

# Microscopic Discectomy Outcomes in Lumbar Disc Herniation Patients

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## ABSTRACT

**Background:** Radiculopathy due to herniated lumbar disc is one of the most common determinant of sciatica. Most patients with sciatica respond well to non-surgical treatment. Surgery is performed when there is an established neurological deficit or when conservative management is not successful in achieving positive results in pain.

**Objective:** To evaluate the frequency of good outcomes regarding pain relief after lumbar microscopic discectomy in adult patients presenting with radiculopathy.

**Material and Methods:** Current study includes 80 patients, both male and female between 20-70 years and admitted for herniated lumbar disc surgery. Microscopic discectomy was performed in all these patients. Outcome variable was frequency of good outcome in terms of post-operative pain  $\leq 4/10$ . Informed consent in written was obtained from the individual patient.

**Results:** In 73 (91.3%) cases good outcome was observed. No substantial difference was noticed in the frequency of good outcome according to the duration of herniated disc ( $p = 0.960$ ), pre-operative pain score ( $p = 0.499$ ), age ( $p = 0.851$ ) and gender ( $p = 0.703$ ). Conclusion: Good outcome was observed in 91.3% patients presenting with herniated lumbar disc undergoing microscopic discectomy regardless of patient's age, gender, pre-operative pain and duration of disc herniation.

**Keywords:** Herniated Lumbar Disc, Microscopic Discectomy, Postoperative Pain.

## INTRODUCTION

Sciatica is the pain in legs, along the sciatic nerve root that distributes to the lumbosacral region usually L4 – S2. It may or may not present with the neurological symptoms. According to studies, 4.1 million American present with these kind of symptoms with annual prevalence of 2% in males and 1.5% in females. Lumbar radiculopathy is among its most common causes.<sup>1-5</sup>

Most of the patient with sciatica undergo the non-surgical treatment and they respond very well. Surgical intervention that includes open (conventional), microscopic and endoscopic discectomy is done if the patient presents with the neurological deficit, e.g. foot drop or when conservative management is not successful in

achieving the desired positive results in the form of pain relief.

Patients after open discectomy have prolonged hospital stay, more pain at the wound site and greater chances of wound infection than microscopic and endoscopic discectomy. Microscopic discectomy is an advanced procedure and needs a higher level of expertise. Few researchers have tried to compare the results of microdiscectomy in cases of lumbar disc herniations with the specific type or level of disc herniation.<sup>2,6</sup>

According to the studies, positive outcome in patients of microscopic discectomy has been observed to be 90-95% with the recurrence rate of 5-10% in some patients.<sup>3,7</sup> This study has been designed to evaluate the outcome of microscopic discectomy

according to the pain relief. This research will provide statistics from our society and the results can be compared with the international data. In the current era of minimally invasive surgery, we propose microscopic discectomy to be established as a routine procedure, avoiding large incisions, wound complications and better recovery as compared to standard open discectomy.

## MATERIAL AND METHODS

### Study Design

It was a descriptive study conducted at the Neurosurgery Department Unit-II, LGH Lahore for one year and 80 patients were included by non-probability consecutive sampling.

### Inclusion Criteria

Patients of age 20-70 years irrespective of gender presenting with herniation, who failed trial to medical treatment i.e. bed rest, NSAIDs and physical therapy, for a period of 4 weeks with pain score > 4/10 were included in the study.

### Exclusion Criteria

Patients with redo spine surgery or recurrent disc herniation (on medical record), patients with congenital deformity i.e. scoliosis or kyphosis and Scheuermann's disease (on clinical examination), patients having established Cauda Equina Syndrome i.e. having foot drop, saddle anesthesia and sphincters impairment were excluded from the study.

### Data Collection Procedure

Informed consent was obtained from the patients. Demographic variables (name, age, gender, and duration of disc herniation) were also noted. Then patients underwent microscopic dissection. A team of surgeons performed all the procedures under general anesthesia. All the patients were moved to the neurosurgery ward after the surgery and were observed there. They were discharged later on and were followed up in the outdoor patient departments after six weeks. After 6 weeks, patients were evaluated for disc condition on MRI Lumbosacral Spine and patients were asked about pain and the outcome was noted. All the relevant data was collected from the patients the help of a standard questionnaire.

### Data Analysis

All the relevant data was submitted as well as analyzed in SPSS version 21. Mean and standard deviation were calculated for the numerical variables, i.e. age, duration of disc herniation and pre-operative pain score. Frequency and percentages were calculated for categorical variables, i.e. gender and good outcome. Data was stratified for age, gender, duration of disc herniation and pre-operative pain score. Chi-square test was applied and a p value of  $\leq 0.05$  was taken as significant.

## RESULTS

### Gender Distribution

This study included 51 (63.8%) male and 29 (36.2%) female patients with the M: F ratio of 1.8:1 (Table 1).

**Table 1:** Sex Distribution.

| Sex    | N  | Percentage |
|--------|----|------------|
| Male   | 51 | 63.8%      |
| Female | 29 | 36.2%      |
| Total  | 80 | 100%       |

### Age Incidence

Mean age of  $44.85 \pm 12.26$  years ranging from 20 to 70 years (Table 2). The time span of the disc herniation ranged from 1 to 9 months with the mean of  $5.01 \pm 2.61$  months. The pre-operative pain score ranged from 5 to 10 with a mean of  $7.20 \pm 1.56$  (Table 2).

**Table 2:** Age Incidence.

|         |       |
|---------|-------|
| N       | 51    |
| Mean    | 44.85 |
| SD      | 12.26 |
| Minimum | 20    |
| Maximum | 70    |

### Outcome

In 73 (91.3%) cases good outcome was observed and no substantial difference was noticed in the frequency of good outcome according to the duration of herniated disc ( $p = 0.960$ ), pre-operative pain score ( $p = 0.499$ ), age ( $p = 0.851$ ) and gender ( $p = 0.703$ ) (Table 3).

**Table 3:** Parameters of study and their outcome.

| Parameters             |                      | Mean          | Good Outcome |           |             |
|------------------------|----------------------|---------------|--------------|-----------|-------------|
|                        |                      |               | Yes          | No        | Total       |
| Age Groups             | 20-45 years (n = 43) | 44.85 ± 12.26 | 39 (90.7%)   | 4 (9.3%)  | 43 (100.0%) |
|                        | 46-70 years (n = 37) |               | 34 (91.9%)   | 3 (8.1%)  | 37 (100.0%) |
| Gender                 | Male (n = 51)        | -             | 47 (92.2%)   | 4 (7.8%)  | 51 (100.0%) |
|                        | Female (n = 29)      |               | 26 (89.7%)   | 3 (10.3%) | 29 (100.0%) |
| Duration of Herniation | 1-4 months (n = 35)  | 5.01 ± 2.61   | 32 (91.4%)   | 3 (8.6%)  | 35 (100.0%) |
|                        | 5-9 months (n = 45)  |               | 41 (91.1%)   | 4 (8.9%)  | 45 (100.0%) |
| Pre-op Pain Score      | 5-7 (n = 44)         | 7.20 ± 1.56   | 41 (93.2%)   | 3 (6.8%)  | 44 (100.0%) |
|                        | 8-10 (n = 36)        |               | 32 (88.9%)   | 4 (11.1%) | 36 (100.0%) |

## DISCUSSION

This study included 51 (63.8%) male and 29 (36.2%) female patients with the M: F ratio of 1.8:1 and the mean age of 44.85 ± 12.26 years. A similar mean age of 42.30 ± 13.60 years was observed by Khan et al., in such patients undergoing micro discectomy at Lahore General Hospital, Lahore. They, however reported an equal gender distribution (M: F, 1:1).<sup>8</sup> Khan et al. reported a similar male predominance (1.5:1) among such patients with a mean age of 38.69 ± 12.25 years at Lady Reading Hospital, Peshawar.<sup>9</sup> Shrestha et al. and Bhatia et al. stated the mean age of 42.54 ± 8.60 years and 43 ± 10 years with M: F ratio of 2.1:1 and 1.7:1 respectively.<sup>10,11</sup> Abouelela et al. reported much younger mean age of 29 ± 7.5 years among such patients in Egypt with a M: F ratio of 2.1:1 similar to this study.<sup>12</sup> Omidi-Kashani et al. reported similar male predominance (1.5:1) among Iranian patients with herniated lumbar disc with a mean age of 40.6 ± 12.2 years.<sup>13</sup>

In 73 (91.3%) cases good outcome was observed. No substantial difference was noticed in the frequency of good outcome according to the duration of herniated disc (p = 0.960), pre-operative pain score (p = 0.499), age (p = 0.851) and gender (p = 0.703). These results favor the existing studies. Khan et al. reported good outcome in 91.5% patients undergoing micro discectomy at Lady Reading Hospital, Peshawar, Pakistan.<sup>9</sup> Tait et al. reported this frequency to be 91.5% in UK.<sup>14</sup> Aichmair et al. reported the frequency of good outcome to be 92.5% in USA while El-Kader et al. reported it to be 92.0% in Egypt.<sup>15,16</sup>

In the present study, good outcome was observed

in 91.3% patients presenting with herniated lumbar disc undergoing microscopic discectomy regardless of the patient's age, gender, pre-operative pain and duration of disc herniation. The results of this research, thus advocate routine usage of this surgical approach which also gives better cosmesis and early rehabilitation due to minimally invasive nature.<sup>8,9,17</sup>

There are some strong limitations to the present study. First, it was a descriptive case series and we didn't compare the results with those of conventional discectomy. Also, we didn't consider the complications of the procedure which are equally important. Furthermore, we didn't stratify the outcome with respect to the level of herniated disc, which is also important and existing studies have shown to be an important predictor of outcome.<sup>18</sup> Therefore, we strongly recommend a randomized controlled trial comparing microscopic and conventional discectomies including the outcome as well as complications of the procedure. The results should be further stratified for the level of herniated disc to determine any effect on choice of procedure.

## CONCLUSION

There was a good outcome of microscopic discectomy in herniated lumbar disc patients. It can be used as a routine surgical procedure. This kind of research should be done in future for further studies.

## ROLE OF AUTHORS

Dr. Hassaan Zahid: Paper Writing.

Dr. Imran Ali, Nabeel Choudhary: Results Writing  
Dr. Junaid Rashid: Literature review.  
Dr. Khalid Mahmood: Paper Editing and Study Design.

#### Additional Information

##### Disclosures and Conflict of Interests:

Authors report no conflict of interest.

**Human Subjects:** Consent was obtained by all patients/participants in this study.

In compliance with the ICMJE uniform disclosure form, all authors declare the following:

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