Interventional Pain Management for Spinal Pain

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Disclosure

- I have no relevant financial or nonfinancial relationships in the products or services described, reviewed, evaluated or compared in this presentation.

Definition of Chronic pain

Pain that persists six months after an injury and/or beyond the usual course of an acute disease or a reasonable time for a comparable injury to heal…[it] is associated with chronic pathologic processes that cause continuous or intermittent pain for months or years…[it] may continue in the presence or absence of demonstrable pathology and may not be amenable to routine pain control methods with healing never occurring (ASIPP)

Interventional Pain Management

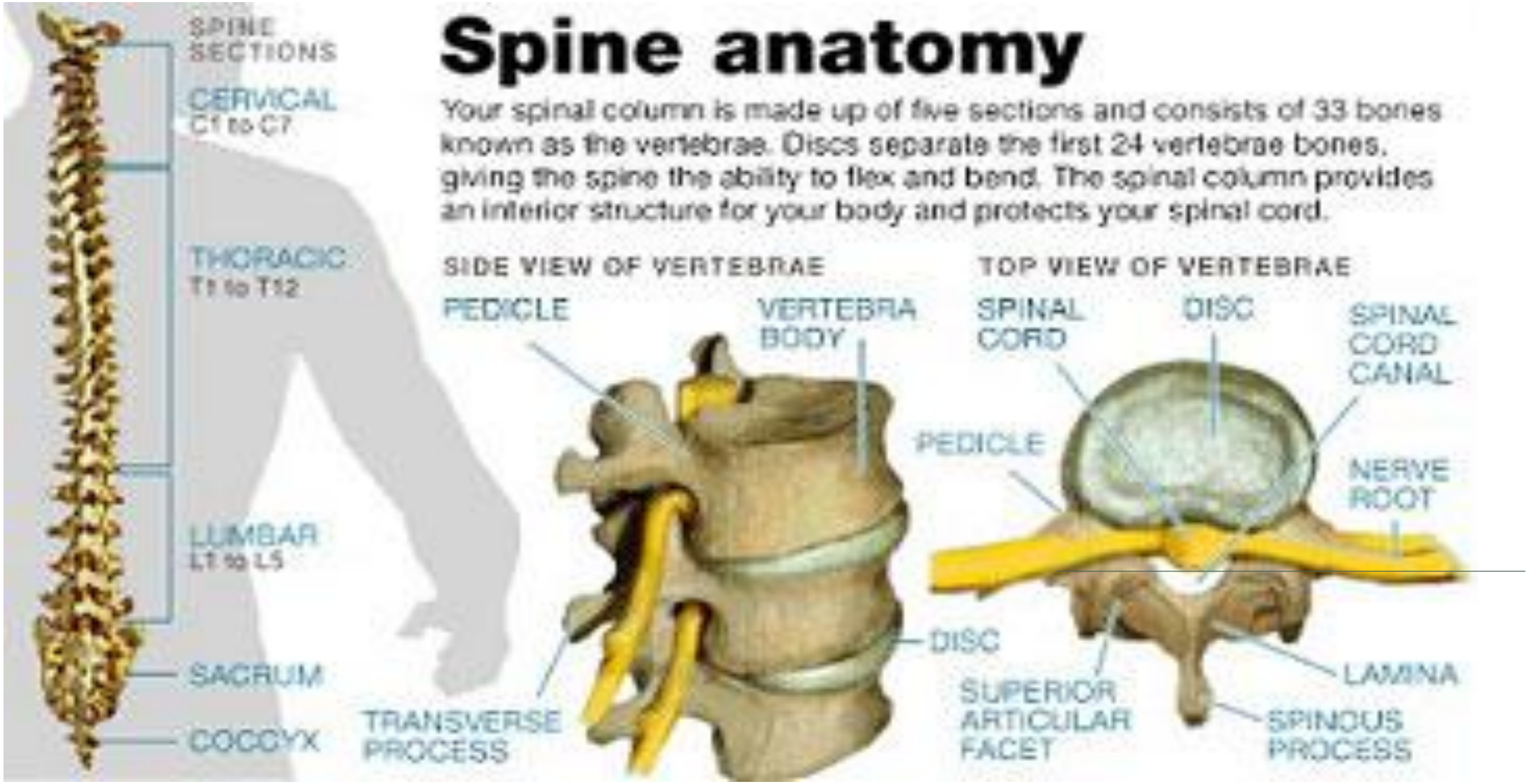
Discipline of medicine devoted to the diagnosis and treatment of pain related disorders principally with the application of interventional techniques in managing subacute, chronic, persistent, and intractable pain, independently or in conjunction with other modalities of treatment.

Interventional pain management techniques are minimally invasive procedures including, percutaneous precision needle placement, with placement of drugs in targeted areas or ablation of targeted nerves; and some surgical techniques such as laser or endoscopic diskectomy, intrathecal infusion pumps and spinal cord stimulators, for the diagnosis and management of chronic, persistent, or intractable pain

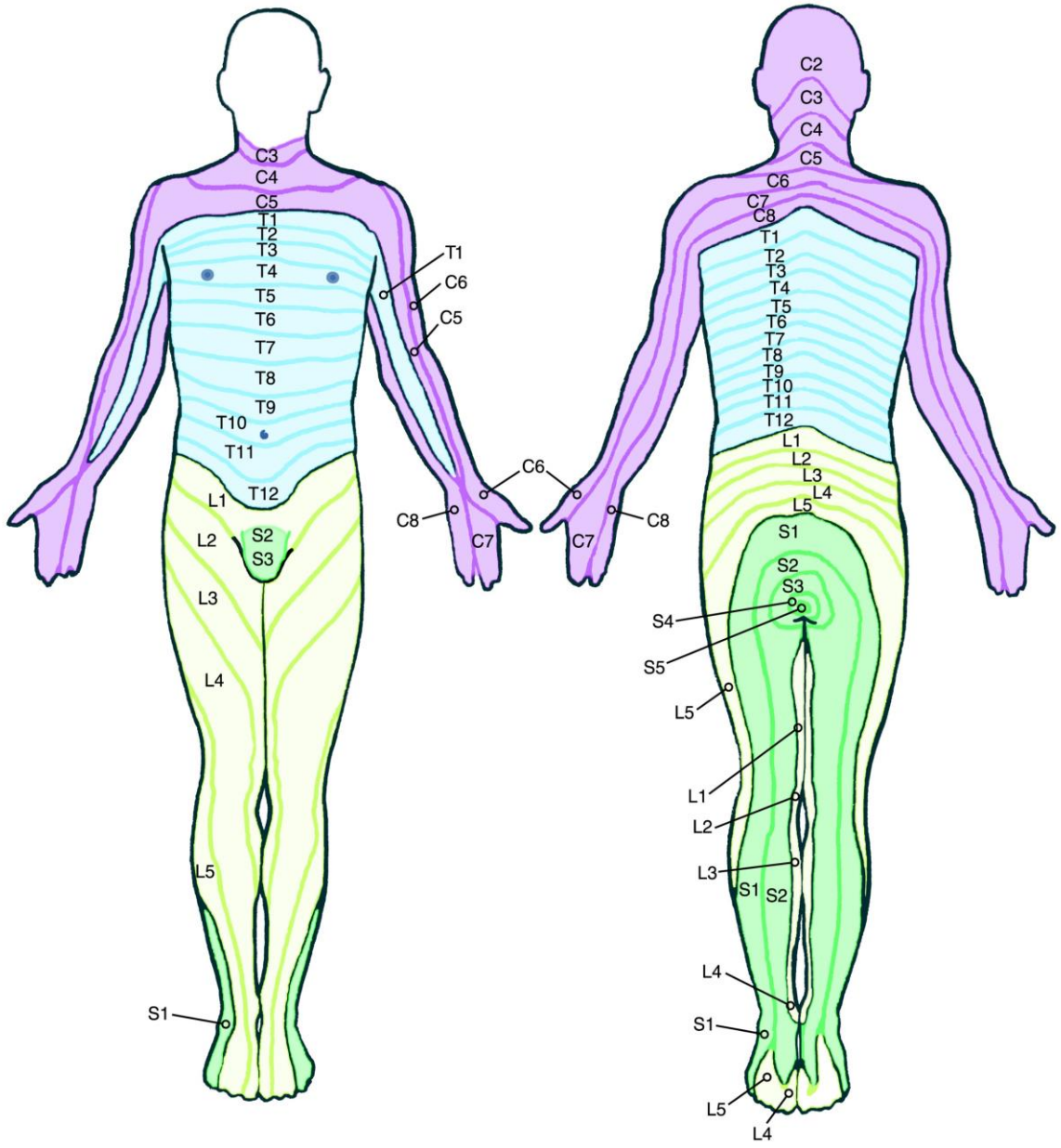
Multimodal Treatment

Spine anatomy

Your spinal column is made up of five sections and consists of 33 bones known as the vertebrae. Discs separate the first 24 vertebrae bones, giving the spine the ability to flex and bend. The spinal column provides an interior structure for your body and protects your spinal cord.



Dermatomes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Spine Pathologies

- Degenerative disc disease
- Disc herniation
- Annular tear
- Spinal stenosis
- Neuroforaminal stenosis
- Facet joint inflammation
- Facet joint hypertrophy
- Compression fracture

ESI-Mechanism of Action

Several mechanisms have been proposed

- Inhibition of leukocyte function
- Alleviation of inflammatory events such as edema
- Fibrin deposition, capillary dilatation, leukocyte aggregation, phagocytosis, capillary and fibroblast proliferation, collagen deposition
- Inhibition of the synthesis of pro-inflammatory substances like PLA2
- Inhibition of the activity of lymphokines
- In addition to their anti-inflammatory effects, corticosteroids may inhibit pain via suppression of ectopic discharges from injured nerves and decreased conduction in normal unmyelinated C fibers

Lumbar Epidural Injections

Indications

- Lumbar disc herniation
- Neuroforaminal narrowing
- Spinal stenosis
- Failed back surgery syndrome

Technique

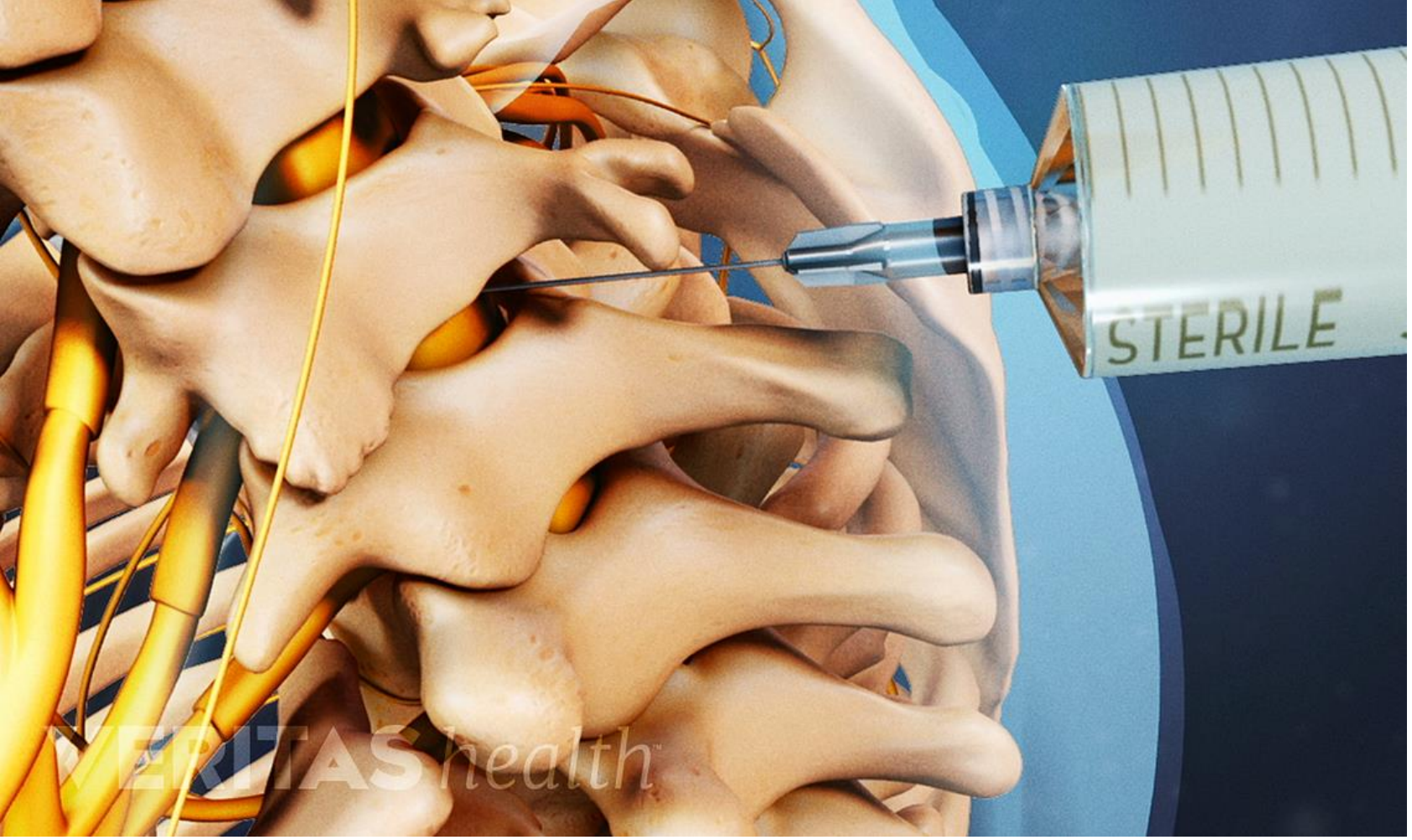
- Interlaminar
- Transforaminal
- Caudal

Complications

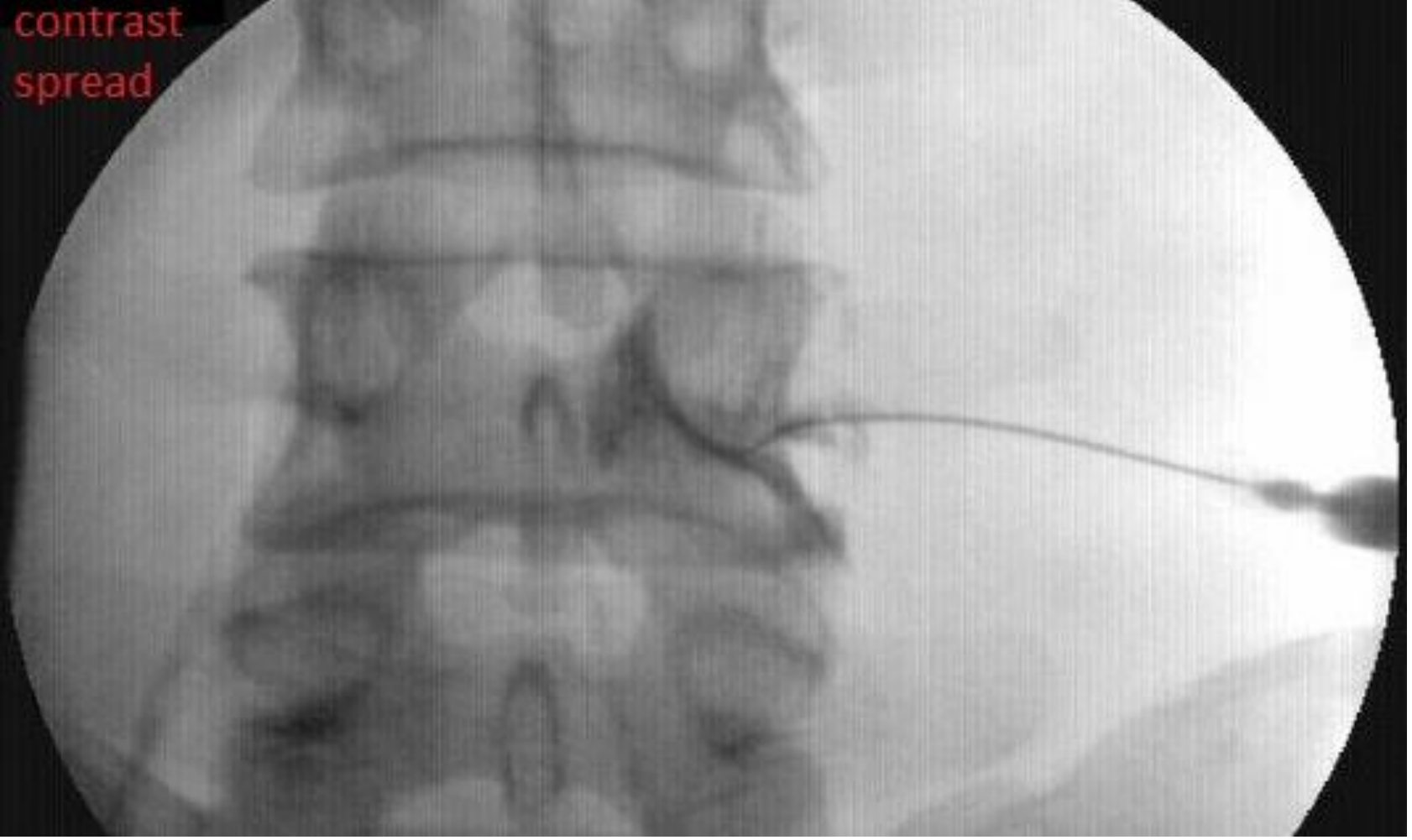
- A total of 4265 injections were performed on 1,857 patients over 7 years: cervical and lumbar
- No major complications were identified
- There were 103 minor complications, for an overall complication per injection rate of 2.4%
- The most common complications were increased pain at injection site and persistent numbness

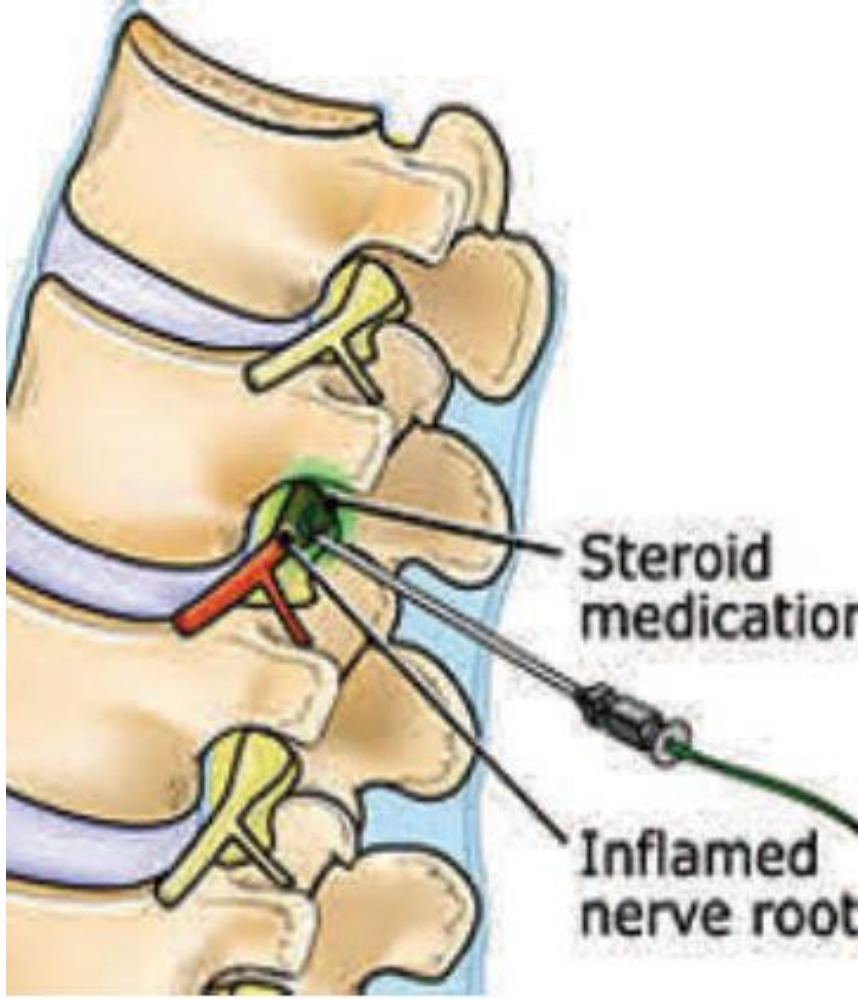
Outcome

- Moderate evidence for interlaminar ESI for short term pain relief, and limited evidence for long-term relief
- Moderate evidence for Transforaminal-ESI for short and long-term pain relief.

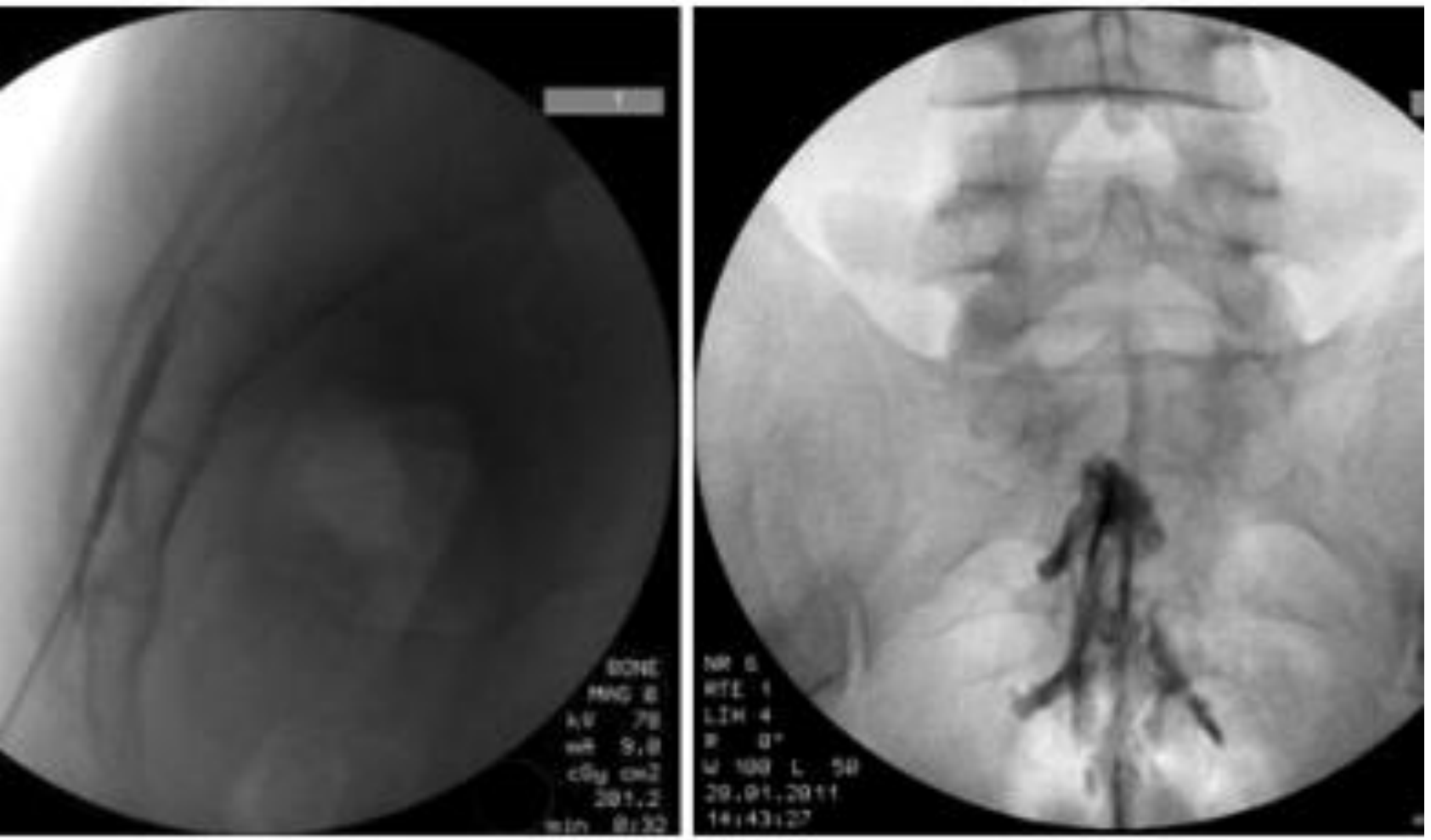


Interlaminar Epidural Injection

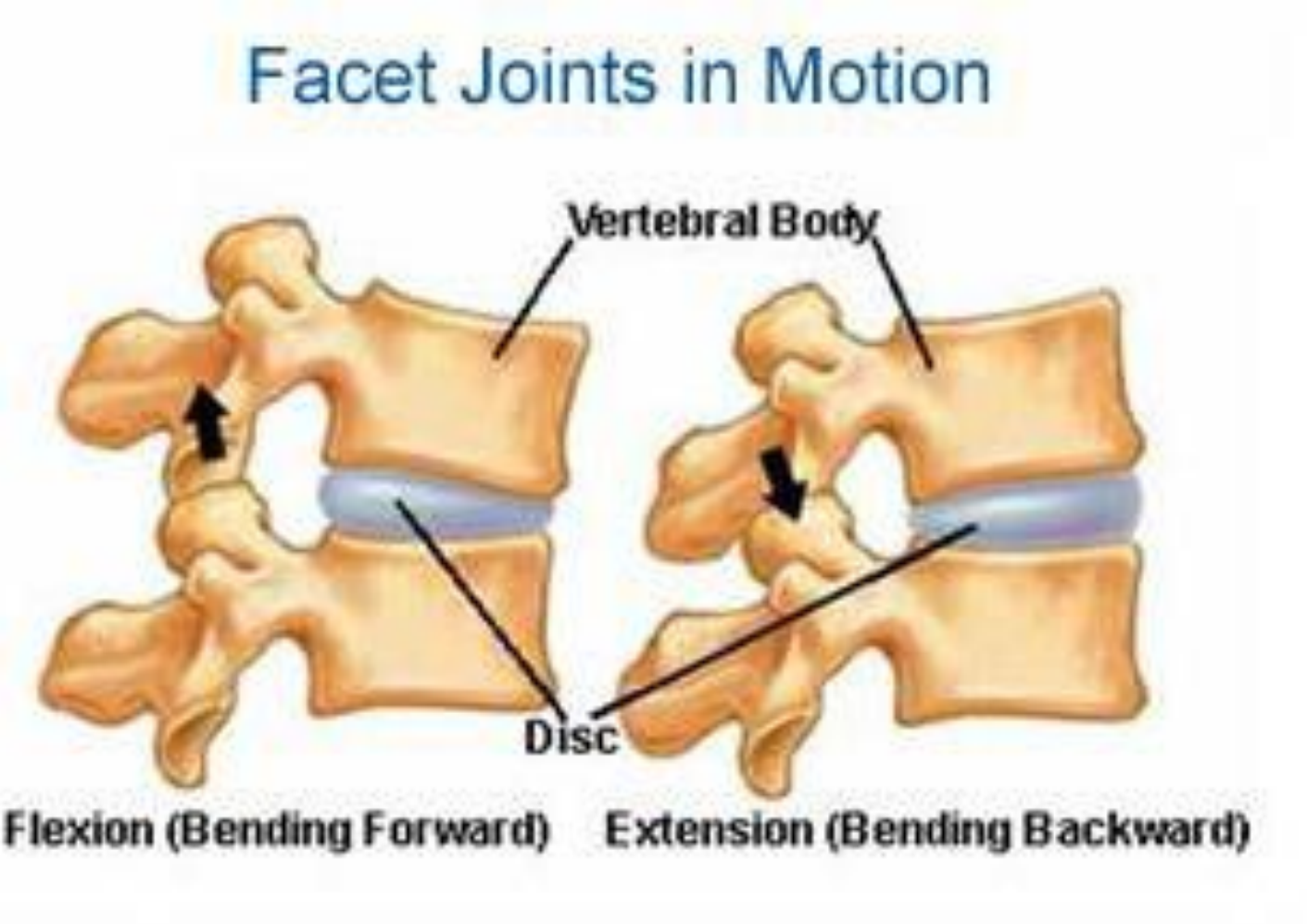


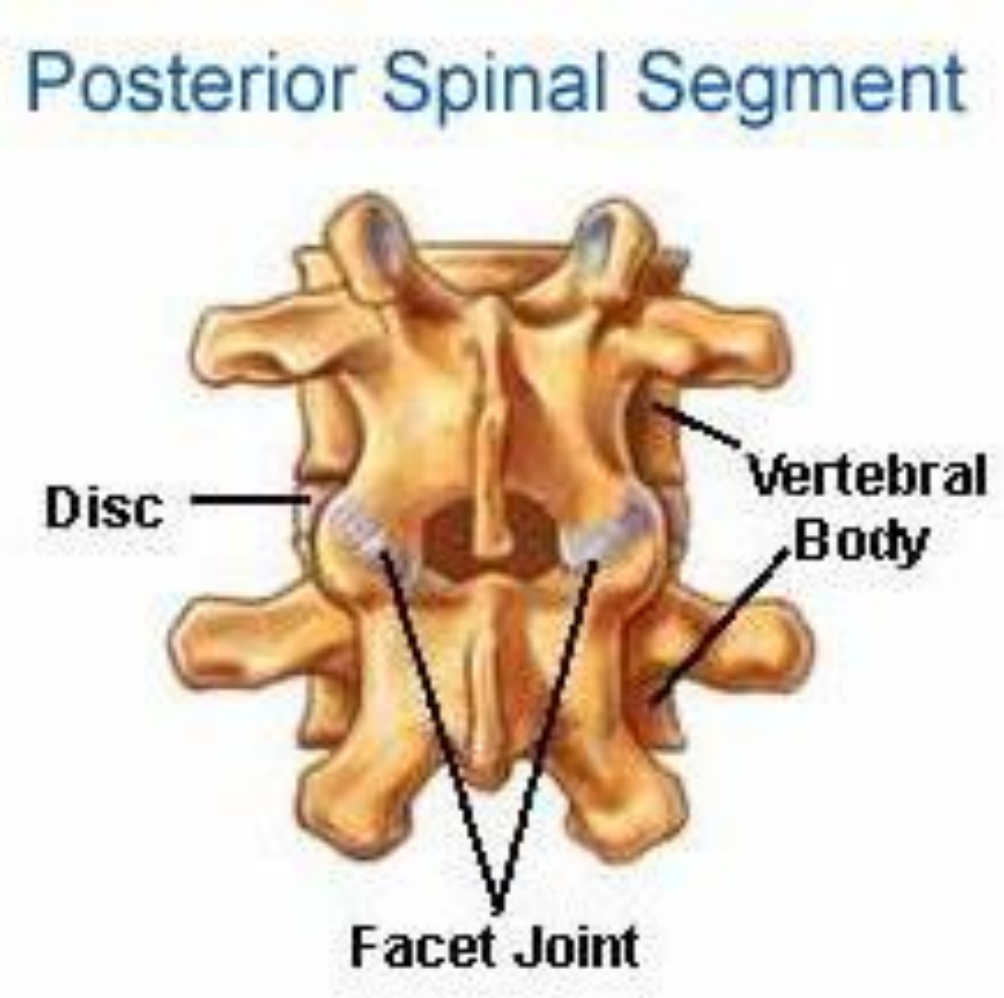


Transforaminal Epidural Injection



Caudal Epidural Injection





Facet Joints

Facet Joints

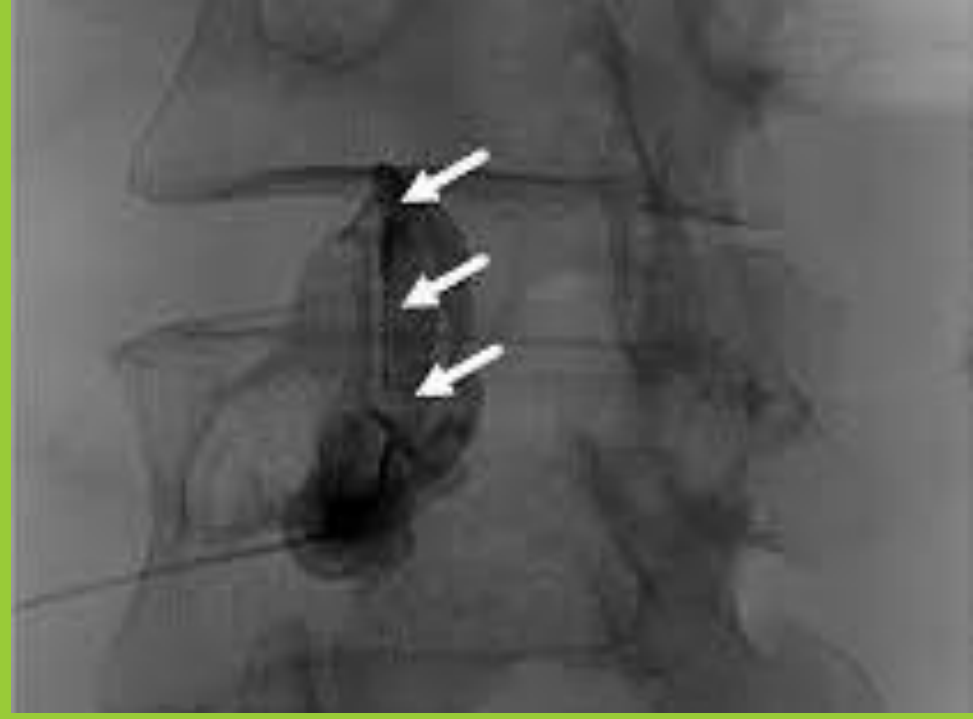
- Innervated by medial branches of dorsal rami
- Synovial joints
- The joint capsule is made up of the ligaments and connective tissues

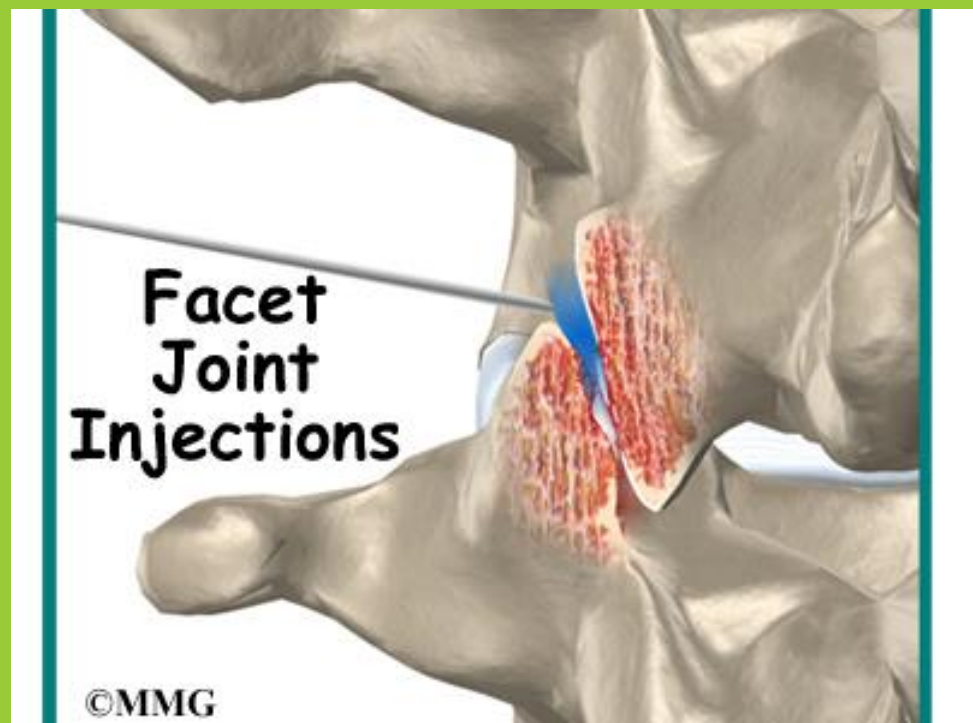
Outcome

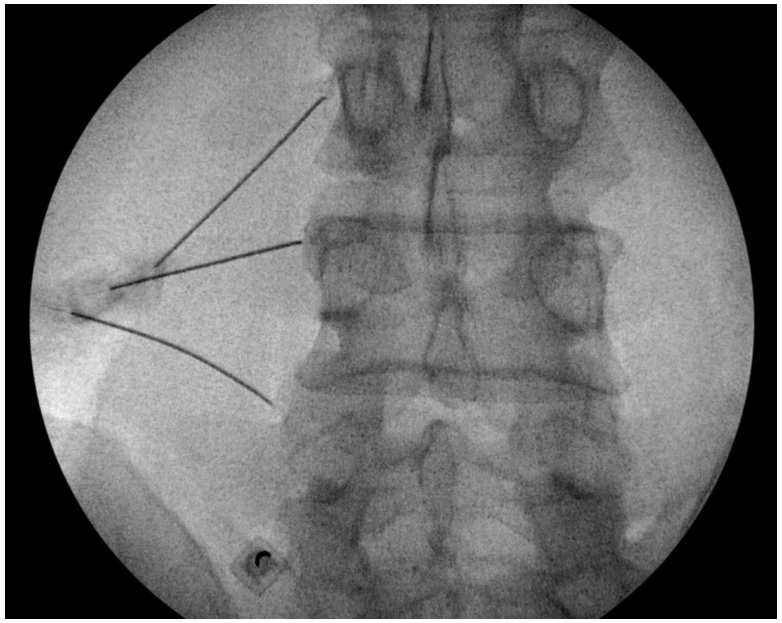
- Moderate evidence for short term and long-term pain relief.

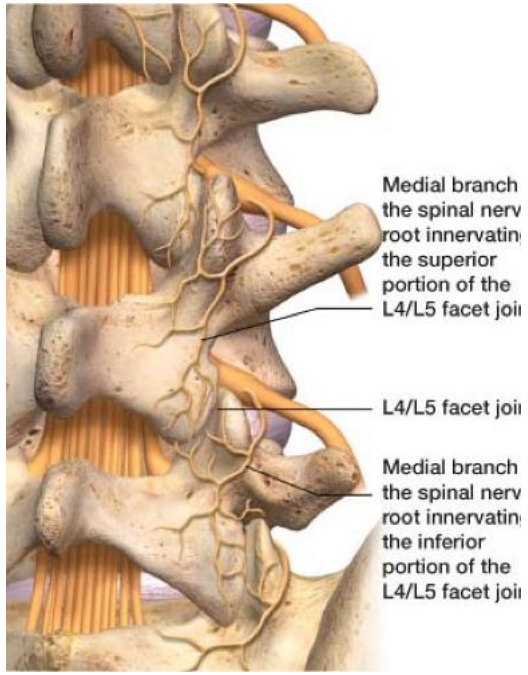
Complications

- A study was carried out over a period of 20 months and included over 7,500 episodes or 43,000 facet joint nerve blocks
- No major complications
- Local bleeding, bruising, soreness and nerve root irritation









LUMBAR MEDIAL BRANCH BLOCK

Technique

- Block is done with LA, with or without steroids
- Pain diary is given
- If more than 50% improvement, proceed with Radiofrequency ablation (rhizotomy)

Outcome

- Strong evidence of diagnosing lumbar facet joint pain

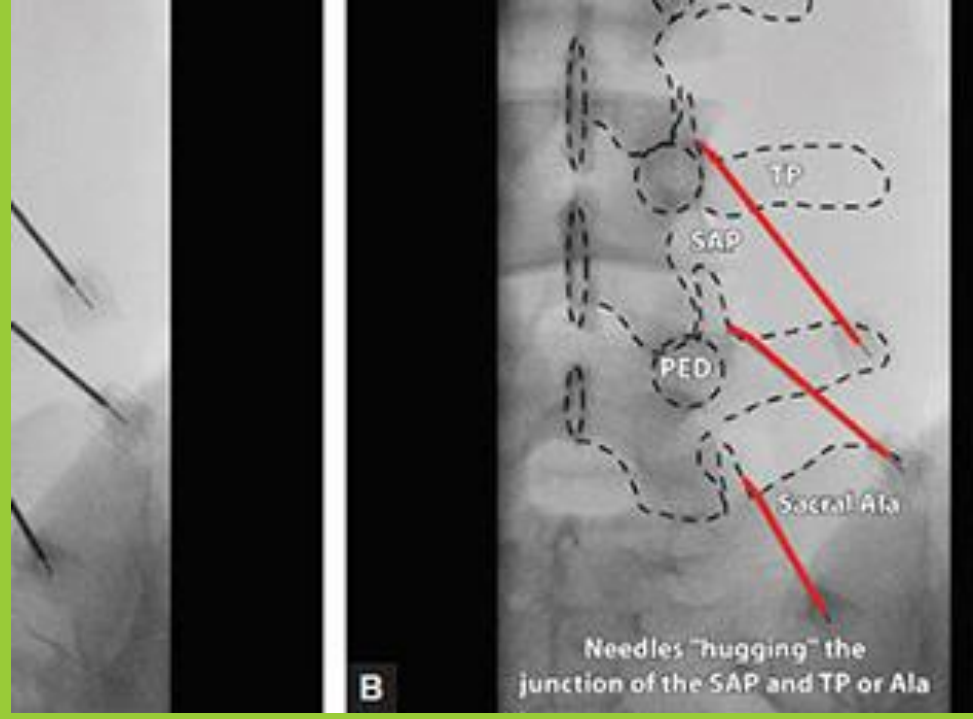
Lumbar Radiofrequncy Ablation

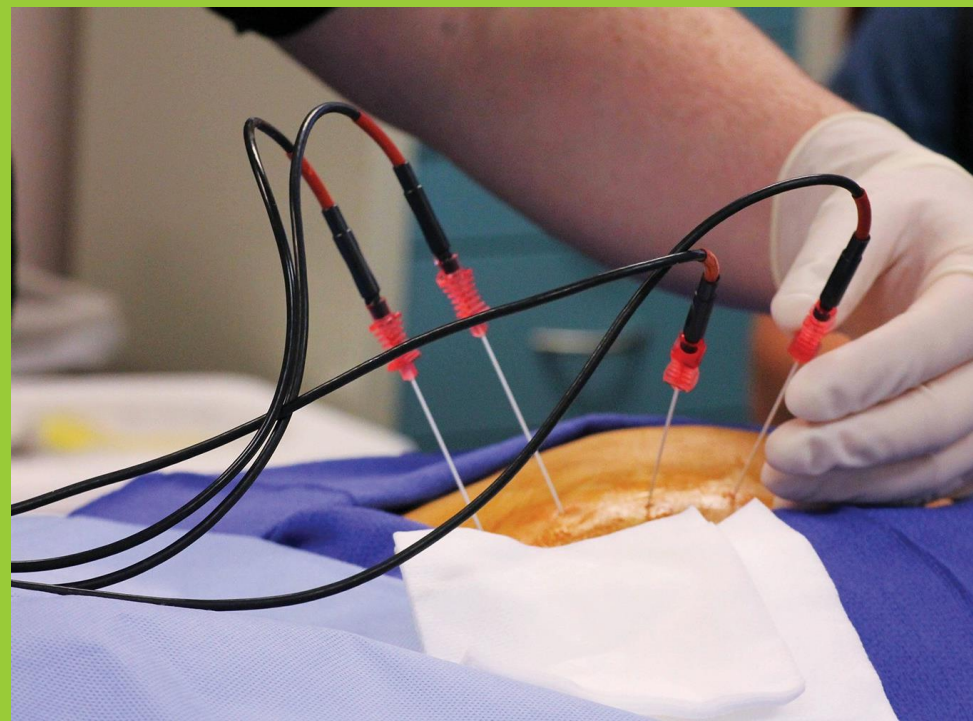
Technique

- A 22G 100mm needle with 10mm active tip is used
- Sensory stimulation at 50Hz up to 1v
- Motor stimulation at 2Hz up to 2.5v
- Lesion at 80 degree C for 60 sec at each level

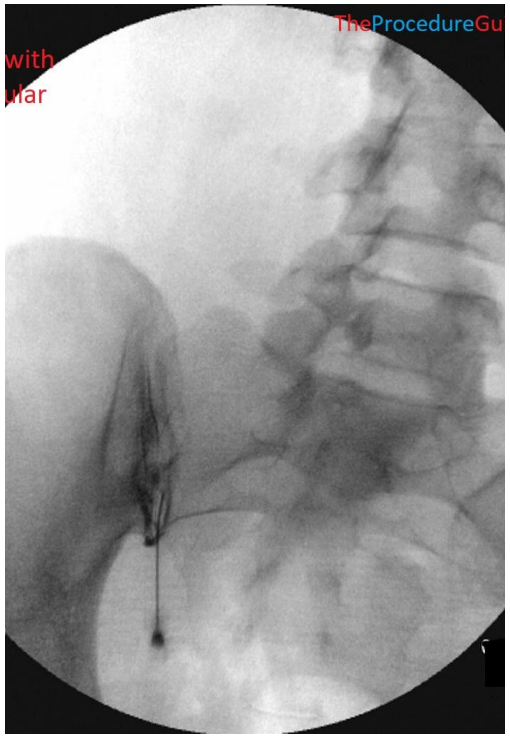
Outcome

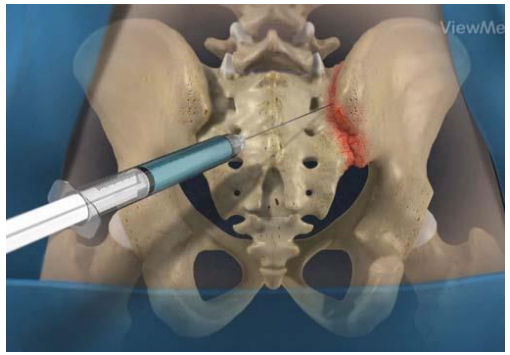
- Strong evidence for short term pain relief
- Moderate to strong evidence for long term pain relief

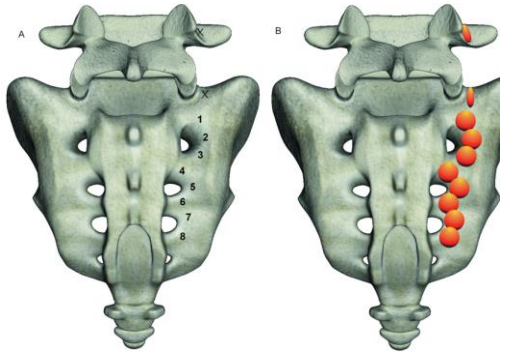




Sacroiliac Joint Pain







Technique

- Intra-articular injection with or without steroids

Outcome

- Fair evidence for short term pain relief

RFA

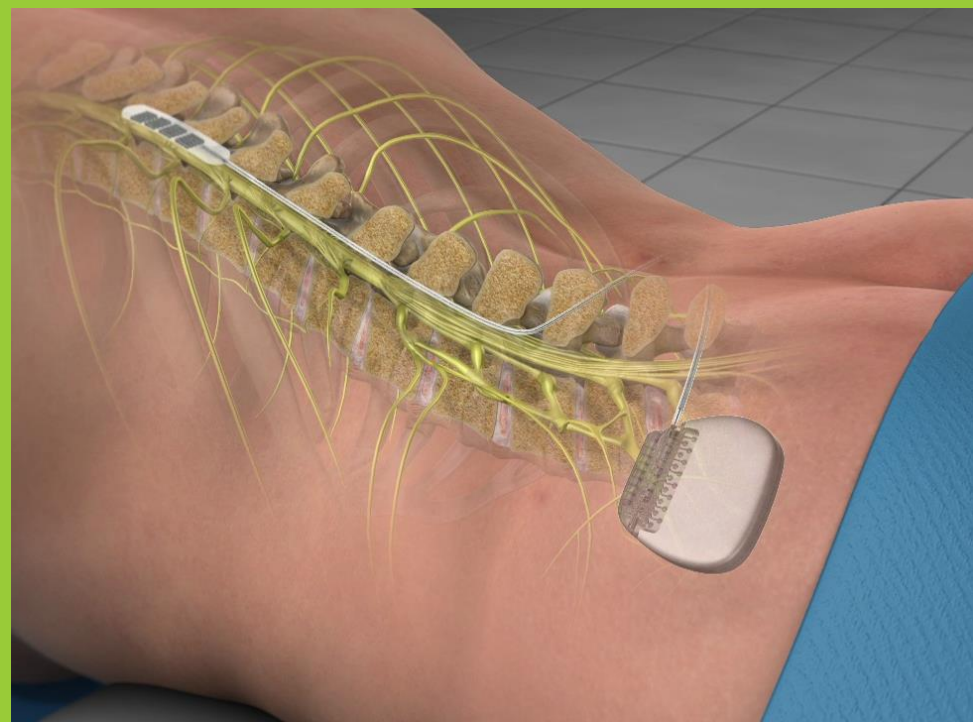
- If IA steroid injection does not provide long term relief, consider RFA
- L4 and L5 dorsal ramus
- S1 to S3 lateral branches

Spinal Cord Stimulation

Implanted medical device that delivers electrical impulses to nerves in the dorsal aspect of the spinal cord that can interfere with the transmission of pain signals to the brain and replace them with a more pleasant sensation.

Electrodes, pulse generator (IMG), remote control

Two parts: Trial and Implant



Spinal Cord Stimulator

Indications

- Failed back surgery syndrome
- Peripheral neuropathic pain
- Complex Regional Pain Syndrome
- Phantom limb pain
- Spinal cord injury
- Post herpetic neuralgia

Complications

- Infection
- Lead migration
- Loss of coverage
- Painful coverage
- Depletion of battery
- Pain around IPG site
- Pain around anchor site

Spinal Cord Stimulator

Evidence

- Fair in managing patients with FBSS.

Cost

- SCS therapy consistently showed higher initial costs, but overall long-term cost efficacy was greater than conventional medical management
- SCS therapy showed lower medical costs by reducing the demand for medical care by patients with FBSS
- SCS to be more effective and less expensive when compared with the standard treatment protocol for chronic RSD

Intrathecal Drug Delivery System (Pump)
Vertebroplasty/Kyphoplasty
Minimally Invasive Lumbar Decompression (MILD)
Percutaneous Epidural Adhesiolysis
Discography
Percutaneous Laser Disc Decompression

Other Spine Procedures

Case Presentation

63 yo female with acid reflux and gastritis presents with low back pain for about 5 years. She denies any injuries or inciting events. Pain is constant and dull. She reports radiating shooting and sharp pain into her left lower extremity with numbness, tingling and weakness. She states that she has been limping for about 3 years. She denies saddle anesthesia, bowel or bladder incontinence.

- Physical therapy did not provide relief
- She has ben taking Naproxen daily for 5 years
- She has had muscle injections twice with no benefit
- MRI significant for multilevel herniated discs with severe NFN, worse on left side and spinal stenosis
- She has been evaluated by a Neurologist, who referred her to physical therapy

Conclusion

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ASIPP-American Society of Intervention Pain Physicians. http://asipp.org

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