

# Epidural Steroid in Conservative Treatment of Prolapse Disc and Lumbar Canal Stenosis

L. Nilachandra and Kunjabasi Wangjam

## Abstract :

Epidural steroid injection as a standard method of treatment for low back pain syndrome was established in 1960's. Since then, this form of treatment has been used by many authors with varying degree of success. 530 cases of prolapse disc and 446 cases of lumbar canal stenosis making the total of 976 cases were studied in the series. After proper diagnosis 2 ml of methyl-prednisolone is injected in the epidural route without any dilution with the patient lying on affected side : 3 doses were given in the interval of 4 to 7 days and patients are followed up upto 3 years or more. The overall success rate in case of prolapse disc is 81.2 percent and 71.9 percent in case of lumbar canal stenosis. In this study there are no complications as less volume is used for the injection, patients are treated as outpatient. Epidural steroid (methyl-prednisolone) is effective and safe method for the conservative treatment of the prolapse disc and lumbar canal stenosis syndrome prior to operative intervention.

## Introduction

The administration of intradural steroids for the treatment of conditions causing low backache was known since 1960's.<sup>3,7</sup> Various investigators have tried this method of conservative treatment in prolapse disc, lumbar canal stenosis, etc., with variable success rate. The efficacy of the treatment is around 30 to 77% according to most authors<sup>1,2,4,8,9</sup>. Most of the authors use corticosteroids diluted with 10 to 20 ml of other fluid like local anaesthetic solution, opiates or plain saline solution. These epidural injections result in some complications in 5% cases like infection, paresis of the limbs, bladder dysfunction, sensory abnormalities in a few cases. We have undertaken the study with view to eliminate these complications by injecting minimum volume of the corticosteroid solution without any dilution.

## Materials

Patients who attended the Regional Rehabilitation Centre O.P.D. between January, 1991 to December, 1994 (4 years) for the complaint of

backache constitute our materials. Of these patients, the cases which were clinically diagnosed as suffering from prolapse disc (PID) or Lumbar canal stenosis were selected for the study. They numbered 976 (male 563 & female 413). Their age group ranges from 18 years to 80 years. With maximum number coming from the age group of 31 to 50 years as shown in Table-I

Age	No. of Cases	Percentage
18-30 Years	180	18.4
31-50 Years	505	51.7
51 & above	291	29.8

Table -I

(Age distribution in low backache)

Diagnosis of prolapse disc was based on clinical examination and radiological investigations. The other causes of backache like lumbosacral strain, infections, etc. were excluded by proper clinical, radio-logical haematological investigations. Those patients who were presented with low backache with or without sciatica or sciatica alone were carefully examined by SLR,

Correspondence : Kunjabasi Wangjam. Regional Rehabilitation Centre, Regional Institute of Medical Sciences Imphal (Manipur) -795 004

sciatic tenderness and focal neurological deficits. The clinical diagnosis was confirmed by radiological investigations which include plain roentgenogram of L.S. Spine in all cases and lumbar myelogram in selected cases.

Diagnosis of lumbar canal stenosis is based on the

paucity of signs against the complaint of neurological claudication with or without sciatica. Some of the cases were confirmed by plain roentgenogram/myelogram. Table-II shows the distribution of signs & symptoms.

Symptoms	No. of Cases	Signs	No. of Cases
Lowbackache	637	SLRT: Ipsilateral	611
		Contralesional	269
Sciatica	542	FNS : Ipsilateral	238
		Contralesional	81
Claudication Pain	462	Neurological Deficit :	
		Sensory Hypoaesthesia	386
		EDL/EHL weakness	249
		DTR - Ankle	239
		Knee	87
		ROM L.S. Spine restriction:	
		Flexion	331
		Extension/Rotation	312
		Claudication Distance :	
		50 metres or less	162
		51-100 metres :	257
		Tenderness	
		Sciatic Nerve	461
		Spine	227
		Paraspinal	287
		X-Ray L.S. Spine :	
		I.V. Space Reduction	399
		Narrowed Canal	180
		Osteophytes Present	207
		Spondylosis	71
		Lumbar Myelogram:	
		Indentation of	
		Dye Column.	74
		Amputation of	
		Root Slips	62

Table -II  
(Distribution of Symptoms, Signs & X-Ray)

## Methods :

The patient is positioned in lateral position with affected side (more affected side in case of bilateral lesion) down in usual lumbar puncture position. The appropriate space mostly L 4-5 Or L<sub>5</sub>S<sub>1</sub> is localised by palpation. After routine aseptic preparation of the part, No. 20 L.P. needle is inserted for about 1.5 to 2 cm. in the selected interspinous space. Epidural space is located by using a syringe attached to the needle. Sudden loss of resistance of the plunger is felt when epidural space is reached.

2ml of methyl prednisolone without dilution is administered through the needle with bivel tip facing downwards. Patient is rested for 15 to 30 minutes in the same position then allowed to go home. Review is done on the 3rd day of injection. Usually, three doses are given in the interval of 4 to 7 days.

For evaluation of the patients with lumbar canal stenosis the improvement in claudication pain/distance and also the relief of sciatica if present are examined. And for the patients with prolapse disc the evaluation is done mainly based on the improvement of the lowbackache, sciatica, SLR and also improvement in the focal neurological deficits if it is there. Pain evaluation is done by visual analogue scale and verbal pain score. The improvement is divided into 3 categories.

These are basic parameters on which our assessment of the improvement is based. However, in the overall assessment of a patient, we depend upon many more parameters as listed in the Table-IV.

Patients are reviewed at 1 to 2 monthly intervals in the first year, then once or twice a year for 2 years.

Group	Prolapse Disc	Lumbar Canal Stenosis
1	2	3
Group - I (Excellent)	<ul style="list-style-type: none"> <li>- 90% or more relief of pain-lowbackache and/or sciatica.</li> <li>- Negative SLR, Significant regression of focal neurological deficits.</li> <li>- No tenderness in sciatic nerve or paraspinal area.</li> </ul>	<p>90% or more relief of pain either sciatica and/or claudication pain. Claudication distance above 1 Km. or no claudication pain. Spine Rom L.S. becomes free specially in extension.</p>
Group - II (Good)	<ul style="list-style-type: none"> <li>- Above 50% pain relief, SLR better i.e. +ve at the angle which is 2 times of the initial angle.</li> <li>- 50% regression of focal neurological deficits.</li> <li>- Patient resumes to his/her normal duty.</li> </ul>	<ul style="list-style-type: none"> <li>- Above 50% relief of pain</li> <li>- Claudication distance more than 2 times of the original C/D.</li> <li>- Spine movements are free in moderate range.</li> <li>- Patient resumes to his/her normal duty.</li> </ul>
Group - III (Poor)	<ul style="list-style-type: none"> <li>- Less than 50% relief of pain</li> <li>- No/minimal improvement in SLRT or focal neurological deficit</li> </ul>	<ul style="list-style-type: none"> <li>- Less than 50% relief of pain</li> <li>- minimal improvement in claudication distance.</li> </ul>

## Methods :

The patient is positioned in lateral position with affected side (more affected side in case of bilateral lesion) down in usual lumbar puncture position. The appropriate space mostly L 4-5 Or L<sub>5</sub>S<sub>1</sub> is localised by palpation. After routine aseptic preparation of the part, No. 20 L.P. needle is inserted for about 1.5 to 2 cm. in the selected interspinous space. Epidural space is located by using a syringe attached to the needle. Sudden loss of resistance of the plunger is felt when epidural space is reached.

2ml of methyl prednisolone without dilution is administered through the needle with bivel tip facing downwards. Patient is rested for 15 to 30 minutes in the same position then allowed to go home. Review is done on the 3rd day of injection. Usually, three doses are given in the interval of 4 to 7 days.

For evaluation of the patients with lumbar canal stenosis the improvement in claudication pain/distance and also the relief of sciatica if present are examined. And for the patients with prolapse disc the evaluation is done mainly based on the improvement of the lowbackache, sciatica, SLR and also improvement in the focal neurological deficits if it is there. Pain evaluation is done by visual analogue scale and verbal pain score. The improvement is divided into 3 categories.

These are basic parameters on which our assessment of the improvement is based. However, in the overall assessment of a patient, we depend upon many more parameters as listed in the Table-IV.

Patients are reviewed at 1 to 2 monthly intervals in the first year, then once or twice a year for 2 years.

Group	Prolapse Disc	Lumbar Canal Stenosis
1	2	3
Group - I (Excellent)	<ul style="list-style-type: none"> <li>- 90% or more relief of pain-lowbackache and/or sciatica.</li> <li>- Negative SLR, Significant regression of focal neurological deficits.</li> <li>No tenderness in sciatic nerve or paraspinal area.</li> </ul>	<ul style="list-style-type: none"> <li>90% or more relief of pain either sciatica and/or claudication pain.</li> <li>Claudication distance above 1 Km. or no claudication pain. Spine Rom L.S. becomes free specially in extension.</li> </ul>
Group - II (Good)	<ul style="list-style-type: none"> <li>- Above 50% pain relief, SLR better i.e. +ve at the angle which is 2 times of the initial angle.</li> <li>- 50% regression of focal neurological deficits.</li> <li>- Patient resumes to his/her normal duty.</li> </ul>	<ul style="list-style-type: none"> <li>- Above 50% relief of pain</li> <li>- Claudication distance more than 2 times of the original C/D.</li> <li>- Spine movements are free in moderate range.</li> <li>- Patient resumes to his/her normal duty.</li> </ul>
Group - III (Poor)	<ul style="list-style-type: none"> <li>- Less than 50% relief of pain</li> <li>No/minimal improvement in SLRT or focal neurological deficit</li> </ul>	<ul style="list-style-type: none"> <li>- Less than 50% relief of pain</li> <li>minimal improvement in in claudication distance.</li> </ul>

## Observations and Results

Out of 1976 cases 882 patients were reviewed for assessment, according to the above mentioned criteria. 94 patients are lost to follow-up due to reasons beyond our knowledge. The follow-up period is given in Table - III.

Duration	No. of Cases
Upto 1 year	645
1-2 years	176
2 years & above	61

Table -III

(Period of follow-up and number of cases)

Of the 530 cases of prolapse disc, 61 patients are lost to follow-up and 381 patients (81.2%) are in excellent or good category. Of the 446 cases of lumbar canal stenosis, 33 patients are lost to follow-up and 297 (71.9%) cases shows excellent or good recovery.

These results are based on the assessment of the improvement in signs and symptoms as shown in Table - IV.

Signs & Symptoms	No. of Cases
Pain Reduced	444
Claudication Improved	312
SLRT Improvement	305
FNS Improvement	99
Tenderness Reduced	
Sciatic Nerve	168
Spine	75
Paraspinal	132
ROM L.S. Spine:	
Flexion Free	123
Extension/Rotation Free	108
Neurological Improvement :	
EHL/EDL	47
Knee Jerk	17
Ankle Jerk	57
Sensory Hypoaesthesia	108

Table -IV

(Results after the injection (Improvement))

## Discussion

In our study we have used small volume i.e. 2 ml of methyl-prednisolone (depomedrol) preparation compared to large volume 3,4,9 used by other authors. We have made special arrangement, so that the drug is deposited as near to the affected root as possible positioning the patient and bivel of the needle. No local anaesthetics or opiates were given. It was found that in most patients the relief is felt on the second day or third day of the injections. Usually, three doses are needed for optimum effect<sup>2</sup>.

There was no incidence of infection, paresis, bladder & bowel involvement. There were two cases of vasovagal attacks which were not directly related with the drugs. The patients were treated as out-patients. After 10 to 15 minutes observation in the post-injection period, the patients were discharged.

Better effects were observed in case of prolapse disc. Of the 88 patients who did not respond to treatment, 71. patients improved with constant pelvic traction or GLRT traction, 11 patients were ultimately subjected to discectomy. Few cases of prolapse disc did not come for further treatment. Of the 116 cases of lumbar canal stenosis, only 53 cases improved with further conservative treatment in the form of traction, lumbosacral corset/brace, etc. 32 cases were subjected to surgery i.e. laminectomy with or without de-compression of the lateral recess, root canal. 31 cases which did not improved with conservative line of treatment were advised to undergo decompression surgery. However, due to other factors they did not come to us for surgery.

## Conclusion

Epidural methyl-prednisolone injection is safe and effective conservative method of treatment for both prolapse disc and lumbar canal stenosis. This can be recommended before deciding to subject the patient to operative form of treatment.

## References :

1. Bowman - SJ; Outcome assessment after epidural corticosteroid injection for lowbackpain and sciatica. Spine 1993 August : 18(10) : 1345-50.
2. Campbell's operative Orthopaedics (1987) : Lower back pain and disorders of intervertebral disc. C.V. Mosby company - 7th Edn: 3293-3294.
3. Finneson E. Bernard; Lowbackpain; Analgesic Blocks. T.B. Lippincott company - 2nd Edn. : 415-418.
4. George Wallace, Gregg T. Solove (1985); Epidural Steroid Therapy for lowbackpain. Post grad. med. 1978, 213-215
5. Hickey-RF; Outpatient epidural steroid injections for lowback pain and lumbo-sacral radiculopathy. N-Z- Med-T. 1987 Sep. 23; 100 (832) : 594-6
6. Jamison-RN; Lowback pain patients unresponsive to an epidural steroid injection: identifying predictive factors. Clin-J-pain. 1991 Dec. : 7 (4) : 311-7.
7. Nelson-DA; Intraspinal therapy using methyl prednisolone acetate. Twenty-three years of clinical controversy. Spine 1993 Feb. : 18 (2).
8. Rosen - CD; A retrospective analysis of the efficacy of epidural steroid injections. Clin-orthop. 1988 Mar. (288) : 270-2.
9. Singh Dudar; Epidural steroid therapy in lowbackache. Indian J. Orthop. 1990; 24(1) 90-93.