



衛生福利部雙和醫院
(委託臺北醫學大學興建經營)
Taipei Medical University · Shuang Ho Hospital,
Ministry of Health and Welfare



Interventional management for truncal pain & lumbar pain

Chen, Kuo-Chih M.D.

Emergency Department,

Shuang Ho Hospital, New Taipei City, Taiwan

juice119@gmail.com / POCUSacademy.com

Chen, Kuo-Chih



Taiwan Pain Society Specialist
TSEM ultrasound instructor
TSUM instructor
WINFOCUS director / instructor
Certified Interventional Pain Sonologist

Emergency & Critical care
Advanced Intervention
Acute Pain Management

PAIN definition

“an unpleasant **sensory** & **emotional** experience associated with actual or potential tissue damage or described in terms of such damage”

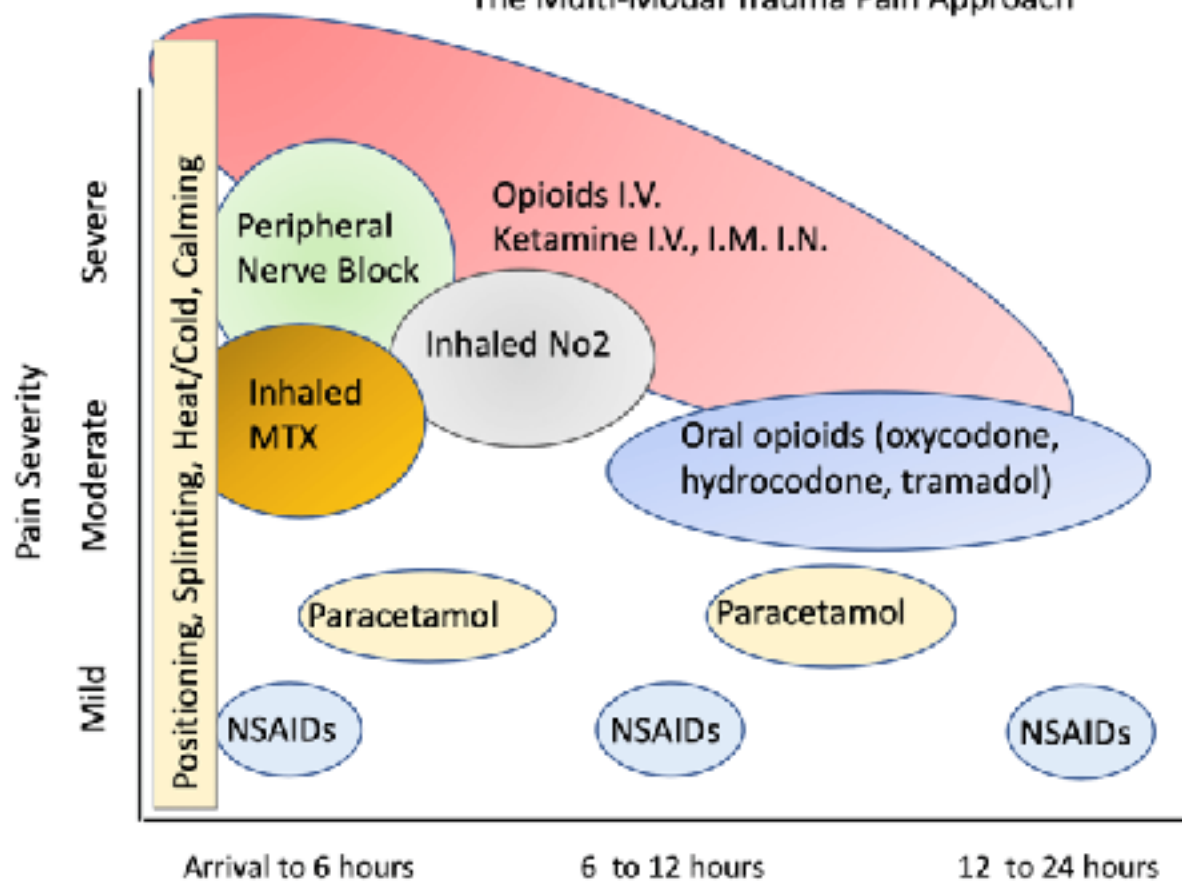
International Association for the Study of Pain (IASP) 1979

Review

The Pain Management of Trauma Patients in the Emergency Department

Andrea Fabbri ^{1,*}, Antonio Voza ², Alessandro Riccardi ³, Sossio Serra ⁴
and Fabio De Iaco ⁵ on behalf of the Study and Research Center of the Italian Society of Emergency Medicine (SIMEU)

The Multi-Modal Trauma Pain Approach





Core Applications (2023 ACEP Emergency Ultrasound Guidelines)
15項急診超音波核心應用

陳國智醫師

Aorta

DVT

Trauma

Thoracic/Airway

Cardia/HD assessment

Procedural Guidance

US-guided NB

Testicular

Ocular

Skin & Soft tissue

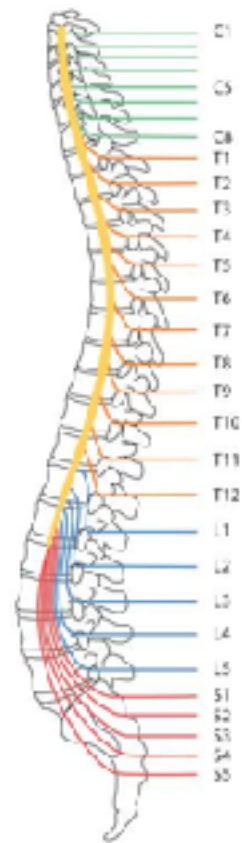
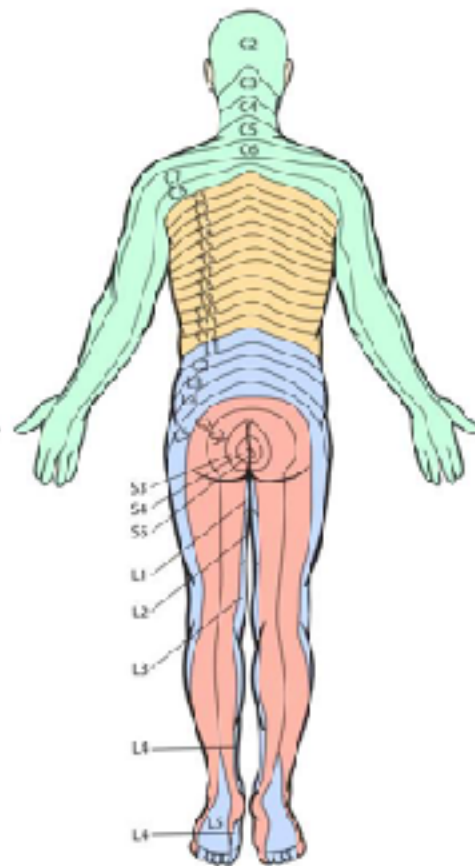
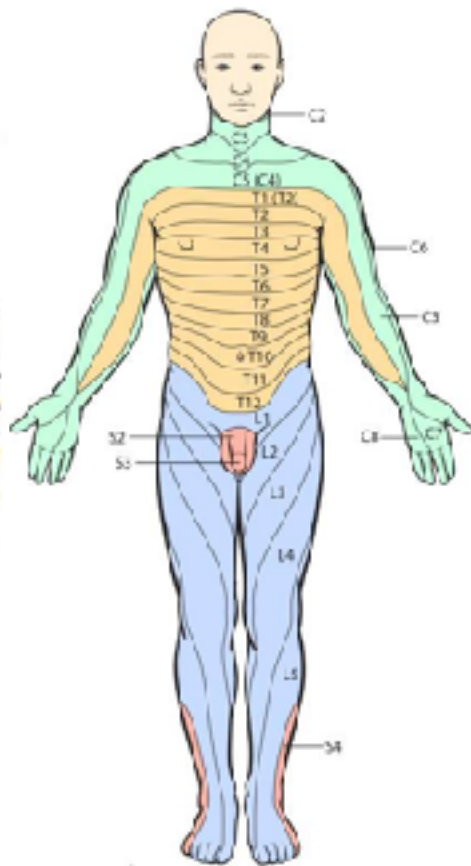
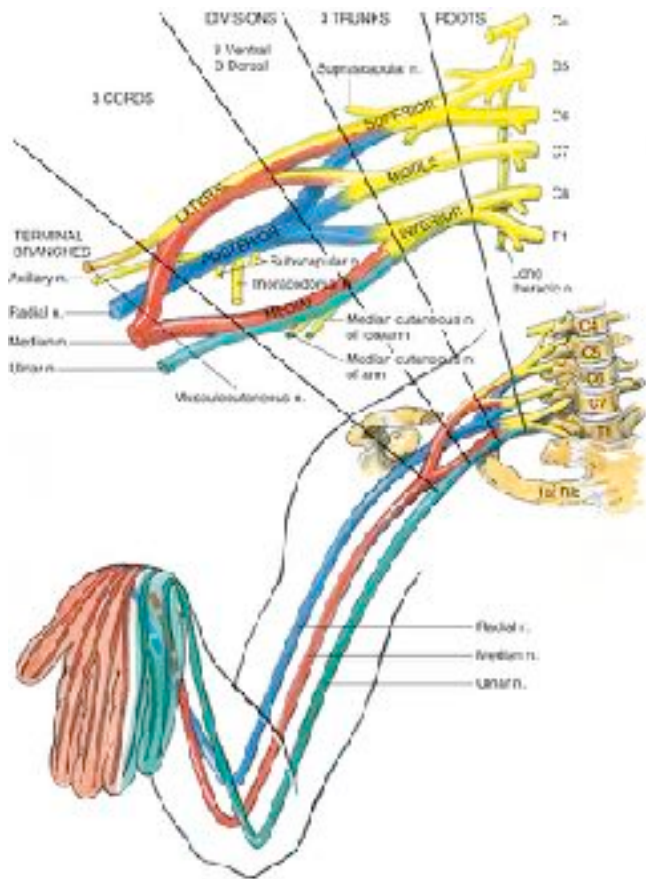
Hepatobiliary

Urinary tract

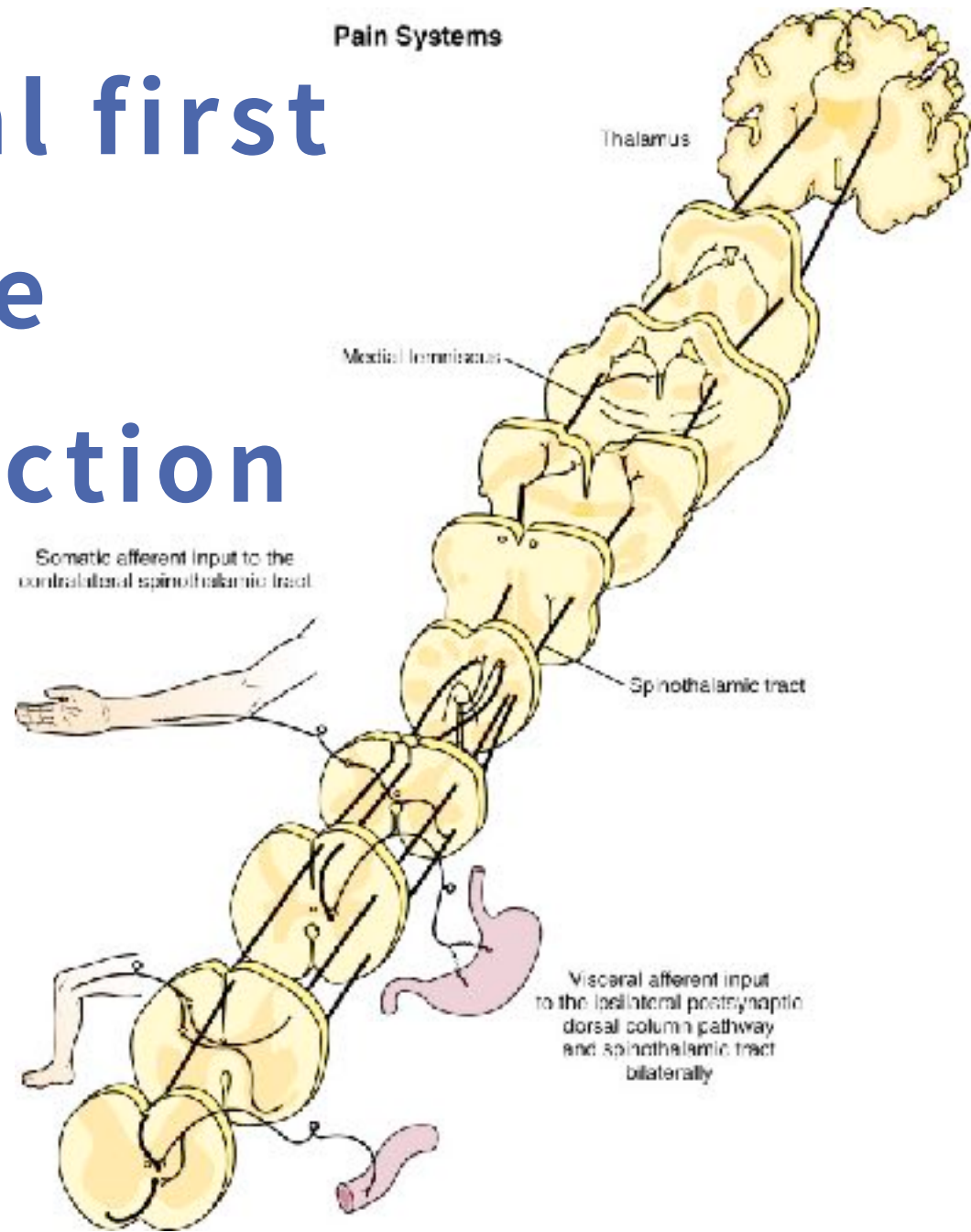
Pregnancy

Bowel

MSK



Peripheral first Safe plane Pain reduction



Pain management in the emergency department: a clinical review

Sergey M. Motov¹, Katherine Vlasica², Igor Middlebrook², Alexis LaPietra²

¹Department of Emergency Medicine, Maimonides Medical Center, Brooklyn, NY, USA

²Department of Emergency Medicine, St. Joseph's Hospital and Medical Center, Patterson, NJ, USA

Upper extremity UGRA

Interscalene	Shoulder dislocation Lacerations to upper arm/deltoid Humerus fractures	Similar analgesic efficacy and satisfaction with procedural sedation	Avoid in patients who cannot tolerate unilateral phrenic nerve paralysis Avoid transverse cervical artery Inconsistent block below mid humerus
Supraclavicular	Any upper limb injury below the shoulder Abscess drainage	Broad coverage of upper limb	Avoid in patients who cannot tolerate unilateral phrenic nerve paralysis
Infraclavicular	Elbow dislocations Forearms fractures Wrist fractures	Lesser systemic absorption Low risk of phrenic nerve paralysis	Hyperacute needle approach
Axillary	Elbow dislocations Forearms fractures Wrist fractures	Lesser systemic absorption Low risk of phrenic nerve paralysis	Multiple redirections
Median	Volar lateral hand to wrist, distal phalanx of digits 1–3		
Radial	Distal radius fracture Dorsal/lateral hand from DIP to wrist		
Ulnar	Boxer's fracture Lacerations to medial aspect of hand		

Trunk & neck			
Superficial cervical plexus	U placement Clavicle fracture Neck and ear lacerations from mandible to clavicle Neck abscess	Good alternative to the traditional "diamond" field ear block	Placement too medial will reach the brachial plexus
Serratus anterior	Rib fractures Chest tube placement Zoster dermatomal rash (T2-9)	Easily performed in prone position/ C-spine immobilization superficial	Patchy posterior and axillary coverage
Erector spinae	Rib fractures Chest tube placement Zoster dermatomal rash thoracic/lumbar Vertebral compression fractures Renal colic	Better coverage in posterior rib fractures Transverse processes provide a good target and bony backdrop for safety	Pneumothorax
Transversus abdominus plane	Abdominal wall lacerations/abscesses below umbilicus Hernia reductions Zoster rashes	Simple to perform	Will not cover visceral pain
Lower extremity			
Fascia iliaca block	Fractures of hip, neck, shaft of femur Abscess/lacerations anterior thigh Hip dislocations	Performing this block above the inguinal ligament produces higher success rates	
Pericapsular nerve group block	Intracapsular hip fractures Pubic rami fractures Acetabular fractures	Motor sparing Low risk of intravascular injection Low volume Good bony backdrop for safety	
Femoral nerve	Femoral shaft fractures Patella fractures/dislocations Proximal tibia fractures Abscess/lacerations anterior thigh	Good vascular landmark	Intravascular injection Injection above fascia iliaca
Sciatic nerve at popliteal fossa	Leg, ankle and foot fractures/dislocations Spare medial malleolus and medial leg	"Spinal of the leg" Tilt probe to the toes for optimal anisotropy	Compartment syndrome controversy Intrafascicular injection
Posterior tibial	Lacerations and foreign body to sole of foot Calcaneal fracture	Good vascular landmark	

Trunk & neck

Superficial cervical plexus	IJ placement Clavicle fracture Neck and ear lacerations from mandible to clavicle Neck abscess
Serratus anterior	Rib fractures Chest tube placement Zoster dermatomal rash (T2-9)
Erector spinae	Rib fractures Chest tube placement Zoster dermatomal rash thoracic/lumbar Vertebral compression fractures Renal colic
Transversus abdominus plane	Abdominal wall lacerations/abscesses below umbilicus Hernia reductions Zoster rashes



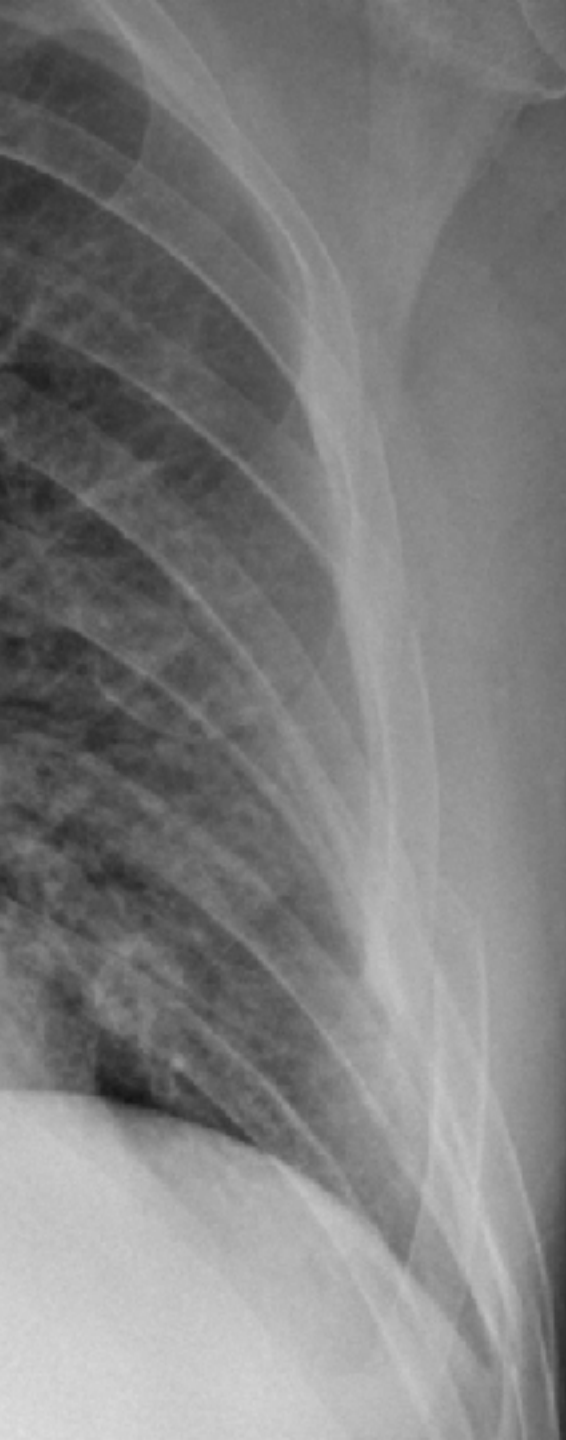
Ultrasound for Interventional Pain Management

An Illustrated Procedural Guide

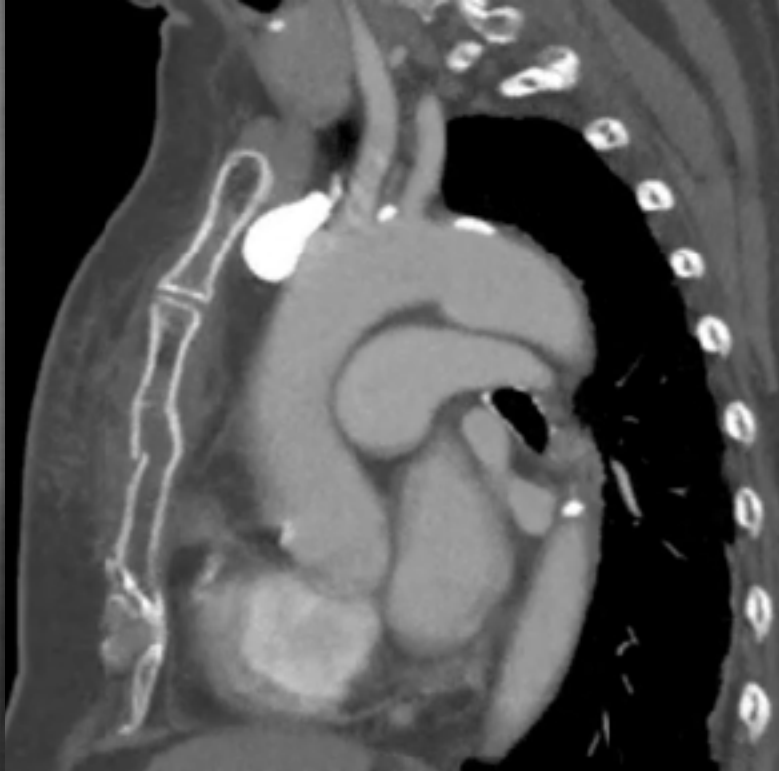
Philip Peng
Roderick Finlayson
Sang Hoon Lee
Anuj Bhatia
Editors

The Ultimate Guide to Point-of-Care Ultrasound-Guided Procedures

Srikar Adhikari
Michael Blaiwas
Editors



7/06/07
4:15



Intercostal Block

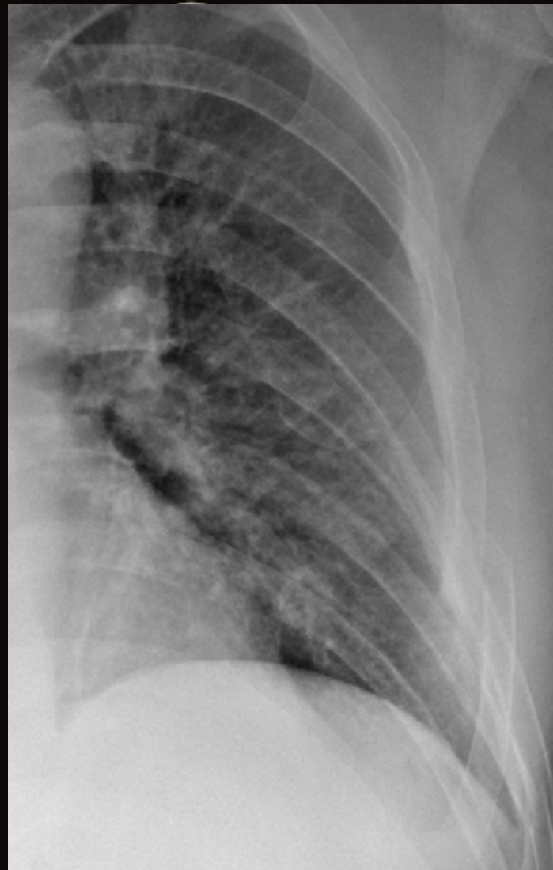
▶▶ QUICK FACTS

Indications: Analgesia for rib fractures, postsurgical analgesia for chest and upper abdominal surgery (i.e., thoracotomy, thoracostomy, mastectomy, gastrostomy, and cholecystectomy), herpes zoster or post-herpetic neuralgia.

Goal: Local anesthetic spread in the intercostal sulcus around the intercostal nerve.

Patient position: An intercostal nerve block can be performed with the patient in the seated, lateral decubitus, or prone positions.

Landmarks: The US transducer is placed parasagittal to identify the ribs.



Linear



22-25 gauge,
3-5 cm



3-5 mL at each level



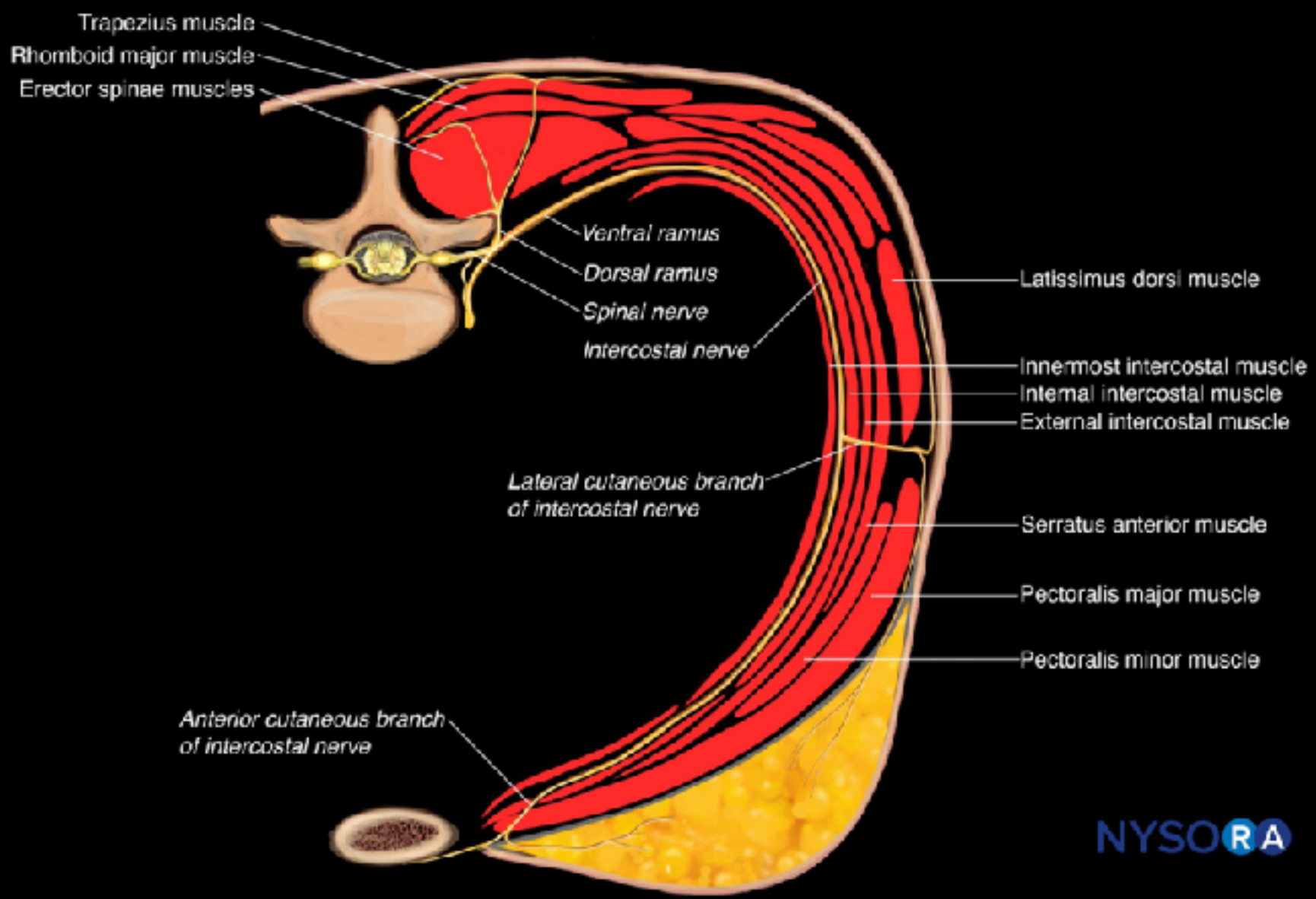
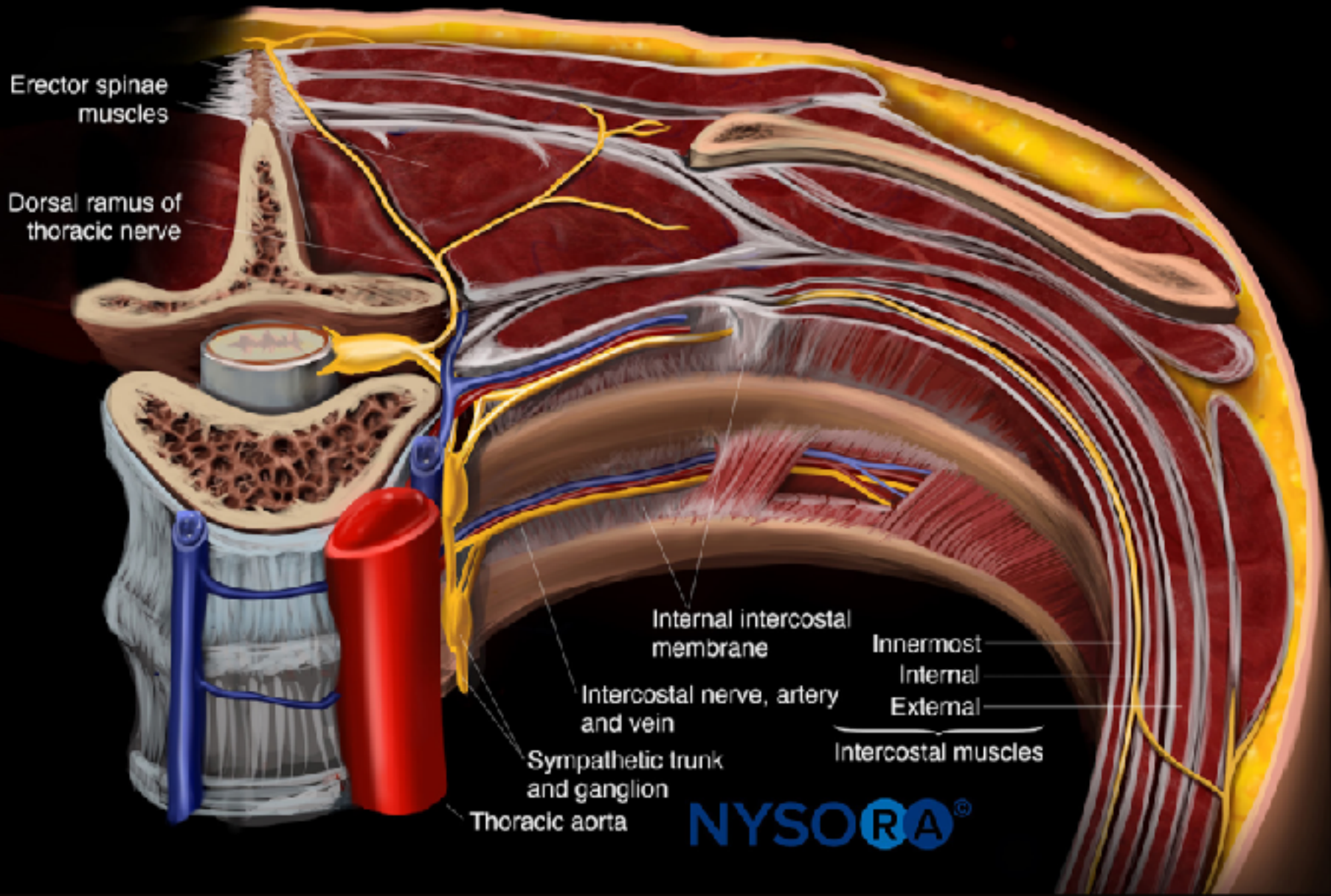
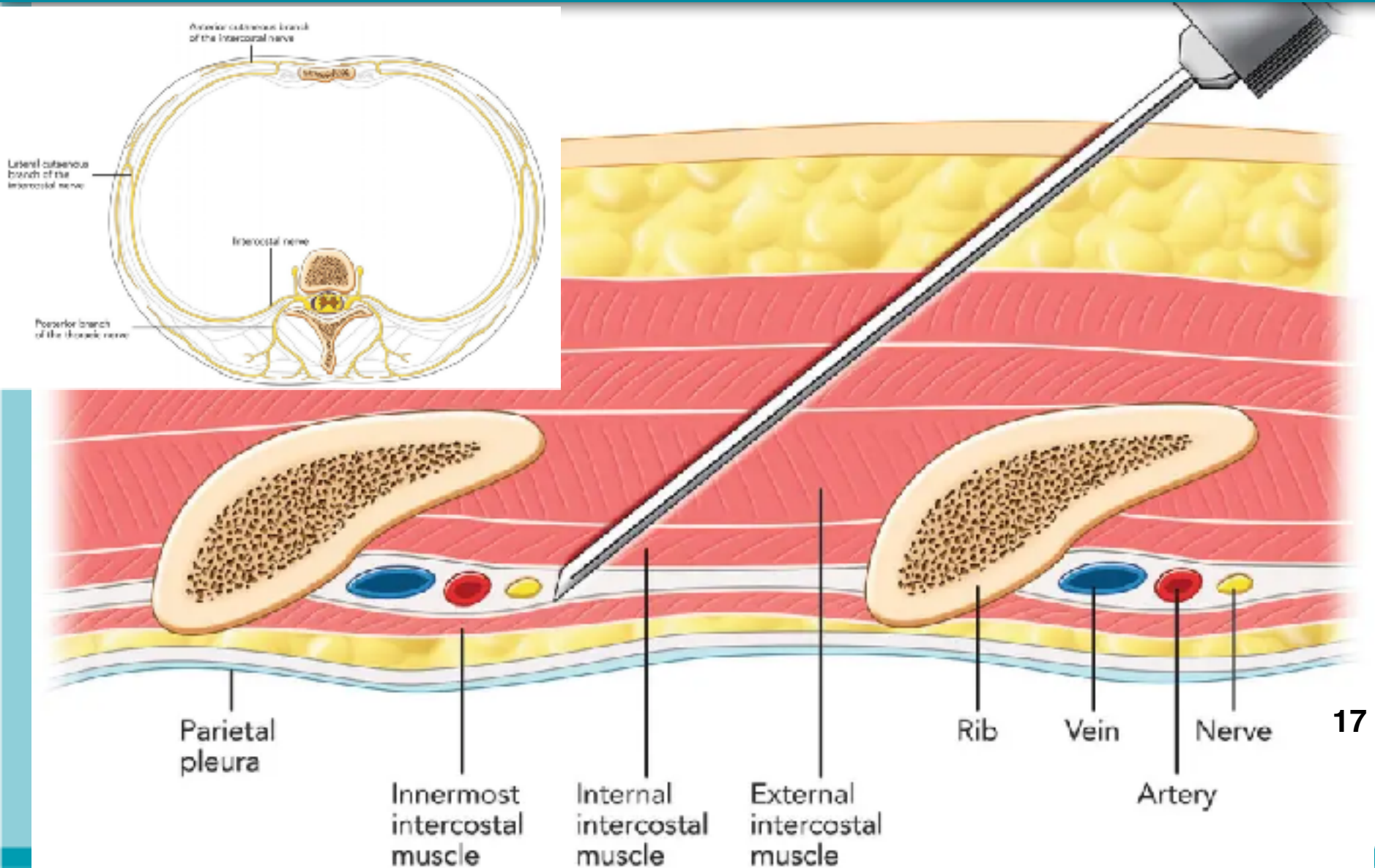


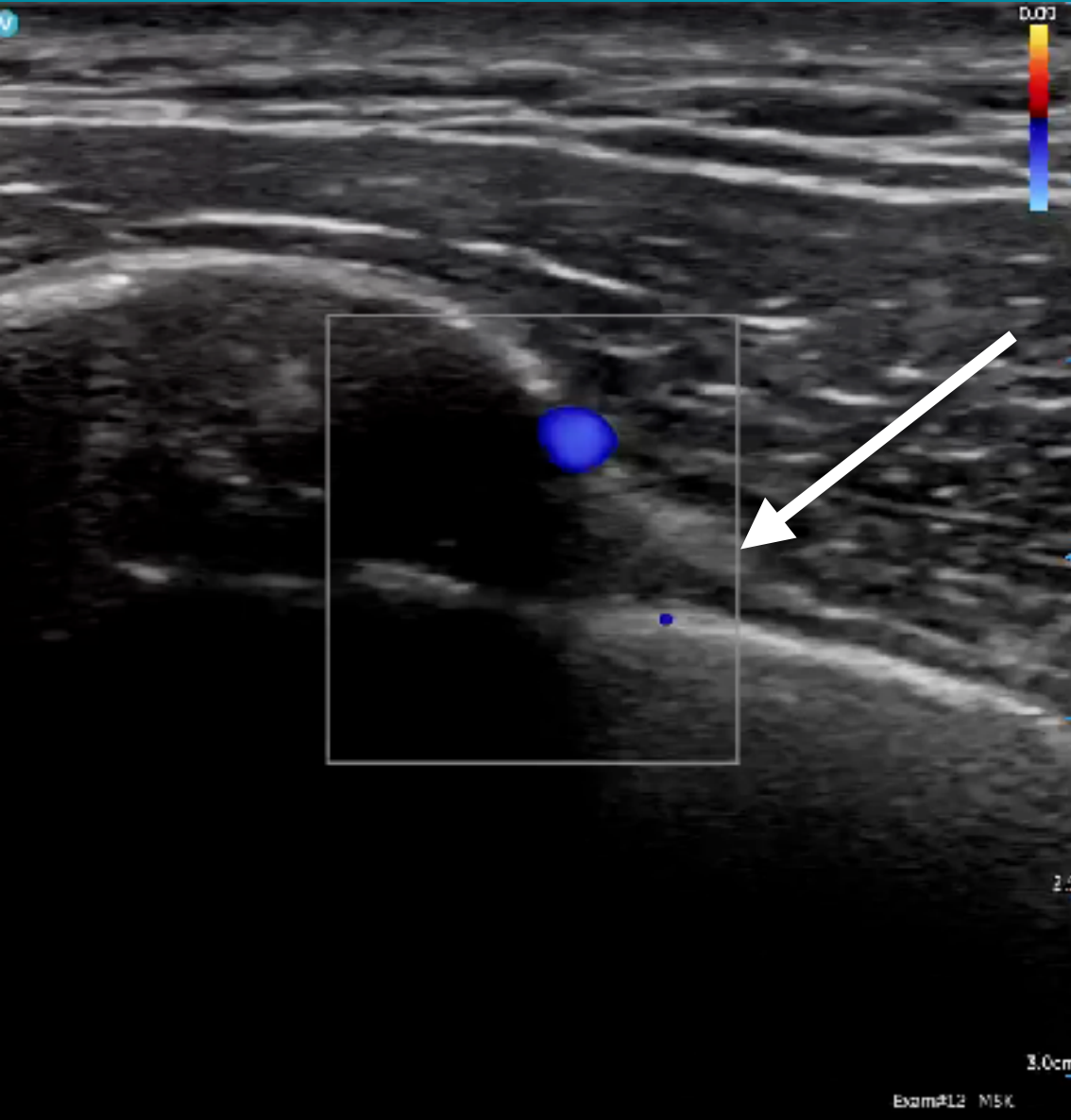
Fig-1. Anatomy of the thoracic spinal and intercostal nerves.



Intercostal nerve block



Intercostal nerve block



Correct level

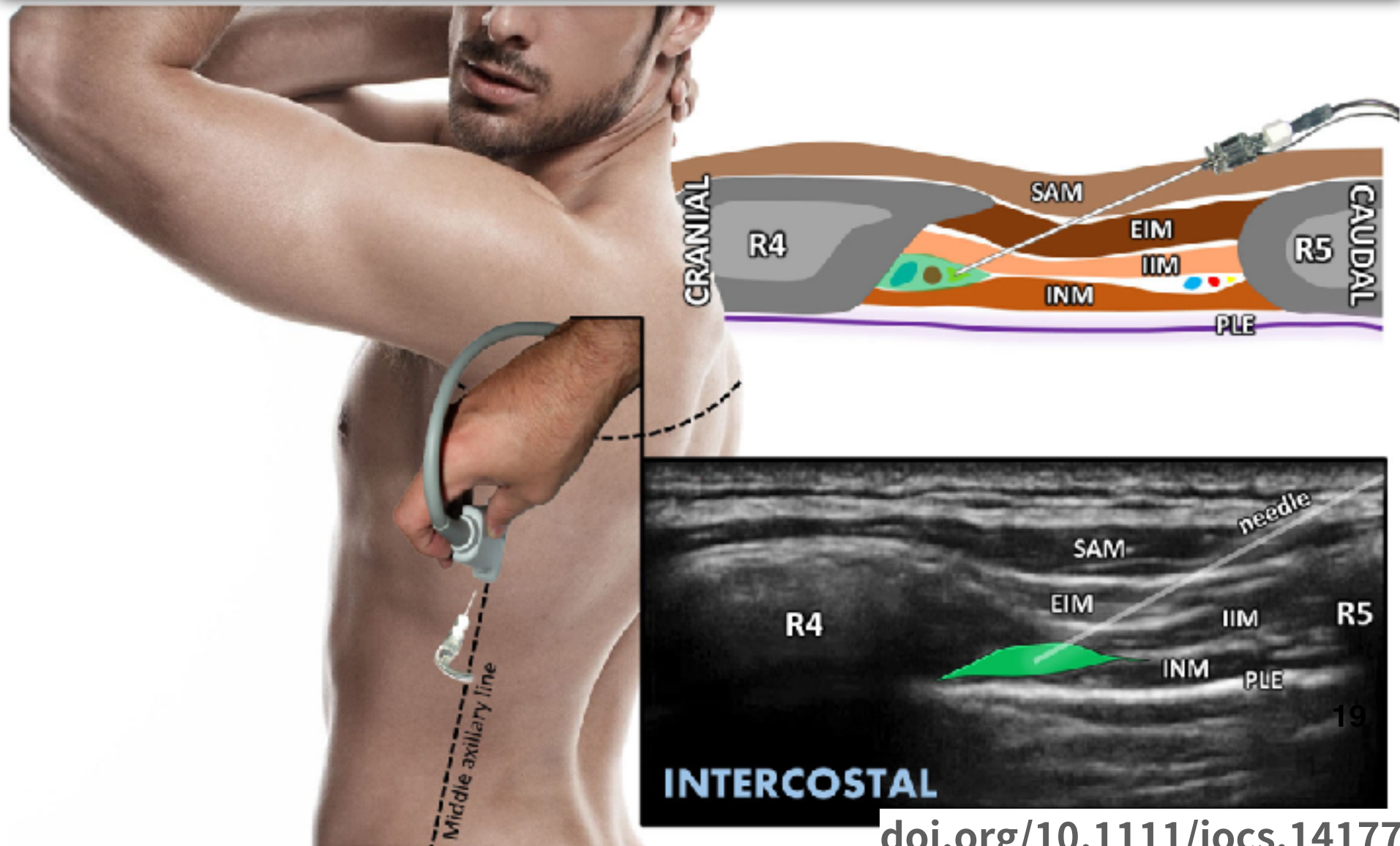
Inferior border

3-5ml/IC level

Hydrodissection

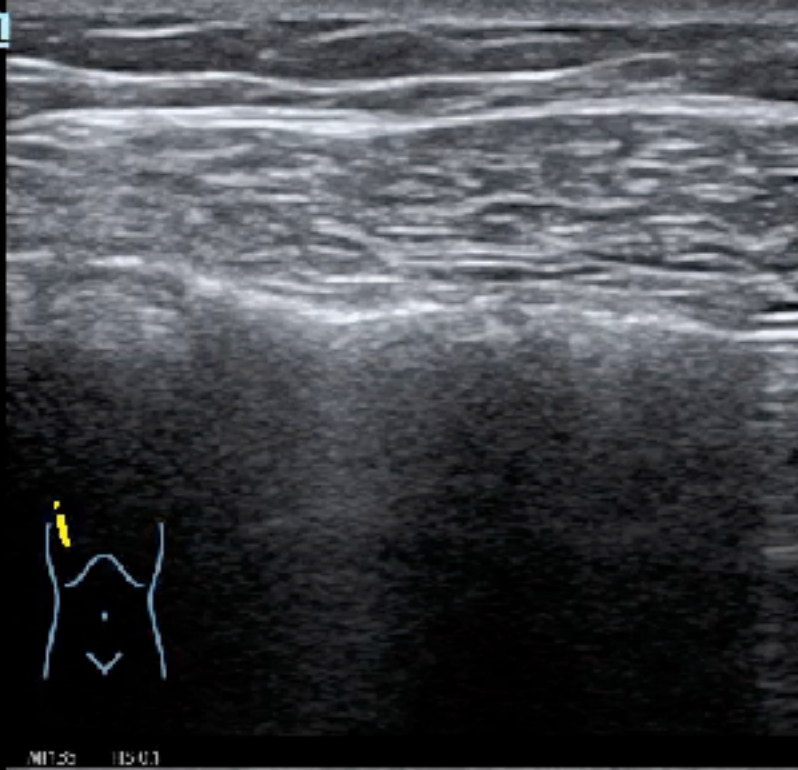
Consider 3 levels

Intercostal nerve block





U
F-F5.0
DR 10.0
FR 71
D 7.5
G A 8



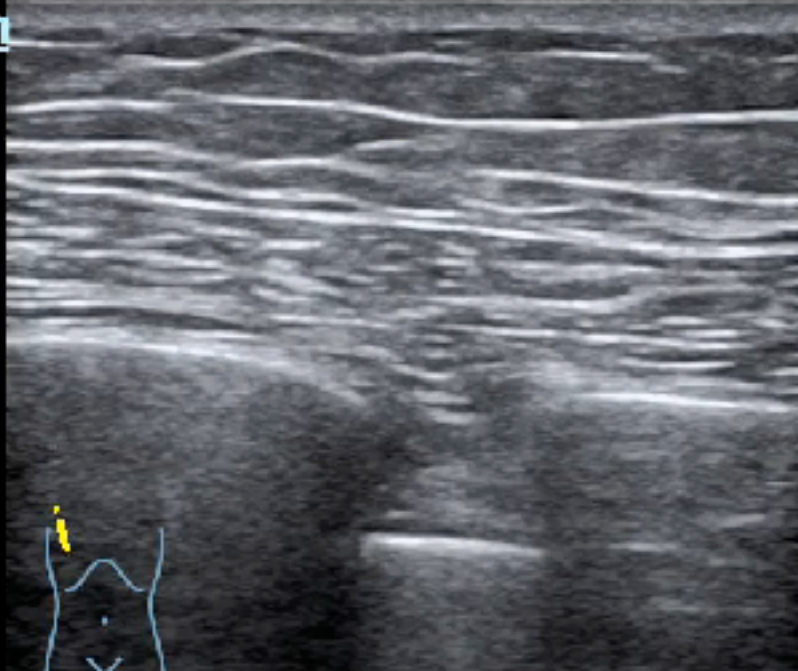
iNeedle

iTouch



LTZ 45 AP 96.5% MI 55 IS 0.1

U
F-F5.0
DR 10.0
FR 71
D 7.5
G A 8

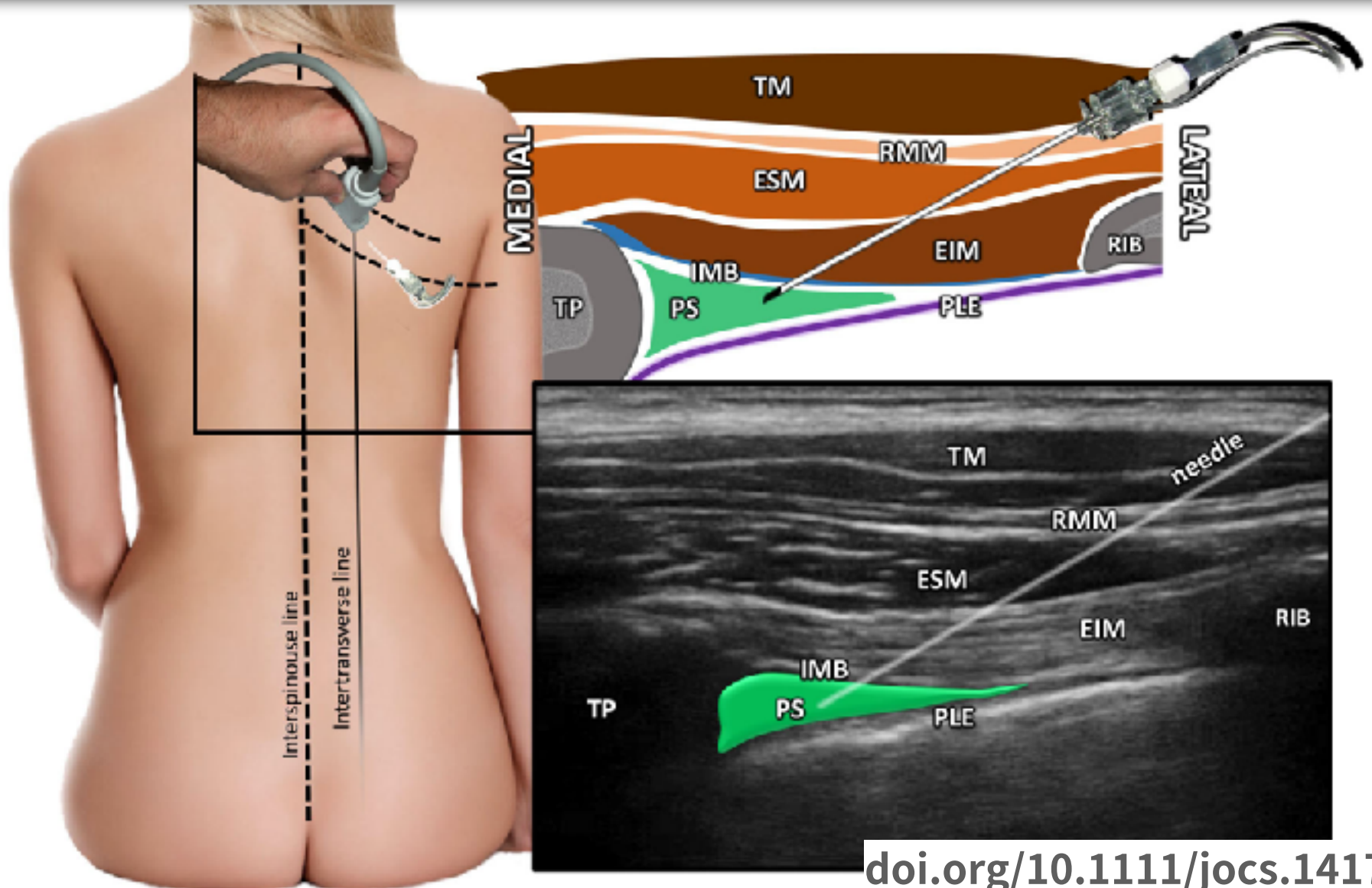


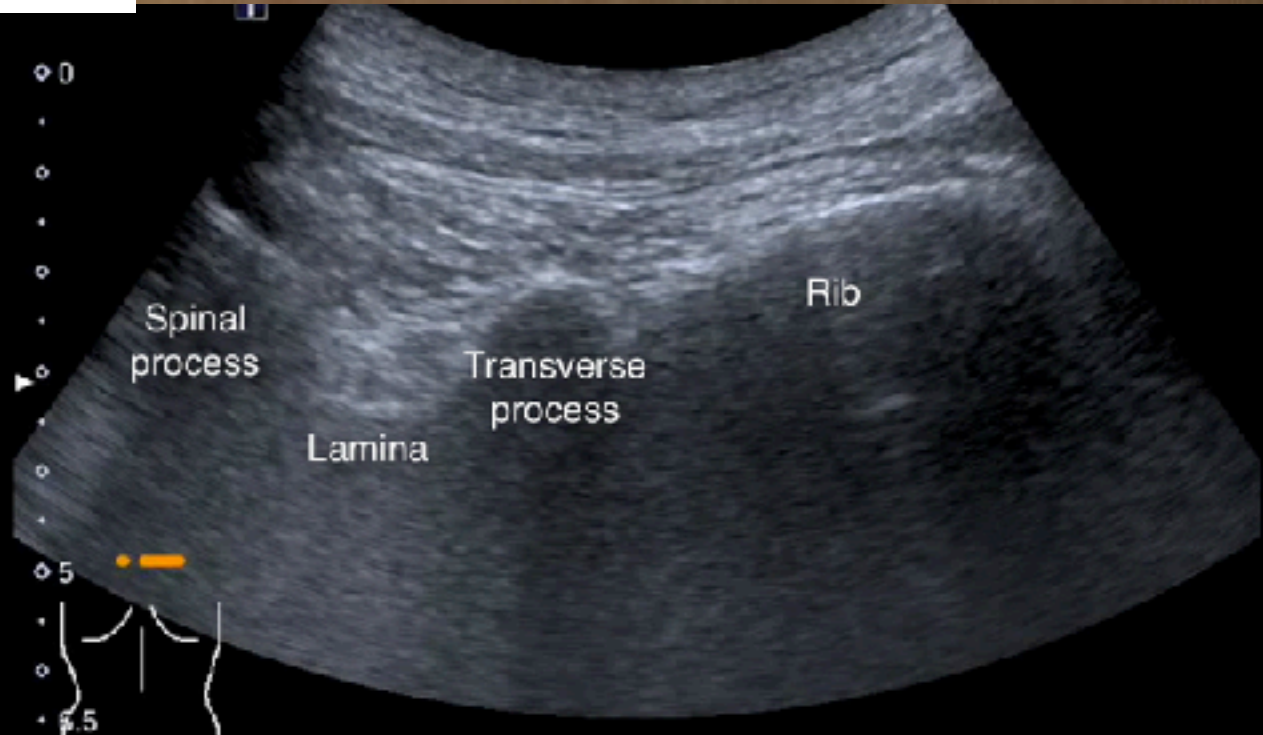
iNeedle

iTouch



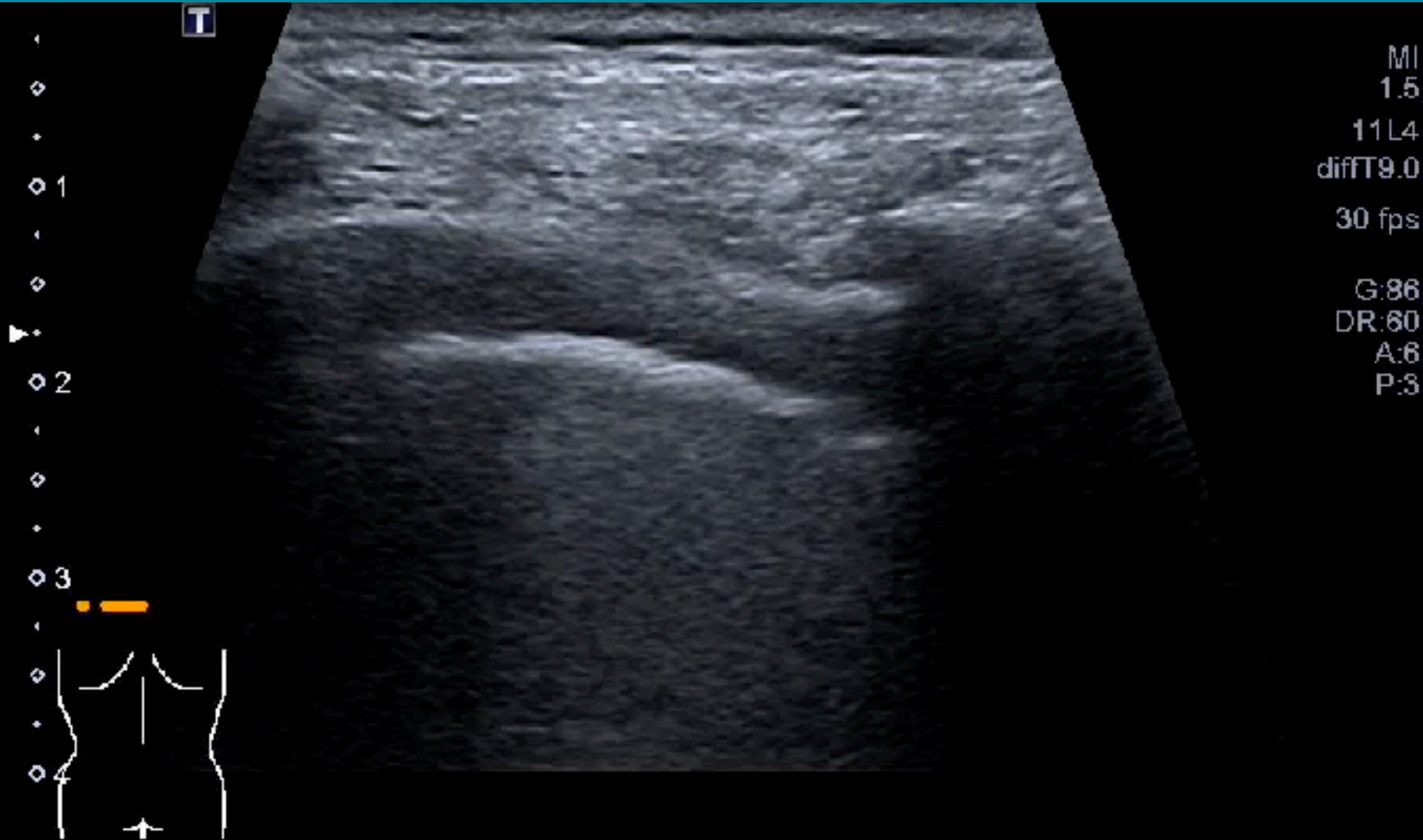
PVB (paravertebral block)



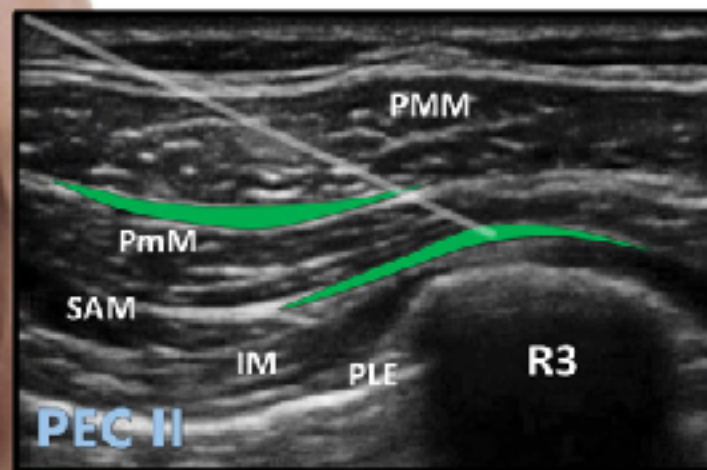
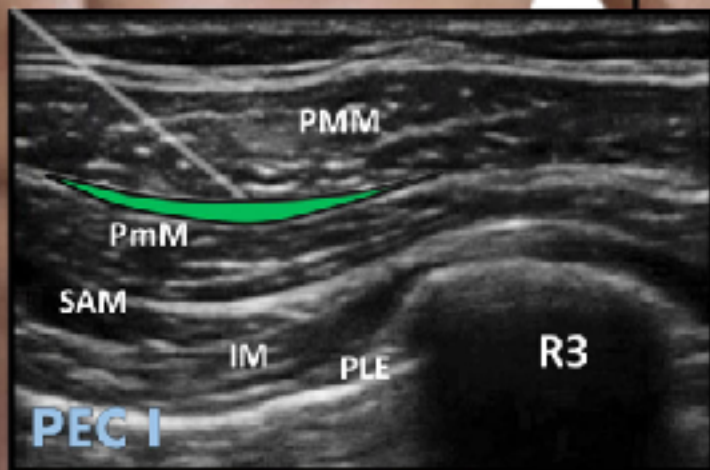
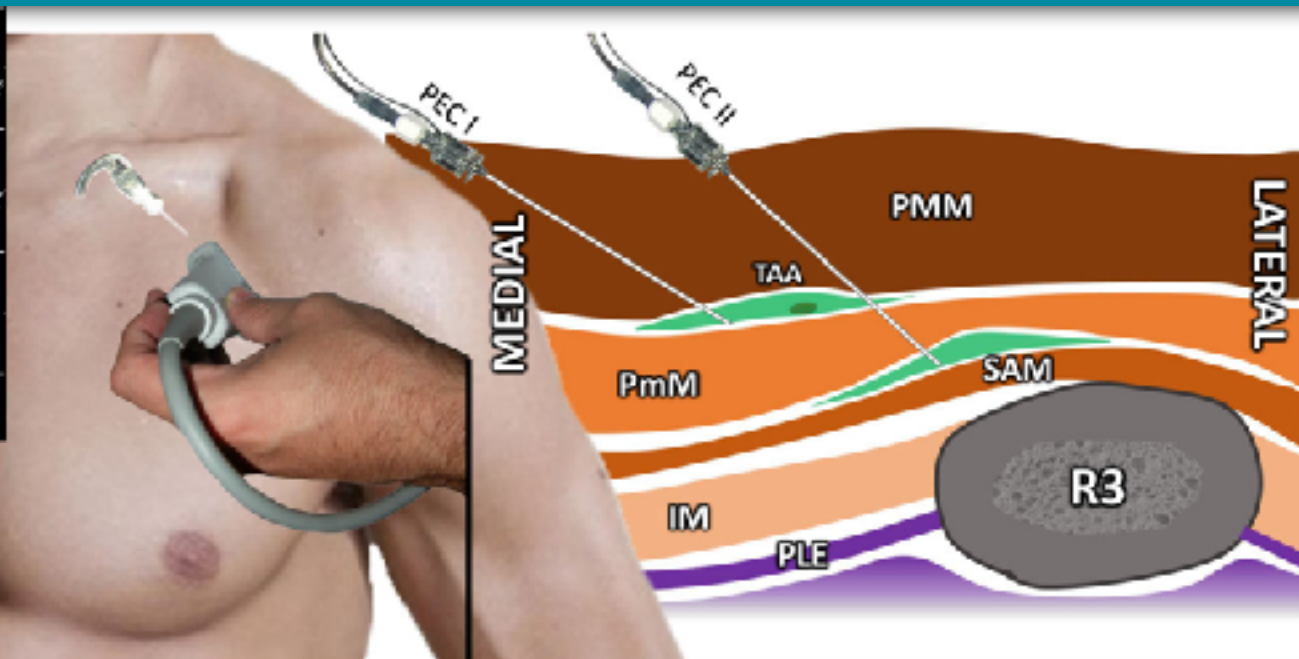
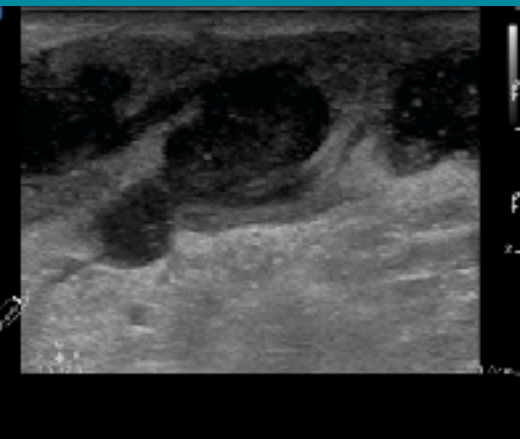


MI
1.5
6C1
T5.0
22 fps
Qscan
G:83
DR:65
A:2
P:1

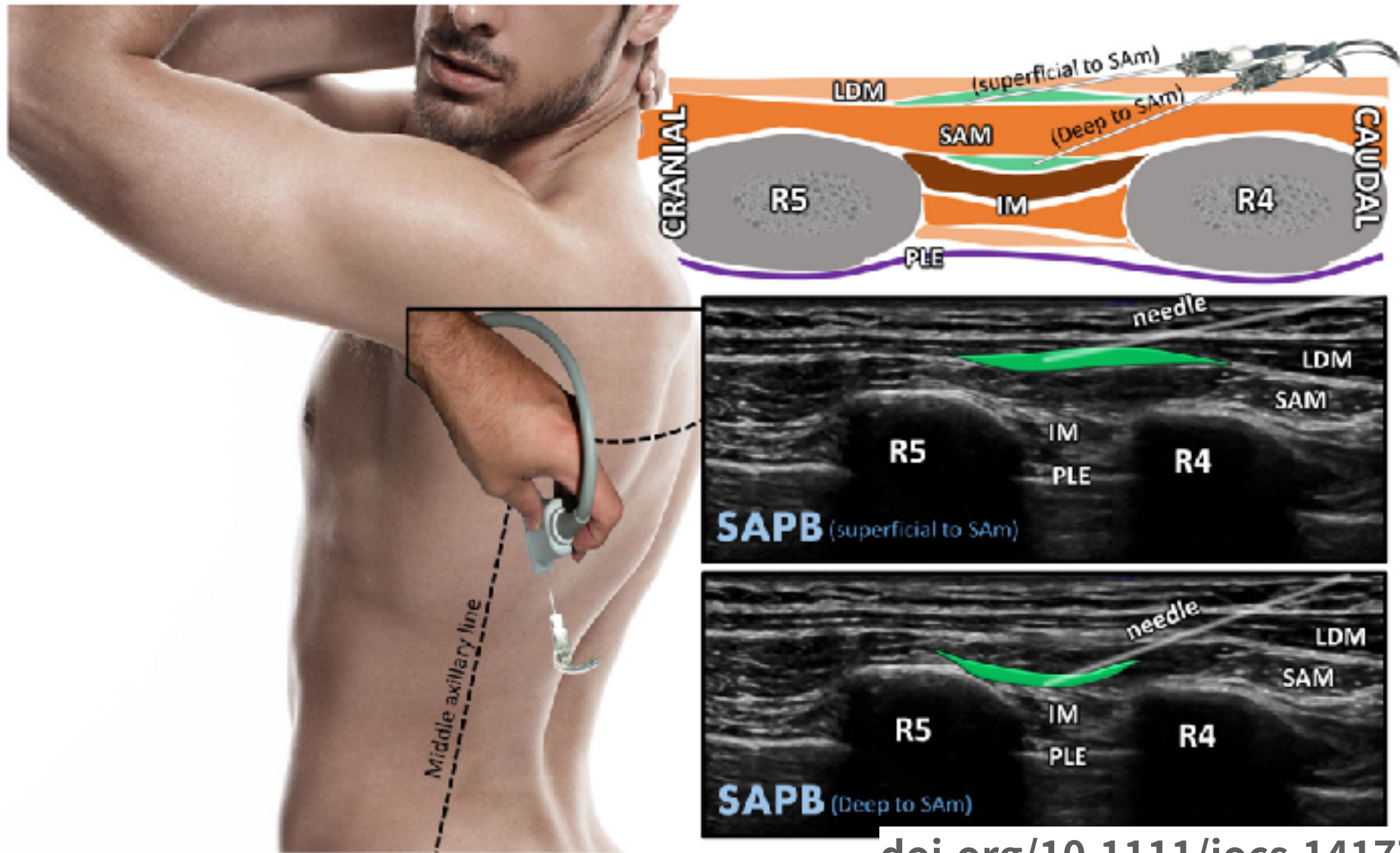
PVB for postherpetic neuralgia



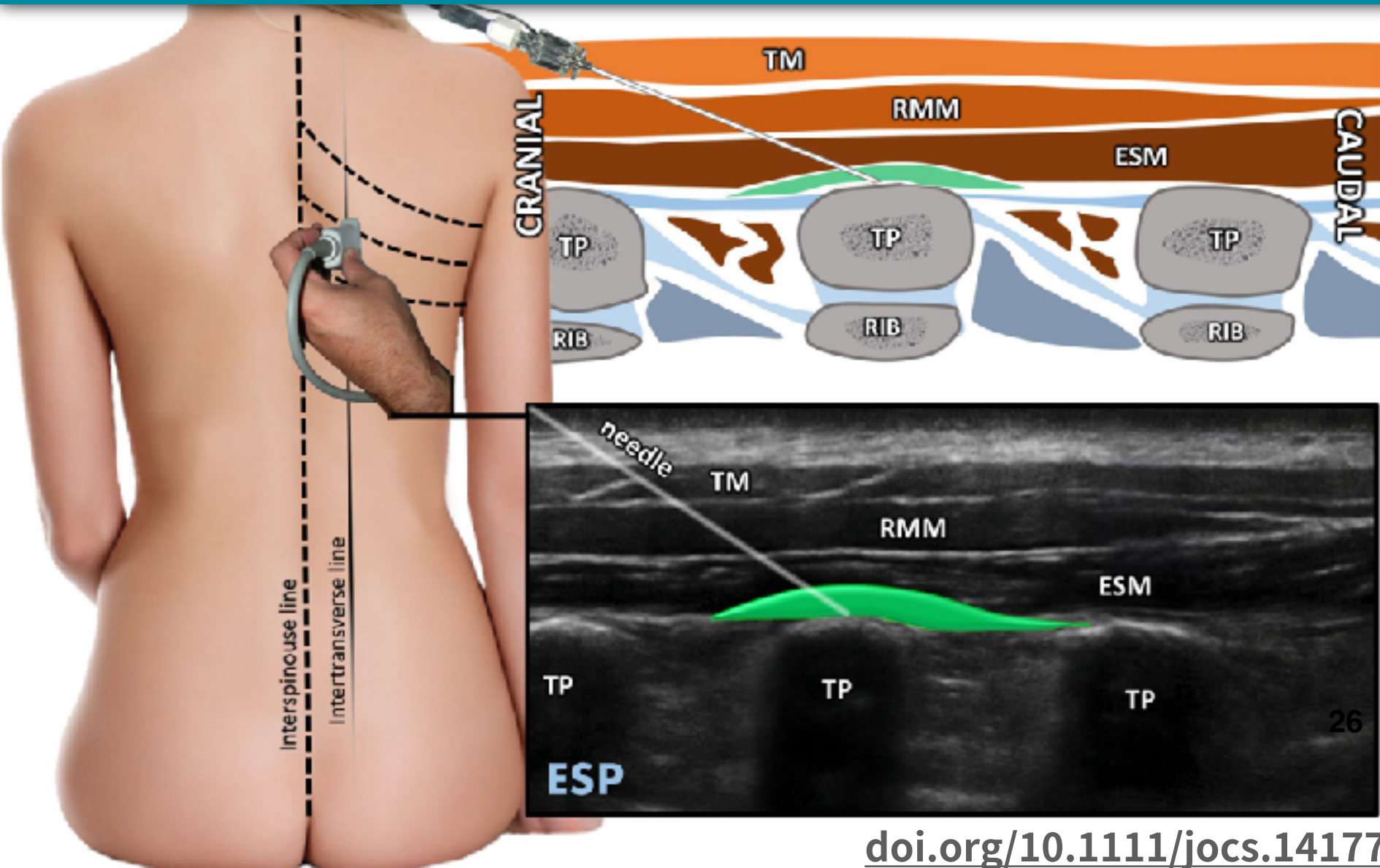
PEC I & II block (pectoral fascial)



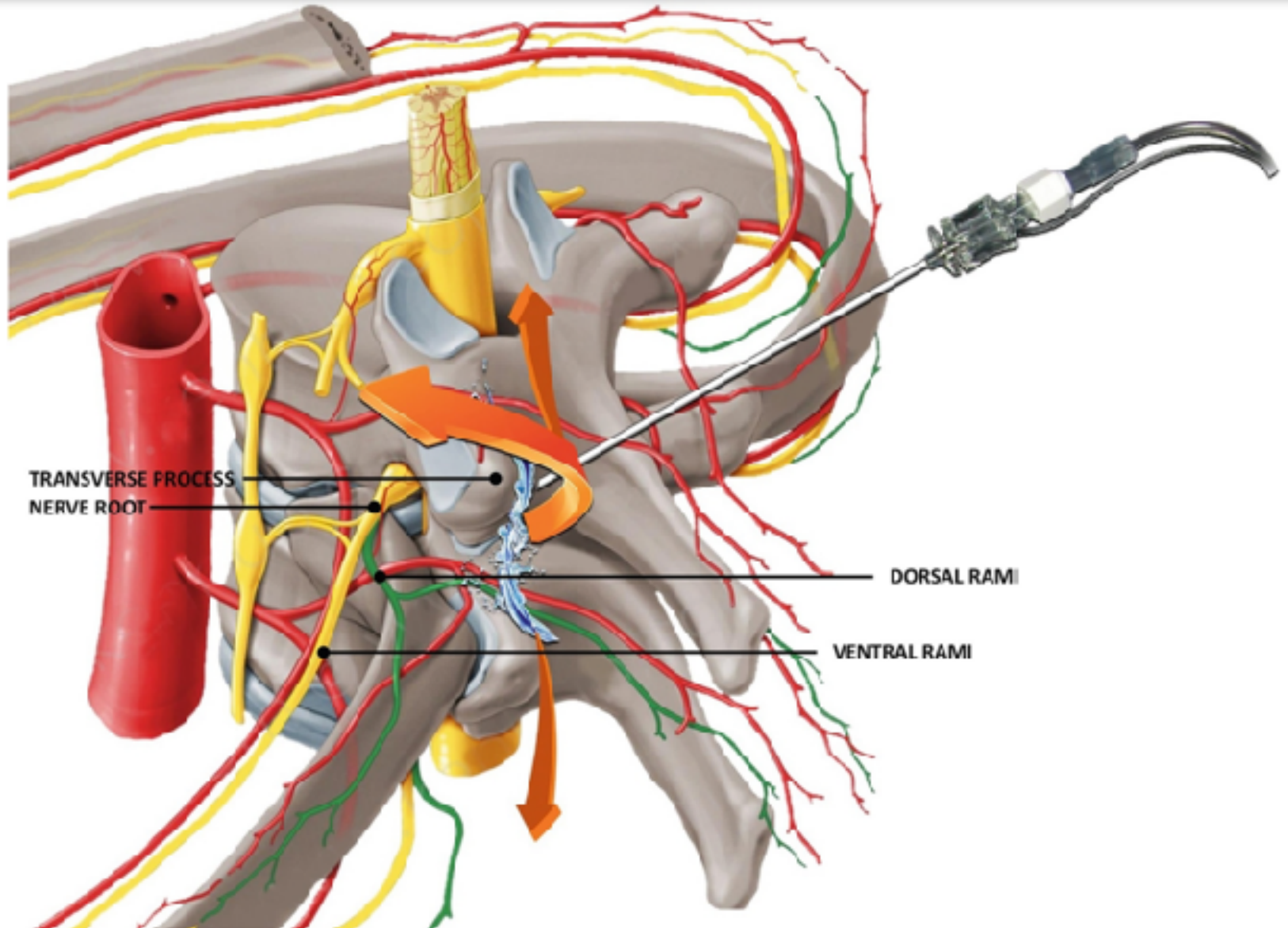
SAPB (serratus anterior plane block)



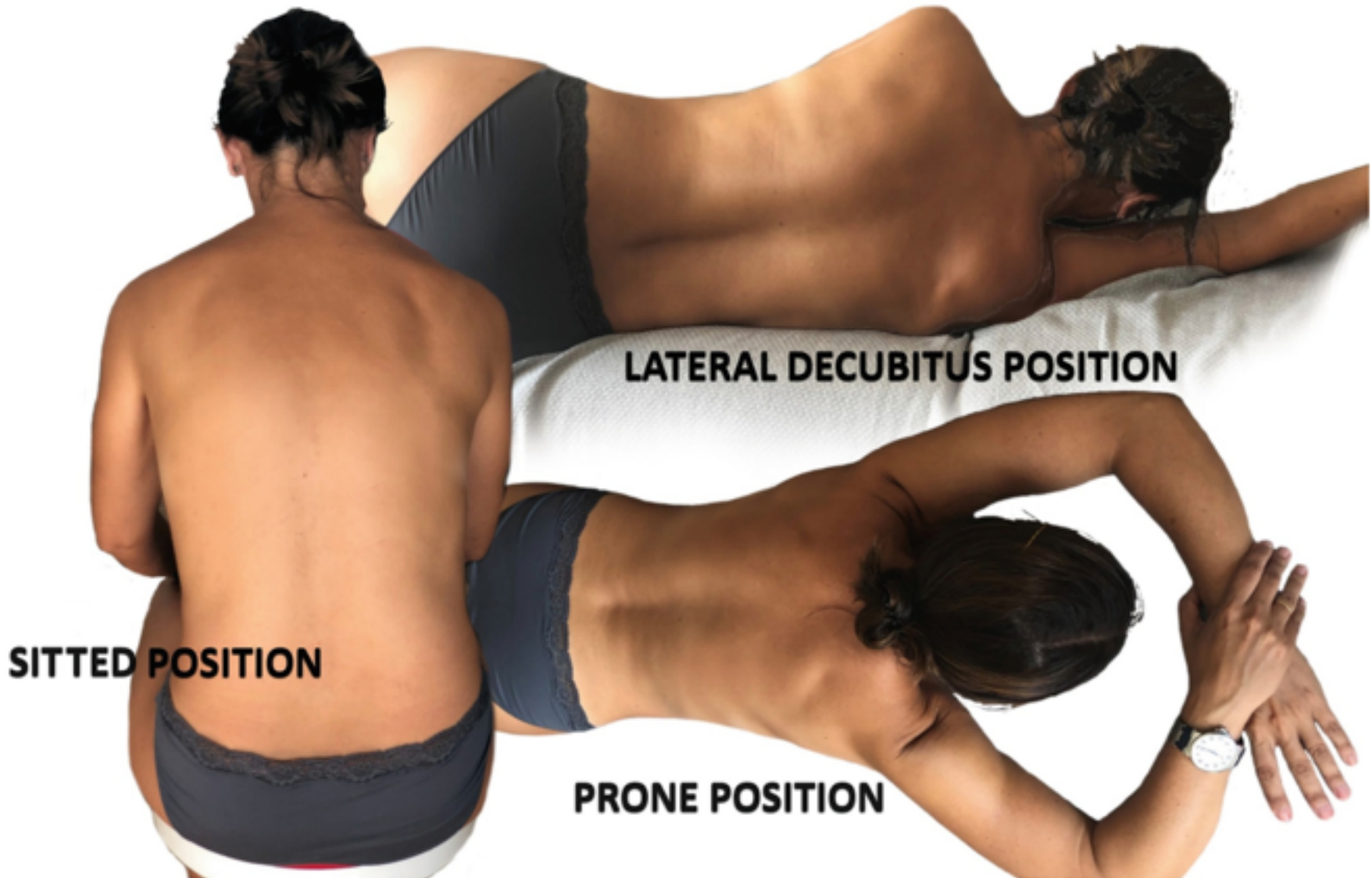
ESPB (erector spinae plane block)



ESPB (erector spinae plane block)



ESP B (erector spinae plane block)

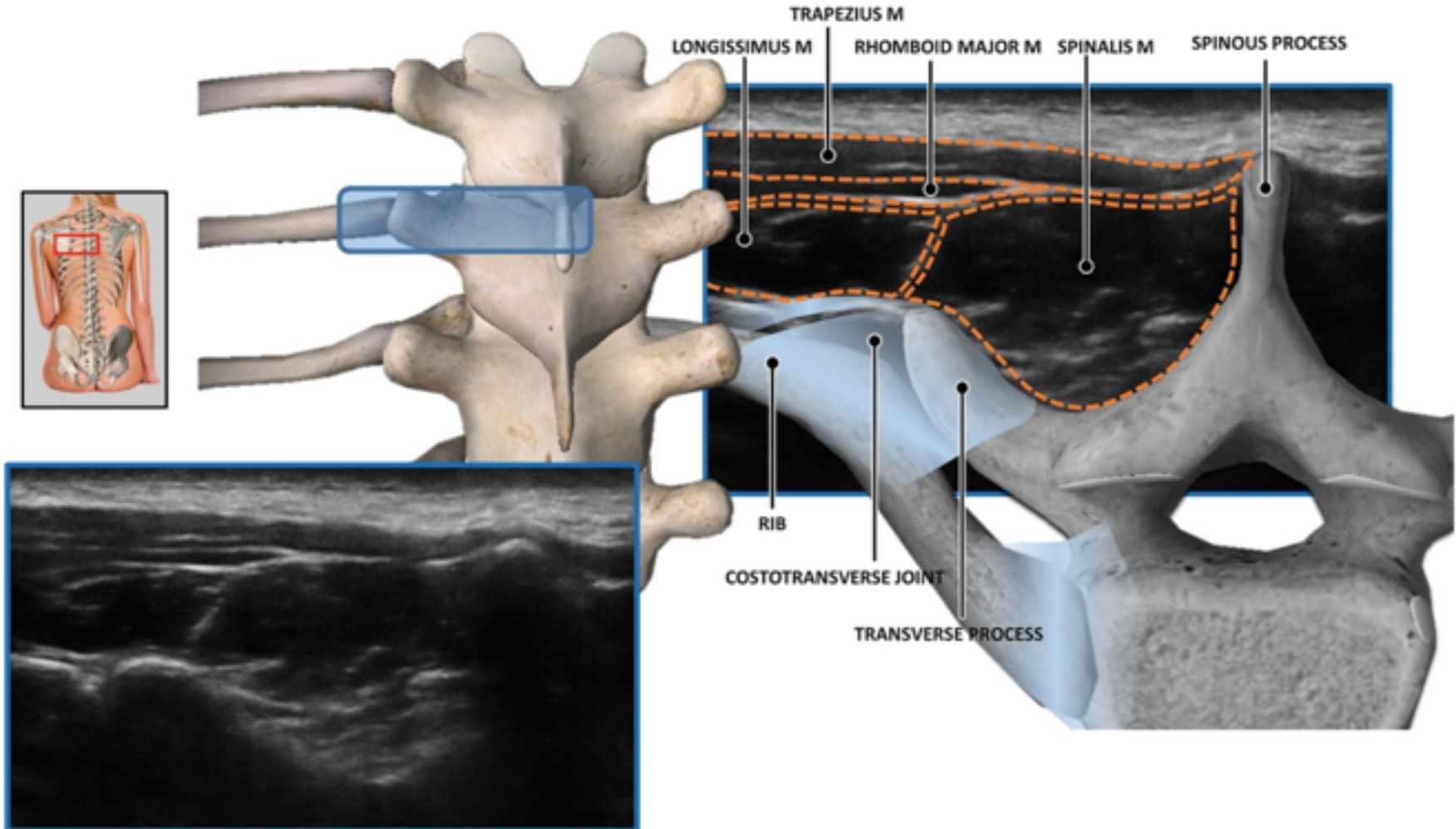


SITTED POSITION

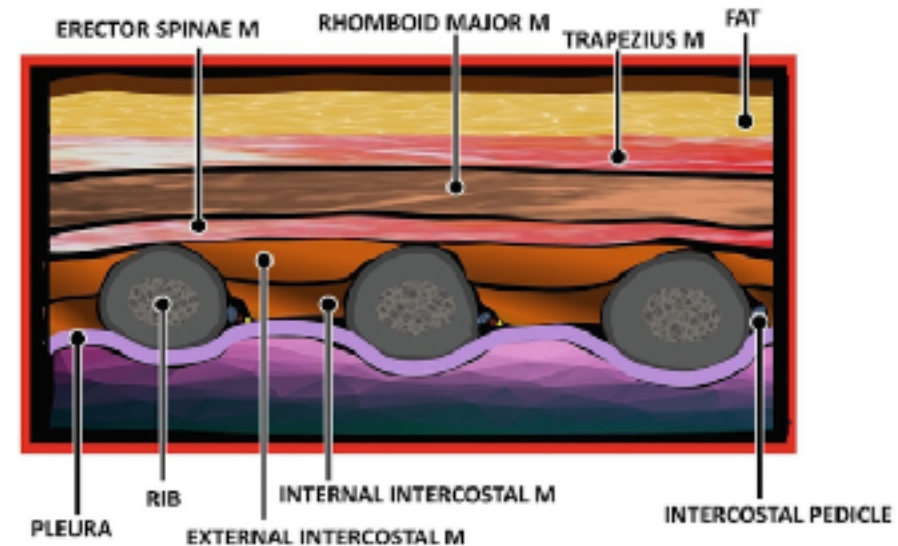
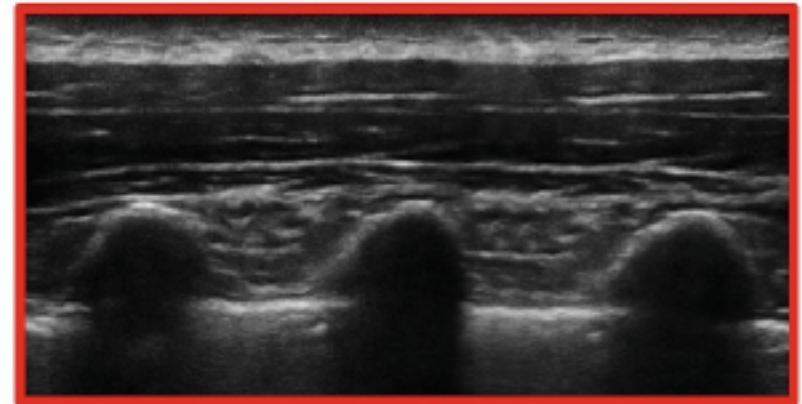
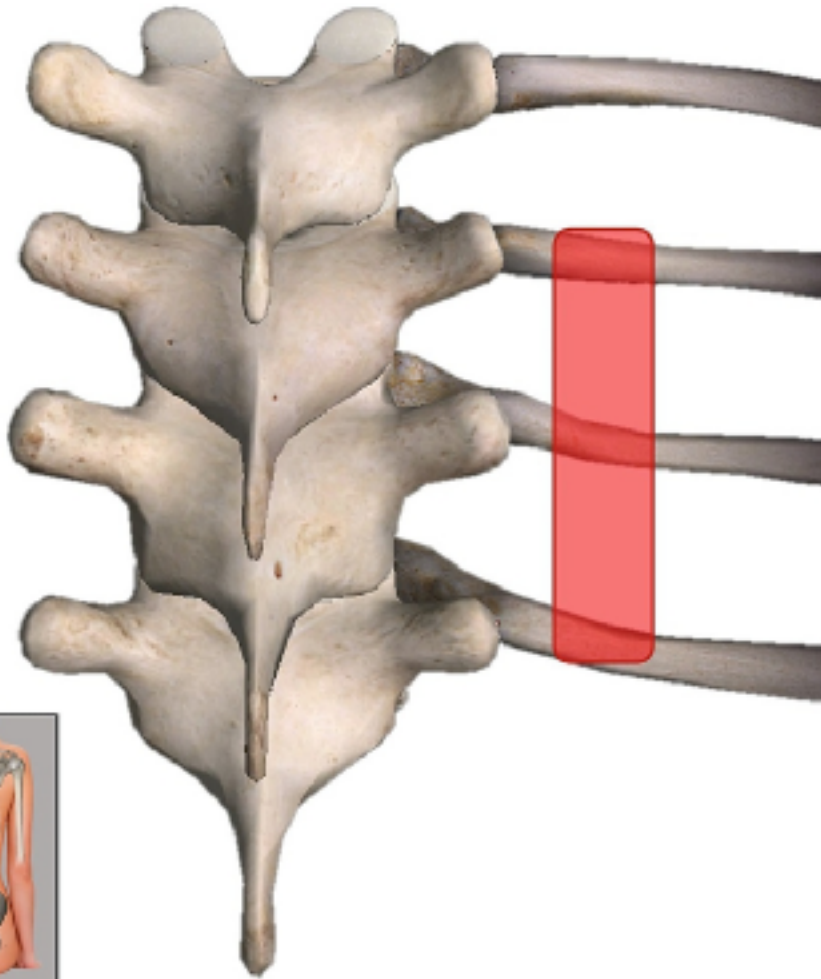
LATERAL DECUBITUS POSITION

PRONE POSITION

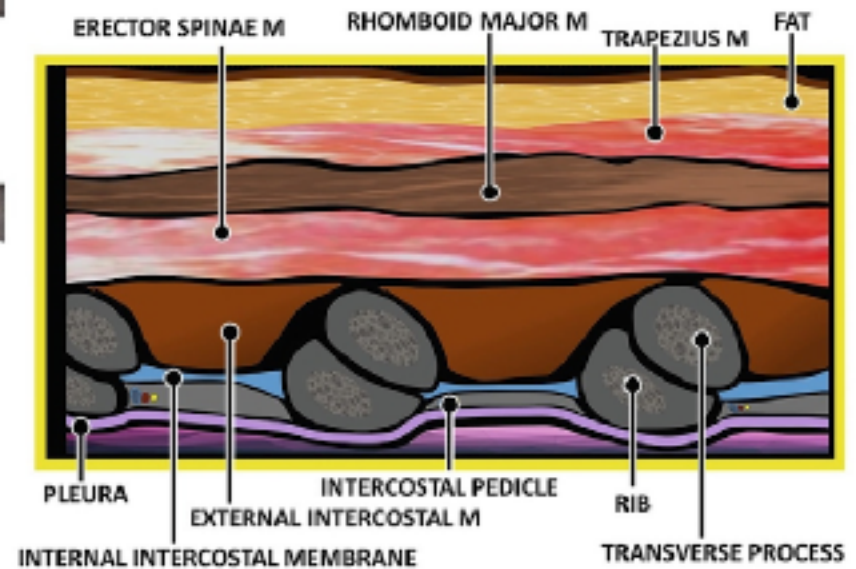
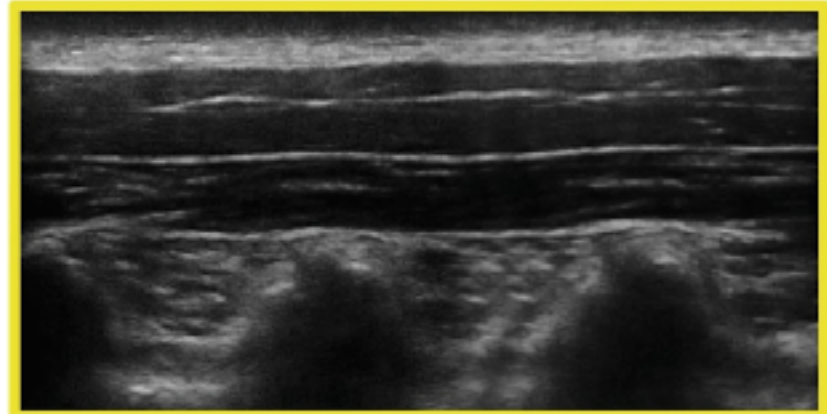
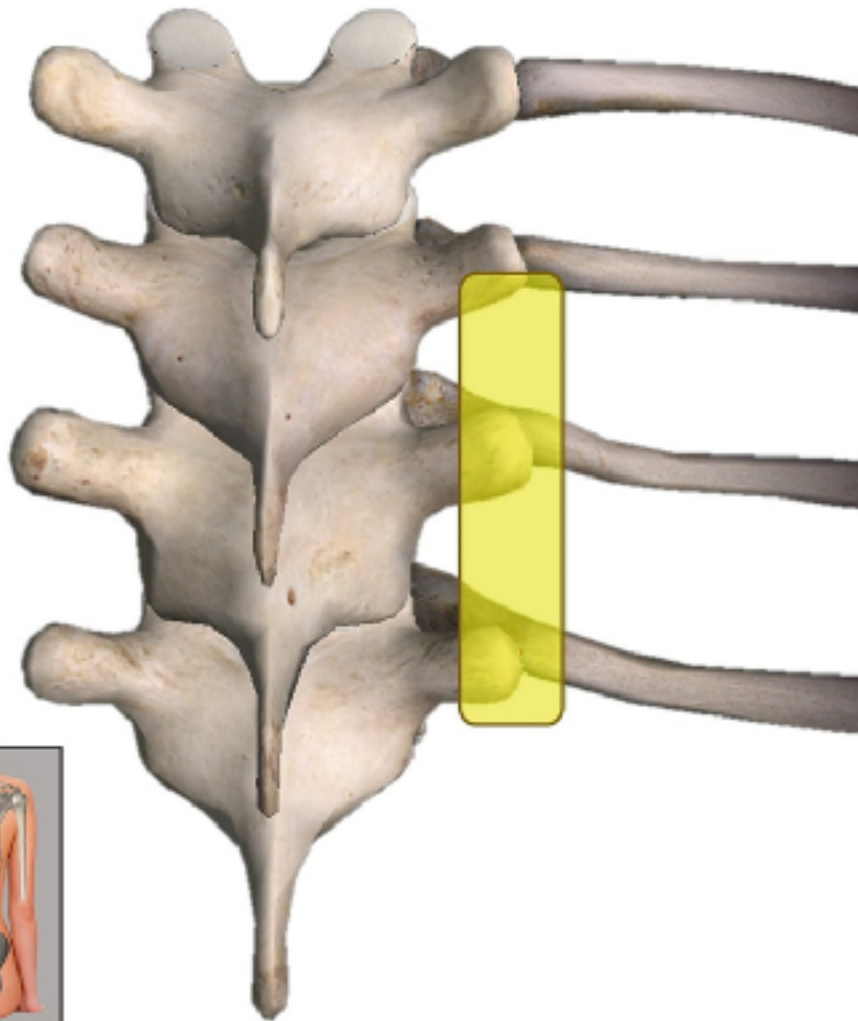
ESPB (erector spinae plane block)



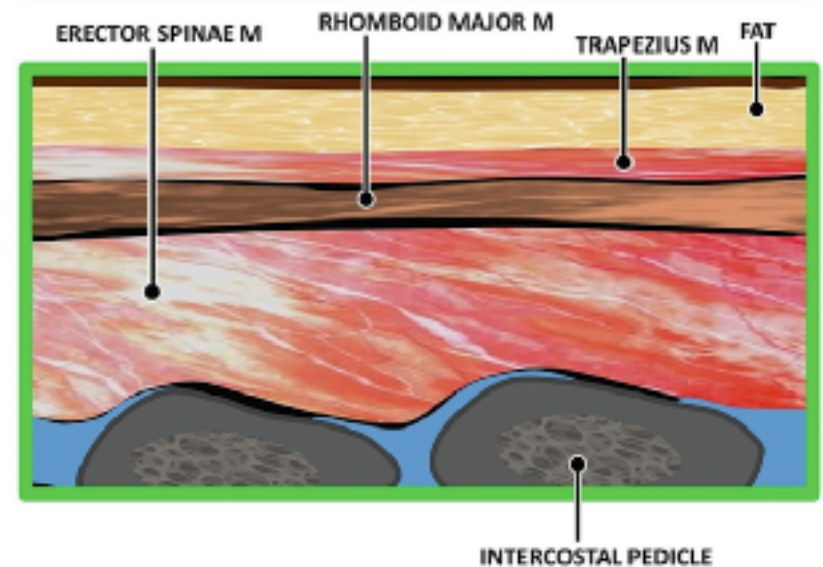
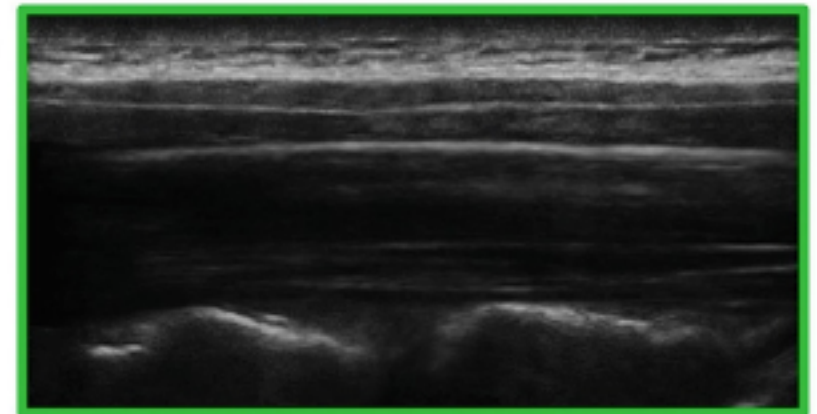
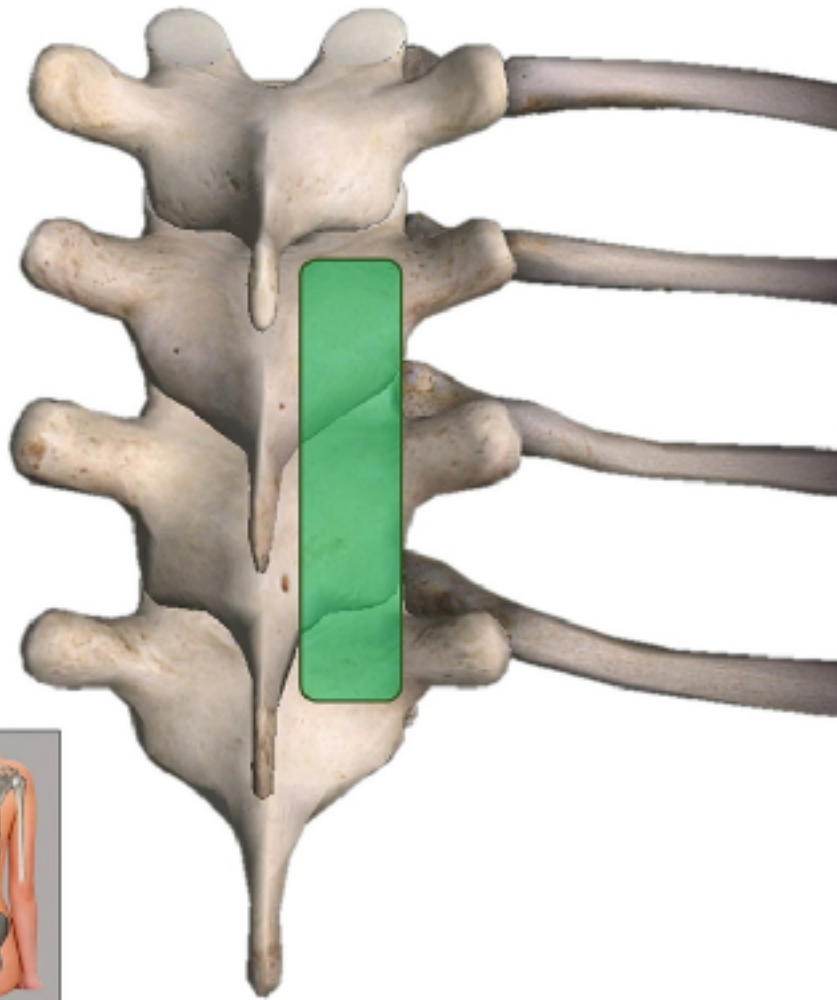
ESPB (Rib level)



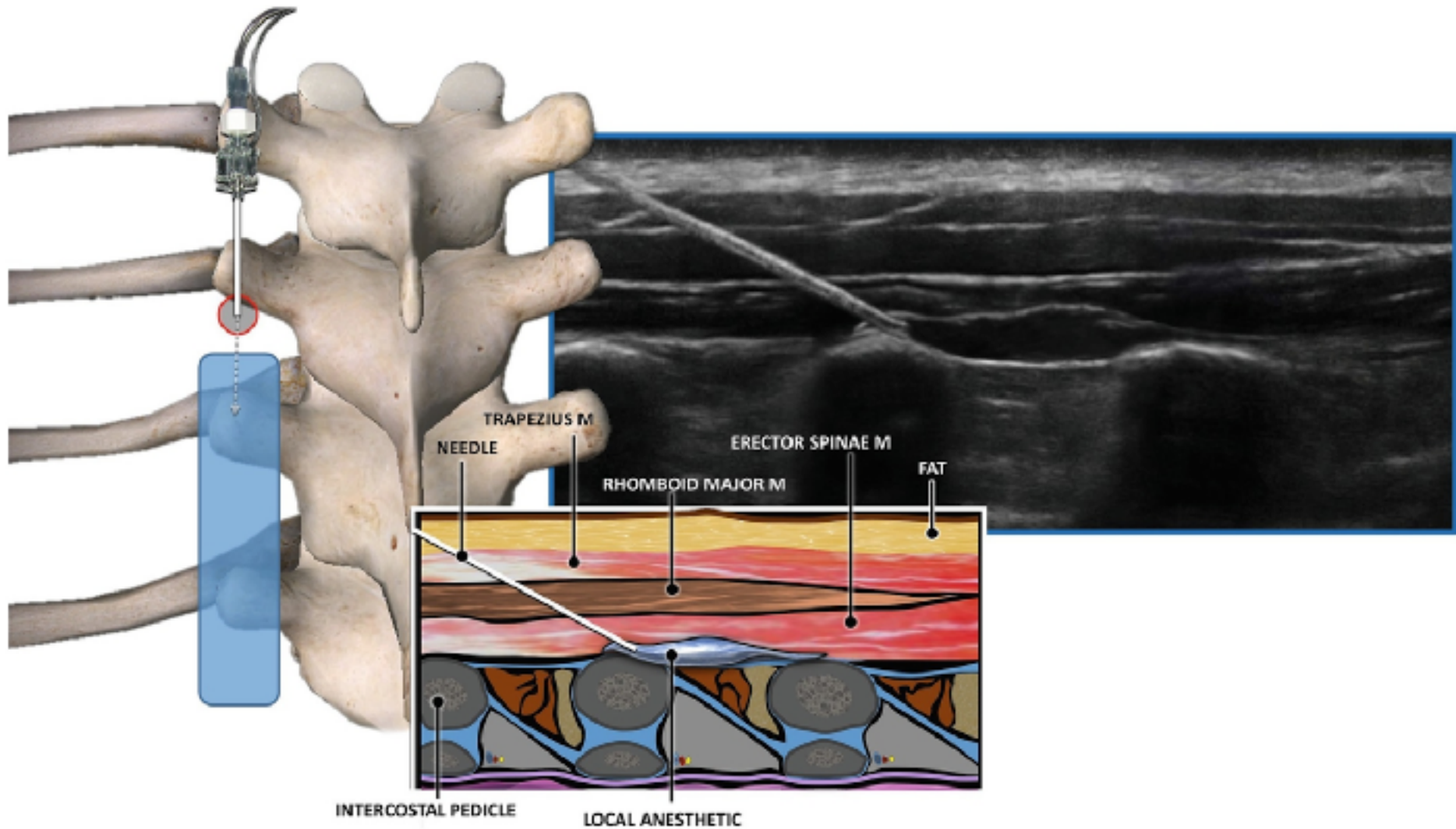
ESPB (Rib / TP level)



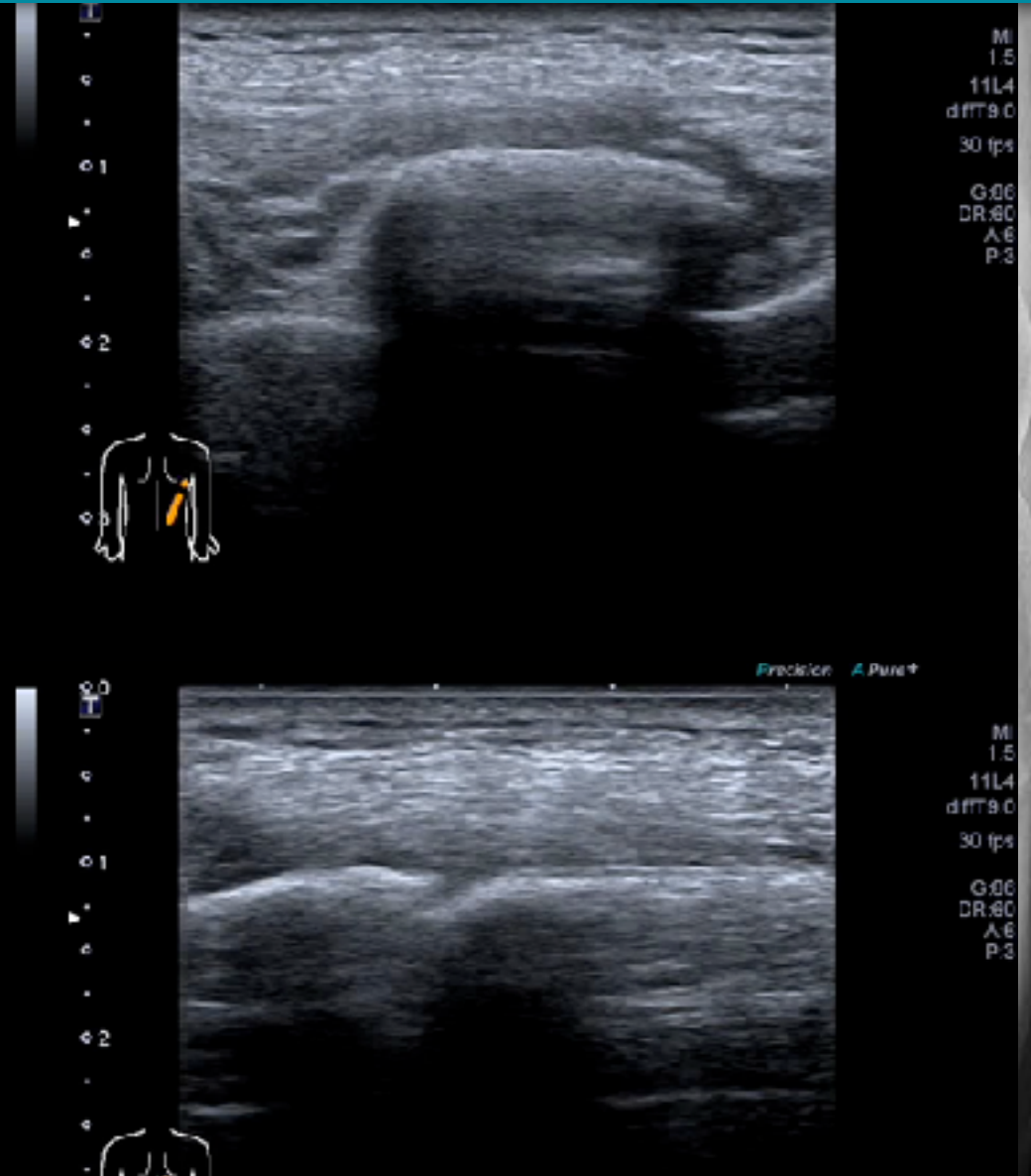
ESPB (lamina level)



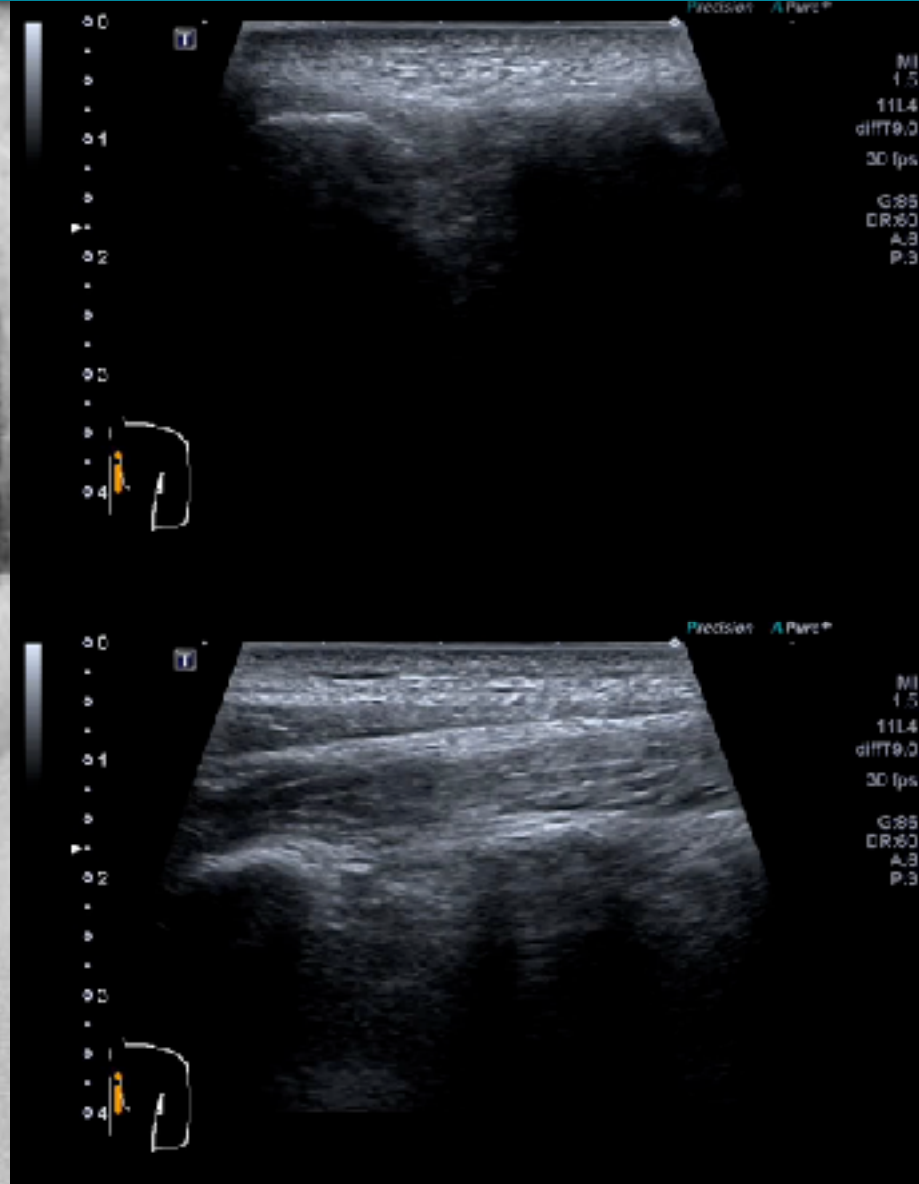
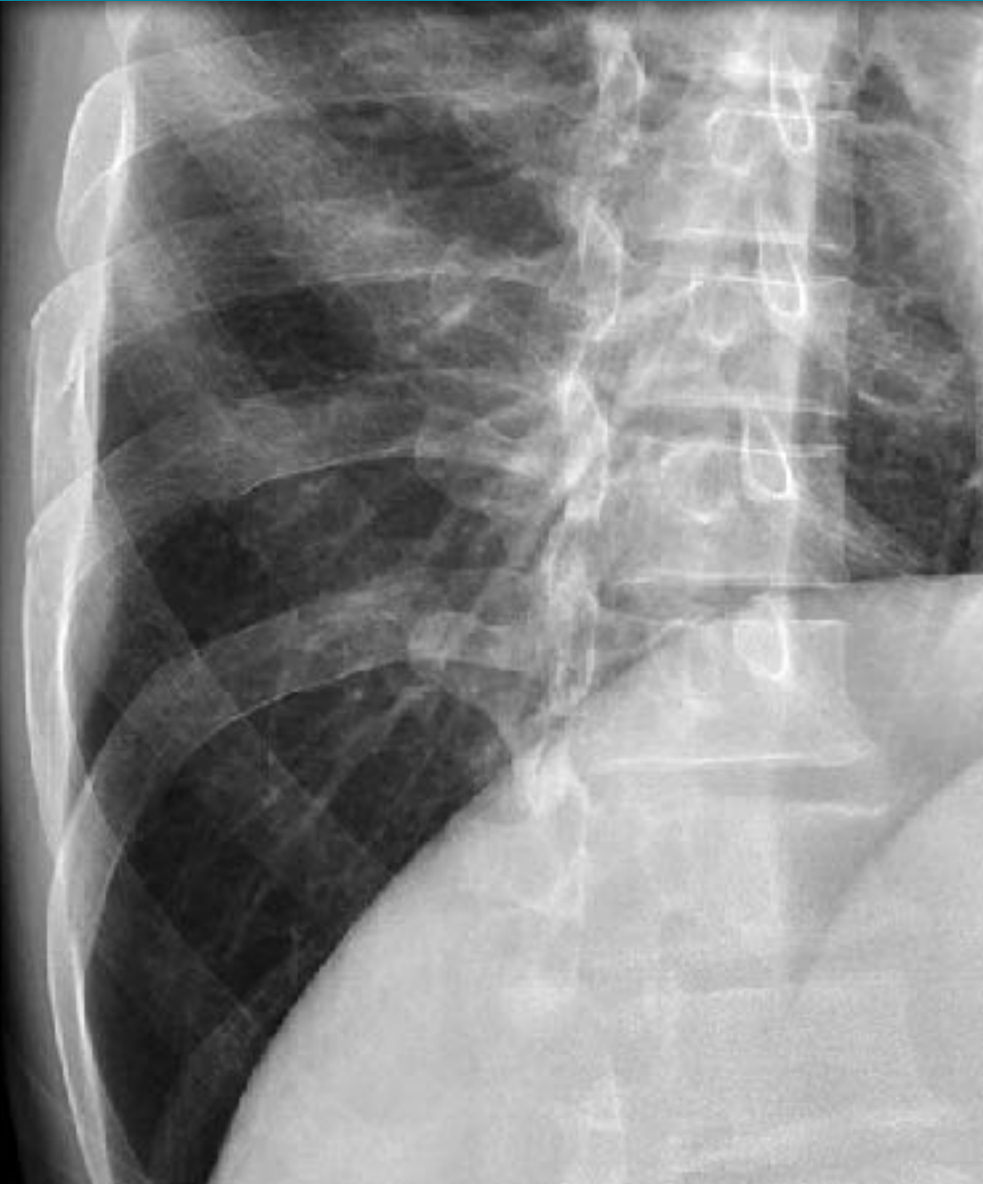
ESPBB (TP level - target of ESPBB)



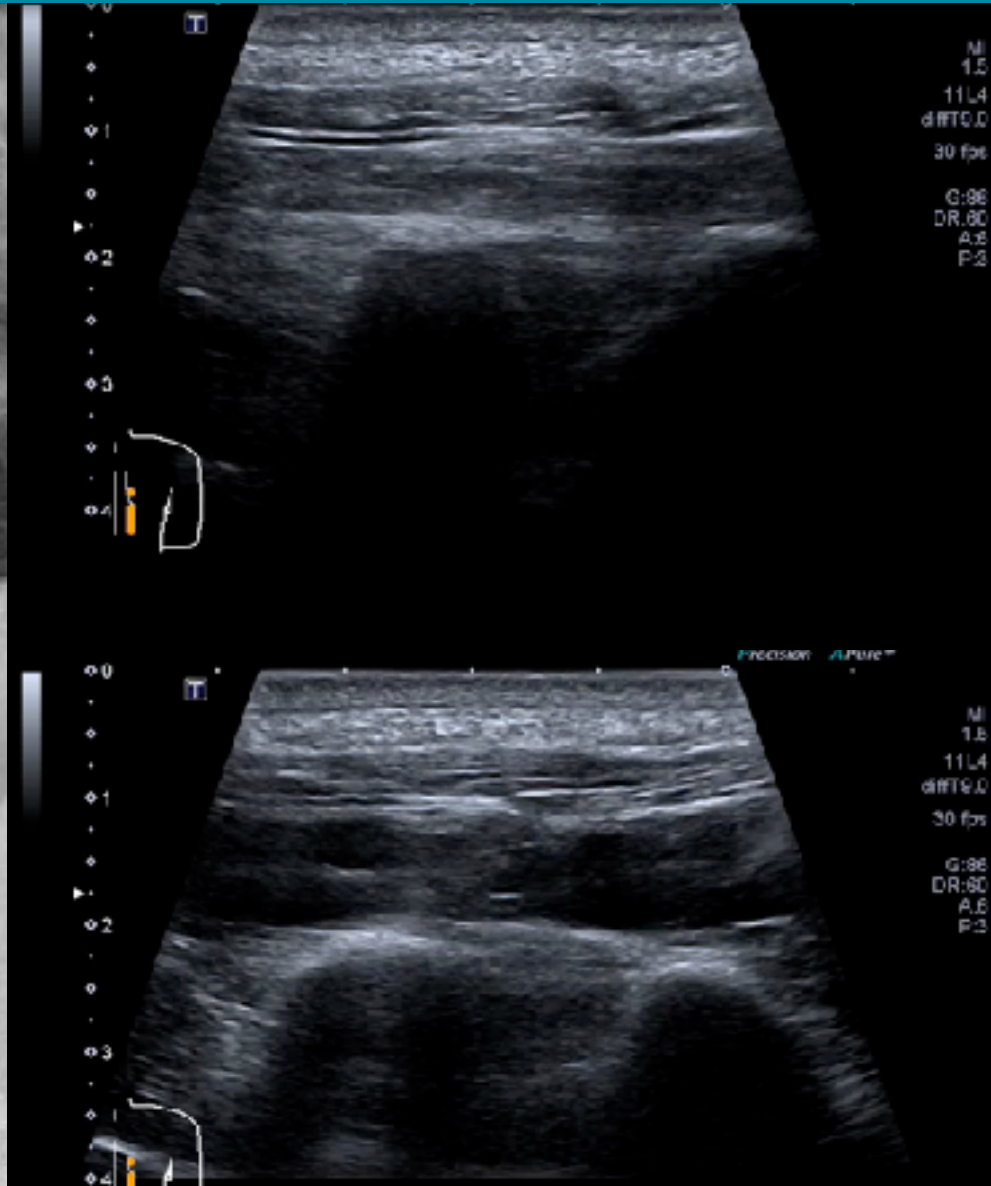
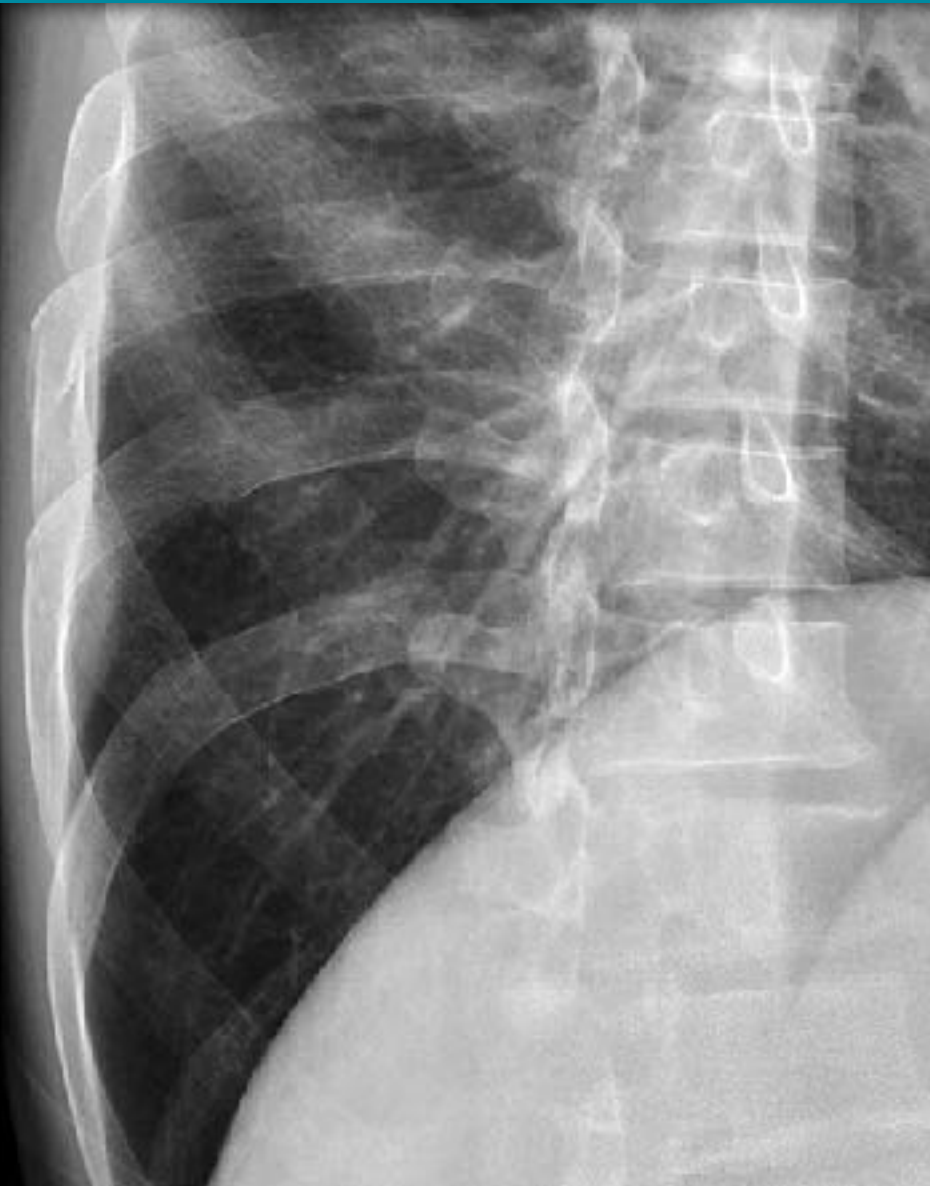
ESPB (TP level - target of ESPB)



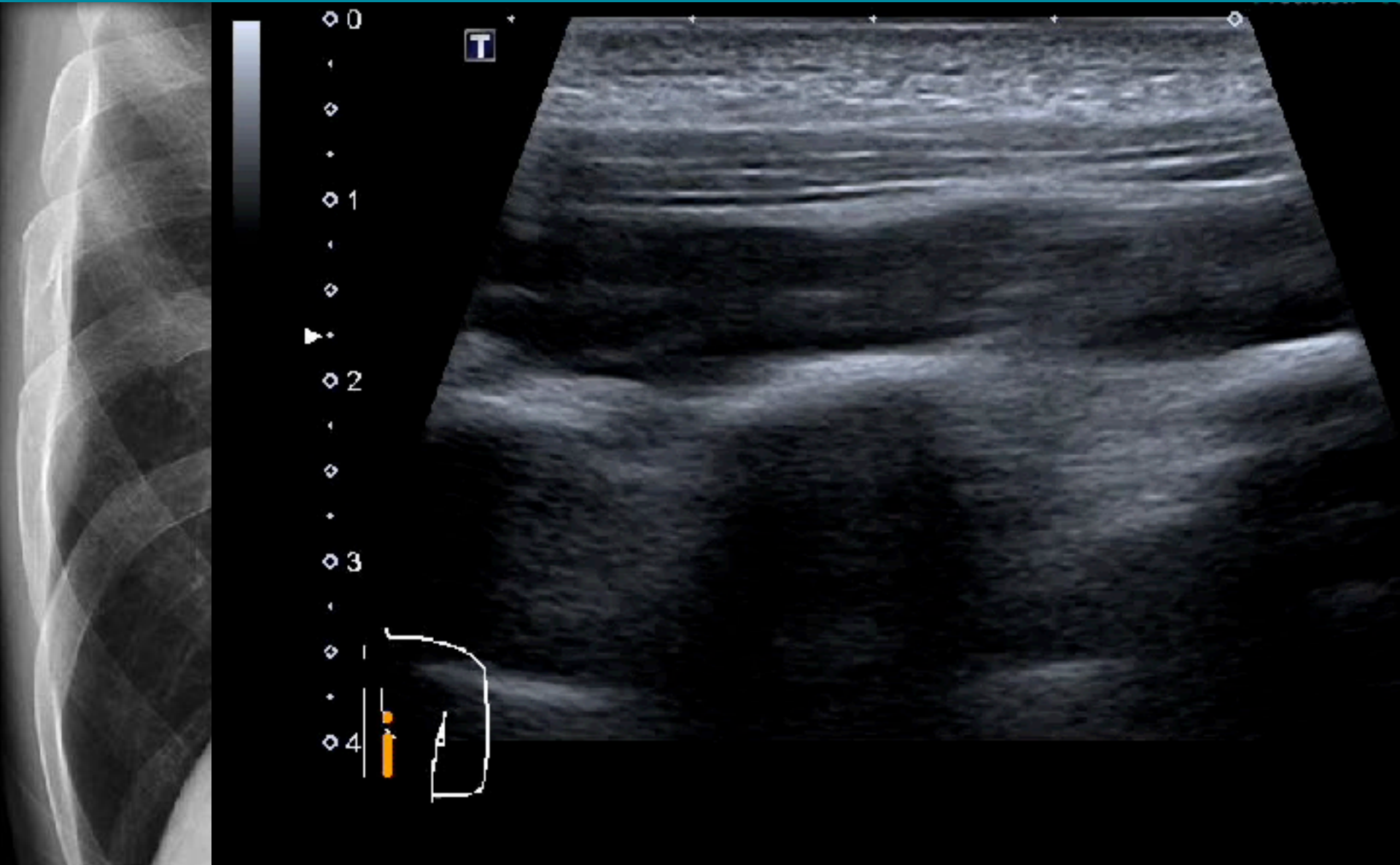
ESPB (TP level - target of ESPB)

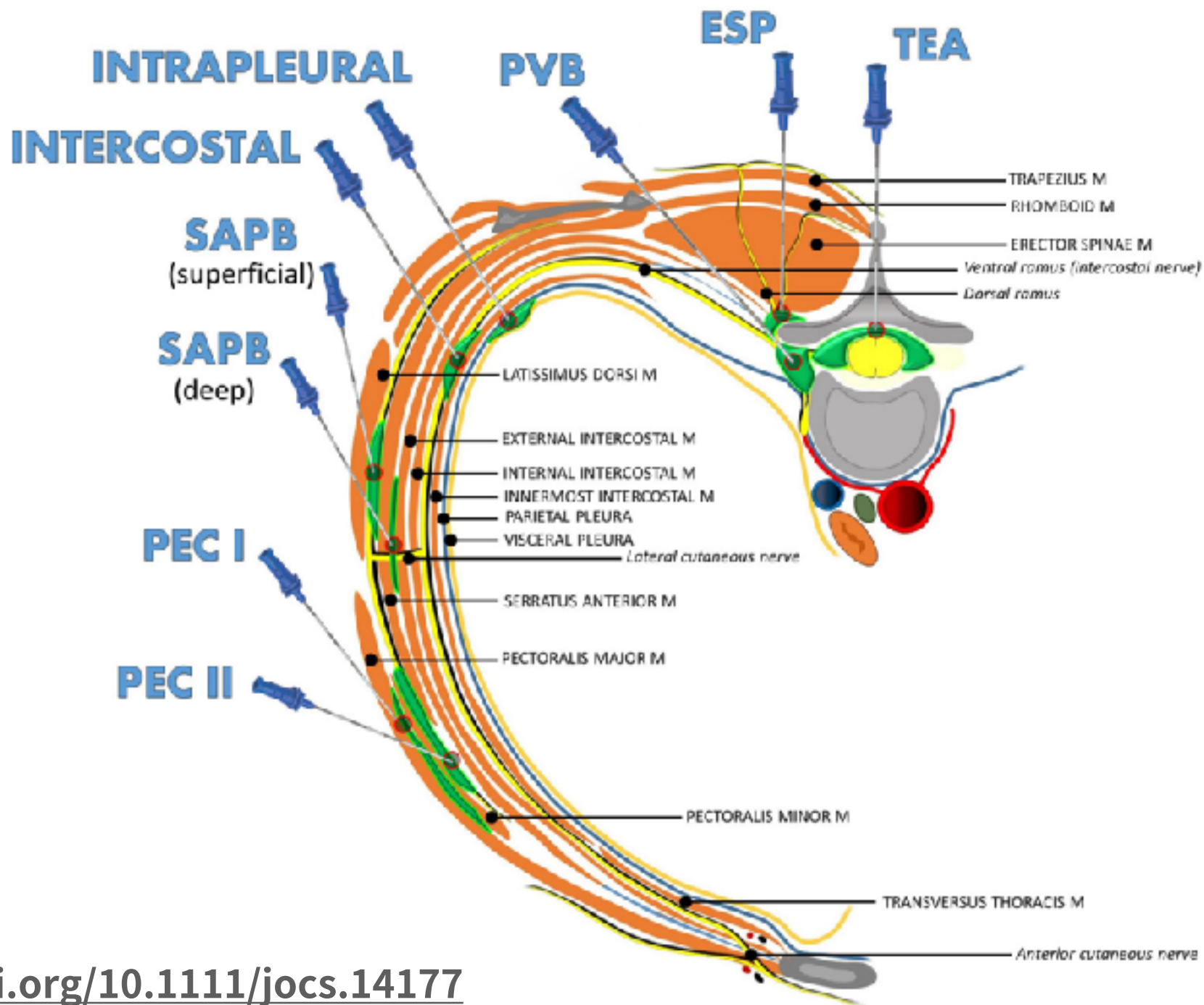


ESPB (TP level - target of ESPB)

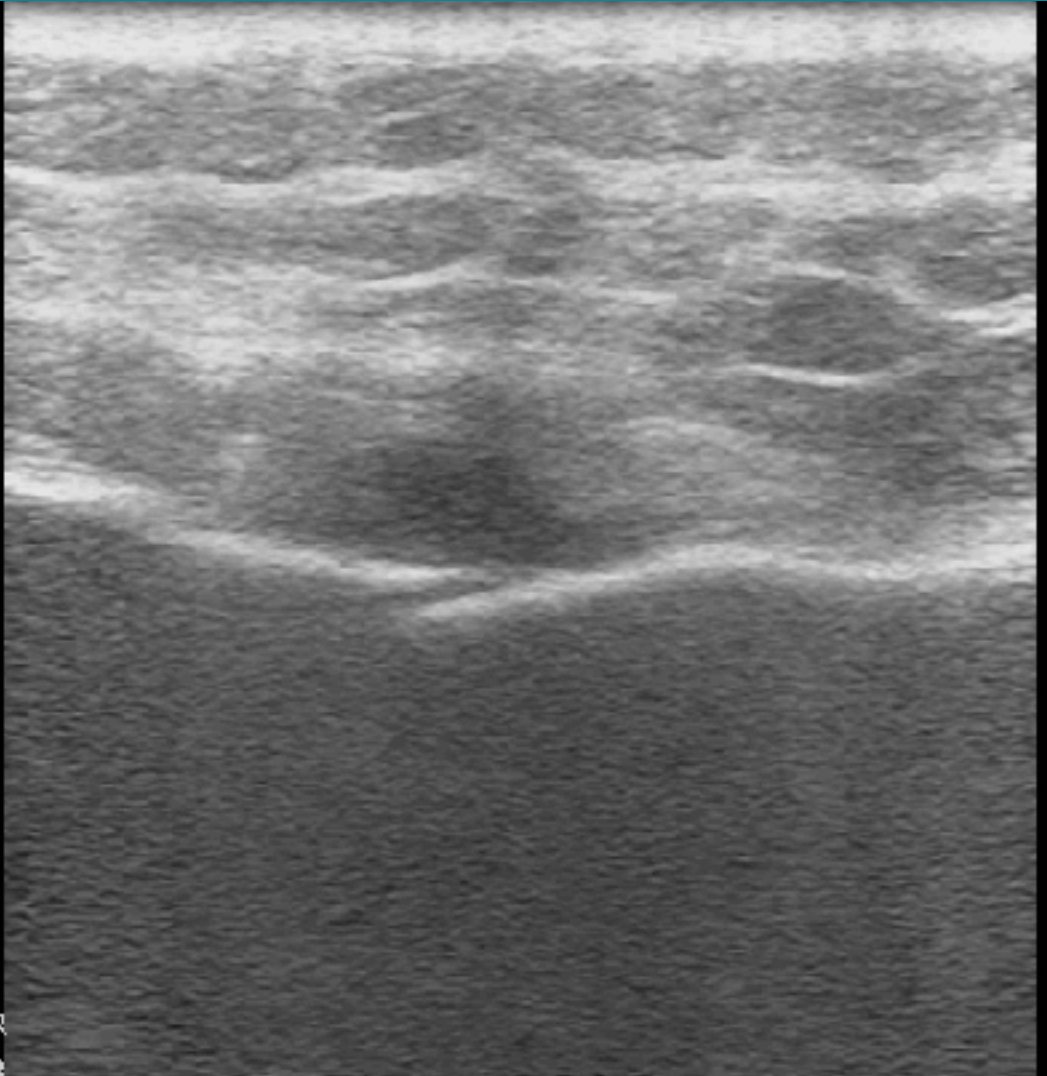
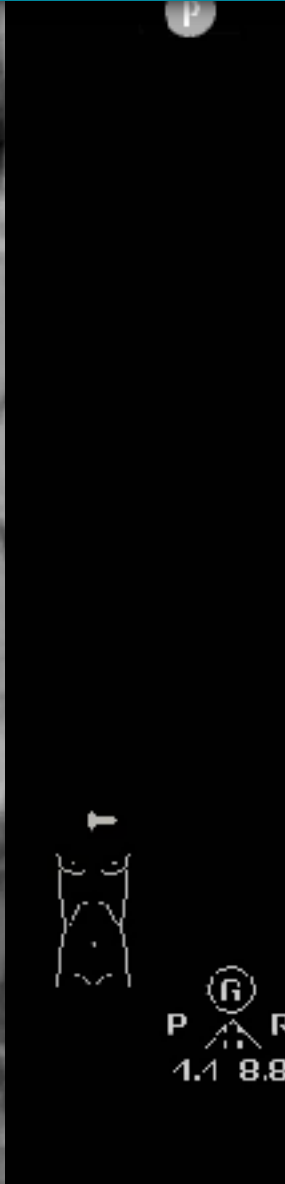
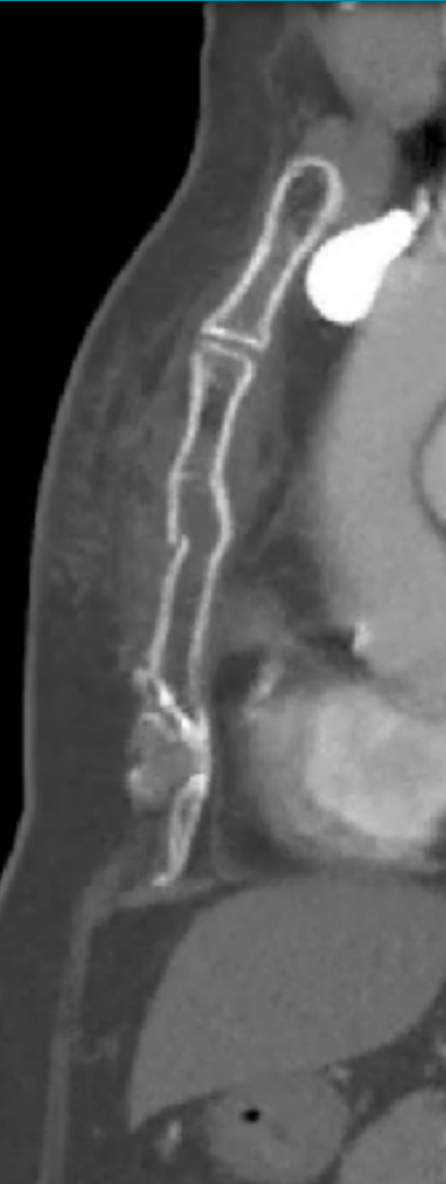


ESPB (TP level - target of ESPB)



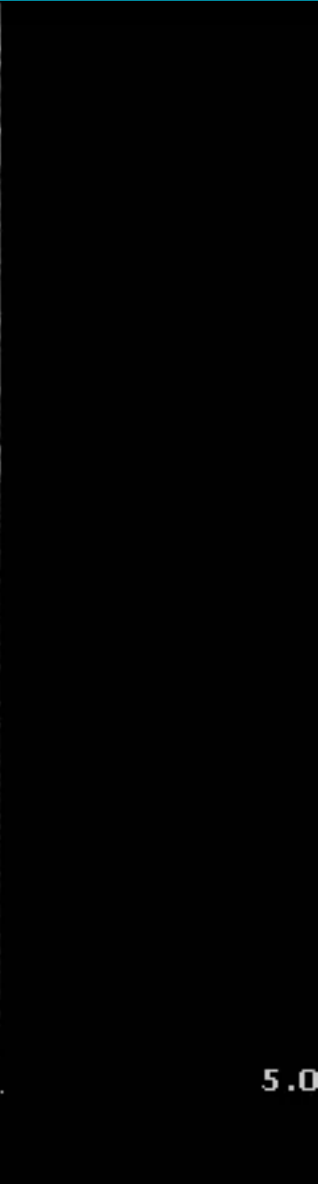
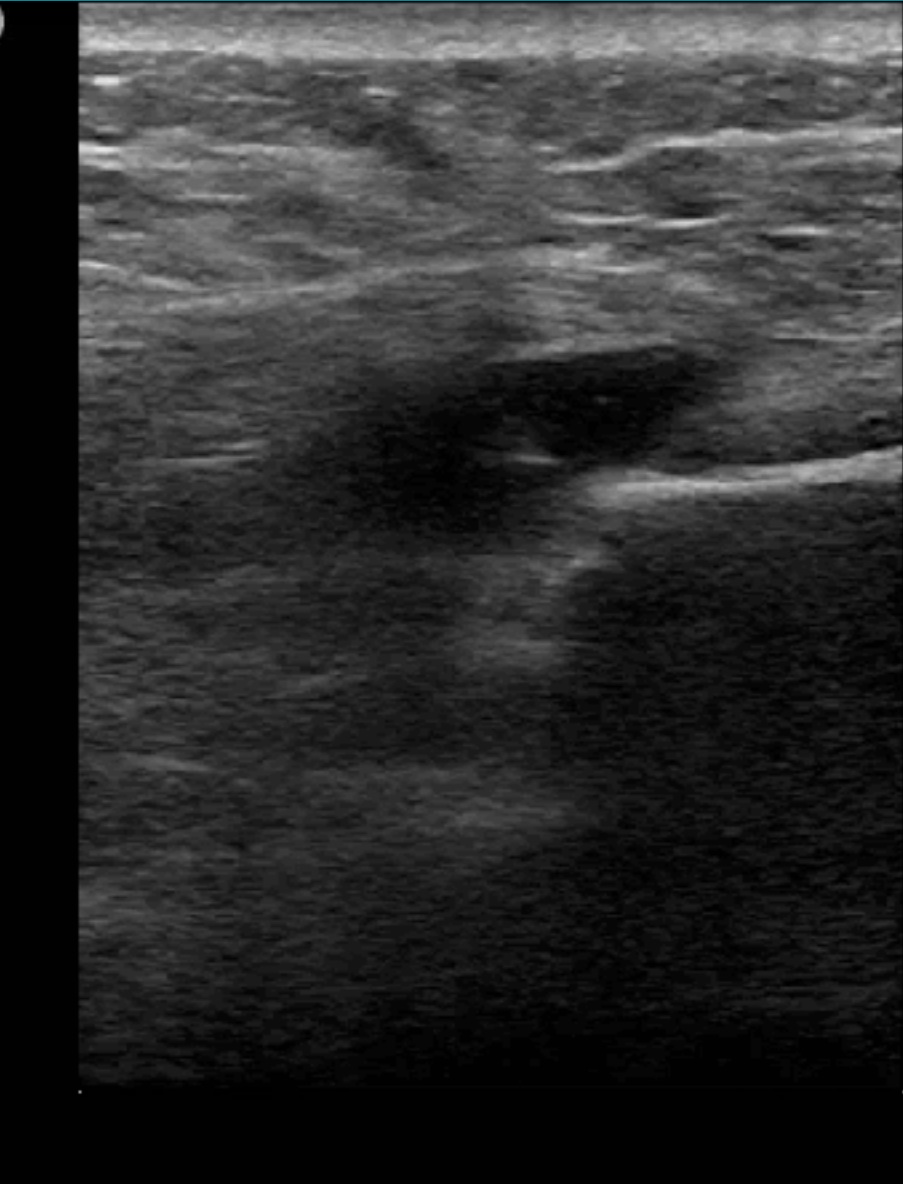
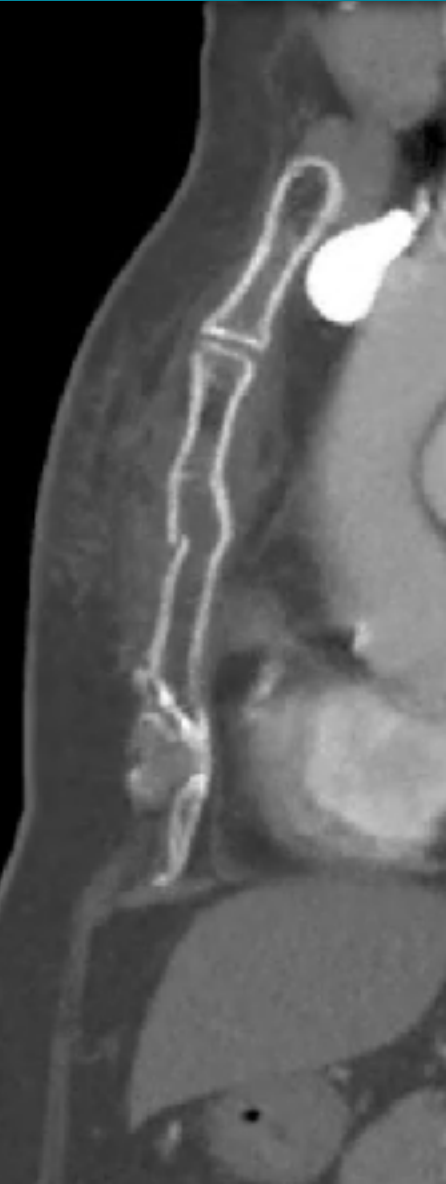


Sternal fracture hematoma block

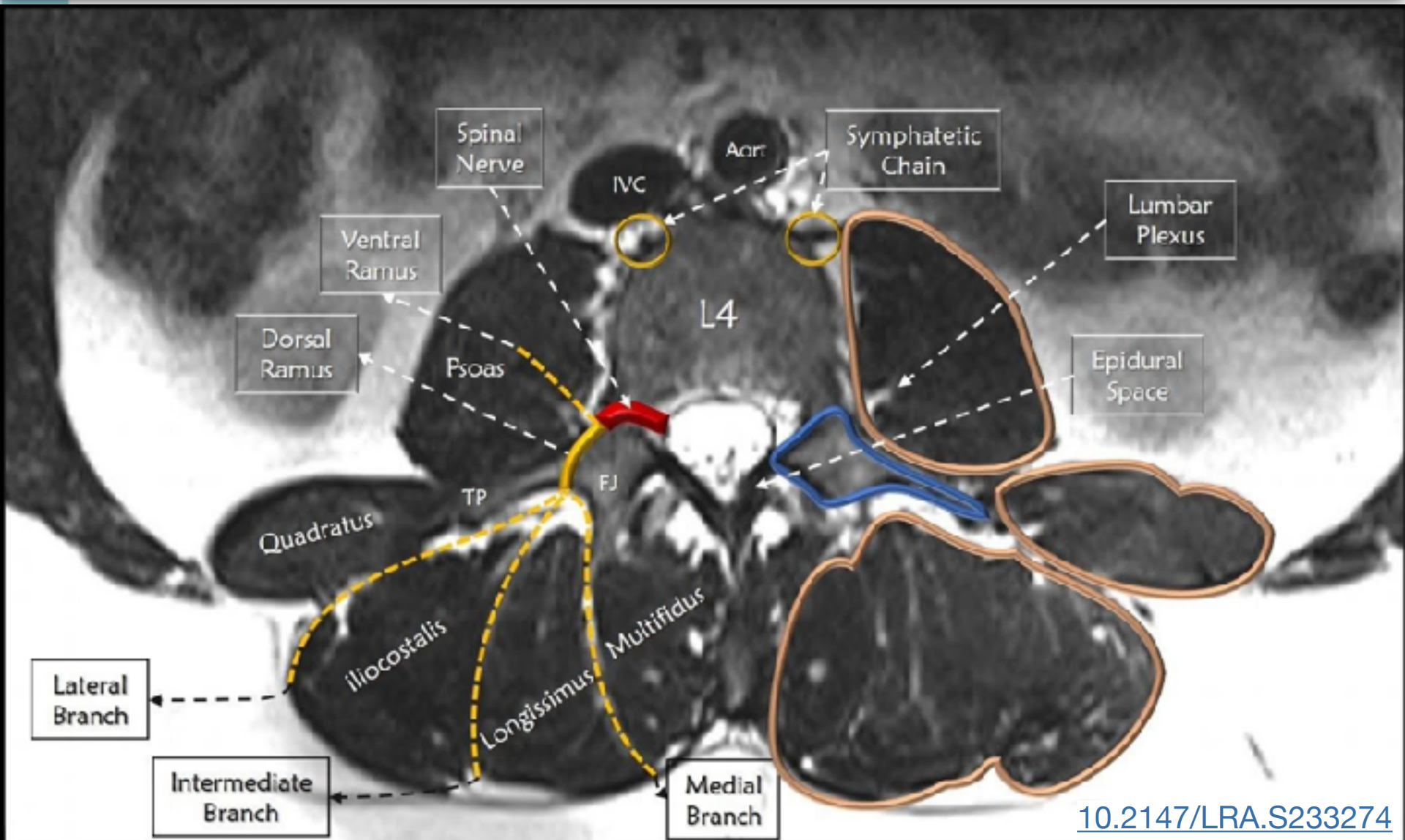


P R
1.1 8.8

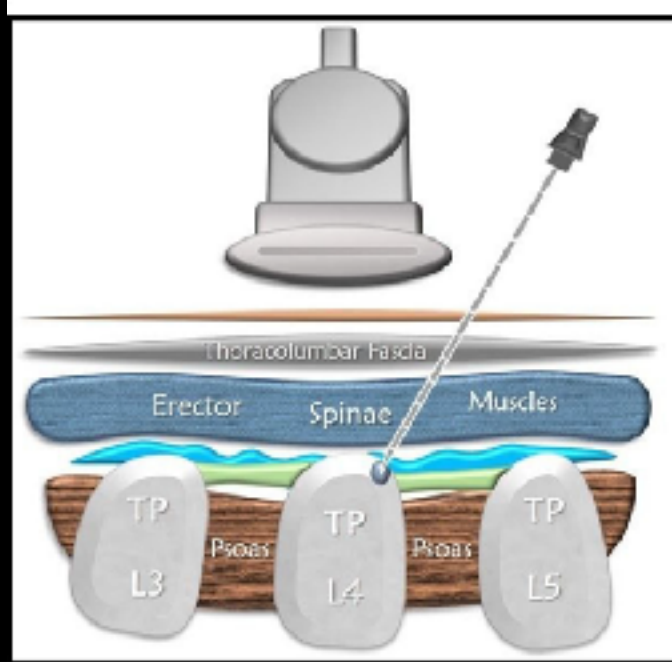
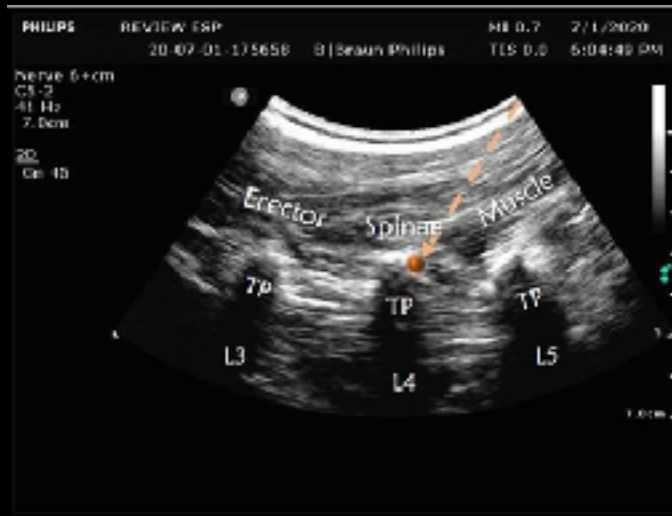
Sternal fracture hematoma block



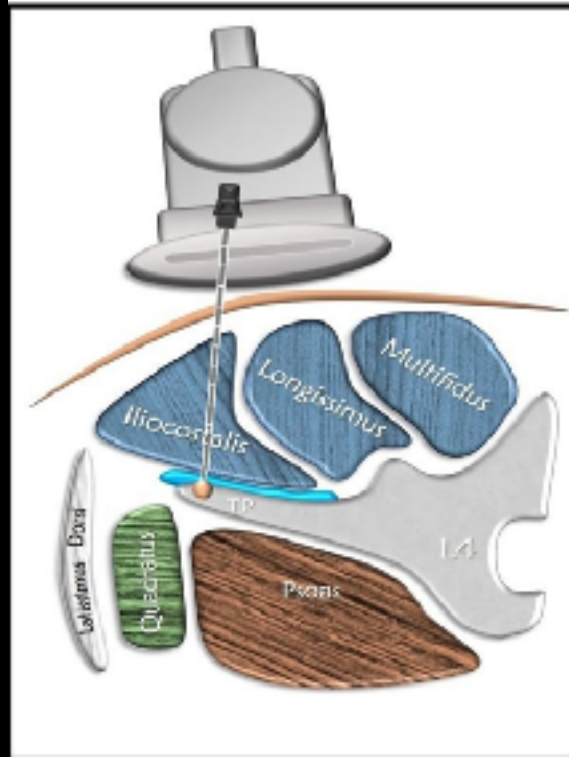
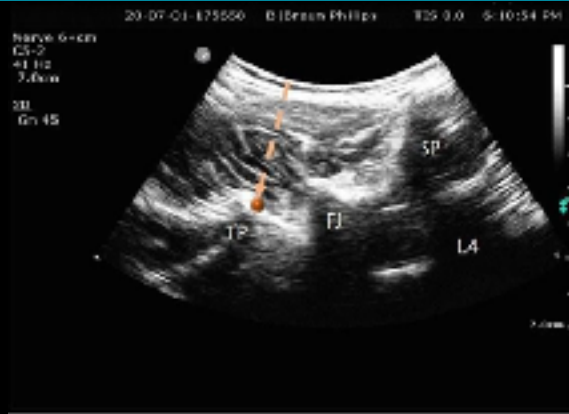
Lumbar ESPB



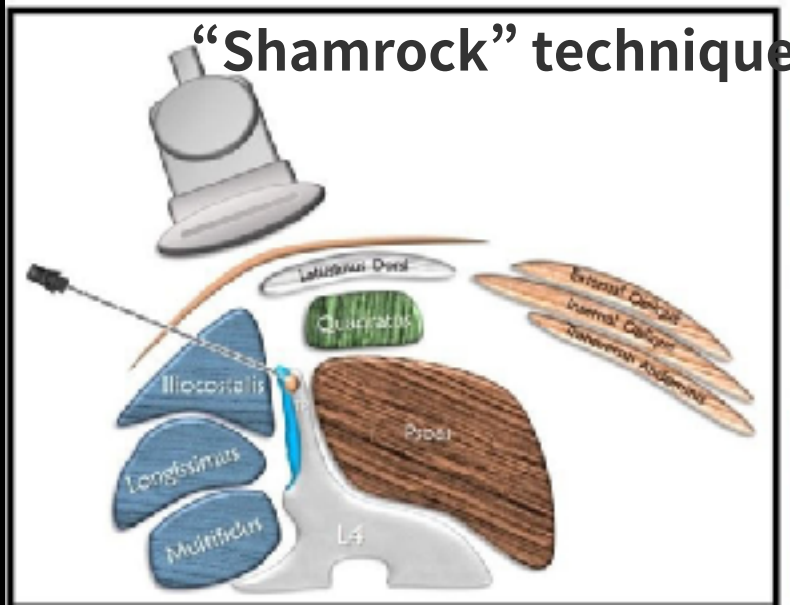
Lumbar ESPB - parasagittal



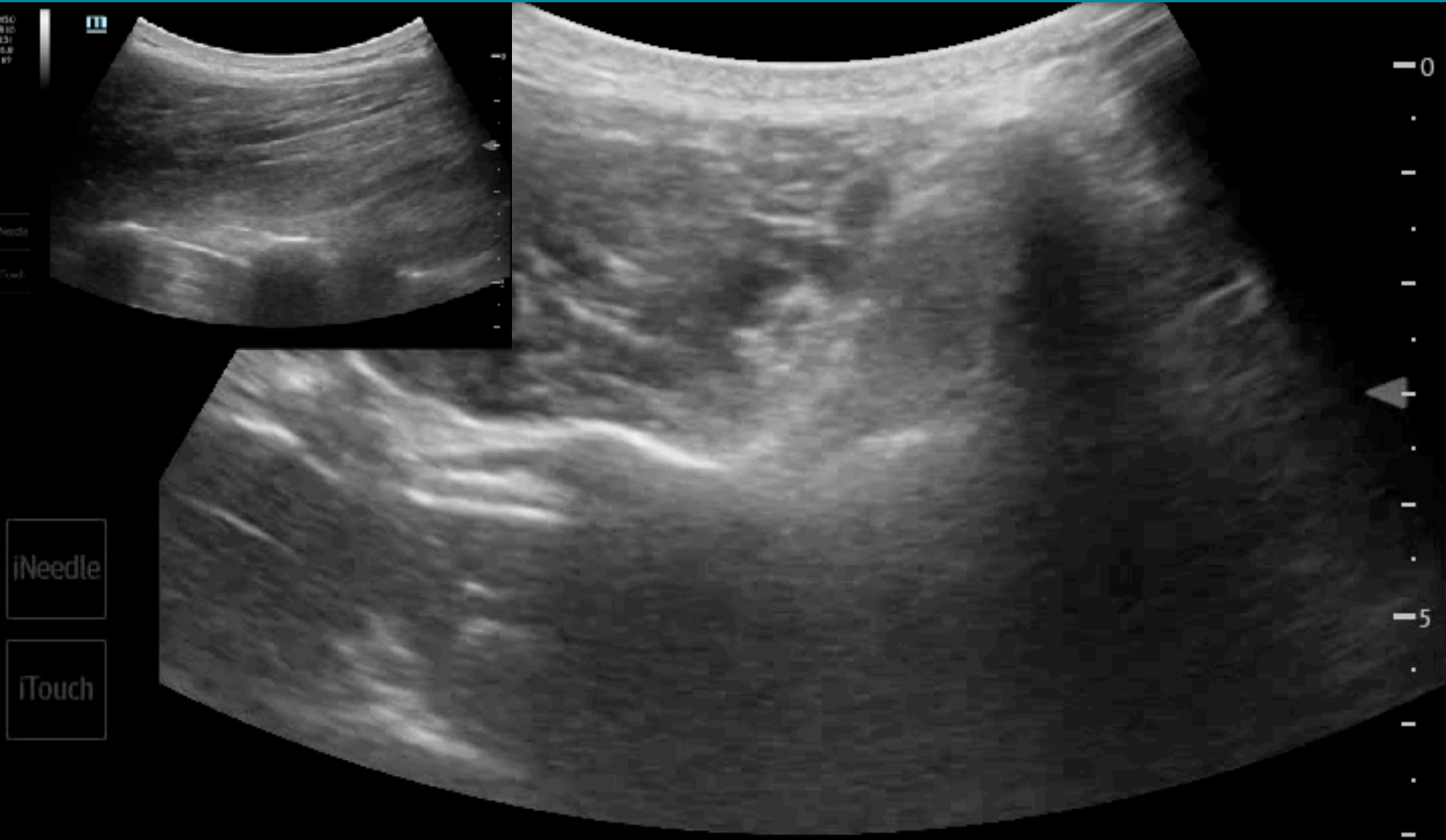
Lumbar ESPB - transverse



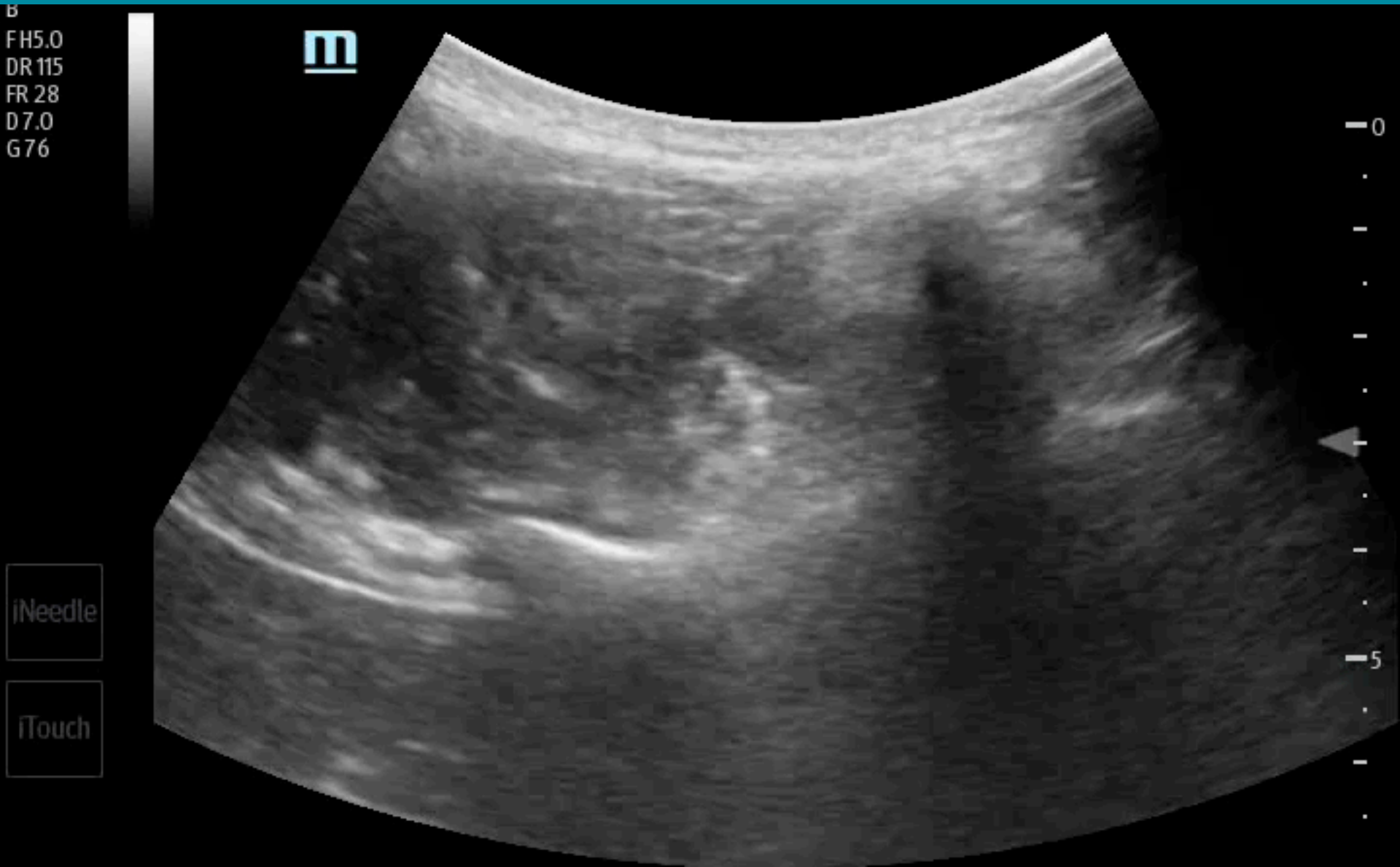
Lumbar ESPB - Aksu approach



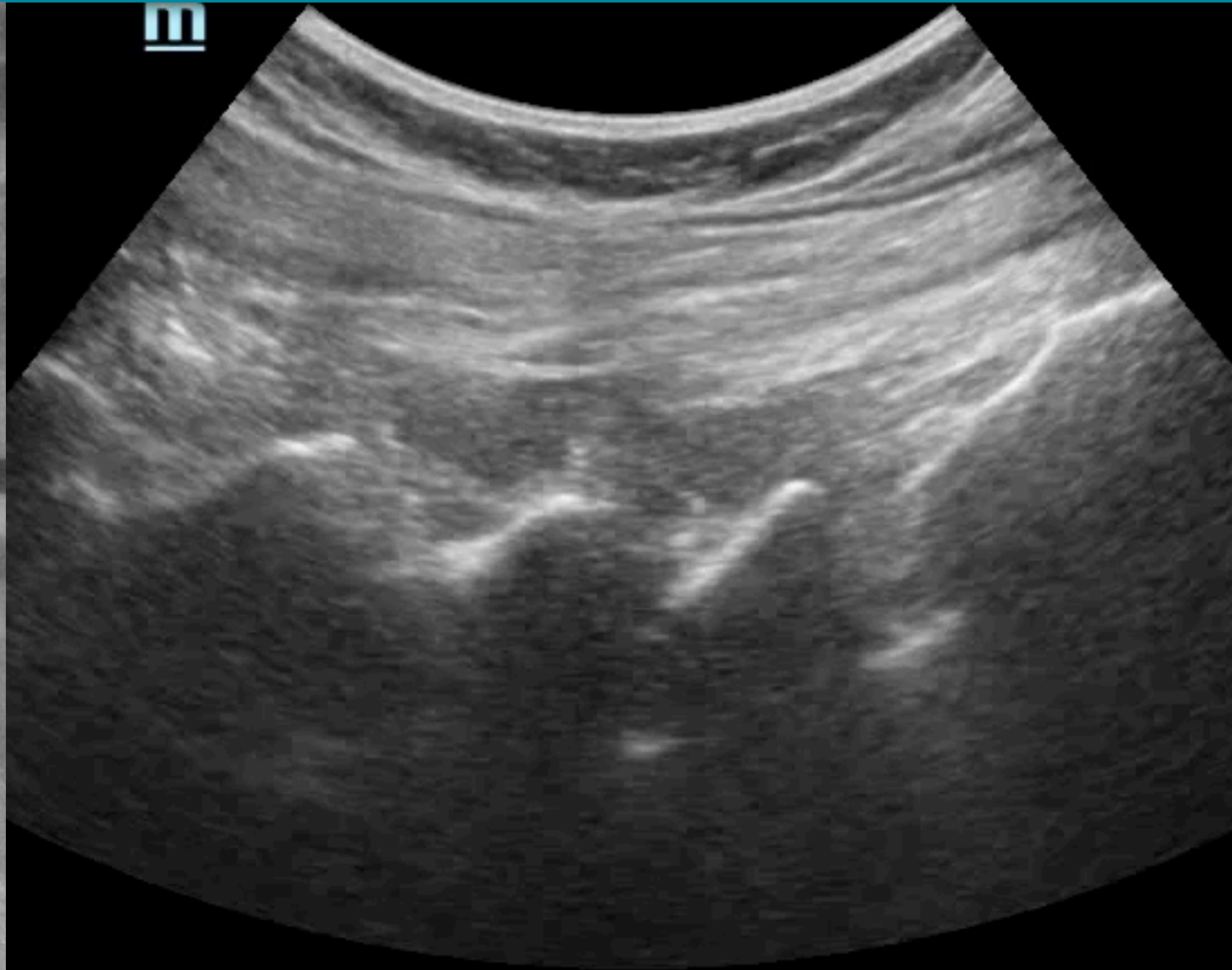
Lumbar ESPB



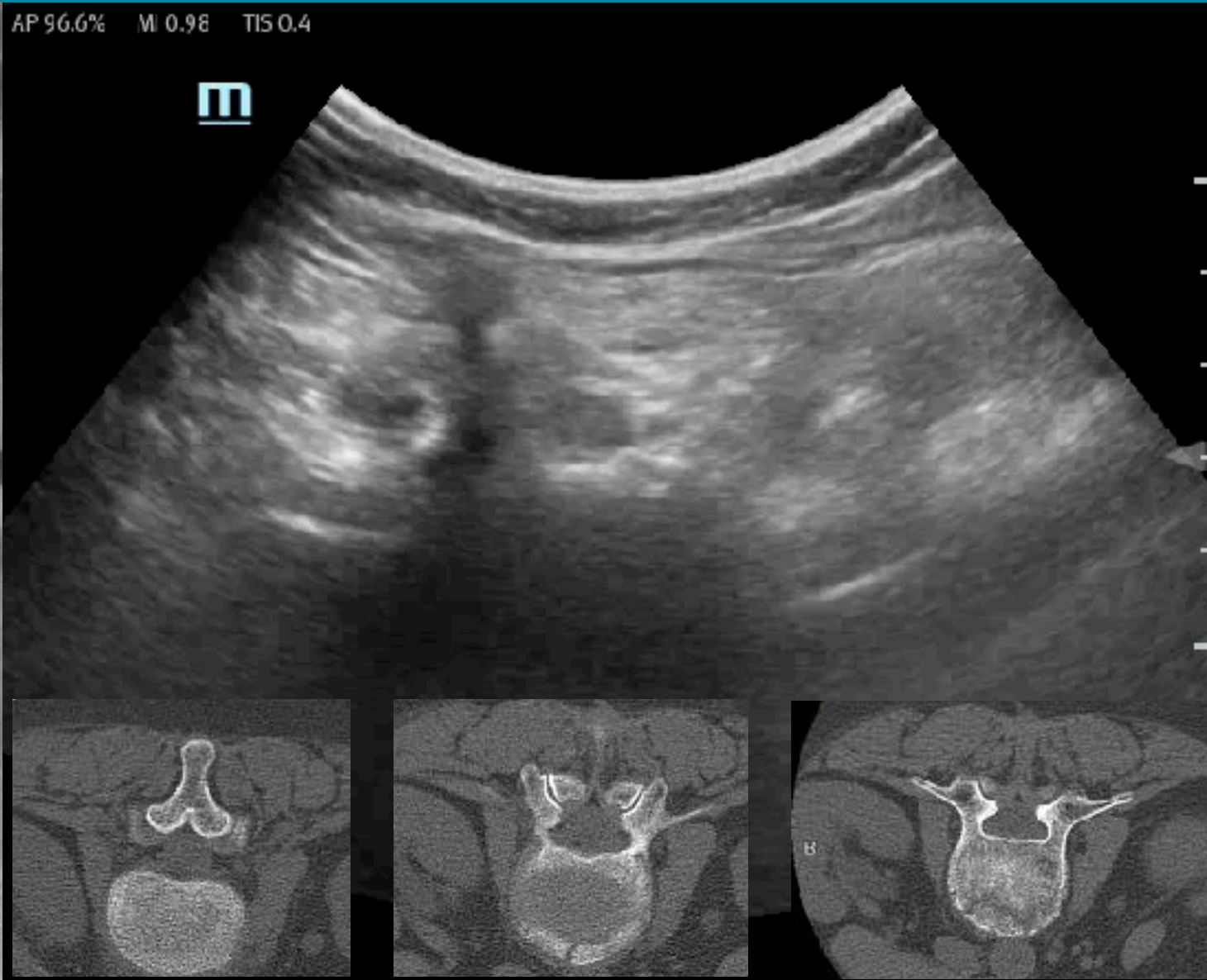
Lumbar ESPB



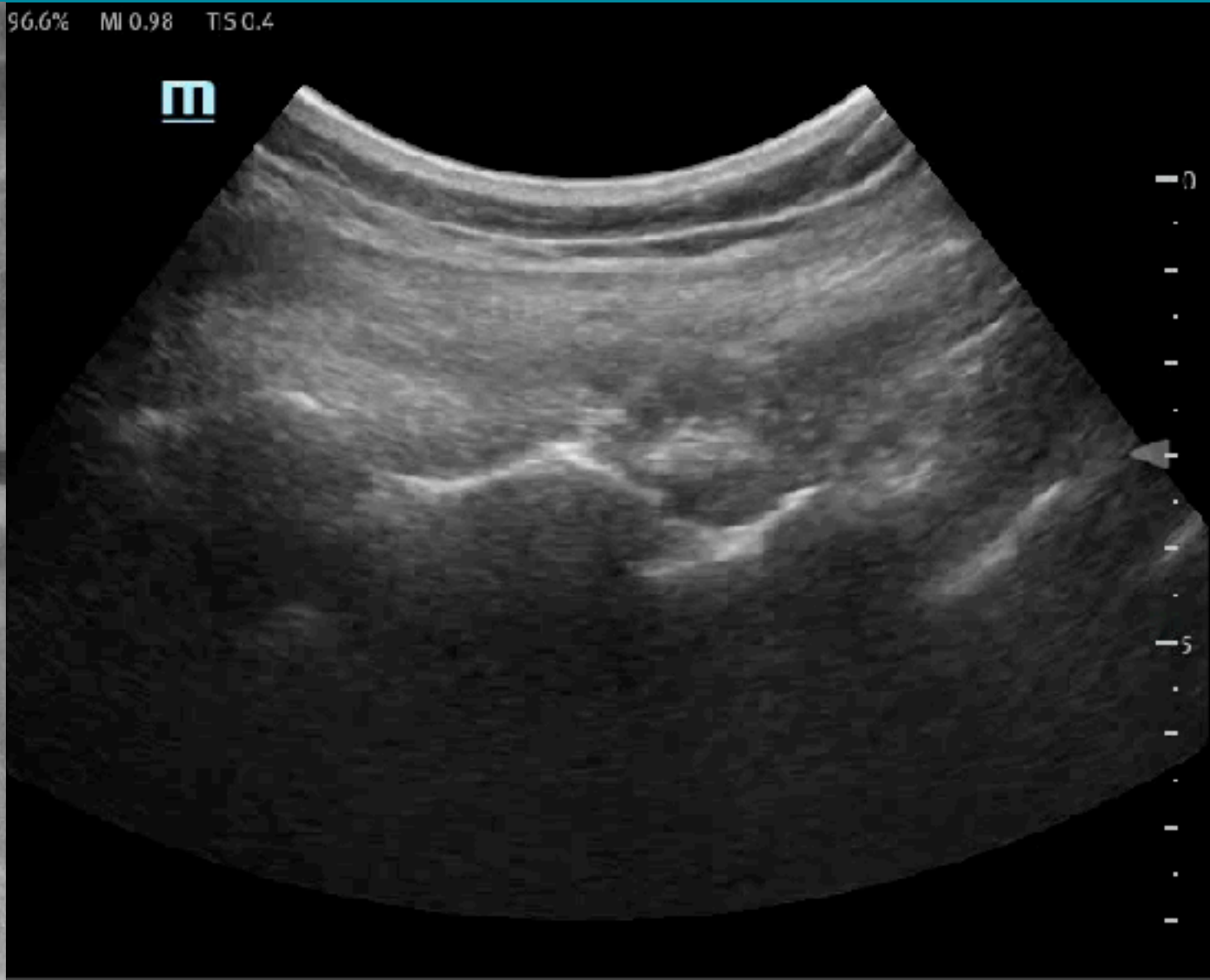
Lumbar ESPB

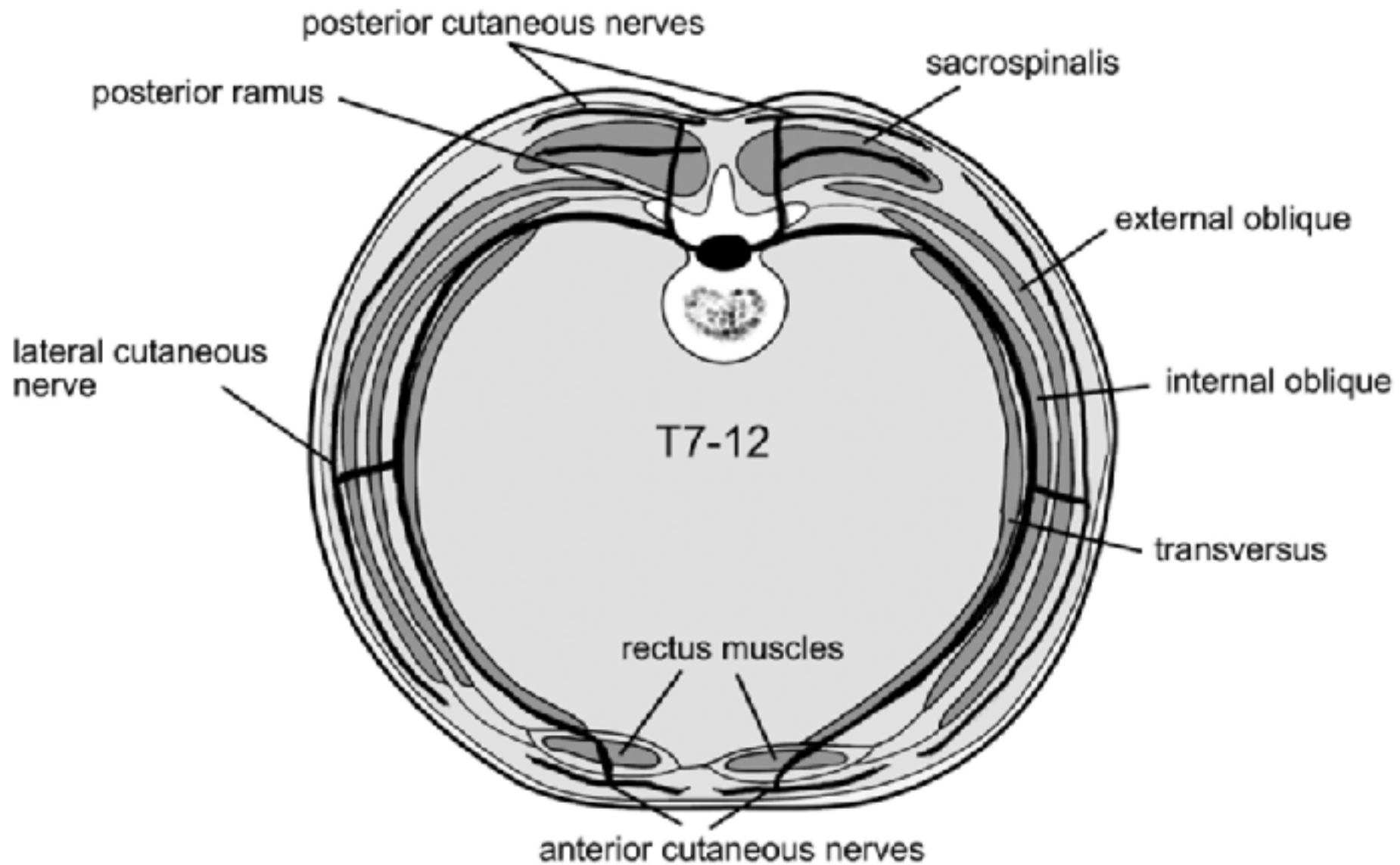


Lumbar ESPB



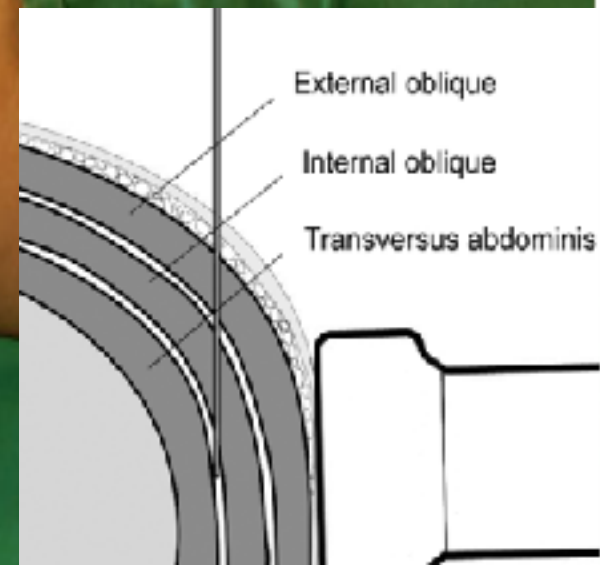
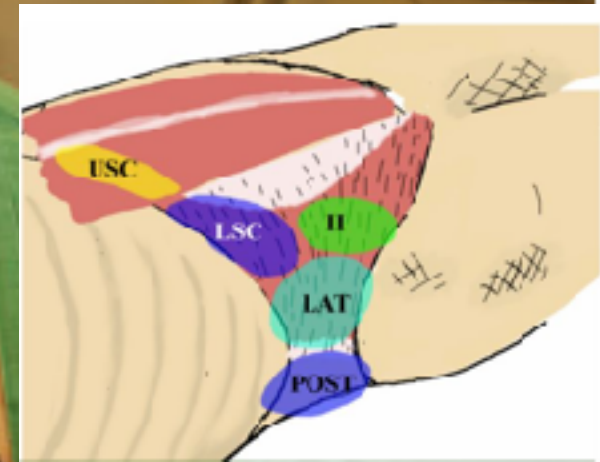
Lumbar ESPB



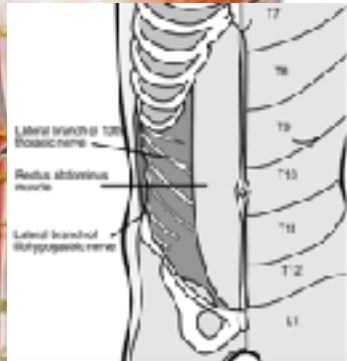
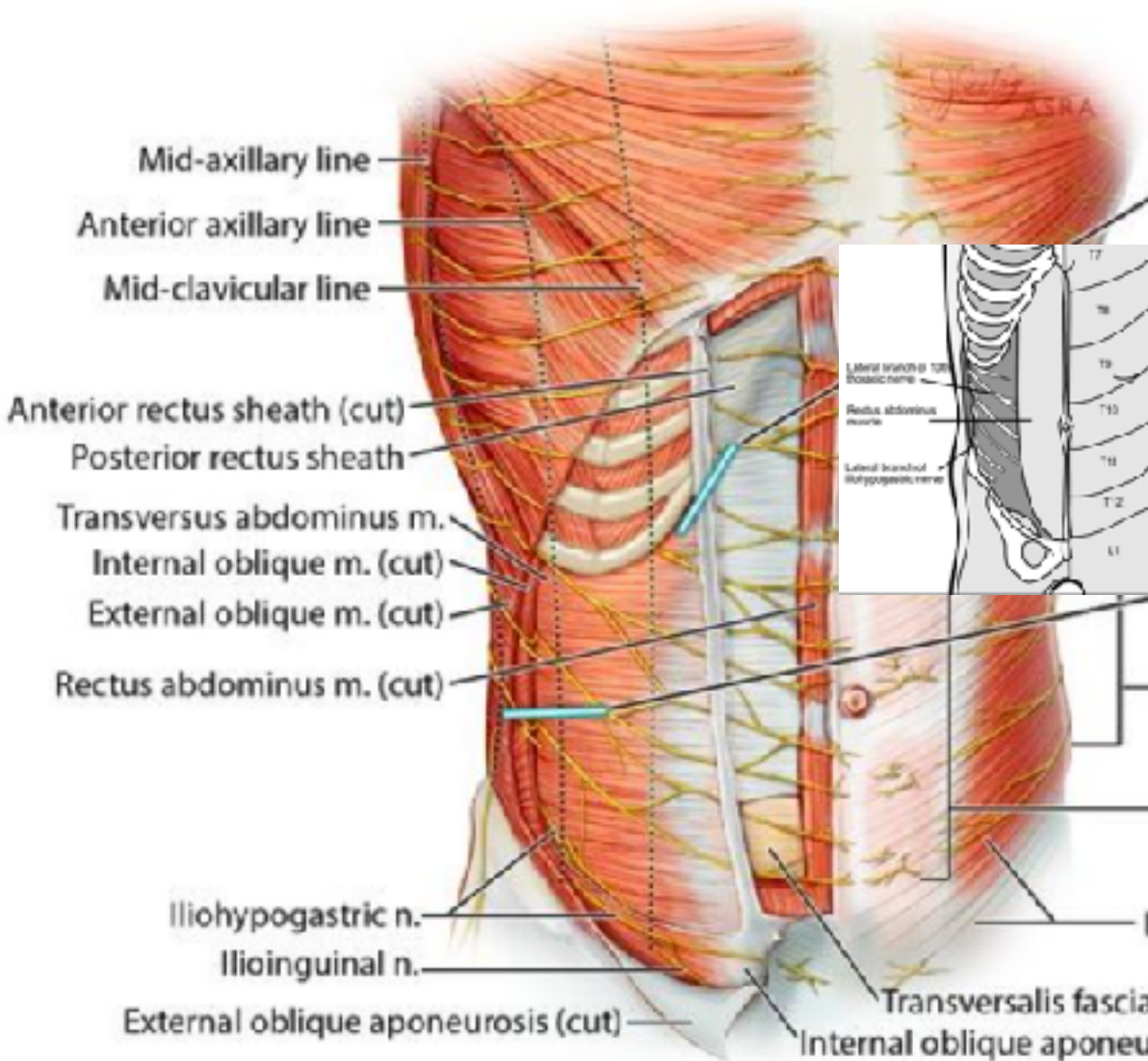


TAP Block - surface landmark

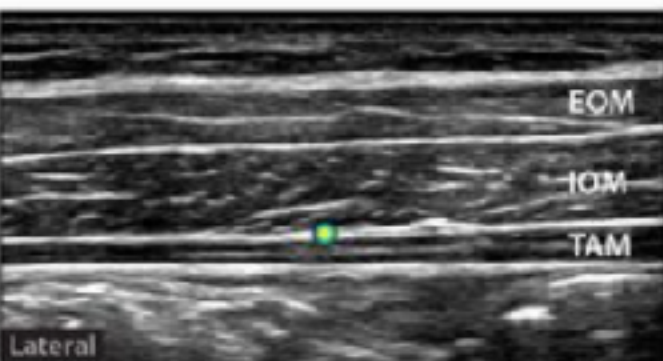
triangle of Petit



Transversus Abdominis Plane Blocks



USG subcostal TAP block



USG lateral TAP block

Lateral cutaneous branches of thoracoabdominal nn. (T6-T12)

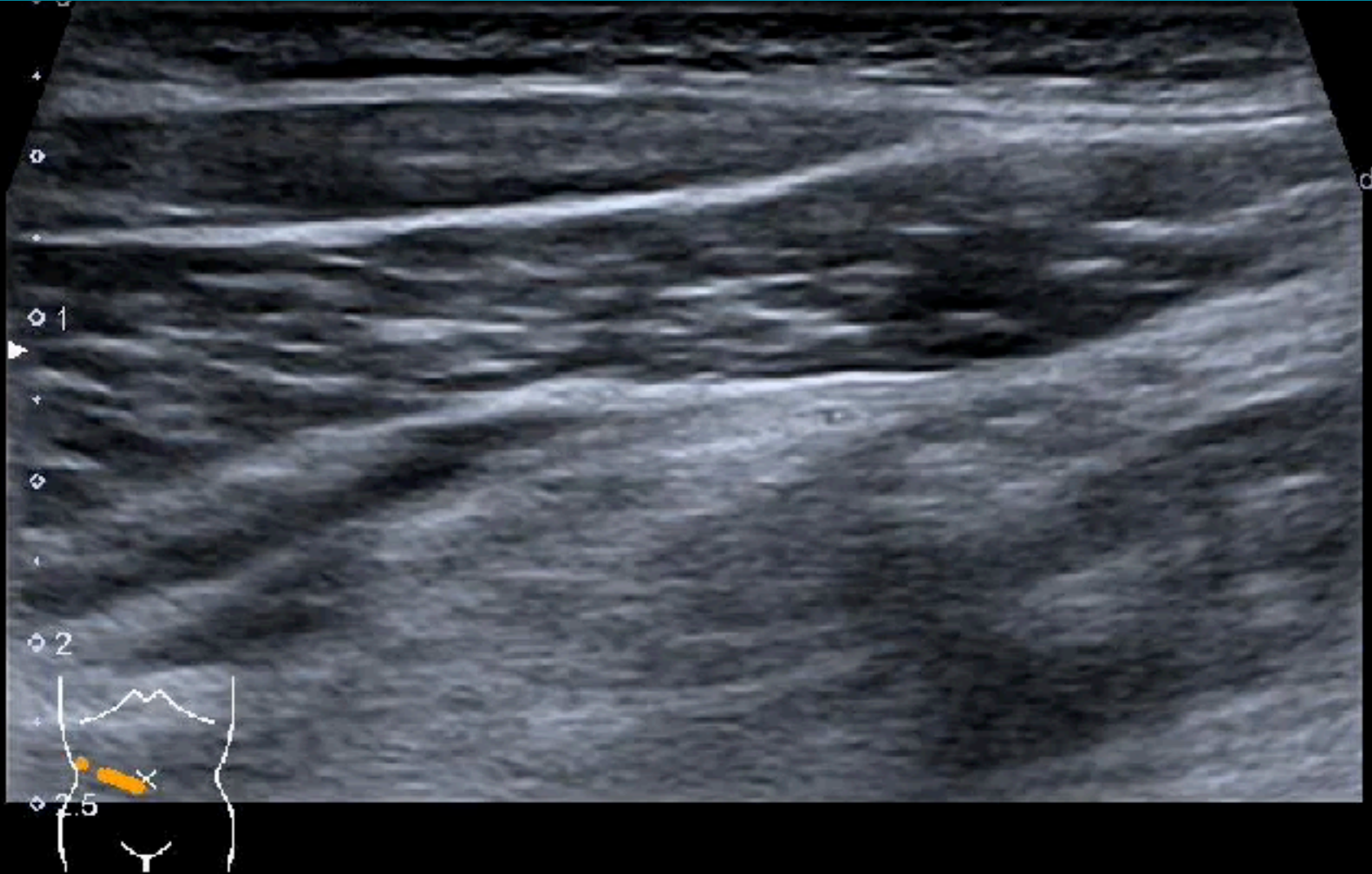
Anterior cutaneous branches of thoracoabdominal nn. (T6-T12)

External oblique m. and aponeurosis

TAP Block

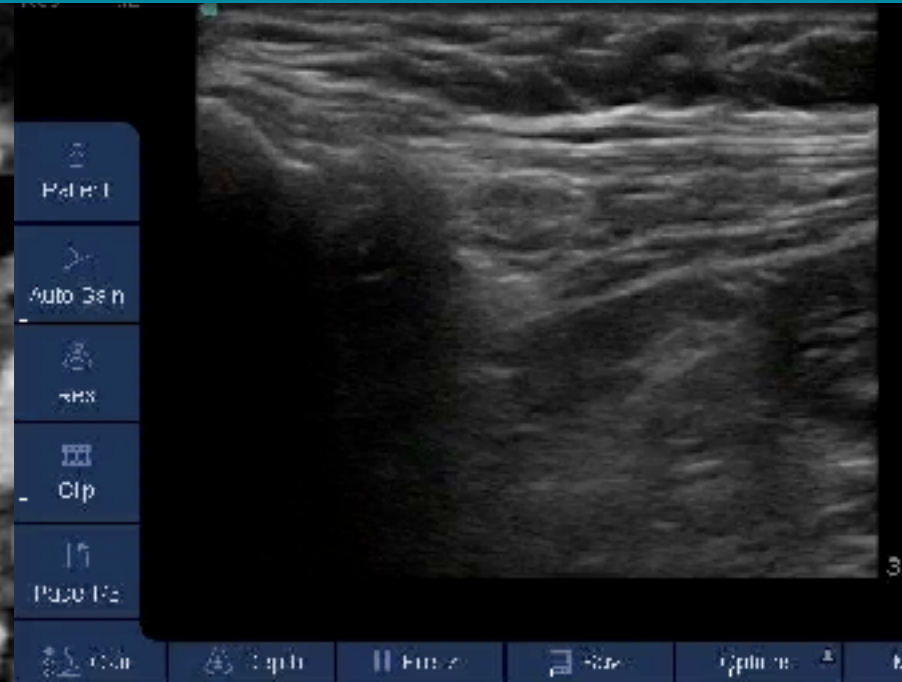
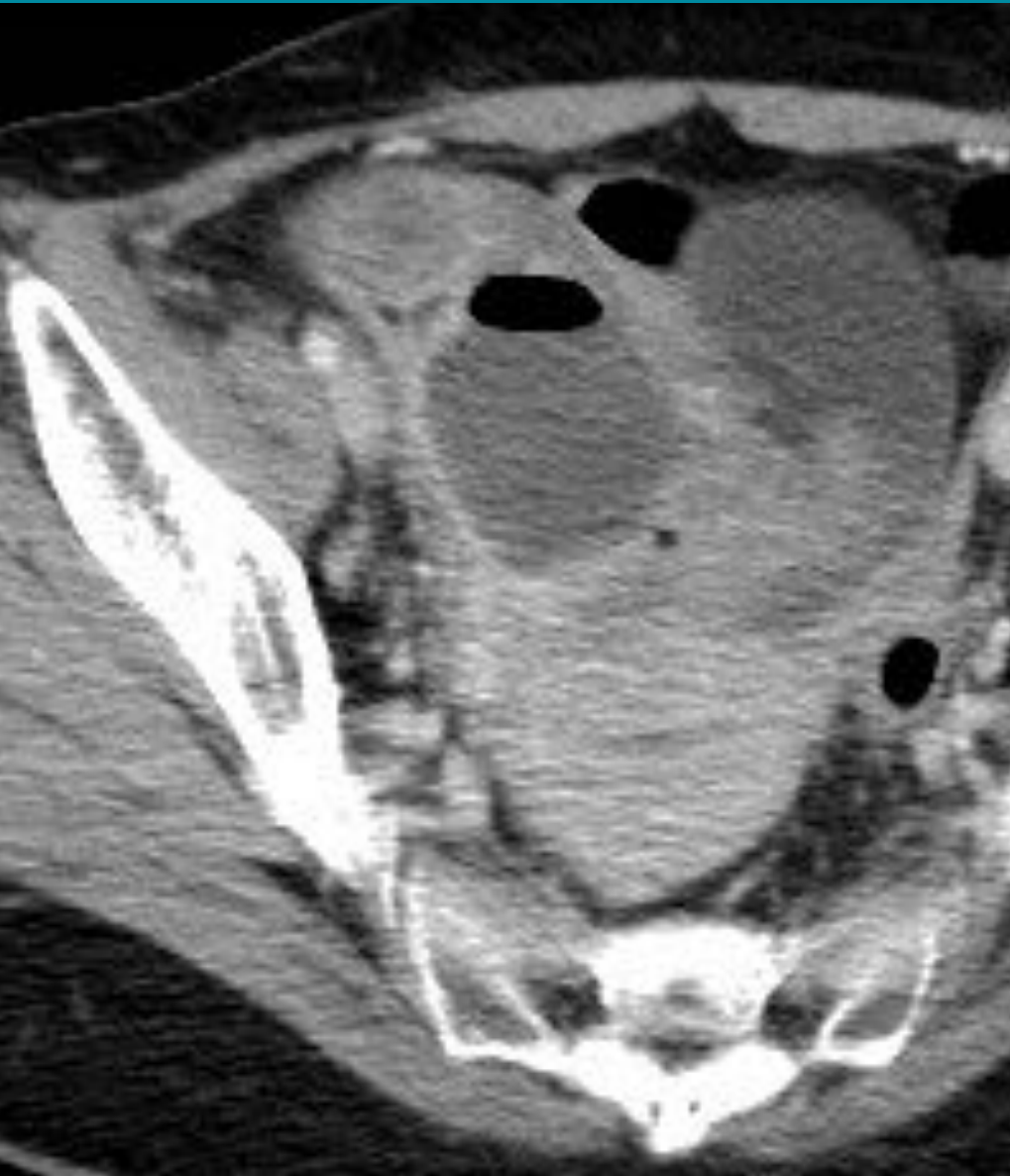


Anterior TAP (Ilioinguinal-iliohypogastric)



MI
1.5
11L4
diffT9.0
30 fps
G:86
DR:80
A:6
P:3

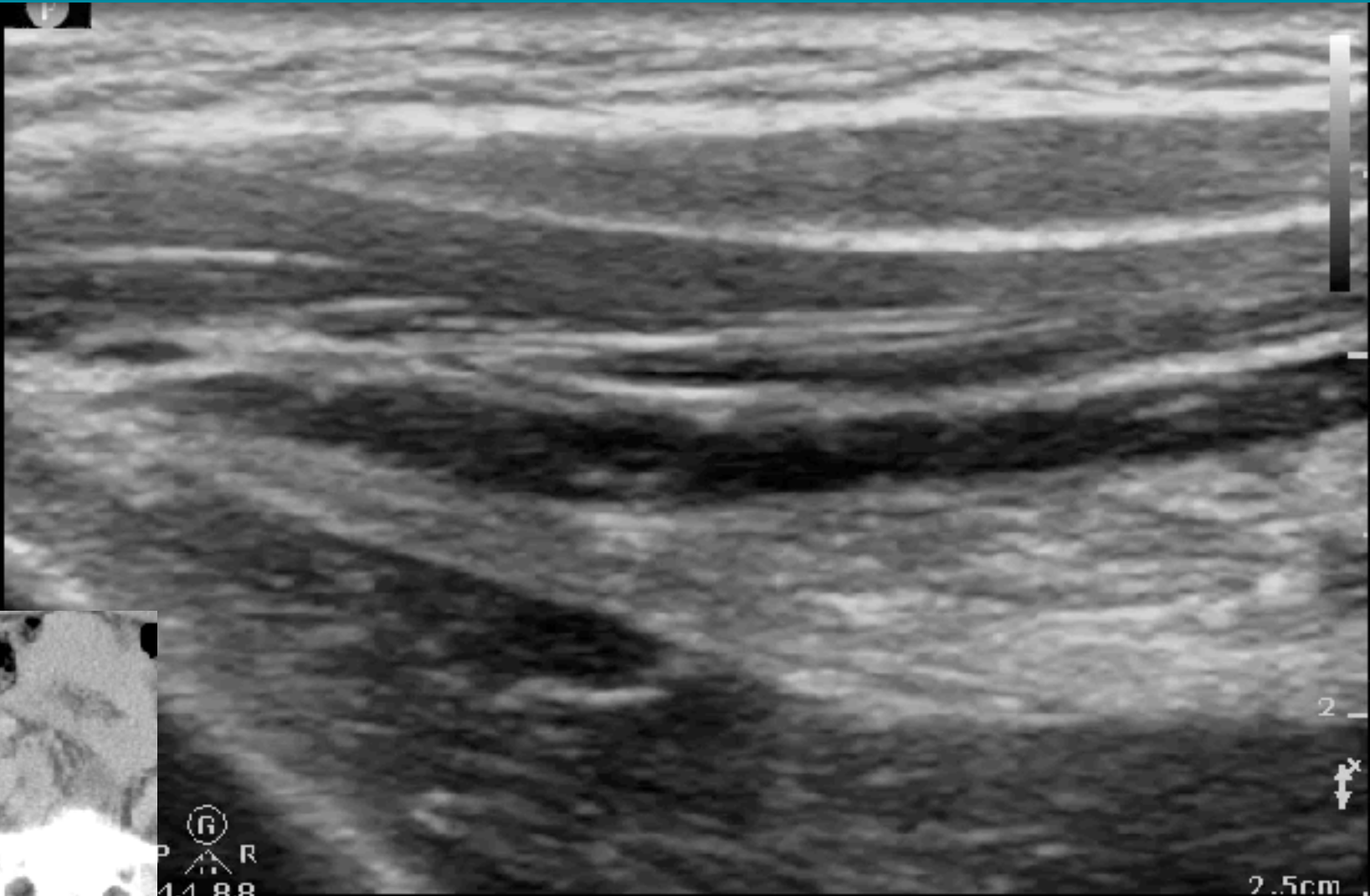
Anterior TAP (Ilioinguinal-iliohypogastric)



Anterior TAP (Ilioinguinal-iliohypogastric)

Arterial
L12-3
49 Hz
2.5cm

2D
HGen
Gn 66
C. 41
3/3/2



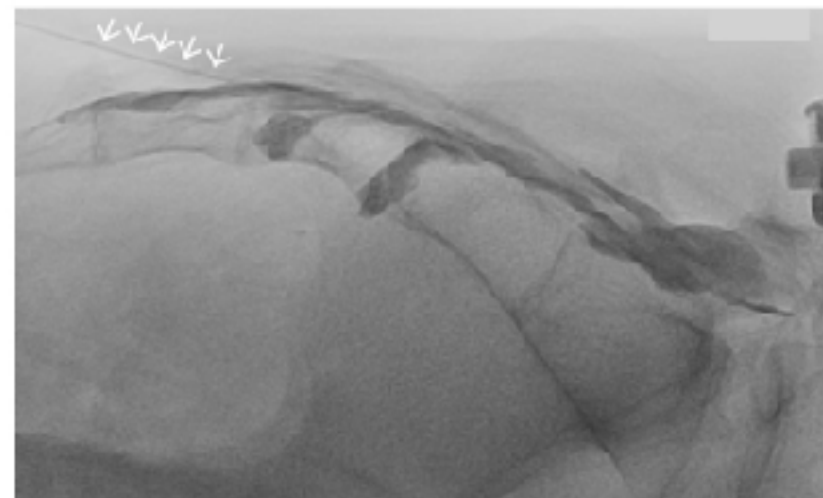
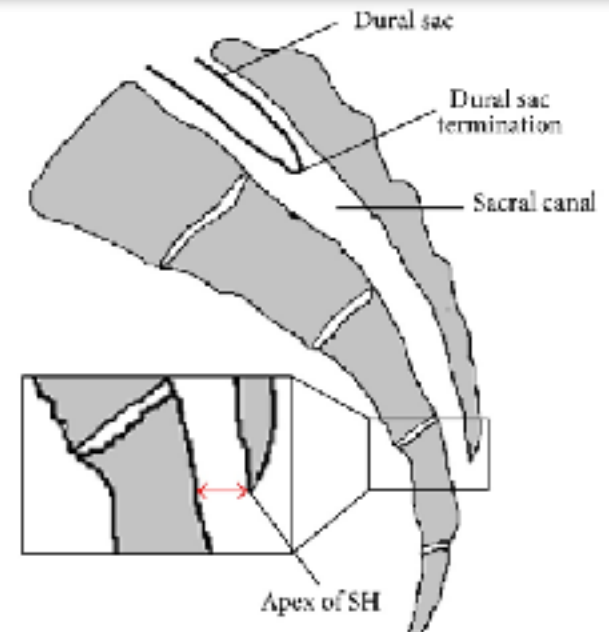
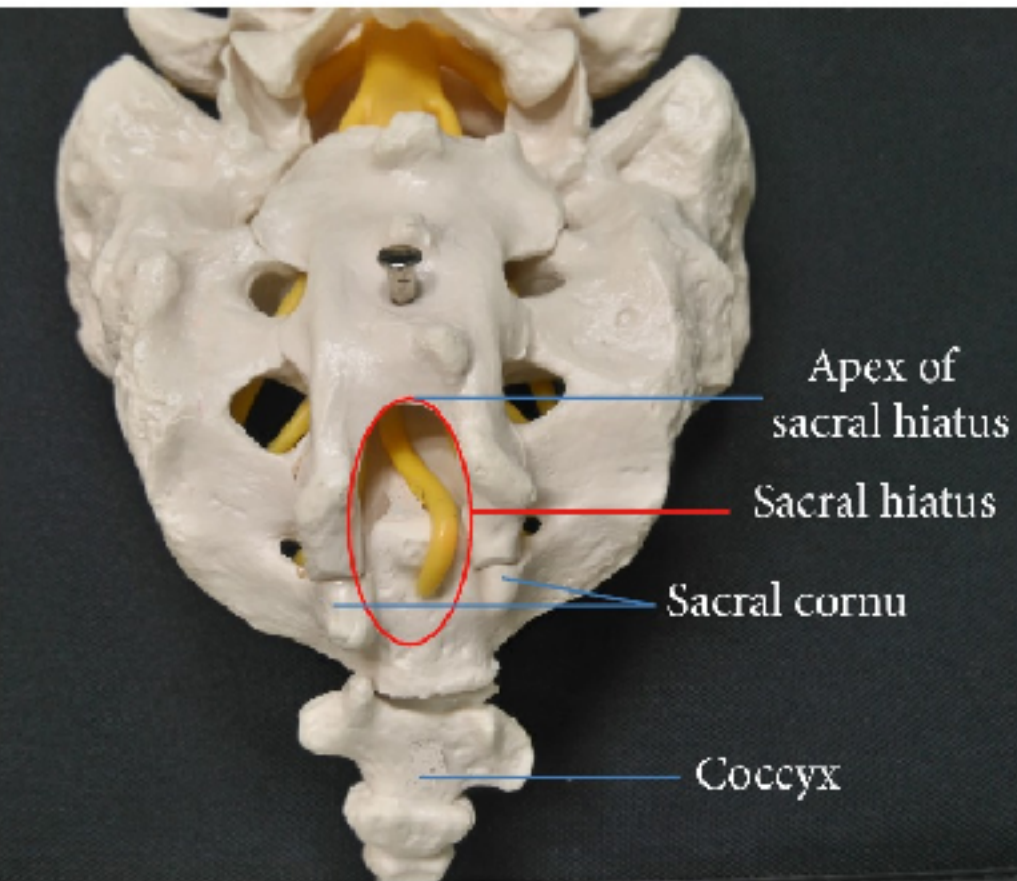
1.1 8.8

2.5cm

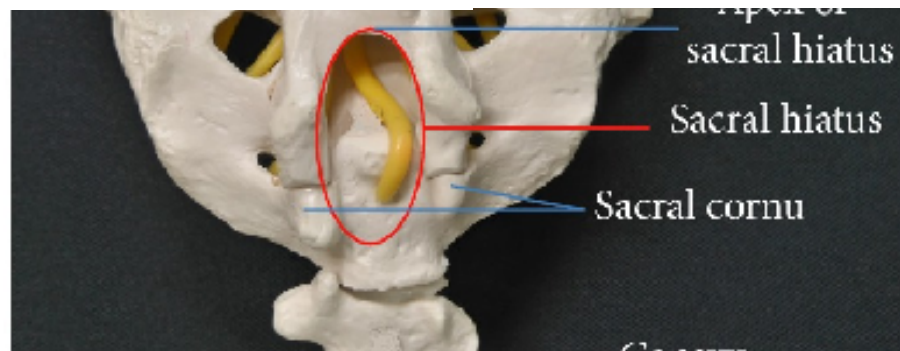
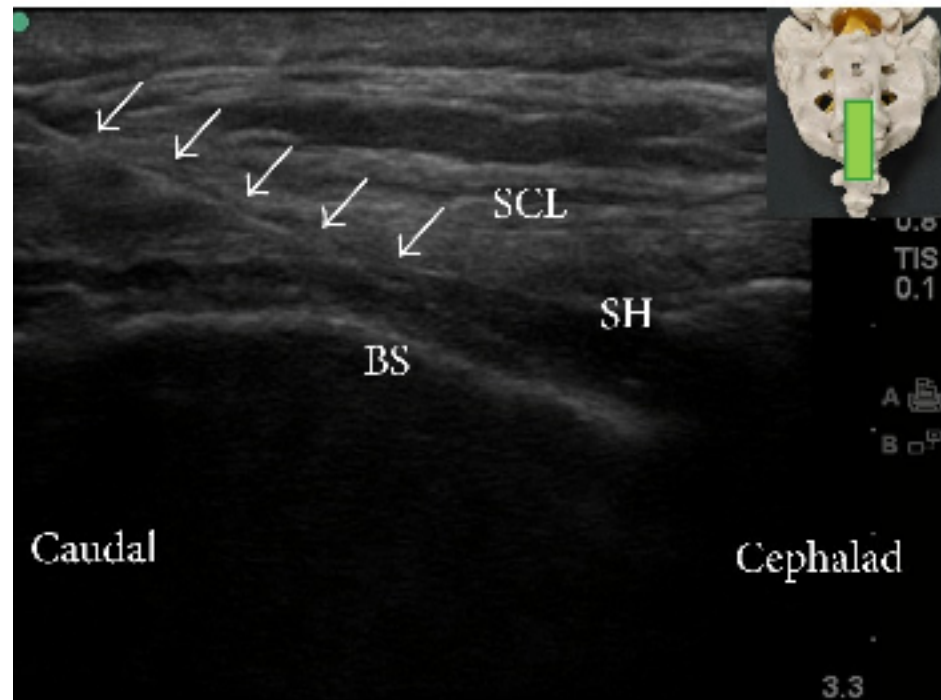
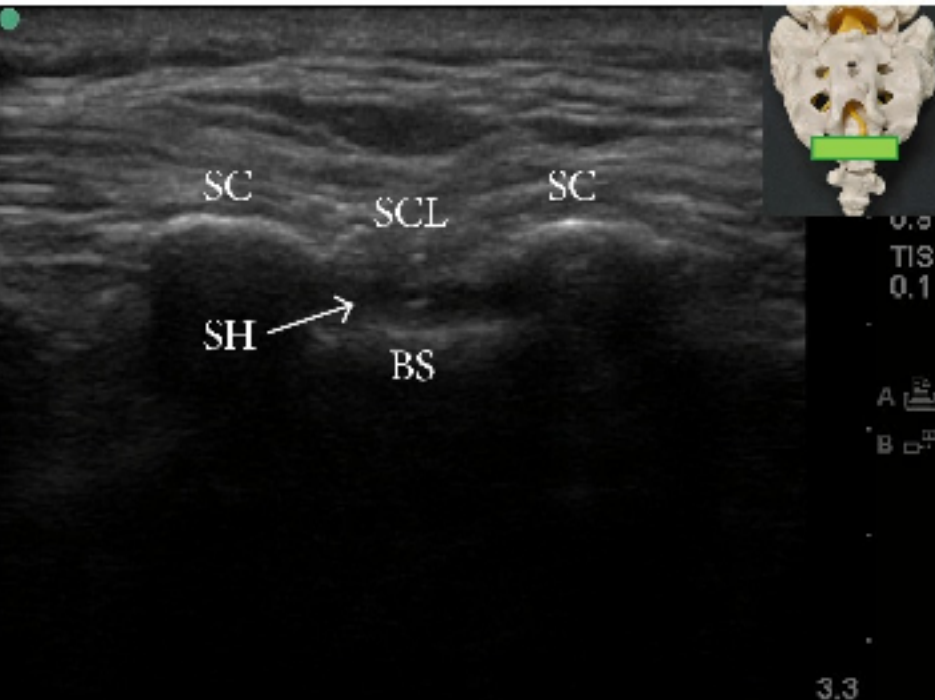
Anterior TAP (Ilioinguinal-iliohypogastric)



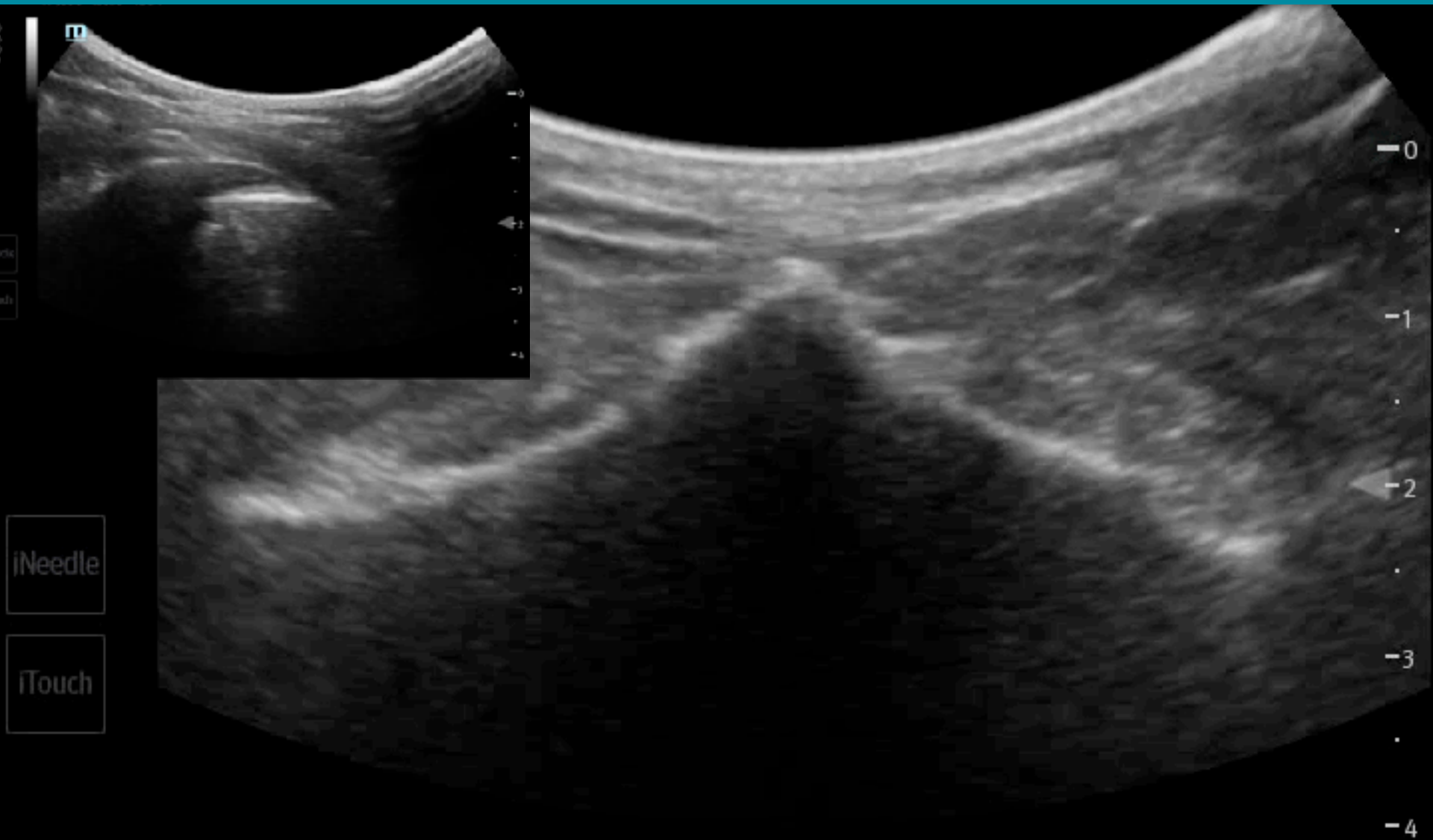
Caudal block



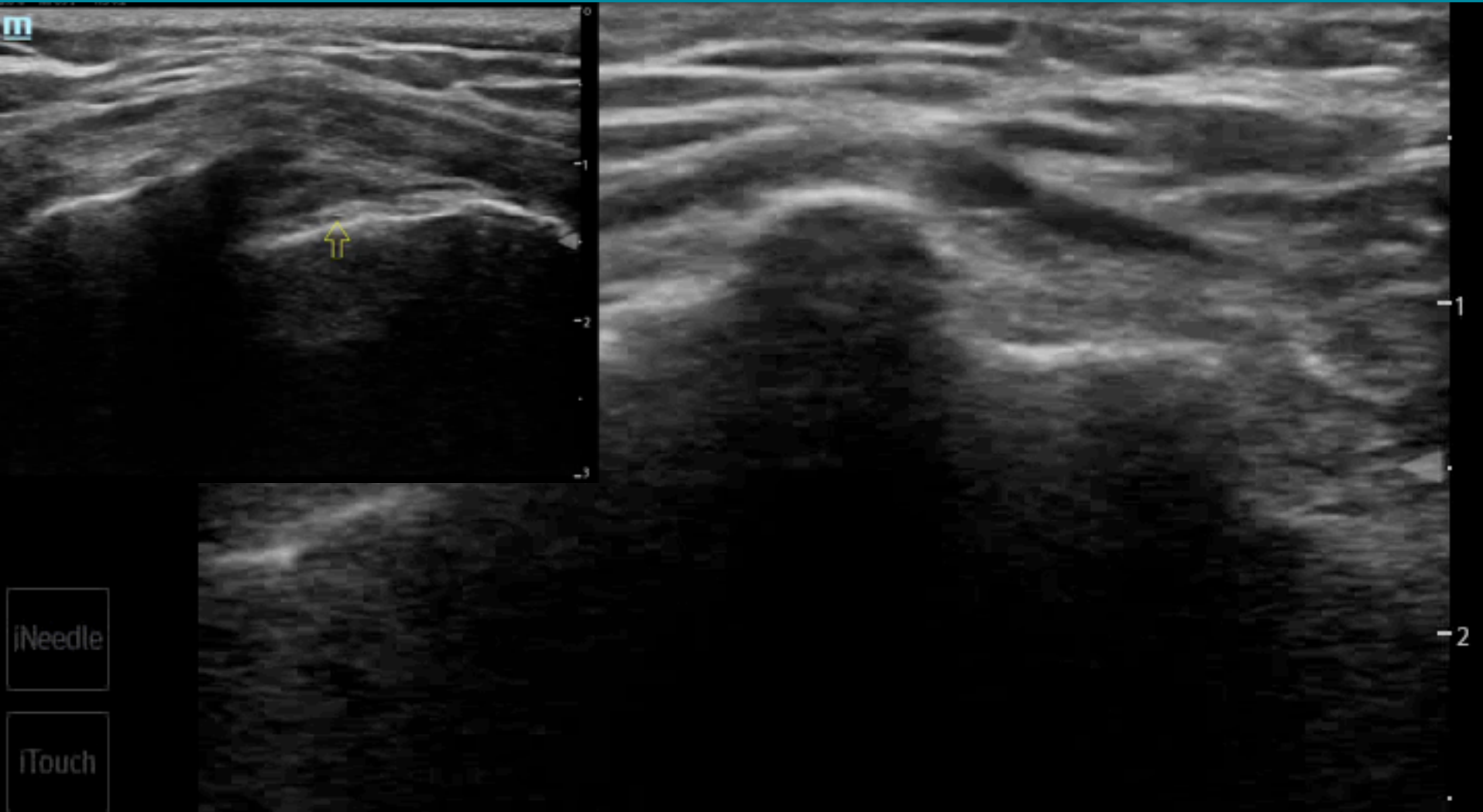
Caudal block



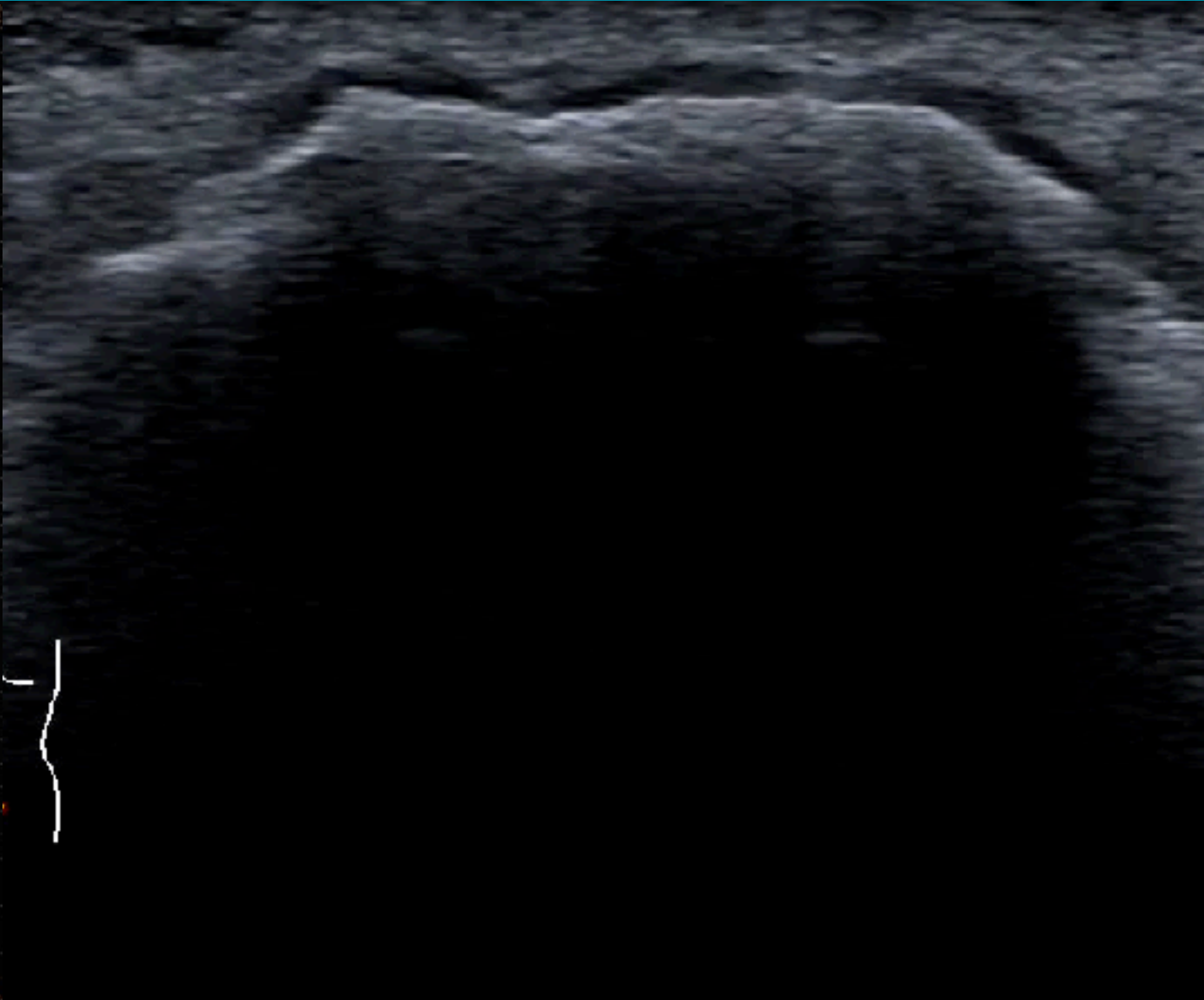
Caudal block



Caudal block



Caudal block for chronic low back pain



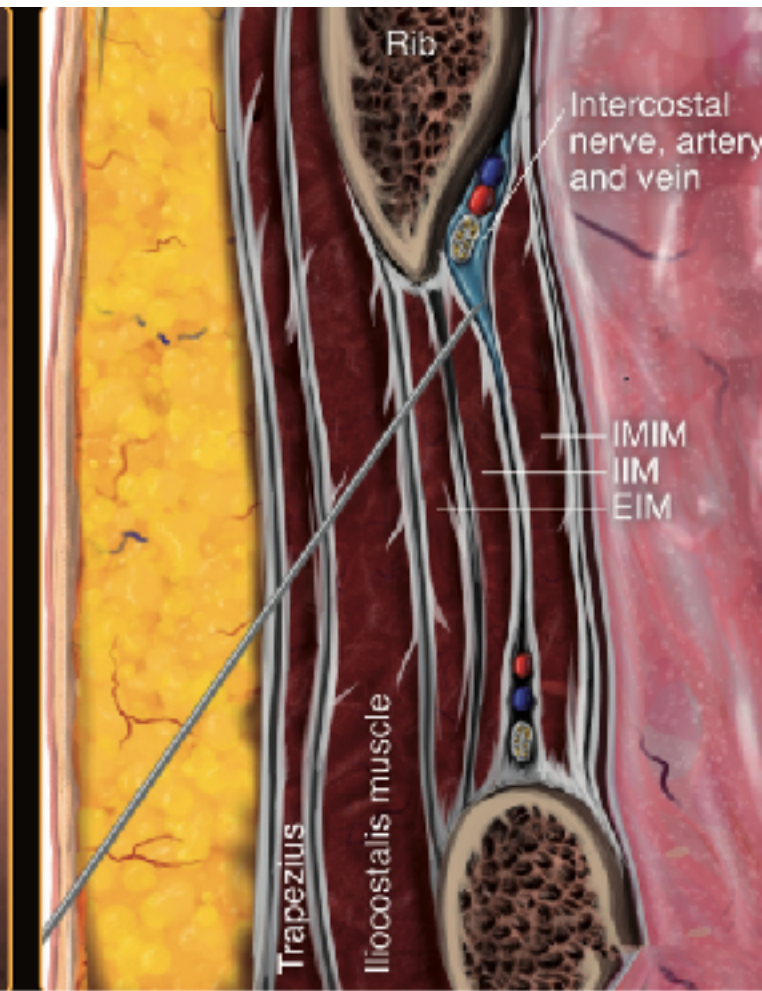
Caudal block for radiculopathy



Intercostal block

3-5ml/IC level

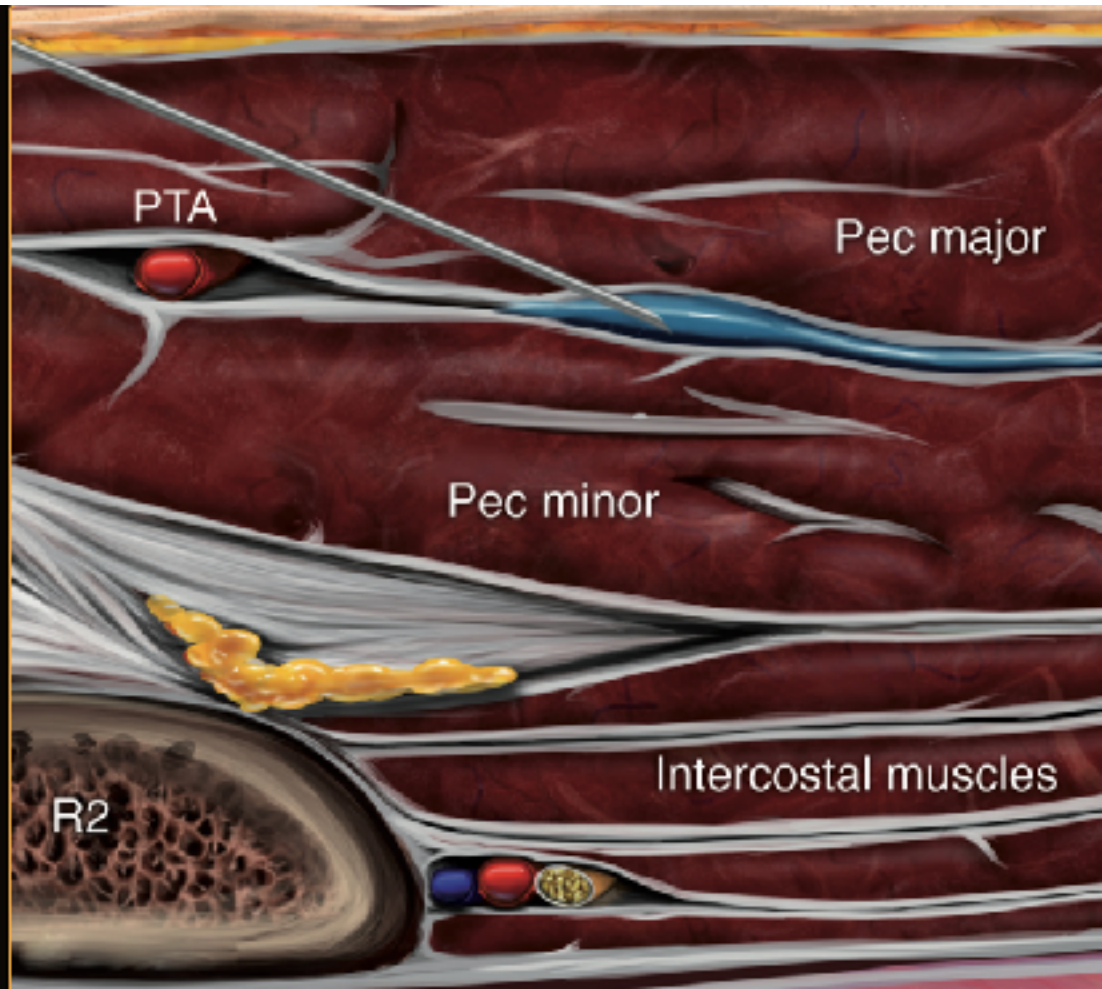
Rib fracture / Chest tube



PEC I block

10-20ml

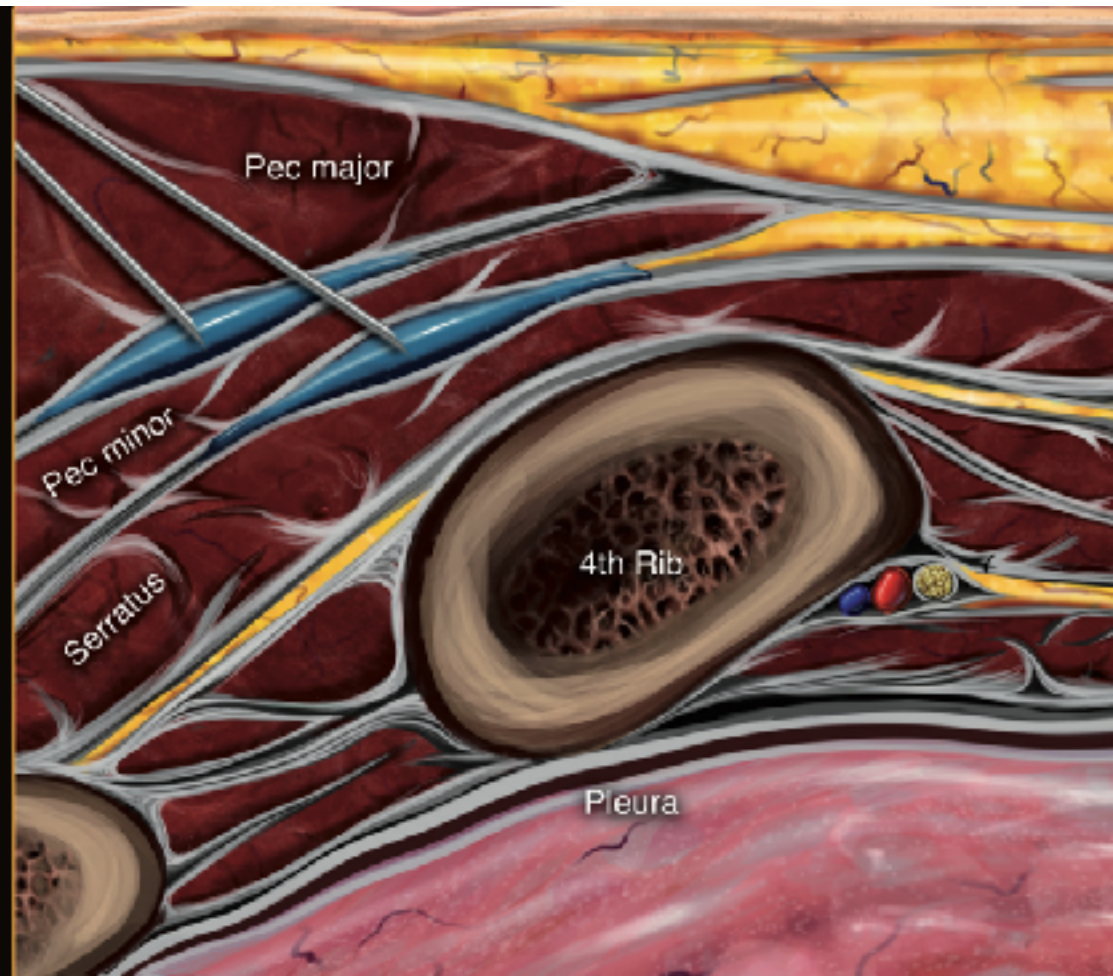
Anterior chest procedures



PEC II block

10 ml (1) / 20 ml (2)

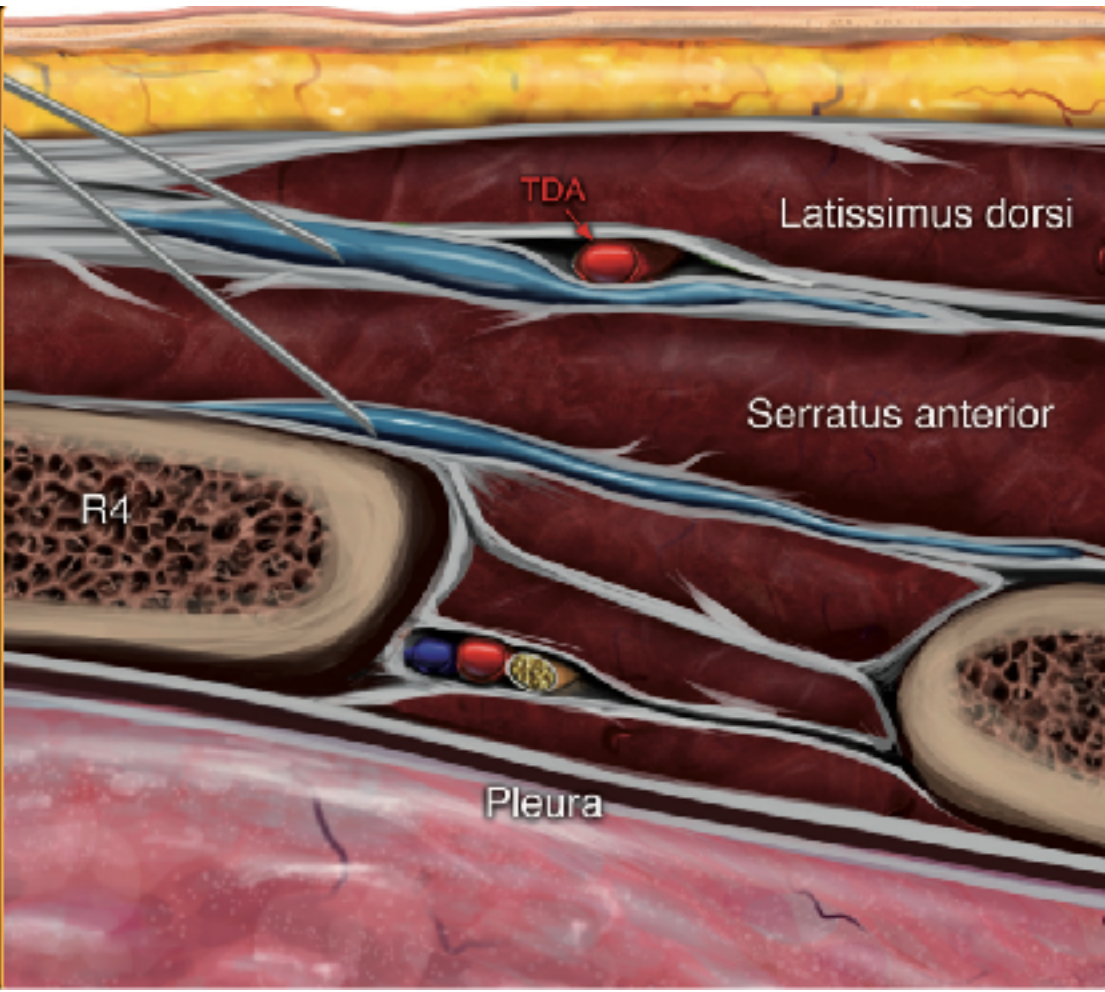
PEC I + Axilla



SAP block

20 ml (above or below)

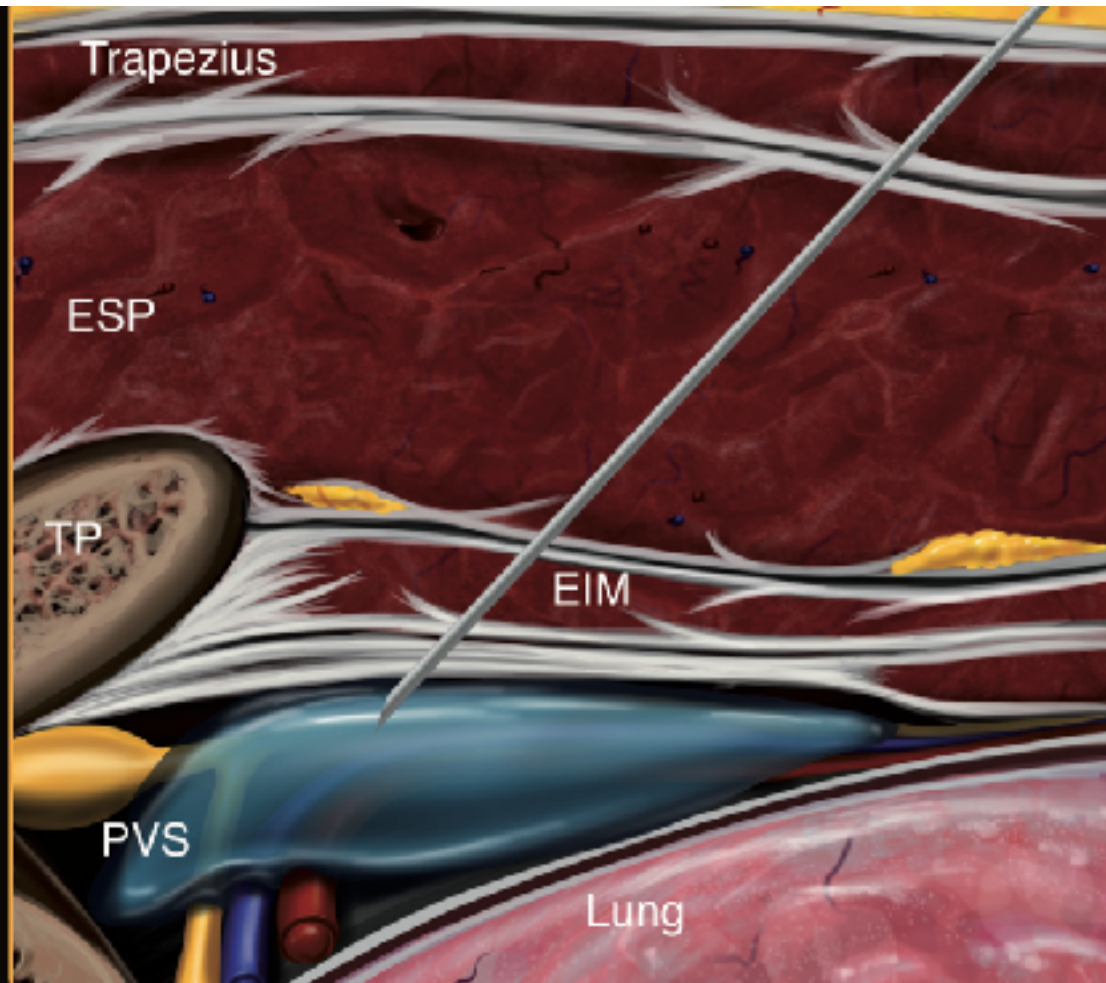
PEC II + Lat chest



PVB

4-5ml/PV level

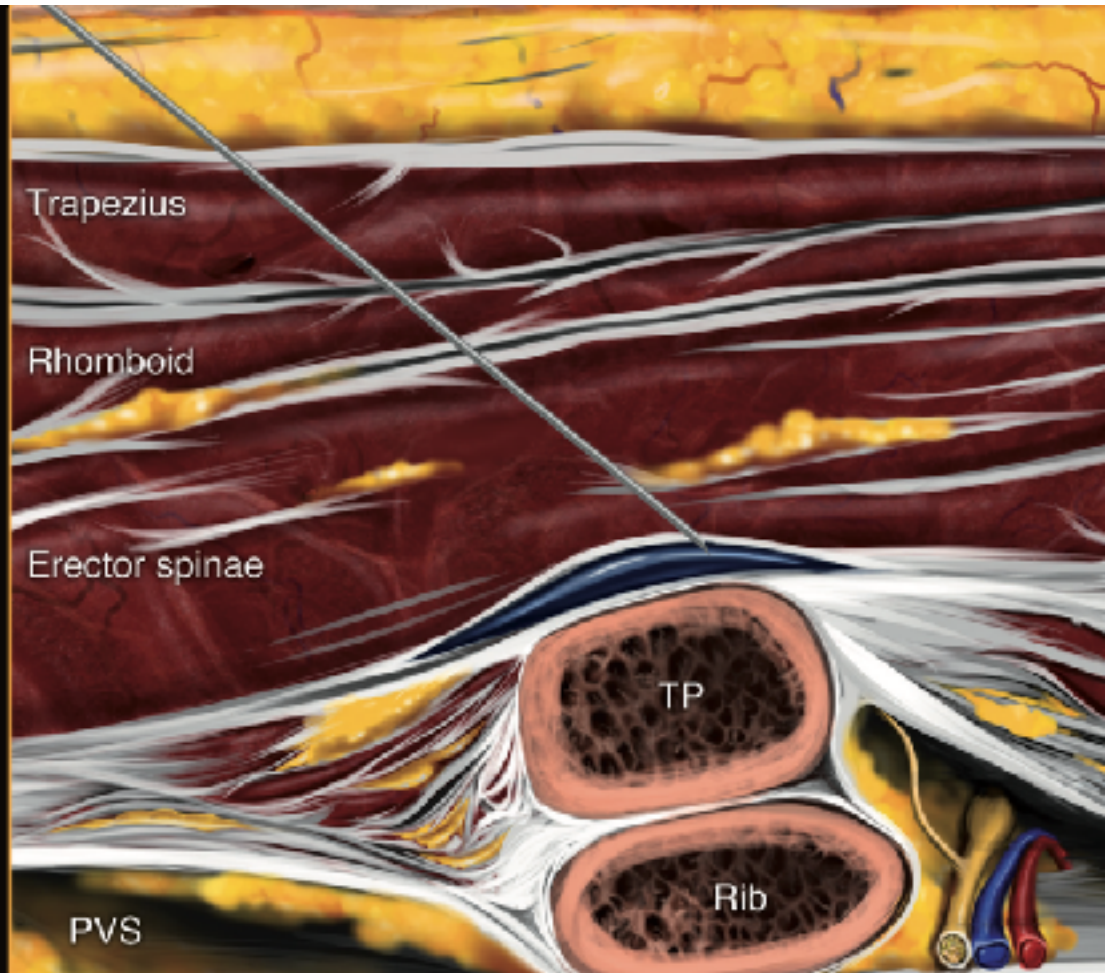
Rib fracture / PHN



ESPB

20-30 ml

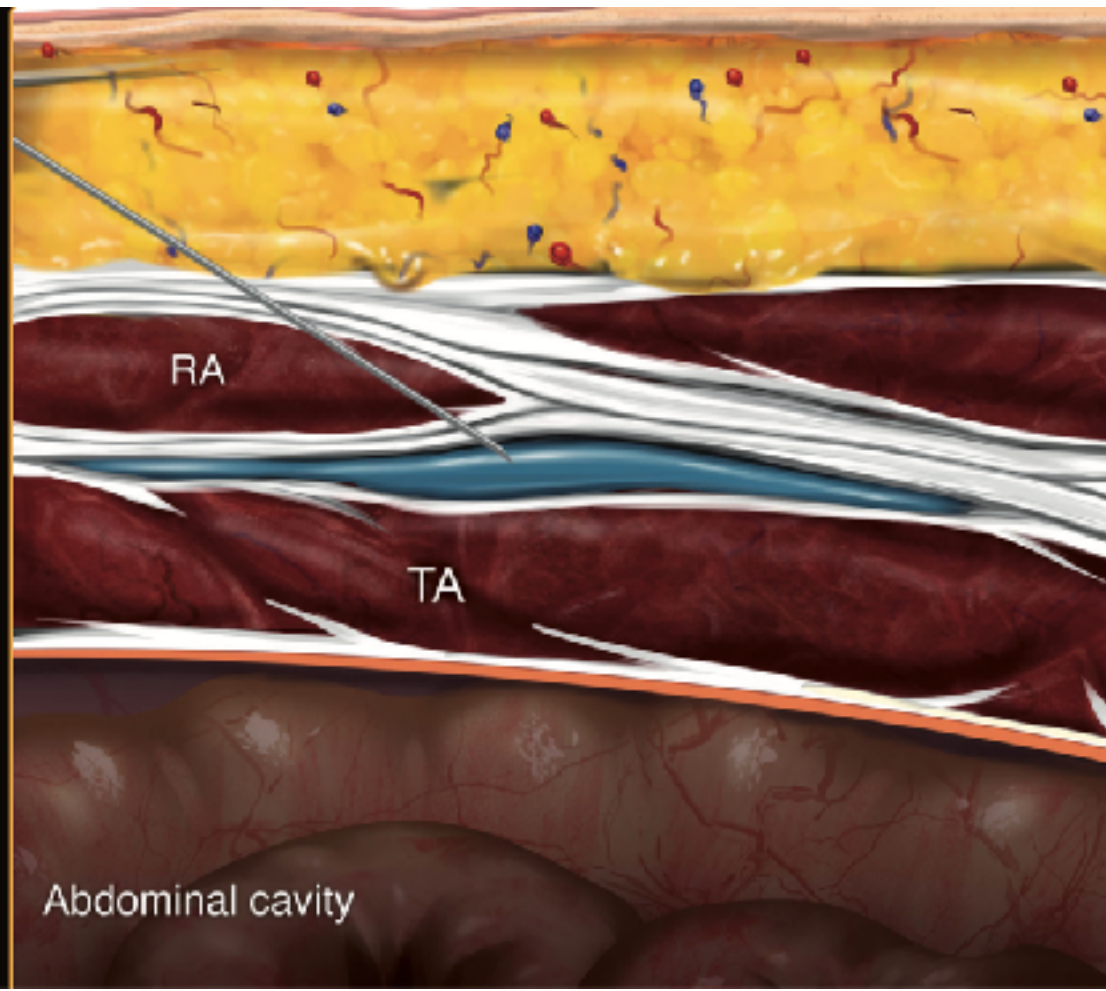
Multiple rib fractures



Subcostal TAP

15-30 ml

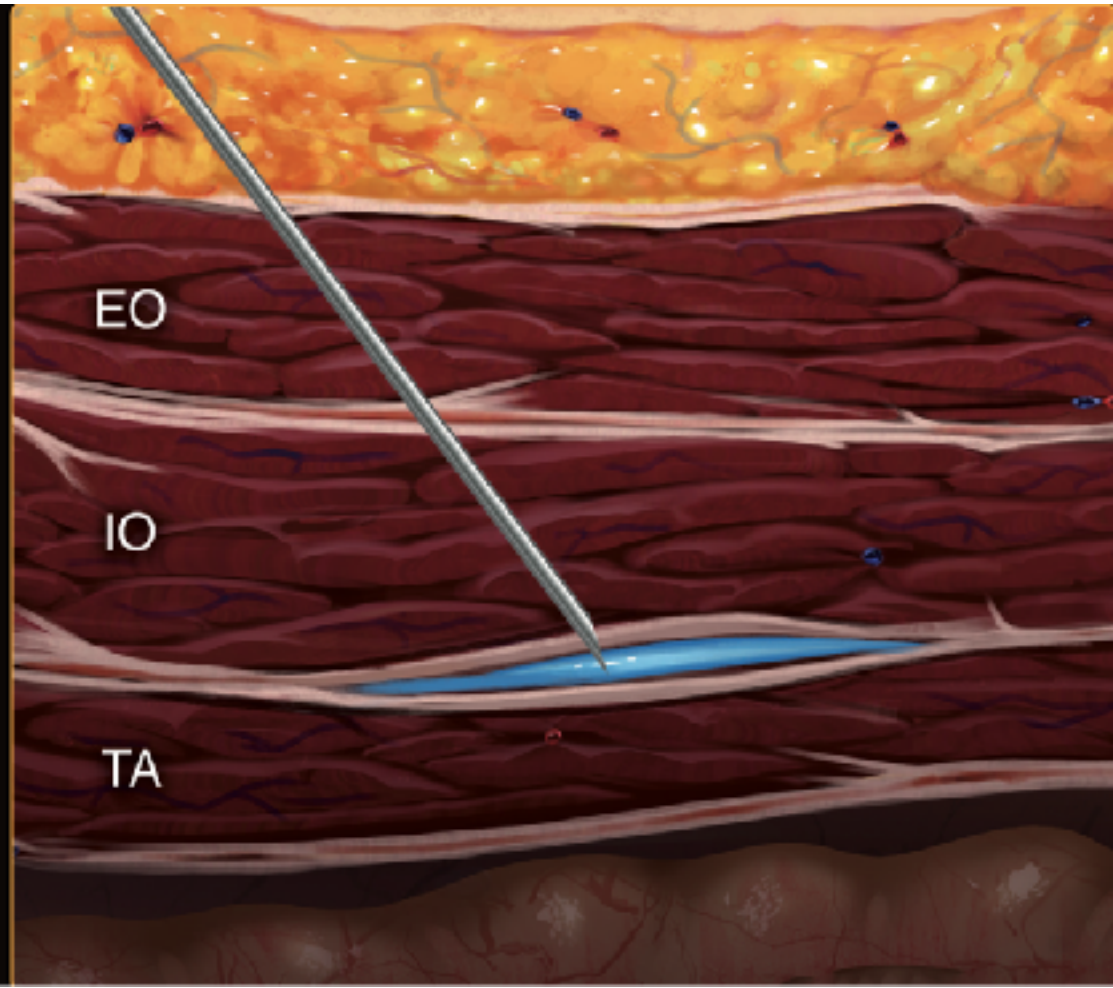
ABD wall & parietal peritoneum



Lateral TAP

15-20 ml

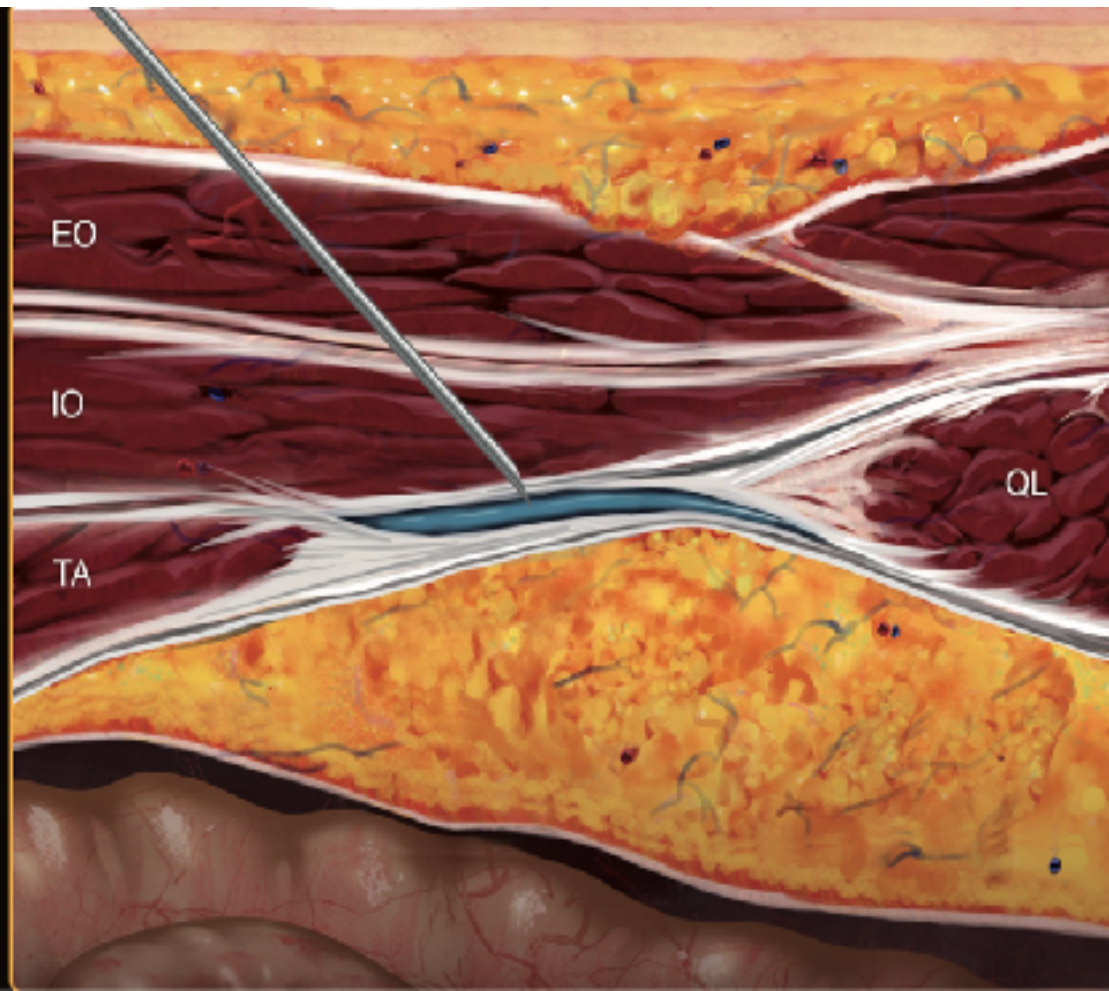
ABD wall & parietal peritoneum



Posterior TAP

15-20 ml

ABD wall & parietal peritoneum

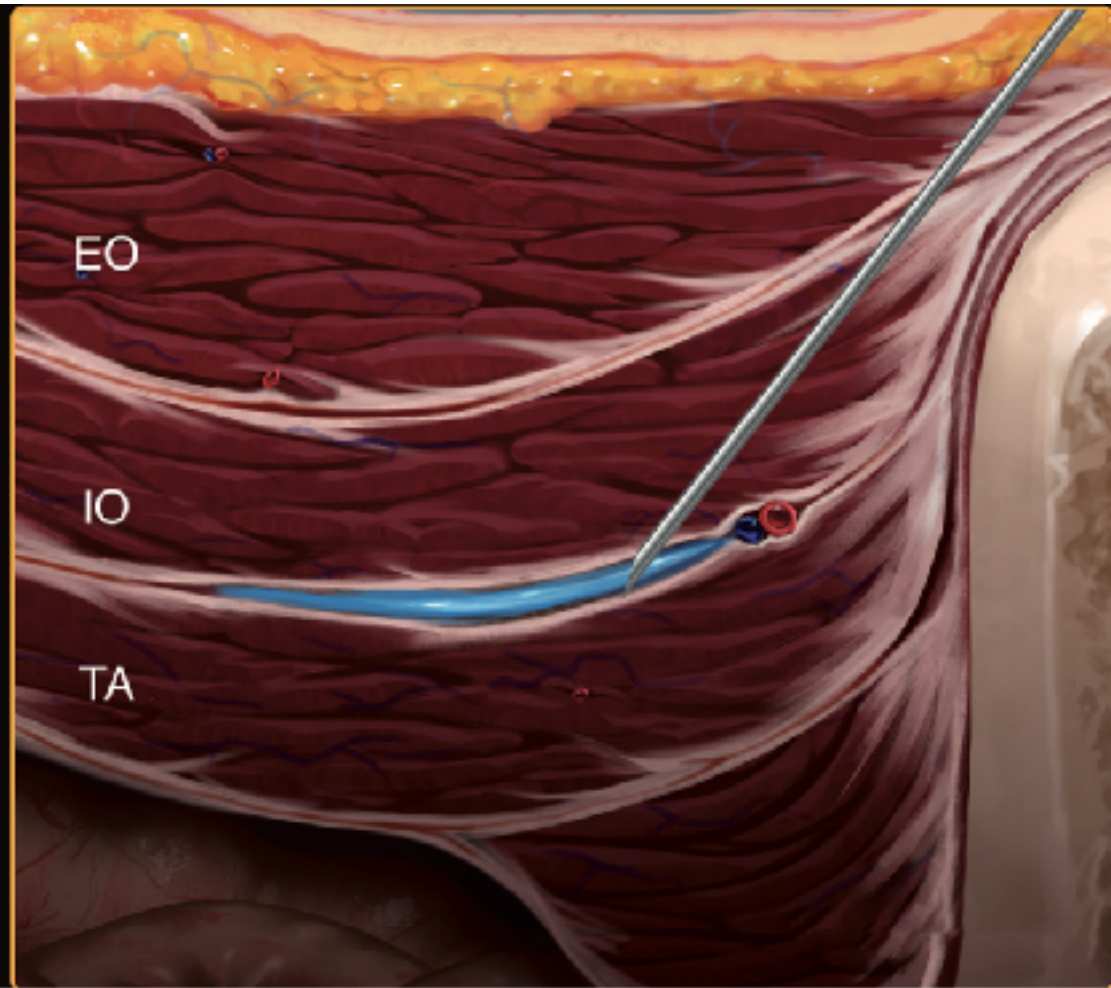


Anterior TAP

Ilioinguinal-iliohypogastric block

15-20 ml

ABD wall & parietal peritoneum



Take Home Skills

