A Summary of the Guideline for the Evidence-Informed Primary Care Management of

Low Back Pain

3rd Edition, 2015

This evidence-informed guideline is for non-specific, non-malignant low back pain in adults only

Red Flags help identify rare but potentially serious conditions. They include:

- Features of Cauda Equina Syndrome including sudden or progressive onset of loss of bladder/bowel control, saddle anaesthesia (**emergency**)
- Severe worsening pain, especially at night or when lying down (urgent)
- Significant trauma (urgent)
- Weight loss, history of cancer, fever (urgent)
- Use of steroids or intravenous drugs (urgent)
- Patient with first episode of severe back pain over 50 years old, especially over 65 (soon)
- Widespread neurological signs (soon)

EMERGENCY - referral within hours
URGENT - referral within 24 - 48 hours
SOON - referral within weeks

Conduct a full assessment:

- History taking
- Physical and neurological exam
- Evaluation of **Red Flags**
- Psychosocial risk factors/**Yellow Flags**

Yellow Flags indicate psychosocial barriers to recovery. They include:

- Belief that pain and activity are harmful
- 'Sickness behaviours' (like extended rest)
- Low or negative mood, social withdrawal
- Treatment expectations that do not fit best practice
- Problems with claim and compensation
- History of back pain, time off, other claims
- Problems at work, poor job satisfaction
- Heavy work, unsociable hours (shift work)
- Overprotective family or lack of support

Any **Red Flags?**

Yes → **Consider referring for evaluation (including lab tests and imaging as indicated) and treatment**

e. g., emergency room, relevant specialist, rheumatologist (in the case of inflammatory disease)

No

Acute and Subacute

(within 12 weeks of pain onset)

- **Educate patient** that low back pain typically resolves within a few weeks, but that recurrences are common (refer to patient information sheet and brochure)
- **Prescribe self-care strategies** including alternating cold and heat, continuation of usual activities as tolerated
- **Encourage early return to work**
- **Prescribe exercise or therapeutic exercise**
- **Consider analgesics** in this order:
  - Acetaminophen
  - NSAIDs
  - Short-course muscle relaxants
  - Short-acting opioids (rarely, for severe pain)

One to Six Weeks

↓

Reassess (including Red Flags) if patient is not returning to normal function or symptoms are worsening

↓

Consider Referral

- Physical therapist
- Chiropractor
- Osteopathic physician
- Physician specializing in musculoskeletal medicine
- Spinal surgeon (for unresolving radicular symptoms)
- Multidisciplinary pain program (if not returning to work)

Chronic

(more than 12 weeks since pain onset)

- **Educate patient** with a clear diagnosis, advice to stay active, and discussion of hurt vs. harm and activity pacing
- **Prescribe exercise or therapeutic exercise**
- **Analgesics Options**
  - Acetaminophen
  - NSAIDs (consider PPI)
  - Short-term cyclobenzaprine if prominent muscle spasm
  - Low-dose analgesic antidepressants

  See medication table in the complete guideline for recommendations if neuropathic pain suspected
- **Referral Options**
  - Community-based active rehabilitation program
  - Community-based self-management/cognitive behavioural therapy program
- **Additional Options**
  - Progressive relaxation or EMG biofeedback
  - Acupuncture, as a short-term or adjunct therapy
  - Massage, as an adjunct therapy
  - Yoga and aqua therapy

Moderate to Severe Pain

- **Tramadol, opioids** for carefully selected patients with documented functional goals to monitor for improvement (refer to Canadian National Opioid Guideline endorsed by the College of Physicians and Surgeons of Alberta - see p. 2)
- **Referral Options**
  - Multidisciplinary chronic pain program
  - Injection therapies in carefully selected patients
  - Surgery in carefully selected patients

TOP Toward Optimized Practice

For complete guideline refer to the TOP Website:
www.topalbertadoctors.org

IHE INSTITUTE OF HEALTH ECONOMICS ALBERTA CANADA

Low Back Pain

Key Messages

- Do a full clinical assessment; rule out red flags and yellow flags
- In the absence of red flags, reassure the patient there is no reason to suspect a serious cause
- Reinforce that pain typically resolves in a few weeks without intervention, but may recur
- Recommend exercise and therapeutic exercise
- If pain continues beyond six weeks, reassess and consider additional treatment and referrals
- The goal of chronic pain management is improved quality of life
- Check for yellow flags and if present, follow good clinical practice*
- Encourage and support pain self-management
- Monitor patient for relative benefit versus side effects

*See the guideline's companion documents '**Clinical Assessment of Psychosocial Yellow Flags**' and '**Management of Psychosocial Yellow Flags**' on the TOP website

Contraindications

Evidence indicates these actions are ineffective or harmful

- Lab tests and diagnostic imaging in the absence of red flags
- Prolonged bed rest
- Traction (including motorized)
- Ultrasound
- Oral and systemic steroids
- Epidural steroid injections in the absence of radicular pain
- TENS for acute pain
- TENS as solo treatment for chronic pain

Medication Table

Pain Type	Medication		Dosage Range
Acute and sub-acute low back pain or flare-up of chronic low back/ spinal pain	**1st line**	Acetaminophen	Up to 1000 mg QID (max of 3000 mg/day long-term)
	2nd line NSAIDs (consider PPIs if >45 years of age)	Ibuprofen	Up to 800 mg TID (max of 800 mg QID)
		Diclofenac	Up to 50 mg BID
	Add: Cyclobenzaprine for prominent muscle spasm		10 to 30 mg/day; Greatest benefit seen within one week; therapy up to 2 weeks may be justified
	If already on a controlled release opioid: add a short-acting opioid or increase controlled release opioid by 20 to 25%		See opioids below
Chronic low back/spinal pain	**1st and 2nd lines**	See acute pain, above	
TRICYCLICS AND OPIOIDS	**3rd line** Tricyclics (TCAs)	Amitriptyline Nortriptyline* *fewer adverse effects	10 to 100 mg HS
	3rd line Weak Opioids	Codeine	30 to 60 mg every 3 to 4 hours
		Controlled release codeine	50 to 100 mg Q8h, may also be given Q12h
	4th line Tramadol**		Slow titration max 400mg/day. Note: Monitor total daily acetaminophen dose when using tramadol - acetaminophen combination
	5th line Strong Opioids** (controlled release)	Morphine sulfate	15 to100 mg BID
		Hydromorphone HCl	3 to 24 mg BID
		Oxycodone HCl	10 to 40 mg BID -TID
		Fentanyl patch	25 to 50 mcg/hr Q3 days

**for carefully selected patients with documented functional goals to monitor for improvement

- This guideline was written to provide primary healthcare providers and patients with guidance about appropriate prevention, assessment, and intervention strategies
- It was developed by a multidisciplinary team of Alberta clinicians and researchers
- This guideline is for adults 18 years of age or older with low back pain and is not applicable to pregnant women
- It is recognized that not all recommended treatment options are available in all communities
- See Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain, available at: http://nationalpaincentre.mcmaster.ca/opioid/
- For further details on the recommendations visit: http://tinyurl.com/top-lowbackpain

Radiological Diagnostic and Therapeutic Interventions Directed to Lumbar Spine Pathology

INDEX:

1. Procedures Directed Towards Lumbar Facet Joint Mediated Pain
2. Procedures Directed Towards the Sacroiliac Joint
3. Procedures Directed Towards Lumbar Disc Mediated Pain
4. Procedures Directed Towards Central Canal Spinal Stenosis
5. Procedures Directed Towards the Lumbar Spine Nerve Roots

---

1. Procedures Directed Towards Lumbar Facet Joint Mediated Pain

A. Diagnostic

1) Lumbar Spine Facet (Zygapophysial) Intra-Articular Joint Block

For the purposes of this guideline, a joint block involves selectively anesthetizing a particular joint with local anesthetic only (no steroid is injected). The concept is that the anesthetic block will reduce or eliminate pain arising from that joint for the duration of the anesthetic, but anesthetising a non-painful joint should not change the patient's pain or symptoms. A "double block" or "controlled comparative block" system is generally considered the optimal method when trying to optimize the costs and ethical and logistical issues with adding a placebo injection. In a double comparative block, two different anesthetic agents with different durations of action are administered at two different visits. The duration and consistency of each response are assessed: short-term relief with the short-acting agent and long-term relief with the long-acting agent. This test injection therefore determines the consistency of the patient's response, and also helps to avoid a false positive assessment for the location of the 'pain generator'.

This study can be performed to determine if a particular facet joint is the cause of the patient's pain, and is performed when searching for the patient's pain generator. The procedure is as follows: using sterile technique, and ideally with fluoroscopic guidance, a needle is placed directly into the lumbar facet joint and usually confirmed with a small amount of iodinated contrast (Figures 1 and 2). Anesthetic alone (without any steroid) is then placed into the joint.

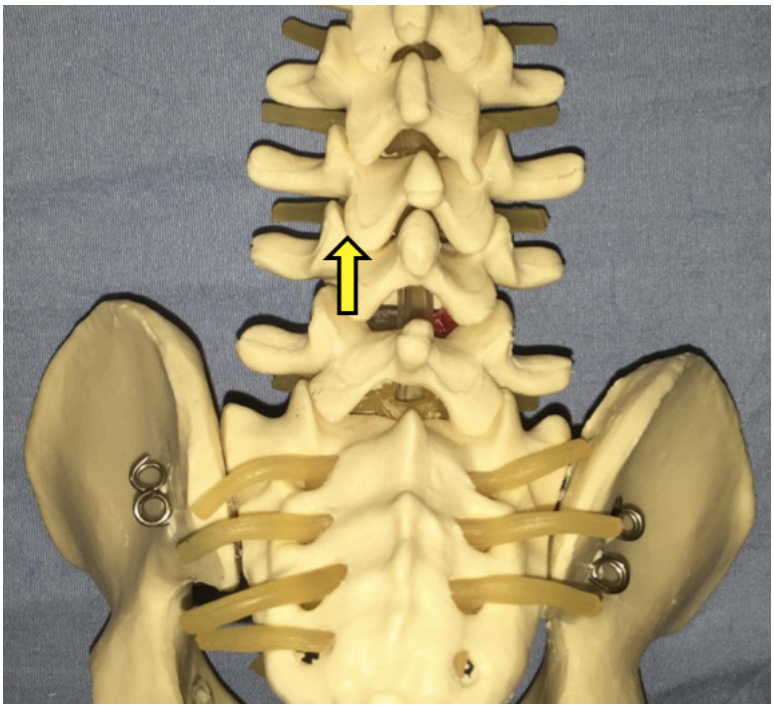


Figure 1: Anatomy showing target for a lumbar facet joint injection

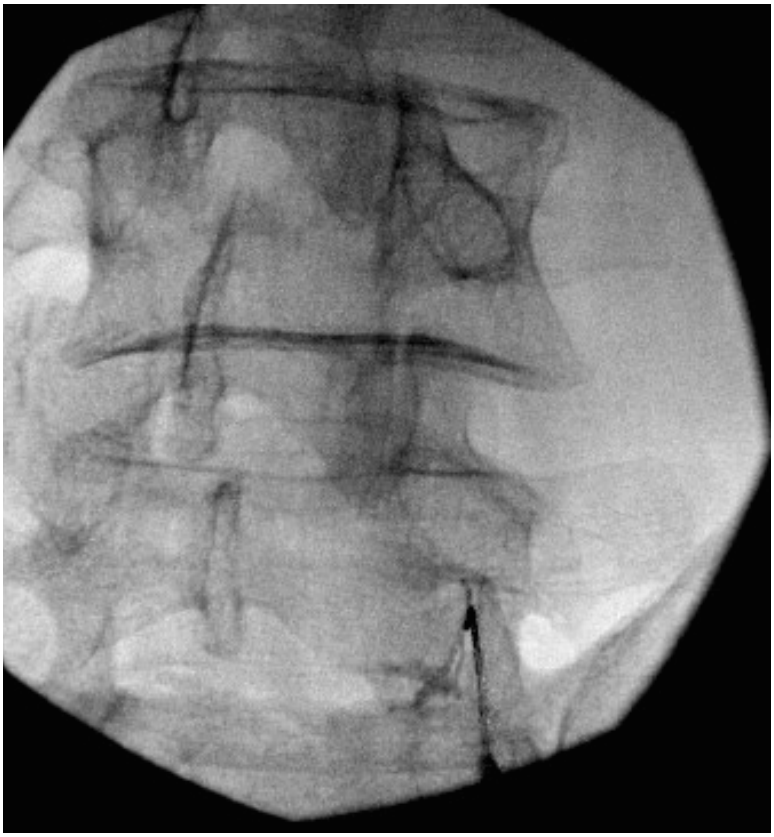


Figure 2: Example of needle placement for a lumbar facet joint injection[i]

2) Diagnostic Lumbar Spine Medial Branch Block

The purpose of this procedure is to selectively anesthetize the two medial branch nerves of the dorsal rami that innervate a single lumbar spine facet joint. Ultimately, this study is performed to obtain a diagnosis and to determine if further intervention (such as a neurotomy, see section C below) will have a high likelihood of success.

Ideally, two comparative blocks (requiring two clinic visits) are performed to standardize and optimize the test. The procedure involves the following:

- A pre-pain (or discomfort) score is obtained from the patient using a numerical pain rating system or visual analog scale for rating pain severity.
- Under fluoroscopic guidance and sterile technique, two needles are placed along the expected course of each of the two medial branch nerves that serve the single lumbar facet joint of clinical concern.
- Appropriate needle tip position is confirmed with a small amount of iodinated contrast (Figures 3 and 4).
- A small volume of local anesthetic is then placed onto each of the two nerves that serve the desired joint. The procedure is then complete.
- Subsequently, the patient should diligently record (possibly every hour for 8 hours, but timings are variable) the short-term changes in pain score and changes in symptoms during this time frame.

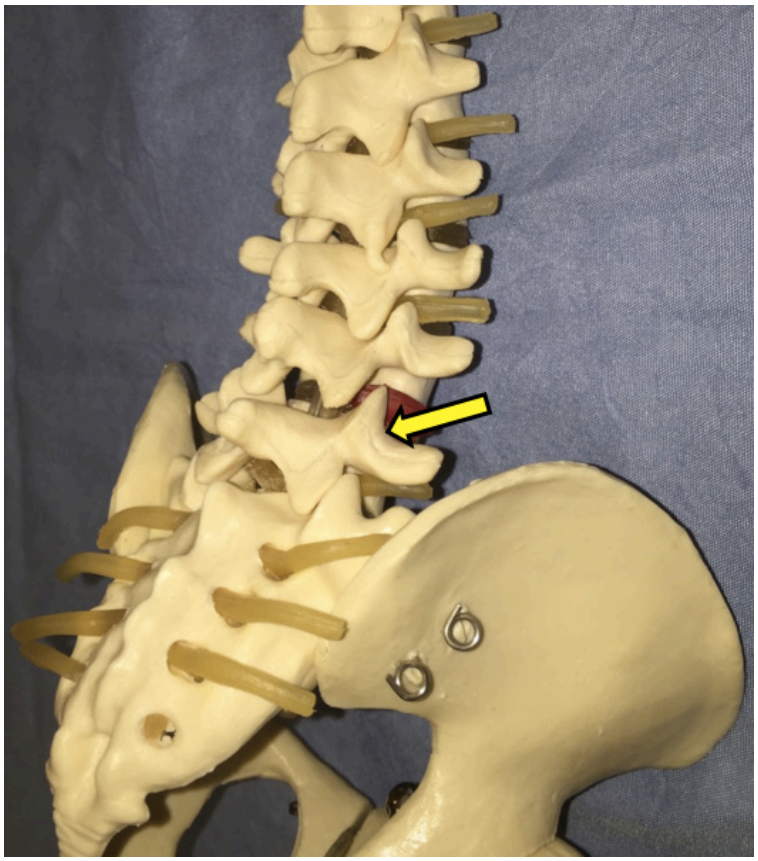


Figure 3: Anatomy showing target for a medial branch block

Figure 4: Example of needle placement for a medial branch block[ii]

B. Diagnostic and Therapeutic

1) Diagnostic and Therapeutic Lumbar Spine Facet (Zygapophysial) Joint Injection

In the literature, this is the term generally used for a mixed anesthetic-steroid injection into the lumbar spine facet joint.

The procedure is the same as the joint block described above except that a mixture of anesthetic and steroid is placed into the joint.

2) Therapeutic Lumbar Spine Medial Branch Block

This has sometimes been referred to as "therapeutic facet joint nerve blocks" in the literature. This procedure involves the same technique as the medial branch block described above, but also uses steroid injected along the course of the medial branches.

C. Therapeutic

1) Lumbar Medical Branch Neurotomy (Radiofrequency Ablation)

This procedure is also known as "lumbar radiofrequency neurotomy", and occasionally as "radiofrequency ablation". It involves placing a radiofrequency probe onto the designated lumbar medial branch nerves (see medial branch block above) to coagulate the nerve and interrupt pain signals from these nerves to the brain. There are two modes available:

- Pulsed mode: The electrical field surrounding the electrode heats the tissue, usually to 42˚C, but then turns off, leaving the heat to dissipate during the silent period.
- Continuous mode: A radiofrequency generator creates a gradient between the probe and the ground plate, with body tissues completing the circuit. The alternating electric field is created results in tissue heating.

2. Procedures Directed Towards the Sacroiliac Joint

A. Diagnostic

1) Sacroiliac (SI) Joint Injection

The procedure is performed with the patient in the prone position. Using sterile technique, and ideally with fluoroscopic guidance, a needle is placed directly into the SI joint, and usually confirmed with a small amount of iodinated contrast (Figures 5 and 6). Anesthetic alone (without any steroid) is then placed into the joint for a diagnostic joint block.

B. Diagnostic and Therapeutic

1) The procedure is the same as outlined above with a corticosteroid added to the injectant.

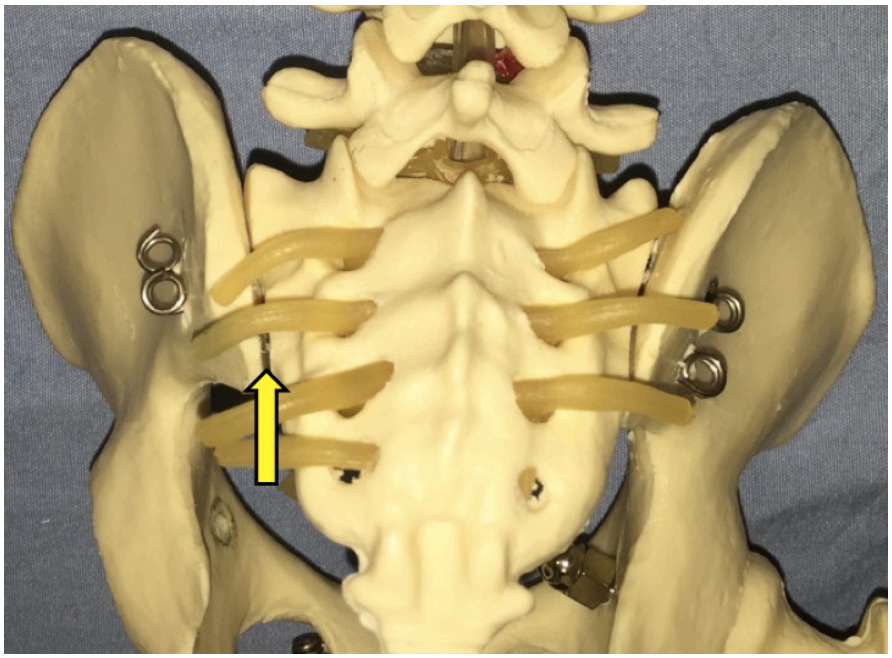


Figure 5: Anatomy showing target for a sacroiliac joint injection

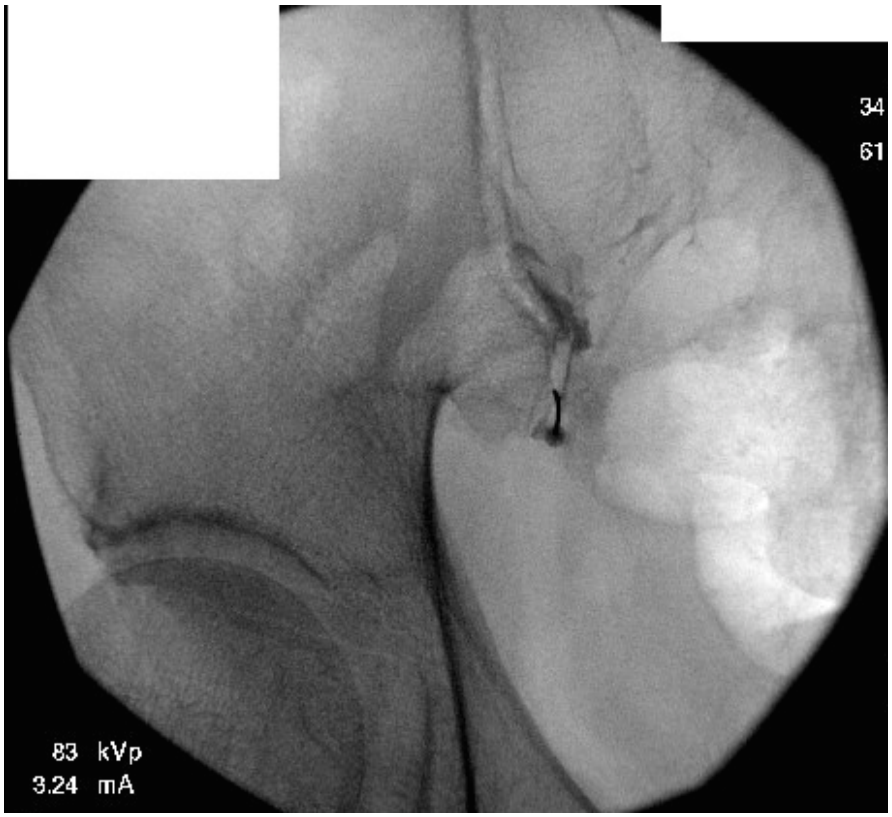


Figure 6: Example of needle placement for a sacroiliac joint injection[iii]

3. Procedures Directed Towards Lumbar Disc Mediated Pain

A. Diagnostic

1) Discogram

Lumbar intervertebral discograms are not recommended as a part of routine primary care practice. They have a role in specialty pre-surgical care only.

B. Therapeutic

1) Epidural Steroid Injections

a. Indications

i. Epidural injections can be used in various conditions including:
- Disc herniation with radiculopathy
- Spinal stenosis secondary to soft tissue compression

ii. History, physical examination, imaging and/or electrodiagnostic investigations confirming neurogenic etiology of pain. For example:
- Dermatomal and myotomal corroboration with imaging findings
- Loss of reflexes in L4, L5, or S1 distribution
- Positive Straight Leg Raising Test and associated dural tension tests
- A cross-sectional imaging study (MRI usually preferred over a CT study) is required prior to performing the study. Please refer to the performing physician's recommendations prior to the study.

b. Contraindications

i. Patient is unable or unwilling to consent to the procedure

ii. Contrast medium or medication cannot be used because of known anaphylactic reaction

iii. Patient has evidence of an untreated localized infection or systemic infection

iv. Patient is unable to cooperate during the procedure

v. Pregnancy

vi. Immunosuppression

vii. Significant respiratory or cardiovascular compromise

viii. Patient is unable to tolerate lying prone

c. Anticoagulation

i. Depending on the type of medication prescribed and the reason for its use, holding anticoagulation medication prior to the procedure may be indicated. Although numerous recommendations and guidelines are available in multiple centres, one

should check with the performing physician's office as to their preference for how and when these medications should be held prior to and after the procedure.

d. Complications

   i. Both major and minor complications can occur with these procedures. The most serious major complications are epidural infection/abscess or hematoma or paralysis of the lower limb. Minor complications include localized inflammation at the needle puncture site, vasovagal reaction, and side effects of the steroids injection. Others include increased pain, seizures, chemical meningitis, and flushing. Many minor complications are self-limiting. Discussions and pre-consultation with the performing physician is advisable.

e. Frequency

   i. Repeated injection can be performed if patients have had positive responses. No maximum dose has been established; however it is the expert panel's opinion that epidural steroid injections should not be performed more frequently than every three months. If there is an incomplete response to the first injection, a second may be considered in three months; further injections are not recommended if there is not a satisfactory response to either. Be mindful, in consultation with the performing physician, of the total amount of corticosteroid being injected with repeat procedures, and the cumulative effects of radiation exposure.

f. Types of epidural steroid injections

   i. Transforaminal epidural steroid injection (TFESI)
      - Technique: With the patient prone, under fluoroscopic guidance, the tip of the spinal needle is positioned in the intervertebral foramen to access the nerve and the surrounding epidural space. Corticosteroid is administered into the epidural space around the spinal nerve in an effort to bathe the exiting nerve and the epidural space (Figures 7 and 8).
      - TFESI is indicated for patients with contained disc herniation and low grade nerve compression.
      - Typically one injection is required.
      - Evidence for treatment of spinal stenosis by this technique remains speculative.[iv]

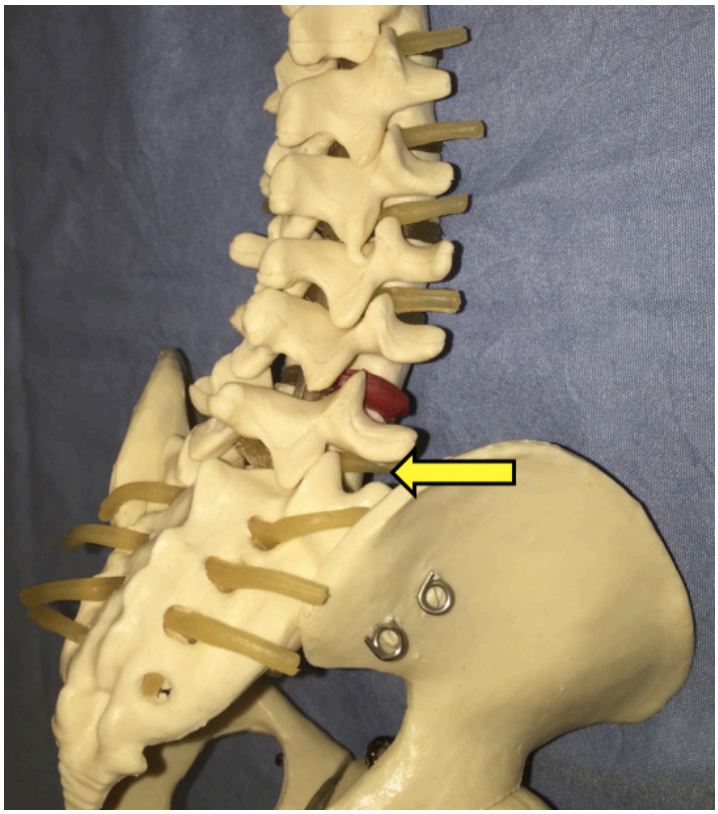


Figure 7: Anatomy showing target for a transforaminal epidural injection

Figure 8: Example of needle placement for a transforaminal epidural injection[v]

ii. Interlaminal Epidural Steroid Injection

- Technique: With the patient in the prone position, under fluoroscopic guidance, the tip of the spinal needle is extended beyond the ligamentum flavum and into the dorsal epidural space in an effort to bathe the posterior epidural space (Figures 9 to 11).

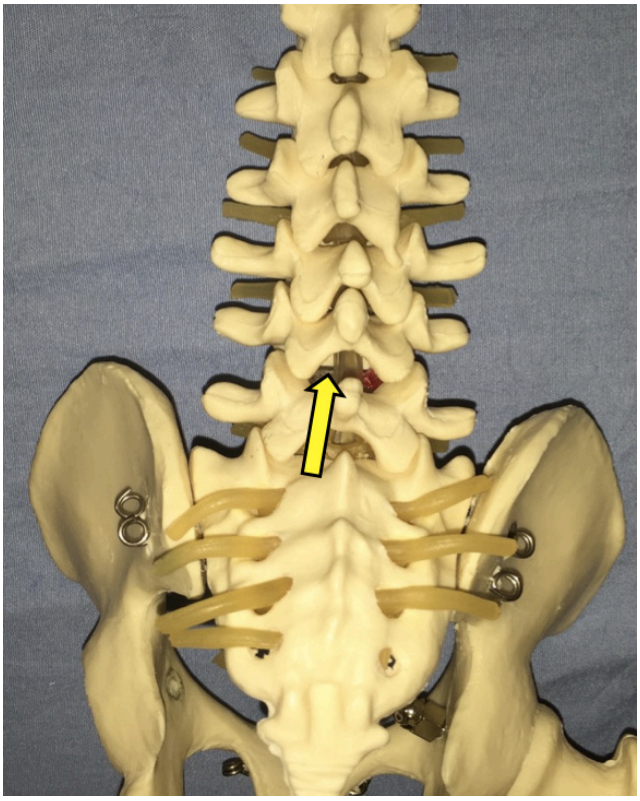
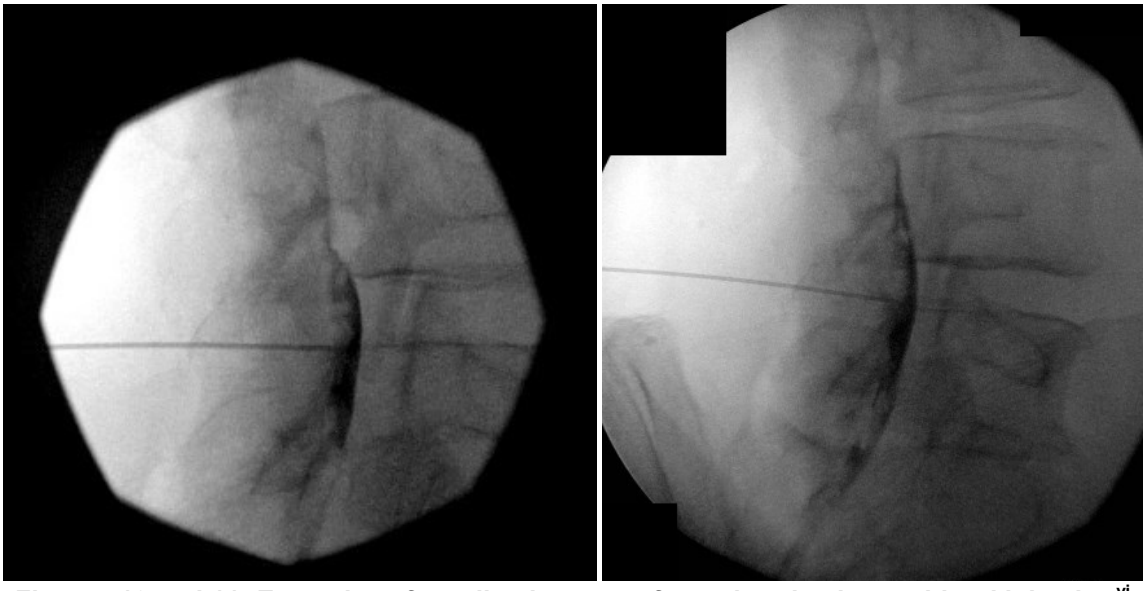


Figure 9: Anatomy showing target for an interlaminar epidural injection



Figures 10 and 11: Examples of needle placement for an interlaminar epidural injection[vi]

iii. Caudal Epidural Steroid Injection

- Technique: With the patient prone, under fluoroscopic guidance, the tip of spinal needle is extended through the sacral cornua into the most caudad portion of the epidural space, in an effort to bathe the posterior epidural space (Figures 12 to 14).

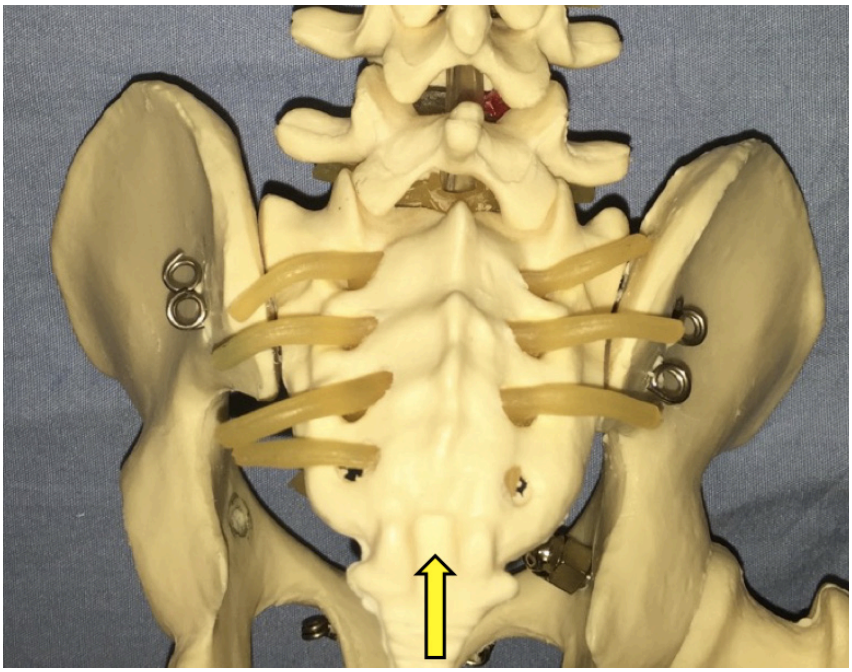


Figure 12: Anatomy showing target for a caudal epidural injection

Figures 13 and 14: Examples of needle placement for a caudal epidural steroid injection[vii]

4. Procedures Directed Towards Central Canal Spinal Stenosis

A. Diagnostic

1) Diagnosis of significant central spinal stenosis is based upon appropriate imaging procedures such as MRI.

B. Therapeutic

1) Interlaminal Epidural Injection (see above)

2) Caudal Epidural Injection (see above)

5. Procedures Directed Towards the Lumbar Spine Nerve Roots

Selective Nerve Root Block (SNRB)

Selective nerve root blocks, sometimes referred to as "selective nerve root injection", are not recommended as a primary care intervention. It is the opinion of the Guideline Update Committee that they be performed in specialized spinal care services where clarification is required to establish which nerve root or roots are symptomatic in the pain syndrome.

The goal of this procedure is to target a specific spinal nerve dorsal root ganglion in an effort to diagnostically confirm or treat the corresponding radicular symptoms.

A. Diagnostic SNRB

- This injection is typically limited to only local anaesthetic in an attempt to establish a specific diagnosis of radicular pain.
- A pre- and post-pain drawing or visual analog scale is used, and generally an 80% reduction in pain or an improvement in symptoms is considered positive.

B. Therapeutic SNRB

- The same principles of diagnostic SNRB are followed, except that the treatment medication (usually a steroid) is also administered at the same time.

---

[i] Photo courtesy of Dr. Amar Suchak, 2015.
[ii] Photo courtesy of Dr. Amar Suchak, 2015.
[iii] Photo courtesy of Dr. Amar Suchak, 2015.
[iv] MacVicar J, King W, Landers MH, Bogduk N. Review Article: The effectiveness of lumbar transforaminal injection of steroids: A comprehensive review with systematic analysis of the published data. *Pain Medicine* 2013;14:14-28.
[v] Photo courtesy of Dr. Amar Suchak, 2015.
[vi] Photos courtesy of Dr. Amar Suchak, 2015.
[vii] Photos courtesy of Dr. Amar Suchak, 2015.