

# Study on Prolapsed Intervertebral Disc Cases Admitted in Military Hospitals

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## Abstract

**Introduction:** Prolapsed intervertebral disc is a condition that can occur anywhere along the spine, but most often occurs in the lower back. It is sometimes called a bulging, protruding or ruptured disc. It is one of the most common causes of lower back pain as well as leg pain or sciatica.

**Objective:** To study the demographic characteristics of prolapsed lumbar intervertebral disc by age, gender, clinical presentation, levels of spinal column involvement, treatment options and post operative complications for lumbar disc prolapse.

**Materials and Methods:** This cross sectional study was conducted in Rangpur and Saidpur Combined Military Hospital from September 2017 to December 2018. A Total of 223 Cases was studied and data were collected by semi-structured questionnaire by face to face interview and medical documents.

**Results:** Most commonly affected disc spaces were L<sub>5</sub>/S<sub>1</sub> (35.87%) followed by L<sub>4</sub>/L<sub>5</sub> (33.18%) and L<sub>4</sub>/L<sub>5</sub>, L<sub>5</sub>/S<sub>1</sub> (14.28%). Males were mostly affected and commonest among 30-39 years' age group (45.29%). Chi-square test is done and result is statistically significant (p<0.01). Most of the cases given conservative treatment 202(90.58%), surgical treatment given 21(9.41%). Mechanical backache was the most common (14.29%) post operative complications.

**Conclusion:** In this study prolapsed intervertebral disc was common in the lower lumbar region at the level of L<sub>4</sub>/L<sub>5</sub> and L<sub>5</sub>/S<sub>1</sub>.

**Key-words:** Backache, Sciatica, Prolapsed lumbar disc, Military personnel.

## Introduction

An intervertebral disc lies between adjacent vertebrae in the vertebral column. Vertebral disc is made up of outer tough annulus fibrosus and inner gel like nucleus pulposus. The annulus fibrosus undergoes degenerative changes and inner nucleus pulposus protrudes out. Degenerative disc disease and aging<sup>1</sup> can both lead to disc degeneration. This condition is known as disc prolapse or commonly called slipped disc. Prolapsed disc is important in our community as most of the people earn their living through stressful works, which predisposes them to spinal injuries and ultimately leading to disc prolapse. Disc prolapse is mostly postero-lateral because of the presence of posterior longitudinal ligament; however, central disc herniation does occur<sup>2</sup>. The majority (95%) of disc prolapses occurs in lumbar region<sup>3</sup> at the level of L<sub>4</sub>/L<sub>5</sub> or L<sub>5</sub>/S<sub>1</sub>. Professionals sitting for prolonged period in the offices, smoking, weight lifting, trauma and driving are all at a greater risk for disc prolapse. Age is related to wear and tear of the disc<sup>4</sup>. According to

most authors, degenerative diseases are more important causes of disc prolapse than trauma<sup>5</sup>. Professional athletes are prone to disc injuries<sup>6,7</sup>. Backache, due to pressure on ligaments and sciatica, due to compression of nerves, mostly forms the initial presentation of the disc prolapse. Compression of other nerve roots leads to weakness of muscles, numbness in the limbs, paresthesias and urinary retention due to compression of cauda equina nerves. The life time incidence of sciatica<sup>8</sup> has been reported from 13-40% in the general population. Disc prolapsed is genetically driven- twin studies indicate that at least 60% of the variance can be explained on genetic grounds and not by the commonly assumed environmental factors (work, trauma, exposure to excessive driving, smoking and so on). Current guidelines indicate that radicular pain should improve within six to eight weeks with conservative management. Surgery should be performed before eight weeks only in patients with progressive neurological deficit, which can be detected by magnetic resonance imaging.

At the level of prolapse paresthesia, muscle weakness and decreased reflexes might be noted. With the impairment of L<sub>5</sub> nerve roots; there is loss of sensation on the dorsal side of the foot and lateral side of the leg and weakness in the extension of big toe. Patients might have difficulty in walking on the heel. The impairment of S<sub>1</sub> nerve roots, leads weakness in ankle jerk reflex, weakness in plantar flexion, weakness in the eversion of the foot and loss of sensation on the lateral and planter aspect of the foot. Due to compression of cauda equina nerves, findings may include loss of sensation in the lower back and urinary retention. The differential diagnosis for disc prolapse includes tuberculosis, spinal stenosis, vertebral abscess, ankylosing spondylitis, vertebral hematomas, vertebral tumors, nerve tumors. To study the demographic characteristics of prolapsed lumbar intervertebral disc by age, gender, clinical presentation, levels of spinal column involvement, treatment options and post-operative complications for lumbar disc prolapse.

## Materials and Methods

This cross sectional study was carried out in the Orthopedic Surgery Department of Rangpur and Saidpur combined military Hospitals from September 2017 to December 2018. A total of 223 prolapsed lumbar disc patients were studied. Detail history of the patient was taken during follow up in which patients were asked about relieve of preoperative symptoms and development of any new symptoms. In each follow up complete neurological examination was done. The patient with poor motor function and myelopathy were subjected to surgery which was done at Combined Military Hospital Dhaka. Data were processed and analyzed by computer software SPSS version 20 and expressed in frequency and percentage.

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## Results

Out of 223 patients' male were 175(78.47%) and female 48(21.52%). Mean age of the patients was 37.68±5.64 years and ranged from 20 to 59 years. The lumbar disc prolapse was common (45.29%) in the patients of 30-39 years. The level of disc prolapse was confirmed on MRI scan of vertebral column. Most Commonly affected disc spaces were L<sub>5</sub>/S<sub>1</sub> (35.87%), L<sub>4</sub>/L<sub>5</sub> (33.18%) and both L<sub>4</sub>/L<sub>5</sub>, L<sub>5</sub>/S<sub>1</sub> (19.28%) (Table-I). The most common symptoms seen in the patients of lumbar disc prolapse was backache (31.39%) followed by sciatica (right side sciatica 22.87%, left side sciatica 25.11% and bilateral sciatica 13.45%) and neurogenic claudication 5.82%. Most of the patients 202 (90.58%) were conservatively treated and rest of the patients 21 (9.41%) underwent surgery (Table-II). Complications of surgeries noted in this study were recurrence of symptoms and mechanical backache (14.29%) (Table-III).

**Table-I:** Age, level of disc prolapses and sex distribution of respondents (n = 223)

Characteristics		Sex		Total n(%)
		Male n(%)	Female n(%)	
Age group in years	20-29	34 (19.42)	04 (08.33)	38 (17.07)
	30-39	86 (49.14)	15 (08.57)	101 (45.29)
	40-49	40 (22.85)	19 (10.85)	59 (26.45)
	50-59	15 (8.57)	10 (05.71)	25 (11.21)
	Total	175 (78.47)	48 (21.52)	223 (100)
Level of disc prolapse	L <sub>5</sub> /S <sub>1</sub>	66 (37.71)	14 (29.16)	80 (35.87)
	L <sub>4</sub> /L <sub>5</sub>	58 (33.14)	16 (33.33)	74 (33.18)
	L <sub>2</sub> /L <sub>3</sub>	02 (1.14)	01 (2.08)	03 (1.34)
	L <sub>3</sub> /L <sub>4</sub>	04 (2.28)	01 (02.08)	05 (2.24)
	L <sub>3</sub> /L <sub>4</sub> , L <sub>4</sub> /L <sub>5</sub>	08 (4.57)	03 (06.25)	11 (4.93)
	L <sub>4</sub> /L <sub>5</sub> , L <sub>5</sub> /S <sub>1</sub>	31 (17.71)	12 (25.00)	43 (19.28)
	L <sub>3</sub> /L <sub>4</sub> , L <sub>4</sub> /L <sub>5</sub> , L <sub>5</sub> /S <sub>1</sub>	06 (3.42)	01 (02.08)	07 (3.13)
	Total	175 (78.47)	48(21.52)	223 (100)

**Table-II:** Distribution of PID patients by clinical signs and symptoms (n = 223)

Characteristics	Frequency	Percentage	
Clinical signs and symptoms	Backache	70	31.39
	Rt Side Sciatica	51	22.87
	Lt Side Sciatica	56	25.11
	Bilateral Sciatica	30	13.45
	Neurogenic claudication	13	5.82
	Foot drop	03	1.34
	Total	223	100
Treatment modalities	Conservative	202	90.58
	Surgical	21	9.41
	Total:	223	100

**Table-III:** Complications of surgery for lumbar PID (n =21)

Complications	Frequency	Percentage
Recurrence of symptoms	01	4.76
Mechanical backache	03	14.29
No complications	17	80.95

## Discussion

Out of total patients 'males were 175(78.47%) and females were 48 (21.52%). The frequencies of males were higher than female. In this study mean age of the patients was 37.68+/-5.64 years and ranged from 20 to 59 years. The increased frequency of males was also seen in other studies. In the study of Prasad R<sup>9</sup>, 65.6% were males and 34.4% were females and other Study by Moein H<sup>10</sup> males constituted 71% of the patients and females constituted 29%. Lumbar disc prolapse in Kenya by Ongeti KW<sup>11</sup> was more common in females. Lumbar disc prolapse was found to be common in age group B (30-39 years) 45.29% and age group C (40-49 years) 26.45%. Similarly considering gender, lumbar disc prolapse was common in males in age group B (30-39 years) 49.14% and in females it was common in age group C (40-49 years) 10.85%. Study by R Prasad<sup>9</sup> showed that age of presentation for prolapsed disc in male was 21-30 years (31.88%) and in female was 31-40 years (48.83%). Study by Prasad R<sup>9</sup> showed that prolapsed disc was common in younger ages as compare to this study. In this study most commonly affected disc spaces were at L<sup>5</sup> S<sup>1</sup> level (35.87%), L<sup>4</sup> L<sup>5</sup> level (33.18%) and 19.28% of patients had disc involvement at two levels (L<sub>4</sub>/L<sub>5</sub> and (L<sub>5</sub>/S<sub>1</sub>). Study by R Prasad<sup>9</sup> disc prolapse was seen to be most common at the level of L<sub>4</sub>/L<sub>5</sub> (34.4%), which was then followed by the disc prolapse at L<sub>5</sub>/S<sub>1</sub> level (26.7%).

Study by Moein H<sup>10</sup> 61% of patients had disc prolapsed at L<sub>4</sub>-L<sub>5</sub> Level and 32% of patients had disc herniation at two levels. This means disc prolapsed is common at the level of L<sub>4</sub>/L<sub>5</sub> and L<sub>5</sub>/S<sub>1</sub> intervertebral disc space in this study as well as other studies<sup>9,10</sup>. There are two main types of treatment for lumbar disc prolapsed, Conservative and Surgery<sup>12</sup>. In this study, 90.58% Patients were conservatively treated while rest of the patients 21 (9.41%) underwent surgery. Excision of disc provides rapid relief of sciatica and lower back pain<sup>13</sup>. The relative frequency of different surgeries performed given in the Table-V. The result of this study comparable to the study by Siddiq M<sup>14</sup> et al for operative treatment of disc prolapse (75%) were male and 25% were female in this study<sup>14</sup>, while in our study 78.47% were males and 21.52% were female. Studies by Siddiq M<sup>14</sup>, most of the affected patients were in 4<sup>th</sup> and 5<sup>th</sup> decade of life. In this study<sup>14</sup> most commonly affected disc space was L<sub>4</sub>/L<sub>5</sub> (56.25%) while in our study L<sub>5</sub>/S<sub>1</sub> (35.87%) was commonly affected. The complications noted the study<sup>14</sup> were dural tear 6.25%, discitis 3.12%, wound infection 2.12%. In this study complications was mechanical backache (14.29%) and recurrence of symptoms 7%. Most patients 80.95% didn't have any complication after surgery.

## Conclusion

This study showed that lumbar PID is common in the age group of 30-39 years. It is most commonly occurred at the level of L<sub>4</sub>-L<sub>5</sub> and L<sub>5</sub>-S<sub>1</sub>. Common clinical presentation is backache and sciatica. Most of the patients are treated conservatively and others underwent surgery.

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