

# Assessment of Functional Outcome of Trans Laminar Epidural Steroid Injection in Recalcitrant Radiculopathy.

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## Abstract

**Introduction** :- Management of low back pain is a common problem faced by many clinicians. Epidural steroid injection is one of the treatment modalities for recalcitrant radiculopathy. In our trial, we studied the efficacy of translaminar epidural saline and steroid injection in lumbar canal stenosis and disc herniation patients.

**Methods** :- We analysed the data of 196 patients diagnosed as either disc herniation (Group 1) or lumbar canal stenosis (Group 2) clinically and confirmed radiologically. Patients were treated with translaminar epidural saline and steroid injection and followed up at 1 month (short term), 6 months (mid-term) and 12 months (long term). Follow up data collection includes objective parameters like active/passive straight leg raising, neurological status and claudication distance and subjective parameter like pain by means of visual analogue scale.

**Results** :- Total of the 196 patients 92 were females and 104 were males. The mean age of patients was 53 years for males and 48.5 years for females, average follow up period was 12.4 months. Mean increase in SLR was 13.5°, mean increase in claudication distance 389 meters, mean increase in VAS score was by score of 5, at the end of 12 months.

**Conclusions** :- Our data suggest that trans laminar epidural steroid injection in lumbar canal stenosis and disc herniation patients has effective outcome at short term and long term basis in terms of pain tolerance and improvement in neurological symptoms.

**Key words**: recalcitrant low back pain, translaminar epidural saline and steroid injection, lumbar canal stenosis, disc herniation, better outcome.

## Introduction

Management of low back pain is one of the tough problems faced by many orthopaedic surgeons. Point prevalence of low back pain is 12 %- 33% [1]. In spite of years of research and untiring efforts by researchers the problem still remains without any convincing solution. The reason is difficulty in understanding of the problem. The confusion is increased by the variety of treatment options that are available like oral medications, exercise therapies, back posture training, life style modification epidural steroid injection, and immediate surgical intervention [2-4]. Epidural steroid can be delivered to epidural space via percutaneous caudal, translaminar and transforaminal route [3-5]. In our study we have tried to assess the role of translaminar epidural steroid injection in recalcitrant radiculopathy.

## Materials and Methods

The study was performed during Jan 2008 to April 2011. Thorough medical examination was done and diagnosis was conformed radiologically (MRI). Written informed consent was obtained from all patients. Total of the 196 patients were considered for study. The age ranged from 22-93 years of age. There were 92 females and 104 males. The mean age of patients was 53 years for males and 48.5 years for females and the average follow up period was 12.4 months. The selection criteria were i) age > 18 years ii) low back pain > 6 months duration with or without treatment iii) pain originating from lumbar spine pathology - central disc herniation, Para central disc herniation, foraminal compression of nerve root, lumbar canal stenosis. Eight (4.08%) cases had previous history of spinal surgical intervention. Patients with - uncontrolled diabetes mellitus, peripheral vascular disease, peripheral neuropathy, severe osteoarthritis of hip and knee joint, loss of follow up to 12 months, were excluded from the study.

**Procedure**: The treatment extended for duration of 5 days. During which epidural steroid were administered at interval of 48 hrs and Tramadol HCl at interval of 12 hrs (Table 1). During the treatment patients were advised strict bed rest. Oral medication like antibiotics, muscle relaxant, NSAIDS, laxatives, peripheral vasodilators, and neuromodulators were continued

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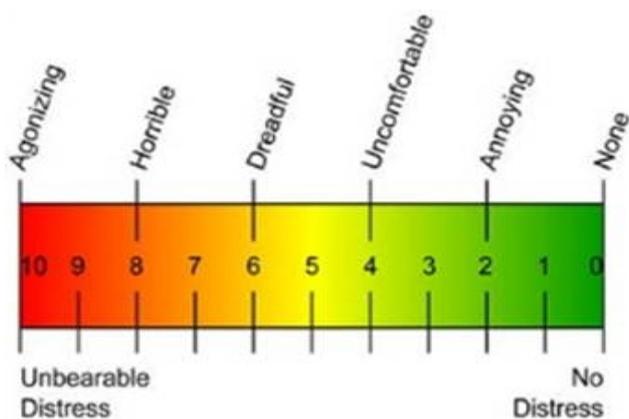
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Day 1 – On admission detailed neurologic examination is performed and documented, routine blood investigation is done. Epidural catheter, in most cases, is inserted at L4-L5 level in such a manner that the tip of catheter lies in proximity to site of compression. Morning dose:- 2ml (80mg) of inj. Methylprednisolone + 2ml (100mg) inj. Tramadol HCl + 25ml ns. Evening dose: -2ml tramadol HCl+ 5 ml normal saline.

Day 2 – Morning dose: -2ml inj. Tramadol HCl + 5ml normal saline. Evening dose: - 2ml inj. Tramadol HCl + 5ml normal saline. Schedule of day1 is repeated on day 3 and 5. Schedule of day 2 is repeated on day 4.

Day 6 – Neurological examination was repeated. Patients were discharged with advice on activity and life style modification. They are taught physiotherapy like core muscle strengthening exercise, para-spinal muscle exercises, and hamstring stretching exercise

Follow –up and clinical evaluation:

Based on clinical and radiological finding patients were grouped as Group 1- disc herniation (n- 100), Group 2- lumbar canal stenosis (n- 96). In Group 1 parameters like straight leg raising, neurological status and pain relief were considered. In Group 2 parameters like claudication distance, neurologic status and pain relief were considered. Study protocol remained same for both the groups.

Pain relief was assessed on basis of visual analogue scale (Fig 1). According to this scale worst pain experienced by the patients is allotted score of 10 and 0 is no pain. Patients

are asked to mark the score on their own. It is very subjective finding and is influenced greatly by physical surrounding of patients.

Patients were assessed at the end of 1 month (short term follow-up), at the end of 6 month (mid-term follow up), at the end of 12 months (long term follow up).

### Results

The mean pre procedure, immediate post procedure, one month, six months and 12 months post procedure VAS score are shown in table 2.

Significant difference was observed in pre procedure and immediate post procedure VAS score. Pain relief was consistent throughout the follow up period. At the end of 1 month score improved by score of 7 at the end of 12 months score improved by score of 5

The improvement in vas score was consistent with the improvement in objective symptoms like straight leg raising, claudication distance. Increase in mean SLR at the end of 1 month was 25.5° (short term outcome, at the end of 12 months was 13.5° (long term outcome)

Increase in mean claudication distance at the end of 1 month was 645mts (short term outcome), at the end of 12 months was 389mts (long term outcome). All the parameters showed some deterioration as compared to immediate post procedure score. But the mean scores at the end of 12 months were still higher than the pre procedure score.

Post intervention MRI scans show persistence of compression, which leads to reappearance of symptoms over a period of time. Minor episodes of adverse reaction to tramadol HCl (n=11 {5.6%}) and syncopal attack (n=3 {1.5%}) were observed which can be prevented by due care.

### Discussion

Low back pain can be explained on basis of three main pathologic changes namely i) Compression of neural element [3] ii) Chemical neuritis [7,8] iii) Muscle spasm. All three changes are interrelated. Compression in any form may it be single level disc or canal stenosis, hampers

Table 1 : Protocol for Epidural Steroids used in this study

Epidural drugs	Day 1		Day 2		Day 3		Day 4		Day 5	
	Oqt0	Eve.	Mor.	Eve.	Mor.	Eve.	Mor.	Eve.	Mor.	Eve.
Inj.Methylprednisolone	+	-	-	-	+	-	-	-	+	-
Inj. Tramadol HCL	+	+	+	+	+	+	+	+	+	+
Normal saline	+	+	+	+	+	+	+	+	+	+

Table 2 : Protocol for Epidural Steroids used in this study

Mean	Day 1 (pre procedure)	Day 6 (immediate post procedure)	1 month	6 months	12 months
VAS score	8	1	2	3	3
Mean SLR right side (Grp I)	57.15°	84.95°	84.05°	77.4°	72.6°
Mean SLR left side (Grp I)	61.95°	86.75°	85.05°	76.08°	73.8°
Claudication distance(in meters) (Grp II)	390.14	1084.89	1035.9	887.5	779.16

local circulation leading to oedema formation and release of local mediators of inflammation [3]. Abdi et al [3] report that it is believed that the neural blockade obtained alters or interrupts nociceptive input, reflex mechanisms of the afferent fibres, self-sustaining activity of the neurons and the pattern of central neuronal activities. Further, it is believed that local anaesthetic interrupts the pain-spasm cycle and reverberating nociceptor transmission. Corticosteroids, on the other hand, reduce inflammation by inhibiting either the synthesis or release of a number of pro inflammatory mediators and by causing a reversible local anaesthetic effect [11]. Normal saline causes washing out of local mediators of inflammation. Due to the volume that is injected, it causes adhesiolysis, improving local circulation [10]. Strict bed rest causes decrease in spasm of muscle, hence alleviates pain.

In our study, symptoms and pain had shown significant improvement. The relief was consistent although the magnitude decreased as compared to immediate post procedure relief. Pain perception was measured by visual analogue scale. Validity and reliability of the VAS has been well documented and thus justify the use of this scale in assessing the efficacy of translaminar epidural steroid. The efficacy, of transforaminal epidural steroid injection is well documented in patients with low back pain with or without radicular symptoms because of disc protrusion and lumbar canal stenosis [5-6]. However transforaminal epidural steroid injection is likely to miss the target area in 30% to 40% of times [2,6]. Also if multiple roots are involved then multiple sites need to be injected. As compared, translaminar approach has definite advantage of single injection and also covers the multiple levels [12-17]

This study focuses on the therapeutic efficacy of translaminar epidural steroid injection. We found it quite effective in alleviating the symptoms in patients with recalcitrant radiculopathy. To substantiate on the findings

further long term study are in process.

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