



THE STUDY OF FUNCTIONAL OUTCOME OF LUMBAR SPINE DISORDERS TREATED WITH LAMINECTOMY:

Orthopaedics

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ABSTRACT

Laminectomy is the procedure of choice especially in the elderly. The central spinal stenosis denotes the involvement of the area between the facet joints, which includes dura and its contents. The reasons for the stenosis here are protruding disc, bulging annulus, osteophyte formation or thickened ligamentum flavum central canal stenosis clinically presents as claudication and the lateral canal stenosis presents as radiculopathy the lateral recess also referred as Lee's entrance zone, begins from lateral border of dura and extends to medial border of pedicle. This is where the nerve root exits. Zones of lateral canal is divided into entrance zone, mid zone and the exit zone the reason for stenosis here are lateral disc herniation, thickened ligamentum flavum extending into the foramen, facet arthritis or spondylolisthesis. The present study is done to find out the functional outcome of lumbar spine disorders treated with laminectomy.

KEYWORDS

Functional Outcome, Lumbar Spine Disorder, Roland Morris Score.

Introduction:

Laminectomy is the procedure of choice especially in the elderly. The central spinal stenosis denotes the involvement of the area between the facet joints, which includes dura and its contents. The reasons for the stenosis here are protruding disc, bulging annulus, osteophyte formation or thickened ligamentum flavum central canal stenosis clinically presents as claudication and the lateral canal stenosis presents as radiculopathy the lateral recess also referred as Lee's entrance zone, begins from lateral border of dura and extends to medial border of pedicle. This is where the nerve root exits. Zones of lateral canal is divided into entrance zone, mid zone and the exit zone the reason for stenosis here are lateral disc herniation, thickened ligamentum flavum extending into the foramen, facet arthritis or spondylolisthesis¹⁻¹⁰.

Weinstein JN, et al¹¹ combined the randomized and observational cohorts of patients with spinal stenosis (SpS), those treated surgically showed significantly greater improvement in pain, function, satisfaction, and self-rated progress over four years compared to patients treated non-operatively. Results in both groups were stable between two and four years.

Park et al¹² did retrospective comparative study looking at the SPORT study results to determine the effect of multilevel stenosis on surgical and conservative treatment outcomes. Patients with multiple levels of stenosis had somewhat less severe pain at baseline on the SF-36 bodily pain scale compared to one and two levels. Patients with single level stenosis were less likely to present with neurogenic claudication ($p < 0.001$) and more likely to report dermatomal pain radiation. Other baseline symptoms were similar across groups. When comparing surgical to conservative treatments for one, two and three level isolated stenosis, there was a significant surgical treatment effect in most outcomes measures within each subgroup at each time point. The only significant difference in treatment effects between subgroups was at two years for patient satisfaction with symptoms. Patients with single level stenosis had a smaller difference in satisfaction between surgery and conservative treatment, that is, a smaller treatment effect than the other two groups. This study provides Level III therapeutic evidence that patients with spinal stenosis without associated degenerative spondylolisthesis or scoliosis can be managed nonoperatively irrespective of the number of levels involved. Surgical intervention never affects the number of level of the spinal stenosis.

Amundsen et al¹³ did a case control, comparative study of 100 patients with symptomatic spinal stenosis. Patients who were included were having sciatic pain in the leg(s) with or without back pain and radiographic evidence of stenosis. These patients were divided into three groups: 19 patients with severe symptoms received surgical treatment, 50 patients with moderate symptoms received conservative management and 31 with moderate to severe symptoms were

randomly assigned. The surgical group received decompression without fusion, inpatient rehabilitation with a lumbosacral corset, back school and physical therapy when out of the brace. The medical/interventional group was admitted to inpatient rehabilitation for one month, braced for up to three months, back school and physical therapy when out of brace. Patients were seen at regular intervals for 10 years. Authors assessed patients based on pain (no or light pain, moderate pain, severe pain), degree of stenosis and response to treatment (worse, unchanged, fair, excellent). With medical/interventional treatment, a good result was reported by 70% (35 of 50) of patients at six months, 64% (32 of 50) at one year and 57% (28 of 49) at four years. With surgery, a good result was reported by 79% (15 of 19) at six months, 89% (17 of 19) at one year and 84% (16 of 19) at four years. Of the patients randomly assigned to the medical/interventional group, good results were reported for 39% (seven of 18) at six months, 33% (six of 18) at one year and 47% (8 of 17) at four years. Of these patients, 56% (10 of 18) reported being worse at six months. Of the patients randomly assigned to the surgical group, good results were reported for 92% (12 of 13) at six months, 69% (nine of 13) at one year and 92% (11 of 12) at four years. After 10 years, 10 patients in the conservative group had died, 19 patients who were in the conservative group adopted surgery and only 39 patients remained in this group. Of the patients remaining in the conservative group, 70% experienced good results based on the assessment of pain.

Atlas SJ et al¹⁴ did a study on long term outcome of surgical and non surgical management of lumbar canal stenosis 8 to 10 years of followup. A prospective observational cohort study of 148 eligible consenting patients initially enrolled, 105 were alive after 10 years (67.7% survival rate). Among surviving patients, long-term follow-up between 8 and 10 years was available for 97 of 123 (79%) patients (including 11 patients who died before the 10-year follow-up but completed a 8 or 9 year survey); 56 of 63 (89%) initially treated surgically and 41 of 60 (68%) initially treated nonsurgically. Patients undergoing surgery had worse baseline symptoms and functional status than those initially treated nonsurgically. Outcomes at 1 and 4 years favored initial surgical treatment. After 8 to 10 years, a similar percentage of surgical and nonsurgical patients reported that their low back pain was improved (53% vs. 50%, $P = 0.8$), their predominant symptom (either back or leg pain) was improved (54% vs. 42%, $P = 0.3$), and they were satisfied with their current status (55% vs. 49%, $P = 0.5$). These treatment group findings persisted after adjustment for other determinants of outcome in multivariate models. However, patients initially treated surgically reported less severe leg pain symptoms and greater improvement in back-specific functional status after 8 to 10 years than nonsurgically treated patients. By 10 years, 23% of surgical patients had undergone at least one additional lumbar spine operation, and 39% of nonsurgical patients had at least one lumbar spine operation. Patients undergoing subsequent surgical procedures had worse outcomes than those continuing with their initial

treatment. Outcomes according to actual treatment received at 10 years did not differ because individuals undergoing additional surgical procedures had worse outcomes than those continuing with their initial treatment. follow up study of such patient for long duration of tome 8-10years both the group became better in relation to pain but the surgical group had an initial advantage of faster pain relief and improvement in the neurological status.

The present study is done to find out the functional outcome of lumbar spine disorders treated with laminectomy.

Aims and Objectives:

To study of functional outcome of lumbar spine disorders treated with laminectomy.

Materials and Methods:

This study was done in Department of Orthopedics, Travancore Medical College, Kollam.

Thirty people who were treated with laminectomy procedures were selected randamoly and the functional scores were studied.

Inclusion criteria

1. Degenerative Lumbar spine stenosis
2. Age of the patient: 35 years and above

Exclusion criteria

1. Old fracture spine
2. Skin Infections

The statistical Analysis was done using the latest SPSS software 2015 California.

Results:

Table 1: SLRT

SLRT	SURGICAL
20-29	3
30-39	10
40-49	4
50-59	6
60-69	5
70-79	2

Table 2: Femoral Stretch test

FST	SURGICAL
YES	26
NO	4

Table 3: Extensor Hallusis Longus Power.

EHL	SURGICAL
GRADE III RIGHT	3
GRADE IV B/L	2
GRADE IV LEFT	14
GRADE IV RIGHT	11

Table 4: Flexor Hallusis Longus Power.

FHL	SURGICAL
GRADE IV LEFT	4
GRADE V B/L	26

Table 4: Spine Flexion.

SPINE FLEXION	SURGICAL
RESTRICTED	21
NOT RESTRICTED	09

Discussion:

Mariconda et al¹⁵ reported an incompletely randomized, prospective study of 44 patients comparing single or multilevel laminectomy in patients with mild to moderate leg pain to patients treated with medical/ interventional therapy. Outcomes were assessed using the Beaujon Scoring System. Twenty-two patients were assigned to each group. Only 32 of 44 patients were randomly assigned into each group. The mean functional status at one year was improved in both groups. Conservative treatment consisted of bed rest, use of a semirigid orthosis, physical therapy and appropriate exercise program. At four years, the good results were 68% in the surgical group and 33% in the medi-cal/ interventional group. Only 2.6% of patients experienced an

increase in their spondylolisthesis. There was a reoperation rate of 9% and a cross over rate of 9%. Arinzon et al¹⁴ performed a prognostic case control study investigating the effect of decompression for lumbar spinal stenosis in elderly diabetic patients. The study included 62 diabetic patients and 62 gender- and age-matched non diabetic controls. The mean follow-up was 40.3 months. Comorbidities were as assessed and outcomes were measured using the visual analog scale (VAS), basic activities of daily living (BADL) and walking distance. The authors concluded that decompression for symptomatic spinal stenosis is beneficial in elderly diabetic patients. However, the results are related to successful pain reduction, physical and mental health status, severity of clinical presentation, insulin treatment and duration of diabetes. The benefits in diabetic patients are low as compared with non diabetic patients with regard to symptom relief, satisfaction, BADL function and rate of complications.

Arinzon et al¹⁶ did a retrospective, prognostic study of the effects of age on decompressive surgery for lumbar spinal stenosis. 283 patients were grouped according to age. One group was aged 65-74 years old and the second group was > 75-years-old. Follow-up was up to 42 months with a minimum of nine months. Within both treatment groups there was a significant (p<0.0001) subjective improvement in low back and radicular pain as well as the ability to per-form daily activities. When compared to preoperative levels, the oral scores for pain while performing daily activities were significantly improved (p<0.001) in both treatment groups. The authors concluded that the overall postoperative complication rate was similar between the groups and that age is not a contraindication for surgical decompression of lumbar spinal stenosis. Both groups are equally likely to suffer minor perioperative complications.

Conclusion:

In this study the fuctional outcome was better for a period of 6 months after surgery.

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