up study.

### **SAMPLE SIZE**

Sample size is calculated after consulting with biostatistician using EPI INFO software by **WHO** and **CDC ATLANTA USA**

the estimated sample size will be 28

Samples are selected based on inclusion and exclusion criteria.

### **INCLUSION CRITERIA:**

Patients undergoing microdiscectomy for Lumbar intervertebral disc prolapse.

### **EXCLUSION CRITERIA:**

Patients with InterVertebral Disc Prolapse associated with  
Structural scoliosis Spondylolysthesis Congenital anomalies

Developmental dysplasia Infections of spine

Cauda equina syndrome Multiple level disc hernia Tumours of spinal cord.

**METHODOLOGY** Patients are selected as per above mentioned criteria and MSU criteria based on MRI.

Informed consent is taken from the patient and the patient is followed up for serial assessment at 2 weeks 6 month .

The patients are assessed based on Japanese Orthopaedic Association scoring system and Visual Analogue pain scale both before and after treatment.

Various variables are assessed including:

### **OUTCOME VARIABLES:**

Japanese orthopaedic association backache score both before and after treatment (at immediate post op, 2 weeks after surgery and 6months after surgery).

It includes: subjective symptoms: low back ache, leg pain, ability to walk

Clinical findings: SLRT, Sensory abnormality, Motor abnormality

**INDEPENDENT VARIABLES:** Age Sex Occupation Etiology BMI Smoking Socioeconomic status Level of prolapse  
Type of Prolapse Weight Height

### 3. RESULTS

In Our study we have taken 28 patients who had undergone Micro-discectomy Procedure in our hospital.

#### AGE

Majority of patients in my study come under middle age category ( 30-50)-(69.9%) others (30.1) , and hence middle aged people had higher incidence in getting this condition.

P value for outcome of pain is statistically significant ,that the improvement of pain is better in middle aged patients when compared to young patients.

#### OCCUPATION:

In my study 46.4% people fall in high and 39.3 % fall into medium type of occupation as per ISCO.

#### WEIGHT:

In my study 85% population comes into obese and overweight category.

#### BMI:

There was no significant difference in BMI and Level of Improvement as per p value (0.069)

**SYMPTOMS: TABLE1: SYMPTOMS COMPOSITION:**

SYMPTOMS	FREQUENCY	%
LBA + Leg pain	4	14.3
Leg pain + Ability to Walk problems	3	10.7
LBA + Ability to walk problems	3	10.7
LBA + ability to walk problems + Leg pain	18	64.3
Total	28	100

In this study most of the patients have all the three symptoms which include Low back ache, reduced walking distance, Leg Pain (64.3%) when compared to the separate groups.

#### SIGNS COMPOSITION:

**TABLE 2: SIGNS AND COMPOSITION:**

SIGNS	FREQUENCY	PERCENT
SLRT + Sensory Abnormality	19	67.9
SLRT + Sensory + Motor abnormality	9	32.1
Total	28	100

In my group 67.9 % population had SLRT and Sensory abnormality and 32.1% population had SLRT ,sensory and motor abnormality.

#### LEVEL OF PROLAPSE

**Table NO. 3.**

LEVEL OF PROLAPSE	FREQUENCY	PERCENT
L3-L4	2	7.1
L4-L5	20	71.4
L5-S1	6	21.4
Total	28	100

In my study 74% patients come under L4-L5 type of prolapse and 21.4 % comes under L5-S1

**TABLE 4: TREATMENT OUTCOMES AS PER VAS**

LEVEL OF PROLAPSE	TREATMENT OUTCOME OF PAIN AS PER VAS				X <sup>2</sup>	DF	P
	NOT IMPROVED		IMPROVED				
	N	%	N	%			
13-14	0	0.0	2	100.0	1.344	2	0.511
14-15	3	15.0	17	85.0			
15-s1	0	0.0	6	100.0			
Total	3	10.7	25	89.3			

There was no significant difference in level of prolapse and improvement.

Extrusion and Sequestration groups have significant improvement in pain when compared to other groups p value 0.006

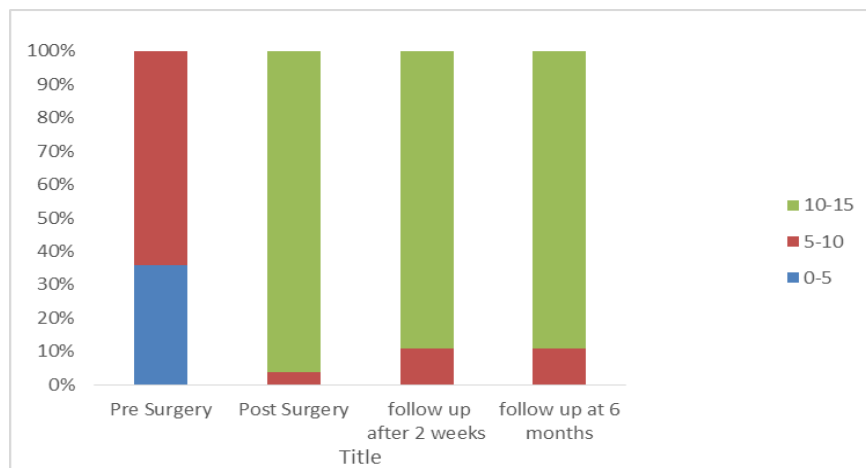
**PRESURGERY, POST SURGERY, AFTER 2 WEEKS AND AFTER 6 MONTHS.**

**Table NO.5**

JOA SCORE	PRE SURGERY		POST SURGERY		FOLLOW UP AFTER 2 WEEKS		FOLLOW UP AT 6 MONTHS	
	N	%	N	%	N	%	N	%
0-5	10	35.7	0	0	0	0	0	0
5-10	18	64.3	1	3.6	3	10.7	3	10.7
10-15	0	0	27	96.4	25	89.3	25	89.3
Total	28	100	28	100	28	100	28	100

**TABLE 6: PAIRED COMPARISION OF JOA**

PAIRED COMPARISION OF JOA SCORE	WILCOXON SIGNED RANK TEST	
	Z	P
Pre surgery VS Post surgery	4.824	<0.001
Pre surgery Vs follow up after 2 weeks	4.882	<0.001
Pre surgery VS JOA score at 6 months	4.882	<0.001



**FIGURE 4: JOA SCORE PAIRED COMPARISION**

In my study, 37% patients were severely affected and 64.3% were moderately affected and post surgery, their score pattern improved significantly post surgery 96.4% patients have >90% improvement and 3.6% have only >50 improvement.

**IMPROVEMENT OF PAIN AS ASSESSED BY VAS SCORE**

89.3% patients have improvement in pain in my study who underwent surgery.

#### 4. DISCUSSION

Our study comprises of 28 patients which were treated by Lumbar Micro- discectomy for IVDP as selected by MSU criteria. Since 1934, many studies have demonstrated the success of surgical treatment of sciatica. In Weber's landmark study comparing surgery with conservative care in a randomized clinical trial, which excluded patients with "intolerable" pain, the outcome of surgery was superior at 1- year follow-up, whereas after 4 years the results of surgery and conservative treatment no longer differed.

Majority of our patient population comprised of males which were in accordance with studies by Weber et al, Spengler et al, Davis et al and Pappas et al. In our study there was highest incidence of disc prolapse i.e 11(39.3%) in patients of 40-50 yr age & most common level of involvement in our study was L4 – L5 (71.4%) followed by L5 –S1. However in the surgical study there was a decrease in the outcome with Young age which was contrary with finding of Mathi Hueme et al, who found that age order more than forty years, was associated with fair to poor outcome.

Results of this study showed a favorable outcome with laminectomy & discectomy for lumbar disc prolapse and are comparable to other techniques of discectomy Radha Mehta\* and Himanshu Sharma study shows there was no statistical difference in smoker and non smokers in improvement following surgery which was on contrary to our study, which showed smokers had significant reduced improvement when compared to non smokers<sup>59</sup>.

In study by Madsbu MA<sup>60</sup> Obese and nonobese patients experienced similar improvement in Euro-Qol-5 scores (0.48 vs. 0.49 points, P = 0.441), it was comparable to our study where there was no significant difference in obese and non obese patients with improvement after surgery (p value =0.69)

In a study by Dewing CB , VAS scores improved significantly which was comparable to our study in which VAS scores for back pain and leg pain improved drastically, Disc herniations at L5 S1 had significantly greater improvement in their study but on contrary there was no statistical difference between L5 S1 and L4 L5 in our study, smokers had significantly low return to activity which can be comparable to our study in which smokers had poor outcome.

In a study by Hossein Mashhadinezha , group 1 showed good results and group 2 showed poor results, which was compared with our study.

P value of our study shows for age 0.10 which is significant when compared to the above mentioned study, smoking had influence in improvement in pain which shows smokers have poorer results compared to non -smokers, the p value for our study 0.69 which is comparable to the above mentioned study, influence on sex difference were not significant 0.91 which was comparable to the above mentioned study.

The incidence of complications in our study such as dural tears were low. Other complications reported did not occur in our study i.e., discitis, increased neurological deficits, nerve root injury, pulmonary embolism, retroperitoneal injury or vascular injury etc.

A good –to- excellent outcome was obtained in our short term study in 89.3% and a fair outcome of 10.7% 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.

Postoperative headache as well as several rare cases of postoperative seizure following prodromal neck pain have been described . Thought to be secondary to increased epidural pressure from the endoscopic irrigation system, all such reported complications resolved with conservative management. The suggestion of increased risk for durotomy when endoscopic central decompression has been made, possibly due to new visuospatial or tactile demands when using the endoscope . Contrastingly, a more recent article noted a reduced rate of dural tears in endoscopic versus MIS and open techniques . Radicular pain and paresthesia corresponding to the exiting nerve root at the operative level has also been described<sup>76</sup>. In our study we only had dural tear as a complication.

#### 5. CONCLUSION

Micro lumbar Discectomy in selected patients offers Excellent Results in Selected Patients. Patient Selection and Operating skills plays a important role. Surgical Management should be considered if patients don't respond to conservative measures. From this study it is clearly established that Micro Lumbar Discectomy is Efficacious with Minimal Complications.

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