

SURGICAL OUTCOME AFTER MICRODISCECTOMY FOR LUMBER DISC HERNIATION

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ABSTRACT

Objectives: To analyze surgical outcome after micro discectomy for lumbar disc herniation.

Material and Methods: This descriptive study was conducted at the Department of Neurosurgery, Post-Graduate Medical Institute, Lady Reading Hospital, Peshawar from January 2011 to December, 2011. Patients having unilateral sciatica with lumbar disc herniation and undergone micro discectomy, irrespective of gender and age were included in the study. Those having sciatica from other causes as spinal stenosis, spinal tumors and sciatic nerve lesions or unfit for surgery were excluded from the study. In prone position small midline incision were given and fenestration discectomy was done. The patients were observed for post-operative pain improvement and complications for a period of 3 months after surgery. They remained admitted for 2 days after surgery. After discharge they were followed at 1 and 3 months.

Results: Out of 225 cases, 135 were males and 90 females with male to female ratio of 1.5: 1. Their age ranged from 16 to 64 years. Mean age of the patients was 38.69 ± 12.25 years. Most of the patients (77.3%) had straight leg raising (SLR) between 30-60 degrees. The most common level involved was L5-S1 (47.11%), followed by L4-L5 (38.67%). 91.5% of patients had improvement in leg pain and 69.3% in backache. Total morbidity was observed in 29 (12.88%) of cases.

Conclusions: Micro discectomy is one of the safe and effective procedures which can be adopted for symptomatic unilateral lumbar disc herniation. Improvement in leg pain is more than backache after this type of surgery. Patient's symptoms are improved with acceptable complication rate.

Key Words: Sciatica, Lumbar disc, herniation, Micro discectomy.

INTRODUCTION

Lumbar disc herniation is a common disorder in neurosurgical practice. The most common cause for lumbar disc herniation is degenerative changes in the spine. Male patients in their middle who carry loads on spine and smokers are more prone to disc herniation^{1,2}. Magnetic resonance imaging is the investigation of choice to confirm lumbar disc herniation and has replaced CT scan and myelography³. Most of the patients with disc herniation are managed conservatively. Surgical intervention is needed in those not responding to medical treatment, having severe intractable pain, cauda equina syndrome or having progressive neurodeficit^{4,5}.

Dandy was the person who performed discectomy for the 1st time in 1929⁶. Micro discectomy, minimally invasive procedure, was 1st introduced in 1977⁷ and is considered to be the surgical treatment

of choice for lumbar disc herniation with radiculopathy. Patients with radicular symptoms show good response than backache and spine is comparatively less destabilized⁸. This procedure is associated with certain complications which are injury to nerve root, dural tear with Cerebro-Spinal fluid leak, hemorrhage, infection including discitis and rare but important ventral injuries to gut or major vessels. However, the results of microsurgical techniques for disc prolapse are equal to standard laminectomy with lower complication rate^{9,10}.

As there is limited local research work, this study of surgical outcome after micro discectomy for lumbar disc will help us to know about response to treatment and frequency of operative complications related to this surgery and thus will provide a base for future studies to decrease these complications.

MATERIAL AND METHODS

This descriptive study was conducted at the Department of Neurosurgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar from January 2011 to December 2011. The sampling technique was consecutive non-probability sampling. Patients having unilateral sciatica with lumbar disc herniation and undergone micro discectomy, irrespective of gender and age were included in the

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study. Those having sciatica from other causes as spinal stenosis, spinal tumors and sciatic nerve lesions or unfit for surgery were excluded from the study. After getting approval from the hospital ethical committee and taking informed consent, the medical record of patients who underwent unilateral lumbar micro discectomy was evaluated. The patients were observed for pain improvement and complications for a period of 3 months after surgery. Severity of Pain was assessed on the basis of visual analog scale (VAS) from 1-10. Improvement in the visual analog scale of 2 or more was considered to have good results. The patients remained admitted for 2 days after surgery. After discharge they were followed up after 1 and 3 months. All information was entered into a proforma especially designed for this purpose. The data was analyzed by descriptive statistics by applying mean $\pm$ standard deviation and frequencies in the statistical program SPSS version 11.

After general anesthesia the patients were put in prone position. The chest and pelvis was supported with designed pillows. The operative site cleaned and draped and midline incision given in skin, subcutaneous tissue and lumbar fascia. Unilateral muscle dissection of the affected side was done. Fenestration made and ligament flavum removed under microscope /magnifying loop and root retracted medially. In case of contained disc incision to the annulus given and the offending disc is removed with the help of pituitary ranjur.

RESULTS

Out of 225 cases, 135 were males and 90 females with male to female ratio of 1.5: 1. The age of patients ranged from 16 to 64 years. The mean age was 38.69 ± 12.25 years. Majority of patients 69 (30.66%) were in the age group 41-50 years, followed by 64 (28.44%) with age 21-30 years and 23 (24.44%) patients in age group of 31-40 years. We had 18 (8%) patients with age range of 11-20 years, 13 (5.78%) with age 51-60 and 6 (2.67%) patients with age more than 60 years (61-64 years).

Straight leg raising test (SLR) ranged from 0-30 degrees in 32 (14.2%) patients, 30-60 degrees in 174 (77.3%) and 60-90 degrees in 19 (8.5%) of patients. SLR was impaired in patients mostly who had disc herniation at lower three levels (L3-4, L4-5 and L5-S1) and was normal or near normal in those with levels above this (L1-2 and L2-3).

The most common presentation of level of disc prolapse was at L5-S1, details given in Table 1.

Two hundred and six (91.5%) of the patients had significant improvement in leg pain and 156 (69.3%) in backache. Improvement in SLR was observed in 199 (88.4%) patients. Seventeen (7.55%) patients had no or minimal improvement in leg pain. Two patients developed partial foot drop postoperatively. Dural tear was most common in patients who had ruptured disc and in old age.

Table 1: Level of disc prolapse

Level of disc prolapse	No. of patients and %age
L1-L2	02 (00.89%)
L2-L3	05 (02.22%)
L3-L4	19 (08.44%)
L4-L5	87 (38.67%)
L5-S1	106 (47.11%)
More than one adjacent levels	06 (02.67%)
Total cases	225 (100%)

Table 2: Operative complications

Complications	No. of patients and %age
Dural tear	11 (04.88%) L3-4=1 L4-5=4 L5-S1=6
CSF leak	02 (00.89%) L4-5=1 L5-S1=1
Foot drop (partial)	02 (00.89%) Both at L4-5
Superficial wound infection	06 (02.67%) L1-2=1 L4-5=3 L5-S1=2
Discitis	08 (03.55%) L1-2=1 L4-5= 4 L5-S1=3
Total complications	29 (12.88%)

DISCUSSION

Micro discectomy is an accepted technique for the treatment of symptomatic disc disease at the lumbar spine. We studied 225 patients who undergone this procedure for lumbar disc prolapse. There were 135 (60%) male and 90 (40%) female in our study, with male / female ratio of 1.5:1 and average age of the patients 38.69 ± 12.25 years. In a local study male to female ratio was 1.42:1 with average age of 36 years³. In a study, Debusscher and colleagues¹¹ has also reported that lumbar disc herniation is more common in male with the average age of 34 years. This could be because of the reason that men are more exposed to physical stress and smoking.

In Tureyenk et al¹² study 59.65% of patients had lumbar disc herniation at L5-S1 and 40.35% at L4-5 level. In another study 50% of patients had disc prolapse at L5-S1 and 46.3% at L4-5 level¹³. However

in some studies disc prolapse was more common (49.2%) at L4-5 level than L5-S1 (46.4%) level⁹. These two levels are more prone to degenerative changes because the dynamics of the spine changes from mobile (lumber) to static spine (sacral).

Straight leg raising test (SLR) is taken important clinical sign helping in diagnosing lumber disc herniation. We had more patients with SLR between 30-60 degrees (77.3%), followed by 0-30 degrees (14.2%) and 60-90 degrees (8.5%). SLR was impaired mostly in patients with disc herniation at L4-5 and L5-S followed by those with level L3-4. Khatak A³ and his colleague also reported in their study that impaired SLR between 30-60 degrees were also more common (74%) in their patients.

In our study 91.5% patients had improvement in leg pain with surgery while backache improved in 69% of the patients. Thomas et al¹⁴ operated on 60 patients and response to surgery was seen in 91% of patients. In one of their study Asch and colleagues¹⁵ also concluded that relief of leg pain is more than relief of backache in patients who undergone surgery for lumber disc prolapse.

We had total of 29 (12.88%) patients with operative complications of which dural tear and discitis were more common and seen in 4.8% and 3.55% cases respectively. Foot drop and CSF leak was observed each in 2 (0.89%) patients and superficial wound infection in 2.67% of the total. None of the patient had operative mortality. All the complications were managed conservatively except one patient with CSF leak which was explored and repaired and another patient who had discitis and transepedicular fixation was done in her.

Almost the same complication rate was published in local study conducted by Khatak A and colleagues³, although they had done fenestration as well as laminectomy, where required, in their patients. They operated on 250 patients and complication rate was 12.2%. Dural tear during surgery was seen in 3.6% cases. In this study 2.4% patients had superficial wound infection but in another study this was in 1% patients¹⁶. This denotes that wound infection is comparatively more common in under developed countries.

In a study by Siddiq et al¹⁷ postoperative discitis was observed in 3.12% patients. This is comparable to our study (3.55%). As all discitis are not infective some are immunologic, this could be reason for more cases of discitis in our study than superficial wound infection.

CONCLUSIONS

Micro discectomy is one of the safe and effective procedures which can be adopted for symptomatic unilateral lumber disc herniation. Improvement in leg pain is more than backache after this type of surgery. Patient's symptoms are improved with acceptable complication rate.

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