

# One Year Outcome After Surgery for Lumbar Disc Herniation: A Comparison of Reoperated and not Reoperated Patients

## ABSTRACT

**OBJECTIVES:** To assess the disability level and quality of life of the patients who had been reoperated and not reoperated because of lumbar disc herniation.

**METHODS:** 34 reoperated and 34 not reoperated patients with lumbar disc herniation were retrospectively included in the study. The disability levels of the patients were evaluated with the Oswestry Disability Index and the the quality of life was evaluated with SF-36. The measurements were repeated in the 2nd, 6th and 12th months after the operation.

**RESULTS:** The disability measurements of the reoperated and not reoperated patients were found to be significantly different in the 2nd, 6th and 12th months ( $p < 0.05$ ); and it was noticed that the reoperated group had more disability levels than not reoperated patients in all the assessments. SF-36 measurement in the 2nd month showed significant differences in all parameters except pain ( $p < 0.05$ ). There were important differences in all parameters of quality of life in the 6th month and significant differences were found in all parameters of quality of life except physical and emotional role limitation in the 12th month ( $p < 0.05$ ) in favour of the not reoperated group.

**CONCLUSIONS:** The increase in the number of operations affects the disability level and quality of life negatively.

**KEY WORDS:** Lumbar disc herniation, Reoperations, Disability, Quality of life.

## INTRODUCTION

Many structural changes in the spine can be the result of normal aging and are difficult to differentiate from pathologic symptomatic disorders. The degeneration process of the intervertebral lumbar disc, resulting in complete or incomplete herniation, may or may not provoke low back pain (18).

There are differences among studies with regard to inclusion criteria, criteria for surgery, and in the way success was defined, which may account for the wide range observed in success rates. The success rate of lumbar disc surgery varies from 60% to 90% (2). The failed back surgery syndrome is a severe, long-lasting and disabling complication of lumbosacral spine surgery (5,13).

The results of surgical operations show that 10% to 40% of patients continue to have symptoms. These persisting symptoms mainly consist of pain, motor deficits, and a decreased functional status. A recurrent herniated lumbar disc is seen in 2% to 19% of patients who have undergone a disc surgery for the first time and it occurs within 6 months

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of the patients' first operation in 74% of the cases (18).

Numerous studies have been published presenting the results after surgery for lumbar disc herniation. Fewer publications report, however, the outcome of reoperated patients (1,2,3,7,10,11, 12,17,19,21,23,24).

The aim of our study is to assess the disability and quality of life in the reoperated and not reoperated patients due to the lumbar disc herniation during a period of up to one year, starting from the early postoperative period.

## MATERIAL AND METHOD

### Patients

The records of the patients reoperated and not reoperated due to lumbar disc herniation between the years of 1997 and 2003 were examined retrospectively.

Patients with lumbar disc herniation who had been referred to the neurosurgery clinic for operation were included into the study without looking over the location and appearance.

Those having bilateral sciatica, spinal stenosis, inflammatory process, or neoplasm, enough leg pain and back pain to impede their activities and walking, other systemic diseases and finally those who wouldn't do any exercise, and who wouldn't come for controls in the one-year period according to the patient records were excluded from the study.

In the retrospective examination, we selected the reoperated patients and then chose patients for the not reoperated group making sure they were matched for age, height, body weight, gender to make the groups homogeneous.

The use of the records of demographic characteristics, the disability level and quality of life was approved by the Ethical Committee at the University.

### Surgical Treatment

All types of surgical techniques for lumbar disc herniation (e.g. standart discectomy, laminectomy, foraminotomy) were included. Instrumentation was not applied in any reoperation; only neural decompression was used. The surgery was performed by the same surgical team.

**Study Population and Design.** 34 of the 68 patients, who had undergone reoperation (2, 3, 4 times), formed the reoperated group, and 34, who had undergone only one operation, formed the not reoperated group. The patients' socio-demographic

characteristics such as age, body mass index (BMI) (calculated by dividing weight into the square of the height (kg/m<sup>2</sup>)), gender, occupation and length of stay (LOS) were questioned. All the cases were seen routinely in the 2nd, 6th and 12th months after surgery.

**Physiotherapy Program:** Home exercise programs are routinely given to the patients in our clinic after discharge, and assessments are made concerning the quality of life and disability level in the second and six months and in a year. Our patients are permitted to return to their work and daily living activities in the second postoperative month.

The exercise program started on the first postoperative day. The rehabilitation program lasted for 24 weeks with 10 repetitions three times a day. The program included repetitive exercises to increase the range of motion of the trunk in flexion and extension as well as the range of motion of the leg in the early stage, and also strengthening exercises that focused on the trunk extensors after the first month. Patients were encouraged to increase their physical activity and given instructions on how to cope with pain actively. All the exercises that we had given to the patients were changed at the 2nd month. The training programs for both groups were designed as home training programs. Patients in both groups received written instructions and schematic illustrations for each exercise. Patients were informed about the aim of the rehabilitation and each prescribed exercise (14,20).

**Disability:** The Oswestry Disability Index (ODI), is a ten-item scale instrument with six response alternatives for each item. The total score ranges from 0 to 100 divided as 0 to 20 (minimal disability), 20 to 40 (moderate disability), 40 to 60 (severe disability), and 60 to 100 (extremely severe to crippling disability). The ODI rates pain intensity and the degree to which an individual's functional ability regarding personal care, lifting, walking, sitting, standing, sleeping, sex life and traveling is affected by back pain. Higher scores on the ODI scale reflect worse function (4).

**Functional status and well-being:** Generic functional status and well-being was assessed using the SF-36 questionnaire. This questionnaire produces a profile of eight domain scores, including physical functioning (PF), physical role limitations (PRL), emotional role limitations (ERL), social functioning

(SF), bodily pain (BP), general mental health (GMH), vitality (V), and general health perceptions (GHP). Each domain is scored from 0 (poor health) to 100 (optimal health). Higher SF-36 scores reflect better function and less pain (23).

Measurements were repeated in the 2nd month, 6th month and 12th month.

**Statistical Analysis.** Descriptive statistics included frequency distribution for categorical variables and means, medians, ranges and standard deviations (SDs) for continuous variables. The chi-square test for categorical variables (gender) was used for the univariate analyses of demographic data. The Independent Samples t Test was used to compare the age, BMI, LOS, gender and disability and quality of life measurements of the reoperated and not reoperated group. The Paired Samples t-test was done to compare the results of 2- 6 month, 2-12 month, 6-12 month results in each group.  $p < 0.05$  was considered to be significant in all cases. The statistical analysis was performed using the Statistical Package for Social Sciences (SPSS), version 11.0.

**RESULTS**

The demographic characteristics of the patients such as the variation of age, BMI and gender are given in (Table I). There were no statistically significant differences between the groups according to age, gender or BMI ( $p > 0.05$ ).

**Between - group comparison**

**Disability levels**

The disability measurements of the reoperated and not reoperated patients were found to be

significantly different in the 2nd, 6th and 12th months ( $p < 0.05$ ) and it was noticed that the reoperated group had more disability levels in all the assessments (Table II, III).

**SF-36 assessments**

**The 2nd month measurement:** There was a significant difference between the groups except for pain in favor of the not reoperated group ( $p < 0.05$ ) (Table II, III).

**The 6th month measurement:** There was significant difference in all SF-36 parameters in two groups in favor of the not reoperated group ( $p < 0.05$ ) (Table II, III).

**The 12th month measurement:** No significant difference was found in the parameters of physical and emotional role difficulties, but there was a significant difference in favor of the not reoperated group for all other parameters ( $p < 0.05$ ) (Table II, III).

**Within - group comparison:**

**Disability levels**

When the groups were compared within; there were statistically significant differences for 2-6 month, 6-12 month and 2-12 month results according to the disability level ( $p < 0.05$ ).

**SF-36 assessments**

In the reoperated group, there was no difference in the 2 and 6-month measurement for the parameters except PF. In the 6-12 and 2-12 month measurement, no significant differences were found in FRL, GMH and V values ( $p > 0.05$ ). The difference was significant ( $p < 0.05$ ) for other parameters.

In the not reoperated group, all measurements of 2-6 month, 2-12 month and 6-12 month were statistically significantly different.

**Table I:** Socio-demographic characteristics of all patients

	Reoperated Group		Not Reoperated Group		Independent t-test p
Age (year) (X±Sd)	35.94 ± 4.91		36.17 ± 4.96		0.845
BMI(kg/m <sup>2</sup> ) (X±Sd)	26.72 ± 2.72		26.62± 2.89		0.875
Length of stay (LOS)	7.58 ±0.70		7.20 ±0.04		0.063
Gender (n, %)					<b>Chi square</b>
					X <sup>2</sup> :0,059 df:1 p:0,808
Male	16	47.1	15	44.1	
Female	18	52.9	19	55.9	

**X:** mean, **Sd:** Standard deviation, **n:** number, **%** percentage

**Table II:** The mean ODI and SF- 36 values of the reoperated group at 2, 6 and 12 months

X ± SD	2nd month	6th month	12th month
Disability	34.47±4.57	38.14±4.73	36.61±5.07
Physical Functioning	12.79±19.39	28.23 ± 18.37	36.76±16.41
Physical Role Limitation	23.52± 40.33	23.52 ± 40.33	27.79±44.12
Bodily Pain	38.41±13.58	42.52±15.34	49.61±14.97
General Health Perception	46.64±8.70	47.64±8.76	45.52±8.88
Vitality	45.32±12.34	45.88±9.24	45.88±9.41
Social Functioning	42.66±11.48	45.19±12.16	50.08±11.24
Emotional Role Limitation	25.76±40,56	24.76±38.21	36.23±44.55
Mental Health	49.05±9.40	50.23±9.19	51.58±8.60

**Table III:** The mean ODI of the not reoperated group at 2, 6 and 12 months

X ± SD	2nd month	6th month	12th month
Disability	21.55±5.38	17.64±5.02	13.91±5.13
Physical Functioning	55.29±11.34	75.50±9.47	83.08±8.79
Physical Role Limitation	72.35±18.91	39,85 ±18,88	30.00±15.61
Bodily Pain	37.50±9.11	22.97±8.33	16.17±10.67
General Health Perception	59.61±6.76	75.02±7.64	83.50±8.19
Vitality	60.70±7.28	76.82±6.81	82.85±7.67
Social Functioning	60.47±9.96	76.76±7.75	81.29±6.69
Emotional Role Limitation	65.50±14,81	41.41±16.50	34.97±11.49
Mental Health	66.88±6.68	77.35±5.62	82.29±6.11

## DISCUSSION

Reoperations generally tend to produce poorer results than initial back surgery. The need for reoperation may reflect a prolongation on the natural history of the patient's spinal disorder, but more often it can be seen as a failure of the initial surgery. As such, the rate of reoperation is an important clinical measure of success for back surgery (5,8,12).

It is always difficult to compare the results from different outcome studies after operation for lumbar disc herniation, since differences in material and sample size as well as questionnaire design may lead to different results. There are, however, several studies reporting less satisfactory results after reoperations for lumbar disc herniation than after primary operations (9).

In our study we examined the patients' file records retrospectively and assessed the disability and quality of life due to the lumbar disc herniation in the reoperated and not reoperated patients for a period of up to one year, starting from the early postoperative period.

Postoperative outcome in lumbar disc surgery patients has traditionally been assessed by improvements in disease-related symptoms and physical signs such as Lasegue's sign, mobility of the lumbar spine, trunk muscle strength or lifting capacity, pain, disability indices, economic status, employment status and physical loading at work, and social and psychological factors. However, these measures place no emphasis on the patient's overall perception of the impact of an operation on subjectively experienced distress or well-being (1,7,10,12,24).

The patient's treatment expectations also seem to be important in predicting outcomes in low back pain as well as the outcomes of surgery for sciatica. However, it is unknown whether fear-avoidance beliefs, kinesiophobia and the patient's treatment expectations are factors that influence the clinical course following lumbar disc surgery (22). In evaluating the postoperative outcomes, many factors such as criteria of choice of the patients for surgery, operation reasons, patients' expectations, professions and way of living and demographic characteristics of the patients play a role (4,23).

Due to the above reasons, an infallible pairing was performed for the patients' physical and sociodemographic characteristics for the purpose of being more effective so that the patients would be similar for retrospective file examination in our study where we presented the postoperative outcomes of the reoperated and not reoperated patients.

The first two months after operation is important as it is the time when permission is given to return to work and daily living activities. And the period of the first six month indicates the success of the surgery. The one year period of time after surgery is important for follow up. For this reason, we would like to give present the assessment outcomes in the postoperative 2nd, 6th and 12th months for our patients reoperated or not reoperated due to the lumbar disc herniation.

The outcome of surgical treatment among patients with lumbar disc hernia depends on the postoperative regimes offered. A rehabilitation program of intensive exercises despite occurrence of back pain as a limiting factor appears to increase the patient's behavioral support, resulting in improvement in work capacity and patient's self-reported disability levels. Postoperative rehabilitation should include intensive back training, which has been shown to be of great value in behavioral support and restoration of functional deficits. This has resulted in increased work capacities for patients undergoing disc surgery (8).

Exercise can increase the probability of returning to work and well-being for patients after lumbar disc surgery. The encouraging results indicate that a short postoperative exercise program may offer a cost-effective way of improving the outcome of surgery for patients with a prolapsed intervertebral disc (22).

Considering the positive effects of exercise on physical fitness, disability and quality of life, we selected our group from patients with a regular exercise habit and we would like to point out the effects of one or more operations on the disability and general health status of the patients (13,14,15,16). In this retrospective study; it was seen that the disability levels of patients decreased from the early period to the one-year period in favour of not reoperated group.

As stated in the literature, quality of life assessments indicating the result of the operation, and showing the perceptions of the patient are of great importance in indicating the effectiveness of the treatment (6).

The measurement of the quality of life is a multi-dimensional concept comprising physical, social and emotional components. The Short Form Health Survey (SF-36) has been used increasingly to evaluate the quality in patients presenting with back pain and other spinal disorders (13). The quality of life experienced by patients with long-term low back pain and different degrees of disc pathology was markedly impaired before treatment as compared with that of a normal population. This is supported by the overall good physical and mental improvement in the health-related quality of life (SF-36). The SF 36 offers a less expensive way to assess patient-determined outcomes (2,3).

In the literature, lots of studies have been performed in regard to determining the short- and long-term assessment results of the reoperated patients and have shown that the results are worse than that of operated group (3,7,12). According to the outcome of the quality of life of our study, there seemed to be no significant difference regarding the pain parameter in the postoperative second month. The fact that there was no difference indicated that both groups were affected equally for the components of activity and reinjury fear, and therefore this led to the restriction of activity. In the evaluations of 6th and 12th months, the fear of activity and reinjury was seen more in the reoperated group, and it affected the pain phenomena in a negative manner, with significant differences seen compared to the group with only one operation.

Emotional and physical role difficulties, during the period two months and six months, arised equally in the reoperated and not reoperated groups.

Although the perception of pain of the reoperated group was more than that of the other group anxiety, depression, and residence components concerning homes and jobs showed that both patients groups perceived equal emotional and physical role difficulties.

### CONCLUSIONS

Our study in which we presented the results of the postoperative one year period make us think that having a reoperation negatively affects the patients' quality of life and their performance in daily living activities.

#### The Limitations of Our Study:

In the patient files we examined retrospectively, we did not take into consideration the location and appearance of the lumbar disc herniation of the patients. If it could have been standardized; the results would be more effective and more understandable.

The emotional and physical limitations which are two of the parameters of the quality of life affect the patients' daily living activities..

For emotional limitations, it is necessary to put forward the differences that may develop with repetitive operations, and evaluate the patients' behavioral outcome (anxiety, depression, pain behavior).

For the physical limitations, it is important to perform evaluations about the individuals' residence where they live and the work-place where they work.

In our study, the patients' parameters important for the emotional and physical limitations could not be evaluated.

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