Opioids and Nerve Blocks

3 common nerve blocks

Arun Nagdev, MD
Director, Emergency Ultrasound
Highland General Hospital
Clinical Associate Professor, UCSF

Multi-modal Pain Management

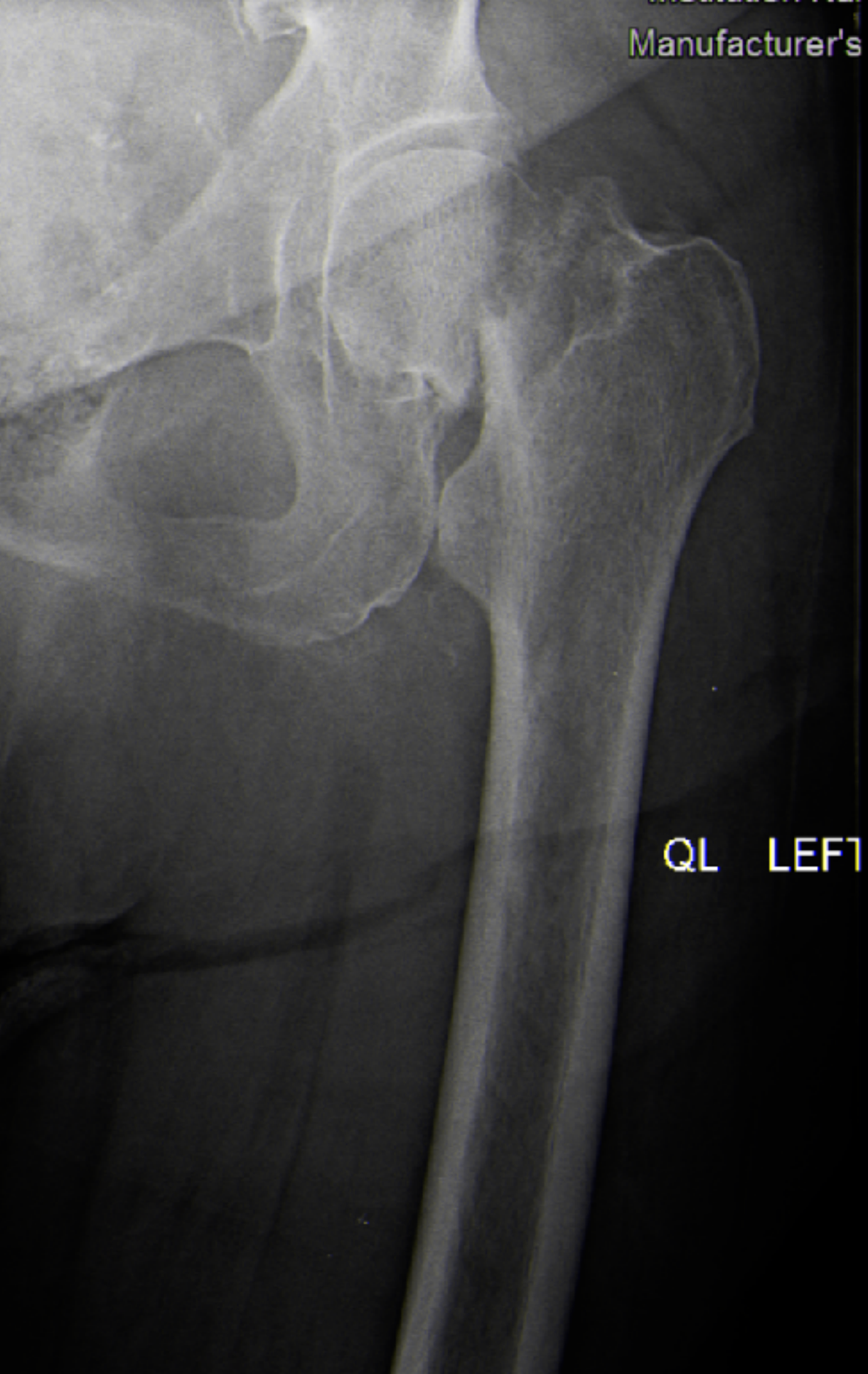
- Opioid crisis = system error
- Roadblocks in clinical care = key learning
- Acute pain should be managed by the Acute Care Specialist

1. Femoral Nerve Block

2. Posterior Tibial Nerve Block

3. Brachial Plexus Blocks

Femoral Nerve Block



Emergency Medicine

Multimodal Pain Control



Downstream Effects

Cutting edge medicine

The American Journal of Emergency Medicine

Volume 32, Issue 7, July 2014, Pages 801–803



Correspondence

Door-to-block time: prioritizing acute pain management for femoral fractures in the ED ☆ ☆☆

Brian Johnson, MD, MPH

Andrew Herring, MD

Swapnil Shah, MD, Michael Krosin, MD

Daniel Mantuani, MD

Arun Nagdev, MD

Kaiser California Funded Initiative

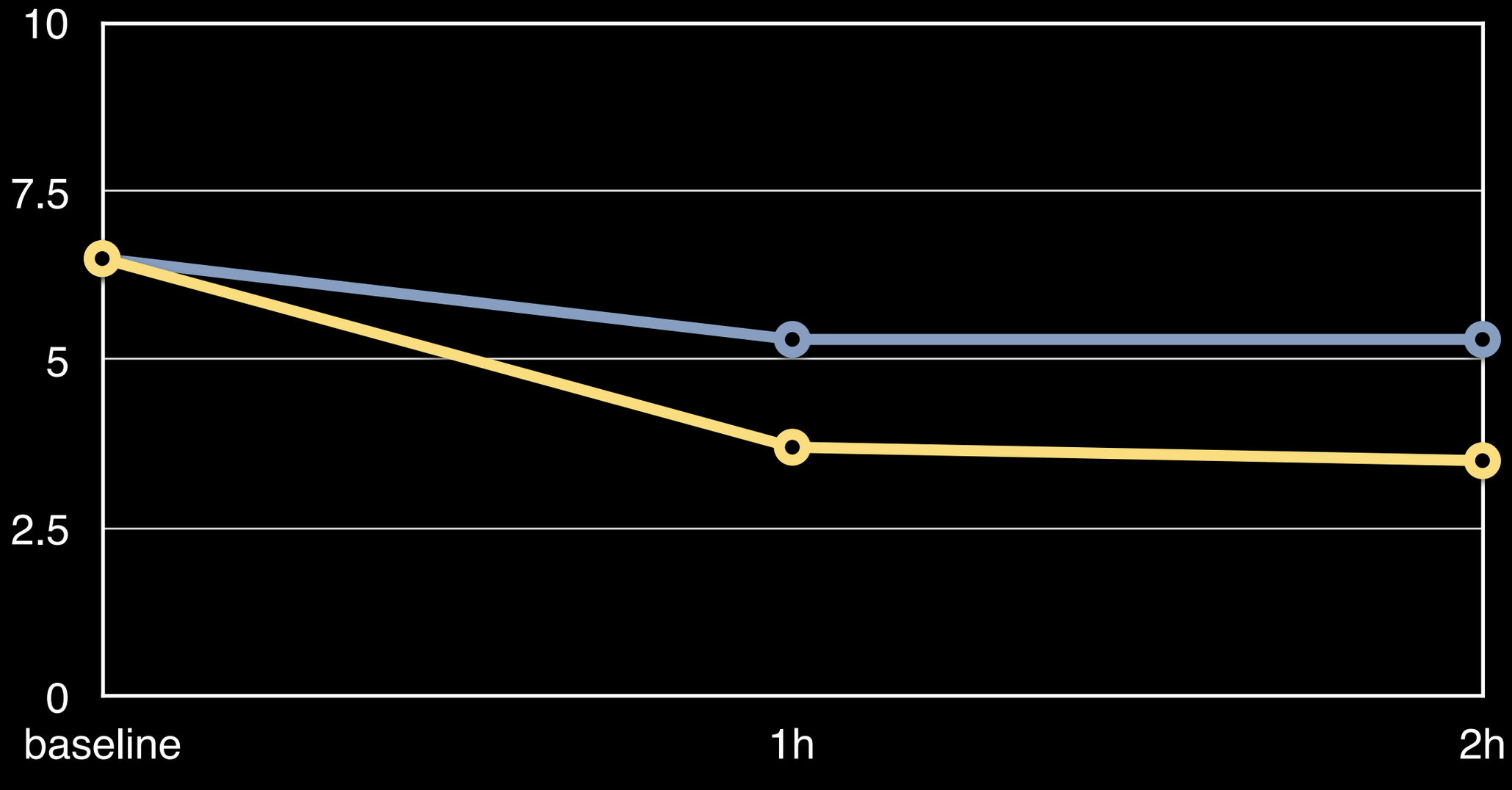
Regional Nerve Blocks Improve Pain and Functional Outcomes in Hip Fracture: A Randomized Controlled Trial

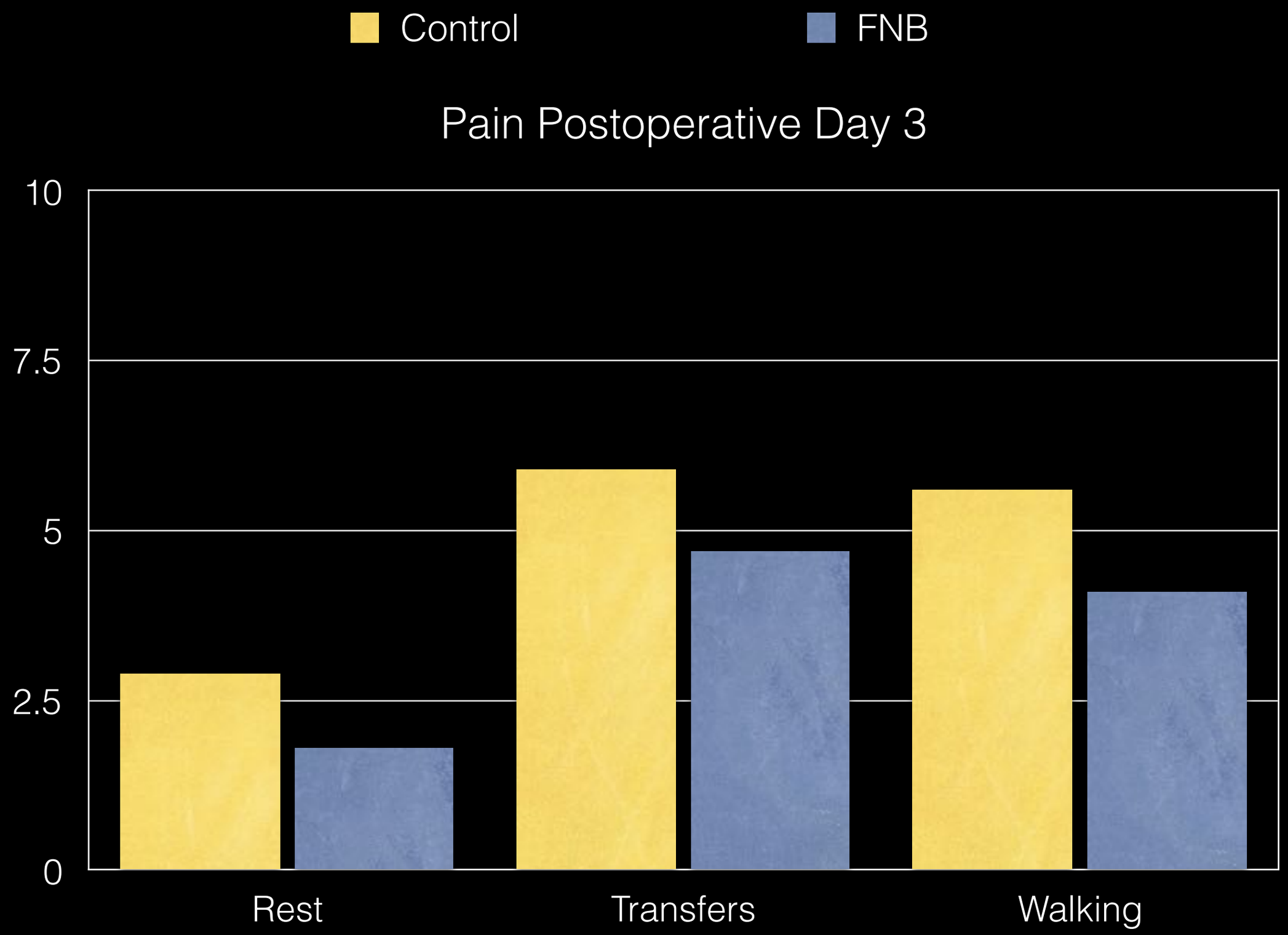
R. Sean Morrison, MD,[†‡] Eitan Dickman, MD,[§] Ula Hwang, MD, MPH,[‖†‡] Saadia Akhtar, MD,[#] Taja Ferguson, MPH,[†] Jennifer Huang, MD,[‖] Christina L. Jeng, MD,[***] Bret P. Nelson, MD,[‖] Meg A. Rosenblatt, MD,[*] Jeffrey H. Silverstein, MD,[*,a] Reuben J. Strayer, MD,[‖] Toni M. Torrillo, MD,[*] and Knox H. Todd, MD[#††]*

JAGS 2016

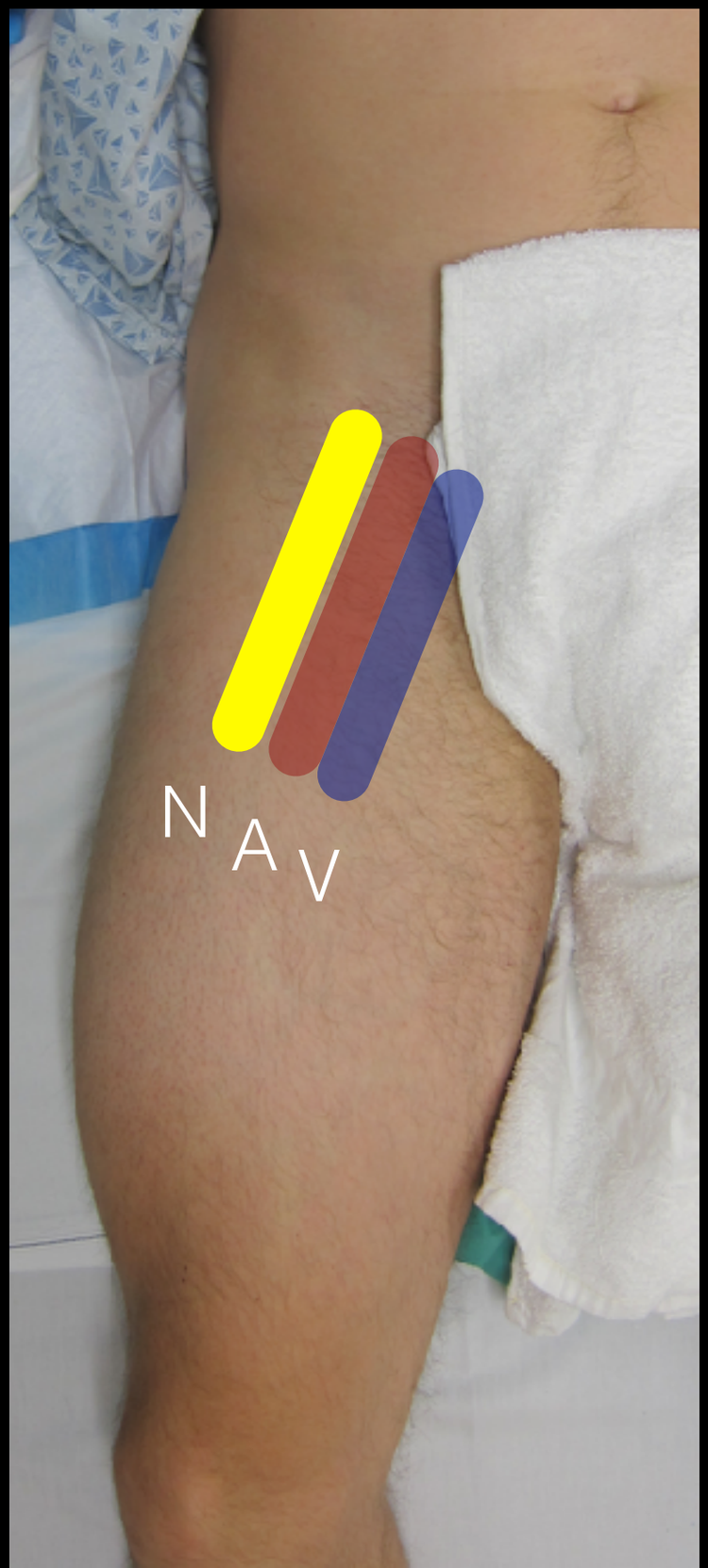
control FNB

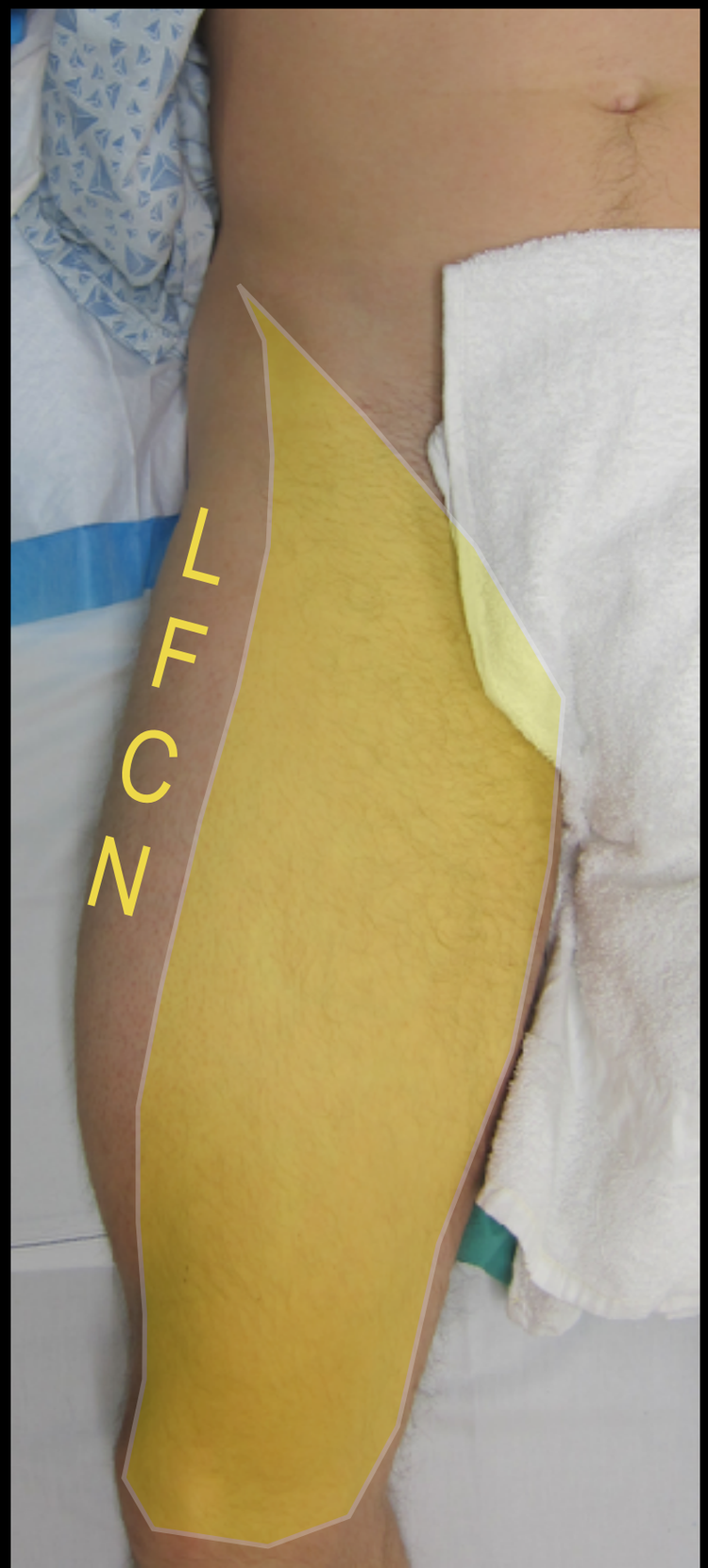
Pain control in the ED




Control
FNB
Pain Postoperative Day 3
10
7.5
5
2.5
0
Rest
Transfers
Walking

Anatomy & Innervation





Indications



- Hip Fracture
- Femur Fracture
- Debridement
- Large Laceration
- Abscess I&D



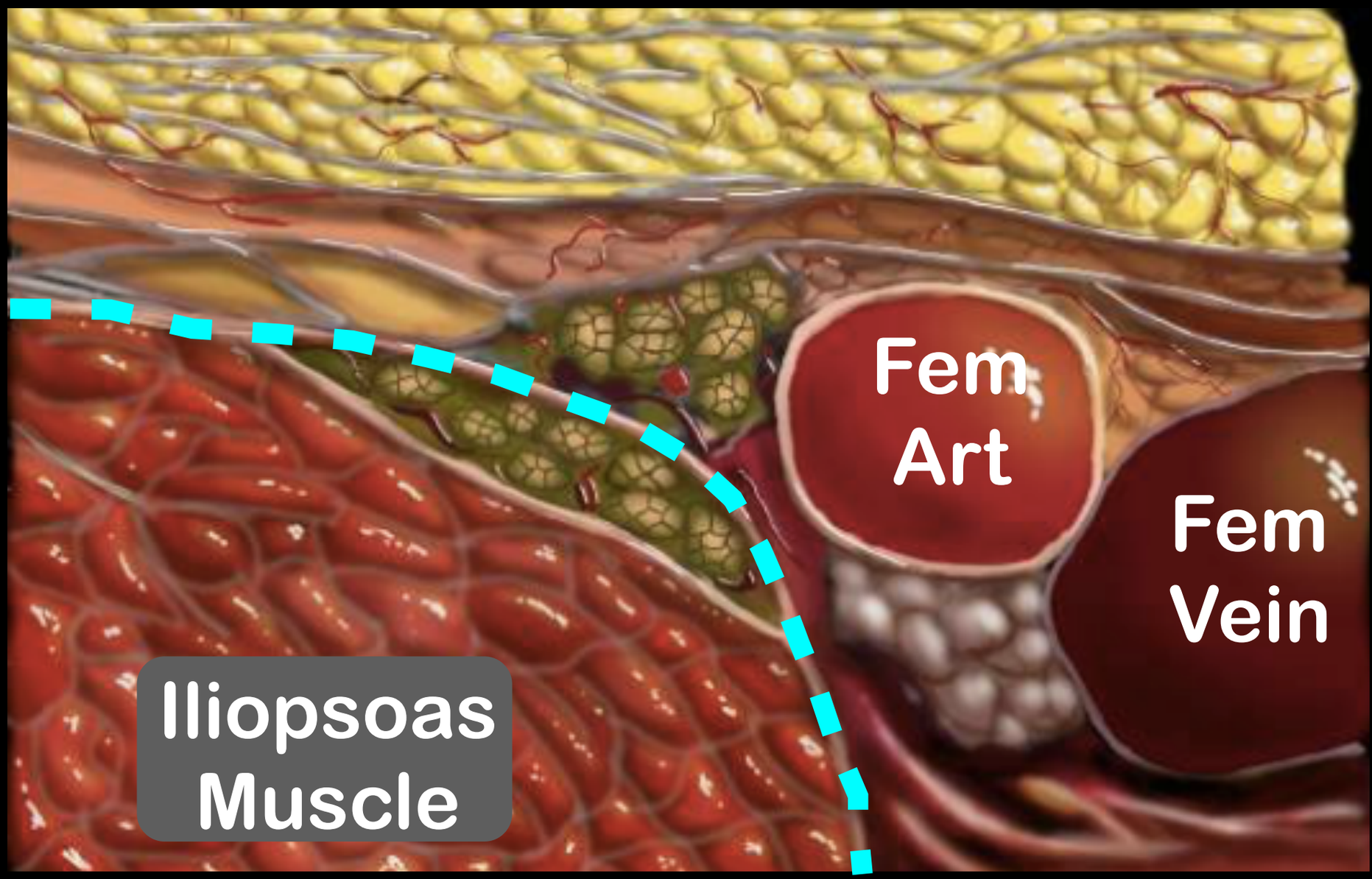



LONG

Lateral

Medial

Fascia Iliaca



Pattern Recognition

lateral

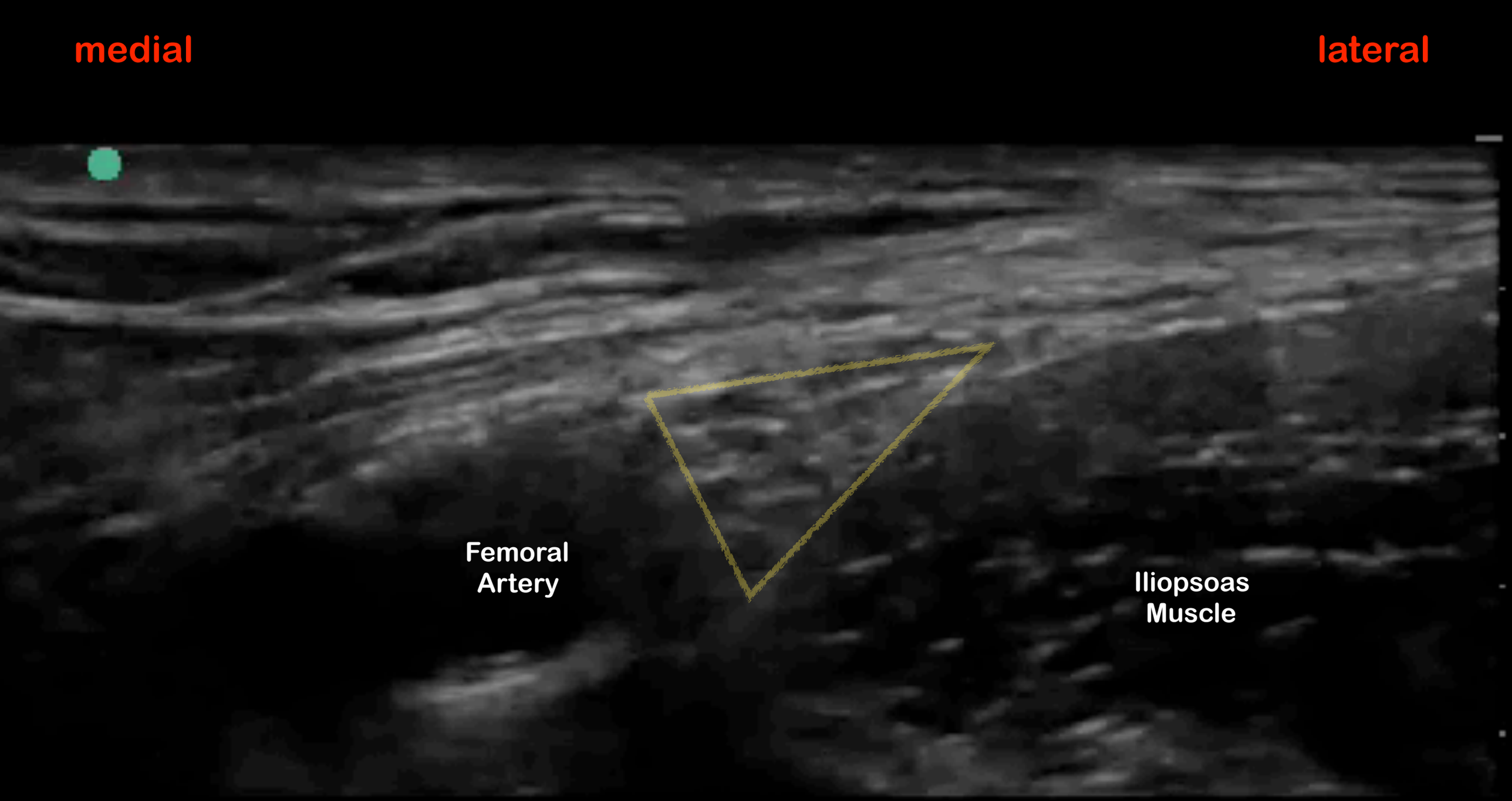
medial

FA

FV

Iliopsoas

2.7



2.2

Supplies and Procedure



Linear Transducer
(high frequency)

Supplies for Femoral NB

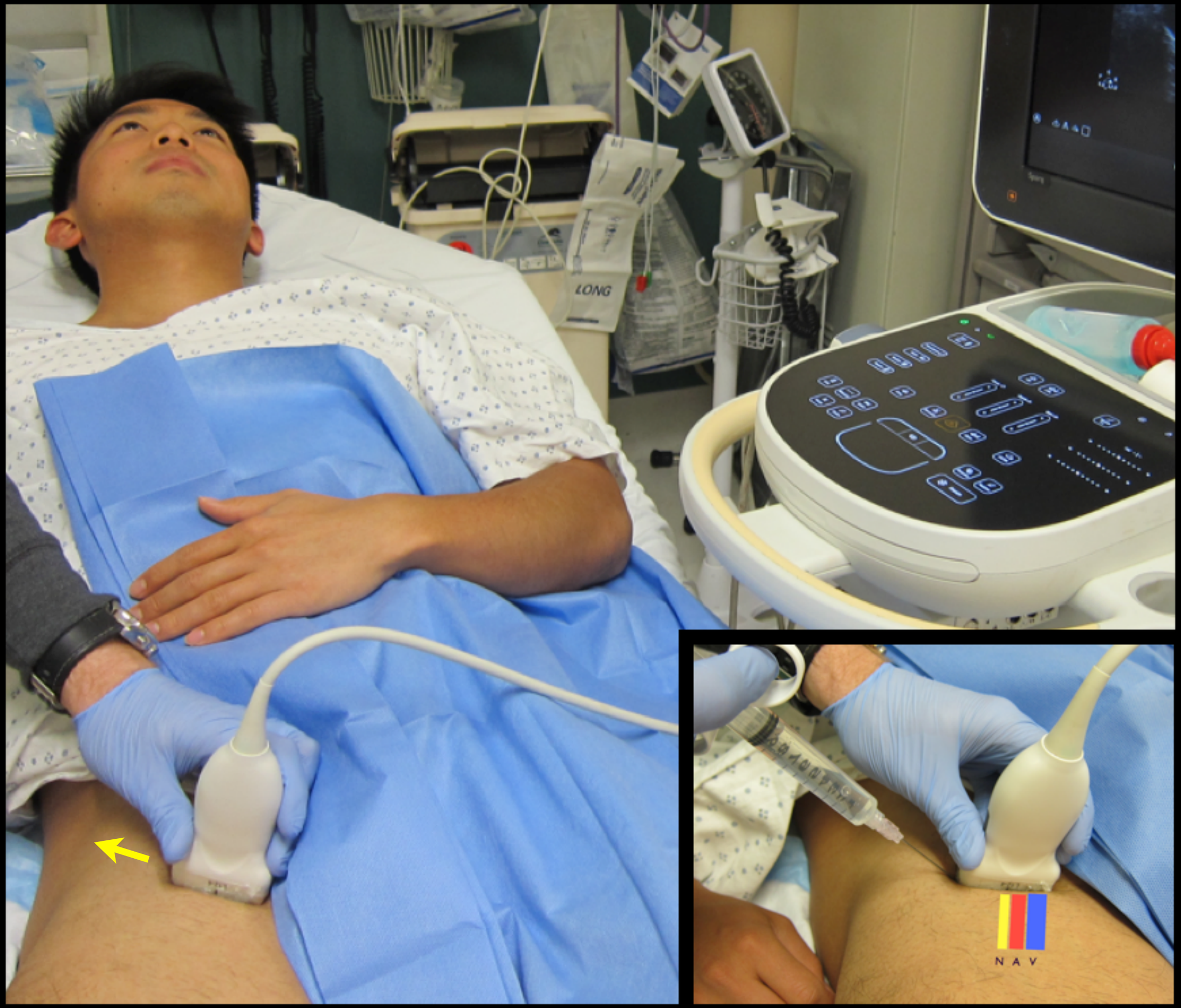
1) 20cc lidocaine 1-2% with epi

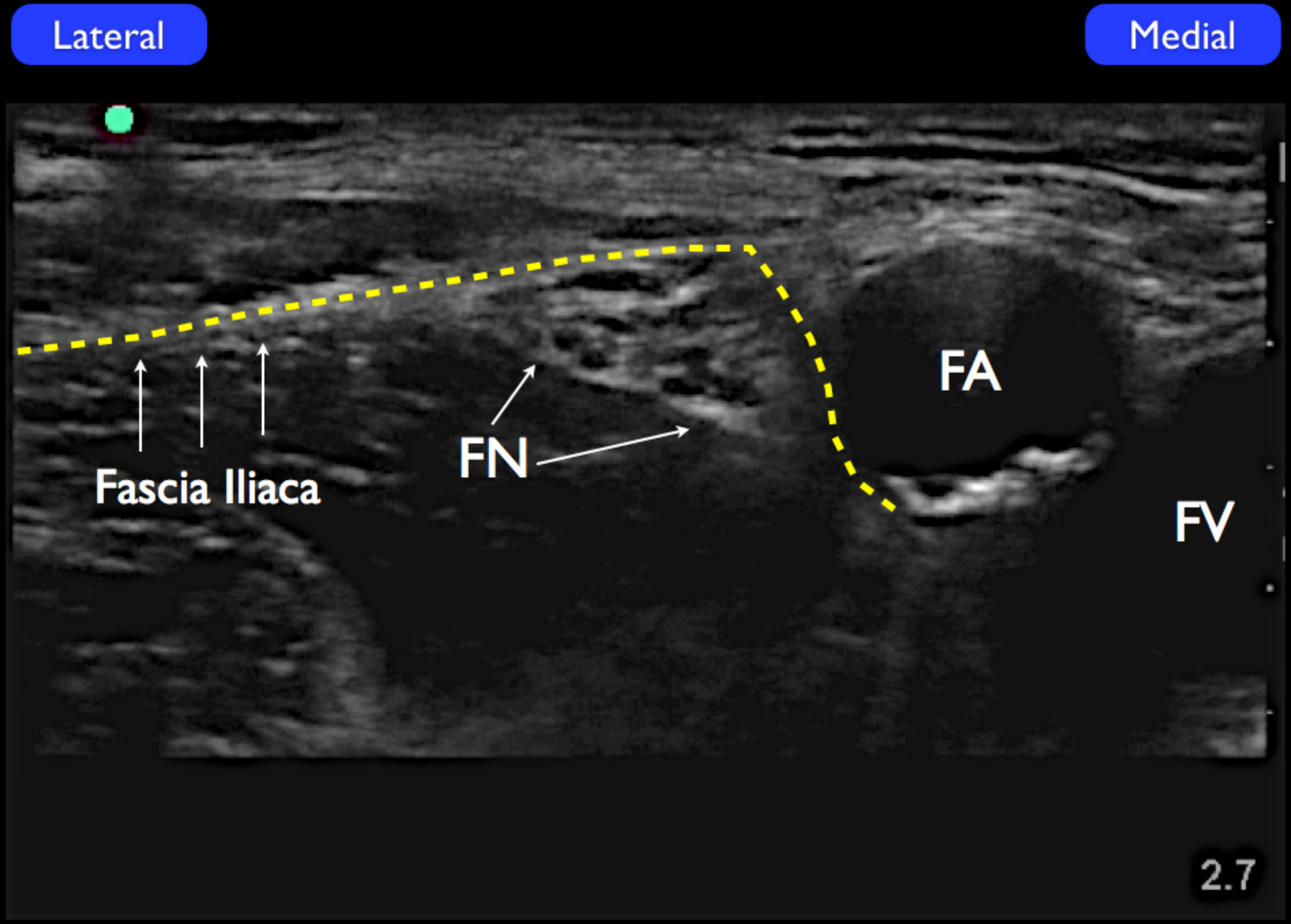
2) 10-20cc Control Syringe

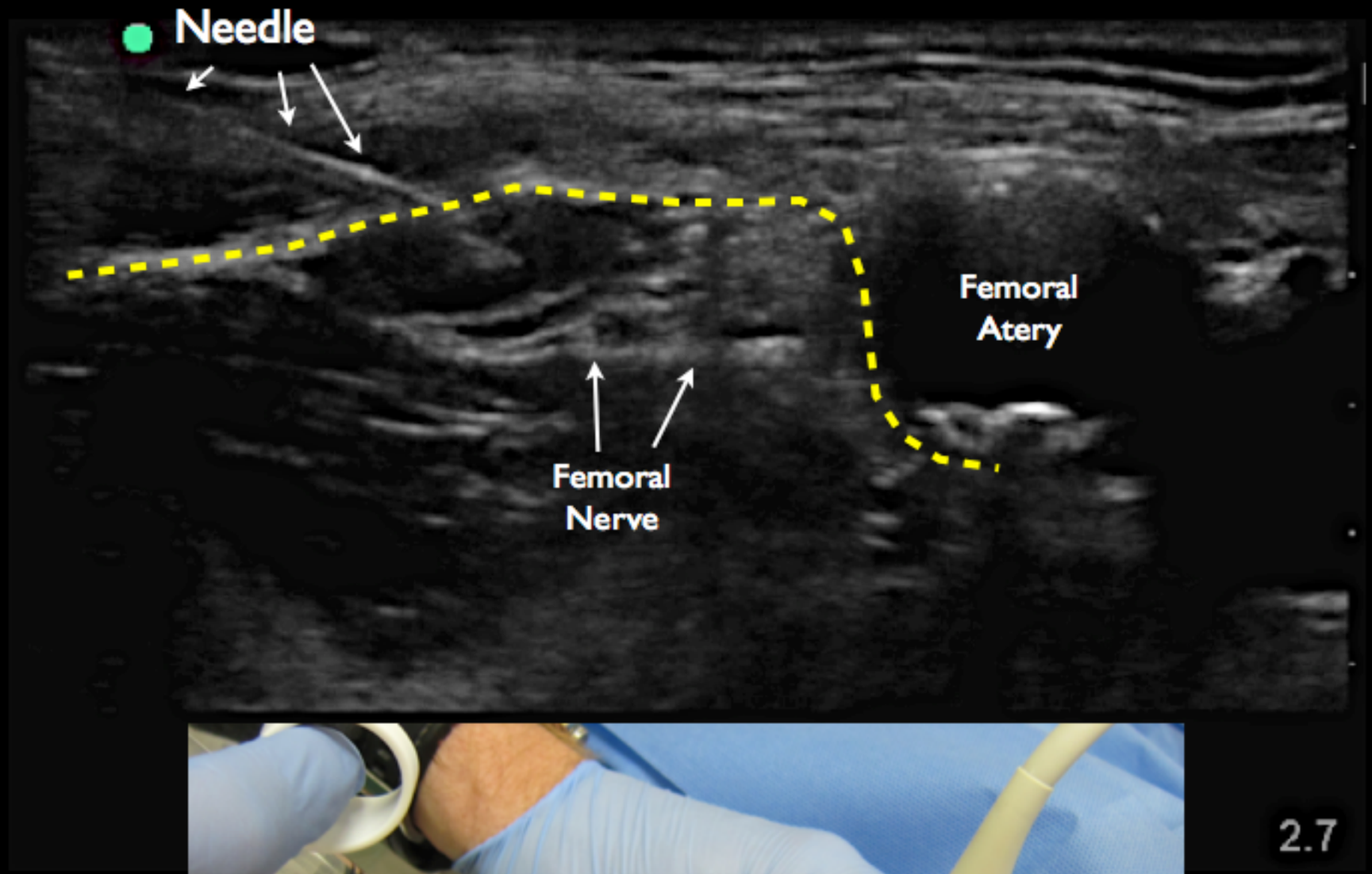
3) Chlorhexidine scrub

4) 22- 20g 3.5 inch spinal needle

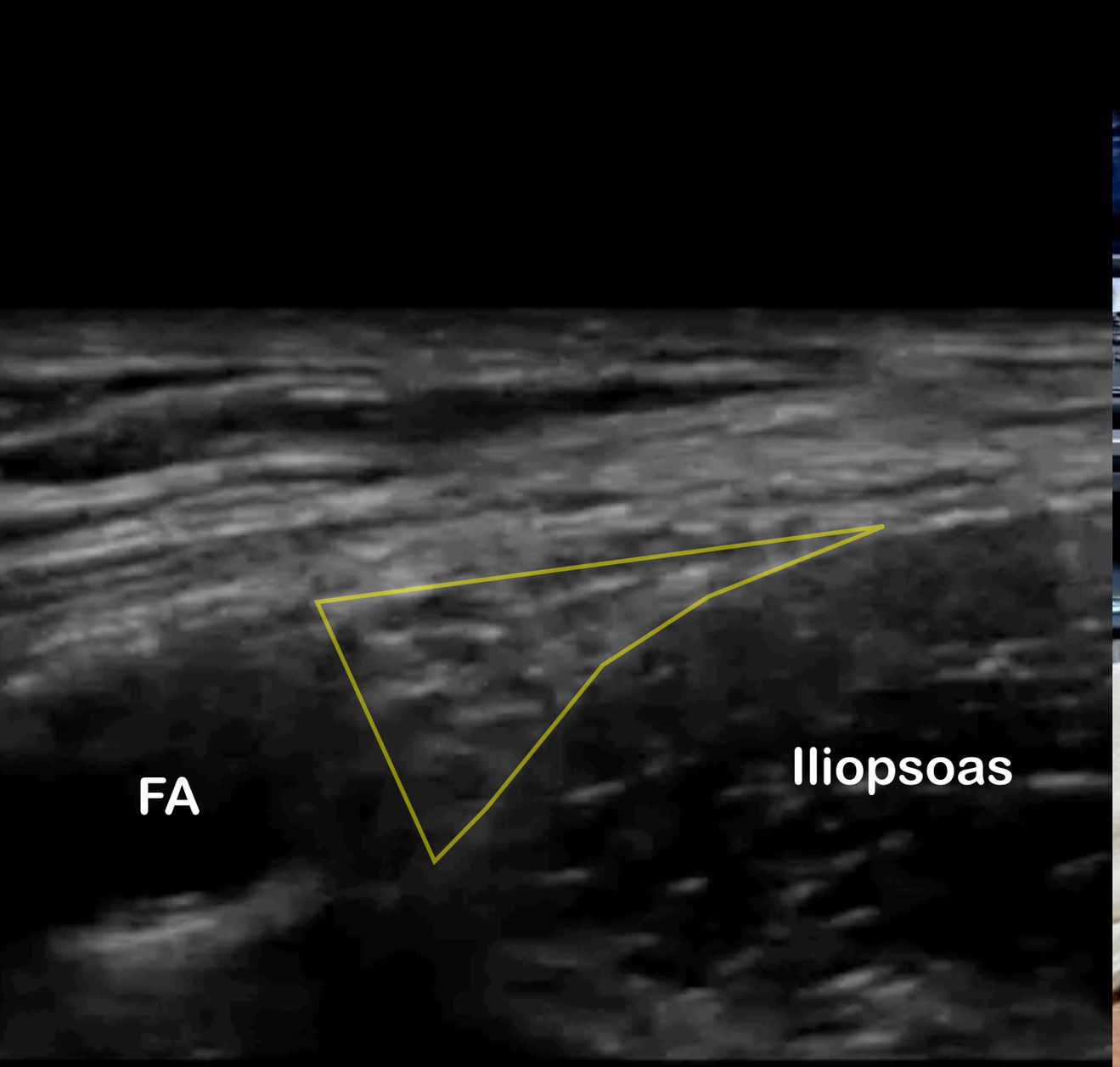
5) 25g needle for local skin wheal

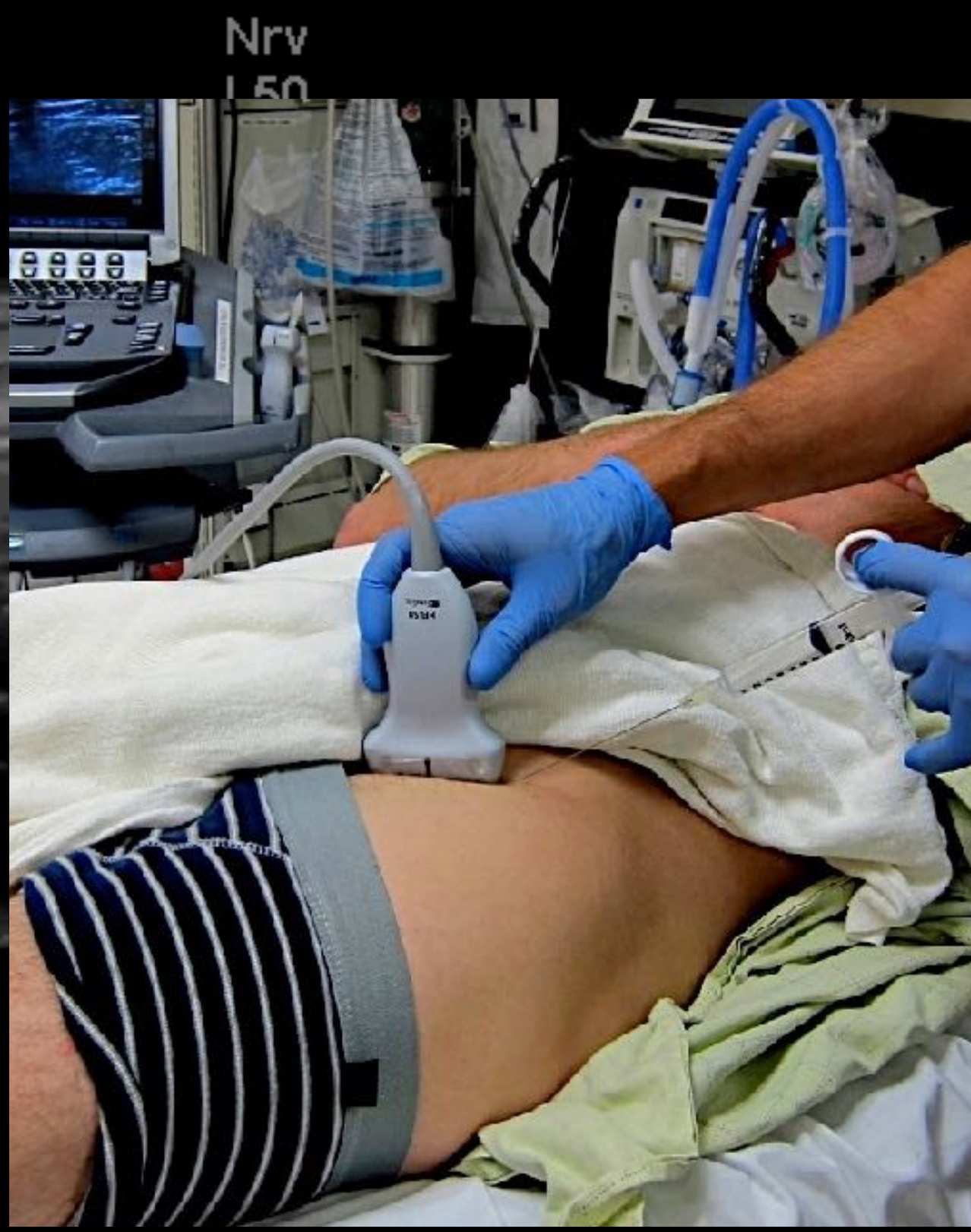

LONG
NAV


Lateral
Medial
FA
FN
Fascia Iliaca
FV
2.7

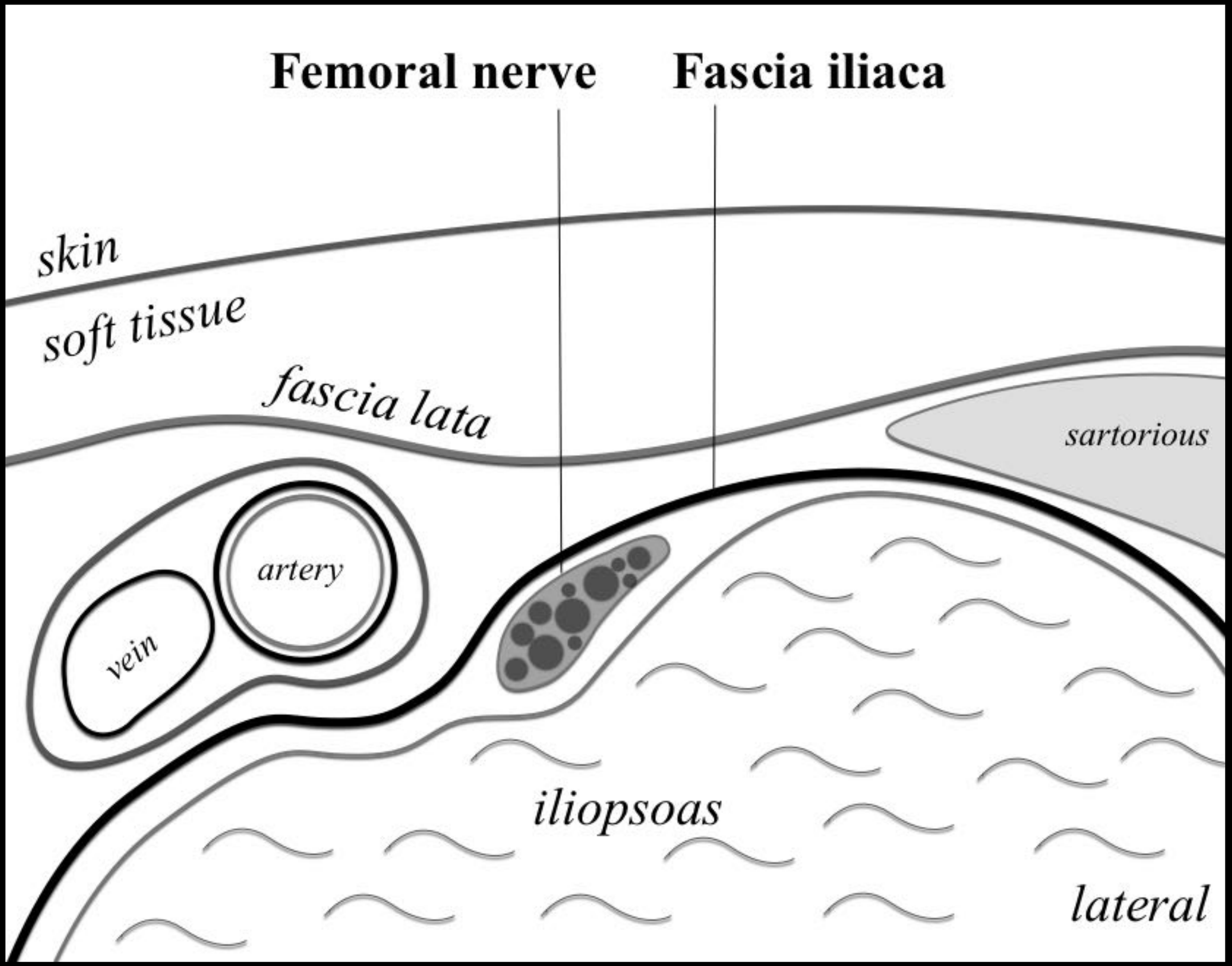

Needle
Femoral
Atery
Femoral
Nerve
2.7

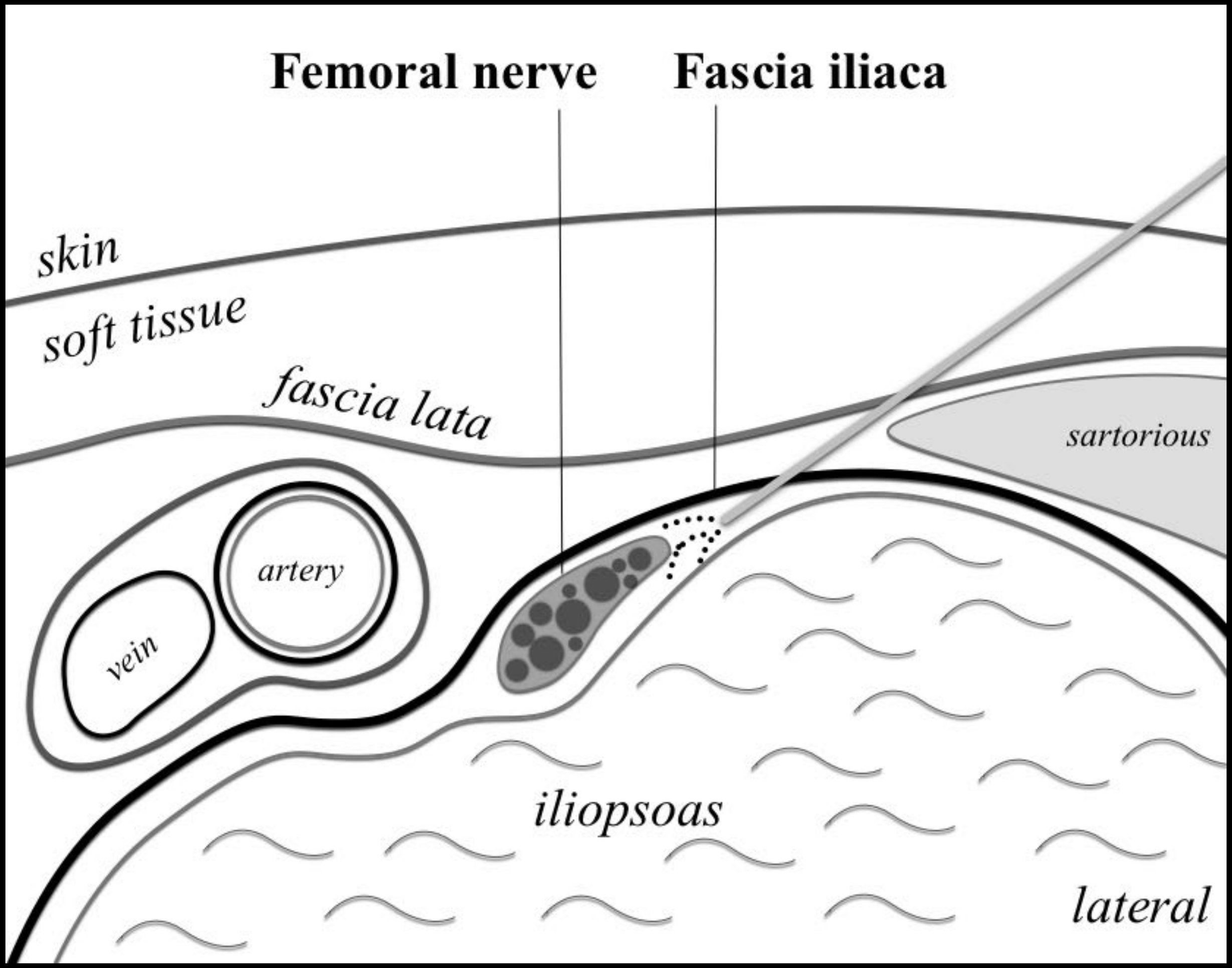

NAV





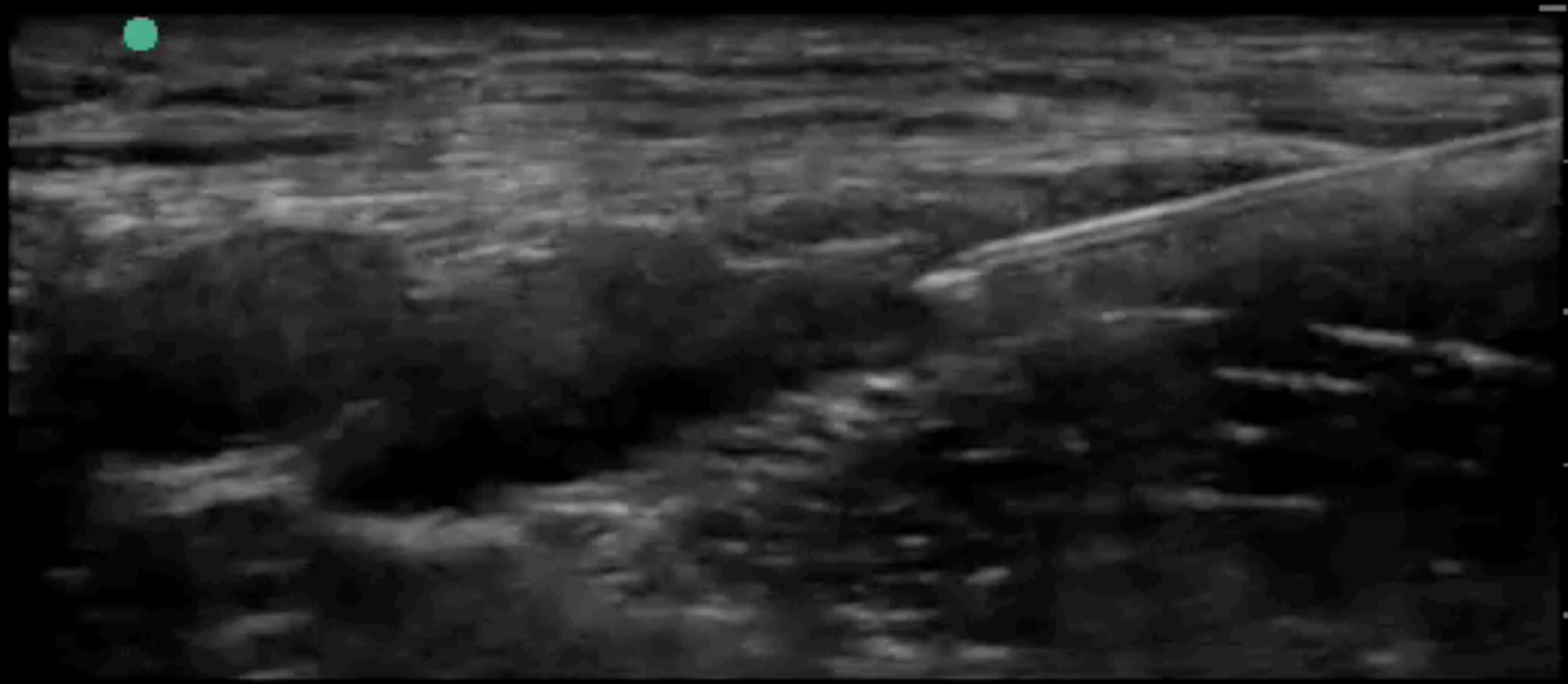
0 Guide MB On Dual Page 1/2


Femoral nerve
Fascia iliaca
skin
soft tissue
fascia lata
sartorious
artery
vein
iliopsoas
lateral


Femoral nerve
Fascia iliaca
skin
soft tissue
fascia lata
sartorious
artery
vein
iliopsoas
lateral



2.2

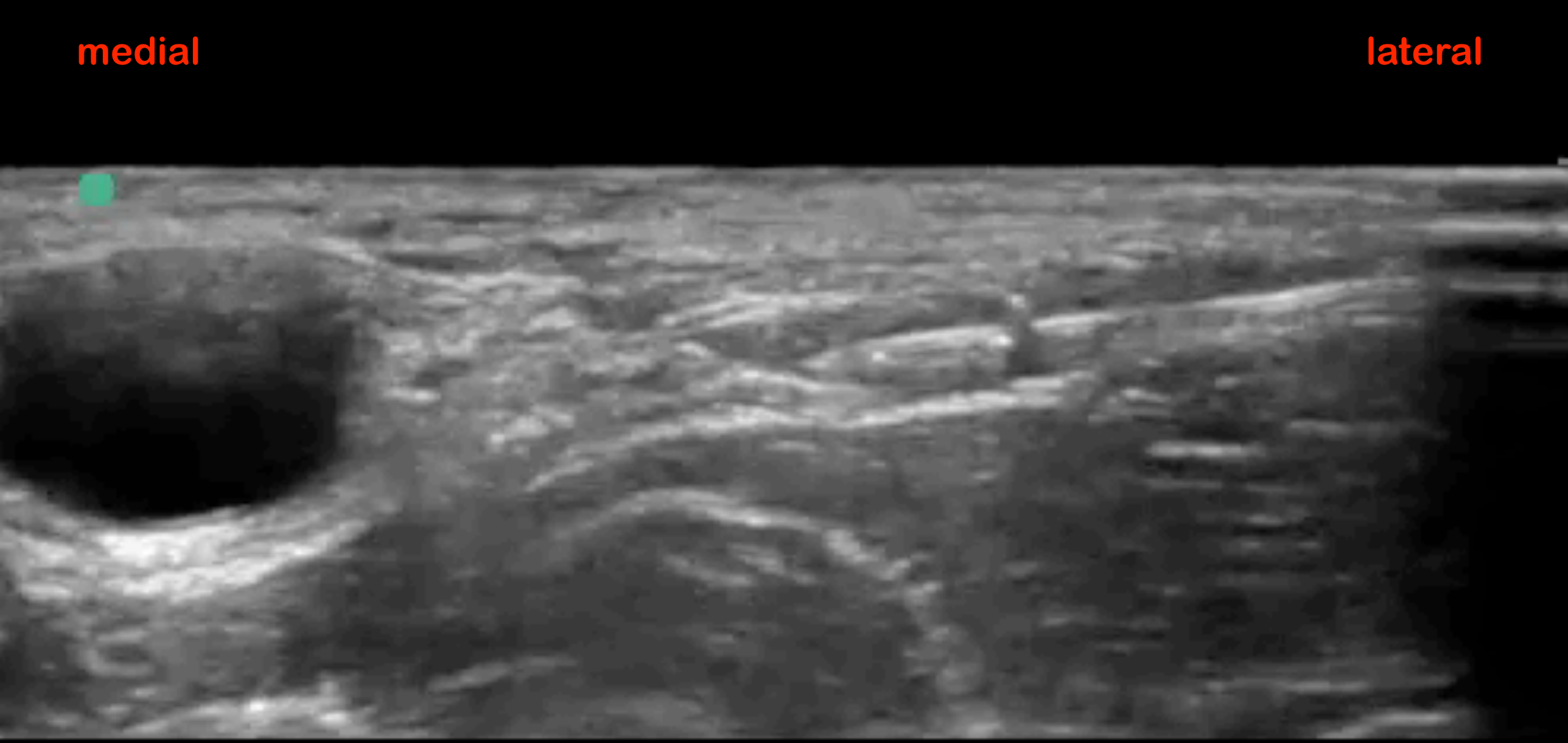


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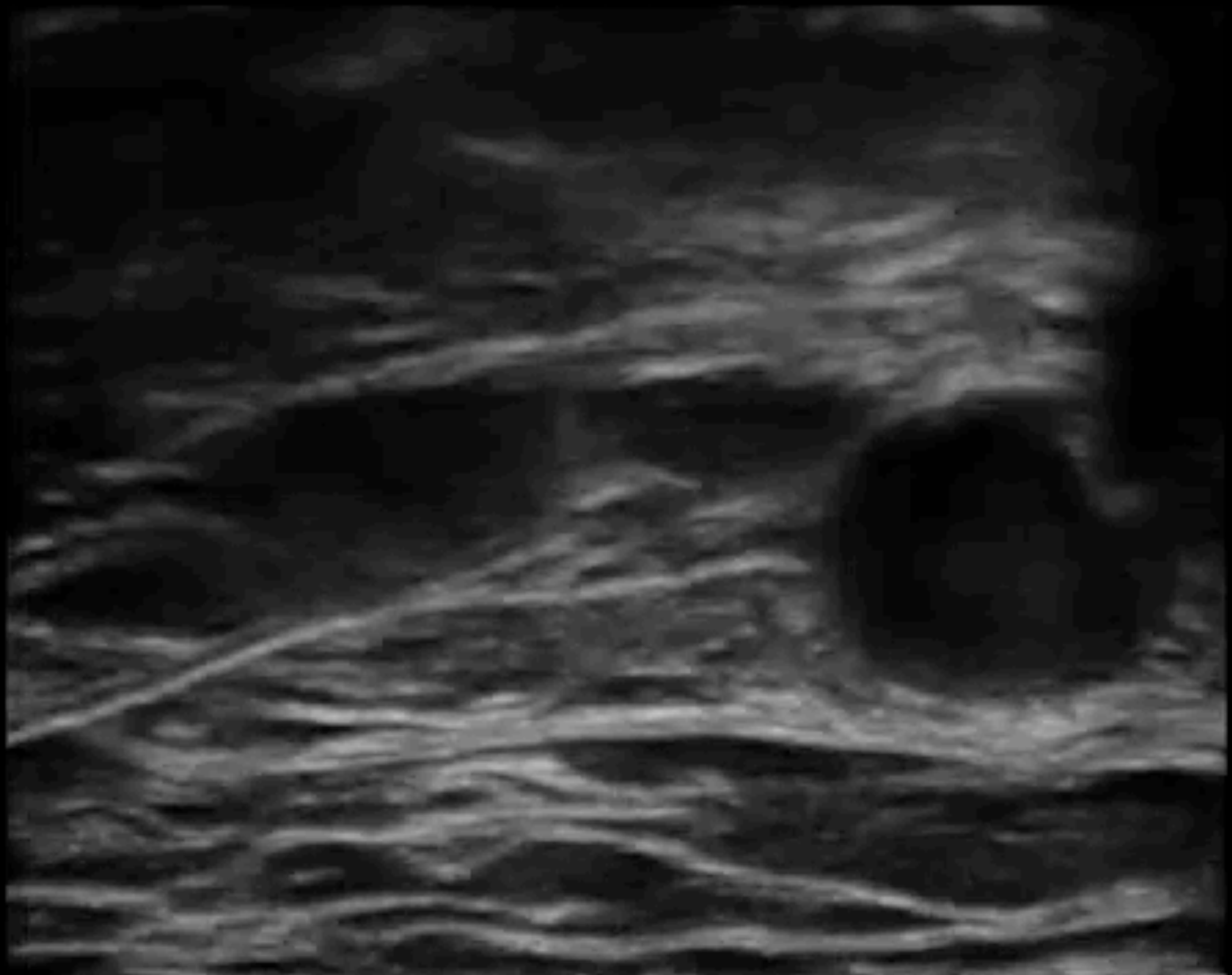
medial lateral



1.8


medial
lateral
1.8

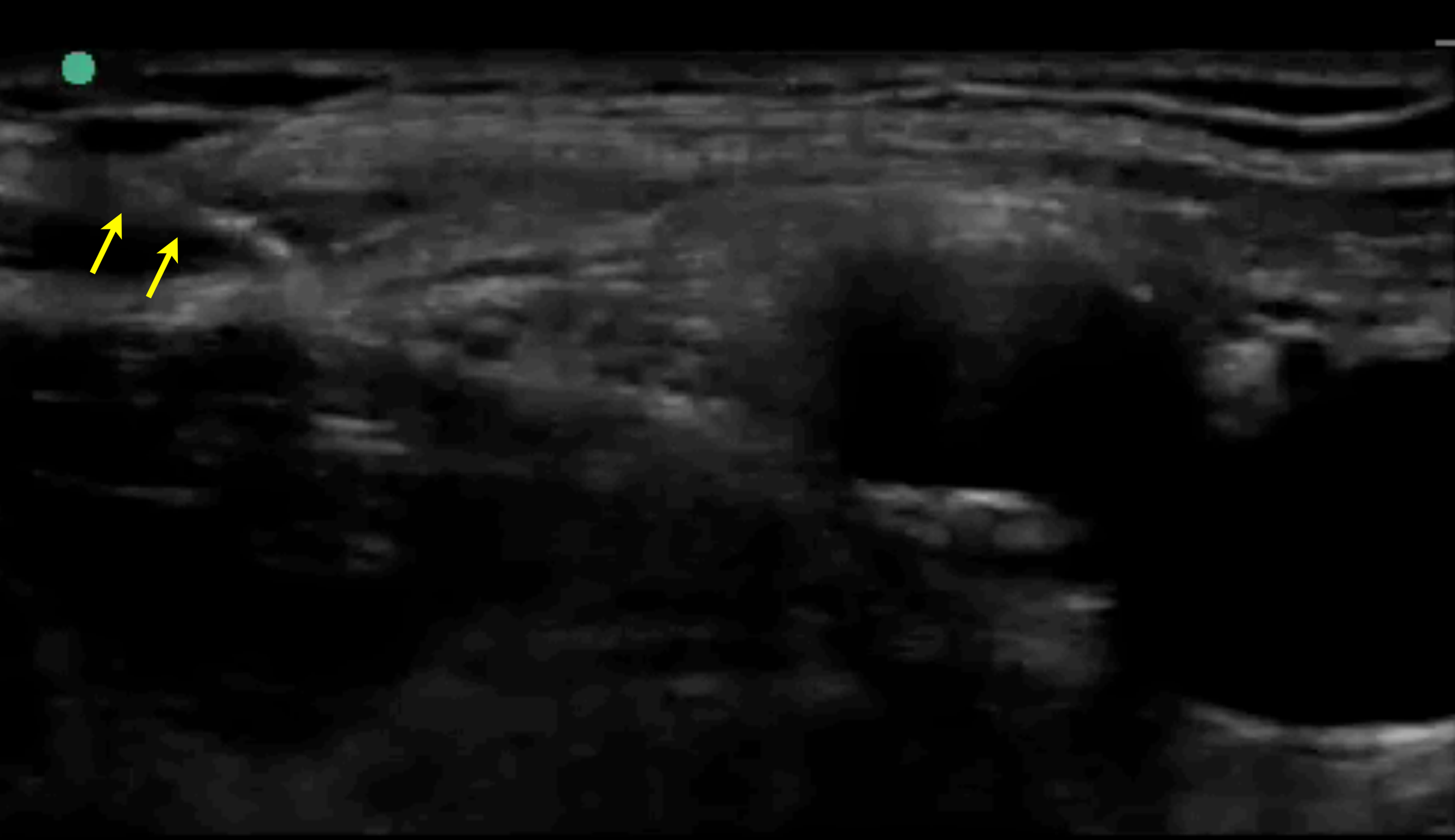

medial
lateral
1.8



Key Points

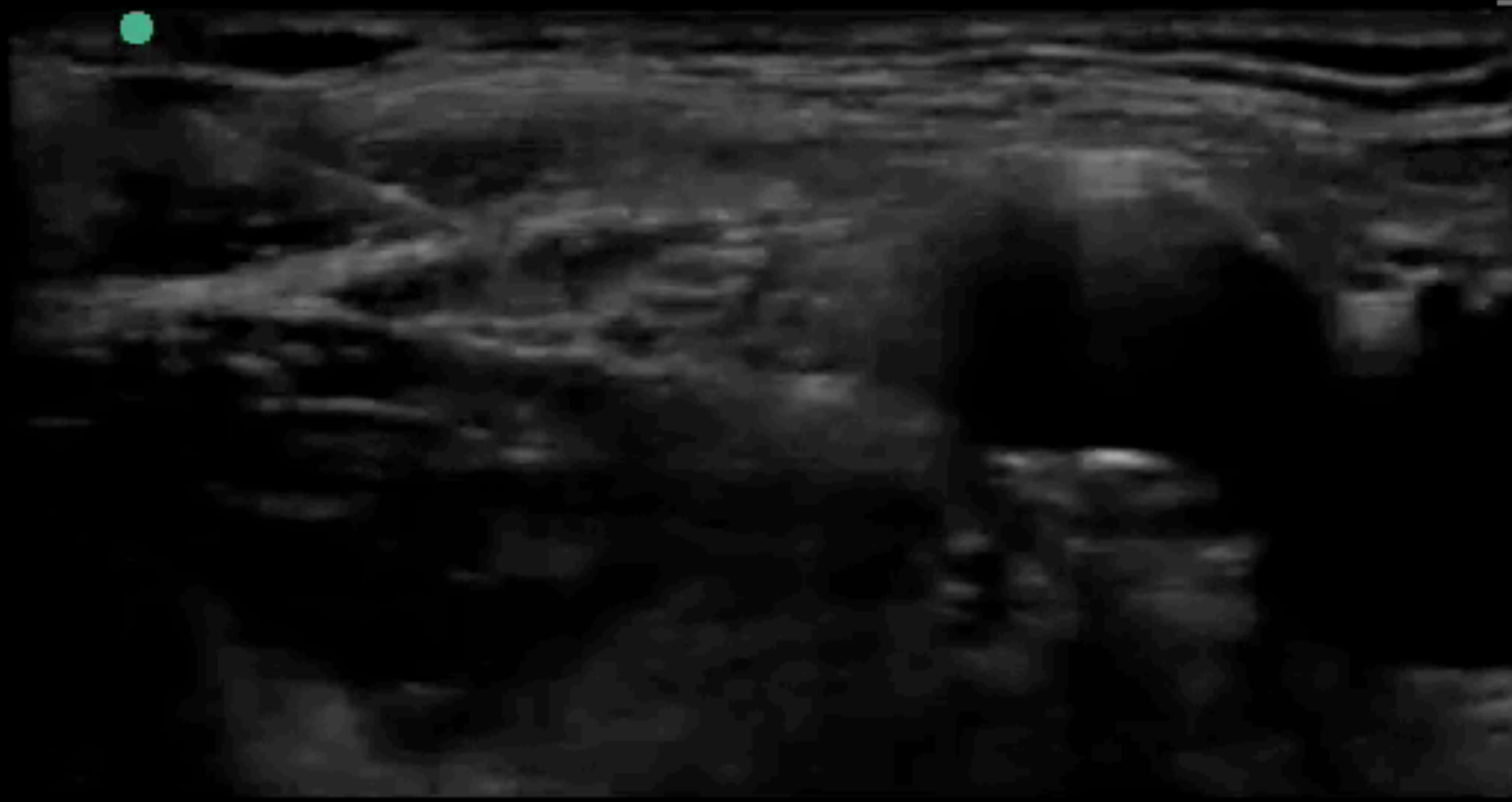
Under Fascia Iliaca

Stay Away from the Nerve



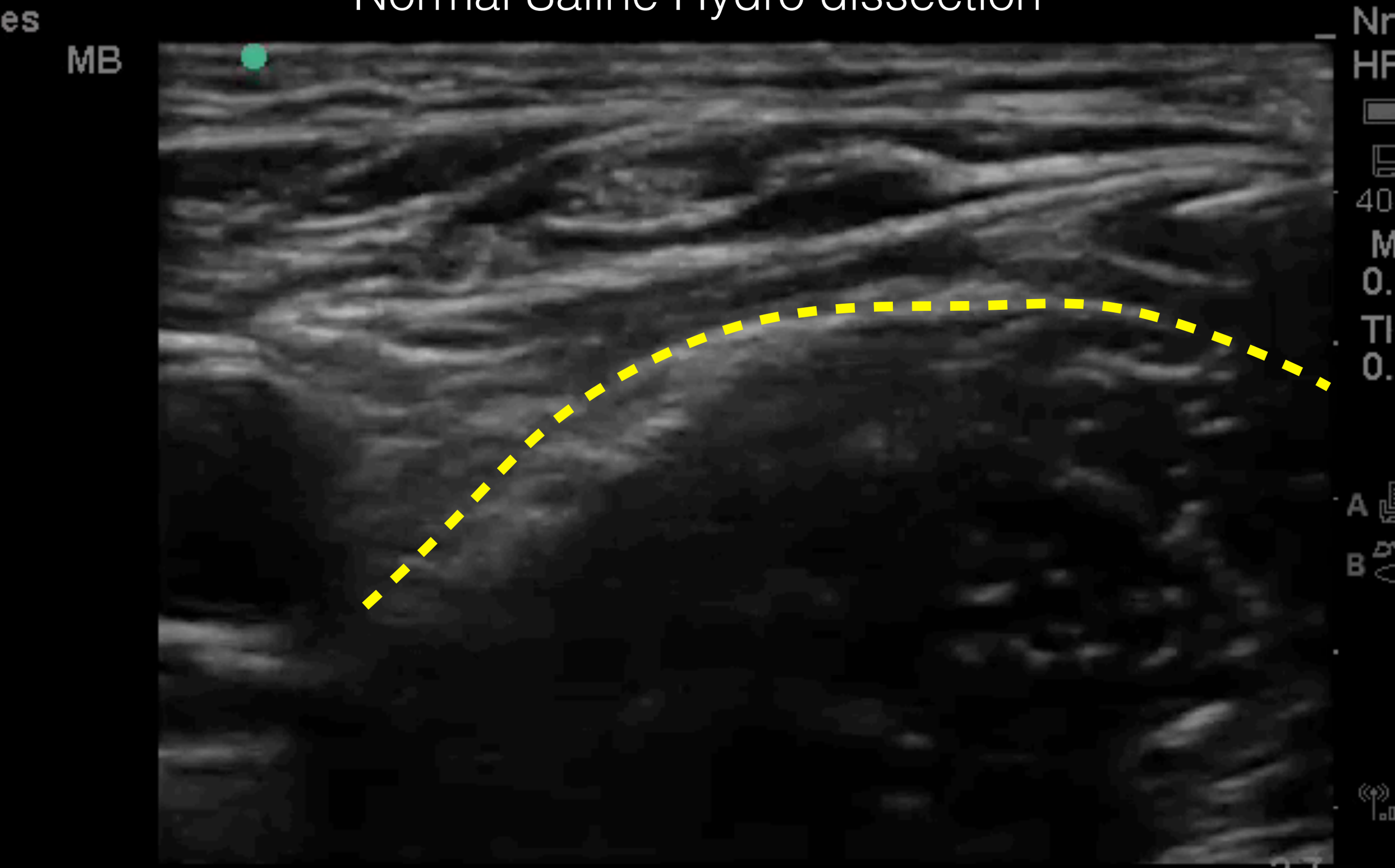
2.7

MB



2.7

Normal Saline Hydro dissection



Normal Saline Hydro dissection




Block
Ham.
2008
5/1/14

Posterior Tibial Nerve Block

(Beginner)

Posterior Tibial Nerve



Indications



Sole Laceration

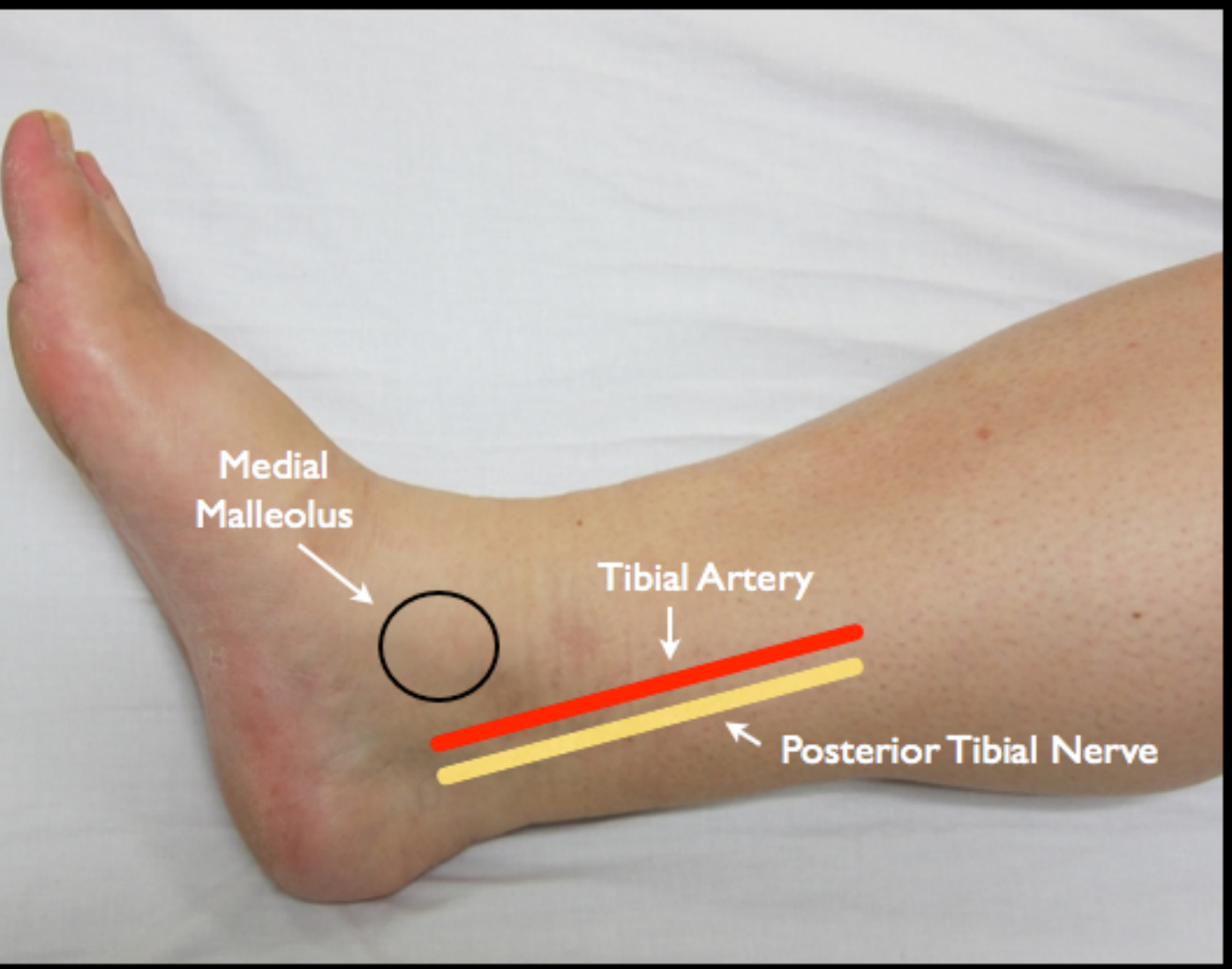
Burns

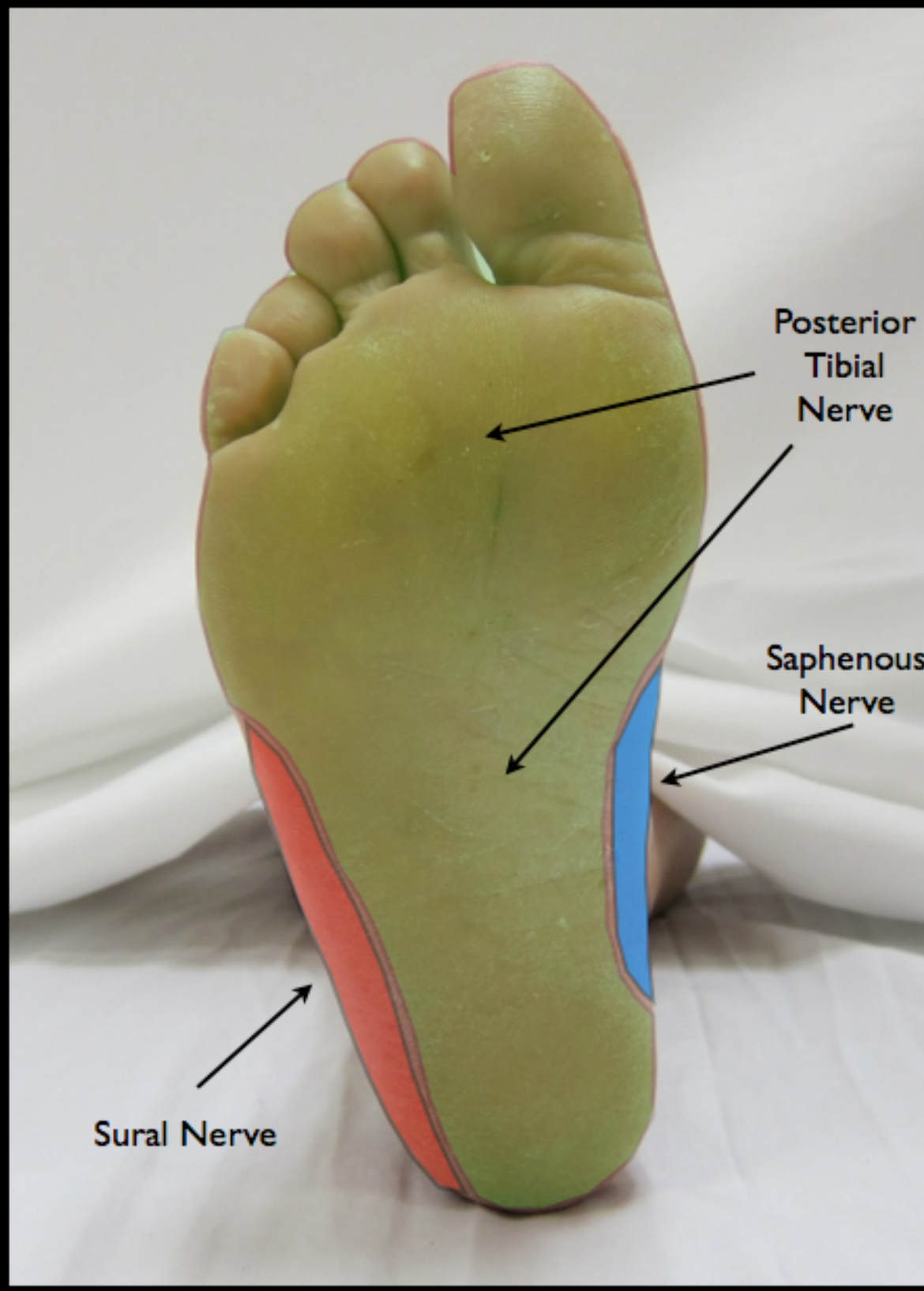
FB / Abscess Removal

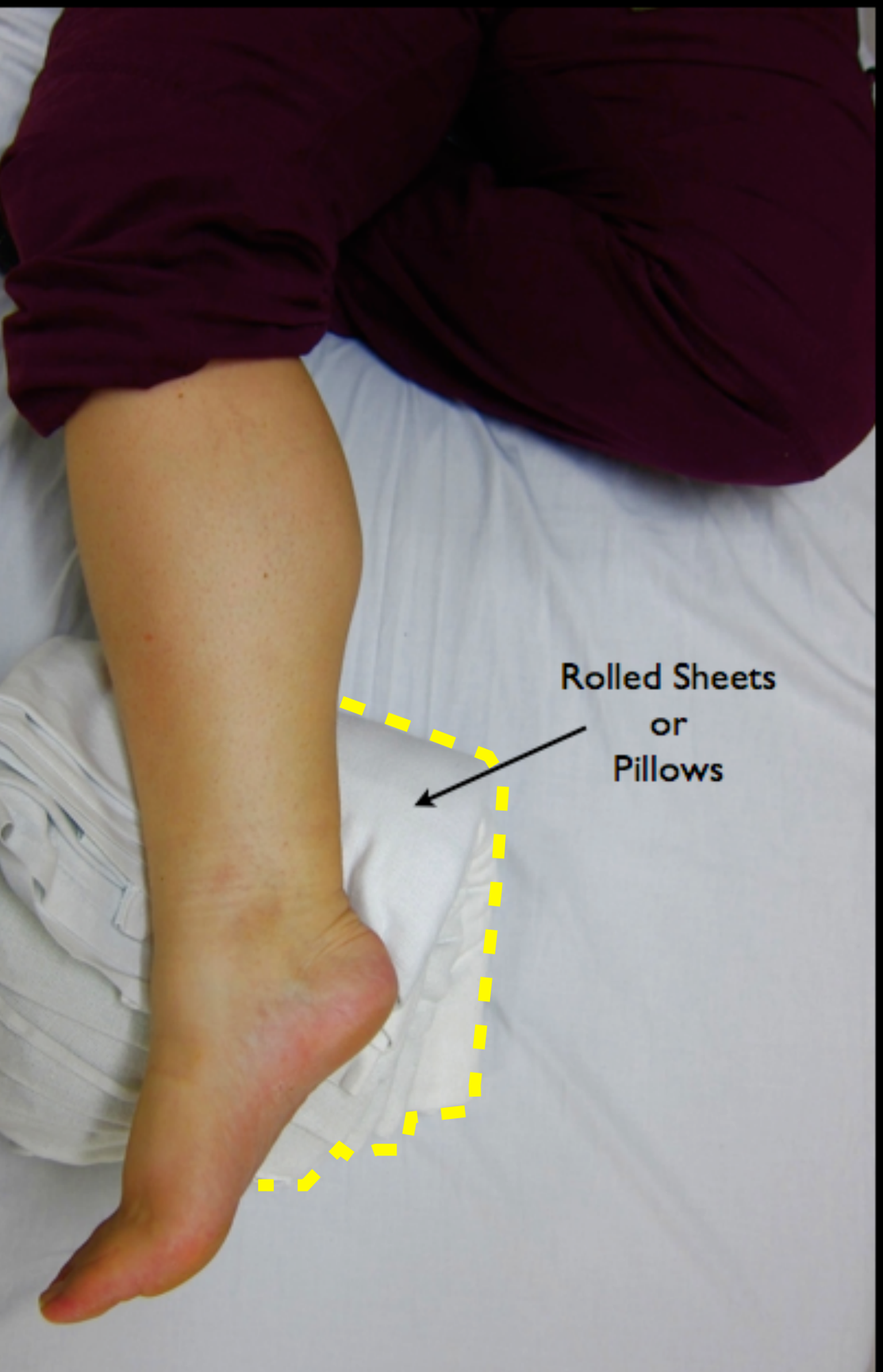
Calcaneal Fracture



Anatomy and Innervation






Rolled Sheets
or
Pillows

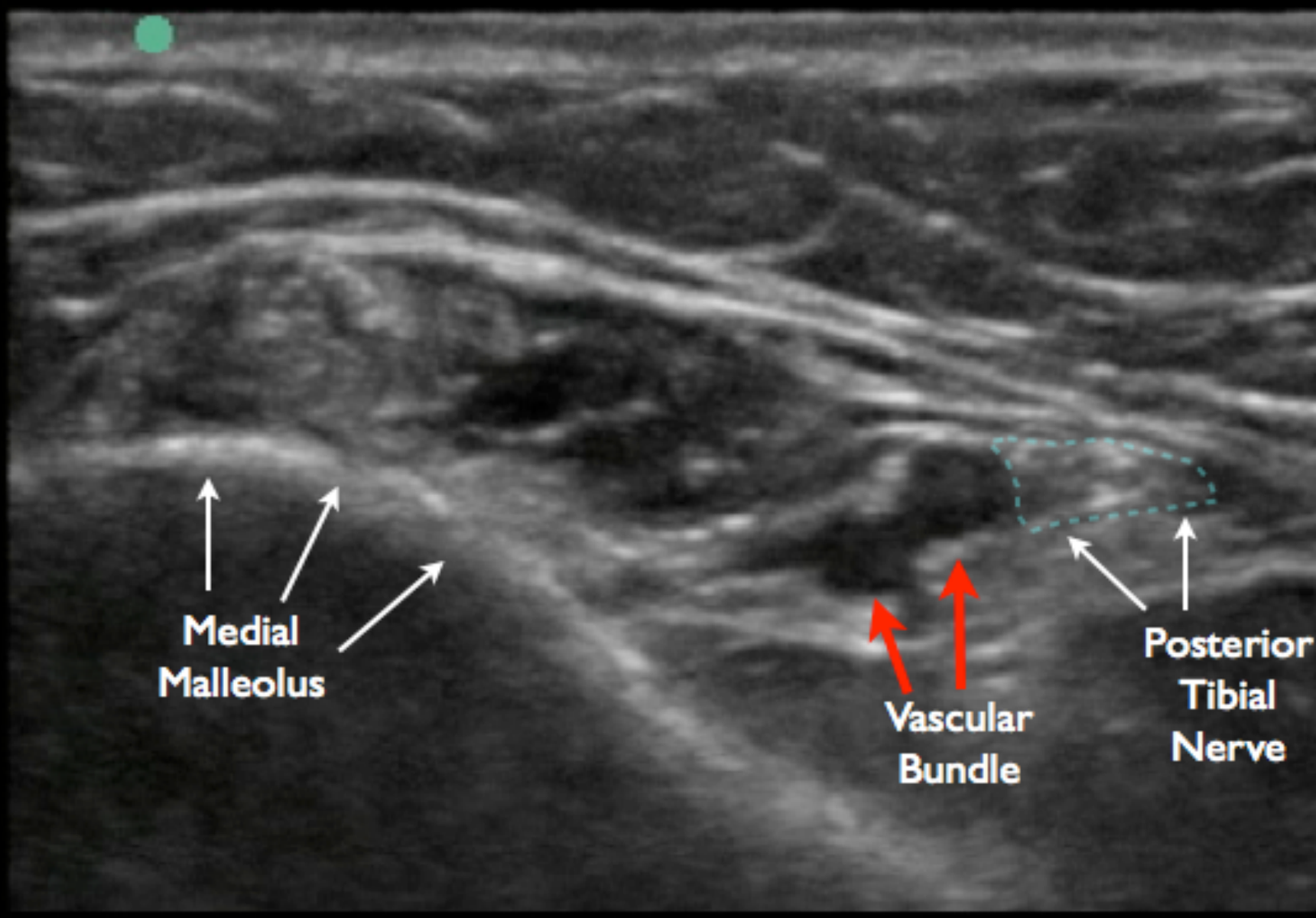




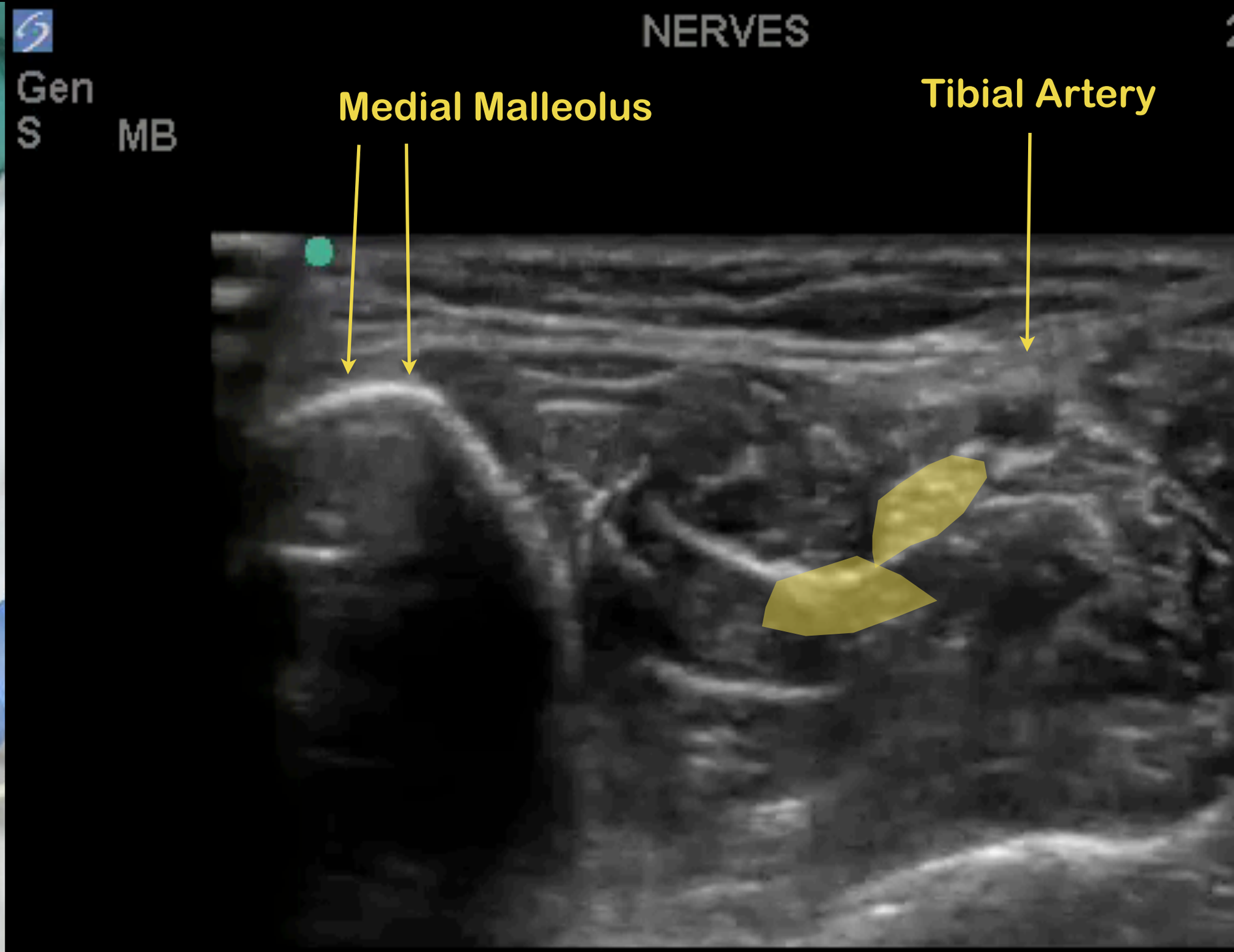
Slide Up Leg





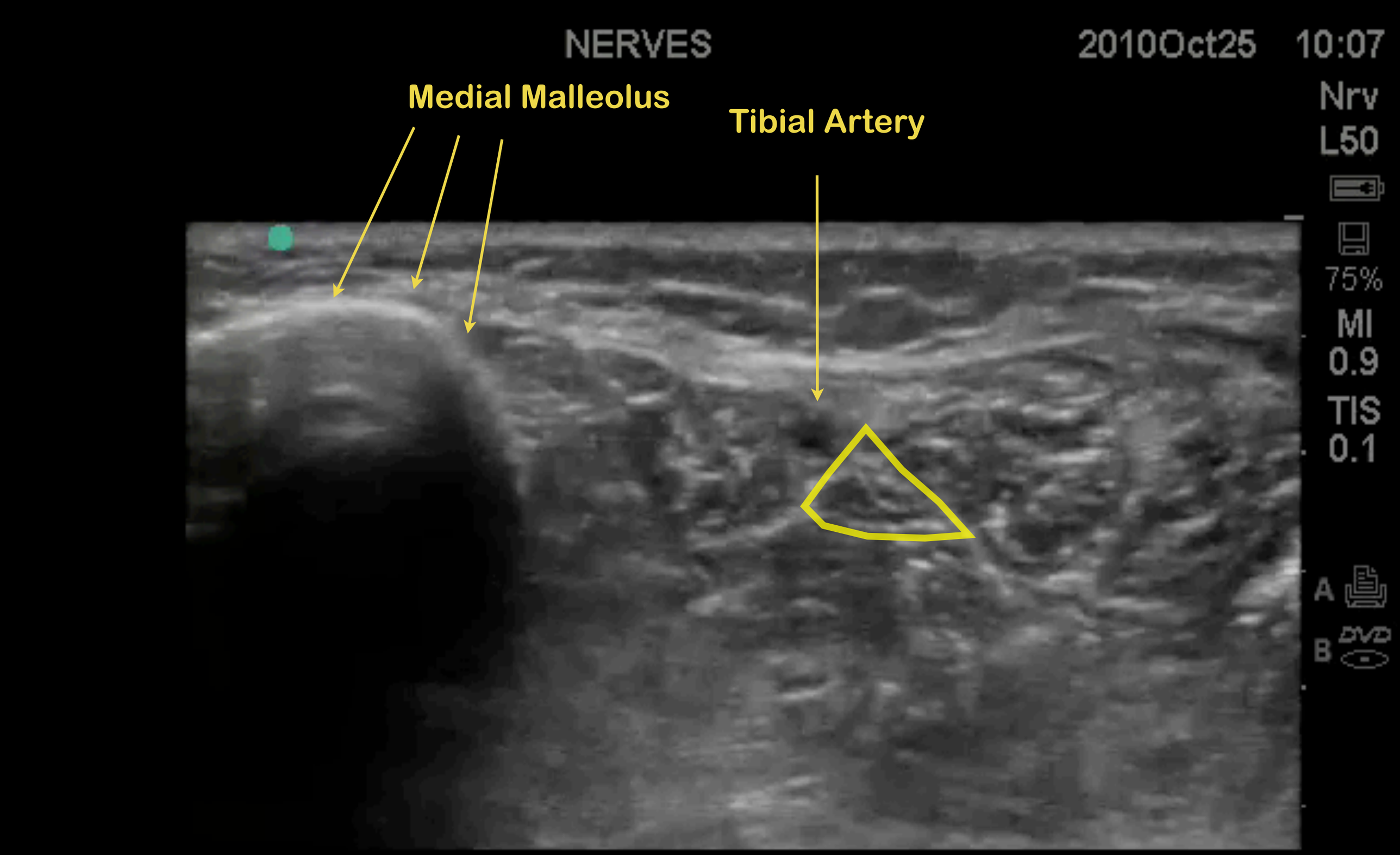

Medial
Malleolus
Vascular
Bundle
Posterior
Tibial
Nerve



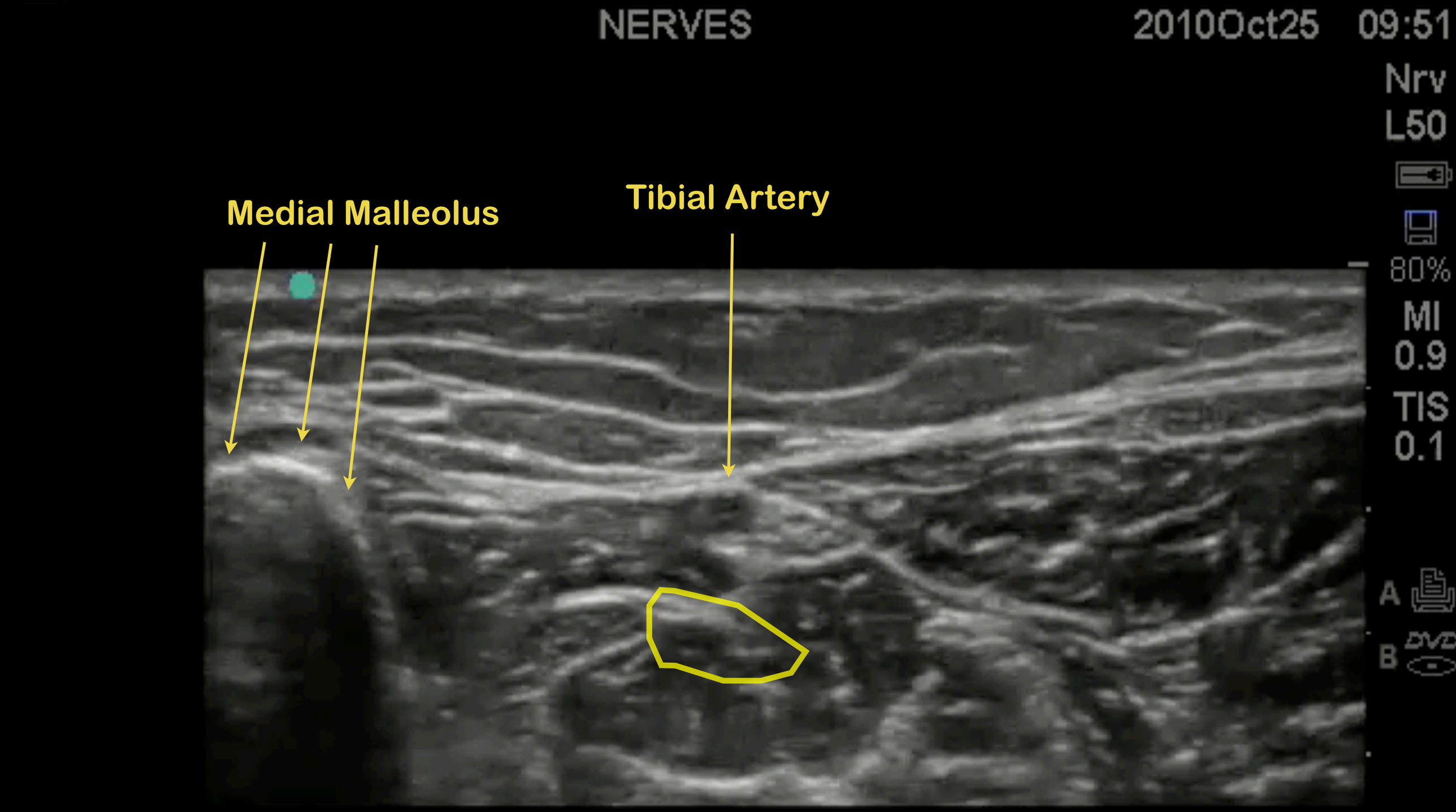


Move Proximal to Access

Pattern Recognition



Posterior Tibial Nerve



Posterior Tibial Nerve

Supplies and Procedure



Linear Transducer
(high frequency)

Supplies for Post Tib NB

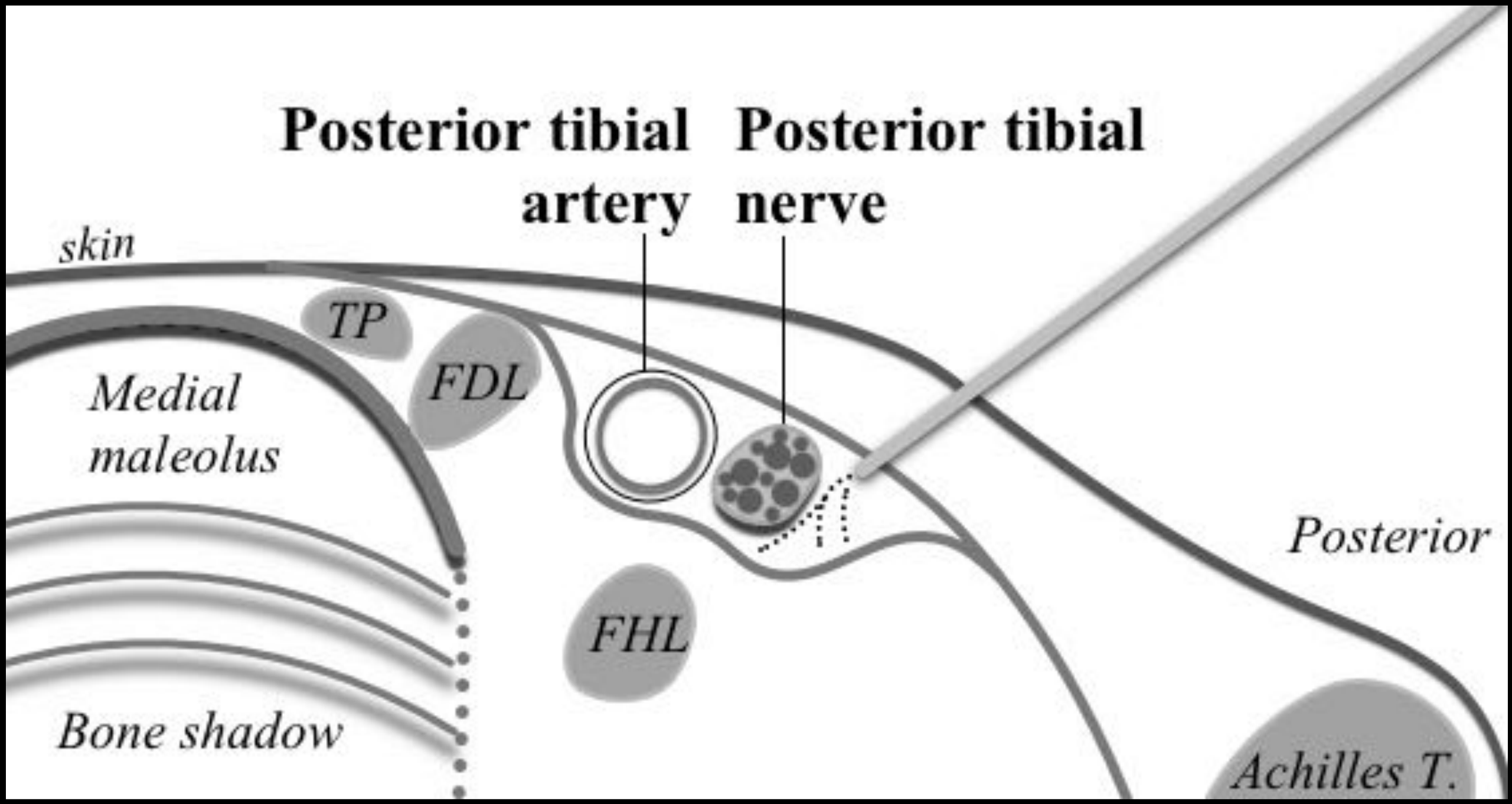
1) 10cc lidocaine 1-2% with epi

2) 10cc Control Syringe

3) Chlorhexidine scrub

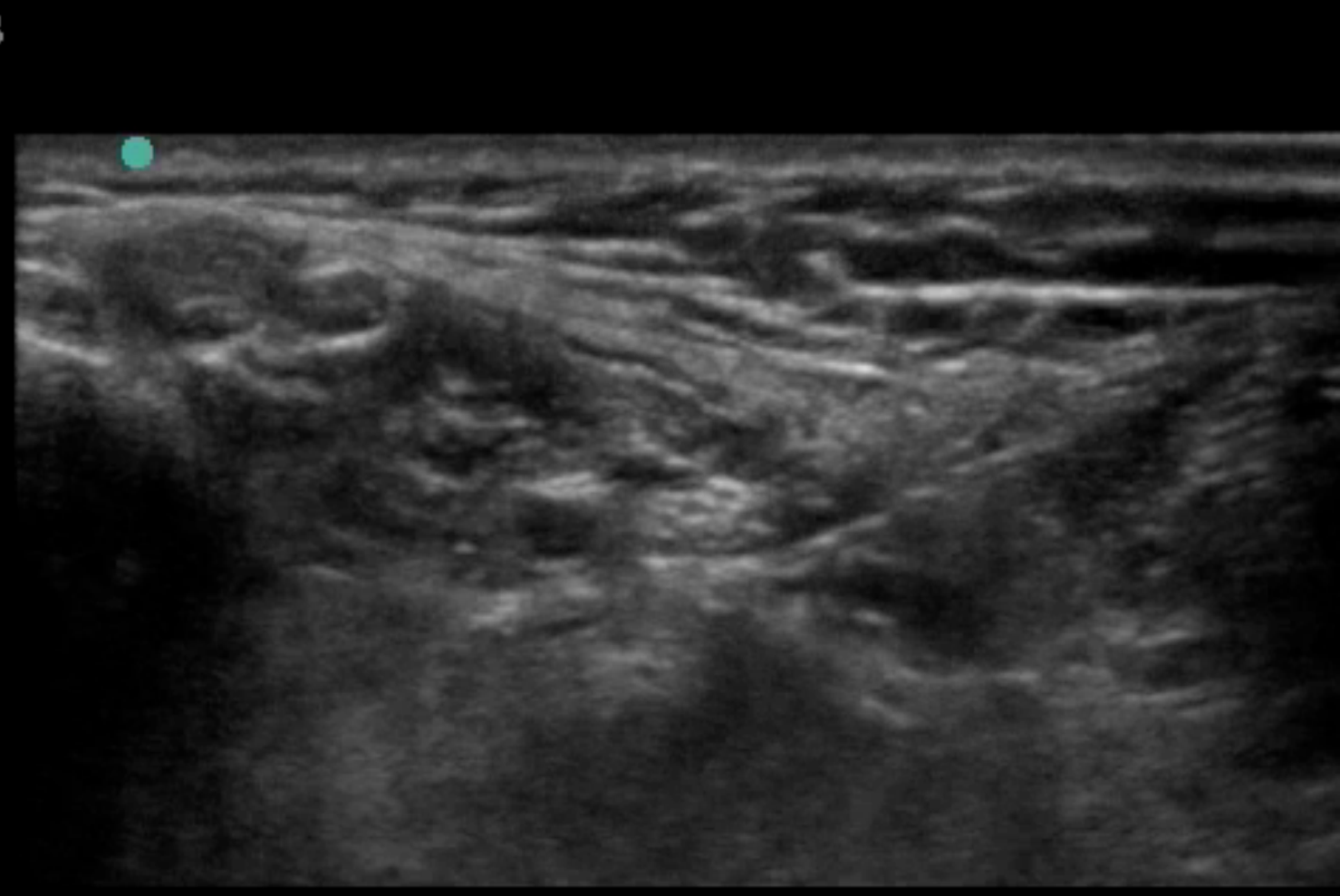
4) 21 - 25g 1.5 inch needle

5) 25g needle for local skin wheal


Posterior tibial artery
Posterior tibial nerve
skin
TP
FDL
Medial maleolus
Posterior
FHL
Bone shadow
Achilles T.

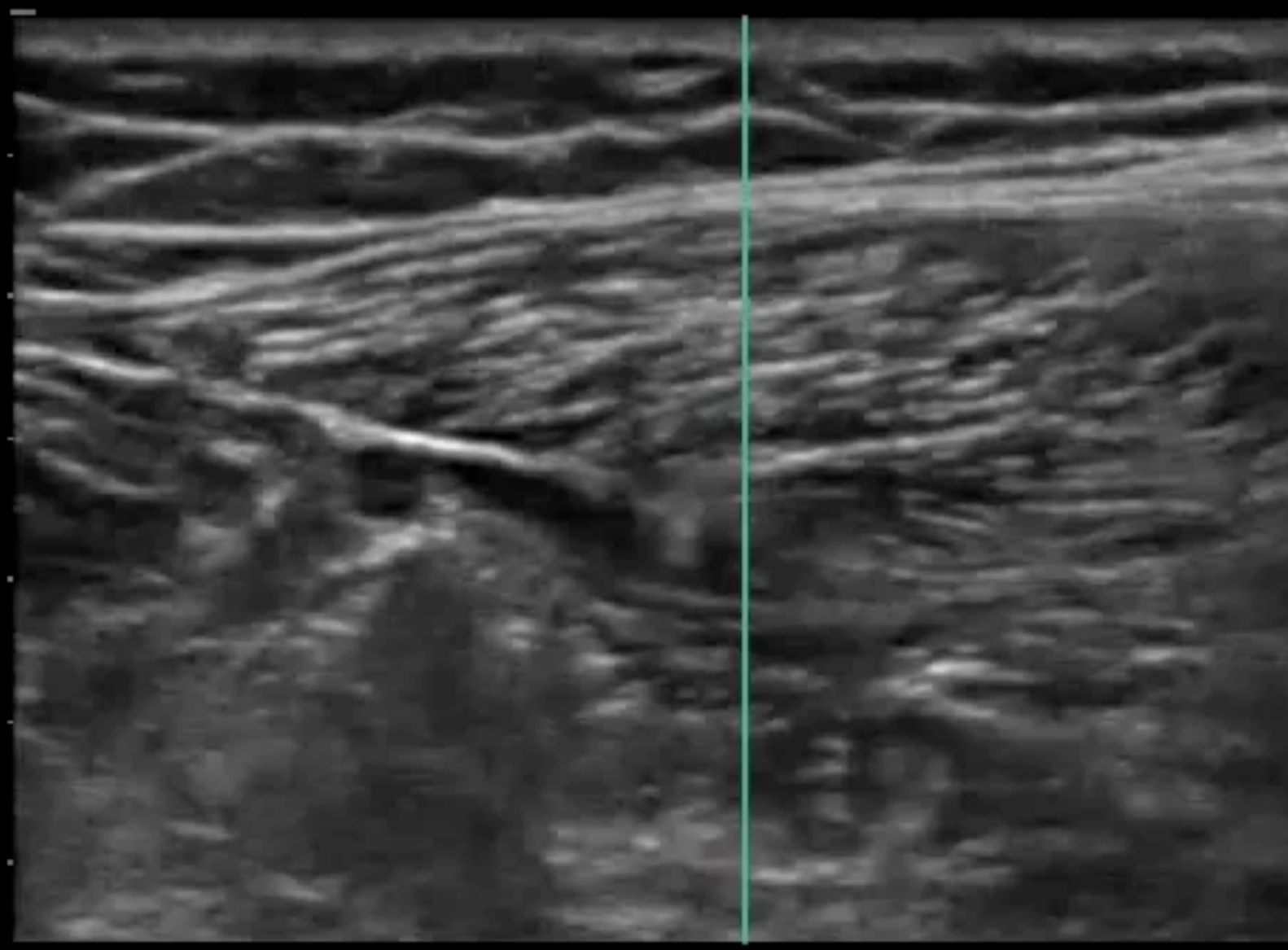
In-plane Approach





Out-of-plane Approach

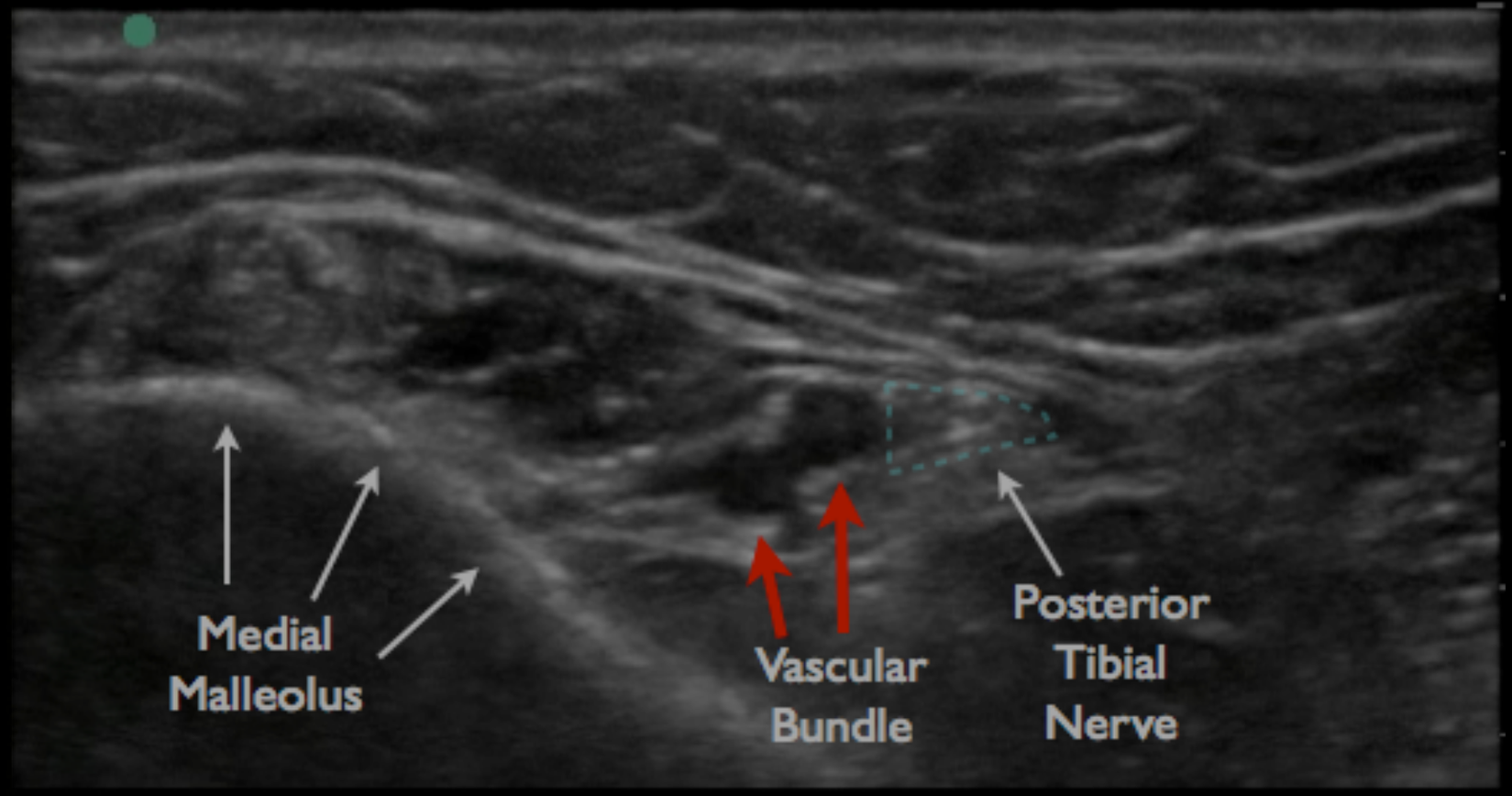




Key Points

Color Doppler

Slide up the leg

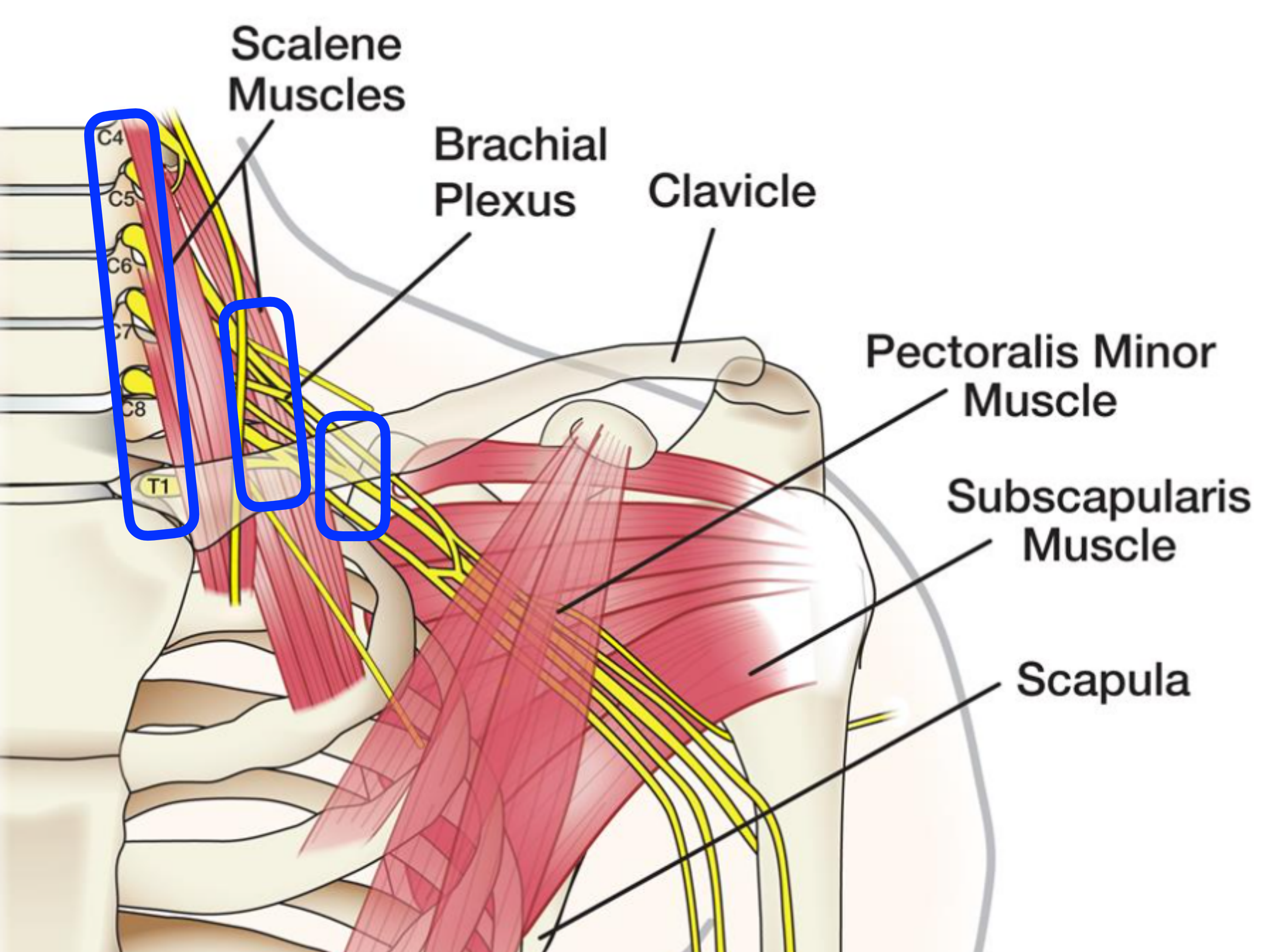

Medial
Malleolus
Vascular
Bundle
Posterior
Tibial
Nerve

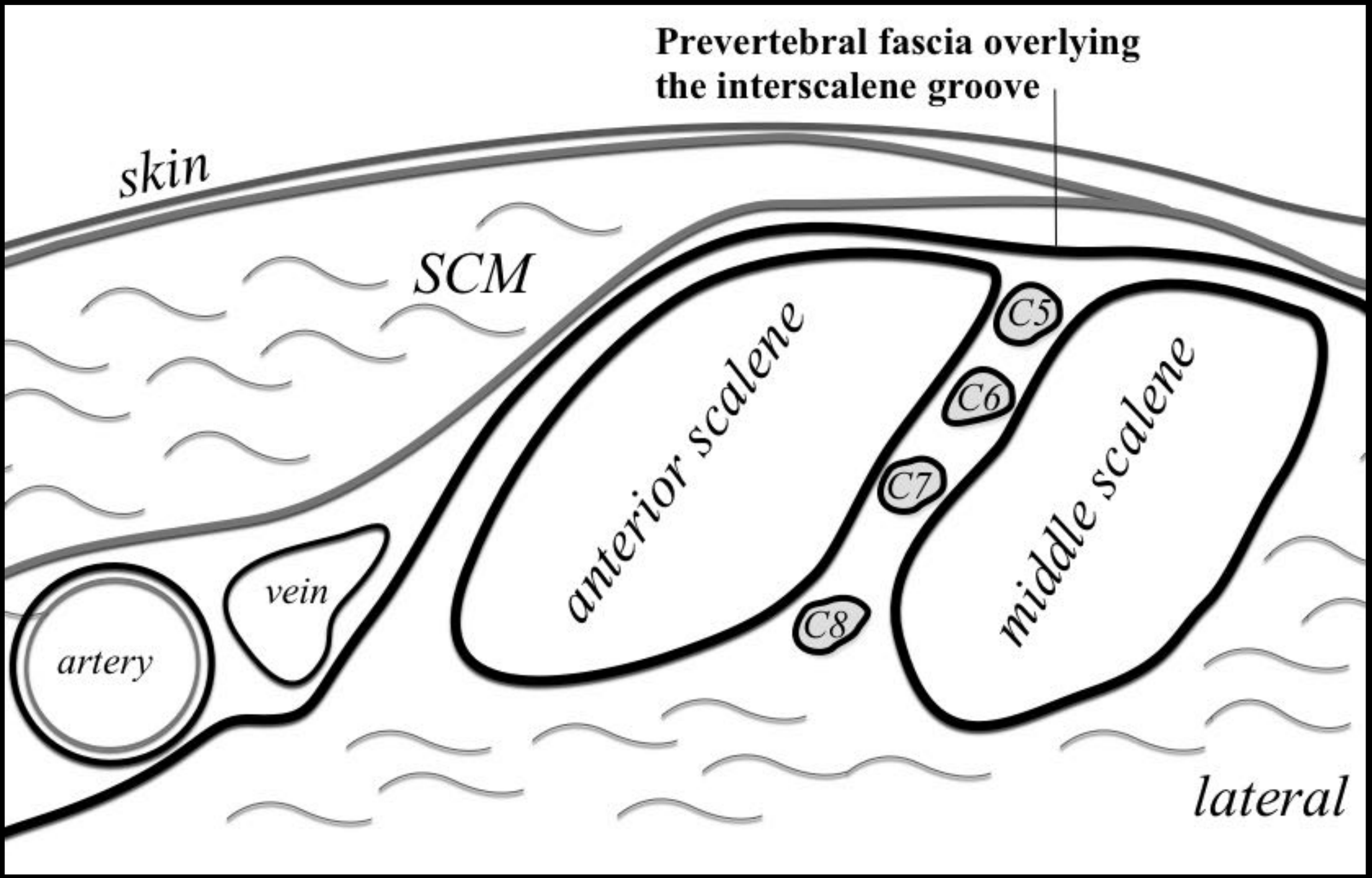
Great Needle Visualization



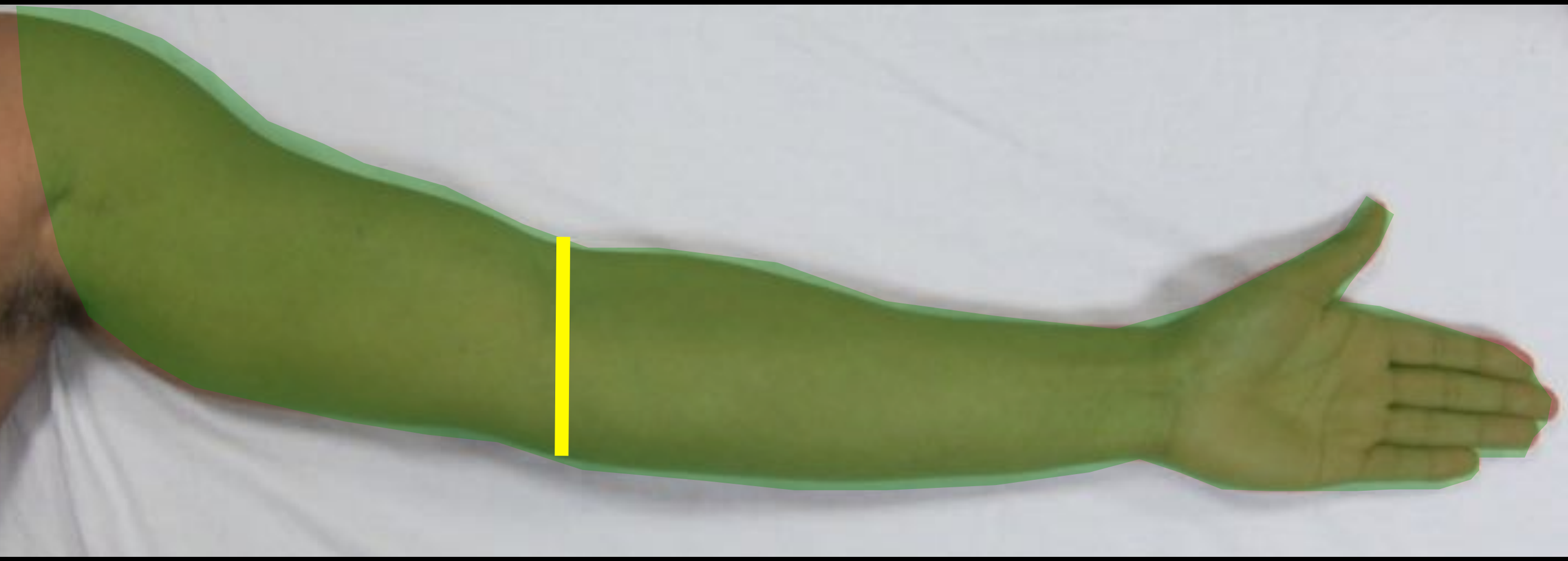


Brachial Plexus Anatomy


Scalene Muscles
Brachial Plexus
Clavicle
Pectoralis Minor Muscle
Subscapularis Muscle
Scapula
C4
C5
C6
C7
C8
T1


Prevertebral fascia overlying
the interscalene groove
skin
SCM
anterior scalene
middle scalene
C5
C6
C7
C8
vein
artery
lateral

Anatomy and Innervation

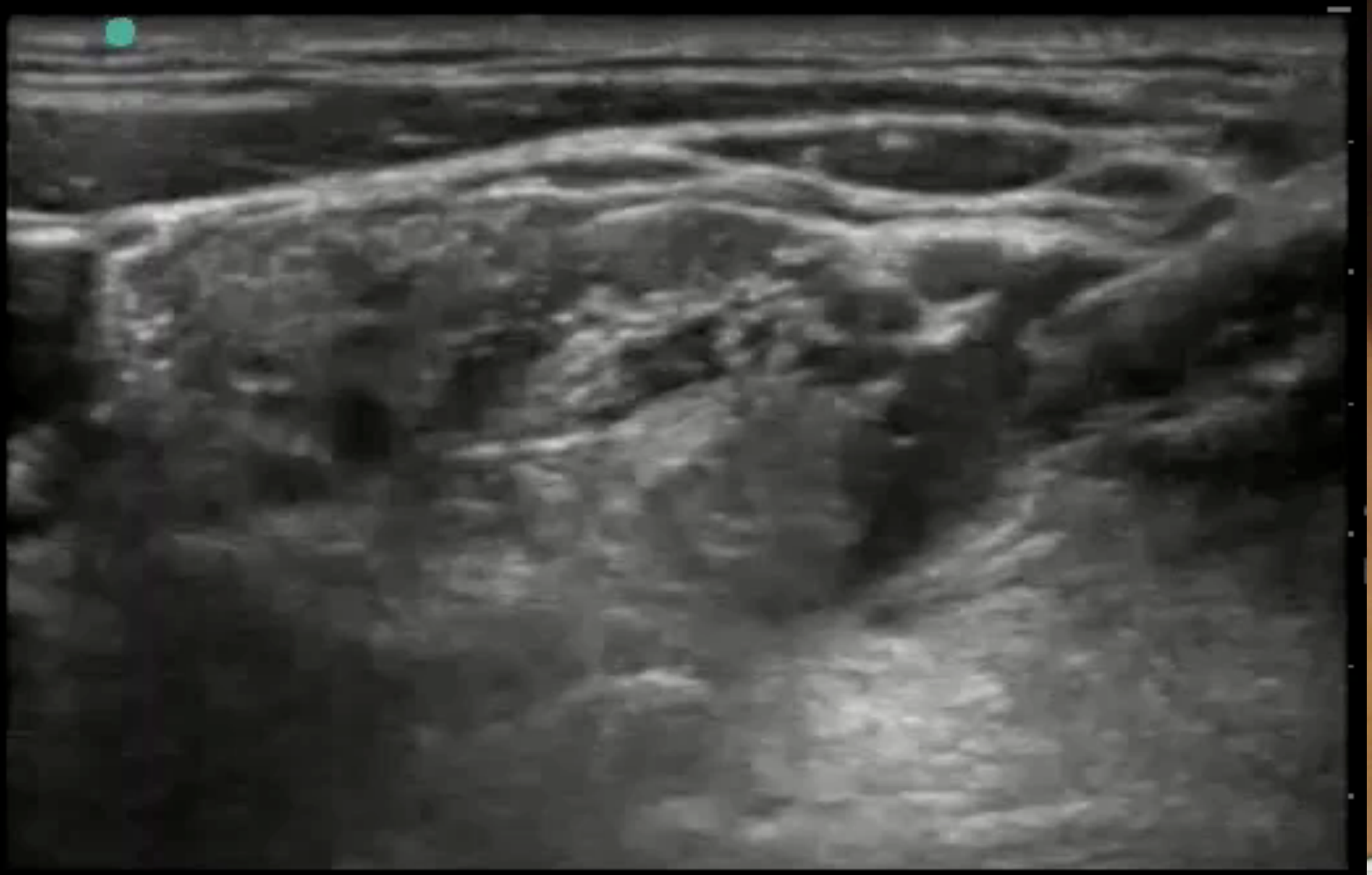


Interscalene

Suprclavicular

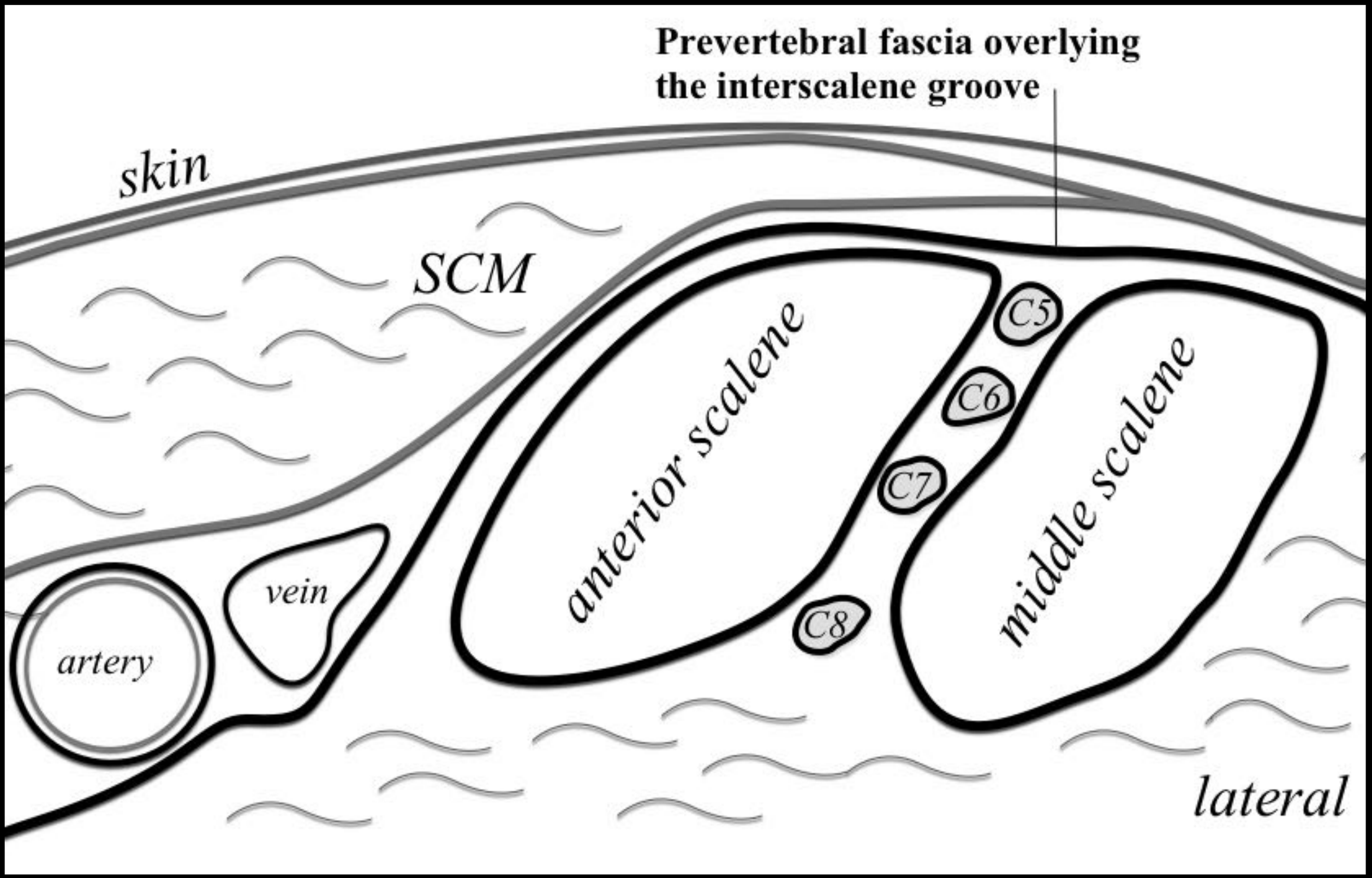
Interscalene Brachial Plexus Block









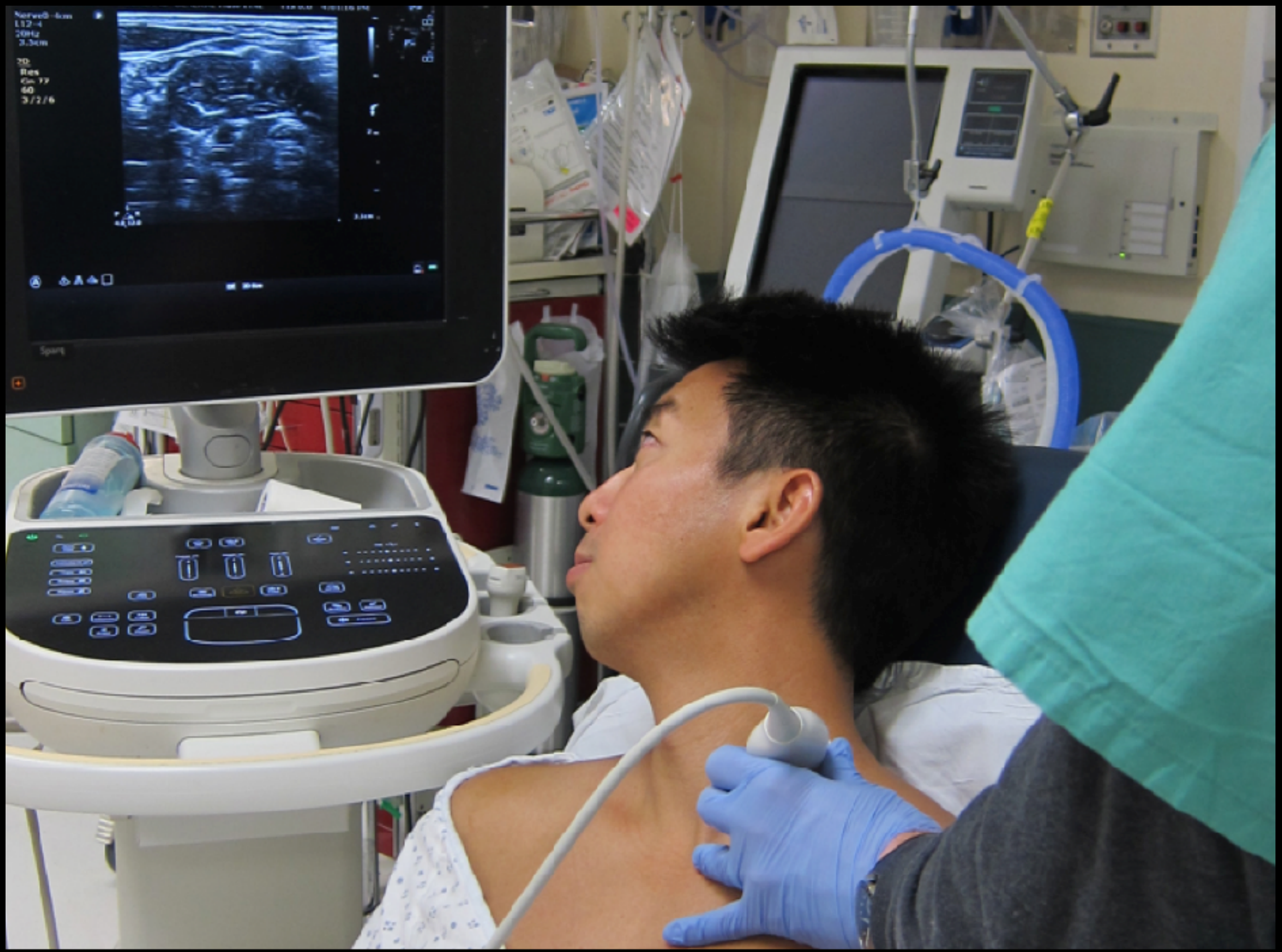

Prevertebral fascia overlying
the interscalene groove
skin
SCM
anterior scalene
middle scalene
C5
C6
C7
C8
vein
artery
lateral

Indications

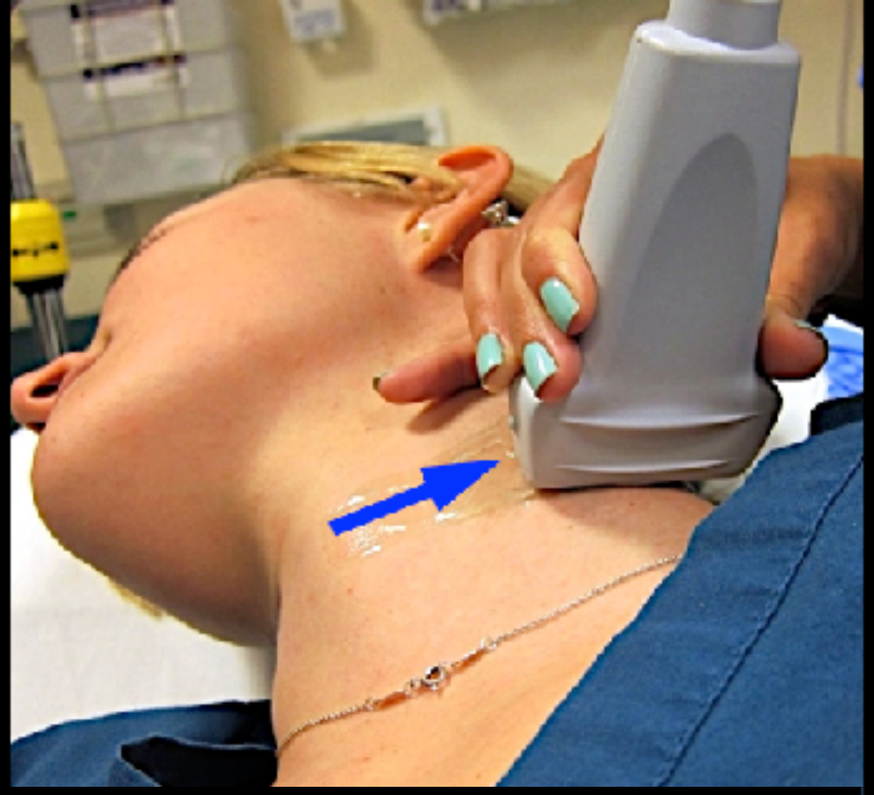


- Humeral Fx
- Prox Arm Burns
- Deltoid Abscess
- Shoulder Dislocation









Medial

Lateral

SCM

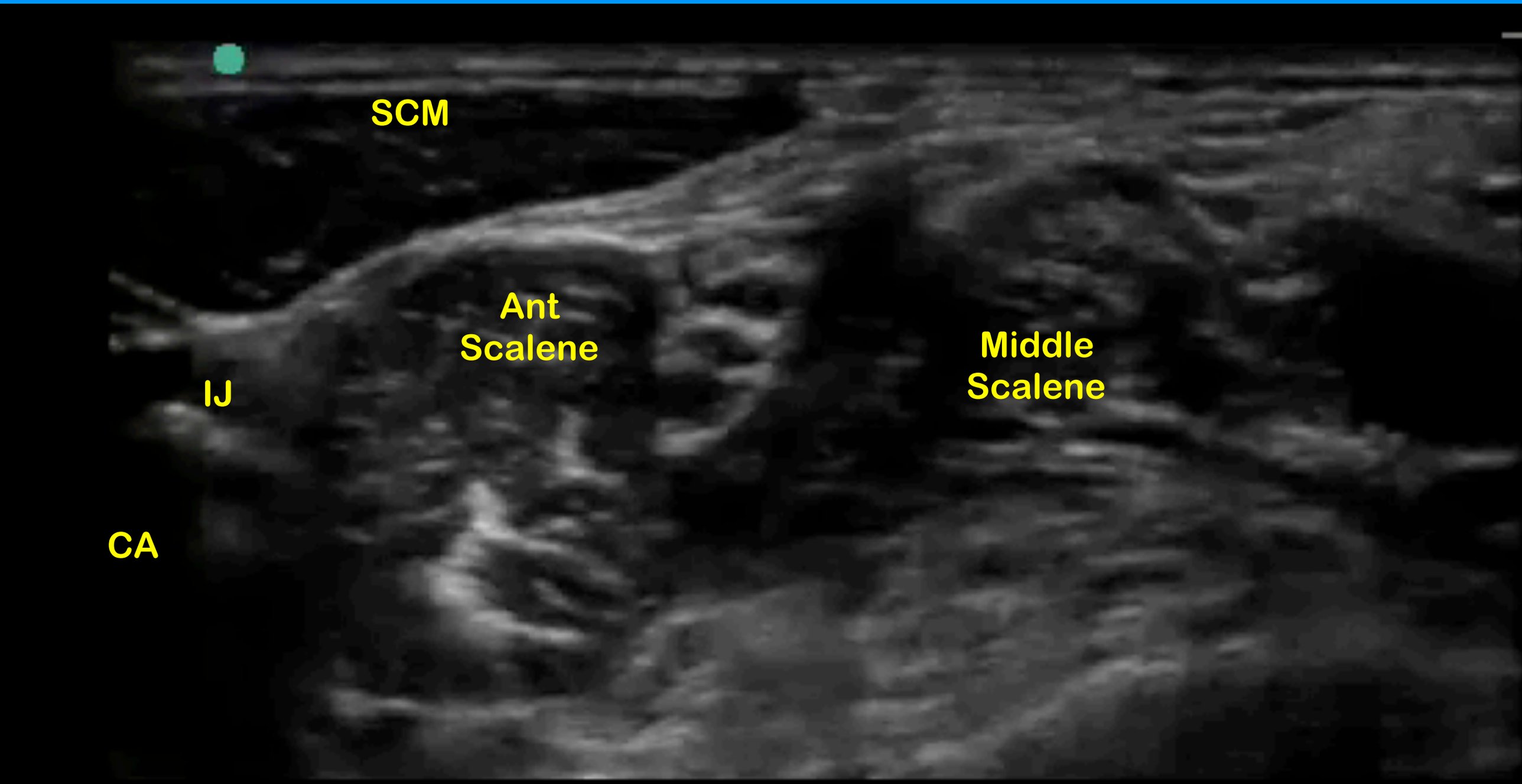
AS

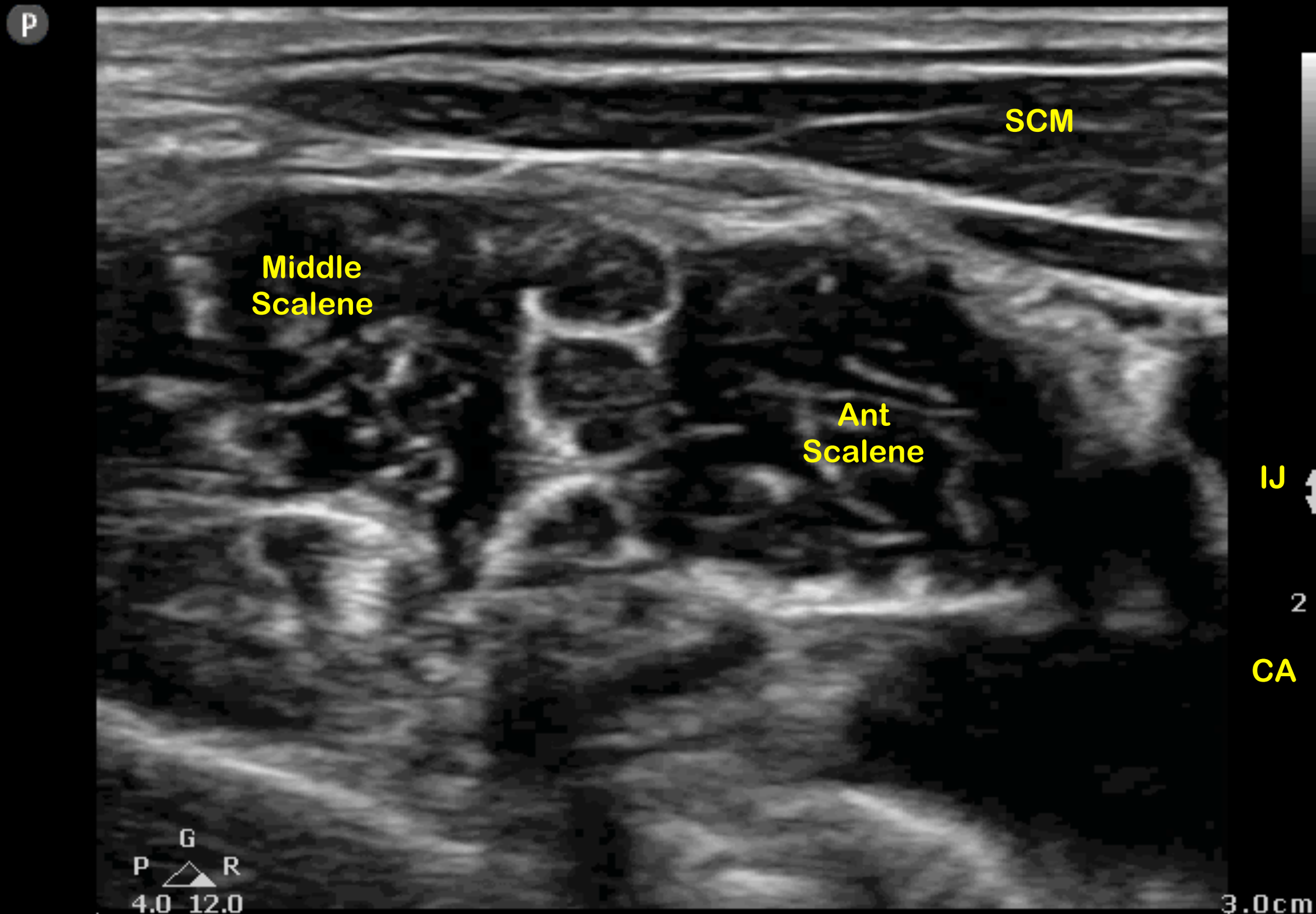
IJV

BP

MS

Pattern Recognition




P
SCM
Middle
Scalene
Ant
Scalene
IJ
2
CA
G
P
R
4.0 12.0
3.0cm

Supplies and Procedure



Linear Transducer
(high frequency)

Supplies for Brachial Plexus NB

1) 20cc lidocaine 1-2% with epi

2) 10cc Control Syringe

3) Chlorhexidine scrub

4) 20 - 22g 3.5 inch spinal needle

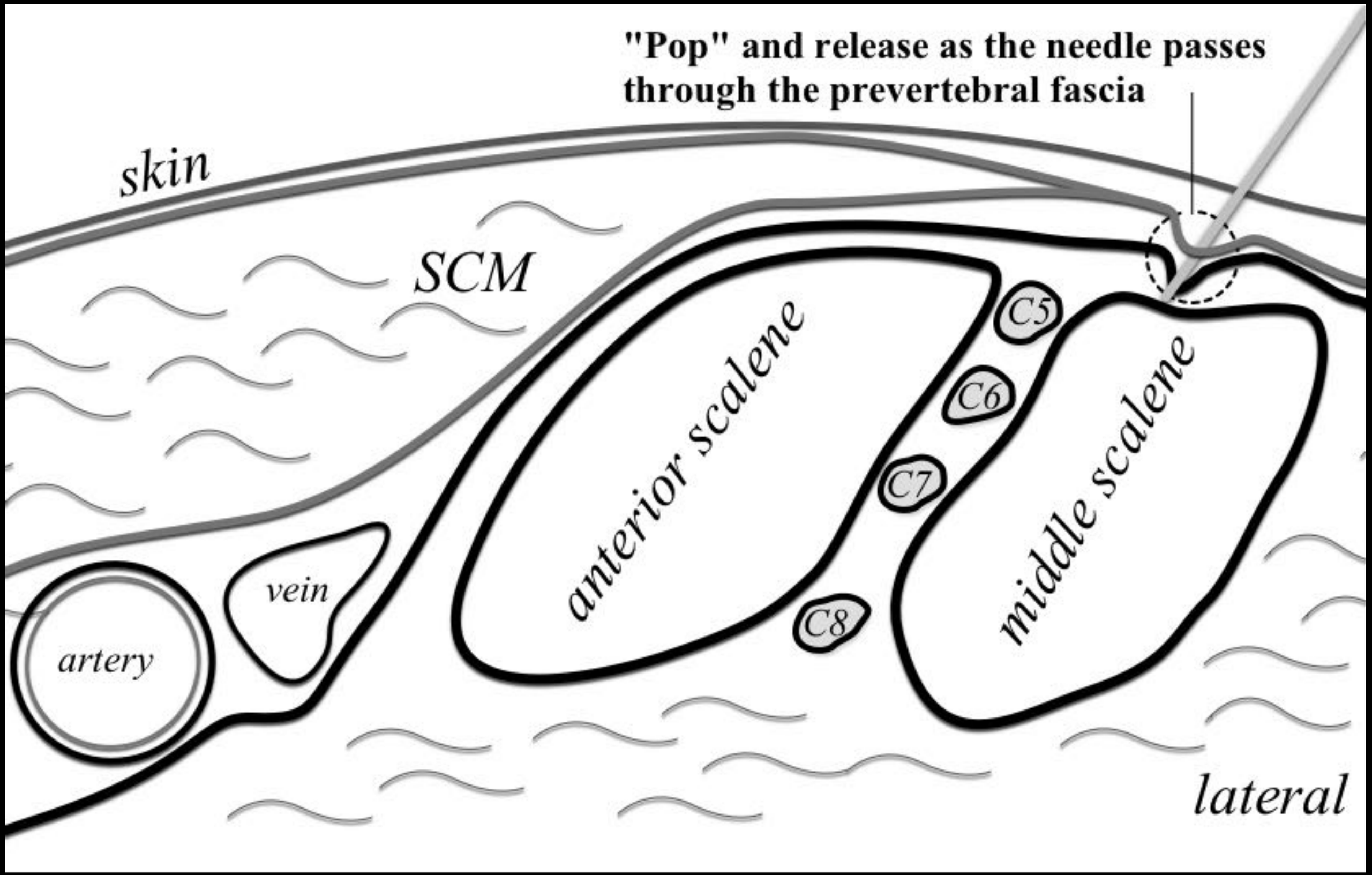
5) 25g needle for local skin wheal



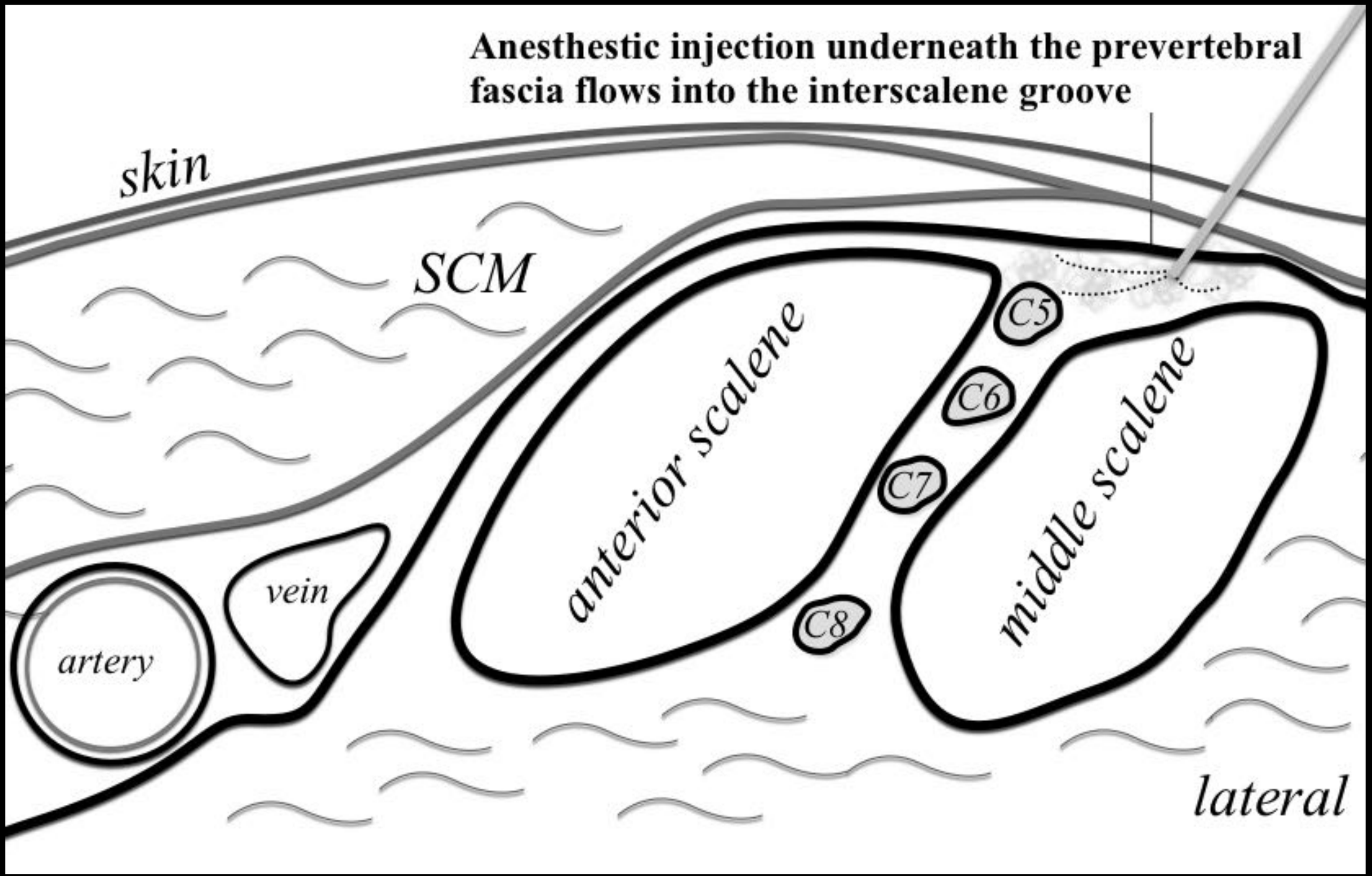


Shoulder Roll

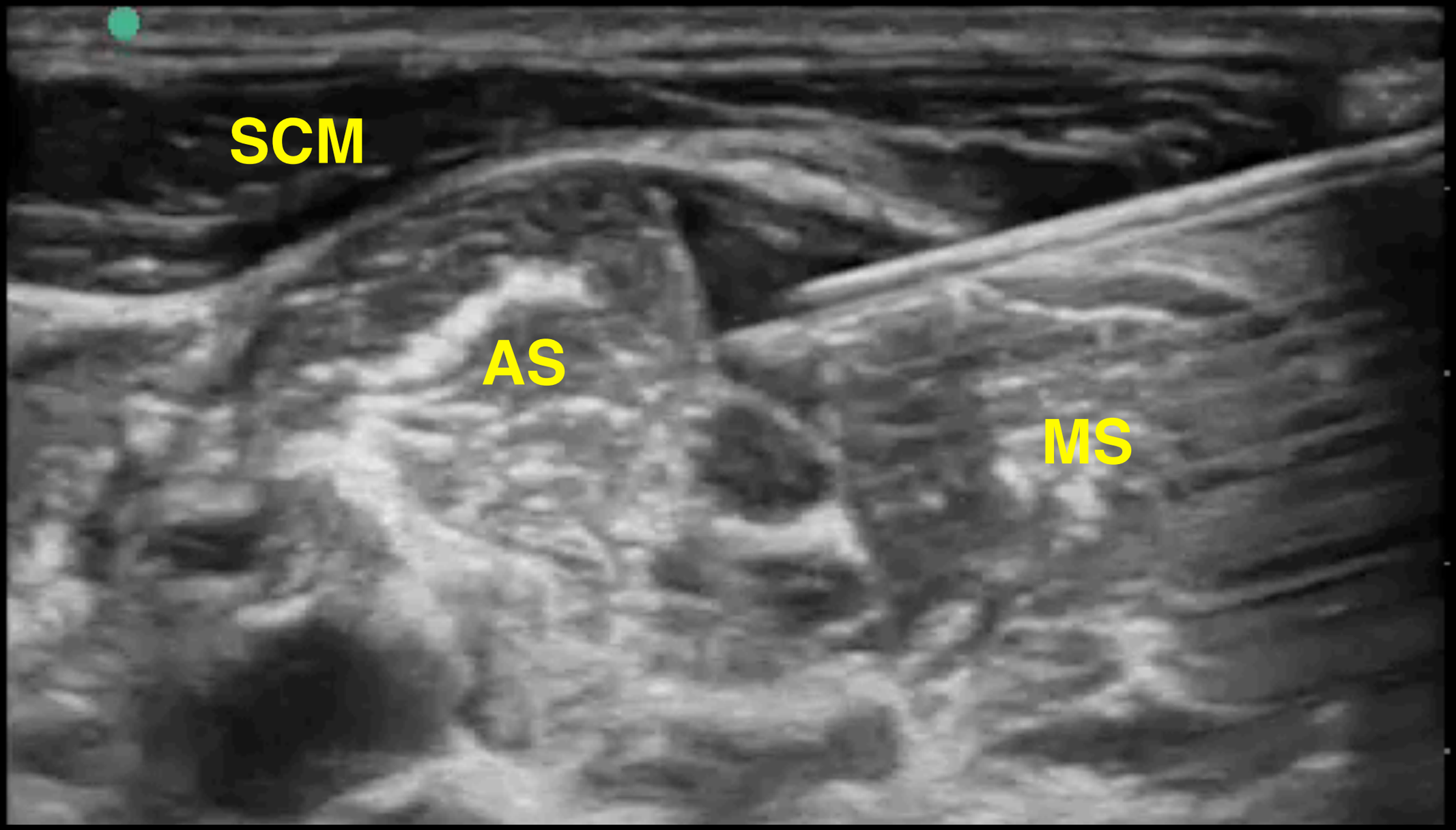
Direct View of US Screen

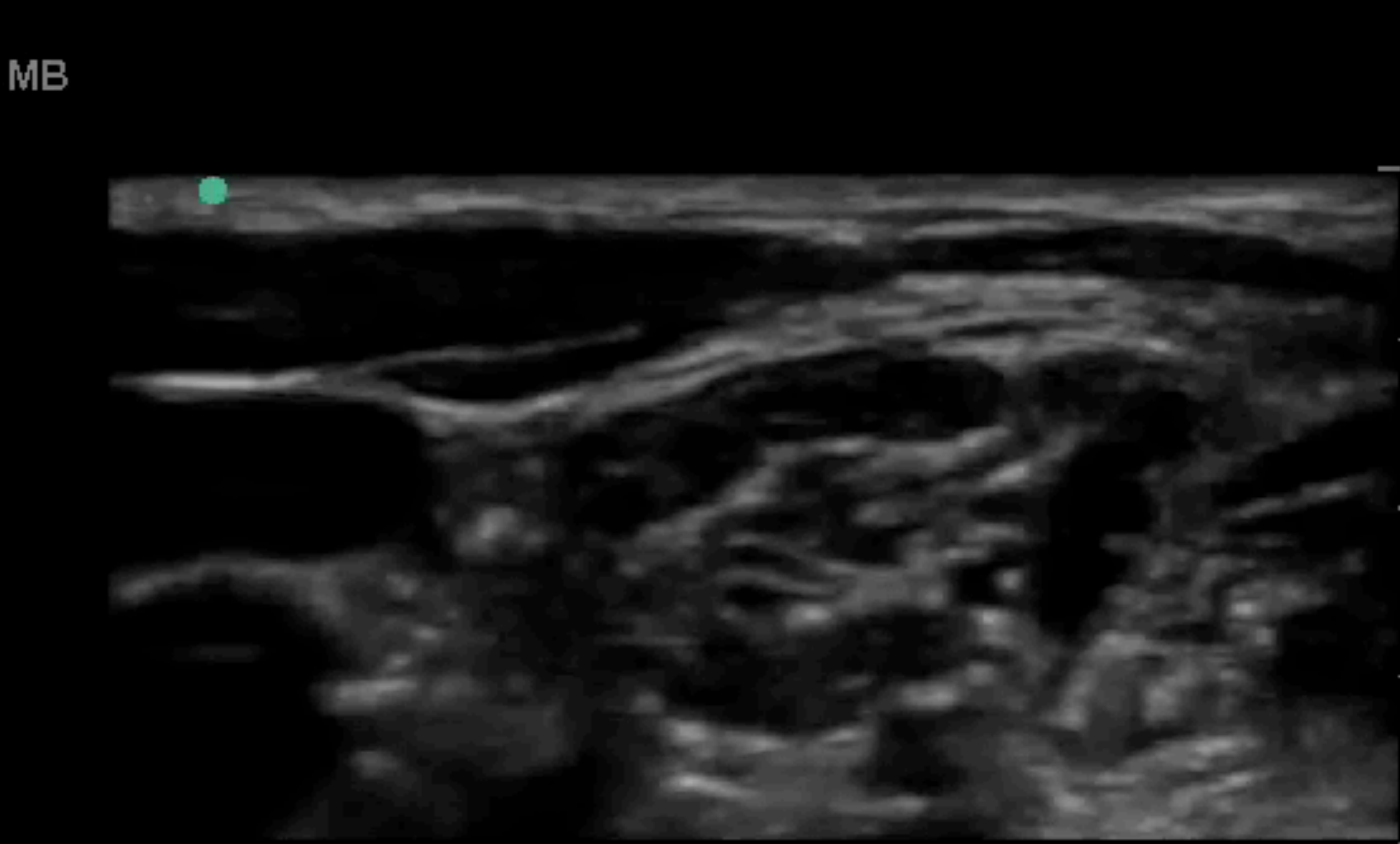

"Pop" and release as the needle passes through the prevertebral fascia
skin
SCM
anterior scalene
middle scalene
C5
C6
C7
C8
vein
artery
lateral

Anesthestic injection underneath the prevertebral fascia flows into the interscalene groove




MB
2.7


SCM
AS
MS


MB
2.0

Summary

Multimodal approach to pain management

Practice localizing nerves on ultrasound

Learn in-plane needle technique

Start with the femoral nerve

Questions?