

# EVALUATION OF RESULTS OF OPERATIVELY TREATED LUMBAR DISC DISEASE

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## ABSTRACT

Results of thirty cases of disc prolapse at lumbar level treated operatively were evaluated with special emphasis on symptomatic relief and recurrence of symptoms. The patients were treated at Services Hospital Post Graduate Medical Institute Lahore between Aug. 1994 to April 1996. Standard discectomy procedure was followed. Patients with absolute indications like cauda equina syndrome or development of a progressive neurologic deficit despite non operative treatment and those with relative indications as disabling pain persisting for six months or more that kept away from work, were included in the study. At mean follow up of thirty two months 59% were collectively rated as excellent or good and 41% as fair or poor. 63% of the cases returned back to their working and occupational routine. 57% were able to carry out some sort of exercise and sports activity like jogging, running and other games. There was no recurrence of the disc prolapses. It was noted that patients with relative indication improved more rapidly after surgery but at the end of the study there was no significant difference. Patients with psychological factors such as depression, prolonged use of narcotics and wage - replacement benefits had the worst results. It is recommended that a careful pre operative assessment and evaluation of the patient regarding indications and psychological factors is necessary for good and excellent results.

## INTRODUCTION

As in other parts of the world, lower back pain is one of the most common problems presented to an orthopaedist or a neurosurgeon in Pakistan. More than 65% of the patients visiting outdoor department of Services Hospital, Post Graduate Medical Institute, Lahore suffer or have suffered lower back pain. Less than 7% to 10% of them require invasive treatments including injections, discectomies and laminectomies etc. It was observed that no scientific study had been carried out before to evaluate the clinical results and outcomes after surgical intervention of the prolapsed disc problems at lumbosacral level. So a study was designed for this purpose at the

Orthopaedic Department, Services Hospital / Post Graduate Medical Institute, Lahore.

Studies have shown that if once a patient suffers a back injury, he is four times more likely to sustain another. Fortunately back injuries are not usually serious, about 70% to 90% of them are caused by muscle or ligament strains often stemming from weakness in the lower back. In 1986, Ebersold et al., in their study of 74 consecutive patients younger than 17 years found that none of them had high lumbar disc prolapse and the same has been proved by our study too.

It has also been observed that spinal canal is narrower in our population and ligamentum flavum is also usually thicker (Raja I. A., 1984). Instability following laminectomy is quite uncommon expect in cases of spinal tumor where the local musculature may be adversely affected. The strength in the spine is not reduced until more than 50% of facet joint has been removed bilaterally (Rayner R. P., 1985).

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A multidisciplinary approach by the expertise of orthopaedists, neurosurgeons, neurologists, rheumatologists, anaesthesiologist, physical and occupational therapists and psychologists is required in order to find out the best method of treatment for each patient. The present study includes evaluation of patients treated surgically after careful selection that fulfilled the criteria for surgery, discussed later in the text.

We are reporting our experience of discectomy/hemi-laminectomy with special reference to subjective and objective symptomatic relief after two years follow up.

## MATERIALS AND METHODS

A total of thirty consecutive patients with prolapsed lumbar disc fulfilling the criteria for surgery were included in the study presenting at Orthopaedic Department, Services Hospital / Post Graduate Medical Institute, Lahore between August, 1994 to April, 1996. They were operated by the senior surgeons of the department to maintain uniformity. There were twenty three men and seven women. Age ranged from 23 years to 51 years, mean age was 39.1 years.

Patients presenting with cauda equina syndrome were planned as emergency procedures, others were operated as elective procedures.

### Selection of Patients

Patients were selected following the criteria for indications for surgery such as cauda equina syndromes, progressive neurologic deficit despite adequate non-invasive treatment, severe disabling pain that kept the patient away from the job for more than 6 months and not resolved to conservative treatment.

Patients with previous history of spinal surgery, having malignancy, stenosis of spine, spondylolisthesis, traumatic and inflammatory spinal disorders, high index of psychologic involvement, scoliosis and spinal tumors were not included in the study. Patients with two level lumbar disc disease were also excluded from the study.

Our treatment goal was to help our patients maintain their lifestyles and function as independently as possible restoring physical

function; relieving pain and minimizing the psychological, social, recreational or vocational effects of the disease or disability. Thus details of the surgical treatment method, along with psychological counseling were explained to the patients. Invasive treatment were offered where non-invasive methods as, rest, heat and cold, medication, physical and occupational therapy failed.

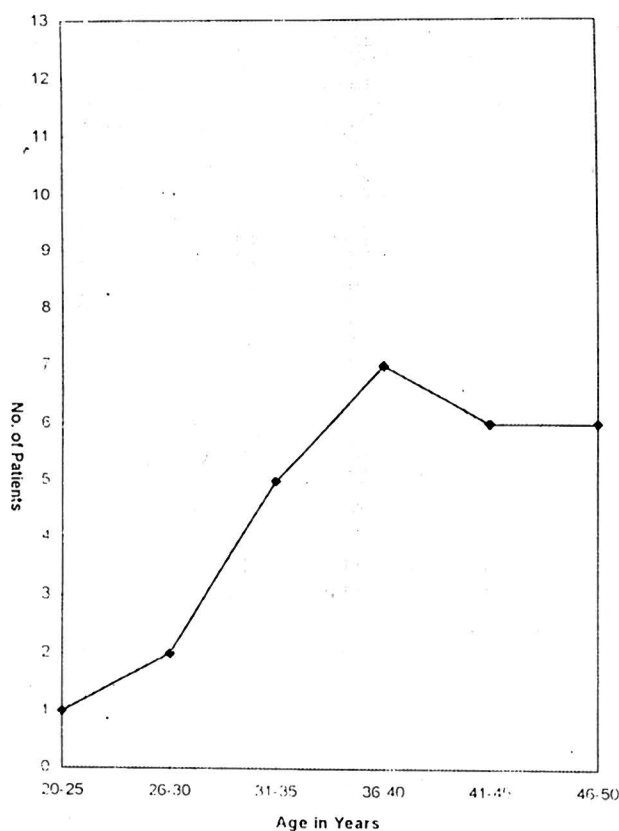


Fig. 1: Distribution of Patients in Different Age Groups

### Investigations

Patients were investigated for other chronic illnesses, as tuberculosis, malignancy, renal profile, cardio respiratory status, diabetes mellitus and/or as advised by the anaesthesiologist. Special investigations included MRI for the affording patients and myelography for the rest were performed. A request was made to the radiologist to mark the level of lesion on the skin at the time of myelography. This remarkably increased the accuracy of level preoperatively. Once surgery was planned, the present status of neurology and clinical presentation were carefully

documented, as shown in the proforma. The attached proforma was developed to collect pre/perioperative data and conduct a follow up for each patient.

### Operative Techniques

Surgery was performed under cuffed endotracheal anaesthesia and patient in knee chest position, keeping abdomen free of pressure. Obese patients were operated in prone position with pillows under the chest and pelvis. First generation cephalosporin 1 gram was injected intravenously half hour before surgery. Wound area was protected from surrounding contamination by opsite. Midline incision was made, paraspinous muscles elevated, packed and haemostasis done. Discectomy was performed by fenestration for lateral disc and hemilaminectomy for postero-lateral or posterior discs. Redivac suction drain was used and removed after 24 to 48 hours. Patients were discharged on 8 to 10 postoperative day after removal of stitches. Clinical data was collected on each follow up for at least twenty two months with an average duration of 32.8 months (range 22 months to 41 months).

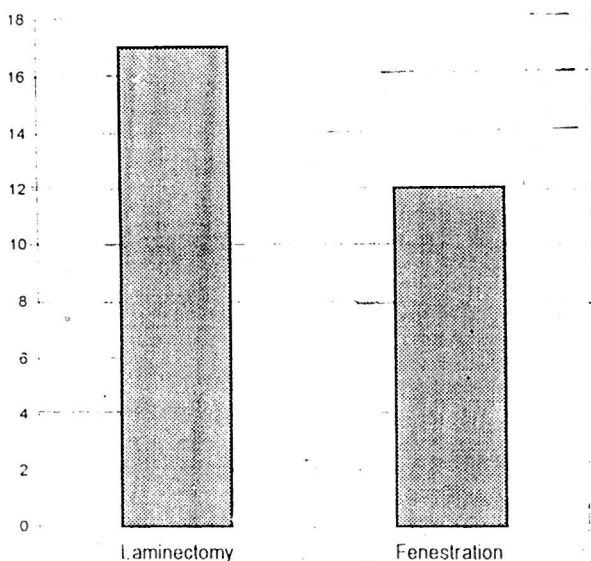


Fig. 2: Choice of Procedure Type

### COMPLICATIONS

#### Per-Operative

No cord or nerve root was damaged during surgery. There was no dural tear. Six patients had intra-spinous venous haemorrhage and were

managed by packing with gelfix. Recovery in all cases was uneventful.

### Post-Operative

#### Early

Eleven patients had transient urinary treatment, six were managed by evacuation with catheter and five required indwelling catheter for few days. None had motor loss, there was numbness of the leg or foot in nine cases, which eventually resolved. There was superficial infection in two cases and deep infection in one case, who was known diabetic for last four years. All infections were controlled after culture and sensitivity of the organisms. Diabetic patient had mixed growth of pseudomonas and staphylococcus aureus and required debridement of the wound and intravenous tienam injections. No patient had deep venous thrombosis or pulmonary embolism.

#### Late

Late complications will be discussed in the results.

### Follow Up

Three patients lost to follow up. All twenty seven were followed clinically for at least 22 months with an average duration of 32.8 months on the proforma developed for the purpose and results were evaluated using the scoring system shown in the proforma.

### AMBULATION

Patients were allowed to sit and stand/walk on 3rd post operative day, except those who presented with cauda equina syndrome. On tenth post operative day, they were encouraged to walk routinely, but forward bending and squatting was delayed according to subjective tolerance, to approximately three weeks.

### RESULTS

#### Early Results

Patients were examined post-operatively in terms of subjective improvement and were clinically assessed. Eleven patients had difficulty in passing urine, five out of them required Foley's indwelling catheter for few days. Nine patients complained of numbness or reduced sensation at the relevant dermatome immediately after surgery. All of them improved with no residual neurologic impairment.

Two patients had reported with cauda equina syndrome. First case was a male 27 years old and duration of sphincter loss for seven hours. He had remarkable recovery after immediate decompression. Second patient was a female of 41 years, with history of 20 hours urinary retention and paresis. This patient gained control of bladder after six weeks and had absent ankle jerks till last follow up.

There were 3 infections, one was a known diabetic and had deep infection. All were controlled after appropriate antibiotics. Two cases complained of persistent pain even after surgery, and no improvement subjectively. Eight cases had mild to moderate pain on walking. Seventeen patients were satisfied with surgery and had no pain post-operatively. Clinically, 19 patients had marked improvement in straight leg raising though ankle jerk and extensor hallucis longus power returned in 4 cases only, of those who had pre-operative deficit.

**Table 1: Functional Ability at Last Follow Up**

	Maintained	Reduced
Working or Occupational Capacity	63% (17)	37% (10)
Exercise and Sports Activity	55.5% (15)	44.5% (12)
Walking and Ability to Manage Straight	81.5% (22)	18.5% (5)

**Late Results**

Two cases had persistent numbness of the lateral border of foot though reduced in intensity. 63% of the cases returned back to their working and occupational routine and had remarkable improvement in quality of their life. 57% were able to carry out some sort of exercise and sports

**Table 2: Subjective Improvement in Pain and Numbness**

	No. of Cases	Percentage
No pain	17	63%
Pain on walking	8	29.6%
Pain at rest	2	7.4%
Numbness Residual	2	7.4%

activity like jogging, running and other games. Three patients were active sportsmen and were back to their normal sports level and were having no problem till last follow up. 81% were able to manage stairs and had normal walking ability.

Following the scoring system mentioned in the proforma, the final results were as follows:

Excellent	=	33.3 (9)
Good	=	26% (7)
Fair	=	33.3% (9)
Poor	=	7.4% (2)

The excellent and good were collectively rated as:

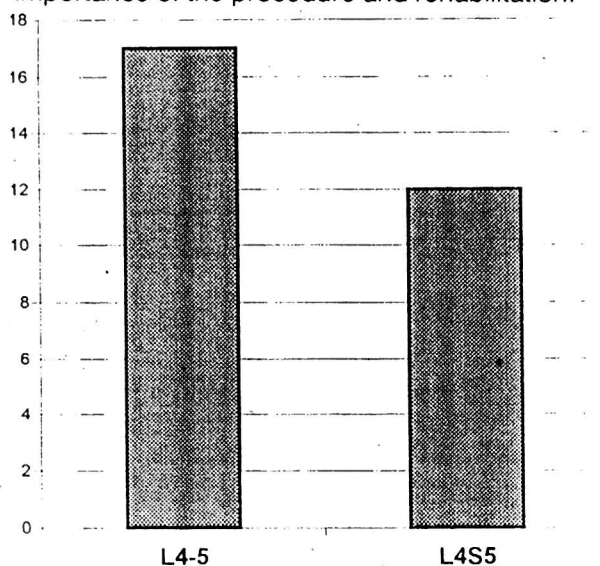
Satisfactory	=	59% (16)
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and fair and poor as:

Unsatisfactory	=	41% (11)
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**DISCUSSION**

After the final average follow up of 32.8 months interesting results were noted. Men to women ratio of the patients reporting to the department was 3:1. The follow up of the patients was very good. There were only three drop outs. This was possible only after thorough and detail explanation to the patients regarding the importance of the procedure and rehabilitation.



**Fig. 3: Disc Level Involved**

Most of the patients had landed after consulting different modalities of medical and quackery professionals (average duration of symptoms was 2.8 years). It was shown that disc prolapse at the level of L<sub>4,5</sub> had higher incidence (63%) as compared to L<sub>5</sub> - S<sub>1</sub> level (37%) and postero-lateral or posterior compression was more (55.5%) than the lateral (44.4%) disc position.

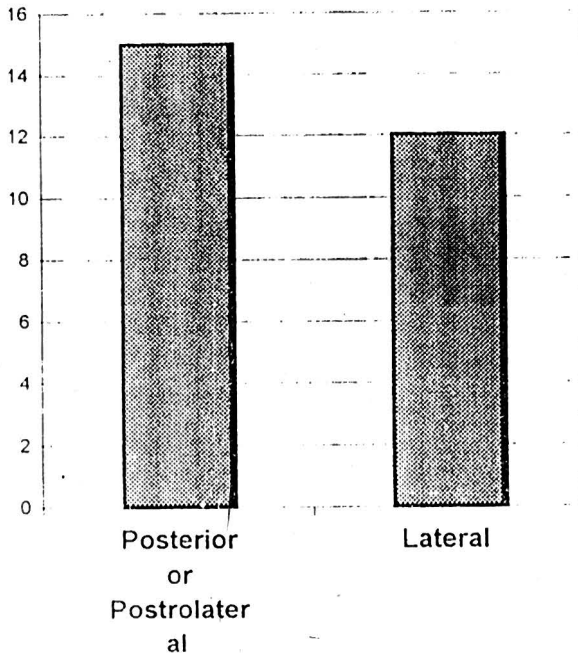


Fig. 4: Disc Position

Both the patients with cauda-equina syndrome were operated as an emergency procedure. First case had a duration of sphincter loss for seven hours and showed excellent recovery in terms of urinary and bowel control, though there was persistent weakness of extensor hallucis and absent ankle jerks bilaterally and scored 60 only on final assessment, and had mild to moderate pain at the back and buttocks bilaterally. The patient was quite satisfied with the results. Second case was a female of 41 years and presented twenty hours after loss of control of sphincters. She also gained control of sphincters in three weeks time. The sensory loss at antero-lateral border of feet improved remarkably but had persistent absent ankle jerks. She was also quite happy with the results though scoring only fifty.

The results showed that psychological disturbance and association of other vague pains

had un-satisfactory outcomes. The importance of careful selection following the exclusion criteria mentioned earlier can not be over emphasized as wrong selection of patients is the one of major causes of poor results, mentioned in the literature.

Post operative early complication of urinary retention in the present study was quite high (40.7%) luckily all of them recovered before discharge except one. Nine patients had numbness and loss of sensations of the leg at the relevant dermatomes post-operatively. All of them recovered. This cautions about careful retraction and handling of the cord and the roots during surgery.

Deep infection in one patient who was known diabetic for the last seven years needed longest stay in the Hospital (4 weeks), and infection was managed by debridement and secondary closure under cover of appropriate antibiotics (Tienam, donated by pharmaceutical company). She had unsatisfactory results at the final evaluation despite early satisfactory results. This was probably due to scarring of tissue around the cord. She did not volunteer for further investigations.

This was observed that elderly patients had less satisfactory results compared to the younger ones. This was probably due to better compliance of younger people regarding rehabilitation and post-operative physical therapy advice.

On subjective evaluation 63% reported to be pain free and were quite satisfied with the final results. 29% of the patients were not satisfied in term of pain relief. These were 7.4% patients who had pain even at rest and had no remarkable improvement of pre-operative numbness.

The present study has minimum follow up of twenty two months with an average of 32.8 months. Which is quite less if, compared to previously published international studies. This is suggested that long term study should be carried out following the principles and parameters used in the study to further evaluate the scope and importance of surgical intervention of lumbar disc disease. However this study has shown encouraging scope in this field and has opened avenues for future researchers and workers.

## CONCLUSIONS

Following points were concluded at the end of the study:

1. Surgical indications should be strictly followed for satisfactory results. Patients with multidirectional disturbance including psycho-social involvement have poor or unsatisfactory results.
2. Clear instructions for rehabilitation and post-operative physical and professional activity are of immense importance for a long term satisfactory results.
3. Cauda equina syndrome patients are quite satisfied if the control of sphincters loss is attained despite residual neurologic deficit and pain. They need detailed description of the surgical outcomes and possible residual deficit before surgical intervention.
4. Incidence of L<sub>4,5</sub> disc disease is higher than L<sub>5</sub> S<sub>1</sub> level in contrast to previous international published studies.

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