



E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2020; 6(3): 425-428
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www.orthopaper.com
Received: 16-05-2020
Accepted: 18-06-2020

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Lumbar disc lesion: Study of epidemiology and surgical intervention

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DOI: <https://doi.org/10.22271/ortho.2020.v6.i3g.2233>

Abstract

Background: As per European studies the incidence of a herniated disc is about 5 to 20 cases per 1000 adults annually and is most common in people in their third to the fifth decade of life, with a male to female ratio of 2:1. The estimated prevalence of symptomatic herniated disc of the lumbar spine is about 1-3 percent of patients. Epidemiology of lumbar disc disease among Indian population needing operative intervention is not clear.

Aim: To study the Epidemiology of lumbar disc disease among Indian population needing operative intervention.

Material and Methods: In this prospective study all the adult (above 18 years) age group presenting with lumbar disc lesion and canal stenosis admitted in orthopaedic department of Tertiary Care Centre satisfying inclusion were taken for study after obtaining their consent.

Results: Out of 120 patients 25% patients needed and rest were managed by conservative line of management. The more common age group affected was 40 to 60 years age group (53.33%). Gender distribution has a male predominance (73.33%) compare to females (26.66%). Majority of the cases studied were presented with low backache, radiculopathy and paraesthesia. Majority having L4-L5 disc involvement (70%).

Conclusion: Out of 120 patients 30 (25%) patients needed operative intervention and rest were managed by conservative line of management. All patients with lumbar disc lesion needs conservative trial. Only if conservative trial fails or patient with persistent disabling pain or neurological deficit are subjected to operative intervention. Majorly affect 40 to 60 years age group with mean of 44.9 years & males outnumbering females in incidence with majority involving L4-L5 disc level.

Keywords: Lumbar disc lesion, adults, minimal invasive lumbar discectomy, epidemiology

Introduction

Humans are the sufferers of back and leg and pain since the history. The ancient cures, of back pain is now appearing as a modern international epidemic. In entire lifespan upto 80 % of people are affected by this symptom at some time. The most frequent cause of limitation of activity in people younger than +5 years is impairments of the back and spine as by the national center for health statistics. In otherwise healthy people in the 3rd and 4th decades of life intervertebral disc disease and disc herniation are most prominent. It accounts for a majority of cases of low backache in clinical practice and also a major contributor of limitation in day to day activities.

In 1934, Mixter and Barr published their study that concluded that the suffering caused by sciatic pain can be improved by laminectomy with decompression and extraction of herniated lumbar disc [27]. Since then increasing number of patients have been operated upon for this disorder. "Gold standard" for operative intervention in patients with herniated lumbar discs whose conservative treatment has failed is now the Open discectomy.

Discectomy first reported by Mixter and Barr [1] (1934) has changed the management of lumbar disc herniations. Kambin and Savitz [2] (1973) introduced the concept of endoscopic lumbar discectomy. Caspar [3] (1977), Yasargil [4] (1977) and Williams [5] (1978) added refinements in approach with the use of microsurgical technique. Foley and Smith [6] (1997) introduced an operative endoscope with the tubular system terming it "Endoscopic Discectomy". As an alternative to the endoscope, Foley *et al.* (2003) modified the tubular retractors to include a microscope, which is termed "Micro Endoscopic Discectomy" (MED).

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The term is used interchangeably for describing the discectomy procedure utilizing tubular retractors either with an endoscope or a microscope [7]. Recent prospective randomized control trials (RCTs) have found a benefit of surgery for patients when conservative therapies fail. [8-11] Discectomy performed open or with an operating microscope remains the standard surgical management [12-14] Tubular retractor system [15-17] is being increasingly used now. The potential benefits of to this technique include less muscle and local damage, better cosmesis [18-20] decreased pain and operative time and faster recovery after surgery [21, 22] On the other hand, open surgery includes extensive retraction and dissection of paraspinal muscles, longer operative time, longer incisions and bone resection [23, 24] However, the outcome studies of lumbar disc surgery document a success rate of 51 to 89% in spite of advances in investigations, operative technique is important. Hence, plotting epidemiology of lumbar disc disease patients needing operative intervention will give us a guide for patient selection and plan the management.

Material and Methods

In this prospective study 120 patients with lumbar disc disease were screened using the inclusion and exclusion criteria. Informed consent was taken for all patients and approval of the Institutional Review Board was obtained prior to the commencement of the study.

Inclusion criteria

1. All lumbar disc lesion and spinal stenosis patients
2. Medically fit for surgery
3. Patients with age >18 years

Exclusion criteria

1. Lumbar disc lesion and spinal stenosis managed non-operatively
2. Medical contraindication for surgery
3. Patient with age <18 years

A detailed history was obtained and they were subjected to a thorough clinical examination. Radiological investigations (plain x-ray and MRI lumbar spine) were carried out to confirm the diagnosis and know the level of the lesion. The patients were also assessed pre-operatively with the Oswestry low back pain disability score. All 120 patients were managed conservatively with bed rest, pelvic traction and analgesics among these 30 patients who had already taken conservative management for more than 6-8 months with unresolving symptoms or patients with disabling pain or neurological deficit where subjected to operative intervention taken into study. All patients underwent minimal invasive discectomy surgery in the prone position. Postoperatively the patients were followed up after 1st, 2nd, 3rd, 6th months and thereafter yearly. The Oswestry low back pain disability score used post-operatively to assess the outcome analysis of functional status.

Results

A hospital based prospective study was done with 30 patients with lumbar disc lesion and spinal stenosis in adults treated with image guided minimal invasive technique.

Table 1: Patient characteristics

Characteristics	No. of patients	Percentage (%)
Age group (years)		
20-40	10	33.4%
40-60	16	53.3%
≥60	4	13.4%
Sex		
Male	22	73.33%
Female	8	26.66%

Majority of cases i.e. 16 (53.3%) were in the age group of 40-60 years. The minimum age of the patient was 28 years and maximum was 66 years. The more common age group affected was 40 to 60 years age group with the average of 44.9 years with significant male predominance.

Table 2: Distribution of disc level involved

Level	No. of patients	Percentage (%)
L4-L5	21	70
L5-S1	4	13
L3-L4 & L4-L5	2	6
L4-L5 & L5-S1	3	10
Total	30	100.0

Majority of the patients had L4-L5 disc involvement i.e. 21 (70%) compare to L5-S1 disc involvement which was 13%, combination of L4-L5 & L5-S1- 10% and L3-L4 & L4-L5 – 6%. It shows L4-L5 disc involvement significant predominance compare to others.

Table 2: Distribution according to presenting symptoms

Symptoms	No. of patients	Percentage (%)
Low backache	27	90
Radicular pain	30	100
Paraesthesia	23	76.6
Weakness	7	23.3
Bowel/Bladder symptoms	0	0

Majority of the cases studied were presented with low backache, radiculopathy and paraesthesia of which majority having L4-L5 disc involvement.



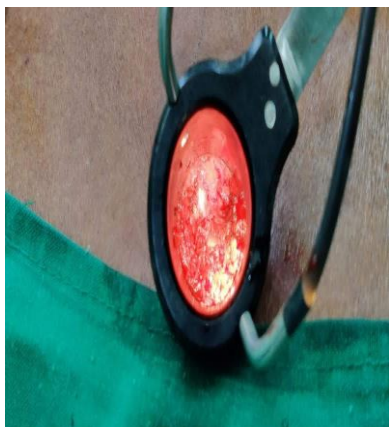
Guide wire localization and serial dilator insertion



Serial tubular retractor insertion



Radiographic confirmation



Operating field view illuminated with fibre optic

Discussion

In our study we used Oswestry disability scoring system for functional outcome. At the end of mean follow up of 8.5 months (ranging from 6 to 12 months) as per Oswestry disability scoring system outcome was plotted into good, fair and poor. We found good result in 15 patients (50%), fair result in 10 patients (33.33%) and poor result in 5 patients (16.66%). Using Oswestry disability scoring system we had more than 80% good to fair outcome. Since we could achieve good spinal decompression with minimal blood loss and soft tissue damage leading to early rehabilitation and minimal post operative hospital stay indicates overall good outcome and promotes minimal invasive lumbar discectomy over open technique.

All 120 patients were managed conservatively with bed rest, pelvic traction and analgesics among these 30 patients who

had already taken conservative management for more than 6-8 months with unresolving symptoms or patients with disabling pain or neurological deficit were subjected to operative intervention taken into study. All patients underwent minimal invasive lumbar discectomy with tubular retractor system.

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Conclusion

Out of 120 patients 30 (25%) patients needed operative intervention and rest were managed by conservative line of management. All patients with lumbar disc lesion needs conservative trial. Only if conservative trial fails or patient with persistent disabling pain or neurological deficit are subjected to operative intervention. Majorly affect 40 to 60 years age group with mean of 44.9 years & males outnumbering females in incidence with majority involving L4-L5 disc level.

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