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Original Article

Prolapse Lumber Intervertebral Disc: An Institution Based Prospective Study

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ABSTRACT

Introduction: Lumbar intervertebral disc prolapse and lumbar canal stenosis are very frequent organic causes of backache and radiating pain along lower limbs. Initially patients of sciatica are treated with conservative means such as bed rest, analgesics and occasionally traction therapy. When conservative means fails to relieve symptoms then surgical interference is contemplated.

Aims and Objectives: This prospective study has been carried out in (n=47) patients to evaluate various factors and types of surgical procedure associated with outcome.

Observation and Results: Early surgery, male gender, fenestration operation were associated with favourable outcome. Delay in surgery after onset of signs and symptoms, female gender and longer duration of surgery were associated with increased morbidity in early postoperative period and incomplete resolution of symptoms.

KEYWORDS: Intervertebral Disc Prolapse, Sciatica, Laminectomy, Fenestration, Straight Leg Raising Test, Facetectomy.

INTRODUCTION

Pain in the lower lumbar region with or without sciatic radiation is one of the most common ailments. Sciatica, as a symptom, had been around for centuries before Mixter and Barr published their now famous paper describing as "ruptured intervertebral disc" as its cause.[1] Numerous authors before proposed various causes of sciatica, but it was the article of Mixter & Barr (1934) that established this entity.[1]

AIMS AND OBJECTIVES

1. To study various factors associated with relief of signs and symptoms after surgery.
2. To evaluate type of surgery associated with final outcome.

MATERIAL AND METHODS

Prospective study of the 47 established patients of prolapsed intervertebral lumbar disc admitted in the Department of Neurosurgery, Rajendra Institute of Medical Sciences, Ranchi for surgical intervention were included in this study. MRI was investigation of choice to establish disc prolapsed requiring surgery.

Inclusion criteria

- Only new cases of lumbar disc prolapse with no relief of pain.
- No relief of mild pain after at least 4 weeks of conservative therapy.
- Severe recurrent incapacitating pain.
- Progressive motor weakness.
- Bladder and bowel incontinence.

Exclusion criteria

- Recurrence of disc prolapse.

OBSERVATIONS

Age Incidence

Almost two third (64%) of patients belong to the age group between 26-45 years and incidence was declining with advancing age after that.

Sex Incidence

Males were predominant in the ratio of 2.35:1.

Occupation

The lesion was more common in office worker, labourers and housewives. It was least common in businessman.

Duration of Symptoms

The mean duration of symptom (preoperative) in present study is 22.53.Majority of the patients (46%, n=22) have symptoms for less than 6 months duration

Straight Leg Raising Test

Out of 47 cases, 42 patients had positive straight leg raising test constituting the 89.66% incidence.

Cross Legged Straight Leg Raising Test

16 cases, out of 47 patients had positive cross legged SLR. Thus, the incidence was 34.04%.

Level of Disc Herniation

Out of 47 patients, 42 (89.35%) had disc prolapse at single level. Single level disc prolapse at L4-5 was most common (53.19%) followed by single level disc prolapse at L5-S1 (34.04%). The incidence of double disc lesion was 10.63%. Among double disc lesion incidence at the L3-4 & L4-5 level (8.51%) was greater than the level of L4-5 & L5-S1 (2.12%).

Nature of Operation

In 4 cases (8.51%) partial facetectomy was also done. In this study, in 25 cases (53.19%) fenestration procedure was done to take out the prolapsed disc. In 19.15% cases hemilaminectomy was done and in the rest 27.66% cases laminectomy was done. There was negative exploration in one case.

Paresis in Relation with Disc Prolapse

34 patients (72.34%) had motor weakness out of total 47 patients. In our series there were 28 patients (59.57%) of sensory deficit.

Incidence of Disc Prolapse in Relation with Side

In our series, central disc prolapse was present in 20 cases (42.55%). One sided disc prolapse was present in 27 cases (57.55%). Among one sided disc prolapse, left sided disc lesion (31.91%) was more common than the right side (25.53%).

RESULTS AND DISCUSSION

For almost 60 years, physicians have been treating symptomatic herniated lumbar disc surgically. Alternative methods to treat the patients with a herniated lumbar disc unresponsive to conservative care have also been continued. Probably the best known of these alternative treatment modalities is chemoneucleolysis. Success rates of chemonucleolysis have been consistently reported to be in the 75% range. (Nordby E JandLucasGL:1973)[2]

Table 1: Mean age & range at operation in comparison with other studies

Author	Year	Mean age (years)	Range (Years)
Barr[3]	1937	37	20 to 58
Davis AR[4]	1994	41	16 to 77
Katayama Y[5]	2006	34	14 to 62
Present study	2009	38.63	16 to 65

Table 2: Comparison of present study for mode of presentation of pain

Author	Year	Backache only	Sciatica only	Both
Sharma & Shankaran[6]	1980	12.8%	11.1%	76.1%
Davis AR[4]	1994	8.9%	10.1%	81%
Present study	2009	6.38%	8.52%	85.10%

18 patients (72%) out of 25 with disc lesion at L4-5 showed complete relief of pain after surgery. Similarly 12 out of 16 patients with disc lesion at L5-S1; also showed complete relief of pain after surgery. 75% of patients with the double level disc lesion at L3-4 and L4-5. The present study showed a positive SLR in 88.37% of preoperative patients which is comparable to that of Jonsson B 88% (1993).[7] After surgery 97.8% of patients showed negative SLR which is comparable to that of Bhalla and Deane 89% (1989)[8] and Spangfort 89% (1972).[9] Negative SLR indicated the complete release of tension on stretched nerve root due to prolapsed disc after surgery.

In our series 85.10% of patients presented with both backache and sciatica. 6.38% of patients presented with only backache and 8.52% of patients presented with only sciatica. This is almost comparable with study of Davis AR[4] and differs slightly with the study of Sharma and Shankaran.[6] Complete relief from backache and sciatica was seen in 74.47% of patients.

Relief of Backache & Sciatica In Relation to Type of Procedure Done:

Out of 25 patients with fenestration, 18 (72%) showed complete relief of pain and 7 (28%) showed incomplete relief of pain. In comparison, out of 9 patients with hemilaminectomy; 6 (66%) showed complete relief and 3 (33.33%) showed incomplete relief. In laminectomy group, out of 13 patients, 9 (69.23%) showed complete relief and 4 (38.76%) showed incomplete relief. 72% patients with fenestration showed complete relief of pain compared to 66% in cases of to hemilaminectomy and 69.23% in laminectomy. Backache had relief in 93.02% cases whereas sciatica relieved in only 88.63% cases. Incidence of relief of both was 87.5%.In our study

93.6% of preoperative patients had reduced spinal mobility. This is comparable to that of Davis AR 85% (1994)[4] and Jonsson B 96% (1993).[7] Improvement in spinal mobility was observed in 27.65% of our patients.

Males had slightly better relief of symptoms (66%) as compared to females in our series though M Sedighi (2014)[11] found no significant difference in outcome according to sex.

Table 3: End result of surgery were compared with Ebeling U et al[10] series

Results of operation		Ebeling U (1986)[10]	Present study (2009)
Satisfactory	**Excellent**	39.2%	25.53
	Good	36.6%	55.31%
	Fair	18.8%	17.02%
Unsatisfactory	**Poor**	6.2%	2.12%
	Failure	2.3%	--

Table 4: The incidence of complication in our study in comparison to other studies.

Series	P	DI	PE	WI	NND	D	M	UR
Oldenkott (1971)[12]	-	5.3%	0.2%	-	-	-	0.3%	NM
Sprangfort (1972)[9]	-	1.6%	1%	3.8%	-	2%	0.1%	NM
Schramm (1978)[13]	0.06%	5%	-	-	-	-	0.3%	NM
Present study (2009)	-	6.38%	-	4.24%	12%	-	-	-

NM = Not mentioned, P = Perforation, DI = Dural injury, PE = Pulmonary embolism, WI = Wound infection, NND = New neurological deficit, D = Discitis, M = Mortality, UR = Urinary

In our series males had better relief of symptoms in follow up period. In our series it was found that 58.82% of patients recovered completely from previous motor deficit while 41.18% showed only partial recovery. In our series 11 cases out of 12 cases who had excellent result had duration of symptoms less than 6 months. This coincided with studies of NgLC(2005)[14] and Nygaard OP(2000)[15] who concluded that shorter duration of symptoms before surgery provided more satisfactory results postoperatively.

Negative exploration occurred in one out of 47 cases (2.12%). In this case disc was found to be healthy, though the level of exploration was right. Knutsson and Weiberg (1958)[16] reported negative exploration in 13% of cases and Anderson & Haklius (1970)[17] in 9% of their cases.

SUMMARY AND CONCLUSION

To sum up, in present series choice of operation was fenestration. It appeared to be safe, simple, and economical operation. It offered equivalent results to other series while preserving the spinal stability and less soft tissue dissection.

Incidence of complications was less and provided excellent and good results in 80.42% cases. Fenestration provided early postoperative mobilization and early return to job.

Laminectomy was done in only those cases where indicated for decompression of spinal canal due to stenosis or in multiple level disc lesions. Surgery yielded the significant improvement in neurological deficits.

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