

## FUNCTIONAL OUTCOME IN PATIENTS WHO UNDERWENT LUMBAR MICRODISCECTOMY FOR INTERVERTEBRAL DISC PROLAPSE (IVDP)

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### ABSTRACT

#### BACKGROUND

Intervertebral Disc Prolapse (IVDP) is a very common cause for low backache in younger population. When conservative treatment fails or when patient develops complications like neurological deficit, then the treatment is surgical discectomy. Open laminectomy and microdiscectomy are the modes of surgical interventions for such patients. There is a lot of morbidity for open laminectomy when compared to microdiscectomy to assess the functional outcome of patients underwent lumbar microdiscectomy.

#### METHODS

A prospective study was done among 30 patients with Intervertebral Disc Prolapse (IVDP) who did not respond to conservative treatment were undergone the surgical procedure microdiscectomy. The patients were re-evaluated for pre and postoperative neurological deficit and postoperative pain relief at 1 week, 6 weeks, 6 months, 12 months and 24 months after surgery.

#### RESULTS

Out of 30 patients in 15 (50%) patients, microdiscectomy was done in hip flexion and in the remaining half (15 patients) it was done without hip flexion. There were 18 men and 12 women with a mean age of 39.4. All patients 30 (100%) is presented with preoperative neurological impairment had a positive Lasegue sign, 20 (66.67%) had motor deficits and 18 (60%) had sensory deficits. In this study group, the vertebral levels mainly affected were L4-L5 in 18 (60%) patients and L5-S1 in 12 (40%) patients. After microdiscectomy, motor deficit was reduced from 66.67% to 20% out of 30 patients by the end of one year. Similarly, a reduction in sensory deficit was also seen from 60% to 20%. Pain relief was also found to be excellent in 86.6% patients at the end of 24 months.

#### CONCLUSION

Early postoperative mobilisation and earlier pain relief are the most important advantages of this novel technique. Lesser blood loss, low surgical time, least destabilisation of spine are other merits of this procedure and can be recommended as the gold standard surgical method for patients with IVDP who were failed with conservative treatment method.

#### KEYWORDS

Microdiscectomy, Hip Flexed Position, Intervertebral Disc Prolapse (IVDP).

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#### BACKGROUND

Intervertebral Disc Prolapse (IVDP) is a very common cause for low backache in younger population.<sup>1</sup> The lifetime prevalence of lumbar disc herniation is approximately 2%. The natural history of sciatica secondary to lumbar disc herniation is spontaneous improvement in majority of cases. Among patients with radiculopathy secondary to lumbar disc herniation<sup>2</sup> approximately 10-25% experience persistent symptoms.

Radicular pain maybe accompanied by paraesthesia and weakness in the distribution of involved nerve root. About 90% of lumbar disc herniation occur at L4-L5 and L5-S1 level. L3-L4 level is the next common level for symptomatic lumbar disc herniation.<sup>3</sup> When conservative treatment fails or when patient develops complications like neurological deficit; then, the treatment is surgical discectomy.<sup>4</sup> Appropriate criteria for surgical intervention are 1. Functionally incapacitating leg pain extending below the knee within a nerve root distribution. 2. Nerve root tension signs with or without neurologic deficit. 3. Failure to improve with four to eight weeks of nonsurgical treatment. 4. Confirmatory imaging study, which correlates with patients physical findings and pain distribution. Open laminectomy and discectomy or microdiscectomy are the modes of surgical interventions for such patients. There is a lot of morbidity for open laminectomy when compared to microdiscectomy.<sup>5</sup>

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Microlumbar discectomy can be done in hip extended in prone position and also in hip flexed to 90 degrees. Advantages<sup>6,7</sup> of microdiscectomy are; 1. Minimal incision. 2. Minimal soft tissue dissection. 3. Minimal blood loss. 4. Early mobilisation. 5. Less destabilisation. 6. Less hospital stay and 7. Early return to work.

**AIMS AND OBJECTIVES**

To assess the functional outcome of patients underwent lumbar microdiscectomy.

**MATERIALS AND METHODS**

A prospective study was done among 30 patients with Intervertebral Disc Prolapse (IVDP) attended Orthopaedic Department of Amala Institute of Medical Science, Trissur. All patients with sciatica caused by herniated lumbar discs who did not respond to conservative treatment were enrolled in the study to undergo microdiscectomy between 2011 and 2013. The inclusion criteria were the presence of a herniated lumbar disc observed on magnetic resonance imaging scans and the persistence of sciatica after 4 to 8 weeks of conservative treatment with rest, analgesia, nonsteroidal anti-inflammatory drugs and physical therapy. The exclusion criteria were as follows: age older than 60 years, previous surgery, associated lumbar spine stenosis, foraminal or extraforaminal disc herniations. Only those patients with a final postoperative follow-up period of at least 2 years were included in this study. The surgical variables analysed were the level the herniated disc.<sup>8</sup> Pre and postoperative neurological deficit and postoperative pain relief. Other studied variables were mean age sex ratio, level of prolapse, mean hospital stay and time to return to work.

The patients who had undergone the surgical procedure microdiscectomy either in hip flexed to 90° or without hip flexion were included in the study. Level identification done under C-arm control, which is the most crucial step. Second day, patient is discharged. Reviewed after 10 days for suture removal. The patients were re-evaluated 1 week, 6 weeks, 6 months, 12 months and 24 months after surgery. On follow up, functional outcome<sup>9,10</sup> for pain was evaluated using the questionnaire method and neurological status was clinically evaluated using the LA segue test, motor assessment by muscle strength and testing of the sensory system.

**RESULTS**

A total of 30 patient’s undergone microdiscectomy were enrolled in the study. Out of 30 patients in 15 (50%) patients, microdiscectomy was done in hip flexion and in the remaining half (15 patients) it was done without hip flexion. The mean postoperative follow up period was 24 months. There were 18 men and 12 women with a mean age of 39.4. The vertebral level affected was L4-L5 in 18 (60%) patients and L5-S1 in 12 (40%) patients. All patients 30 (100%) is presented with preoperative neurological impairment had a positive Lasegue sign, 20 (66.67%) had motor deficits and 18 (60%) had sensory deficits.

**Neurological Status**

Time	Frequency No. (%)
Preoperative	20 (66.67%)
1 week postoperative	16 (53.3%)
6 weeks postoperative	10 (33.3%)
6 months postoperative	8 (26.6%)
12 months postoperative	8 (26.6%)
24 months postoperative	6 (20%)

**Table 1. Motor Deficit**

**Sensory Deficit**

Time	Frequency No (%)
Preoperative	18 (60%)
1 week postoperative	12 (40%)
6 weeks postoperative	12 (40%)
6 months postoperative	10 (33.3%)
12 months postoperative	6 (20%)
24 months postoperative	6 (20%)

**Table 2. Sensory Deficit**

**Pain Relief**

Pain Relief	1 Week	6 Week	6 Months	1 Year
Excellent	18 (60%)	22 (73.3%)	25 (83.3%)	26 (86.6%)
Good	8 (26.6%)	4 (13.3%)	3 (10%)	3 (10%)
Fair	2 (6.6%)	3 (10%)	2 (6.6%)	1 (3.3%)
Poor	2 (6.6%)	1 (3.3%)	0	0

**Table 3. Pain Relief**

Variables	Microdiscectomy with Hip Flexion	Microdiscectomy without Hip Flexion
Mean Surgical Time	50 mins.	65 mins.
Blood Loss	60 mL	75 mL
Laminotomy	Nil	Yes
Hospital Stay	24 hrs.	72 hrs.
Return to Work	30 days	58 days
Postop Pain at Surgical Site	Minimal	Moderate
Dural Tear	Nil	2 cases

**Table 4. Microdiscectomy with Hip Flexion Versus without Hip Flexion**

## DISCUSSION

Development in recent years have made the treatment of herniated discs safer and less invasive.

By using microscopic discectomy approaches through small incisions, nerve root decompression is achieved with minimal risk of complication and preserving normal anatomy. The superiority of microdiscectomy over traditional discectomy has been widely proven. The most important step in microdiscectomy is correct level identification and adequate decompression. In this study group, the vertebral levels mainly affected were L4-L5 in 18 (60%) patients and L5-S1 in 12 (40%) patients. After microdiscectomy, motor deficit was reduced from 66.67% to 20% out of 30 patients by the end of one year. Similarly, a reduction in sensory deficit was also seen from 60% to 20%. Pain relief was also found to be excellent in 86.6% patients at the end of 24 months. Microscopic discectomy with patient in prone position with hip flexed to 90° helps in faster postoperative mobilisation, faster recovery and resumption of work at the earliest because of the following reasons like less bony removal, thus minimal destabilisation, less bleeding, thus less surgical time and early mobilisation because of minimal pain due to no bony procedure.

## CONCLUSION

Microlumbar discectomy with patient in prone position with hip flexed to 90° is a safe, effective method of treatment for herniated lumbar intervertebral disc diseases, which enable them to have early mobilisation, early return to home as well as to their work. So, this procedure can be as the gold standard in its management in IVDP.

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