



THE RATIO OF RECURRENT DISC HERNIATIONS IN POSTERIOR THORACIC AND LUMBAR FUSION SURGERIES

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ABSTRACT

Objective: The aim of our study is to evaluate the ratio of recurrent disc herniation in posterior thoracic-lumbar fusion surgeries.

Materials and Method: We evaluate the ratio of recurrent disc herniation in posterior thoracic-lumbar fusion surgeries. The patient files and radio-diagnostic images were inspected retrospectively. Simple microdiscectomies lateral and anterior thoracic-lumbar stabilization surgeries were excluded.

Results: One hundred ninety one patients were included in the study. Mean age of the study group was 56.3 ± 14.2 years. M/F was 48.2 / 51.8. Mean age was 53.6 years for males, and 58.8 years for women ($p=0.06$). Most frequent diagnosis was stenosis ($n=117$, 61.3 %), and recurrence was present in 14.7 % of the cases ($n=28$). Revision operation was performed in 6.8 % of patients. The comparisons between genders revealed that stenosis rates were higher in females, and fracture rates were higher in males ($p=0.003$). However, rates of revision operations were similar between males and females ($p=0.445$). Most frequent level of recurrent disc herniation were L4-L5 (78.57 %).

Conclusions: It is spectacular that the ratio of recurrent disc herniation is more than listhesis and fracture surgeries in posterior thoracic-lumbar instrumentation surgeries.

Key Words: Recurrent disc herniation, posterior instrumentation, stabilization surgery.

Level of Evidence: Retrospective clinical study, Level III.

INTRODUCTION

The definition of recurrent lumbar disc herniation is an ipsilateral or contralateral disc herniation at the same level as the primary herniation typically after a 6-month pain-free interval from the main surgery⁽⁵⁻⁶⁾. Many reasons are discussed for the degenerative process of lumbar disc degeneration and recurrence in the literature⁽¹³⁾. The ratio of re-herniation of operated lumbar disc herniation is 25 % whereas only of 11 % of those cases requiring revision^(1,7).

The most common treatment modality could be either a repeat discectomy or a discectomy supplemented with arthrodesis⁽¹⁰⁾. Systematic reviews in the literature have investigated to

understand whether undergoing a fusion procedure offers significant advantage over repeat discectomy and found no evidence to support such a recommendation^(3-4,15).

In our study, we try to evaluate the ratio of recurrent disc herniation in posterior instrumentation surgeries.

MATERIALS AND METHOD

We evaluate the ratio of recurrent disc herniation in posterior thoracic-lumbar fusion surgeries. The patient files and radio-diagnostic images were inspected retrospectively. Only surgeries with posterior thoracic-lumbar instrumentation included for the study. Simple microdiscectomies

lateral and anterior thoracic-lumbar stabilization surgeries were excluded. One hundred ninety one patients were collected for the study.

Statistical Analyses

Descriptive data were presented as mean and standard deviations for numerical variables, and frequencies and percent for categorical variables. Independent group comparisons were analyzed with Chi-square and Mann-Whitney U tests between genders. A Type I error level of 5% was considered as statistical significance in analyses. SPSS 18 (IBM Inc., Armonk, USA) was used for the statistical assessments.

RESULTS

One hundred ninety one patients were included in the study. Mean age of the study group was 56.3 ± 14.2 years. M/F was 48.2 / 51.8. Mean age was 53.6 years for males, and 58.8 years for women ($p=0.06$) (Table-1).

Table-1. General demographics of the patients

	Mean	SD
Age (years)	56.3	14.2
	N	%
Sex		
Male	92	48.2
Female	99	51.8

The clinical characteristics of patients were presented in Table 2. Most frequent diagnosis was stenosis ($n=117$, 61.3 %), and recurrence was present in 14.7 % of the cases ($n=28$). Revision operation was performed in 6.8% of patients. Distribution of the operation sites were presented in the table. The comparisons between genders revealed that stenosis rates were higher in females, and fracture rates were higher in males ($p=0.003$) (Table-2).

But, rates of revision operations were similar between males and females ($p=0.445$). Most frequent level of recurrent disc herniations were L4-L5 (78.57%). Remaining sites of recurrence were presented in Table-3.

Table-2. Clinical characteristics of patients

	Total n (%)	Male n (%)	Female n (%)	p
Diagnosis				0.003
Stenosis	117 (61.3)	48 (52.2)	69 (69.7)	
Recurrent Disc	28 (14.7)	15 (16.3)	13 (13.1)	
Listesis	24 (12.6)	11 (12)	13 (13.1)	
Fracture	19 (9.9)	16 (17.4)	3 (3)	
Infection	2 (1)	2 (2.2)	-	
Tumor	1 (0.5)	-	1 (1)	
Revision operation	13 (6.8)	7 (7.6)	6 (6.1)	0.445
Operation site				
Iliac wing	3 (1.6)	2 (2.2)	1 (1)	
T3	3 (1.6)	2 (2.2)	1 (1)	
T4	3 (1.6)	2 (2.2)	1 (1)	
T5	3 (1.6)	2 (2.2)	1 (1)	
T6	1 (0.5)	1 (1.1)	-	
T9	1 (0.5)	1 (1.1)	-	
T10	3 (1.6)	2 (2.2)	1 (1)	
T11	3 (1.6)	2 (2.2)	1 (1)	
T12	10 (5.2)	7 (7.6)	3 (3)	
L1	14 (7.3)	9 (9.8)	5 (5.1)	
L2	34 (17.8)	21 (22.8)	13 (13.1)	
L3	77 (40.3)	33 (35.9)	44 (44.4)	
L4	145 (75.9)	68 (73.9)	77 (77.8)	
L5	158 (82.7)	74 (80.4)	84 (84.8)	
S1	57 (29.8)	30 (32.6)	27 (27.3)	

Table-3. Most frequent level of recurrence disc herniation

	n	%
Diagnosis of recurrence level of recurrence	28	100
L5-S1	4	14.29
L4-L5	22	78.57
L3-L4	2	7.14

DISCUSSION

The choice of treatment modality between repeat discectomy and discectomy with fusion for recurrent lumbar disc herniation is an area of debate among spinal surgeons; also there are no clear guidelines established to assist surgeons in determining which approach is most appropriate to treat with ^(2,12,14). In the literature, some authors suggest discectomy for patients with recurrent lumbar disc herniation and radiculopathy, whereas fusion has been recommended in cases of lumbar instability, radiographic degenerative changes and/or chronic axial lower back pain ⁽⁸⁾.

Kerezoudis et al evaluated 1405 patients from 15 studies undergoing surgery for recurrent lumbar disc herniation. and both procedures were found to cause significant improvement in symptoms and disability following revision surgery ⁽¹⁰⁾. Furthermore, they concluded with that fusions were associated with longer operative times and hospital stays as well as higher intraoperative blood loss and no significant differences were found with regards to functional outcomes, reoperation rates and dural tears between the two cohorts.

Guan et al used the National Neurosurgery Quality and Outcomes Database (N2QOD) to assess outcomes of patients who underwent repeat discectomy versus instrumented fusion at a single institution from 2012 to 2015 and they found that repeat discectomy and instrumented fusion result in similar clinical outcomes at short-term follow-up; patients undergoing repeat discectomy had significantly shorter operative times and length of stay, and they incurred dramatically lower hospital charges ⁽⁹⁾.

Mroz et al made a survey of clinical and radiographic case scenarios that included a one- and twotime lumbar disc herniation was electronically delivered to 2,560 orthopedic and neurologic surgeons in the United States and the surgical treatment options were revision microdiscectomy, revision microdiscectomy with in situ fusion, revision microdiscectomy with posterolateral fusion using pedicle screws, revision microdiscectomy with posterior lumbar interbody fusion/transforaminal

lumbar interbody fusion (PLIF/TLIF), anterior lumbar interbody fusion (ALIF) with percutaneous screws, ALIF with open posterior instrumentation, or none of these ⁽¹¹⁾. Surgeons in practice for more than 15 years were more likely to select revision microdiscectomy compared with surgeons with fewer years in practice who were more likely to select revision microdiscectomy with PLIF/TLIF. Similarly, those surgeons performing more than 200 surgeries per year were more likely to select revision microdiscectomy with PLIF/TLIF than those performing fewer surgeries ⁽¹¹⁾.

CONCLUSION

In our study, the ratio of recurrent disc herniation operated with fusion surgery is 14.7 % and fusion surgery is a common chosen treatment modality for this disease. : It is spectacular that the ratio of recurrent disc herniation is more than listhesis and fracture surgeries in posterior thoracic-lumbar fusion surgeries.

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