

Is age a prognostic factor of postoperative outcome of lumbar disc herniation operations?

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ABSTRACT

Objective: To evaluate the influence of the patients age on preoperative symptoms and outcome.

Methods: The general data, symptoms, signs, and neurological examination findings were recorded from 511 patients between 2000 and 2006 at Vakif Gureba Hospital and Afyon Kocatepe University Neurosurgery Departments, Afyonkarahisar, Turkey. The mean follow-up of the patients was 44.7 months. All patients younger than 64 were defined as younger patients (n=449). The others were defined as elderly patients (n=62). The measuring method of the outcome was visual analogue rating scale (VAS).

Results: Preoperative and postoperative VAS values were found similar in both the younger and older group. Only preoperative differences were found in the older group, due to systemic disease.

Conclusion: The outcome was not statistically different in both groups, indicating that age is not a valuable prognostic factor for lumbar discectomy.

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Back pain is an unpleasant and noxious sensation of varying severity localized in different regions of the back, mostly lumbar.^{1,2} The simplified etiologic or pathogenetic classification of back pain includes myofascial, articular (including degenerative disc changes), and neurogenic. Back pain is a serious problem because of the ever-increasing number of cases of low back pain or lumbosacral radicular syndrome. There are many related risk factors for back pain, and one of the important questions is whether or not age is a factor. In the literature, several authors accepted age as a predictor of poor outcome.³⁻⁵ Dausch et al,⁶ and Rothoerl et al,⁷ found no statistical significance for age as a predictor of bad outcome. Most of the published studies do not find age to be a statistically significant predictor.^{8,9} However, in these studies outcome did not compare younger and older groups. In this study, our aim is to evaluate the influence of the age of the patient on preoperative symptoms and the outcome in comparison with a group of older patients.

Methods. Following approval by the ethics committee in our faculty and obtaining informed consents from the patients in this study, we included patients who underwent single level lumbar disc surgery for the first time at Vakif Gureba Hospital and Afyon Kocatepe University Neurosurgery Departments, Afyonkarahisar, Turkey between 2000 and 2006. Lumbar MRI and CT were obtained for all patients and those with concentric or lateral spinal stenosis were excluded. Inclusion criteria were single level protrude and extrude disc imaging, and positive neurological findings. Neurological findings, symptoms, signs, and general data of the 511 patients was recorded preoperatively. Before surgery all patients received a visual analogue rating scale (VAS; 10: worst pain, 0: no pain) to classify their individual pain level, similar to other studies.^{8,10,11} The standard operation procedure was discectomy, partial hemilaminectomy, and foraminotomy. All levels were verified by fluoroscopy intraoperatively. The patients were routinely operated upon by 4 neurosurgeons. All the patients' follow-up examinations were carried out by one of the 4 neurosurgeons, but not the same neurosurgeon that performed the surgery. The mean follow-up period was 44.7 months. The outcome was measured by 10 cm VAS. Patients who classified their pain level smaller than 4 after operation were classified as having a good outcome. All patients younger than 65 years were defined as belonging to the group of younger patients (n=449), and the others were defined as elderly (n=62). Statistical evaluation was carried out using the Z test, a component of the statistical program of SPSS 10.0 for Windows.

Results. Comparison of preoperative neurological exam of the 2 groups is summarized in Table 1. There was no statistical significant difference between the 2 groups. The statistical difference can be obtained only by investigating accompanying disease; which was more frequent in older patients, $p < 0.01$. Comparison of the postoperative neurological exam of the 2 groups is summarized in Table 2. According to the VAS, 94% of all younger patients (n=422) were classified as having good outcome after surgery, and 92% of all older patients (n=57). There was no significant statistical difference between older and younger groups. In the analysis of outcome data regarding pain, hypoesthesia, paresis, and hyporeflexia, there was no significant difference between the 2 groups.

Discussion. There is no statistical difference between older and younger groups after and before operations. Preoperatively straight leg raising test was found positive in 382 patients, and in only 17 patients postoperatively. This was positive in 51 patients in the older group preoperatively, and 4 patients in the postoperative period. There have been several studies describing the diagnostic relevance of the straight leg raising test, however, we could not find any difference regarding this symptom.¹²⁻¹⁴ In 1987, Hurme and Alaranta³ included 375 patients in a prospective study.

Follow-up examinations were performed in the first and sixth months after surgery. In that study, all patients were younger than 55 years of age. An age older than 40 years correlated with poor outcome ($p < 0.008$). However, different inclusion criteria were used so the results are not directly comparable to our study.

In 1983, Weber⁴ described a population of 208 patients. Different groups were defined. One group of patients underwent lumbar discectomy while the other was treated conservatively. Follow-up examinations were performed up to 10 years later. The aim of this study was to compare the outcome of the patients who were operated on versus those treated with conservative methods. Weber included patients only younger than 55 years in his study, the mean age of the patients with good/fair results was 39.9 years, compared with 47.5 years in the patients with poor/bad results ($p < 0.01$). However, none of these studies compared the symptoms and outcome of the younger and older group of patients. Despite this, we could not confirm the finding that age seems to be a predictor factor for poor outcome in lumbar disc surgery.

Other studies, for example, Sorenson,⁸ Barrios,⁹ and Rothoerl et al⁷ show no significant correlation between age and outcome after lumbar disc surgery. However, all these studies also did not compare preoperatively obtained clinical, general data, and outcome in the

Table 1 - Comparing neurological examinations of younger and older groups preoperatively.

Variable	Younger (N=449)	Older (N=62)	Total (N=511)
Age (Mean)	45.45	68.4	48.3
Gender (Male) n (%)	210 (46.8)	24 (38.7)	234 (45.8)
Complaint duration (days)	94	118.1	96.9
SLR (+) n (%)	382 (85.1)	51 (82.3)	433 (84.7)
Crossed SLR (+) n (%)	83 (18.5)	11 (17.7)	94 (18.4)
SLR (-) n (%)	67 (14.9)	11 (17.7)	78 (15.3)
Hypoesthesia n (%)	269 (59.9)	37 (59.7)	306 (59.9)
Paresis n (%)	221 (49.2)	34 (54.8)	255 (49.9)
Hyporeflexia n (%)	178 (39.6)	27 (43.5)	205 (40.1)
Diabetes mellitus n (%)	23 (5.1)	18 (29.0)	41 (8.0)*
Hypertension n (%)	45 (10.0)	21 (33.9)	66 (12.9)*
L3-L4 level n (%)	99 (22.1)	7 (11.3)	106 (20.7)†
L4-L5 level n (%)	223 (49.7)	21 (33.9)	244 (47.8)†
L5-S1 level n (%)	116 (25.8)	12 (19.4)	128 (25.1)

SLR - single leg raising, L - lumbar, NS - Not significant, * $p < 0.01$, † $p < 0.05$

Table 2 - Comparing neurological examinations of the groups postoperatively.

Variable	Younger (N=449)		Older (N=62)		Total	
	Good outcome	Bad outcome	Good outcome	Bad outcome	Good outcome	Bad outcome
Number (%)	422 (94.0)	27 (6.0)	57 (92.0)	5 (8.0)	479 (93.7)	32 (6.3)
Gender (male) n (%)	197 (93.8)	13 (6.2)	22 (90.9)	2 (9.1)	219 (93.6)	15 (6.4)
SLR (+) n (%)	221 (52.4)	17 (63.0)	31 (54.4)	4 (80.0)	252 (52.6)	21 (65.6)
SLR (-) n (%)	183 (43.4)	10 (37.0)	25 (43.9)	1 (20.0)	206 (43.0)	11 (34.4)
Hypoesthesia n (%)	279 (66.1)	17 (63.0)	38 (66.7)	3 (60.0)	317 (66.2)	20 (62.5)
Paresis n (%)	178 (42.1)	13 (48.1)	25 (43.9)	2 (40.0)	203 (42.4)	15 (46.9)
Hyporeflexia n (%)	165 (39.1)	9 (33.3)	22 (38.6)	2 (40.0)	203 (42.4)	15 (46.9)
Pain n (%)	18 (4.3)	27 (100)	3 (5.3)	5 (100)	21 (4.4)	32 (100)
Follow-up (months)	44.3	44.3	47.2	47.2	44.7	

SLR - single leg raising, all results are non-significant

described population, other than Rotherl et al.⁷ Therefore, the results are not directly comparable to the results of our study.

In the study of Dora et al,¹⁵ they found that recurrent disc herniations after surgical discectomy occur more frequently in patients whose nucleus pulposus still had a normal or almost-normal MRI appearance. Therefore, this is another indicator that age is not a poor prognostic factor for lumbar discectomy prognosis, as older people generally have more degenerative disc material compared with a younger population. Kohlboeck et al¹⁶ found that Lasègue sign, depression, and sensory pain descriptions proved to be significant predictors, whereas pain cognition and pain coping strategies had no significant influence on evident outcome classification.¹⁶ In their study they did not identify age as a poor prognostic factor.

In summary, as the outcome did not differ statistically between older and younger groups in our population, we conclude that the indications for surgery of lumbar disc herniations should not be different for older patients when compared with younger patients.

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Related topics

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