

ROLE OF EPIDURAL INJECTIONS IN THE MANAGEMENT OF ACUTE LUMBAR DISCOGENIC PAIN

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ABSTRACT: INTRODUCTION: The use of epidural injections in the cervical, thoracic and lumbo sacral spine for both diagnostic and therapeutic purposes has developed as an important part of a comprehensive interdisciplinary approach to spinal pain.^(1,2) It is well known that structural abnormalities seen on CT or MRI scans do not always cause pain and diagnostic injections often can help correlate abnormalities on imaging studies with associated pain complaints. Therapeutically, epidural injections can provide significant pain relief during which, time recovery of disc and nerve root injuries can occur and patients also can progress their level of physical activity. In acute disc injury with or without radiculopathy, therapeutic injections can help and manage the patient's pain without reliance on oral analgesics. Epidural cortico steroid injections with physical therapy is recommended in conjunction.⁽¹⁾ Mechanism of pain relief is due to potent and anti-inflammatory properties of the cortico steroids.^(3,2) Aim to know the efficacy and results of the epidural steroid injection in acute lumbar discogenic pain.⁽²⁾ **MATERIALS AND METHODS:** I have treated 800 patients with lumbar epidural injections for 3 weeks (Weekly interval) since 2005 at Sri Venkata Hospital and pain management centre SP Nagar, Kukatpally, Hyderabad, Telangana. For the management of Lumbar Discogenic Pain till 2014. **RESULTS:** Excellent in 90% of patients and no patient complained of recurrence of symptoms and reached their normal activities without surgery after epidural injection treatment. Lumbar Epidural steroid injection is usually performed in about 6 weeks after the onset of low back pain or radicular pain. Lumbar Epidural steroid injection is appropriate for an outpatient setting provided all necessary resuscitative equipment is available i.e. O₂, intubation equipment, emergency drugs, IV access and we can avoid the hospitalization. **DISCUSSION:** LESIs^(3,4,5,6) appropriate for O.P. setting provided all necessary resuscitative equipment available i.e. Oxygen, intubation equipment, emergency drugs, IV access, monitoring Pulse, B.P. for every 15 min. observing for 45 min. follow up phone call after 24 hrs. **CONCLUSION:** Initial epidurals are very effective in the management of acute Lumbar Discogenic Pain and may not require surgery just by MRI findings.

KEYWORDS: Epidural Injections, Acute Lumbar Discogenic Pain.

INTRODUCTION: The use of epidural injections in the cervical, thoracic and lumbo-sacral spine for both diagnostic and therapeutic purposes has developed as an important part of a comprehensive inter disciplinary approach to spinal pain.^(1,2) The purposes are diagnostic and therapeutic. It is well known that structural abnormalities seen on CT or MRI scans do not always cause pain, and diagnostic injections often can help correlate abnormalities on imaging studies with associated pain complaints. Therapeutically epidural injections can provide significant pain relief during which time recovery of disc and nerve root injuries can occur and patients also can progress their level of physical activity.⁽⁷⁾ In acute disc injury with or without radiculopathy therapeutic injections can help manage the patient's pain without reliance on oral analgesics.^(8,9,2,10)

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HISTORY: In 1901 for low backache & Sciatica injection of cocaine was used. Viner injected mixtures of procaine, ringer solution, saline and liquid petrolatum using a caudal approach. In 1930, Evans published good results in 22 of 40 patients. With unilateral sciatica treated by caudal epidural injection of procaine & saline.⁽²⁾

In 1955, Boudin⁽²⁾ et.al first injected corticosteroids in to the subarchnoid space, this was followed in 1957 by Lievre published report of treatment of low backache by Lumbar epidural steroid injections with the injection of hydrocortisone.

In 1984 Shulman et. al & Catchlove and Braha published for cervical epidural steroid injections.^(11,2)

No historical information on Thorasic epidural steroid injections.⁽²⁾

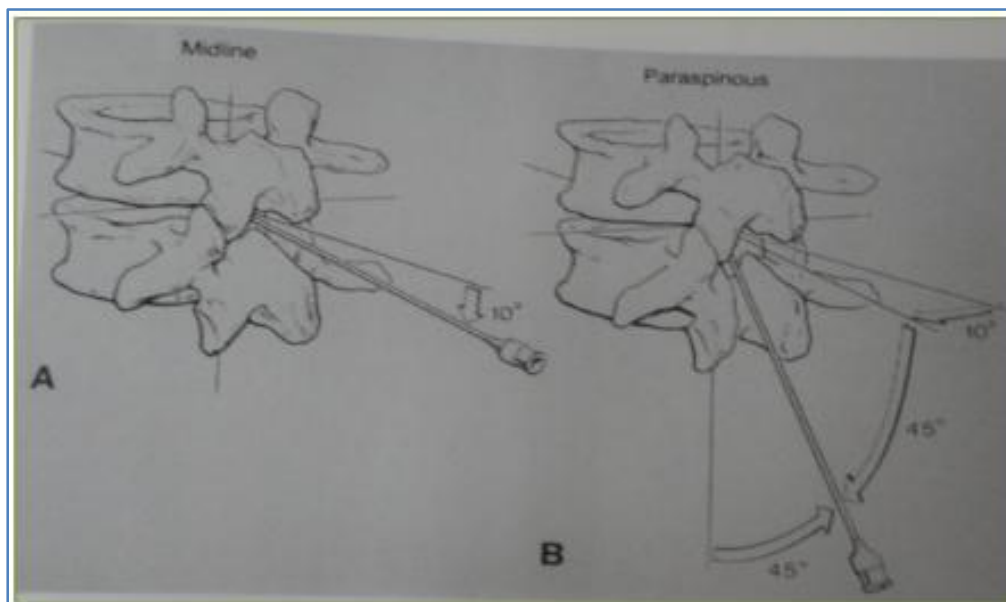
MECHANISM OF PAIN RELIEF^(12,2): Primarily mechanism of action is due to potent anti-inflammatory properties of corticosteroids the marked pain relief noted with epidural steroid injections for acute radiculopathy may also be due to the stabilization of nerve root membranes by the corticosteroid suppressing the ectopic neuronal discharges, which can cause pain and parasthesias.^(1,13)

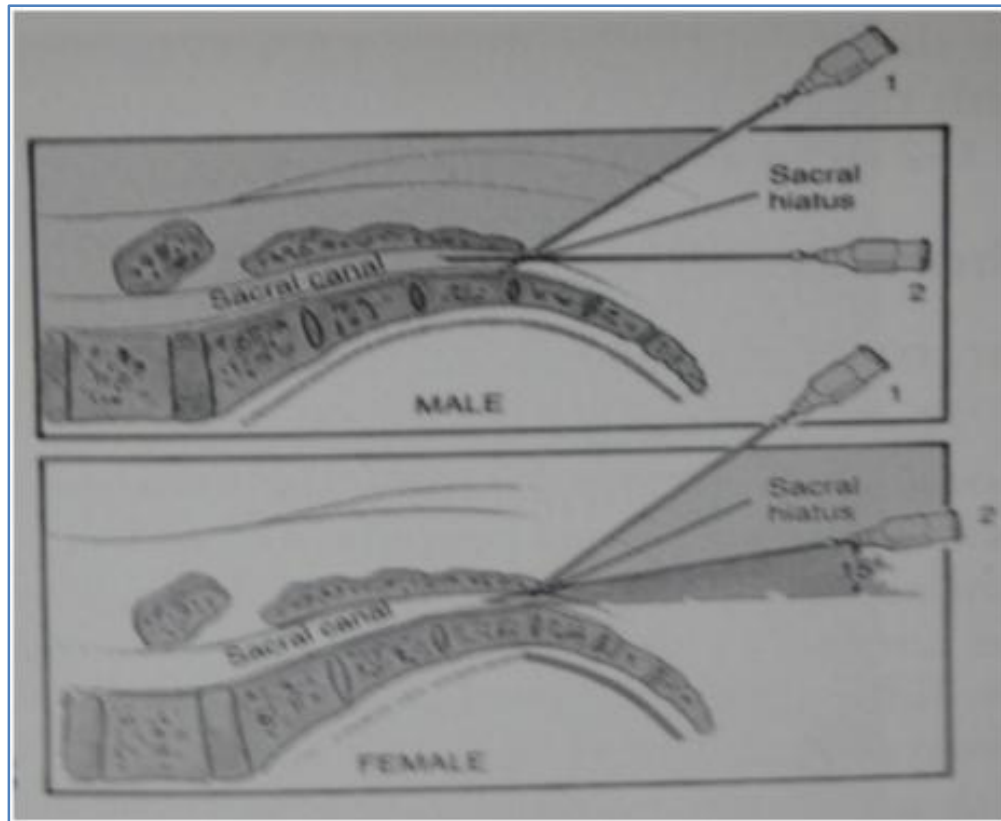
Corticosteroids may also exert anesthetic action to block nociceptive C-fiber conduction independent of their anti-inflammatory properties.⁽²⁾

Lumbar Epidural Steroid Injections: Lumbar epidural steroid injections are more effective in patients with pain of discogenic origin, especially if the condition is acute, involves a significant disc bulge or herniation and is associated with significant radicular pain.^(3,14,15,16)

Several studies document better results if Lumbar epidural steroid injections are given within the first 1 month of low back pain or radicular pain.

Mid Line & Paramedian Approaches:



Caudal Approach:

Factors must be considered when scheduling a patient for initial Lumbar epidural steroid injections.^(1,2)

- Failure of less invasive interventions.
- Severity of patient pain and need for pain control.
- The use or misuse of oral analgesics.
- Patient ability to perform self-care activities.
- Avoidance of hospitalization.
- Facilitation of active rehabilitation.
- Allowance of an early return to work.

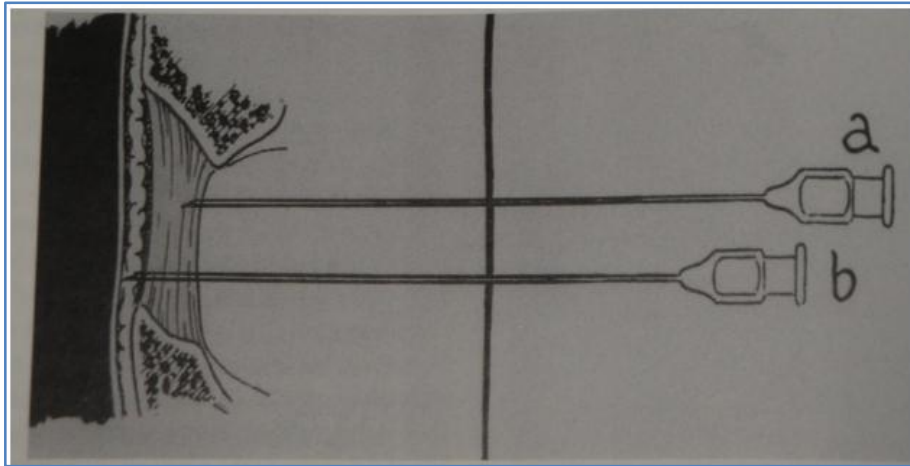
Lumbar epidural steroid injections is usually performed in about 6 wks after the onset of low backache or radicular pain.

Lumbar epidural steroid injections may be given if alternative pain management techniques are failing.

An experienced physician does not require CT or MRI.

Lumbar epidural steroid injections can be done based on clinical judgment alone.

Identification of Epidural Space: When the needle enters the epidural space as compared to the marked resistance to injection with in the tough overlying ligamentum flavum and other dense soft tissues.

**Volume and Rate of Injection:**

10-15 ml is most appropriate volume.

10 ml injected at the L4-L5 interspace usually spreads from L1 to S5 level.

The rate of epidural injection does not appreciably change the ultimate spread of injection.

Faster rate of injection – more pain during & after the procedure.

Patient Selection & Monitoring: Each patient should be asked for Diabetes mellitus, Infection (past & present), Immunodeficiency, Any allergic reactions, Possibility of pregnancy, Blood clotting abnormalities or treatments.

GENERAL COMPLICATIONS OF MEDICATIONS & ASSOCIATED RISKS:

LOCAL ANAESTHETICS (Lidocaine, bupivacaine)^(1,12,16)

CNS Toxicity—circum oral numbness, disorientation, light headedness, nystagmus, tinnitus, muscle twitchings.

CORTICOSTEROIDS^(3,17,2): (Methyl prednisolone, triamcinalone, beta methasone):

Insomnia, mood swings, euphoria.

Depression, post injection pain flare.

Facial erythema, fluid retention.

Hypertension, Congestive heart failure, Hyperglycemia, headache, gastritis, menstrual irregularities.

Allergic anaphylactic reactions: Anaphylaxis occur most often within two hours after the epidural injection.

Closed pt monitoring is important after epidural injection.

MEDICAL COMPLICATIONS: SYSTEMIC COMPLICATIONS OF EPIDURAL STEROID INJECTIONS
EPISODES OF VASOVAGAL SYNCOPE which requires treatment with IV Fluids and ephedrine.

Superficial infection at the site of injection.

Intermittent nausea and vomiting.

In Lumbar epidural steroid injections, Brown reported no serious side effects in 500 patients.

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White quoted 0.4% in 300 patients.

Minor complications in Lumbar epidural steroid injections are - Headache, dizziness, transient hypertension, nausea, Transient aggravation of back pain or leg pain.⁽²⁾

DURAL PUNCTURE & ASSOCIATED HEADACHE^(17,18,2): Un intentional dural puncture can occur even in the hands of experienced physicians.

Incidence is 0.5-1%.

Lower with caudal epidurals.

Following the accidental dural puncture White suggests relocating the needle at a different interspace and injecting only steroid and saline.

Incidence of post dural puncture headaches are 7.5-75%.

Treatment of dural puncture and Headache.

24-48 hrs Bed rest.

Intake oral fluids.

IV or oral caffeine.

Oral analgesics.

Abdominal binders.

Blood patches may be required if headache is not subsided by 1 or 2 weeks.

Epidural abscess and hematoma: - Epidural abscess is very rare, is associated with the use of epidural catheter.

In patients with pre-existing systemic infections when we suspect epidural abscess patients complaints of severe back pain, fever & chills. Treatment is surgical laminectomy & debridement.

Any medication for blood clotting mechanism taken before the epidural injection could increase the risk of epidural hematoma (heparin, Coumadin, aspirin).

CONTRAINDICATIONS:

Cauda equina syndrome.

Anti-coagulation or bleeding disorder.

Suspected local or systemic infection.

Burn & Laugdon⁽²⁾ documented depressed plasma cortisol levels occurring for about 2 weeks after epidural methyl prednisolone injection with a return to normal levels within 3 weeks.

Raff et. al.⁽²⁾ Reported chronic suppression of ACTH secretion and decreased plasma cortisol levels for 3 months in patients receiving 80mg of triamcinalone at weekly intervals for 3 weeks.

MATERIALS AND METHODS: In our study 800 patients were treated with Lumbar epidural steroid injections. Out of which 425 are males and 375 are females were treated since 2005 to 2014. All patients were given three injections weekly interval.

Age ranged from 30 years to 50 years. All patients were suffering with acute lumbar discogenic pain with sciatica. And they used analgesics and muscle relaxants for 3 to 4 weeks. Then patients opted for lumbar epidural steroid injection. X-rays were taken to see any radiological abnormalities. Routine blood investigations were done and MRI is suggested in willing patients as it is very costly. Then all patients were treated with Lumbar epidural steroid injections with midline approach.⁽²⁾ Crawford or Tuohy needles are blunt, designed specifically for epidural injections were used.

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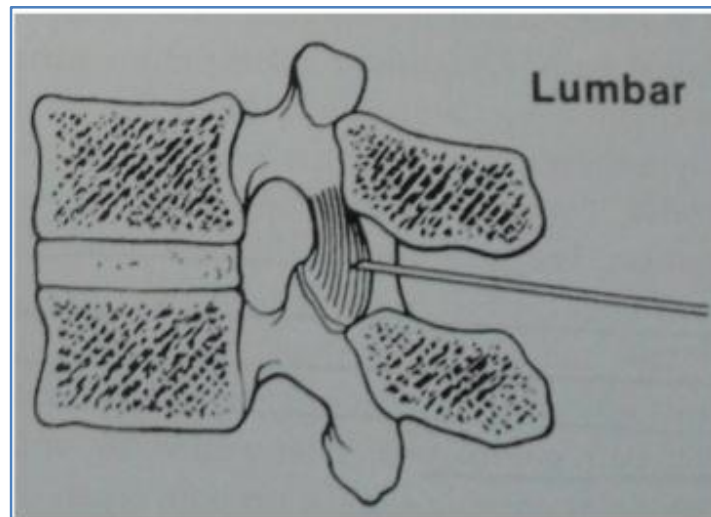
Materials required are Betadine, sterile drapes, Local anesthetics, epidural needles gauge 18 or 20, corticosteroid injection vials, Loss of resistance syringe, fluoroscopy.

MATERIALS:



PROCEDURE: Patient is in sitting posture on stool and surgeon is sitting behind the patient, then back part is painted with beta dine and draped, local anesthesia was given at a selected point. Then epidural needle was passed slowly by millimeter by millimeter in to the epidural space with the help of loss of resistance syringe. While entering the ligamentum flavum we can feel the resistance and we can appreciate the feeling of crossing the ligamentum flavum. Then once the needle is entered into the epidural space, the already prepared normal saline with steroid is injected into the epidural space. Then needle is removed patient is shifted on to the bed and given rest for one hour in prone position. Dressing is done and patient is discharged after 2 hours.

Spinous Process and Needle Entry Angle for Lumbar Spine, Midline Epidural Injection Approach:



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RESULTS AND OBSERVATIONS: Especially in patients with acute lumbar discogenic pain, after proper patient selection and evaluation, lumbar epidural steroid injections were given. All 800 patients were evaluated for any pre-existing disease or illness prior to the lumbar epidural steroid injections

In our study 800 patients out of which 425 are males, 375 are females of acute lumbar discogenic pain, were treated with lumbar epidural steroid injections. Results were analysed. Significant pain relief was observed in 90% of patients after the 1st dose of epidural steroid injection. After completion of 2nd and 3rd dose of injections results were observed. Physiotherapy was advised from 2nd month onwards. Follow up done up to till date. No recurrence of complaints and symptoms observed in 90% of patients. 10 % of patient were not relieved by epidural steroid injections and they did not come for the follow up later on. 90% of patients reached to their normal activities within 3 months

In our study dural puncture and headache was observed in 4 (0.5%) patients and it was relieved by giving complete bed rest for 1 or 2 weeks and plenty of oral fluids and IV fluids and advised to drink coffee 5 to 8 times a day. Headache was disappeared in all patients in 2 weeks. 2nd dose of epidural steroid injection was post poned in dural puncture patients and it was given after 3 to 4 weeks of bed rest. Blood patch was not required in any of the dural puncture patients.

DISCUSSION: Lumbar epidural steroid injections are very effective in patients with acute lumbar discogenic pain with sciatica.^(19,20,21) Results were compared with other studies.90% excellent results were observed and many patients did not required surgery after lumbar epidural steroid injections and physiotherapy helped them to reach their normal activities with in shorter duration. Lumbar epidural steroid injections are appropriate for an outpatient procedure, provided all necessary resuscitative equipment available i.e. oxygen, intubation equipment, emergency drugs, IV access, monitoring pulse and BP for every 15 minutes and follow phone call after 24 hours.

According to Kepes and Duncalf⁽²²⁾ about 100 reports on the use of subarachnoid and lumbar epidural steroid injections for low back pain were published worldwide from 1962- 1985.

Recent review of articles on the efficacy of lumbo sacral epidural steroid injections by Kepes and Duncalf, Benzon, Haddox, and Bogduk^(15,22) et. al are recommended. With an average response rate calculated from many studies at 60% by Kepes and Duncalf⁽²²⁾ and 75% by White.^(23,24)

CONCLUSION: Lumbar epidurals are very effective in acute lumbar discogenic pain and may not require surgery just by MRI findings. It is very economic & Patients can reach their normal activity after 6-8 weeks

In many patients with proper clinical examination and evaluation if the discogenic pain is about 6 weeks duration after the onset of low backache it is better to treat with lumbar epidural steroid injections. And we can minimize or misuse of oral analgesics, we can avoid Hospitalization and surgery just by MRI findings.

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