


Intervention in Low Back pain

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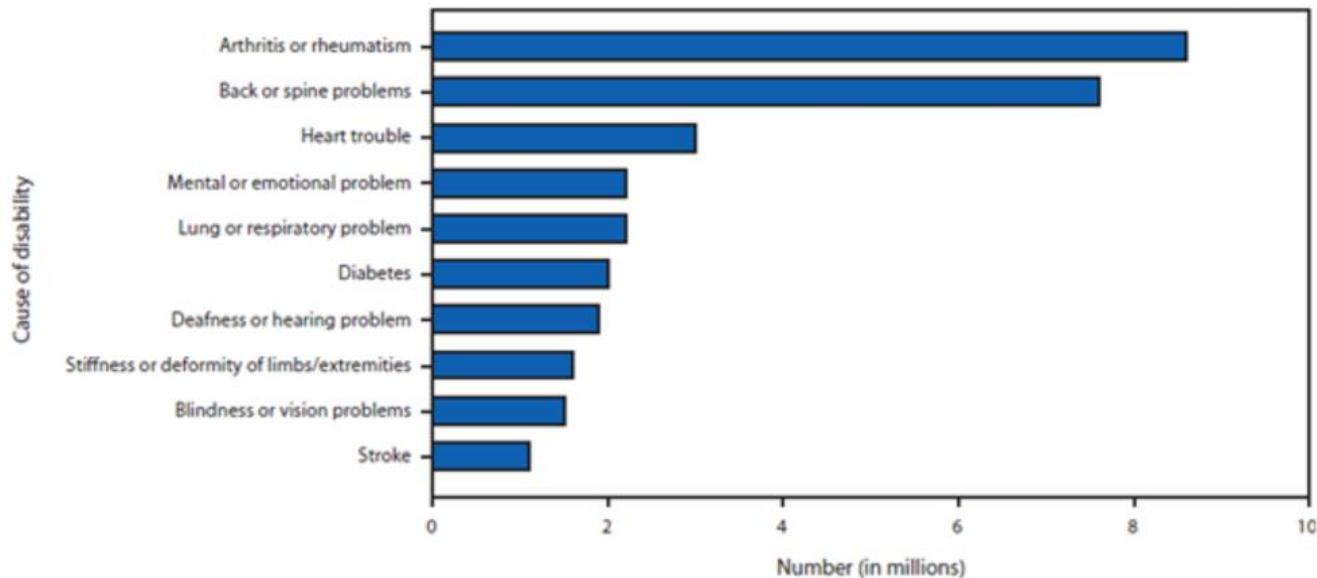
Epidural Steroid Injection



- Clinical Relevance of Back Pain
- Anatomy Review
- Physical Assessment
- Differential Diagnosis
- Pharmacologic Treatment Options
- Indications/Contraindications to ESI
- Equipment
- Technique
- Additives
 - Local Anesthetics
 - Steroids
- Outcomes
- Case Studies

Clinical Relevance

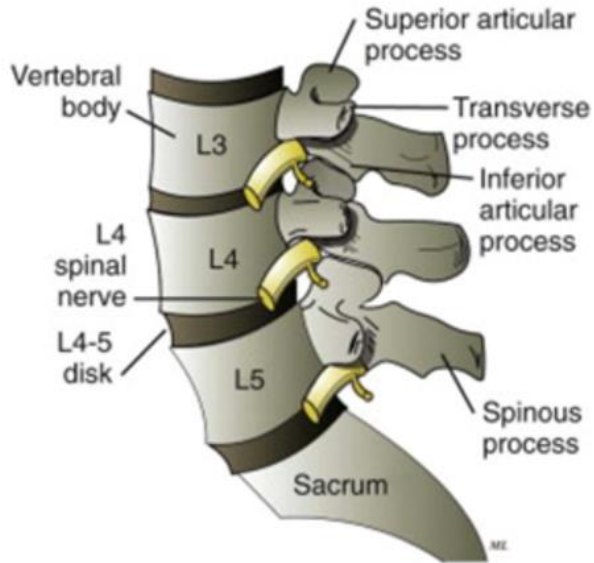
FIGURE 3. Top 10 causes of disability among adults – Survey of Income and Program Participation, United States, 2005



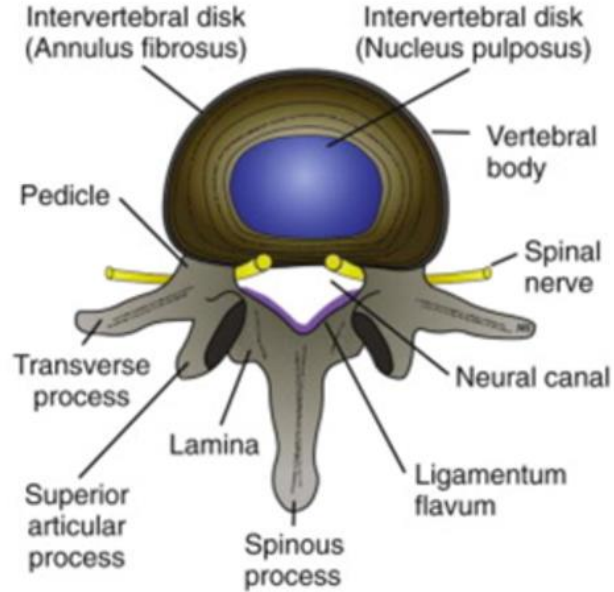
In **USA** it is the commonest cause of **limitation** of activity in those under the age of 45. (1)

The lifetime prevalence of non-specific (common) low back pain is estimated at **60–70%** (1)

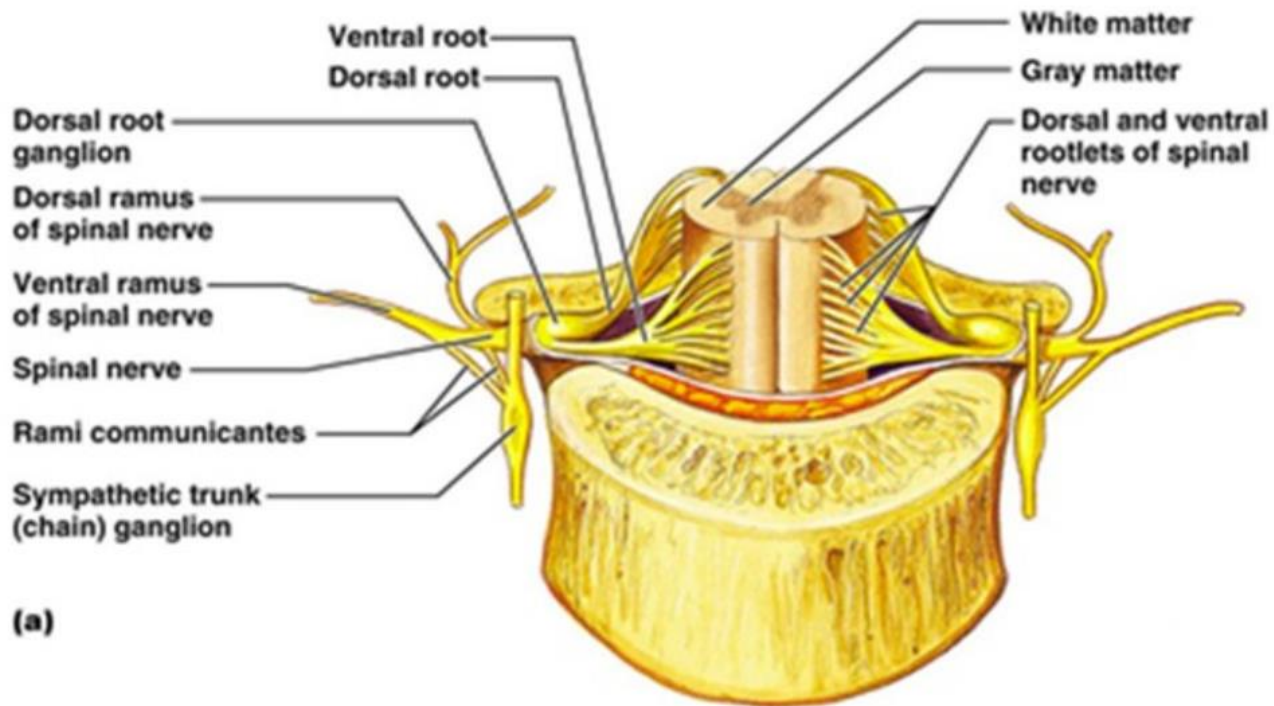
Anatomy Review

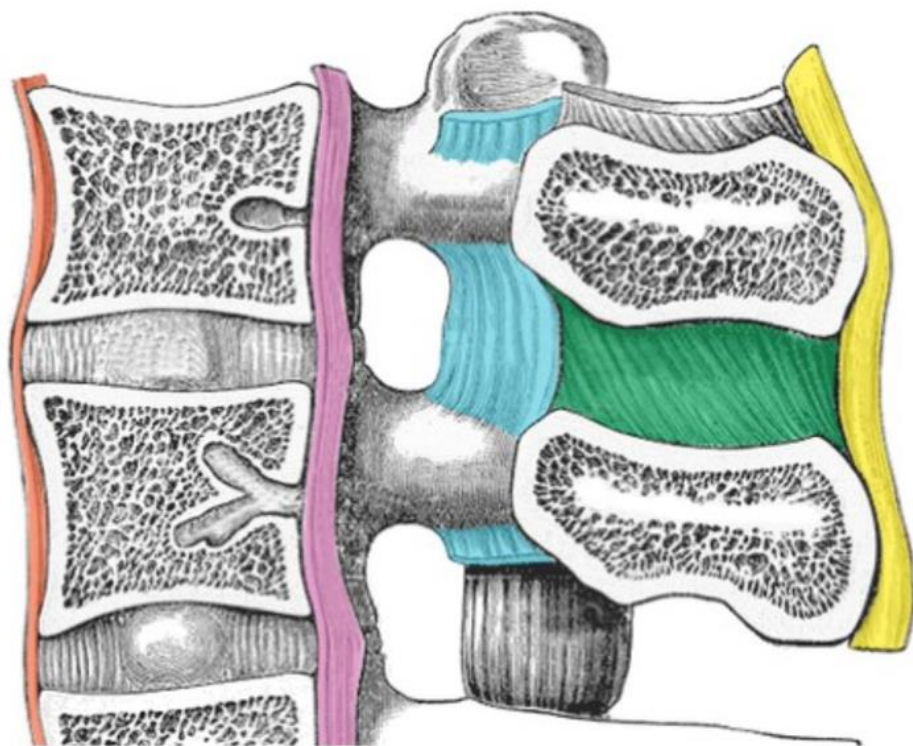


LATERAL VIEW

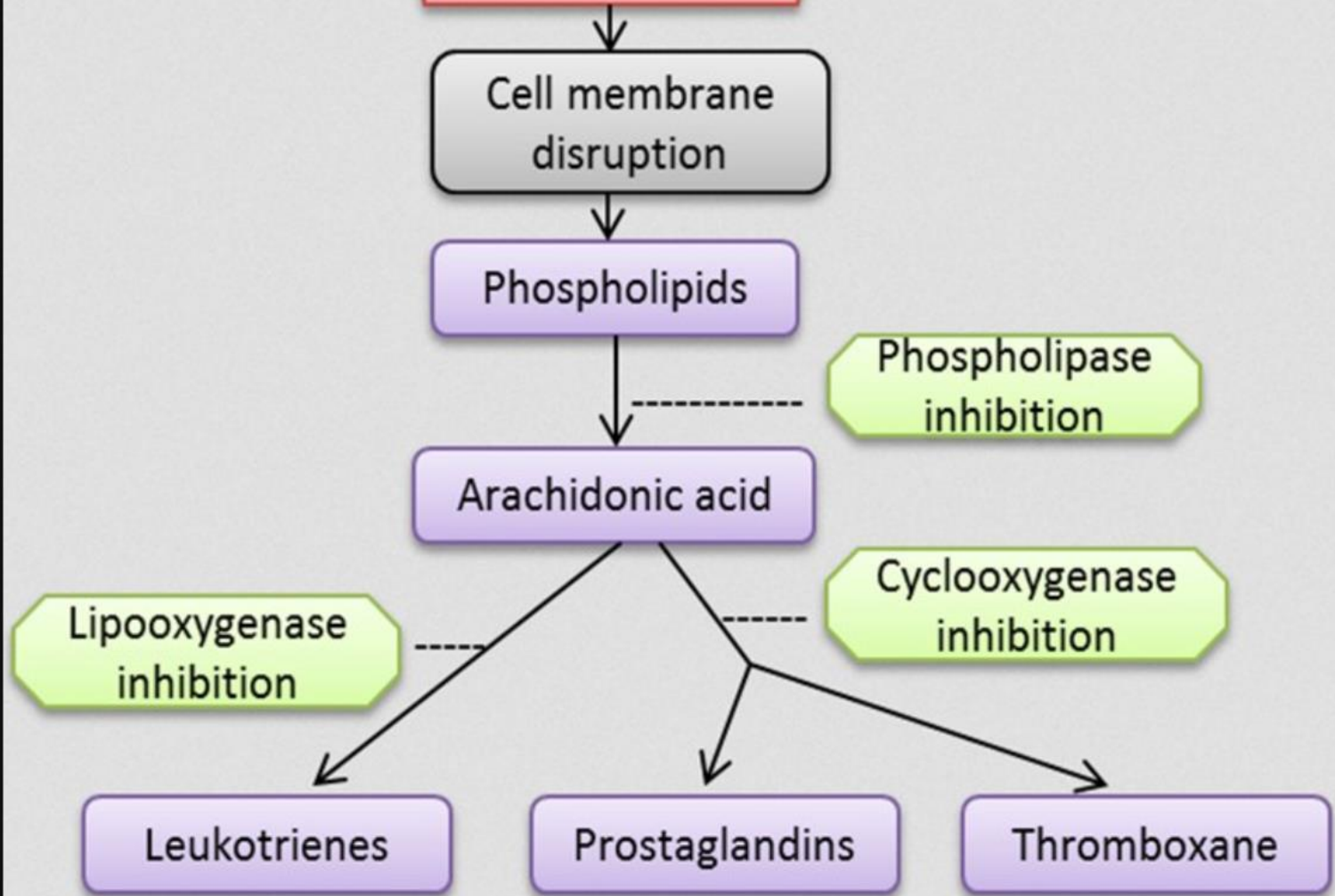


AXIAL VIEW





- Anterior longit. ligament**
- Posterior longit. ligament**
- Ligamentum flavum**
- Interspinous ligament**
- Nuchal ligament**



PMH

Trauma?

Cancer?

Psychiatric?

Past Surgical Hx

Medications

Steroid?

Family, Social & Systemic Review

Inherited disease?

Smoking?

Alcohol?

Social?

DDx

Mechanical

Lumbar strain or sprain

Herniated disc and spinal stenosis

Degenerative processes of disc and facet joint

Compression fracture

Spondylolysis

Systemic

Malignancy

Multiple myeloma

Metastatic carcinoma

Infection

Osteomyelitis

TB

Brucellosis

Inflammation
Ankylosing spondylitis

Referred

Acute Aneurysm

Pelvic disease

Prostatitis/Endometriosis

Renal disease

Stones / Pyelonephritis

GI disease

Pancreatitis

Cholecystitis

Oswestry Low Back Pain Questionnaire

- Section 1- Pain Intensity
- Section 2- Personal Care
- Section 3- Lifting
- Section 4- Walking
- Section 5- Sitting
- Section 6- Standing
- Section 7- Sleeping
- Section 8- Sex Life
- Section 9- Social Life
- Section 10- Traveling





Interpretation of scores

0% to 20%: minimal disability:	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.
21%-40%: moderate disability:	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
41%-60%: severe disability:	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
61%-80%: crippled:	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
81%-100%:	These patients are either bed-bound or exaggerating their symptoms.

Definition of Low Back Pain



- Non-radicular- Pain which does not radiate along a dermatome
- Radicular- Pain which radiates along a dermatome
- Radiculopathy- Pain present beyond source of spinal nerve root irritation.

Nerve root level	L3	L4	L5	S1
Pain location				
Stress test	R-SLR	R-SLR	SLR, C-SLR	SLR, C-SLR
Sensation ("X")	Medial thigh	Medial foot	Between 1st and 2nd toe	Lateral foot
Strength	Hip flexion	Knee extension	Big toe/ankle dorsiflexion	Ankle plantar flexion
Reflex	—	Patellar	—	Achilles

Root Affected	Pain Distribution	Sensory Distribution	Motor Distribution	Reflexes
S1	Posterior thigh Posterior leg Lateral foot	Posterolateral leg Lateral foot	Foot/toe plantar flexion Knee flexion Hip extension	Achilles
L5	Posterolateral thigh Lateral leg Medial foot	Lateral leg Dorsal foot Great toe	Foot/toe dorsiflexion Knee flexion Hip extension	
L4	Anterior thigh Medial leg	Medial leg Medial malleolus	Knee extension Hip flexion Hip adduction	Patellar
L3	Anterior thigh Knee	Distal anteromedial thigh	Knee extension Hip flexion Hip adduction	Patellar Thigh adductors
L2	Inguinal region Anterior thigh	Anterior thigh	Hip flexion Hip adduction	Cremasteric Thigh adductors

Neurological?

Red Flags!

"Red Flag" Symptoms in Brain Cancer = TUNA FISH

T = Trauma

U = Unexplained Weight Loss

N = Neurologic Symptoms

A = Age > 50

F = Fever

I = IVDU

S = Steroid Use

H = History of Cancer (Prostate, Renal, Breast, Lung)

Warrant additional
diagnostic imaging



Red Flag Diagnosis

Fracture



Cauda Equina Syndrome

Spinal Infection



Malignancy



Indicators for Serious Spinal Pathology

- Fever
- Unexplained weight loss
- Bladder and bowel dysfunction
- Rapidly progressing neurologic deficit
- Saddle anesthesia
- Abnormal gait
- History of carcinoma
- Abnormal presentation (thoracic pain)

Indications for ESI

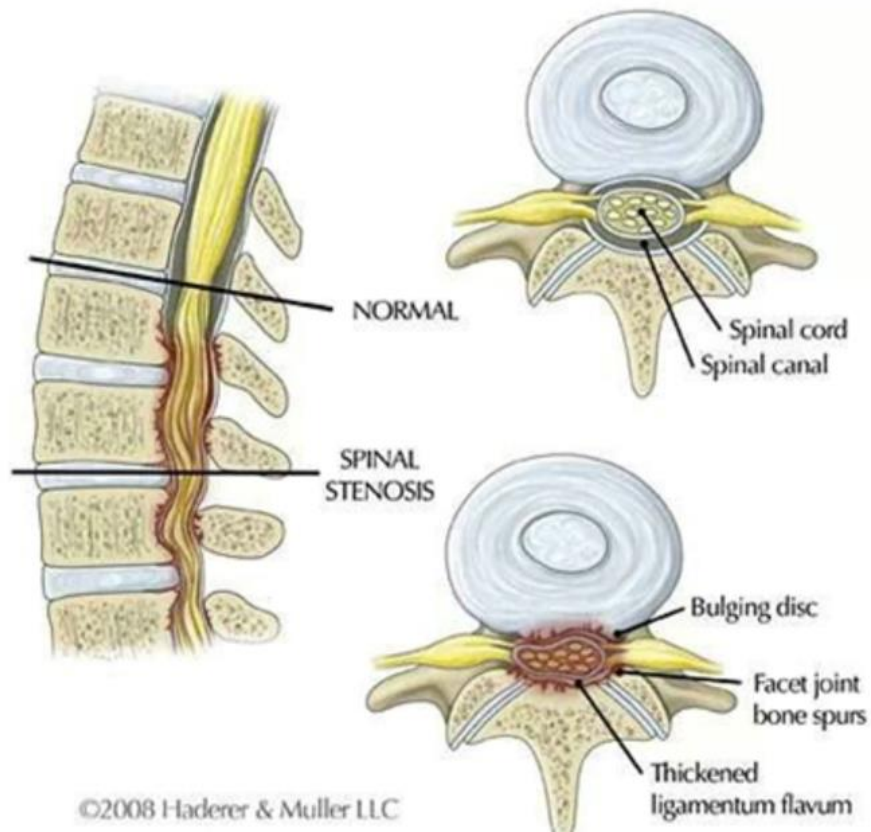
Herniation



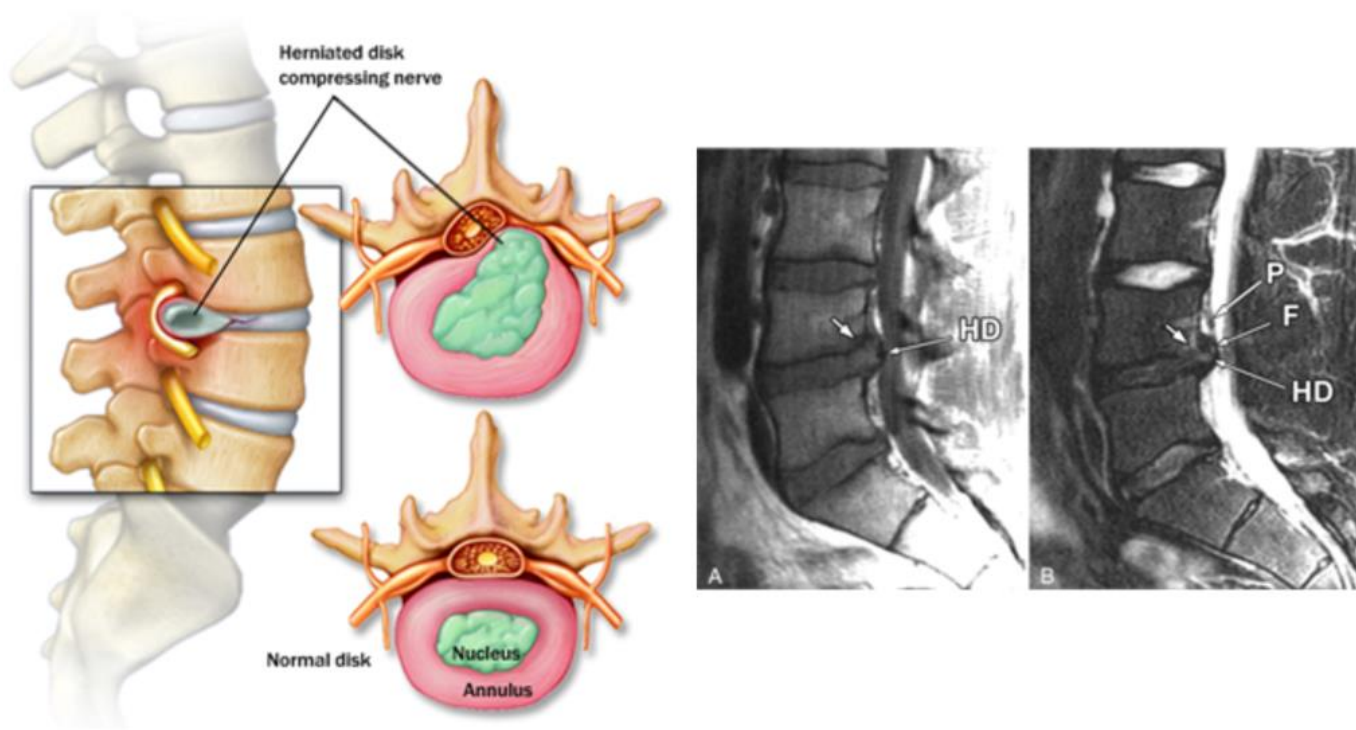
Spinal Stenosis



Spinal Stenosis



Herniated Disk



Locally Injectable Steroids

	Hydrocortisone	Methylprednisolone (Depo Medrol®)	Triamcinolone Acetonide (Kenalog®)	Betamethasone Sodium Phosphate and Acetate (Celestone® Soluspan®)
Relative antiinflammatory potency	1	5	5	25
pH	5.0–7.0	7–8	4.5–6.5	6.8–7.2
Onset	Fast	Slow	Moderate	Fast
Duration of action	Short	Intermediate	Intermediate	Long
Concentration mg/mL	50	40-80	20	6
Relative mineralocorticoid activity	2+	0	0	0

Best Outcome Suggested Steroid Doses

Type of Injection	Depo Medrol® (40 mg/mL)	Celestone® Soluspan® (6 mg/mL)
Cervical, thoracic and lumbar transforaminal	2.4 cc	3.0 cc
Cervical nerve root block	1.4–1.6 cc	2 cc
Lumbar nerve root block	1.6 cc	2 cc
Cervical and lumbar intra-articular facet joint	0.8 cc	0.8 cc
Sacroiliac intra-articular	1.6 cc	2.0 cc

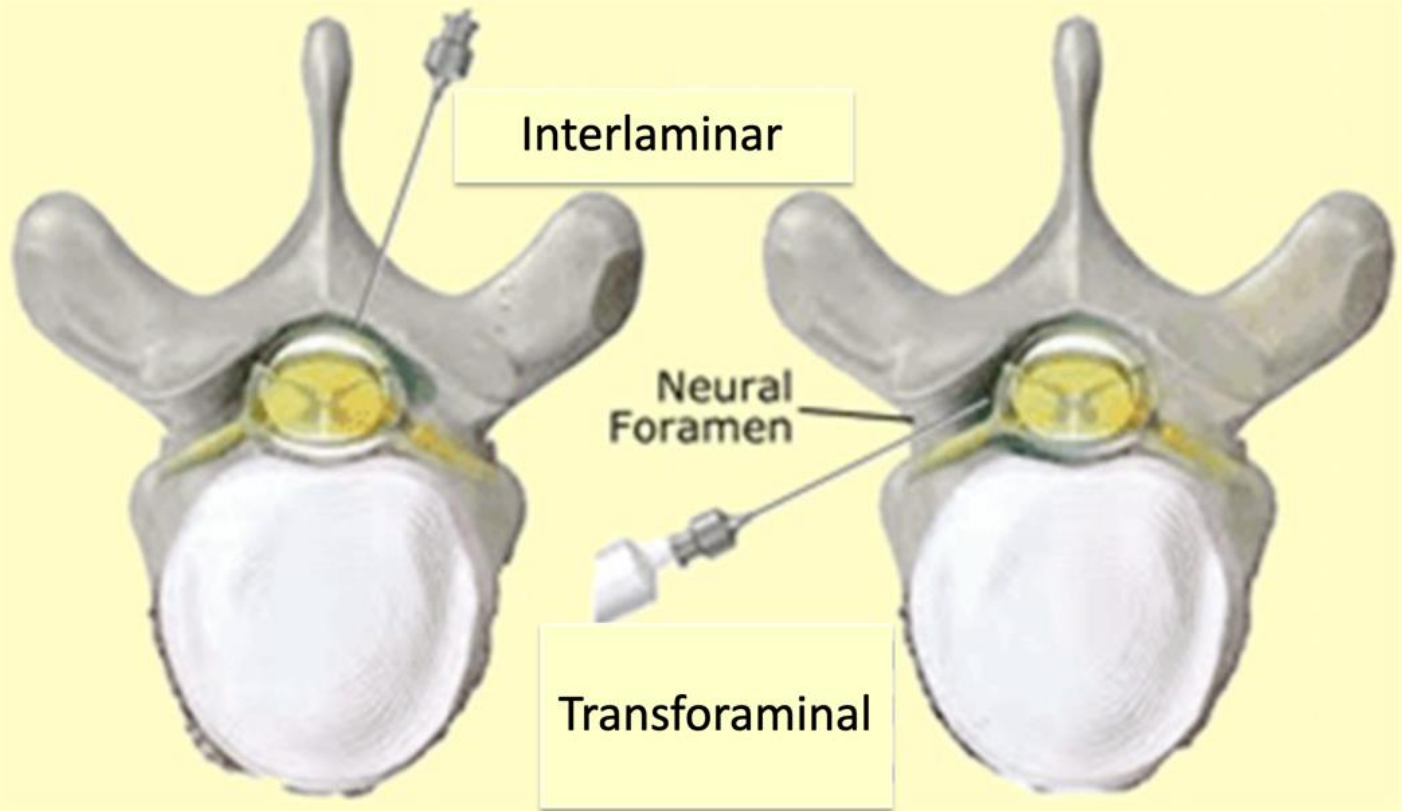
Additives to Spinal Injections

Local Anesthetics



Steroids



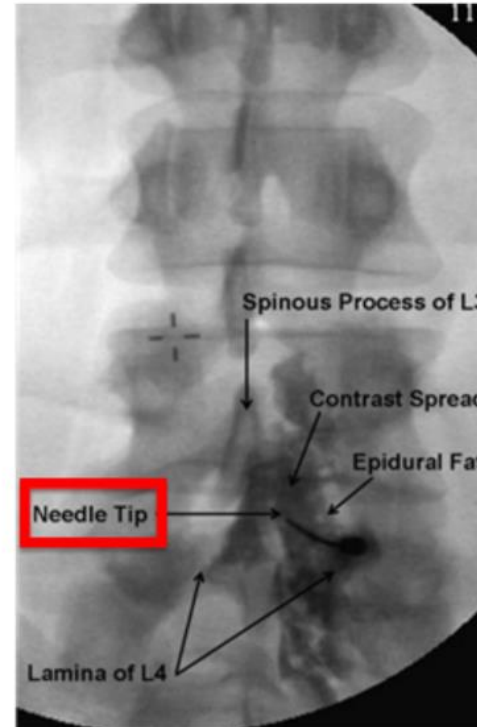
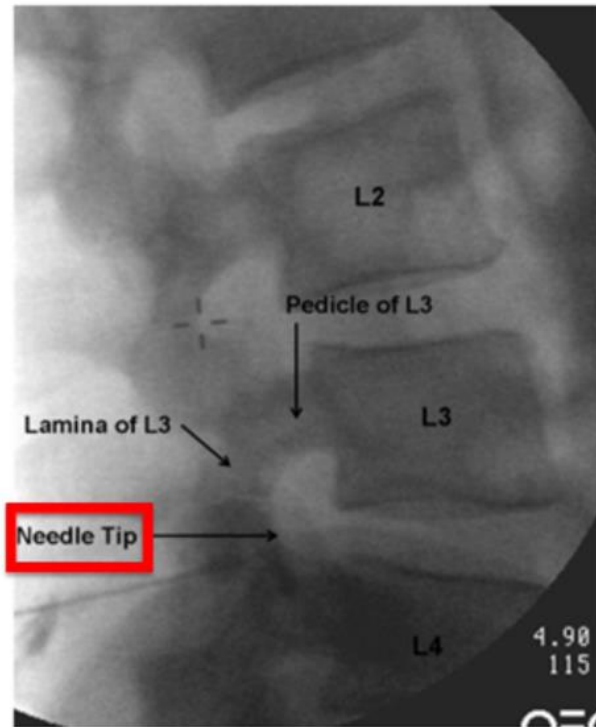


Interlaminar

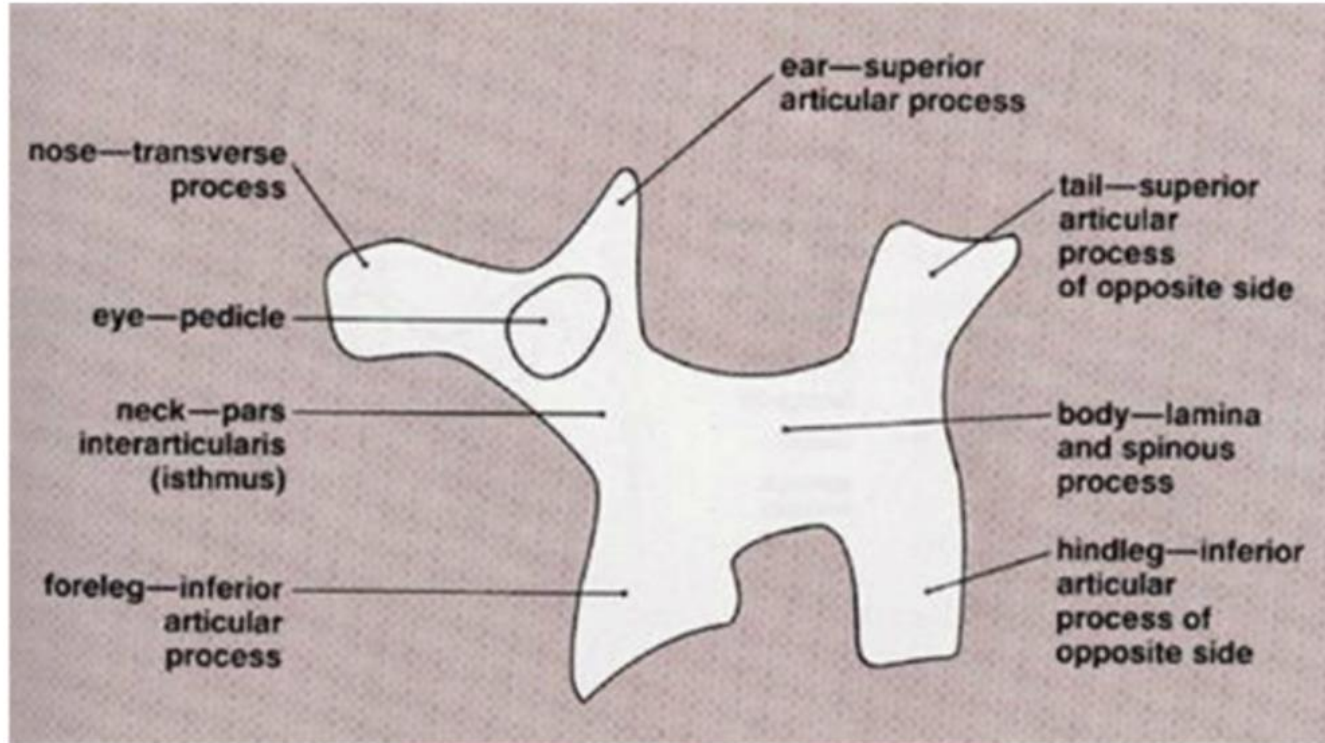
Neural Foramen

Transforaminal

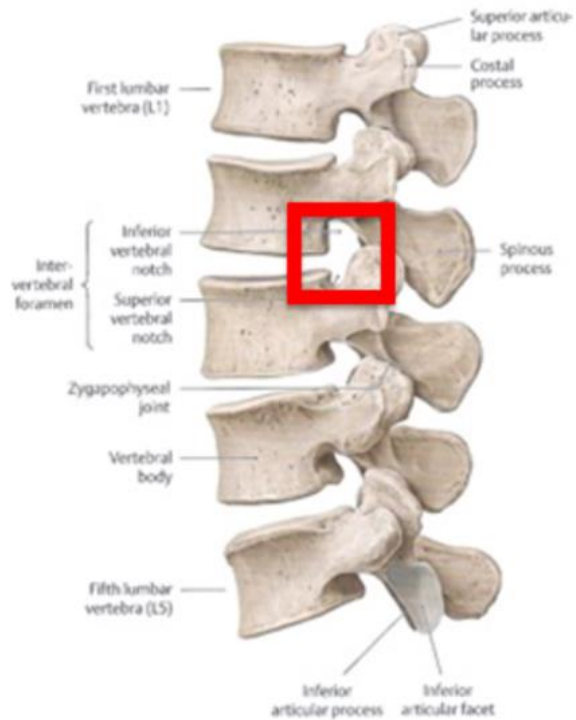
Interlaminar Approach



Scotty Dog View

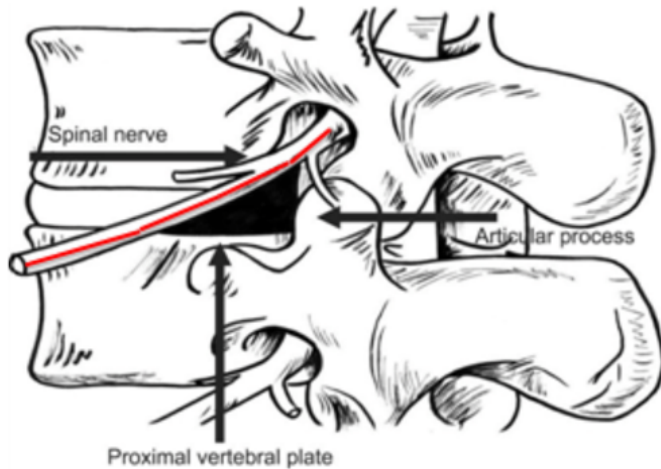


Transforaminal Approach

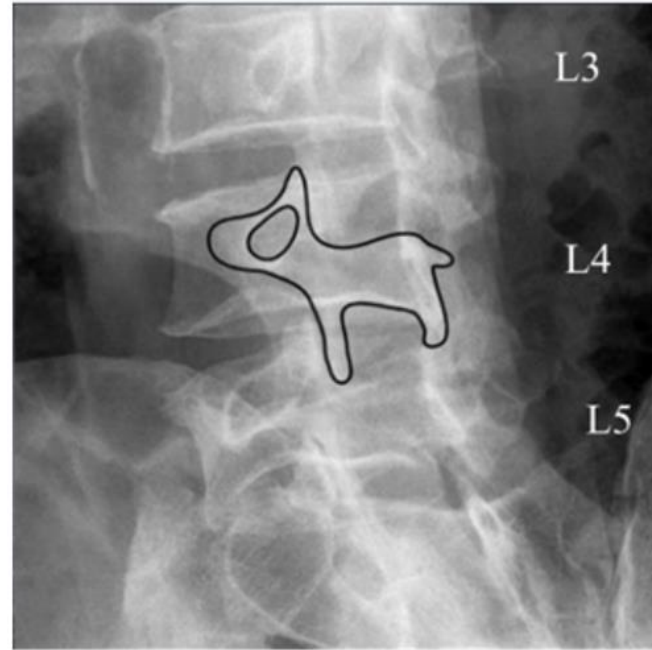
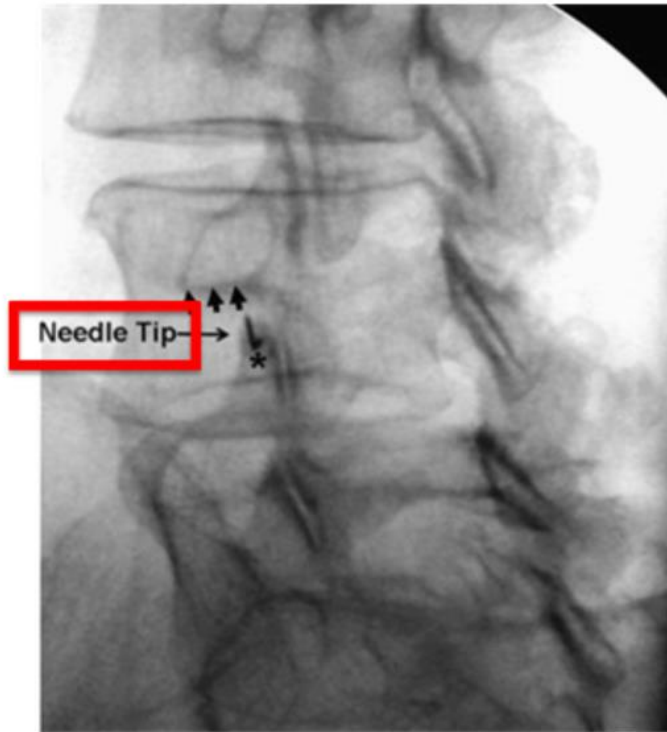


Transforaminal Approach

Kambin's Triangle



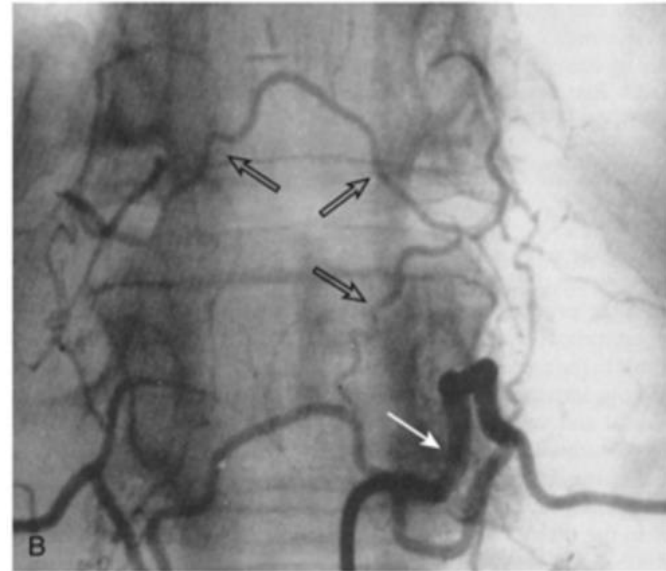
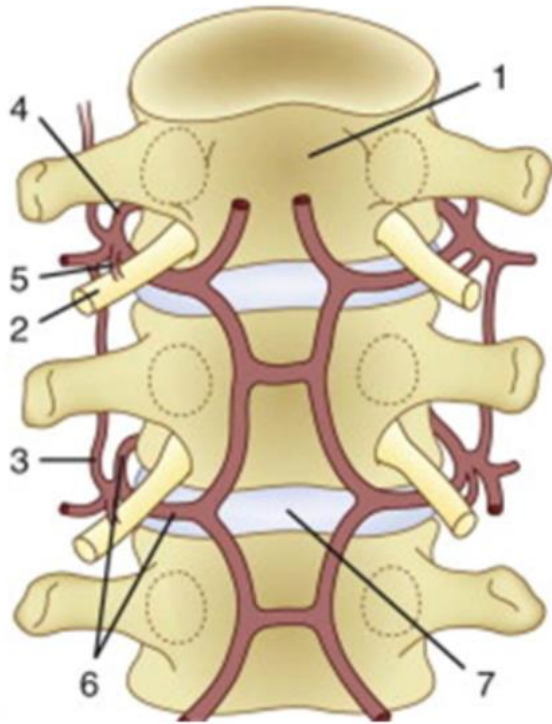
Transforaminal Approach



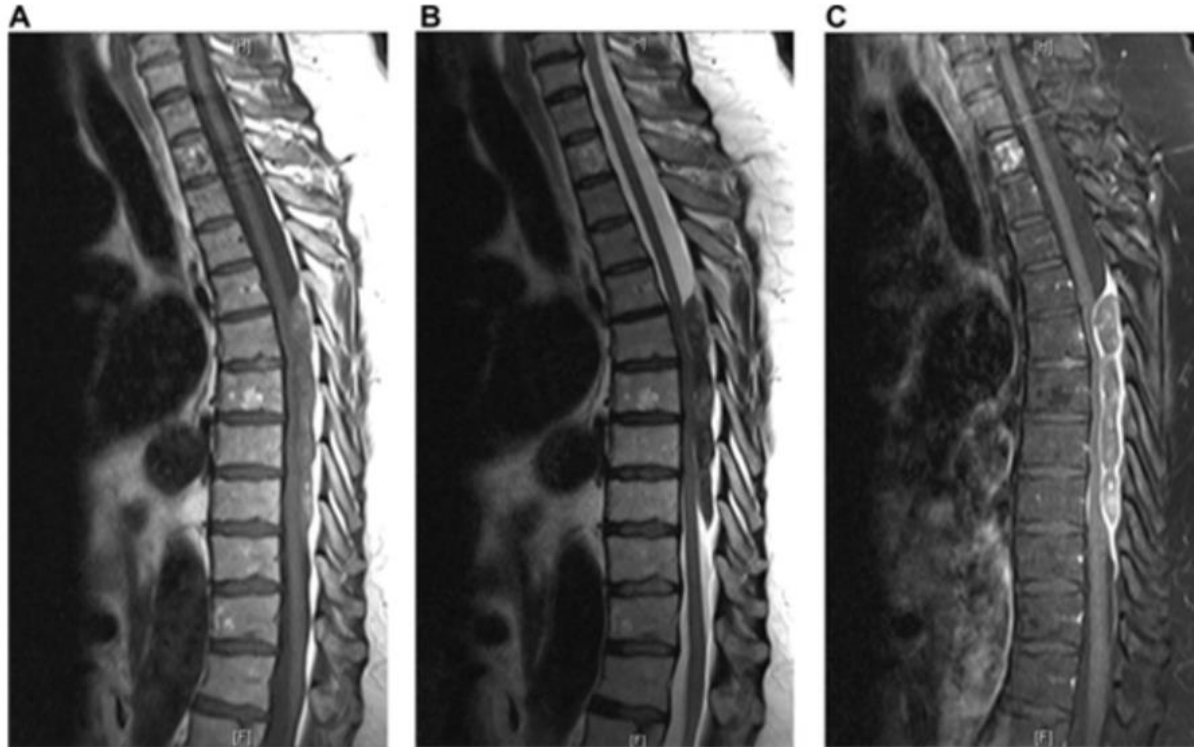
Factors Associated with Poor Outcomes after ESI

- Smoking
- Disability and lack of employment
- Prolonged duration
- Constant nonradicular pain
- Sleep and social disruption
- Psychologic factors

Arterial Supply

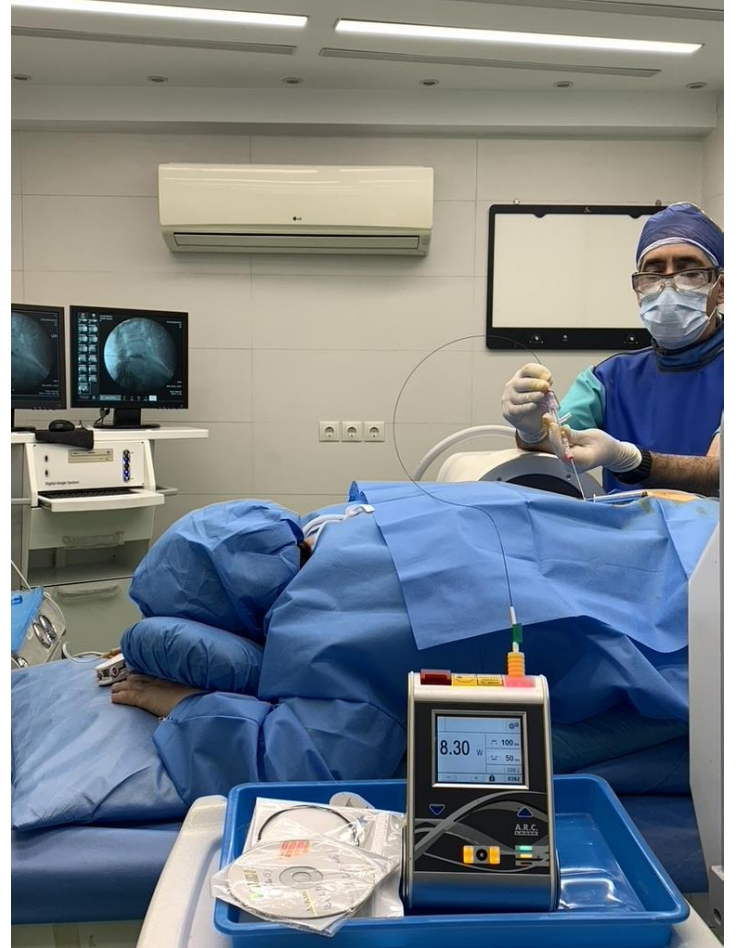
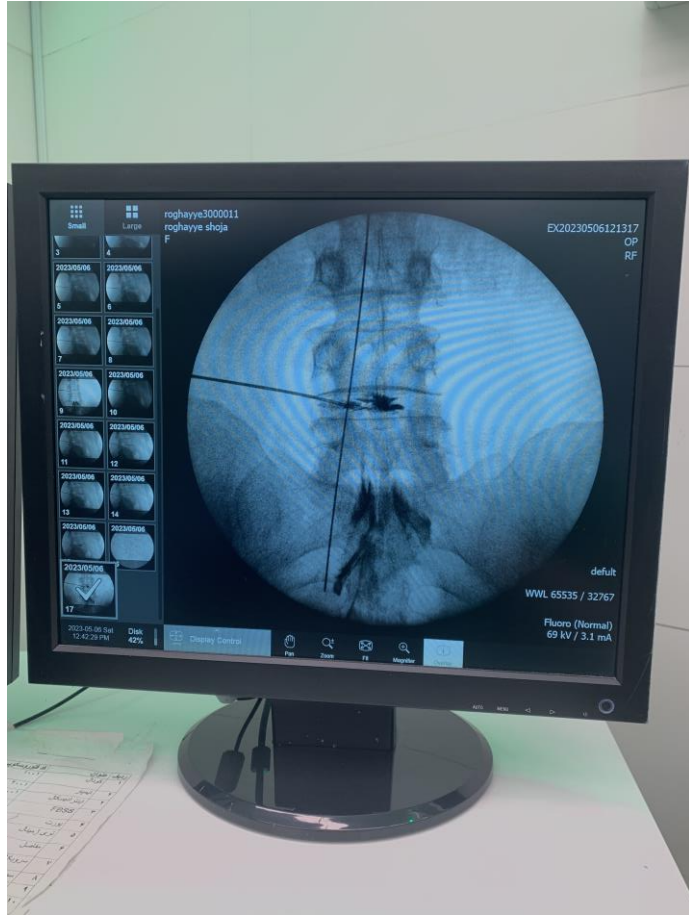


Contraindications



Equipment





Thank
you