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ORIGINAL ARTICLE

Outcome of Decompression Alone Versus Decompression Plus Transpedicular Screw Fixation in the Treatment of Degenerative Lumbar Spine Stenosis

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ABSTRACT

Background: Degenerative lumbar spinal stenosis (DLSS) is a condition where degenerative and arthritic state of the disc and facet joints respectively results in the displacement of the vertebra resulting in lower back pain in association with radiculopathy. In patients with degenerative lumbar spine, the rate of fixation has increased**.**

Aim: To identify the difference in outcome of decompression alone versus decompression with spinal fixation in DLSS.

Place and duration of study: Department of Orthopaedic & Spine Surgery, Ghurki Trust Teaching Hospital, Lahore from 1st January 2017 to 31st December 2019.

Methodology: All the discharged patients with primary diagnosis of DLSS were identified. Two subgroups were studied i.e. Decompression only and Decompression with TranspedicularScrew Fixation .Primary outcome among patients was assessed using Swiss Spinal Stenosis Score (SSS). All the data were entered and analyzed using SPSS software and p-value≤0.05 considered to be significant.

Results: Total number of patients included in study was 87.out of the total,34(39%) patients had underwent decompression alone, whereas in 53(60.9%) patients decompression with transpedicular fixation were done. Significant difference was not observed among cases with respect to mean score on SSS based on two different types of surgical interventions. In decompression with fixation group, the average length of stay of patients in hospital was 6.4 days as compared to decompression only group as 4.4 days.

Conclusion: Both surgical procedures decompression plus transpedicular fixation and decompression alone produce similar outcome at 2 years follow-up.

Keywords: Decompression, Swiss Spinal Stenosis Score, Degenerative spine, Transpedicular screw fixation

INTRODUCTION

Spinal stenosis at the level of lumbar vertebrae occurs due to narrowing of the central canal and is usually caused due to degeneration of the spine resulting in the disability of the patients.[1] Hence, becoming the commonest cause of spine surgery in elderly people.[2] In many studies, surgical option have been preferred over the conservative management.[3] In surgical options decompression of neural structures with laminectomy has been supplemented with fusion avoiding instability and deformity of lumbar spine in future.[4] Diagnosis of DLSS is based on clinical history, physical examination and imaging modalities, most important of which is magnetic resonance imaging (MRI)[5]. Treatment usually begins with conservative management with regular follow-up. Unremitting pain, progressive neurological deterioration and Cauda Equina syndrome warrants surgical treatment. In some cases the natural history is variable and progressive neurological deterioration does not occur. But recent studies strongly suggested that decompression is the most effective treatment option for decreasing pain and improving functional outcome of patients in degenerative lumbar spine stenosis[6,7].

Similar study was conducted in 2016 and the findings indicated that fixation surgery along with decompression gives similar outcome at 2 years as compared to decompression alone surgery[7].

MATERIALS AND METHODS

This retrospective study conducted at Ghurki Trust & Teaching Hospital Lahore from 1st January 2017 to 31st December 2019 after approval from IRB. All patients between 50-75 years of age of either sex who had not undergone previous spine surgery were included. Patients having scoliosis or any history of trauma to spine were excluded. Patients were divided into two groups; Decompression only and Decompression with Transpedicular Screw Fixation. Radiologocal assessment like AP, Flexion, Extension radiographs along with magnetic resonance imaging of lumbosacral spine among all patients were done preoperatively.[8].Only patients with spinal stenosis at one or two adjacent lumbar vertebral levels were included in the study. The data for this study were obtained from hospital data base. This data base contains clinical and non clinical data; diagnosis, investigations, procedure, clinical features and hospital related information.

All the procedures were performed by consultants who were experienced in performing both techniques. Selection of an appropriate technique was determined exclusively by the surgeons. Outcome of this study was measured with the use of patient reported data obtained from validated questionnaires Swiss Spinal Stenosis Score (SSS). The primary outcome was the score on the SSS. This score included 18 questions related to pain, neuro-ischemic, phyiscal function and patuiients satisfaction domain.[9] The study included patients who underwent the assigned surgery and completed the two year follow-ups. Independent sample t-test and Chi square test were applied to analyze the difference between the two surgical subgroups. P value ≤0.05 was considered to be significant.

Fig 1; preoperative & postoperative degenerative lumbar spine stenosis decompression with fixation

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Fig 2: Preoperative and postoperative degenerative lumbar spine stenosis decompression alone

Preoperative view Postoperative

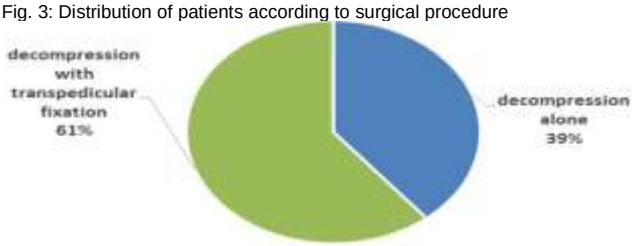
RESULTS

The mean score on the SSS in two years was 35±12.3 in decompression group and 32±15.0 in decompression with transpedicular screw fixation group. There was no significant difference between two treatments groups (p=0.20). In decompression with fixation group, the average length of stay of patients in hospital was 6.4 days as compared to decompression only group as 4.4 days. Significant difference in mean age and hospital stay between two groups observed as p<.05 (Table 1, Fig. 3).

Table 1: Comparison of patients according to demographic and clinic profile

Variable	Group I	Group II	P value
Gender			
Male	24 (70.6)	32 (60.4)	0.081
Female	10 (29.4)	21 (39.6)	
Age (years)	42.1±3.95	45.0±3.41	*0.005
Hospital stay (days)	4.4±1.2	6.4±3.2	*0.008
SSS	35±12.3	32±15.0	0.20
Symptom Severity	16	14	
Physical function	10	8	
Satisfaction	9	9	

Fig. 3: Distribution of patients according to surgical procedure



DISCUSSION

In the present study we came to know that there is no clinical benefit at 2 years post surgery of adding fusion with decompression of degenerative lumbar spine. Previously it was considered that decompression alone in degenerative lumbar spine could lead to iatrogenic spondylolisthesis[10]. But in recent studies, this perception has been shifted[11] as degenerative lumbar spondylolisthesis if left untreated does not progress[12]. But despite this fact most surgeons these days usually prefers decompression with fusion surgery in an attempt to overcome instability and re-stenosis postoperatively[13]. But this fact has not been established in clinical trails[14]. In our study, there is no significant difference in mean score of SSS between decompression alone and decompression with fixation Some other studies have suggested that there is no significant advantage of adding fusion to decompression even in lumber spinal stenosis with spondylolisthisis[15,16].

Decompression with fixation surgery in comparison to only decompression is lengthy procedure with an increased risk of severe complication like mal-positioning of the implant leading to neurology compromise, fracture or dislodgment of the implant. Apart from complications fixation with decompression also increases the operating time leading to increase cost of surgery and in-hospital stay. However, decompression alone is less risky, has lower treatment cost per patient and a shorter operating time and shorter hospital stay.

CONCLUSION

The patients with degenerative lumbar spinal stenosis involving one or two adjacent vertebral levels undergoing decompression with transpedicular fixation did not show superior clinical results over the decompression alone surgery.

Conflict of interest: Nil

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