

## Functional Outcome of Discectomy in Single Level Lumbar Disc Disease

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### ABSTRACT

**Objective:** To know functional outcome of discectomy in single level lumbar disc disease.

**Materials and Methods:** This prospective study was conducted in the Department of Neurosurgery unit B, Lady Reading Hospital Peshawar from July 2014 to July 2016. Patients with severe leg pain, progressive neurological deficit, positive nerve root tension signs and disc herniation confirmed on radiology were included and conventional open discectomy was performed. Follow up was done for 6 months after surgery.

**Results:** Ninety patients who were operated for single level herniated disc were included. Most commonly, the involved level was L4–5 followed by L5–S1. Improvement in leg pain was observed in 91.02 % of patients.

**Conclusion:** Good preoperative workup is necessary for excellent postoperative results in herniated lumbar disc surgery. Outcome for leg pain is good as compared to only back pain. The poor outcome in the form of failed back surgery is due to improper preoperative workup and patient selection.

**Keywords:** Lumbar disc herniation, open discectomy, Failed back surgery.

### INTRODUCTION

Sciatica and low back pain are the result of weak annulus fibrosus tear with resultant nucleus pulposus herniation, most likely occurs when the force applied to the disc is greater than its natural bearing capacity. Herniation most commonly occurs in posterolateral direction. The degree of pain is directly proportional to the compromise of roots mobility by disc fragment.<sup>1,2</sup> Degenerative process is a natural aging phenomenon which also starts with the disc and degenerative disc is more prone to herniate and cause nerve root compression. Radiculopathy is aggravated by local inflammation, which also accompanies herniated disc. L4–5 followed by L5–S1 is most commonly involved levels by herniated disc.<sup>1-3</sup> Certain risk factors have been identified. Increase weight, heavy manual work, occupational like long driving, standing for a long time, and heavy weight handling have the greatest effect on disc degeneration. Smoking also seems to play a role in the degenerative process. Disc

degeneration is accelerated in the presence of genetic risk factors. Intractable pain or neurological deficits dictate the need for surgery. Patients having a proper diagnosis and imaging workup have good relief of pain.<sup>2-4</sup> Significant numbers of patient complain of persistent paresthesias and back pain post operatively and are labeled as a failed back surgery syndrome. Incorrect initial diagnosis, residual disc, post-operative adhesions, excessive root manipulation or instability all seems to play a role in failed back surgery. Social and psychological factors also influence final functional outcome of disc surgery.<sup>4-6</sup>

### MATERIAL AND METHODS

This prospective study was conducted in the Department of Neurosurgery unit B, Lady Reading Hospital Peshawar from 1<sup>st</sup> July 2014 to 30<sup>th</sup> June 2016 (2 years). Patients with backache and sciatica who failed conservative treatment were selected for

study. Informed consent was taken from all patients and permission for study from hospital ethical committee. Preoperative workup in the form of detailed history and complete clinical examination was performed in all patients. An MRI was done in all cases. Patients suffering from multilevel disc disease, recurrent cases and those patients having malignancy were excluded. After confirmation of a pathological level with the help of fluoroscopy midline incision was given and laminectomy, hemi laminectomy or fenestration was performed and herniated disc removed. Excessive manipulation of nerve root avoided, but when necessary root was retracted medially. Antibiotics were used for three days in all patient post operatively. Patients were mobilized on the first postoperative day and discharged from hospital on 2nd day. The data were recorded on a predesigned Proforma, and analyzed using SPSS-20 and date presented in tables.

## RESULTS

The total number of patients were 90 (male: 66.6%, female: 33.33%). Mean age was 38.46 years, having a range of 18-60 years. A common mode of presentation was the leg pain in 82 (91%) patients, numbness in 79 (87.69%) patients and back pain in 74 (82.14%) patients. (Table 1).

L4–5 level was commonly involved (58, 64.38%), followed in frequency by L5–S1 level. Leg pain improved postoperatively in the majority of patients. Persistent back pain and paresthesias in leg is also present in significant number of patients during the postoperative period (Table 2).

CSF leakage complicated 4 cases which were treated with conservative measures, and 2 patients suffered from discitis. Dural tear occurred in 6 cases,

**Table 1:** *Presenting Complaints.*

Complaints	No	Percentage
back pain	74	82.14
Sciatica	82	91.03
Motor deficit	16	17.77
Numbness	79	87.9
Cauda equina syndrome	8	8.88

in 5 cases it was repaired primarily and fat graft was placed in one case where tear was in a nerve root sleeve.

Two patients who were diagnosed on repeat MRI was having residual disc (Table 3). Out of the 90 patients 58 (64.3%) were being treated by quacks or peers and local therapies like burns, venipuncture or Hujama were given to them (Figure 1).



**Fig. 1:** *Onaeb Treatment.*

**Table 2:** *Symptoms improvement.*

Symptoms	Pre-operative No.	Pre-operative Percentage (%)	Post-operative No.	Post-operative Percentage (%)
Leg pain	82	91.02	8	8.88
Back pain	74	82.14	16	17.76
Numbness	79	87.69	52	57.72
Weakness	19	21.09	6	6.66
Physical disability	70	77.7	7	7.77

**Table 3:** Postoperative complications.

Numbness	No.	Percentage (%)
		67
CSF leak	4	4.44
Dural tear	6	6.66
Discitis	2	2.22
Residual disc	2	2.22
Sphincter disturbances	4	4.44

## DISCUSSION

Most of the patients with low back pain and leg pain (sciatica) are managed with conservative approach.<sup>2-4</sup> Various myths are still present in our rural area to burn skin on back, legs or feet and create wounds, and sometimes they cut veins in legs to discharge venous blood in order to relieve pain. Acupuncture and Hujama is also practiced widely to cure sciatica<sup>3,7,9,13</sup> (Figure 1). Surgery relieves pain in the majority of patients.<sup>4-6</sup> Proper pre-operative history, detailed examinations, excluding differential diagnosis by the radiologic workup is important for better functional outcome.<sup>3-8</sup> Surgery is the best treatment modality in those who met surgical criteria. Activities of daily living are usually hampered by pain and early surgery gives better result. Waiting long in a symptomatic patient may worsen the neurological deficit. The correlation of history, examination and radiology is important for good results. Patients with large extruded disc have excellent response in term of symptoms relief.<sup>3,4,6,11</sup>

Male gender was more common in our study like other studies.<sup>9-12</sup> In our male dominated society males are more exposing to heavy work. Lack of education, poor health facilities, poverty, unavailability of neurosurgeons outside the main cities and lack of MRI in district hospitals, the majority of these patients are misguided and mishandled.<sup>4,12</sup> The rates of poor functional outcome after discectomy range from 5–20% as failed back syndrome. Surgery is the main modality for treatment of herniated lumbar disc throughout the world. In our study, we found same results.<sup>10,11,13</sup> It was noted that late presentation for surgery raised number of patients with residual post-operative leg numbness. Postoperative epidural fibrosis, degenerative process, mechanical instability and muscle scar have significant role in low back pain

in patients undergoing disc surgery. Comprehensive preoperative workup both clinical and radiological gives good outcome. Counseling also has a significant role in managing these patients.<sup>10,11</sup> Studies show the same problem of low back pain after discectomy. Strenuous physical activity, social and psychological disturbance all has impact on good functional outcome. Psychological disturbances were found more in female patients. Mechanical pain after discectomy usually is worse when the spine is loaded and can also present in a particular posture or activity<sup>8, 9, 10, 11, 12.</sup>

Persistent postoperative low back pain is more common in old age that could be due to segmental instability. Retraction on nerve root is best avoided while removing the disc to reduce postoperative numbness and paresthesias.<sup>9-12</sup> Established neurological deficits (motor, sensory or sphincters) rarely improve after surgery and most of time deficit is permanent. Postoperative patient has a good relief of leg pain and motor deficit. While sensory deficit like numbness and paresthesias have a poor outcome in term of symptomatic relief. Back pain also responds poorly to surgery and a significant number of patients complain of low back pain post operatively. In our series, recurrence of disc was found in 4.4% of cases which is compatible with other studies.<sup>11-13</sup>

## Additional Information

**Disclosures:** Authors report no conflict of interest.

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

**Conflicts of Interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following:

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## CONCLUSION

Better functional outcome can be achieved in most cases by proper selection of patient. Conservative approach is a logical approach in majority of patient before surgical intervention. Increase in rate of lumbar spine surgery has increased patients with failed back syndrome. Patient insight to understanding of disease is important for better functional outcome.

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