

## The Management of Intractable Low Back Pain: Recent Advances

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**Abstract:** Low back pain (LBP) a pandemic disease having 80% of lifetime prevalence, affecting 15-20% population at any point of time, being one of the commonest reason for visit to a doctor (as such pain is the commonest reason to see a doctor) & commonest cause of young age disability (3-4% annually with 1% permanently disabled). 30% of all acute LBP develop chronic LBP. It has great financial, socioeconomic, emotional & physical problem. Percutaneous least invasive interventional Pain management of LBP has both diagnostic & therapeutic relevance (as there are significant false positive & negative imaging studies not correlating to symptoms). Better results are obtained if treatment is started early. "No one needs to suffer as so many good and effective treatments are now available at specialty pain clinics". You must see a pain specialist if you still suffer from pain after a month of conservative treatment. Sooner your pain is managed better are the overall results. With interventional pain management patients are getting back to normal life.

### EPIDEMIOLOGY

LOW BACK PAIN (LBP) is a pandemic disease having 80% of lifetime prevalence, affecting 15-20% population at any point of time, being one of the commonest reason for visit to a doctor & young age morbidity/disability/work absenteeism.

### AETIOLOGY OF LBP

LBP is not just a disease but a symptom, a syndrome with combination of multiple possible abnormalities of anterior & posterior longitudinal ligaments, vertebral body, synovia / chondropathy/ osteoarthritis of articulating facets joints, sacroiliac joint, nerve roots & foramen, paraspinal muscles, related connective tissues eg.- ligamentum flavum, spinal canal, intervertebral disc at annulus ring. It may be due to mechanical, nonmechanical, referred pain, psychological & failed back surgery (FBSS).

### PERCUTANEOUS LEAST INVASIVE INTERVENTIONAL PAIN MANAGEMENT OF LBP

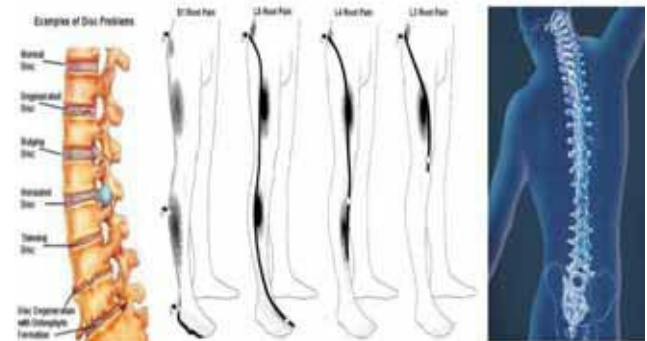
It has both diagnostic & therapeutic relevance ( as there are significant false positive & negative imaging studies not correlating to symptoms)

**Better results are obtained if treatment is started early.**

- **LESI-lumbar epidural steroid injections::**
  - interlaminar or transforaminal or caudal approach
- SNRB- selective nerve root block
- Epidural adenolysis or percutaneous decompressive neuroplasty
- Trigger point injection
- Botox paraspinal muscle injection
- Facet joint or pericapsular injection
- Spine Prolotherapy & manipulation
- Facet RF thermal neurolysis
- SI joint injection or denervation
- Piriformis muscle block
- Diagnostic provocative discography
- Intradiscal procedures:-Ozone Discolysis/ Chemonucleolysis
  - Dekompressor disc debulking
  - IDET-intradiscal electrothermal therapy
  - Coblation nucleoplasty

- Laser percutaneous discectomy
  - Vertebroplasty & kyphoplasty
  - Intrathecal pump neuraxial implants
- Augmentation or neuromodulation spinal cord stimulation

### Once The Conservative Treatment Fails



Early aggressive treatment plan of pain has to be implemented to prevent peripherally induced CNS changes that may intensify or prolong pain making it a complex pain syndrome. Only 5% of total LBP patients would need surgery & 20% of discal rupture or herniation would need surgery. Nonoperative treatment is sufficient in most of the patients, although patient selection is important even then.

Depending upon the diagnosis one can perform & combine properly selected percutaneous fluoroscopic guided procedures with time spacing depending upon patients pathology & response to treatment.

Using precision diagnostic & therapeutic blocks in chronic LBP, isolated facet joint pain in 40%, discogenic pain in 25%(95% in L4-5&L5S1), segmental dural or nerve root pain in 14% & sacroiliac joint pain in 15% of the patients. This article describes successful interventions of these common causes of LBP after conservative treatment has failed.

### LESI : Lumbar Epidural Steroid Injection

#### Indications

- Acute radicular pain due to irritation or inflammation.
- Symptomatic herniated disc with failed conservative therapy
- Acute exacerbation of discogenic pain or pain of spinal stenosis
- Neoplastic infiltration of roots
- Epidural fibrosis
- Chronic LBP with acute radicular symptoms

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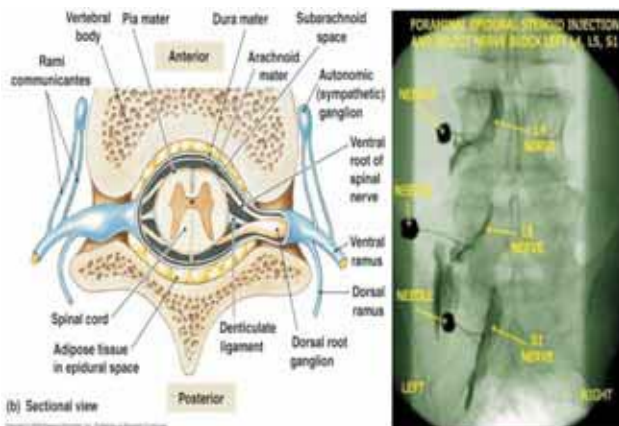
### ESI Treatment Plan

Compared to interlaminar approach better results are found with transforaminal approach where drugs (steroid+ L.A./saline +/- hyalase) are injected into anterior epidural space & neural foramen area where herniated disc or offending nociceptors are located. Whereas in interlaminar approach most of drug is deposited in posterior epidural space. Drugs are injected total 6-10 ml at lumbar, 3-6 ml at cervical & 20+ ml if caudal approach is selected. Lumbar ESI is performed close to the level of radiculopathy, often using paramedian approach to target the lateral aspect of the epidural space on involved side. Cervical epidural is performed at C7-T1 level.

### SNRB- Selective Nerve Root Block

Fluoroscopically performed it is a good diagnostic & therapeutic procedure for radiculopathy pain if

- There is minimal or no radiological finding.
- Multilevel imaging abnormalities
- Equivocal neurological examination finding or discrepancy between clinical & radiological signs
- Postop patient with unexplainable or recurrent pain
- Combined canal & lateral recess stenosis.
- To find out the pathological dermatome for more invasive procedures, if needed



### Epidural adenolysis or percutaneous decompressive neuroplasty for epidural fibrosis or adhesions in failed back surgery syndromes (FBSS)

A catheter is inserted in epidural space via caudal/ interlaminar/ transforaminal approach

After epidurography testing volumetric irrigation with normal saline/ L.A./ hyalase/ steroids/ hypertonic saline in different combinations is then performed along with mechanical adenolysis with spring loaded or stellated catheters or under direct vision with EPIDUROSCOPE.

### Facet Syndrome: Facet Joint Injection or RF Medial Branch Neurotomy

It is due to mechanical stress on the Zygapophysial joints or traumatic/ anatomical derangement & degenerative facet arthropathy. It is commoner in male of younger age group during active careers. CT/ MRI/ Bone scan show structural pathology, but diagnosis is confirmed by relief of pain with joint injection (1ml of LA+ 20 mg triamcinolone) which has therapeutic value also. After effective facet joint block, fluoroscopic percutaneous radiofrequency (RF) thermal rhizotomy of two level medial branches of dorsal ramus is a safe, effective & long term treatment.

### Sacroiliac Joint Injection & Denervation

The only way to make a definitive diagnosis is pain relief with image

guided joint injection of depo-steroid with L.A.. This can be followed by joint denervation of L4-5 S1-3 branches to this joint providing long term pain relief.

## INTRADISCAL PROCEDURES

### Provocative Discography: Coupled with CT

A diagnostic procedure & prognostic indicator for surgical outcome is necessary in the evaluation of patients with suspected discogenic pain, its ability to reproduce pain (even with normal radiological finding), to determine type of disc herniation /tear, finding surgical options & in assessing previously operated spines

### Percutaneous Disc Decompression (PDD)

After diagnosing the level of painful offending disc various percutaneous intradiscal procedures can be employed.

### Ozone-Discolysis

Ozone Discectomy a revolutionary least invasive safe & effective alternative to spine surgery is the treatment of choice for prolapsed disc (PVD) done under local anaesthesia in a day care setting. This procedure is ideally suited for cervical & lumbar disc herniation with radiculopathy. Total cost of the procedure is much less than that of surgical discectomy. All these facts have made this procedure very popular at European countries. It is also gaining popularity in our country due to high success rate, less invasiveness, fewer chances of recurrences, remarkably fewer side effects meaning high safety profile, short hospital stay, no post operative discomfort or morbidity and low cost.

### Dekompressor

A mechanical percutaneous nucleotome cuts & drills out the disc material somewhat like morcicator debulking the disc reducing nerve compression.

### Intrathecal (Spinal) Pump Implants

Opted when oral narcotics provide insufficient pain relief or side effects are troublesome in intractable cancer & chronic pain patients. It delivers drug via an implanted catheter directly into CSF needing a very small dose (1/300 of oral dose). The programmable pump is implanted in ant. lower abdomen. It delivers the drug as per the patients needs. More powerful analgesia & spasticity control is achieved using lower doses, constant relief & fewer side effects as with oral doses eg. Somnolence, mental clouding, constipation, euphoria with decreased chances of drug addiction or misuse.

## NEUROMODULATION TECHNIQUES

### Spinal Cord Stimulation (SCS) Implants

Done for FBSS( failed back surgery syndrome) & CRPS(complex regional pain syndromes) in USA. In Europe it is done for chronic intractable angina & pain of peripheral vascular diseases (PVD). The indications are expanding further in chronic pain states. A set of electrodes is placed in epidural space & connected to a pulse generator ( like a cardiac pacing device) that is implanted in upper buttock. Low level of electric impulses replace pain signals to the brain with mild tingling sensation. A trial stimulation is done before permanent SCS lead implant.

## PERCUTANEOUS VERTEBROPLASTY / KYPHOPLASTY

### A Newer Approach To Management Of Vertebral Body Fractures

As life expectancy is increasing so is the incidence of vertebral body (VB) # now being the commonest # of the body. PVP is an established interventional techniques in which PMMA bone cement is injected under L.A. via a needle into a # VB with imaging guidance providing increased

bone strength, stability, pain relief, decreased analgesics, increased mobility with improved QOL and early return to work.

### PIRIFORMIS SYNDROME

Piriformis syndrome is a neuromuscular disorder that occurs when the sciatic nerve is compressed or otherwise irritated by the piriformis muscle causing pain, tingling and numbness in the buttocks and along the path of the sciatic nerve descending down the lower thigh and into the leg. Diagnosis is often difficult due to few validated and standardized diagnostic tests, but one of the most important criteria is to exclude sciatica resulting from compression/irritation of spinal nerve roots, as by a herniated disk. The syndrome may be due to anatomical variations in the muscle-nerve relationship, or from overuse or strain. Piriformis syndrome should be considered as a possible diagnosis when Sciatica occurs without

a clear spinal cause.

### Treatment

Symptomatic relief of muscle and nerve pain can be obtained by non-steroidal anti-inflammatory drugs and/or muscle relaxants. Conservative treatment usually begins with stretching exercises and massage, and avoidance of contributory activities, such as running, bicycling, rowing, etc. Some clinicians recommend formal physical therapy. Failure of conservative treatments described above may lead to consideration of various therapeutic injections such as local anesthetics, Anti-inflammatory drugs and/or corticosteroids, botulinum toxin (BOTOX), or a combination of the three. Injection technique is a significant issue since the piriformis is a very deep seated muscle. BOTOX can be injected under CT control. This inactivates the piriformis muscle for 3 to 6 months, without resulting in leg weakness or impaired activity. Rarely surgery may be recommended.

### COCCYDYNIA/TAIL BONE PAIN

Coccyx pain is often caused by falling backwards or by childbirth, though the cause of pain is unknown in about a third of cases. It makes it very painful to sit down. There are effective treatments available, and the great majority of sufferers can be cured. Most coccyx pain is caused by the coccyx dislocating when you sit. In such cases, manual treatments, if applied by an expert, may relieve the pain. Injections of cortisone help some people.

Coccydynia is often reported following a fall or after childbirth. In some cases, persistent pressure from activities like bicycling may cause the onset of coccyx pain. Coccydynia due to these causes usually is not permanent, but it may become very persistent and chronic if not controlled. Activities that put pressure on the affected area are bicycling, horseback riding, and other activities such as increased sitting that put direct stress on the coccyx. The medical condition is often characterized by pain that worsens with constipation and may be relieved with bowel movement. Activities that put pressure on the affected area are bicycling, horseback riding, and other activities such as increased sitting that put direct stress on the coccyx. The medical condition is often characterized by pain that worsens with constipation and may be relieved with bowel movement. sometimes even just a single local nerve block injection at the ganglion impar can give 100% relief of coccydynia when performed under fluoroscopic guidance.

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*Impar Block*



*Piriformis Injection*

### Next Issue Highlights

- Thyroid Nodule: Diagnostic & Therapeutic Challenges
- Hernia Repair : Challenges & Innovations
- Clinical Drug Interaction
- *Symposium:* Interesting Clinical Problems in Dermatology