



DEGENERATIVE LUMBO-SACRAL DISORDERS– IS SURGERY REQUIRED?

Orthopaedics

*DR ATUL K
PATILASSOCIATE PROFESSOR, TERNA MEDICAL COLLEGE, NERUL, NAVI
MUMBAI. *CORRESPONDING AUTHORDR ANURAG
GUPTA

ASSISTANT PROFESSOR, GMC, AKOLA.

DR VIKRAM
KHANNA

APOLLO HOSPITAL, NAVI MUMBAI.

ABSTRACT

Common subgroups of low back pain of IVD origin include lumbar disc herniation, internal disc disruption (IDD), and degenerative disc disease (DDD). DDD also contributes to the pathogenesis of secondary spinal disorders such as spinal stenosis and degenerative spondylolisthesis. Lumbar Canal stenosis is a progressive degenerative disorder of the spine most frequently causing morbidity in middle aged and elderly. The diagnosis is essentially clinical and only supported by radiological investigations. The natural course of spinal stenosis is that a substantial proportion of patients do not automatically deteriorate and will remain unchanged or even improved by nonoperative treatment. Ultimately, patient desire combined with failure of conservative treatment with physical therapy, activity modification, medication, and steroid injections drives the decision for operative treatment. Proper patient selection is critical to achieving a good outcome with spinal stenosis surgery. The ideal patient has symptoms of neurogenic claudication, which includes pain, numbness, and paresthesias in the posterolateral legs and thighs associated with prolonged walking or with activities causing back extension such as walking up stairs. In properly selected patients, there is a significant improvement in symptoms and ODI score over a follow-up of 9 months, the maximum improvement occurring upto 3 months post-surgery. Age less than 65 years, duration of symptoms less than 12 months, lower number of levels involved were positively correlated with better post-op results. Thus it can be concluded that predictors of clinical and neurological recovery in operated cases of degenerative lumbo-sacral spine disorders are age of the patient, duration of symptoms and number of intervertebral levels involved.

KEYWORDS

Introduction:

Degenerative spine disease is the commonest cause of back pain in the elderly population. With the average life expectancy of the population is on the rise along with the functional demand of the elderly population. With the increase in the functional demand of the population it is seen that the disability is more. The degenerative spine is also known as degenerative disc disease which most commonly presents as Lumbar canal stenosis.

Kirkaldy-Willis¹ et al. have described the mechanism of degenerative disc disease in 3 stages - dysfunction, instability, and stabilization. In the initial stage there is dysfunction of the disc due to age related loss of elasticity, this dysfunction causes instability of the spine which is stabilized by the help of osteophytes. Treatment generally consists of methods not only to give pain relief but also to avoid chronic low back pain.

This study was conducted to evaluate the role of surgery in degenerative disc disease along with the impact of the timing of the surgery.

Methodology:

This study was conducted on 30 patients who underwent surgery for degenerative lumbar spine between January 2012 and March 2013. All the patients had received appropriate conservative management for a minimum period of 6 weeks before the surgery. 15 women and 15 men were included in the study. The ethics committee approved the study plan and informed consent was obtained from all patients before the operation.

All patients with diagnosed lumbar canal stenosis, degenerative spondylolisthesis or prolapsed intervertebral disc disease who had not improved despite 6 weeks of conservative management were included in this study. Patients with cauda equine syndrome, earlier back operation, ankylosing spondylitis, neoplasm, metabolic diseases, Intermittent claudication due to atherosclerosis, Severe osteoarthritis, Neurologic disease causing impaired function of the lower limbs, including diabetic neuropathy, Psychiatric disorders, no definite diagnosis or Hemodynamically and medically unstable patients were

excluded from this study.

After a detailed neurological examination the radiographs and MRI were taken. After confirming the diagnosis and giving the patient an adequate trial of conservative treatment for 6 weeks, surgical intervention was planned. Surgery was done by a senior spine specialist for a definite diagnosis. Decompression + stabilization for Lumbar canal stenosis, stabilization with instrumentation for spondylolisthesis (Figure 1, 2).

Results were graded as follows:

1. Excellent results: Were those in which the patients had no pain or neurodeficit and returned to his or her previous work.
2. Good results: Were those when patients had occasional pain requiring medications but returned to work.
3. Fair results: Were those in which patients required medications but returned to lighter work.
4. Bad or worse results : Were those in which there was no reduction but sometimes aggravation of pain and neurological deficit.

Excellent and Good results were classified as Successful outcomes
Fair and Bad results were classified as Unsuccessful results.

Results:

Most patients were in the age group of 45-54 years (30%) followed by 35-44 years (26.7 %). Maximum patients were of DDD (53.3%) followed by LCS (36.7%) followed by DS (10%). 63.3% patients had only a single level involvement while 23.3% patients had 2 level involvement and only 13.3% patients had 3 level involvement. 43.33% patients were symptomatic for less than 6 months, 36.66% patients for 7-12 months while only 20 % patients for more than 12 months. 60% patients underwent decompression alone, 23.3% patients underwent decompression with interbody fusion, while 16.7 % patients underwent decompression with posterolateral fusion. At the end of 9 month follow-up, 46.7% patients had more than 75% improvement in ODI score, 36.7% patients had improvement from 50-74%, while 16.7% patients had improvement less than 50%. 40% patients had an excellent outcome, 43.3% patients had a good outcome, 13.3% patients had a fair and only 1 patient i.e 3.3% had a poor outcome which meant that 83.3% patients had a successful outcome while

16.7% patients had an unsuccessful outcome. It was found that age of the patient, number of levels involved and the duration of symptoms were significantly correlated with the improvement (Table 1). It was found that age had a significant effect on the final result for a patient. Duration of symptoms before the surgery had a significant effect on the outcome. Patients with duration of symptoms less than 12 months significantly better results than those with more than 12 months (Table 2).

Discussion:

This study was conducted to study the clinical and neurological pattern of recovery in operated cases of degenerative lumbo-sacral spine disorders and to study the predictors of recovery in the same. In our study it was noted that most patients were in the age group of 45-54 years (30%) followed by 35-44 years (26.7 %). The mean age was 52.37 years. This was comparable to a similar study by Herno et al.² where the mean age at presentation was 52 years.

In this study, 83.3% patients had a successful outcome while 16.7% patients had an unsuccessful outcome. De Palma and Rothman in 1969 found good results in 88% of the patients with relief of back pain and leg pain those who underwent discectomy for lumbar disc degeneration³. The work of Gordon Waddell in 1988 assessed results postoperatively by pain, disability physical impairment and return to work. He found success rates in 90% of them⁴.

A study by Gelalis et al⁵ showed that the outcomes were excellent to good in 72% of patients. In this study, it was found that the outcomes were significantly better in patients younger than 65 years than those with patients older than 65 years (p-value 0.00042). This correlates with a similar finding noted by Thornes et al⁶, where people of 65 years or more were four times more likely to be not satisfied with surgery result as compared to those less than 65 years (p=0.02).

In this study, it was found that the outcomes was significantly better in patients with duration of symptoms less than 12 months than in patients symptomatic for more than 12 months (p-value <0.05). This correlates with the similar findings noted by Ng et al⁷ where the patients with sciatica for more than 12 months have a less favourable outcome (p-value 0.039).

In this study, it was found that the patients with single and 2 level involvement had a better outcome than those with more than 2 level involvement (p-value 0.004). We failed to find a similar correlation mentioned in other similar studies published in the literature.

The difference in the results in this study could be due to the shorter duration of follow-up and the difference in the study population and the setup. In this study it was found that the improvement in VAS score for back pain and leg pain, the RMDQ score and the ODI score over the 9 month follow-up had a typical pattern. Significant improvement was noted to occur during the first 1 to 3 months after the surgery. Then there was a plateau till the final follow-up where not much improvement occurred. This correlates with a similar finding noted by Atlas et al⁸ in The Maine lumbar spine study, where the maximal benefit of surgery was observed by the time of the first follow-up evaluation, which was at 3 months. In this study, it was found that males had a better outcome than females, however, the difference was not statistically significant (p-value 0.221). This finding was similar to that noted by Thornes et al⁶ where females were found to be less satisfied after the surgery but did not reach the level of significance in the adjusted analysis (p-value 0.08).

Conclusion:

Predictors of clinical and neurological recovery in operated cases of degenerative lumbo-sacral spine disorders are age of the patient, duration of symptoms and number of intervertebral levels involved.

Figure 1: Figure showing posterior stabilization in a case of spondylolisthesis



Figure 2: Posterior stabilization with interbody fusion for



Tables:

Table 1 Correlation between age, no. of levels, time since symptoms and % improvement in ODI

Variables		Age (in years)	No. of levels involved	Time since symptomatic	% improvement in ODI
Age (in years)	Pearson Correlation	1	.603(**)	.712(**)	-.472(**)
	p-value		0.0004	1.01E-05	0.0084
No. of levels involved	Pearson Correlation	.603(**)	1	.766(**)	-.534(**)
	p-value	0.0004		8.27E-07	0.0024
Duration of symptoms (months)	Pearson Correlation	.712(**)	.766(**)	1	-.705(**)
	p-value	1.01E-05	8.27E-07		1.34E-05
% improvement in ODI	Pearson Correlation	-.472(**)	-.534(**)	-.705(**)	1
	p-value	0.0084	0.0024	1.34E-05	

**Significant correlation <0.01

Table 2 Comparison of results on the basis of duration of symptom

Duration of Symptoms (months)		Result				Total
		Excellent #	Good #	Fair @	Poor @	
<= 6	No.	8	5	0	0	13
	%	61.5%	38.5%	0.0%	0.0%	100.0%
7 to 12 ^	No.	4	7	0	0	11
	%	36.4%	63.6%	0.0%	0.0%	100.0%
> 12 ^	No.	0	1	4	1	6
	%	0.0%	16.7%	66.7%	16.7%	100.0%
Total	No.	12	13	4	1	30
	%	40.0%	43.3%	13.3%	3.3%	100.0%

REFERENCES

- Kirkaldy-Willis WH, Farfan HF. Instability of the lumbar spine. Clin Orthop Relat Res. 1982 May;165:110-23.
- Herno A, Airaksinen O, Saari T. The long-term prognosis after operation for lumbar spinal stenosis. Scand J Rehabil Med. 1993 Dec;25(4):167-71.
- DePalma AF, Rothman RH. Surgery of the lumbar spine. Clin Orthop Relat Res. 1969 Mar-Apr;63:162-70.
- Waddell G, Reilly S, Torsney B, Allan DB, Morris EW, Di Paola MP, et al. Assessment of the outcome of low back surgery. J Bone Joint Surg Br. 1988 Nov;70(5):723-7.
- Gelalis ID, Stafilas KS, Korompilias AV, Zacharis KC, Beris AE, Xenakis TA. Decompressive surgery for degenerative lumbar spinal stenosis: long-term results. Int Orthop. 2006 Feb;30(1):59-63.
- Thornes E, Ikonomou N, Grotle M. Prognosis of surgical treatment for degenerative lumbar spinal stenosis: a prospective cohort study of clinical outcomes and health-related quality of life across gender and age groups. Open Orthop J. 2011;5:372-8.
- Ng LC, Sell P. Predictive value of the duration of sciatica for lumbar discectomy. A prospective cohort study. J Bone Joint Surg Br. 2004 May;86(4):546-9.
- Atlas SJ, Deyo RA, Keller RB, Chapin AM, Patrick DL, Long JM, et al. The Maine Lumbar Spine Study, Part III. 1-year outcomes of surgical and nonsurgical management of lumbar spinal stenosis. Spine (Phila Pa 1976). 1996 Aug 1;21(15):1787-94; discussion 94-5.