A CLINICAL STUDY OF SURGICAL MANAGEMENT OF LUMBAR DISC PROLAPSE BY LAMINECTOMY AND DISCECTOMY

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BACKGROUND

Back pain, the ancient curse is now appearing as a modern epidemic. Humans have been plagued by back and leg pain since the beginning of recorded history. Lumbar discs are responsible for well over 90% of all organic symptoms attributable to low backache. Clearly lumbar disc herniation is a significant medical and social problem. What is less clear is the efficacy of treatment and type of treatment to choose. In 1934, Mixter and Barr published their study and concluded that laminectomy with decompression and extraction of herniated lumbar disc could improve suffering caused by sciatic pain. Since then increasing number of patients have been operated upon for this disorder. Open discectomy is now the “gold standard” for operative intervention in patients with herniated lumbar discs whose conservative treatment has failed. However, the outcome studies of lumbar disc surgery document a success rate of 51 to 89% in spite of advances in investigations, operative technique and postoperative care. Therefore, appropriately presenting and reviewing this subject is important.

MATERIALS AND METHODS

The study was conducted among 30 patients with signs and symptoms of lumbar disc prolapse who got admitted from OPD and casualty of Government General Hospital, Kurnool between November 2015 to October 2017. Patients were operated for lumbar disc prolapse by Laminectomy and Discectomy and followed for 4 to 24 months.

RESULTS

Average duration of hospital stay was 10.3 days ranging from 6 days to 24 days. 96.6% of cases had a post-op JOA score between 11 and 15.80% cases had good outcome. Complications were superficial infection in 1(3.3%) case, discitis in 1(3.3%), dural tear in 1(3.3%).

CONCLUSION

In our study we achieved results comparable to that achieved with microdiscectomy. Microsurgical techniques may have some advantages in terms of a less invasive approach; shorter hospital stay etc., but one must understand the demands, requirements, and limitations of this technique. It also has a long learning curve and is technically a more demanding procedure in terms of surgical skills of the surgeon and equipment required and thus is available only in multispeciality hospitals. Also, standard laminectomy and discectomy is more cost effective than microdiscectomy.

Therefore, for the Indian scenario, standard laminectomy and discectomy is still the “Gold Standard” in operative treatment of lumbar disc prolapse.

KEYWORDS

Lumbar Disc Prolapse, Laminectomy, Discectomy.


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BACKGROUND

Back pain, the ancient curse is now appearing as a modern epidemic. Humans have been plagued by back and leg pain since the beginning of recorded history. 80% of the population is affected by this symptom at some point of time in life. Impairments of the back and spine are ranked as the most frequent cause of limitation of activities in people of all age groups. Lumbar discs are responsible for well over 90% of all organic symptoms attributable to low backache.

Clearly lumbar disc herniation is a significant medical and social problem. What is less clear is the efficacy of treatment and type of treatment to choose. The incidence of
back pain appears to be constant. Efforts are being made to decrease the risk factors. Unfortunately, the cost of medical care and claims for disability appears to be rising. However, at present the claims of disability in India appear to be negligible, that too in rural setup we have never come across the patient having employment disability claim.

In 1934, Mixter and Barr published their study and concluded that laminectomy with decompression and extraction of herniated lumbar disc could improve suffering caused by sciatic pain. Since then increasing number of patients has been operated upon for this disorder. Open discectomy is now the "gold standard" for operative intervention in patients with herniated limber discs whose conservative treatment has failed. The present study is to find out the surgical outcome of standard laminectomy and discectomy.

Aims and Objectives
1. To study the effectiveness of laminectomy and discectomy in achieving symptomatic relief in lumbar disc prolapse patients.
2. To study the clinical outcome following laminectomy and discectomy in lumbar disc prolapse patients.
3. To evaluate the results of laminectomy and discectomy.

MATERIALS AND METHODS
The study was conducted among 30 patients with signs and symptoms of Lumbar disc prolapse who got admitted from OPD and casualty of Government General Hospital, Kurnool between November 2015 to October 2017. Patients were operated for lumbar disc prolapse by Laminectomy and discectomy and followed for 4 to 24 months.

Inclusion Criteria
1. Age between 25 to 70 years.
2. Both sexes.
3. Low backache with or without radiculopathy.
4. Low backache with or without weakness and paraesthesia of lower limbs.

Exclusion Criteria
1. Age less than 25 and more than 70
2. Spine fractures
3. Prior spine surgery
4. Spondylolisthesis
5. Associated long bone fractures

Sample Size: 30 cases

Sample Procedure: a prospective study. Patients are followed up periodically postoperatively.

Patients Are Assessed By: Japanese Orthopaedic Association Backache Score both before and after treatment.

Methodology
After a detailed clinical examination all the patients' radiographs, and MRI were taken. The patients were assessed using Japanese orthopaedic score preoperatively. Then surgery was performed, and the details of the surgical procedure are as follows: The patient is anaesthetized and positioned prone over bolster. By allowing the abdomen to hang free, intravenous pressure is decreased and blood loss is reduced as a result of collapse of the epidural venous plexus. A mid line skin incision is given over the spine after confirming the level of disc involved under fluoroscopy and standard laminectomy and discectomy at the respective levels was performed.

Post-Operative Regimen
Neurological function is closely monitored after surgery. The patient is allowed to turn in bed. Prophylactic Antibiotics and adequate analgesics given. Patient is allowed to sit up and walk using a lumbarosacral orthosis. Gentle isotonic leg exercises are started immediately. Dressings are changed on post op day 3 and if the wound is healing satisfactorily then patient is discharged. The sutures are removed on 10th post-operative day. Gradually the duration of sitting and walking is increased to maximum by 6 weeks. Lifting, bending and stooping are prohibited for 3 months. Between the fourth and sixth post-operative week, back school is stressed. Lifting, bending and stooping are gradually restarted after 3 months. In our study, labour intensive job started over three months with advice to modify their occupation activity.

RESULTS
This study consists of 30 cases of lumbar disc prolapse treated by laminectomy and discectomy in between 2015 to 2017. The mean follow-up was 8.2 months ranging from 6 to 13 months.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-40</td>
<td>10</td>
<td>33.4%</td>
</tr>
<tr>
<td>41-60</td>
<td>17</td>
<td>56.6%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 1. Age Distribution**

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>21</td>
<td>70%</td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 2. Sex Distribution**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant</td>
<td>18</td>
<td>60%</td>
</tr>
<tr>
<td>Non-Significant</td>
<td>12</td>
<td>40%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 3. Occupation of the Patients**

<table>
<thead>
<tr>
<th>Duration</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 months</td>
<td>14</td>
<td>46.6%</td>
</tr>
<tr>
<td>7-12 months</td>
<td>12</td>
<td>40%</td>
</tr>
<tr>
<td>&gt;12 months</td>
<td>4</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

**Table 4. Duration of Symptoms**
In our study 70% of the cases were males and 30% females. Males were affected more commonly than females which were in accordance with studies by Pappas\(^4\) and Richard Davis\(^5\) who also had male preponderance.

**Occupation of the Patients**

In our study 60% (18) of the cases had a history of heavy weight lifting and bending activity as precipitating factor, whereas 40% (12 cases) had insidious onset. Hult L. in 1954 showed a linear increase in disc degeneration, to nearly 100 percent in workers performing heavy physical work.\(^6\)

**Preoperative SLRT**

In our study all the patients were positive for SLRT with varying range of degrees and it is most sensitive test clinically. Out of 30 cases, 33.3% of the cases had SLRT in between 0-30 degrees which is highly suggestive of disc prolapsed. 56.6% cases had SLRT in between 31 -70 degrees which is of doubtful significance. 10% of the cases had SLRT more than 70%. So we had to further investigate to confirm the disease.

Shiqing X, Qyanzhi Z, Dehao F, et al in their study proved the significance of SLRT in the diagnosis.\(^7\) In their study 113 patients who had protrusion of a lumbar intervertebral disc were analyzed to determine the relationship between the findings at operation and the location of the pain that resulted from the straight-leg-raising test. The study showed a close relationship between the location of the pain and the position of the protrusion of the disc. The degree of limitation of straight-leg raising was also found to have a direct relationship to the size and position of the protrusion and to its relationship to the spinal nerve.

Jonsson and stromqvist\(^8\) had a positive SLRT test preoperatively in 86% of their 150 patients. SLR was positive below 30 degree in 42% cases and in between 30-60 degree in 26% cases. In 18 % cases the SLR was positive above 60 degrees.

**Distribution of Levels of Disc Prolapse**

All cases have undergone MRI to know the level of disc prolapse. In our study out of 30 cases, 22 cases (73.3%) had prolapse at the level of L4-5 and L5-S1 level was involved in 5 cases (16.6%). L3-4 level was involved in 3 cases (10%).

In a study conducted by Pappas et al, the distribution of level of prolapse was like 49% cases with L4-5, 40% cases with L5-S1, 9% of cases with L3-4 and 2% cases had involvement of L2-3 level.\(^4\)

**Distribution of Outcome**

In our study we achieved 86.6% good outcomes and 10% fair outcomes. We had 3.4% of poor outcome. Richard Davis in his study had outcomes as good in 89% of cases, fair 7.7% cases and 3.3% had poor outcome.\(^5\)
Distribution of Complications

In our study out of 30 cases 10% (3 cases) had complications following surgery. Dural rupture occurred in 1 case (3.3%) intraoperatively. In a series of 2503 patients, Sprangfort concluded that 2.2% had wound infections, 1.6% had dural tears, 0.8% had nerve root injuries and 0.1% had mortality.²

CONCLUSION

The standard laminectomy and discectomy is an extremely useful and effective surgery for treatment of lumbar disc prolapse. Consistently good results (86.6%) in our study could be attributed to proper selection of cases and a meticulous surgical protocol. The Japanese Orthopaedic Association low backache score appears to be a useful tool for evaluation of disc surgery. The only limitation of this study was a small sample size.

Microsurgical techniques may have some advantages in terms of a less invasive approach; shorter hospital stay etc., but one must understand the demands, requirements, and limitations of this technique. It also has a long learning curve and is technically a more demanding procedure in terms of surgical skills of the surgeon and equipment required and thus is available only in multispeciality hospitals. Also, standard laminectomy and discectomy is more cost effective than microdiscectomy.

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REFERENCES