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A Study Of Results Of Lumbar Traction And Epidural Steroid Injection For Prolapsed Intervertebral Disc At L4-L5 Level With Unilateral Radiculopathy Without Neurological Deficit

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ABSTRACT:
Introduction: To offer epidural steroid and lumbar traction as a **middle path regime** for patients not willing for surgery and not having relief with assess recovery with this treatment protocol.
Methods: The study was conducted prospectively in 52 patients of 20 to 70 years of age with documented chronic low back pain at Department of Orthopaedics, GMC Aurangabad for a period of three year from January 2018 to January 2021.
Patients were assessed clinically and functionally using VAS scale and Oswestry low back pain disability score at 1,3,6,12 months
Results: In our study there was a statistically significant improvement in the 1 year post Epidural steroid injection and lumbar traction VAS score,Oswestry low back pain disability scores compared to the preoperative scores. The average VAS scores at pre op,1 month,3 months 6 months and 1 year are 6.13,2.40,2.65,3.21,3.23 respectively.
Oswestry low back pain disability questionnaire scores showed statistically significant improvement from initial scores to 1 year scores
Prolapsed intervertebral disc disease is more commonly seen in males as compared to females. It is more commonly seen in between 30-50 yrs with heavy manual workers. It is more common in patients with weight more than 70 kgs.
It is more on right side as compared to left side.
Our results suggest that Epidural steroid injection and lumbar traction can relieve pain in the majority of patients with moderate disability due to lumbar disc disease for up to one year.
Conclusion: Epidural steroid injection and lumbar traction might be a good option when urgent surgical treatment is not needed and patients are not responding to NSAIDS.
We recommend Epidural steroid injection and lumbar traction as a middle path regimen in patients with lower backache associated with features of disc prolapse in x ray and MRI, considering its cost effectiveness and flexible conversion to surgery.
Keywords: Prolapsed intervertebral disc at L4-L5 level, lumbar traction, epidural steroid injection

I. INTRODUCTION:

Intervertebral disc prolapse(IVDP) seems to be the most common cause of Sciatica.[1]

Pathogenesis of sciatica was mediated by Inflammation,Phospholipase A2 which is a natural component of intervertebral disc triggers release of Arachidonic acid which is a precursor of Leukotrienes and prostaglandins causing inflammation of the nerve roots.[2]

The mode of conservative management are bed rest, lumbar traction, physiotherapy, exercise therapy, drug therapy and epidural steroid infiltration. Operative intervention indicated in patients with herniated disc with progressive neurological deficits but it has its own disadvantages of persistent pain and recurrence of symptoms.[3]

So, in patients who don't respond to the conservative treatment and are not indicated for surgical treatment, Epidural steroid injections can be given.[4]

Epidural space is usually approached using the

1. Interlaminar
2. Caudal
3. Transforaminal routes. [5]

Lumbar traction is widely used on patients with intervertebral disc disease, as a way to reduce pressure on the vertebral foramen by releasing tension between adjacent spinal vertebrae.[6] Thus, it can improve spinal alignment and reduce unnecessary muscle spasms surrounding the lesioned area . In addition, the reduction of intervertebral pressure and restoration of the original lumbar
lordotic curve can allow the protruded nucleus pulposus to be retracted inward .

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Traction is used as a popular modality in the management of low back pain. As a result of traction, the range of vertebral distraction as reported
varies from 0.3 mm to 4.0 mm.[7] The maximum distraction reported is 20.mm.[8]

There are two types of lumbar tractions :

- Continuous traction
- Intermittent traction

Materials and methods:

INCLUSION CRITERIA:

1. Age group- 20-70 years.
2. Right or left side involvement.
3. Disc level- L4-L5.
4. Non psychiatric patient.
5. Prolapsed intervertebral disc proved on recent MRI within 3 months
6. Straight leg test – 30-60 degree
7. Motor examination-No deficit
8. Bowel/bladder- not involved.

EXCLUSION CRITERIA:

1. Psychiatric patient.
2. Patient with motor deficit.
3. Patient with bowel and bladder involvement.
4. Patient with other co morbidities like Uncontrolled diabetes,chronic kidney disease
5. Patient with neurological disorders like parkinsonism, alzeihmers, cva, cerebral disorders.

52 patients with low back pain satisfying the inclusion criteria were selected. Following informed consent was obtained from the patients and lumbar traction was applied for a period of 4 weeks to 12 weeks
All patients had imaging done either in GMC hospital, Aurangabad .

All the patients who were advised to get epidural steroid injection were given routine blood investigations i.e., Haemoglobin, Creatinine, Blood borne Virus screening (HbSAg, HCV and HIV), Random blood sugar and Chest X ray and ECG also were done as and when needed. Pre-anaesthesia check up was done and fitness was obtained after which they are scheduled a time in Day care operation theatre for the administration of Epidural steroid injection.

Procedure of the epidural steroid injection:

All the patients were admitted in the day care ward on the day of injection; vital signs were checked and noted down by trained staff nurses till the scheduled time for injection of the specific patient arrives.

Procedure in the theatre:

Patients were made to lie down on the operating table and all the monitoring devises were connected. A 20G intravenous catheter was inserted and a pint of Normal salinewas started.

Positioning:

Patient was positioned to sit with his/ her legs on the side of the table resting over stool.

Painting and draping:

The back of the patient was painted with Chlorhexidine paint for three times and was draped with disposable drapes.

Identification of the level:

Anatomic levels of the interspinous spaces were identified with the help of the
landmark, i.e., Iliac crest which is at the level of the L3-L4 space. Then, the desired
level, i.e., one level below L4-L5 identified.

Injection procedure:

The L4-L5 level of lumbar interlaminar interspace is identified & epidural space is located by loss of resistance technique under aseptic precautions and the epidural steroid injections were given

Epidural Steroid Injection **2ml of 40mg Methyl prednisolone and 0.5% Bupivacaine along with 6 ml normal saline is injected**

Patients were monitored for 2 hours after the procedure before discharge.

All patients were explained about the Visual Analogue Scale (VAS) & Oswestry low back pain disability score were properly educated regarding possible success or failures of the intervention. They were counselled and moderated regarding their level of expectation of pain relief.

All patients were followed telephonically and physically at 4 weeks, 3 months and 6 months and 12 months after the epidural steroid injection. All patients were advised to concurrently continue with Rest and their oral analgesics (tramadol+paracetamol, pregablin) as well as physiotheraphy
regularly.

Patients who did not get adequate pain relief after 3 injections were considered as failed therapy and referred for alternative means of pain relief, including surgery.

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II. RESULTS:

SEX DISTRIBUTION

A total of 52 patients included in the study.

35 Males and 17 females were included in the study

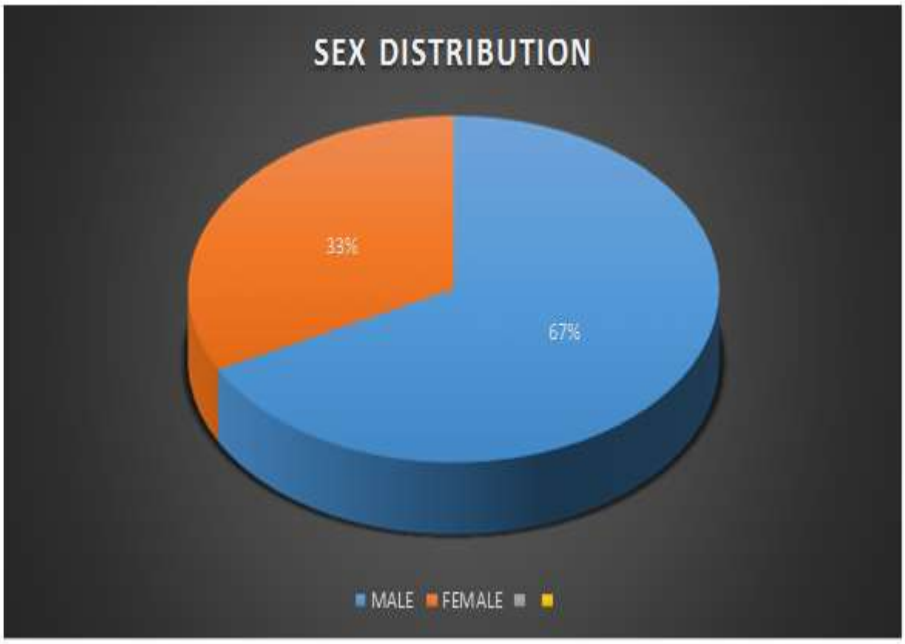

Chart 1;Pie chart of sex distribution in study population (N=52)

AGE DISTRIBUTION

17 Patients were below 40 years, 21 patients in the 40-60,14 patients more than 70.

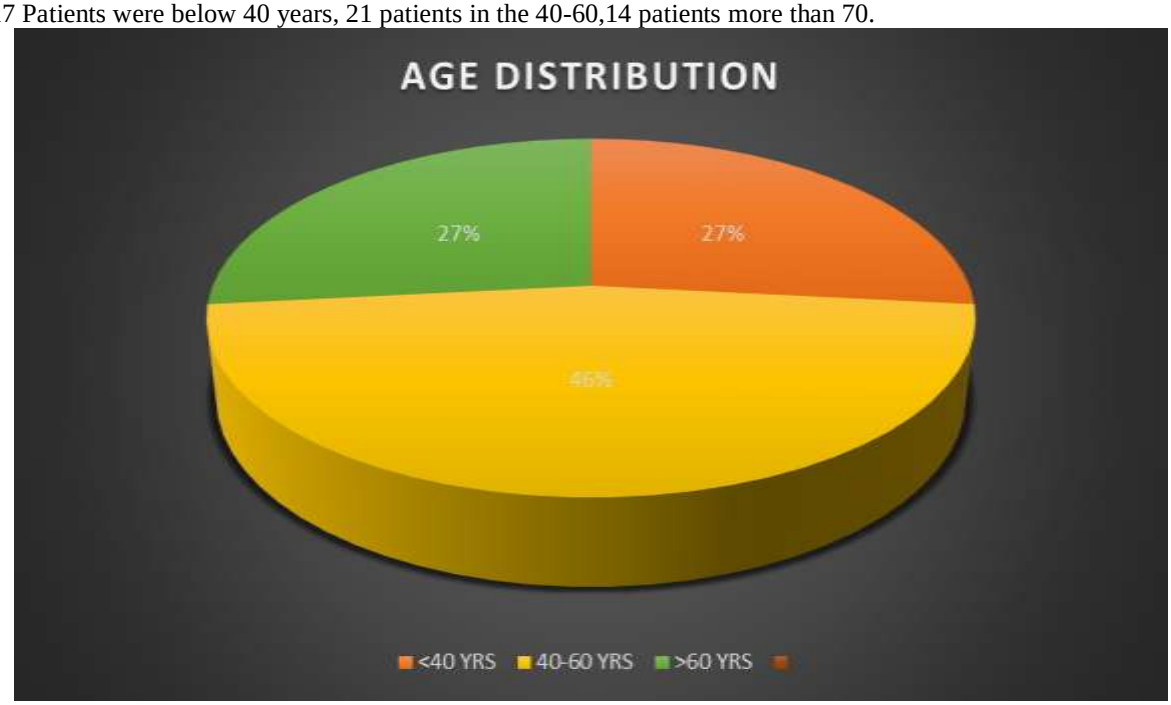

Chart 2;Pie chart of sex distribution in study population (N=52)

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STRAIGHT LEG RAISING TEST

Out of the 52 patients 52 patients have Straight leg raising test positive before giving injection.Out of the 52 patients 44 patients Straight leg raising test became negative after 1 month of Epidural steroid injection and lumbar traction.Out of the 52 patients 15 patients Straight leg raising test became positive after 1 year follow up.

OCCUPATIONAL HISTORY

Out of the 52 patients 14 of them had occupational history with heavy manual work.

Chart 3; Pie chart of analysis of occupational history age study population (N=52)

BODY WEIGHT DISTRIBUTION

8 Patients were below 50 kgs, 19 patients in the 50-70 kgs ,25 patients more than 70kgs.

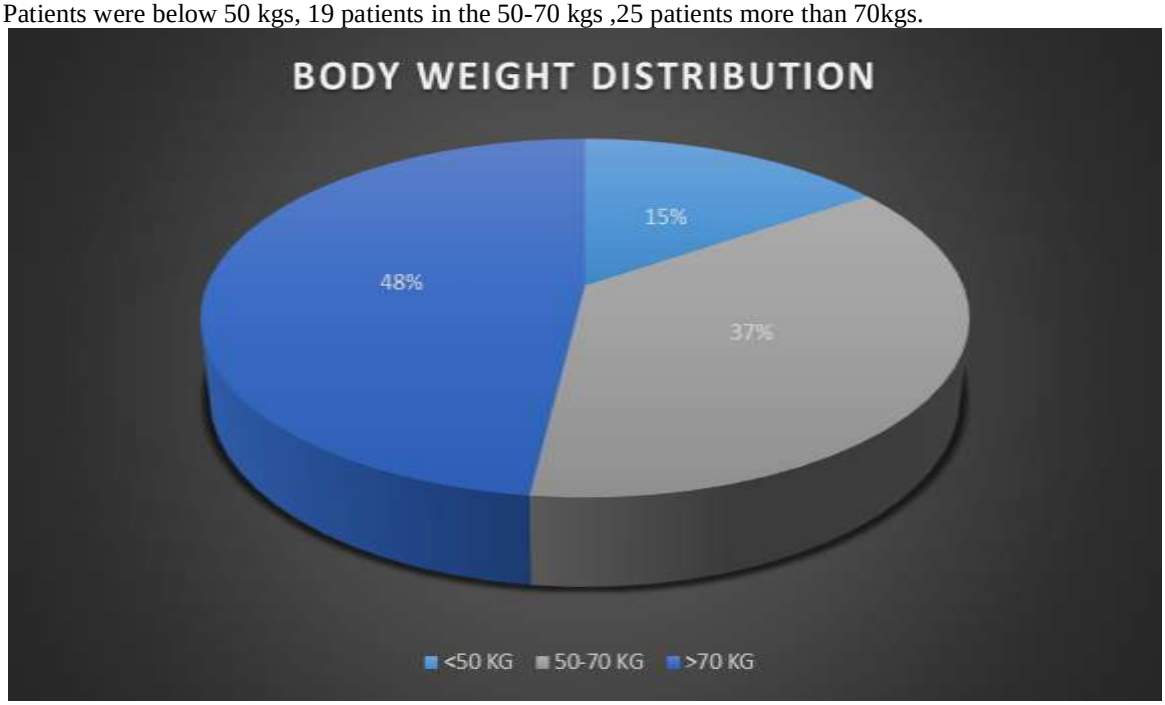

Chart 4; Pie chart of body weight distribution in study population (N=52)

UNILATERAL RADICULOPATHY

32 patients have right sided radiculopathy and 20 patients have left sided radiculopathy in the study

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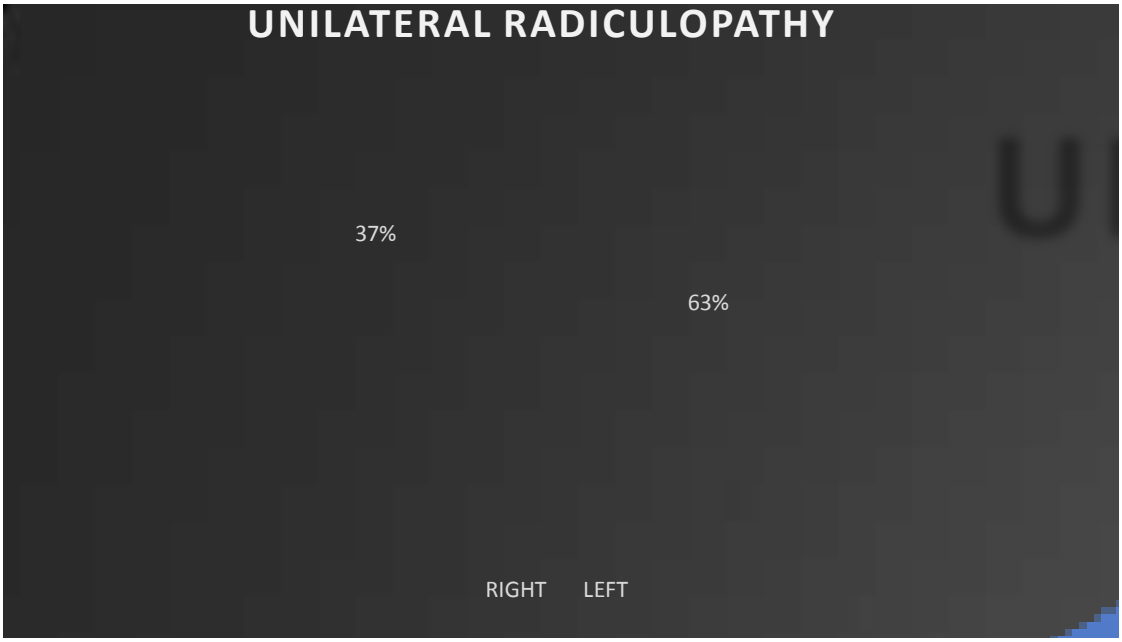

Chart 5; Pie chart of analysis of study population with unilateral radiculopathy(N=52)

COMPARISON OF VAS SCORES:
at pre op,1 month,3 months,6 months and 1 year post epidural steroid injection and lumbar traction

TIME	MEAN	P value	P value is less than 0.05 level of significance ,hence null hypothesis[H_o] is rejected
PREOP	6.13	0.029	
POSTOP AT 1 MONTH	2.40		
AT 3 MONTHS	2.65		
AT 6 MONTHS	3.21		
AT 12 MONTHS	3.23		

H_1 =There is significant difference between preoperative and postoperative scores
H =There is no difference between preoperative and postoperative scores
As the p value is less than 0.05 null hypothesis is rejected and the true hypothesis is accepted.

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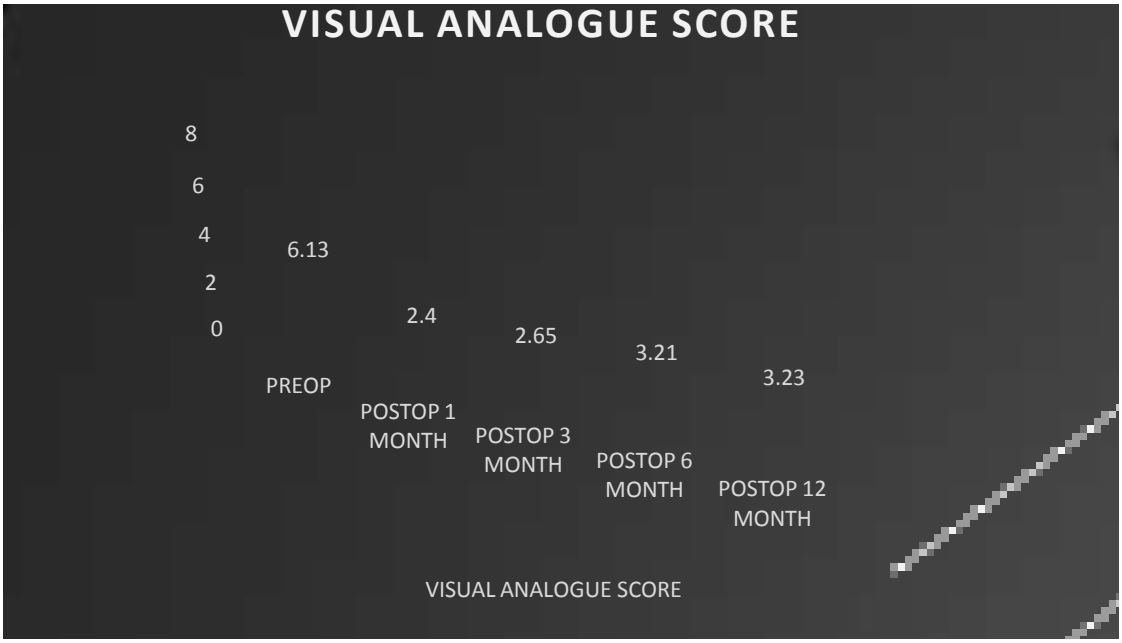

Chart 6; Comparison of visual analogue score preoperatively and postoperatively at 1,3,6,12 month

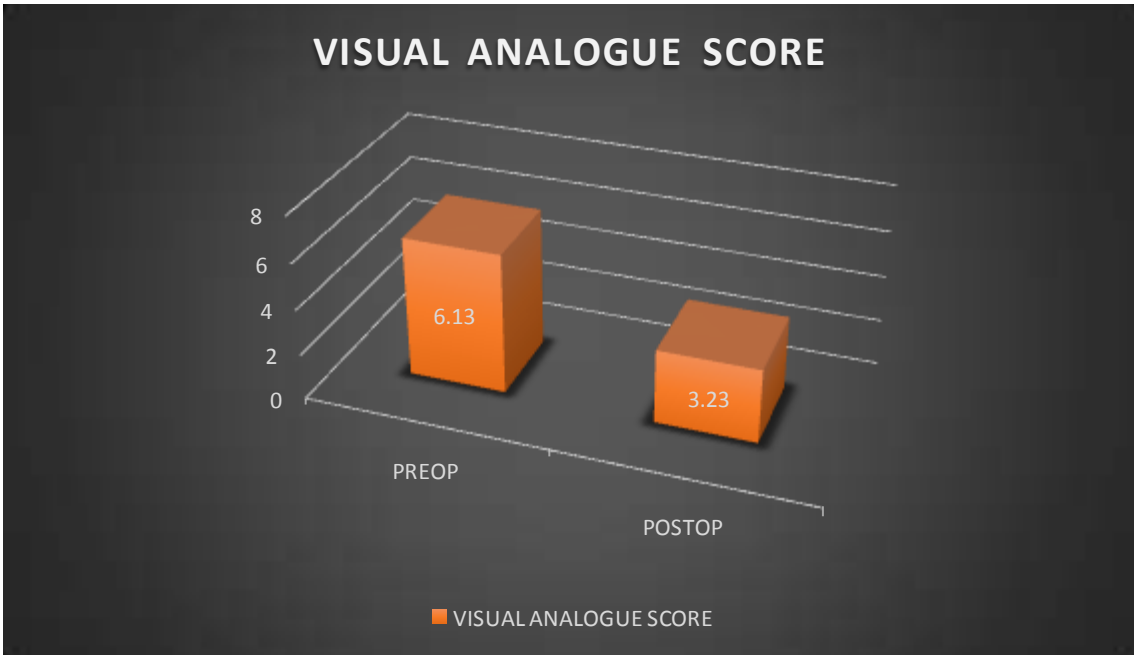

Chart 7; Comparison of pre epidural steroid injection and lumbar traction and 1 year post VAS scores

Oswestry Low Back Pain Disability Score

	Mean	P value	P value is less than 0.05 level of significance ,hence null hypothesis[H_o] is rejected
Preop	42.53	0.03	
Postop	17.38		

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H_1 =There is significant difference between preoperative and postoperative scores
H =There is no difference between preoperative and postoperative scores
As the p value is less than 0.05 null hypothesis is rejected and the true hypothesis is accepted.

Chart 8;Comparison of Oswestry disability score preoperatively and postoperatively (N=52)

Complications

Out of 52 patients,5 patients had history of headache,4 patients had infection,4 patients had dural puncture,1 patient had epidural haematoma,1 patient had history of weight gain postoperatively.

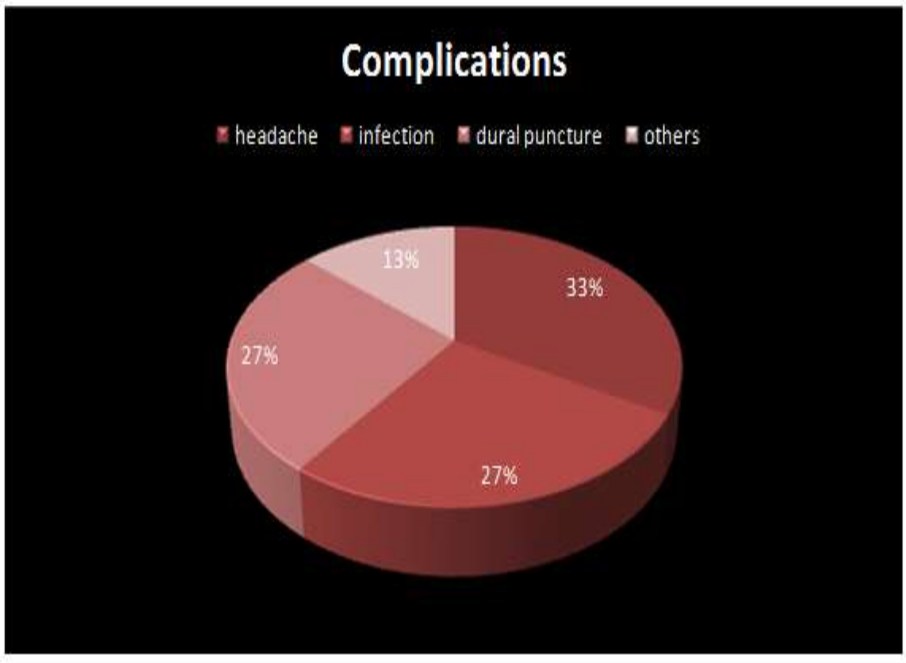

Chart 9 ; Bar chart depicting complication rates in patients with epidural steroid injection and lumbar traction postoperatively.

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VAS score:

Sr.No.	Pain	Score
1	No pain	0
2	Mild	1-3
3	Moderate	4-6
4	Severe	7-9
5	Unbearable	10

Oswestry Low Back Pain Disability Score:

Modified ODI score[%]	Level of disability
0-20	Minimal disability
21-41	Moderate disability
41-60	Severe disability
61-80	Cripple,pain iminges on all aspects of patient's life
81-100	Patients are bed bound or exaggerating their symptoms

IMAGES

Figure 1 ; A vial of 0.5% Bupivacaine

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Figure 2 ;A vial of Methyl prednisolone

Figure 3 ; Patient positioning for epidural steroid

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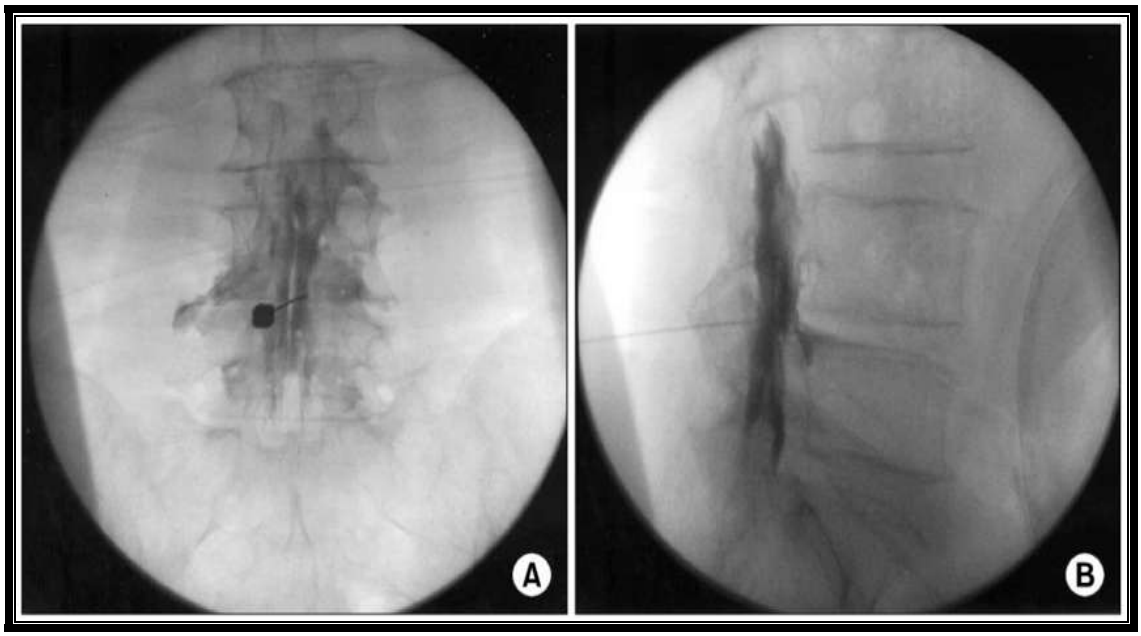

Figure 4; (A) A-P view of interlaminar epidural block at L4/5 level after injection of 3 ml of dye (B) Lateral view of interlaminar epidural block at L4/5 level after injection of 3 ml of dye.

Figure 5; Lumbar traction

III. CONCLUSION:

In this study we investigated the effectiveness of Epidural steroid injection and lumbar traction in cases of prolapsed interverterbral disc disease based on VAS score and Oswestry score.

In our study there was a statistically significant improvement in the 1 year post Epidural steroid injection and lumbar traction compared to the preoperative scores.

Epidural steroid injection and lumbar traction might be a good option when urgent surgical treatment is not needed.

We should determine the indications of when or to whom Epidural steroid injection and lumbar traction should be offered so that the most favorable results can be achieved.

We recommend Epidural steroid injection and lumbar traction as a **middle path regimen** in patients with lower backache associated with features of disc prolapse in x ray and MRI, considering its cost effectiveness and flexible conversion to surgery.

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