ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 4, Issue – 3, June - 2019, Page No. : 148 – 155

A Prospective Analysis on the Outcome of Degenerative Lumbar Spine Disorders: A Study at a Tertiary Hospital in Meeyannoor, Kollam.

Dr Atul Ajith[1], Dr Sanjeev Bhaskar[2*]

[1]Junior Resident, [2]Assistant Professor

[1,2]Department of Orthopedics, Azeezia Institute of Medical Sciences and Research, Meeyannoor, Kollam, Kerela.

Corresponding Author: Dr Sanjeev Bhaskar, Assistant Professor; Department of Orthopedics, Azeezia Institute of Medical Sciences and Research, Meeyannoor, Kollam, Kerela.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Aims & Objectives: 1) To compare the outcome of conservative / operative management in degenerative lumbar spine disorders in patients attending orthopaedic OPD at Azeezia Medical College and Hospital, Meeyannoor. 2)To compare the functional outcome of lumbar spine disorders treated with laminectomy and conservatively. 3)To study the end result of laminectomy with respect to pain and neurologic status after surgery. 4)To study the complications of laminectomy.

Materials and Method: A prospective study on patients above the age of 35years presenting with lumbar canal stenosis to Azeezia medical college between June 2014-2016 in the Department of orthopaedics. Sample Size has been found to be 15 for each group and hence total of 30 patients were required. Data for prospective cases data was collected by history by verbal communication, physical and clinical examination and radiological evaluation using a standard proforma.

Results: In the present study of 30 cases of degenerative lumbar spine disease 15 treated surgically another 15 conservatively the following results were obtained. The results have been compared with some of the standard series and found to be satisfactory. Mean age of patients in the present study is 55.23 years, with mean age in surgical group to be 54.4years and in conservative group to be 56.06 years. The youngest patient aged 37 years while the oldest was of 68 years. In the present study, degenerative lumbar spine disease was more commonly seen in patients who were in age group of 61 years to 65 years, constituting 10 patients. (33.3 %). The degenerative lumbar spine disease was found to be common in females which constituted 18 females (60 %).

Conclusion: In the present study, the treatment of degenerative lumbar spine disease was compared with surgical and conservative methods in 30 cases over a period of 2 years. At 6 month follow up statistically significant difference (p=0.001) was noted as per Independent sample Mann Whitney U test with respect to functionality among the two groups. A significant difference was noted in the surgical group on long term follow up with respect to pain, improvement in deficits and functional outcome as assessed by Roland Morris Score at 6weeks, 3 months and 6 months.

Keywords: Spinal canal, Stenosis, imaging, degenerative.

Introduction

Chronic degenerative arthritis of lumbar spine is one of the commonest affections in patients who are complaining of back pain. Life time incidence about 60 to 70 percentage[1,2].the affected persons workdays lost[2] and adversely effects the economy. Degenerative spine disease is not as such a disease condition, but a natural aging process due to wear and tear of the spinal column.

The spinal stenosis caused by the degenerative arthritis is the most common type[3].There are congenital forms like achondroplasia and dysplastic spondylolisthesis which are not that common other processes are Paget's disease, fluorosis, kyphosis, and fracture causing canal narrowing. Degenerative spine disorders come under acquired causes, arthritic changes seen in the facet joints and ligamentum flavum hypertrophy. This narrowing can be in single, double or multiple motion segment of the spine. Degenerative arthritis of lumbar spine follows structural abnormality of spine or chronic disc lesion of lumbar spine both resulting in relative lumbar canal stenosis[4] resulting in symptoms of neurologic claudication and clinical evidence of neurological deficit following nerve root entrapment.

Treatment modalities not only immediate pain relief but also to prevent the long-term disabilities caused by chronic back ache and spinal instability. With our modern advancements in better understanding of the Clinicopathological correlation treatment has a wide spectrum from conservative modalities to decompression and fusion with or without instrumentation. Research is going on to identify the various factors that accelerate degeneration and decrease its progression. Replacement of the nucleus pulposis[5]has been introduced.

The study envisages the analysis of two methods of treatment of degenerative spine disease namely conservative treatment which include physiotherapy, medications and surgical management as laminectomy and decompression of entrapped nerve roots.

Objectives of study

- To compare the functional outcome of lumbar spine disorders treated with laminectomy and conservatively.
- To study the end result of laminectomy with respect to pain and neurologic status after surgery.
- To study the complications of laminectomy.

Materials and Method

Study design: Prospective study

Study period: Two years July 2014-July 2016

Study population: Patients above the age of 35years presenting with lumbar canal stenosis to Azeezia medical college

Inclusion criteria

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

Exclusion criteria

1. Pathological fracture
2. Grade 4 Osteoporosis
3. Old fracture spine
4. Skin Infections

Sample size & sample technique

- Consecutive Sampling

$n = (Z_{\alpha/2} + Z_{1-\beta})^2 (p_1q_1 + p_2q_2)$

(p_1-p_2)

p_1 = proportion of conservative

p_2 = proportion of surgical

$\alpha = 0.05$

$Z_{\alpha/2} = 1.96$

$Z_{1-\beta} = 0.842$

$1-\beta$ = power of the test = 80%

Sample Size has been found to be 15 for each group and hence total of 30 patients are required.

Data collection technique and tools

Data for prospective cases data was collected by history by verbal communication, physical and clinical examination and radiological evaluation using a proforma

Data analysis

A total of 30 patients, separated into two groups of surgical and conservative were compared, and Data analysis was done by comparing the results of present study with the other standard international studies done by various authors.

Independent Samples Mann Whitney U Test (two tailed, independent) has been used to find the significance of study parameters between two groups (Intergroup analysis). Chi-square/Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

Statistical Methods

Descriptive and inferential statistical analysis has been carried out in the present study. Results on scale measurements are presented on Median ± SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance.

Observation

In the present study of 30 cases of degenerative lumbar spine disease 15 treated surgically another 15 conservatively the following results were obtained:

- The results have been compared with some of the standard series and found to be satisfactory.
- Mean age of patients in the present study is 55.23 years, with mean age in surgical group to be 54.4years and in conservative group to be 56.06 years. The youngest patient aged 37 years while the oldest was of 68 years.
- In the present study, degenerative lumbar spine disease was more commonly seen in patients who were in age group of 61 years to 65 years, constituting 10 patients. (33.3 %).
- The degenerative lumbar spine disease was found to be common in females which constituted 18 females (60 %).
- Right side was more commonly involved which is 14 cases (46.6 %). No side preference noted in 11 cases (36.66%)
- 12 (40 %) patients had associated medical illness. Diabetes Mellitus and Hypertension were commonly seen in patients in the present study.
- The mean duration of hospital stay was 13.4 days in surgical Group and 7.2 days in conservative Group.
- 1 patient had post-operative infection-superficial surgical scar infection. While one patient from conservative stream had gastritis and another patient had skin allergy as complication associated with procedure
- Most of the patients had endured the pain for two years. The earliest presentation was at 6 months duration. On an average patient presented after 24 months of pain, the maximum duration being 6 years.
- In the present study 8 patients had only leg pain 11 patients had both leg pain and back pain and 11 patients had only back pain.
- In the present study 17 patients had SLRT less than 50 deg.13 patients presented with SLRT more than 50.
- EHL weakness was found in whole study population while FHL weakness was found only in 3 patients.
- 23 patients had reduced sensations in either or both the lower limbs.

- Deep tendon reflexes were diminished in 14 patients (46%).
- X-ray of lumbosacral spine (AP and Lateral) was taken for 30 patients.
- MRI was taken in all 15 patients who underwent surgery and in 6 patients who was treated conservatively
- Out of 30 patients, 16 had scoliosis as an associated feature-9 in surgical and 7 in conservative stream.
- Out of 30 patients, 25 had difficulty in flexing spine-13 in surgical and 12 in conservative stream
- For Surgical group mean hemoglobin, Random Blood Sugar was 12.64 gm%, 128.13 mg/dl respectively.
- 4 patients in the conservative group where changed to surgical group following worsening of symptoms or recurrence

The mean Roland Morris Score for surgical and conservative treatment at 6 weeks was 14.47 and 12.87, 3 months was9.07 and 10.13, at 6 months it was 3.6 and 6.27 respectively.

Discussion

This is a study of 30 patients with degenerative lumbar spine disease with canal stenosis. Diagnosed based on the clinical findings supported by x ray and MRI. There were 15 patients who were treated surgically and 15 treated conservatively.

- The mean age group of this study was 55.23 ,CAPUTY ET AL[18] their study had a mean age of 67 years, JOHNSON ET AL[19] study has a mean age of 60 years
- This study had a female predominance ,most of the studies have a female preponderance like CAPUTY ET AL and KATZ ET AL[18]
- Most of the patients had pain for 1-2 years in the present study this is compatible with CAPUTY ET AL ,KE JOHNSON ET AL[19]
- Patients initially given a conservative line of management. If they are not better with the conservative modality like the pain is as of the same intensity or worsening during the course of treatment[20].with support of the radiological investigation and of course clinical findings .the exact pathology of nerve root compression is identified and managed surgically with procedures like decompression, decompression with fusion or decompression fusion with instrumentation.
- Routine pain x ray of lumbosacral spine was taken for all patients in the study. Flexion extension views taken only if indicated for surgery. MRI was taken if there is no or worsening of the symptoms.
- The symptomatic improvement with treatment according to RMD (Roland-Morris Disability)[21]questionnaire given to the patients during their follow-ups and assessment of the neurological status.
- This study didn't have any correlation with the signs and symptoms, the pain wasn't associated with the neurological status, the improvement of neurological status was better in the surgical group than in conservative group.
- The outcome of the surgical group was better when in patients who had pain for shorter duration.as the duration of pain increases it need not give a better result in form of outcome like pain and neurological status improvement.
- Patients under surgical group became better in relation to pain, claudication and neurological

deficits than the conservative group for a follow up period of 6 months.

- In this study the functional outcome was better for a period of 6 months after surgery. A study conducted by ATLAS S J et al[16] who conducted a 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.
- One patient in the surgical group had superficial surgical scar infection which became better after proper antibiotic and regular dressing.one patient from conservative group had skin allergy and the other had gastritis with NSAID's.

Graph 1

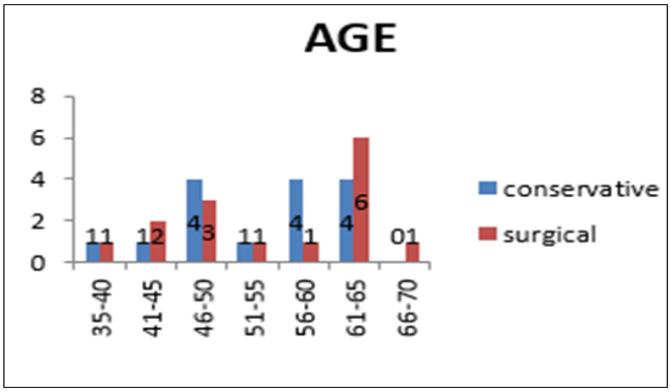

Table 1

Age	conservative	surgical
35-40	1	1
41-45	1	2
46-50	4	3
51-55	1	1
56-60	4	1
61-65	4	6
66-70	0	1

Graph 2

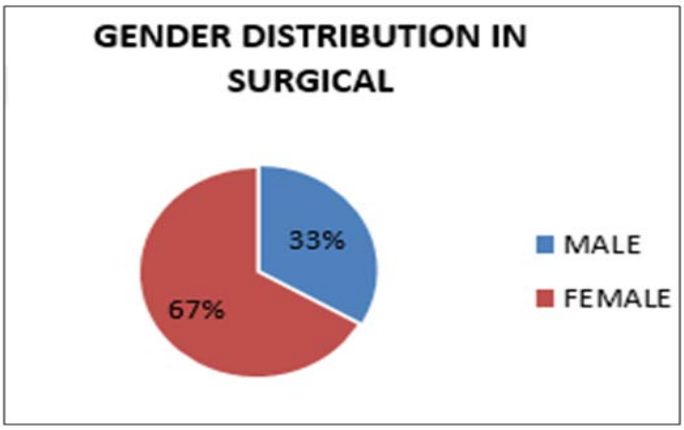

Table No.2

SEX	SURGICAL
MALE	5
FEMALE	10

Graph 2

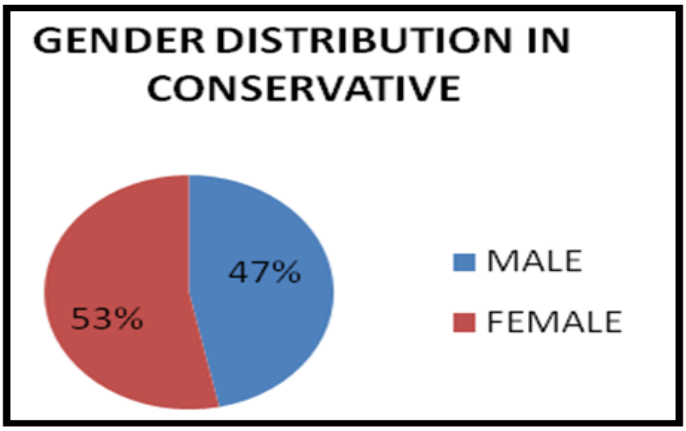

Table 3

SEX	CONSERVATIVE
MALE	7
FEMALE	8

Graph 4

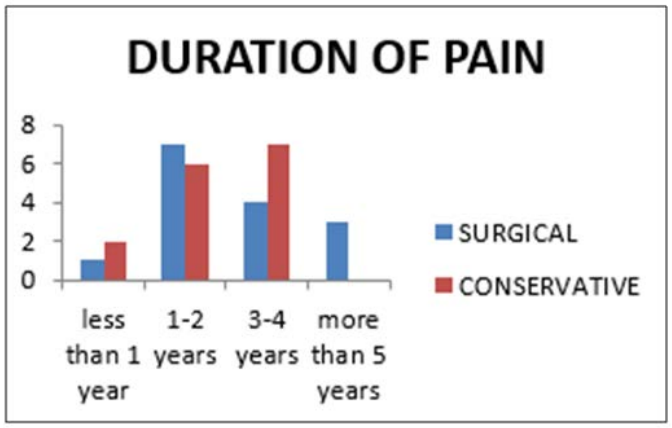

Table 4

DURATION OF PAIN	SURGICAL	CONSERVATIVE
less than 1 year	1	2
1-2 years	7	6
3-4 years	4	7
more than 5 years	3	0

Graph 5

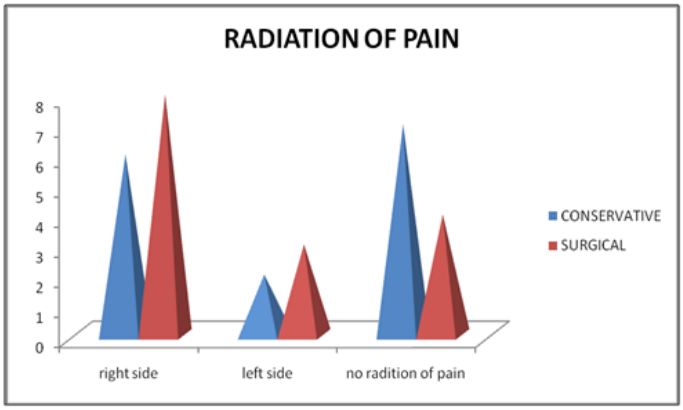

Table 5

Radiation Of Pain	Conservative	Surgical
Right Side	6	8
Left Side	2	3
No Radiation Of Pain	7	4

Conclusion

- In the present study, the treatment of degenerative lumbar spine disease was compared with surgical and conservative methods in 30 cases over a period of 2 years.
- At 6-month follow up statistically significant difference (p=0.001) was noted as per Independent sample Mann Whitney U test with respect to functionality among the two groups.
- significant difference was noted in the surgical group on long term follow up with respect to pain, improvement in deficits and functional outcome as assessed by Roland Morris Score at 6weeks, 3 months and 6 months.
- The complication we encountered was one case of superficial surgical scar infection from surgical stream. While one patient from conservative stream had gastritis and another patient had skin allergy which is in par with the complication rates in standard literatures.
- The complications associated with this operation can be avoided by proper selection of cases, good pre-operative planning, and good surgical skills with awareness regarding proper postoperative physiotherapy.
- According to present study, surgery can be recommended as the treatment choice in degenerative lumbar spine disease considering its long-term benefits.

References

1. Svensson HO, Andersson GB. Low-back pain in 40- to 47-year-old men: work history and work environment factors. Spine. 1983 Apr;8(3):272–6.
2. Svensson HO, Andersson GB. The relationship of low-back pain, work history, work environment, and stress. A retrospective cross-sectional study of 38- to 64-year-old women. Spine. 1989 May;14(5):517–22.

3. (retired) PFU Jr ,MD, Orthopedic Surgeon. Lumbar Spinal Stenosis: A Definitive Guide [Internet]. Spine-health. [cited 2016 Nov 25]. Available from: http://www.spine-health.com/conditions/spinal-stenosis/lumbar-spinal-stenosis-a-definitive-guide
4. Medtronic. Lumbar Spinal Stenosis Treatment & Symptoms | Back.com [Internet]. [cited 2016 Nov 25]. Available from: http://www.back.com/back-pain/conditions/lumbar-spinal-stenosis/index.htm
5. Ise S, Abe K, Orita S, Ishikawa T, Inage K, Yamauchi K, et al. Surgical treatment for far-out syndrome associated with abnormal fusion of the L5 vertebral corpus and L4 hemivertebra: a case report. BMC Res Notes [Internet]. 2016 Jun 28 [cited 2016 Nov 26];9. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4924308/
6. Canale ST, Beaty JH. Campbell's Operative Orthopaedics. Elsevier Health Sciences; 2012. 5105 p.
7. Goats GC. Continuous short-wave (radio-frequency) diathermy. Br J Sports Med. 1989 Jun;23(2):123–7.
8. DeSantana JM, Walsh DM, Vance C, Rakel BA, Sluka KA. Effectiveness of Transcutaneous Electrical Nerve Stimulation for Treatment of Hyperalgesia and Pain. Curr Rheumatol Rep. 2008 Dec;10(6):492–9.
9. Hansraj KK, O'Leary PF, Cammisa FP, Hall JC, Fras CI, Cohen MS, et al. Decompression, fusion, and instrumentation surgery for complex lumbar spinal stenosis. Clin Orthop. 2001 Mar;(384):18–25.
10. Zaina F, Tomkins-Lane C, Carragee E, Negrini S. Surgical versus non-surgical treatment for lumbar spinal stenosis. Cochrane Database Syst Rev. 2016 Jan 29;(1):CD010264.
11. Athiviraham A, Yen D. Is spinal stenosis better treated surgically or nonsurgically? Clin Orthop. 2007 May;458:90–3.
12. Malmivaara A, Slätis P, Heliövaara M, Sainio P, Kinnunen H, Kankare J, et al. Surgical or nonoperative treatment for lumbar spinal stenosis? A randomized controlled trial. Spine. 2007 Jan 1;32(1):1–8.
13. Weinstein JN, Lurie JD, Tosteson TD, Skinner JS, Hanscom B, Tosteson ANA, et al. Surgical vs nonoperative treatment for lumbar disk herniation: the Spine Patient Outcomes Research Trial (SPORT) observational cohort. JAMA. 2006 Nov 22;296(20):2451–9.
14. Park DK, An HS, Lurie JD, Zhao W, Tosteson A, Tosteson TD, et al. Does multilevel lumbar stenosis lead to poorer outcomes?: a subanalysis of the Spine Patient Outcomes Research Trial (SPORT) lumbar stenosis study. Spine. 2010 Feb 15;35(4):439–46.
15. Amundsen T, Weber H, Nordal HJ, Magnaes B, Abdelnoor M, Lilleâs F. Lumbar spinal stenosis: conservative or surgical management?: A prospective 10-year study. Spine. 2000 Jun 1;25(11):1424-1435-1436.
16. Atlas SJ, Keller RB, Wu YA, Deyo RA, Singer DE. Long-term outcomes of surgical and nonsurgical management of lumbar spinal stenosis: 8 to 10 year results from the maine lumbar spine study. Spine. 2005 Apr 15;30(8):936–43.
17. Epstein NE. Spine surgery in geriatric patients: Sometimes unnecessary, too much, or too little. Surg Neurol Int [Internet]. 2011 Dec 31 [cited 2016

Nov 29];2. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3263001/

18. Caputy AJ, Luessenhop AJ. Long-term evaluation of decompressive surgery for degenerative lumbar stenosis. J Neurosurg. 1992 Nov 1;77(5):669–76.
19. The Natural Course of Lumbar Spinal Stenosis. : Clinical Orthopaedics and Related Research [Internet]. LWW. [cited 2016 Dec 1]. Available from: http://journals.lww.com/corr/Fulltext/1992/06000/The_Natural_Course_of_Lumbar_Spinal_Stenosis_.10.aspx
20. Yuan PS, Booth RE, Albert TJ. Nonsurgical and surgical management of lumbar spinal stenosis. Instr Course Lect. 2005;54:303–12.
21. Roland Morris Disability Questionnaire [Internet]. [cited 2016 Dec 1]. Available from: http://www.rmdq.org/