Management of Low Back Pain by Administration of Epidural Steroid Injection

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Abstract

The likelihood of experiencing an episode of low back pain increases with age, and 85% of people will have at least one episode in their lifetime. Prevalence of low back pain is next only to headache.

Total 50 patients (28 male and 22 female) who met the inclusion and exclusion criteria underwent epidural steroid injection. Patient pain scaling is done before performing the procedure, after 48 hours, after 2 weeks, after 3 months of the procedure. The proposed pain scale to be used is Numerical Rating Scale.

Out of total 50 patients, after 48 hours it was found 30 patients had mild pain (NRS 1-3),18 patients moderate pain (NRS 4-6) and 2 patient continued to have severe pain (NRS 7-10). After 2 weeks it was found 24 patients to be mild pain, 24 patients with moderate pain and 2 patient with severe pain. After 3 months it was found 14 patients had mild pain, 32 patients had moderate pain and 4 patients had severe pain.

The effect of epidural steroid injection decreases with time. The local effect of steroids has been shown to last at least 2 to 3 weeks at a therapeutic level.

Epidural Steroid Injection is a safe, effective, & economical treatment modality for LBP. It reduces the period of hospitalization, analgesic intake & facilitates the institution of early rehabilitative programs.

Keywords: Low Back Pain; Conservative Management; Epidural Steroid Injection

Access this article online	
Quick Response Code:	**Website:** www.innovativepublication.com
	DOI: 10.5958/2395-1362.2016.00003.7

Introduction

Backache, which was known as an ancient curse, has now become a modern international epidemic. The likelihood of experiencing an episode of low back pain increases with age, and 85% of people will have at least one episode in their lifetime.[1] Prevalence of low back pain is next only to headache. Limiting activity levels, recurrence of symptoms in people with low back pain, psychological stress, loss of wages are of primary concern.[2]

Low back pain can be broadly classified into following main categories

- Congenital – Spina bifida, lumbar scoliosis, spondylolysis, spondylolisthesis
- Musculoskeletal - mechanical (including muscle strain, muscle spasm, or osteoarthritis); herniated nucleus pulposus, herniated disk; spinal stenosis; or compression fracture
- Inflammatory - HLA-B27 associated arthritis including ankylosing spondylitis, reactive arthritis, psoriatic arthritis, and inflammatory bowel disease
- Neoplastic–Benign like osteoid osteoma, eosinophilic granuloma, giant cell tumour. Malignant like multiple myeloma, lymphoma and bone metastasis from lung, breast, prostate, thyroid.
- Metabolic – Osteoporosis, Osteomalacia
- Pain referred from viscera – Genitourinary diseases, Gynaecological diseases, Gastrointestinal conditions.
- Miscellaneous – Functional back pain, Postural back pain, Occupational causes, Obesity

Management of low back ache:

a) Rest
b) Heat and ice packs
c) Medications - oral/topical NSAIDS; acetaminophen; opoids
d) Exercise
e) Epidural steroid injection
f) Surgery - discectomy/ micro discectomy; laminectomy; fusion surgery

Epidural injection of corticosteroids is one of the most commonly used interventions in managing chronic low back pain.[3] They are combination of long acting steroid and epidural anesthetic. They provide analgesia for variable periods during which patient can go for rehabilitation exercises.[4] Steroids presumably exert

their effects by limiting inflammatory response, inhibiting leukocyte aggregation, preventing degranulation of inflammatory mediators, stabilizing lysosomal and other membranes, and reducing the synthesis and release of proinflammatory factors.[5,6]

Materials and Methods

The present study is a Prospective Analytical study on 25 patients in department of Orthopaedics, Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara, Nagamangala.

Patients meeting the inclusion criteria were selected from all patients attending AHRC OPD and admitted indoor. The patients were evaluated and followed up according to the protocol

Inclusion Criteria:

1. Patients who are not relieved of their low back pain by conservative management and they are not candidates or willing for spinal surgery.
2. Age >18 years and < 70 years
3. SLRT value between 40 to 70 degree
4. Willing to participate and after proper informed consent

Exclusion Criteria:

The patients with the following symptoms were excluded from study

1. Patients with progressive motor deficit
2. Patients with multi-level degenerative spine disease, unstable spine, vertebral compression fractures, spondylolisthesis, caudaequina syndrome and arachnoiditis
3. Previous lumbar spine surgeries or epidural steroid injections.
4. Patient with history of allergy to steroids and local anaesthetic agents.
5. Patients with coagulopathy or systemic infection or infection of the injection site
6. Patients with an unstable medical or psychiatric condition
7. Patients not willing to participate in the study
8. Pregnant patients

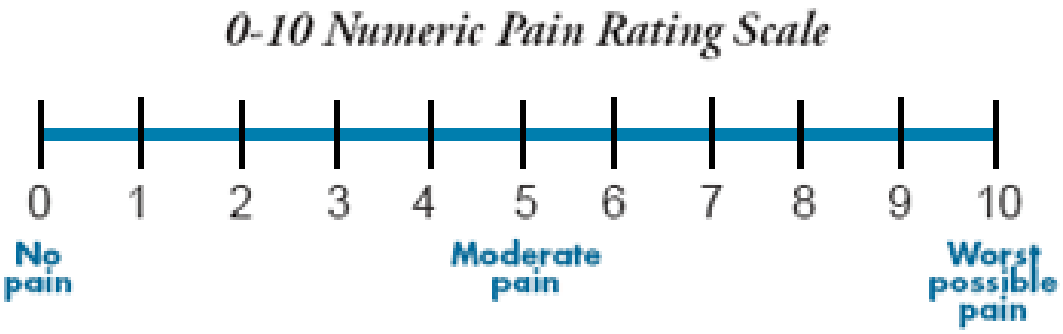
Patients meeting the requirements of inclusion criteria and exclusion criteria were chosen, a detailed history taken and thorough general and local examination along with investigation done.

Straight leg raising test (SLRT), Patrick's test, Motor system examination of lower limb (including bulk, tone, power of muscles), superficial and deep reflexes and Sensory system examination was done.

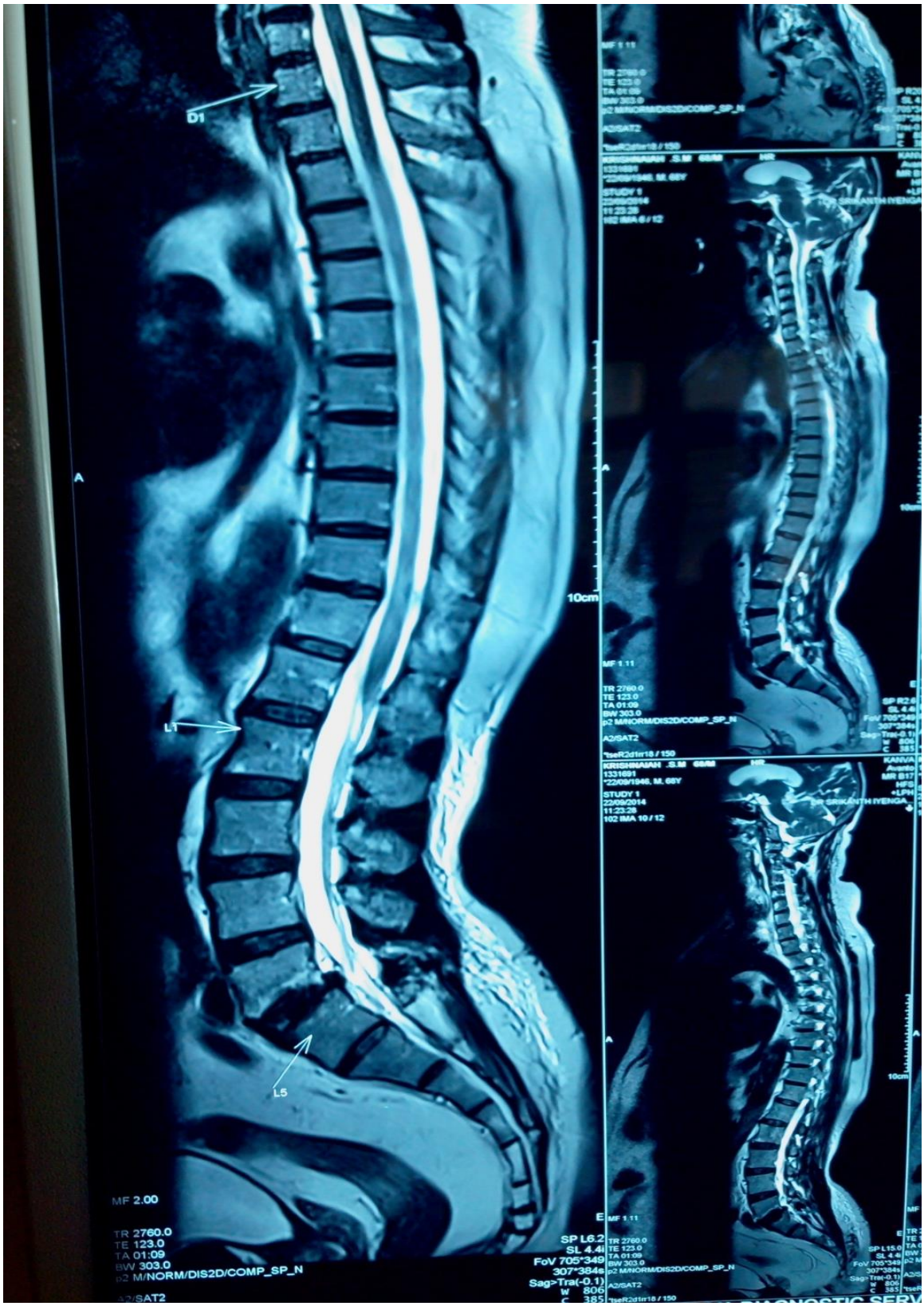
Investigations like Blood tests (Complete haemogram, LFT, Renal function test), X Ray chest PA view, X Ray Lumbosacral spine AP and Lateral view, CT Scan, MRI lumbo sacral spine were done.

MRI results were disc bulge/ Protrusion/ Extrusion or disc Sequestration with proper aseptic precaution and under antibiotic cover patient is shifted to OT. The skin above and below the laminar interphase to be injected is aseptically prepared with isopropyl alcohol and povidone iodine. After local skin anaesthetia (injection 2% lignocaine with adrenaline), patient being in lateral decubitus position, epidural steroid via intralaminar approach is injected. The needle enters between the lamina of two vertebras directly posterior to the vertebra. Loss of resistance and negative aspiration technique is used. Injection Methyl prednisolone (80 mg, 2cc) was taken along with 2ml 0.5% injection bupivacaine plus 6ml normal saline and injected. The patient was allowed to lie in a lateral position for a few moments and then transferred back to the ward. The procedure was done with help of anaesthetist.

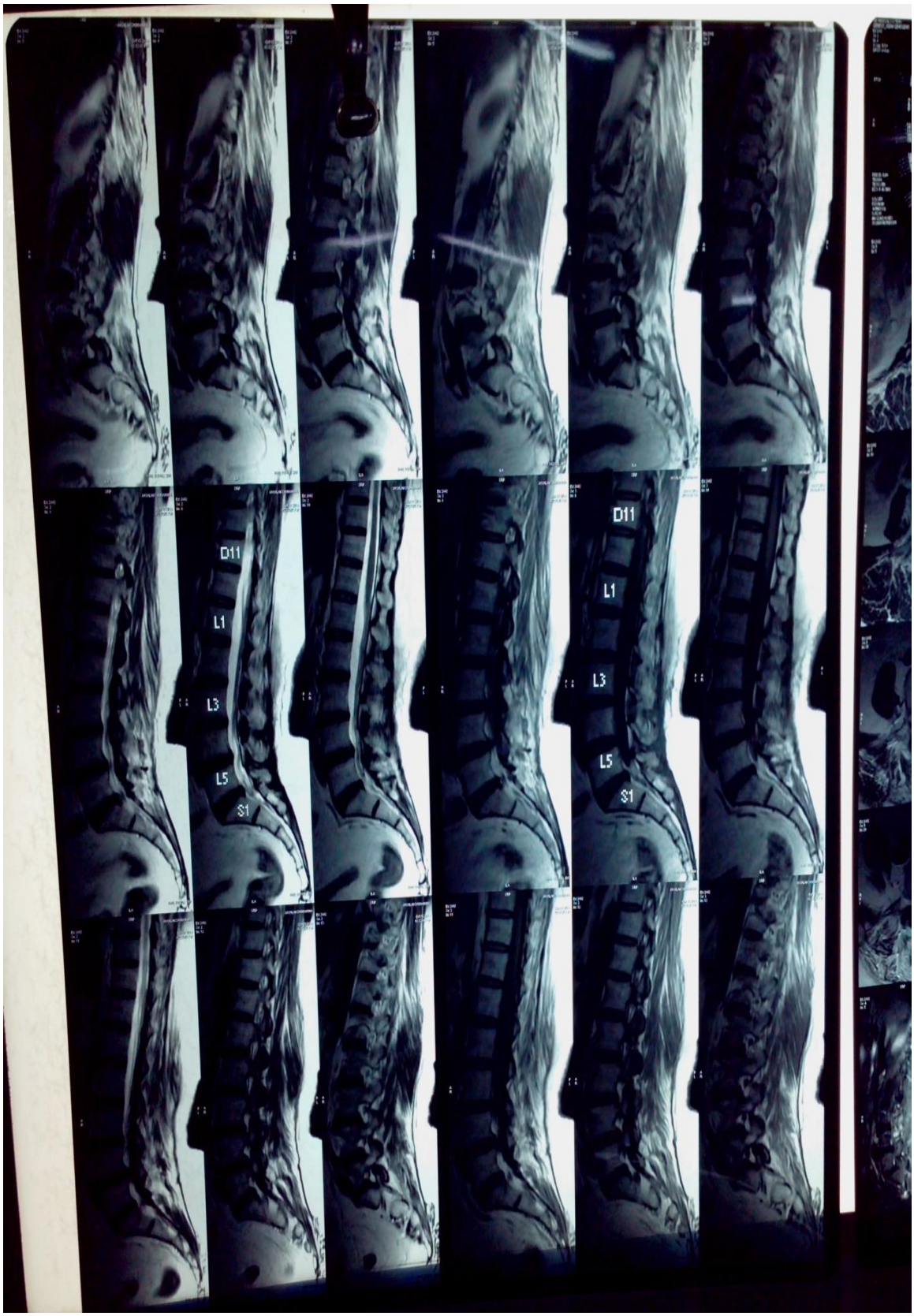
The proposed pain scale to be used is Numerical Rating Scale.



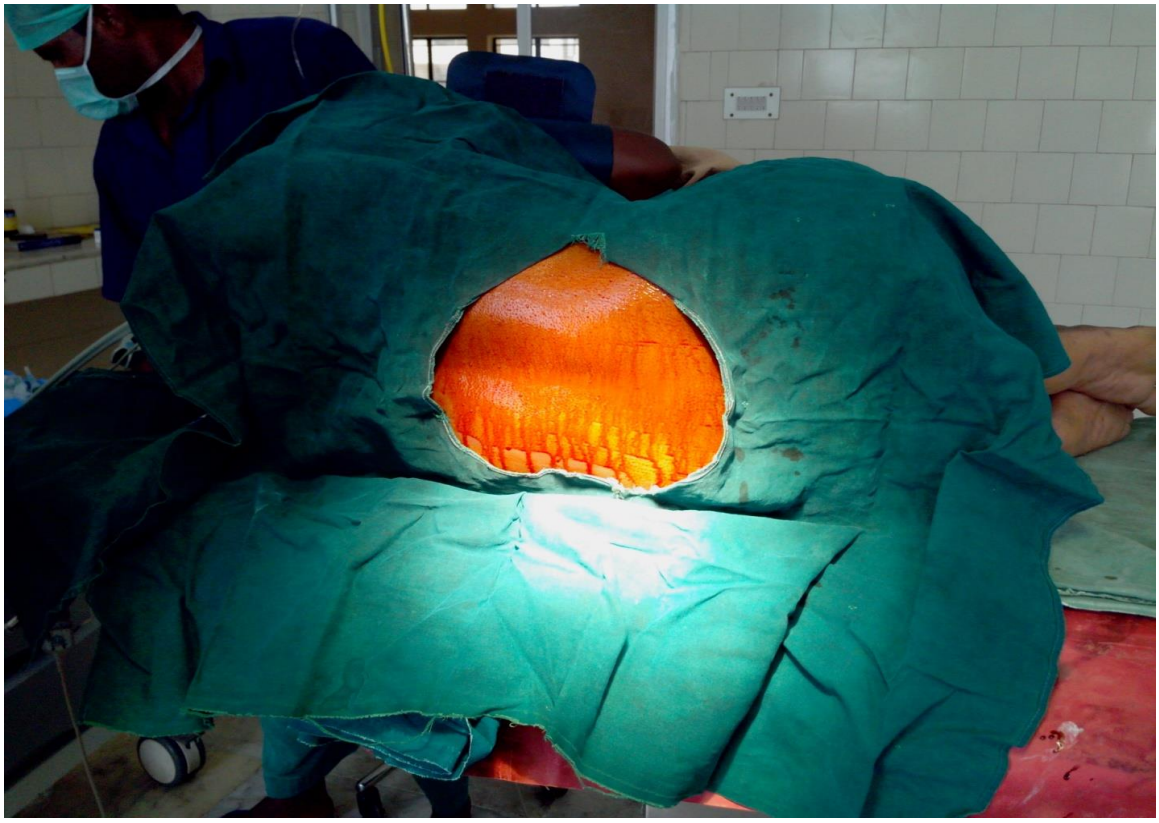
Patient pain scaling is done before performing the procedure, after 48 hours, after 2 weeks, after 3 months of the procedure and compared with the previous pre-procedure result.



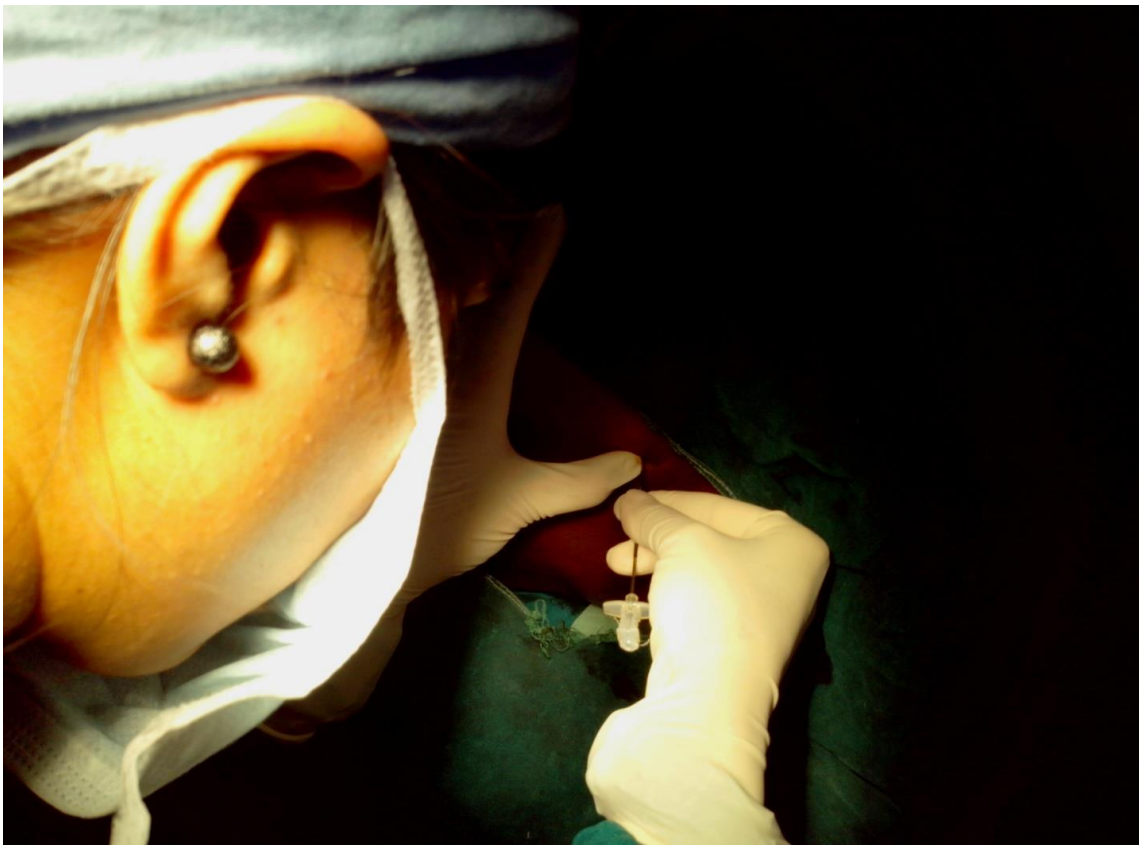
MRI showing diffuse annular disc bulge at L_4-L_5 level



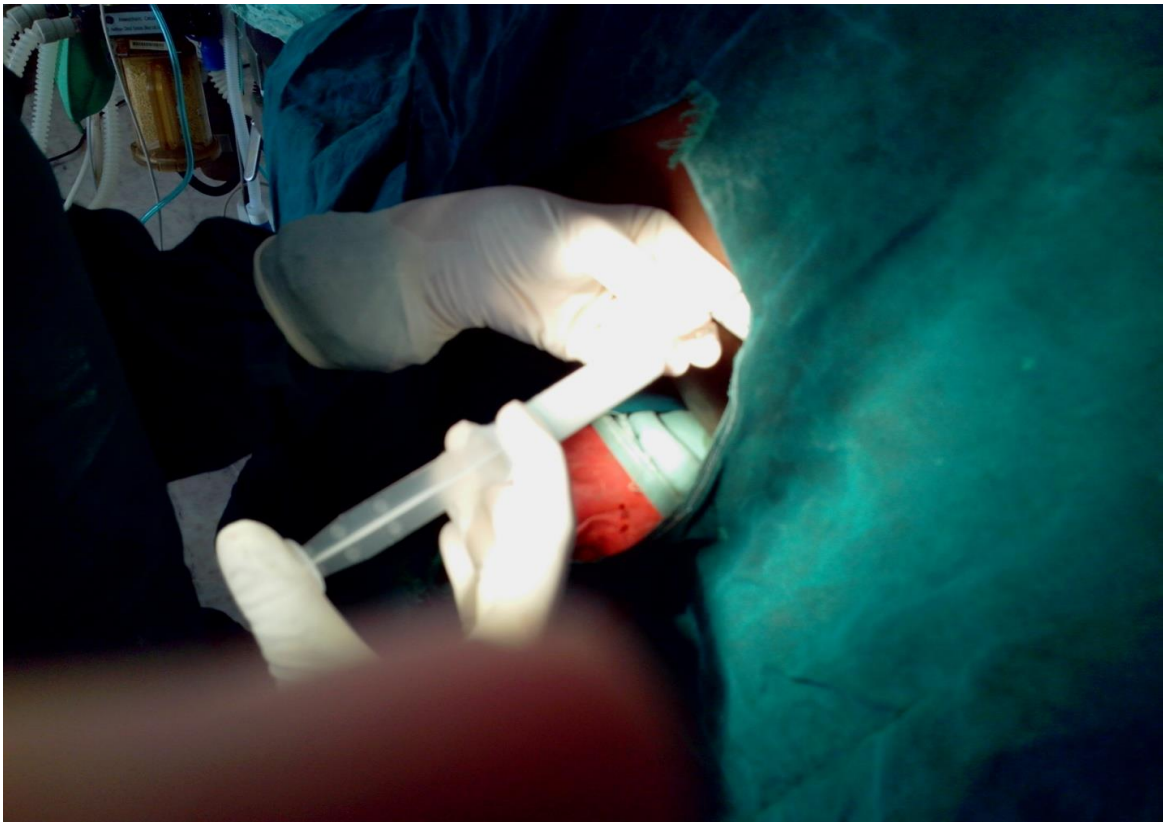
MRI showing at L_4L_5 level mild diffuse disc bulge indenting on ventral aspect of the cal sac and at L_5S_1 level posterior tear with diffuse asymmetrical disc bulge



Positioning of patients



Identification of epidural space



Injecting the mixture of methyl prednisolone, bupivacaine and normal saline.

Results

The following results of study were compiled after follow up of 50 patients:

1) Sex distribution of the study group is as follows :
   Male – 28
   Female – 22

2) AGE distribution of the study group is as follows :
   20-30 years – 12
   31-40 years – 20
   41-50 years – 4
   51-60 years – 10
   61-70 years – 4
   >70 years – none

3) Duration of symptoms of the study group is as follows :
   <6 month: 6
   6 month – 1 year: 8
   1 year – 3 year: 26
   3 year -5 year: 8
   >5 year: 2

4) ASSOCIATED RADICULOPATHY of the study group is as follows :
   Right sided: 14
   Left sided – 10
   Bilateral – 8
   No radiculopathy – 18

5) Numeric Rating Scale

	1	2	3	4	5	6	7	8	9	10
Pre op	-	-	-	-	-	6	14	24	6	-
48 hours	2	12	16	10	8	-	2	-	-	-
2 weeks	2	10	12	8	12	4	2	-	-	-
3 months	-	4	10	12	12	8	4	-	-	-

6) Positive Patrick Test

The following people had positive patricks test
   Pre op – 10
   After 48 hours – 4
   After 2 week-6
   After 3 month – 6

7) Positive SLRT test between 40 to 70 degree:

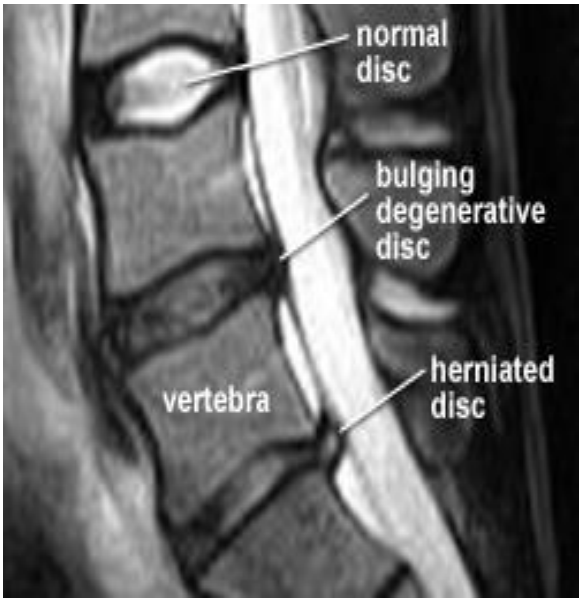
Positive SLRT test between 40 to 70 degree of the study group.

	Bilateral SLRT 40-70 degree	Unilateral SLRT 40-70 degree	Total
Pre op	6	10	16
After 48 hours	1	3	4
After 2 weeks	2	4	6
After 3 months	4	6	10

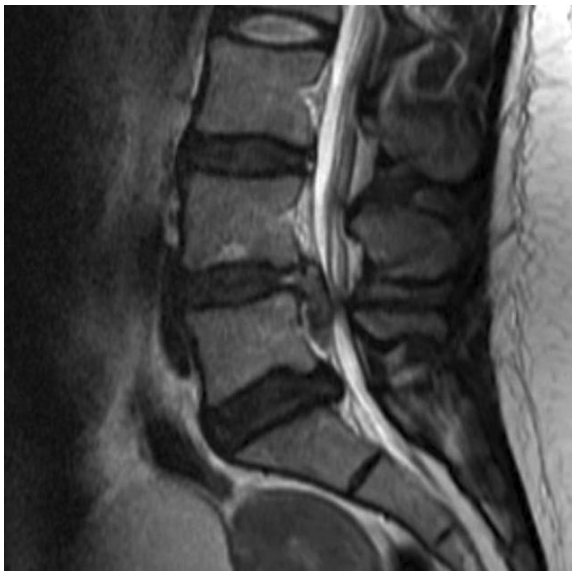
8) **MRI findings**:
Diffuse disc bulge noted at:
$L_3L_4 + L_4L_5 – 4$
$L_4L_5 + L_5S_1$ - 14
Isolated L_4L5 – 20
Isolated L5S1 - 12

Discussion

From the above results we find that the effect of epidural steroid injection decreases with time. There are several factors for varied results like patient selection, patient's individual interpretation of level of pain, regular follow up and the degree up to which patient follows post injection advice of doctors. The local effect of steroids has been shown to last at least 2 to 3 weeks at a therapeutic level. This therapeutic decay prompted many physicians to recommend multiple injections.[7] The acceptable time interval between two injections is still debatable but some studies have shown that 7-10 days interval is appropriate.[8] Only few of our patients reported with local pain over the injection site and headache, which subsided with conservative treatment. There have been reports of epidural abscess, epidural hematoma, and duro-cutaneous fistula, bacterial meningitis and post-dural puncture headache.[9,10] None of these were seen in our study.



MRI of disc prolapsed



MRI of disc extrusion at T_2 level

Conclusion

Epidural Steroid Injection is a safe, effective, & economical treatment modality for LBP. It reduces the period of hospitalization, analgesic intake & facilitates the institution of early rehabilitative programs. We recommend Epidural Steroid Injection as a conservative mode of treatment of back pain with or without radicular symptoms not responding to other modes of conservative treatment.

Shortcomings of the study:
Inadequate sample size.
Non availability of control group

Acknowledgement

I would like to express my deepest appreciation to all those who provided me the possibility to complete this study. I would like to acknowledge with much appreciation the crucial role of the staff Dr (Prof) Abdul Ravoof, HOD, Department of Orthopaedics, who gave the permission to use all required equipment and the necessary materials to complete the study.

Conflict of interest: None
Source of Funding: Self
Ethical clearance: Approved

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