



## Comparative Study of Surgical and Non-surgical Management of Lumber Disk Herniation

Mahammad Mahbubur Rahman Khan<sup>1\*</sup>, Md. Al Mamun<sup>2</sup>, Mahammad Rafiqul Islam<sup>3</sup>, Rabin Chandra Halder<sup>4</sup>, Syed Khaledur Rahman<sup>5</sup>, Tapas Mandal<sup>6</sup>

<sup>1</sup>Assistant Professor, Department of Orthopedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: mahbubur37@yahoo.com,

Orcid Id: 0000-0001-6279-2662

<sup>2</sup>Resident, Department of Orthopaedic, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: sunsetbd@gmail.com,

Orcid Id: 000-0003-3346-1340

<sup>3</sup>Assistant Register, Department of Orthopaedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: rafiqm32ortho@gmail.com,

Orcid Id: 000-0001-7899-3805

<sup>4</sup>Assistant Register, Department of Orthopaedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: rabinsbmc29@gmail.com,

Orcid Id: 000-0003-3346-1340

<sup>5</sup>Assistant Register, Department of Orthopaedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: drkhaledurrahman@gmail.com,

Orcid Id: 0000-0002-4420-6444

<sup>6</sup>Assistant Register, Department of Orthopaedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh.

E-mail: tapast11@gmail.com,

Orcid Id: 0000-0003-1919-3597

\*Corresponding author

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### Abstract

**Background:** Lumber disk herniation (LDH) is one of the most severe form of low back pain may causes lifetime suffering for a patient. Now a day, both surgical and non-surgical treatment methods are available for LDH patients. We have very few research-based comparative date regarding the effectiveness of surgical and non-surgical management of patients with lumber disk herniation. **Aim:** The aim of the present study was to compare the effectiveness of surgical and non-surgical management of patients with lumber disk herniation. **Methods:** This prospective, comparative study was conducted in the Department of Orthopedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh during the period from January 2018 to December 2020. In total 46 confirmed cases with lumber disk herniation associated with low back pain and lower limb radiculopathy were selected as the study population. Among them 23, denoted as group 1 patients underwent to surgical treatment and other 23, denoted as group 2 patients underwent to conservative treatment for LDH. All patient data were processed, analyzed and disseminated by MS Word and SPSS version 26 programs as per need. **Results:** In this study, in follow-up stages, we found extremely significant correlations between the groups in 6 month's VAS scores and in 6 month's SF 36 (Mental) scores where the p values were less than 0.0001. Besides this, we found correlations in 2 year's SF 36 (Physical) and 2 year's SF 36 (Mental) scores where the p values were less than 0.05. **Conclusions:** Surgically treated patients with lumber disk herniation (LDH) reported substantially greater improvement at the 2-year follow-up. We can conclude that, patients with LDH benefits from surgery with a reduction within 6 months according to the VAS scores. According to the SF-36 scale it is clear that surgery ensures better quality of life for the patients.

**Keywords:-** Lumber disk herniation, VAS Score, SF 36, Pain, Oswestry Disability Index.

## INTRODUCTION

Lumber disk herniation is considered as one of the most severe form of low back pain may causes lifetime suffering for a patient. Now a day, both surgical and non-surgical treatment methods are available for LDH patients. We have very few research-based comparative data regarding the effectiveness of surgical and non-surgical management of patients with lumber disk herniation. Lumbar disc surgery remains one of the most commonly performed operations, with rates exhibiting considerable geographic variation.<sup>[1]</sup> Two randomized trials demonstrated that surgery provides faster pain relief and perceived recovery in patients with herniated disc.<sup>[2,3]</sup> Outcomes were similar at 1 year for patients assigned to surgery and for those assigned to the non-operative treatment. Both the trials included substantial numbers of surgical patients in non-operative comparison arm due to treatment crossover, affecting the interpretation of the intent-to-treat analyses. The aim of nonsurgical treatment for acute low back pain is a return to baseline functional status while effectively controlling pain.<sup>[4]</sup> In general, the effect sizes for established conservative interventions in acute low back pain are fairly small, and there is limited evidence at best for several adjunct interventions such as acupuncture, spinal manipulation, transcutaneous electrical nerve stimulation, or lumbar traction.<sup>[5,6]</sup> Lumbar discectomy remains one of the most commonly performed procedures.<sup>[7,8]</sup> and the outcomes are considered excellent for patients who are good surgical candidates. For patients without severe neurological deficits, determining who should undergo surgery is not properly clear. Because most cases (>85% at 6 weeks) of back pain (including those from disk herniation) are

self-limited and would resolve with nonsurgical treatment in the first place, there is no reliable way to predict which patients will benefit from surgical intervention.<sup>[9]</sup>

### Objective

#### **General Objective:**

- To compare the effectiveness of surgical and non-surgical management of patients with lumber disk herniation.

#### **Specific Objective:**

- To determine the demographic status of the participants
- To assess the baseline characteristics of the participants.
- To evaluate the status of patients at the follow-up periods.

## MATERIAL AND METHODS

This prospective, comparative study was conducted in the Department of Orthopedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh during the period from January 2018 to December 2020. In total 46 confirmed cases with lumber disk herniation associated with low back pain and lower limb radiculopathy were selected as the study population. Among them 23, denoted as group 1 patients underwent to surgical treatment and other 23, denoted as group 2 patients underwent to conservative treatment for LDH. According to the inclusion criteria of this study, "patients between 21- 60 years of age, male/female, with low back pain and lower limb radiculopathy, patients with positive signs of root tension (SLRT between 30-70 degrees or severe femoral root stress), patients associated with neurological dysfunction

(With respect to corresponding abnormal reflexes, reduced sensation in dermatomal distribution or weakness in myotomal distribution) as well as multiple disc herniation cases if only one of the level was symptomatic were included. On the other hand, according to the exclusion criteria of this study, patients with scoliosis of more than 15 degrees, segmental instability, cases of spondylolisthesis, spine or tumor infection, psychiatric disease patients were excluded. All patients selected as study subjects had to fill the consent and a clinical evaluation by means of established questionnaires which included the Short Form 36 (SF36), the Oswestry Disability Index (ODI), and the visual analog scale or pain (VAS).<sup>[10,11,12]</sup> All patient data were processed, analyzed and disseminated by MS Word and SPSS version 26 programs as per need.

## RESULTS

In this study, the mean ( $\pm$ SD) age of the group 1 (Surgery group) participants was  $37.2 \pm 6.3$  years whereas in group 2 (Non-surgery group), it was  $36.8 \pm 6.1$  years. We did not find any

signification correlation between the groups regarding the ages and there the p value was found greater than 0.05 (0.828). In group 1, male patients were 61% and female patients were 39%. On the other hand, in group 2 male and female were 65% and 35% respectively. So, in both the groups, male patients were dominating in number. In analyzing the baseline characteristics of the participants, we observed the mean ( $\pm$ SD) VAS scores of group-1 and group-2 patients were  $7.3 \pm 0.7$  and  $7.2 \pm 0.7$  respectively ( $p=0.570$ ). The mean ( $\pm$ SD) Oswestry Disability Index were  $28.8 \pm 3.4$  and  $28.3 \pm 3.5$  respectively ( $p=0.594$ ). On the other hand, between SF 36 (Physical) SF 36 (Mental) scores we found extremely significant correlation in SF 36 (Mental) scores between the groups where the p value was less than 0.0001. In this study, in follow-up stages, we found extremely significant correlations between the groups in 6 month's VAS scores and in 6 month's SF 36 (Mental) scores where the p values were less than 0.0001. Besides this, we found correlations in 2 year's SF 36 (Physical) and 2 year's SF 36 (Mental) scores where the p values were less than 0.05.

**Table 1:** Demographic status of participants (N=46)

Characteristics	Group 1		Group 2		P-value
	n	%	n	%	
Age (Year)	$37.2 \pm 6.3$		$36.8 \pm 6.1$		0.828
Gender distribution					
Male	14	61%	15	65%	
Female	9	39%	8	35%	
Total	23	100%	23	100%	

Note: p-value  $< .05$  considered as statistically significant

**Table 2:** Baseline characteristics of participants (N=46)

Predictors	Group 1	Group 2	p value
	Mean $\pm$ SD	Mean $\pm$ SD	
VAS Score	$7.3 \pm 0.7$	$7.2 \pm 0.7$	0.57

ODI	28.8 ± 3.4	28.3 ± 3.5	0.594
SF 36 (Physi.)	29.2 ± 1.6	29.1 ± 1.9	0.743
SF 36 (Mental)	53.4 ± 4.9	48.5 ± 2.2	<0.0001

Note: VAS indicates 'Visual analog scale' and ODI indicates Oswestry Disability Index

**Table 3:** Follow-up assessments of patients at 6 months and 2 years (N=46)

Time	Group 1	Group 2	p value
	Mean(±SD)	Mean(±SD)	
VAS Score			
6 Months	2.7 ± 0.5	2.9 ± 0.6	<0.0001
24 Months	1.7 ± 0.8	2.1 ± 1.2	0.19
ODI			
6 Months	14.6 ± 3.2	16.3 ± 3.4	0.088
24 Months	11.4 ± 2.4	12.8 ± 2.9	0.081
SF 36 (Physical)			
6 Months	35.5 ± 4.5	37.7 ± 4.9	0.120
24 Months	41.7 ± 3.3	44.2 ± 3.7	0.02
SF 36 (Mental)			
6 Months	48.6 ± 2.5	45.3 ± 2.4	<0.0001
24 Months	47.7 ± 2.4	44.9 ± 2.3	0.0002

## DISCUSSION

The aim of the present study was to compare the effectiveness of surgical and non-surgical management of patients with lumbar disk herniation. In this study, in analyzing the baseline characteristics of the participants, we observed the mean (±SD) Vas scores of group-1 and group-2 patients were 7.3 ± 0.7 and 7.2 ± 0.7 respectively (p=0.570). The mean (±SD) Oswestry Disability Index were 28.8 ± 3.4 and 28.3 ± 3.5 respectively (p=0.594). On the other hand, between SF 36 (Physical) SF 36 (Mental) scores we found extremely significant correlation in SF 36 (Mental) scores between the groups where the p value was less than 0.0001. In this study, in follow-up stages, we found extremely significant correlations between the groups in 6 month's VAS scores and in 6 month's SF 36 (Mental) scores where the p values were less than 0.0001. Besides this, we found correlations in 2 year's SF 36

(Physical) and 2 year's SF 36 (Mental) scores where the p values were less than 0.05. The patients in group 1 (Surgical group) reported fewer physical impairments at the 6 month and 2 years of follow-up. Faster improvement in pain symptoms in patients treated with surgical treatment is a common finding in comparison with patients treated conservatively with lumbar disc herniation. Some previous studies also observed that back ache was reduced quickly with surgical treatment.<sup>[7,13]</sup> Nonetheless, results concerning neurogenic symptoms, physical function and quality of life are not recorded in other observational studies as reliably although we have tried. In line with other observational studies, short-and long-term effects of surgical treatment have been observed in these outcomes are beneficial.<sup>[13]</sup> There was a significant improvement in the VAS and ODI in patients treated with surgical compared to

the patient treated conservatively (Non-surgical group). These findings were in relation with some previous studies conducted. We observed some difference in the quality of life in the patients at the follow-up in group 1. In another study, patients treated with surgical procedure showed a better score in physical and mental status on SF-36 questionnaire.<sup>[14]</sup> In many studies they claimed that, “aster improvement in pain symptoms with surgical treatment is a common finding in comparisons with conservative treatment in patients with lumbar disc herniation”. Previous observational studies have also found that back pain is reduced more quickly with surgical treatment.<sup>[15,16]</sup>

All the findings of this study may be helpful in further similar studies and in the treatment arena of lumbar disk herniation.

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