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A study of clinical presentations of patients with lumbar spinal stenosis & functional outcome of surgical decompression in lumbar spinal stenosis

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Abstract

Background and Objective: The management of lumbar spinal stenosis by surgery has increased rapidly in the past two decades, however, the results are not uniform as reported by different users. Our aim was to investigate the effectiveness of surgery in the management of patients with lumbar spinal stenosis.

Materials and Methods: It is a prospective study which was carried out from August 2015 to January 2017 in MVJ Medical College and Research Hospital, Bengaluru. In this study period 30 patients of degenerative lumbar canal stenosis managed surgically (laminotomy, laminectomy and discectomy) were included after meeting inclusion and exclusion criteria. JOA scoring system was used to assess the patient's pre operatively and post operatively at 3 weeks, 6 weeks, 3 months and 6 months.

Recovery rate was calculated as described by Hirabayashi *et al.* (1981). Surgical outcomes was assessed based on the recovery rate and was classified using a four grade scale. Excellent, improvement of >90%; good, 75 – 89% improvement; fair, 50 – 74% improvement; poor, below 49% improvement.

Results: In our study, majority of the patients were males, at 6 months follow up 27% (n=8) patients showed excellent outcome, 57% (n=17) showed good outcome and 17% (n=5) showed fair outcome.

Conclusion: Operative management for lumbar spinal stenosis yields excellent results as observed on basis of JOA scoring system.

Keywords: Degenerative lumbar spinal stenosis, JOA scoring system, functional outcomes, laminectomy and discectomy

Introduction

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 time of 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 canal stenosis is a major problem in daily clinical practice. The wide variety of causes make it more intriguing, as arriving at etiological diagnosis becomes challenging after clinical examination. Recent advances in imaging has lessened this task to a greater extent with high resolution MRI scan and CT scan being available in most of the tertiary care hospitals.

After diagnosing, the surgeon is always in a dilemma as to begin with a trail of conservative treatment or to go with a surgical procedure

The results in mid and long term follow up are unclear, though short term follow up results looks promising following surgeries in different types of lumbar spinal stenosis.

The treatment offered ranges from laminotomy, laminectomy, and laminectomy with discectomy and in case of spinal instability, stabilization by instrumentation and bony fusion to micro decompression.

Our study is to access the immediate and short term functional outcome at intervals following decompressive surgery.

Aims & objectives

1. To study the clinical presentations of patients with lumbar spinal stenosis.

- To assess functional outcome of surgical decompression in lumbar spinal stenosis.
- To assess the rate of recovery at 3 weeks, 6weeks, 3months and 6 months.

Materials and methods

Source of data

The patients who comes to MVJ Medical College and Research Hospital with symptoms of spinal stenosis not relieved by conservative treatment were taken in this study. This was a prospective study. Total number of patients studied was 30. The period of study was from November 2015 to January 2017. The assessment of patients was done by JOA score pre and post operatively. Follow ups were done at 3 weeks, 6 weeks, 3 months and 6 months.

Study type: Prospective follow up study.

Duration of study: 1.5 years.

Following criteria was taken into consideration for the selection of cases for the study.

Inclusion Criteria

- Low back ache
- Motor deficits
- Sensory disturbances
- Radicular symptoms
- Neurogenic claudication
- Lumbar disc lesion
- Ligamentum flavum hypertrophy
- Degenerative lumbar spinal stenosis.

Exclusion Criteria

- prior lumbar surgery
- cauda equina syndrome
- developmental spine anomalies
- traumatic lumbar canal stenosis
- spinal instability and Spondylolisthesis
- Spinal stenosis due to tumors and infection
- Patients lost during follow up

Observations

Age

Table 1: Distribution of subjects according to Age groups.

Age – groups	Frequency	Percentages (%)
20 – 40 years	10	33
41 – 60 years	17	57
Above 60 years	3	10

Average age was 48 years

Chart 1: Age distribution

Majority of the patients were in age group between 41years and 60 years, with mean age of 48 years.

Gender

Table 2: Distribution of subjects according to Gender.

Age – groups	Frequency	Percentages (%)
Males	18	60.0
Females	12	40.0
Total	30	100

Chart 2: Gender distribution

There was male predominance with 60 % (n=18) males and females 40 % (n=12) in our study.

Discussion

The average age was 48 years. There were 18 male patients and 12 female patients. All patients had symptoms at least for 4 months.

Preoperatively, 47% (n=14) had frequently mild symptoms while 27% (n=8) had continuous severe low back pain.

At 6 months post operatively no patient had continuous severe low back pain while occasional mild symptoms persisted in 60% (n=18) patients. 40% (n=12) patients had no back pain at 6months of follow up.

The most common presenting feature was frequent severe leg pain/numbness, that was seen in about 83% (n=25) patients which significantly improved postsurgical decompression in 70% (n=21) of the patients.

Majority of the patients had a pre-operative claudication distance of 100 – 500m which on 6months follow up following decompressive surgery had a significant improvement with 53% (n=16) patients having a normal gait while 47%(n=14) had a claudication distance >500m with occasional leg pain/numbness.

Straight leg raising test was 30-70° in 43% (n=13) and on 6months following decompressive surgery 83% (n=25) had >70° straight leg raising test.

77% (n=23) patients had more than grade 3 motor power at the time of presentation while at 6 months follow up 90% (n=29) had normal grade 5 motor power.

87% (n=26) of the patients had sensory disturbance at the time of presentation out of which 40% (n=12) recovered normal sensory function while slight sensory disturbance persisted in 47% (n=14) patients.

At 6 months of follow up 27% (n=8) patients had an excellent outcome while 57% (n=17) had a good outcome with 16% (n=5) showing fair outcome.

Functional outcome improved as the duration since surgery increased up to 6 months.

On comparison of pre-op and post-operative JOA scores at 6

months using Wilcoxon signed rank test for non-parametric data, p value was <0.001 which meant outcomes were highly significant for symptoms including radiating pain, claudication distance, SLRT, lifting weights and running post operatively.

Conclusion

Lumbar decompressive surgery either laminectomy/laminotomy decompression are beneficial for patients diagnosed with LCS.

The functional outcome using JOA score and recovery rate increases upto 6 months. Significant improvement was present from 3 weeks to 3 months.

Radicular symptoms were relieved in majority of the patients at 3 weeks follow up. However Sensory deficits and motor deficits improved over 6 month's duration.

Age, gender or duration of symptoms have no significant influence on the recovery rate following surgical decompression at 3 weeks, 6 weeks, 3 months and 6 months.

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