

# PoCUS Guided MSK Injections: For happier providers and better patient outcomes

UBC Rural PoCUS Rounds

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# Disclosures

I am a medical advisor to Clarius Mobile Health

# Mitigation

This talk is about PoCUS in general and is device-agnostic

# Objectives

1. Apply a general approach and “tricks of the trade” to maximize success in MSK injections
2. Identify specific examples where PoCUS guided injections can make a significant improvement in acute MSK diagnosis management

# The Literature



# **Effectiveness of Ultrasound Guidance on Intraarticular and Periarticular Joint Injections**

Systematic Review and Meta-analysis of Randomized Trials

## *Accuracy of Anterior Intra-articular Injection of the Glenohumeral Joint*

Paul M. Sethi, M.D., Scott Kingston, M.D., and Neal Elattrache, M.D.

## *A Randomized, Double-Blind, Controlled Study of Ultrasound-Guided Corticosteroid Injection Into the Joint of Patients With Inflammatory Arthritis*

Joanna Cunnington,<sup>1</sup> Nicola Marshall,<sup>2</sup> Geoff Hide,<sup>2</sup> Claire Bracewell,<sup>2</sup> John Isaacs,<sup>1</sup>  
Philip Platt,<sup>2</sup> and David Kane<sup>3</sup>

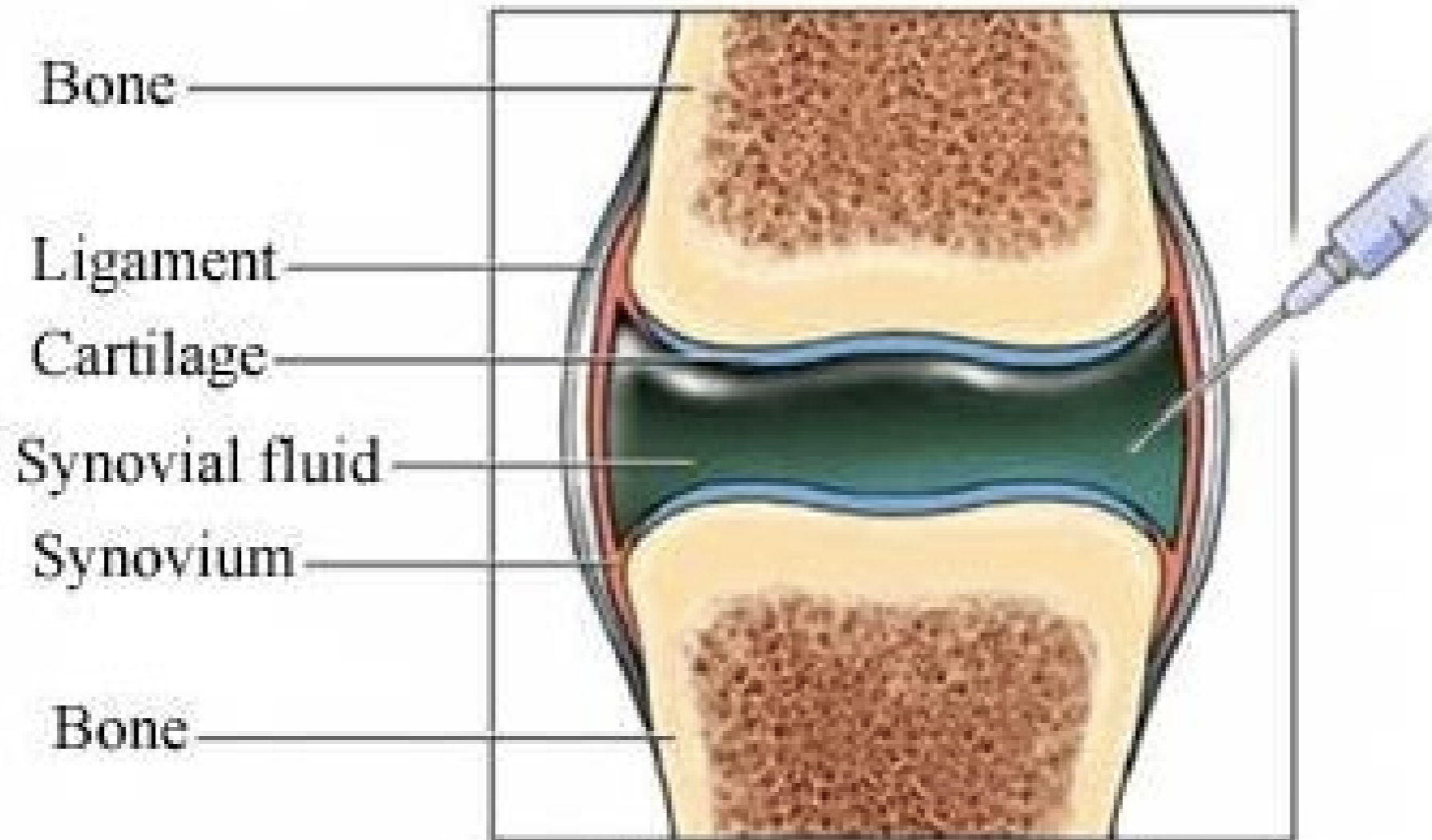




Awaken your inner ninja

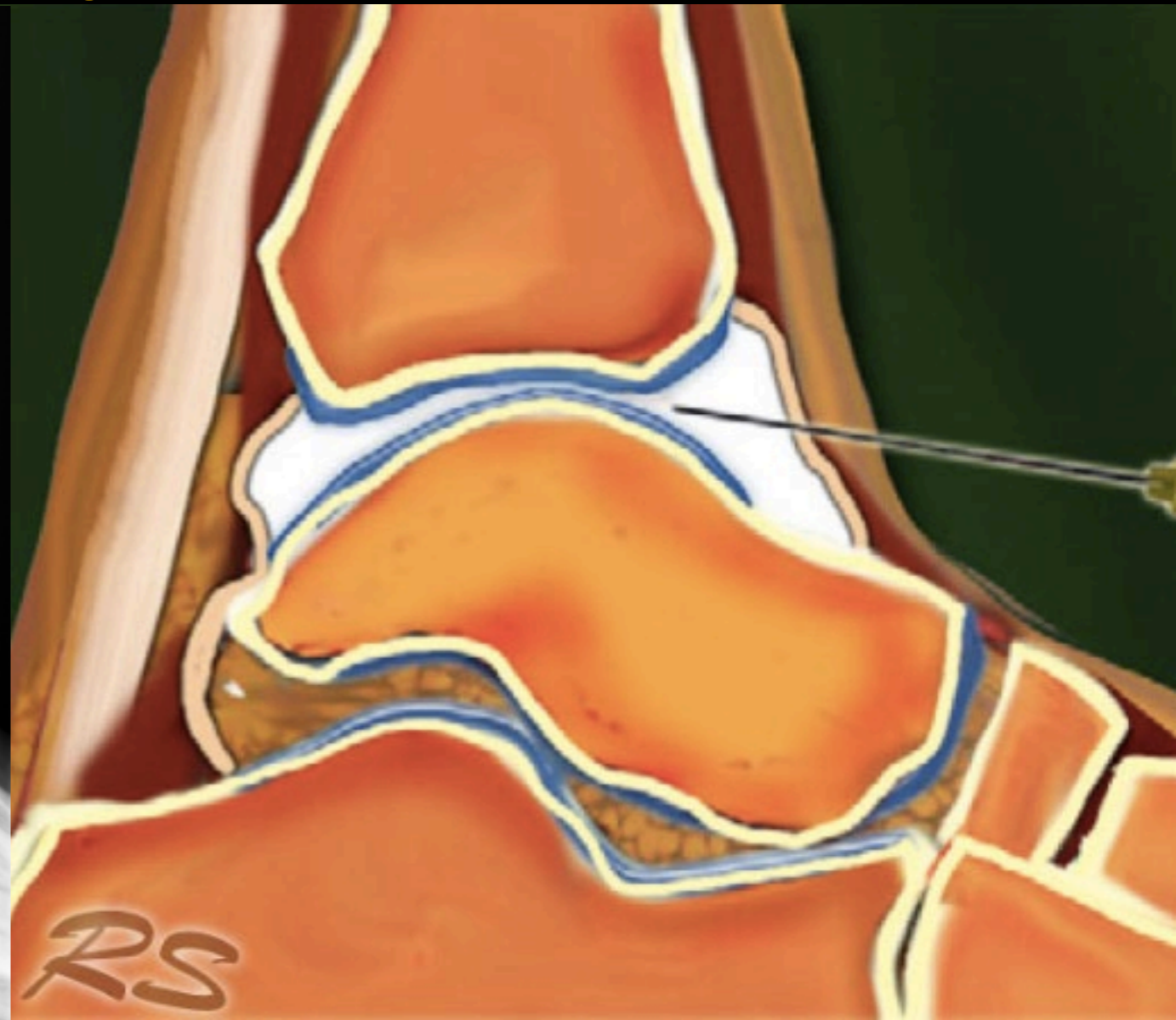
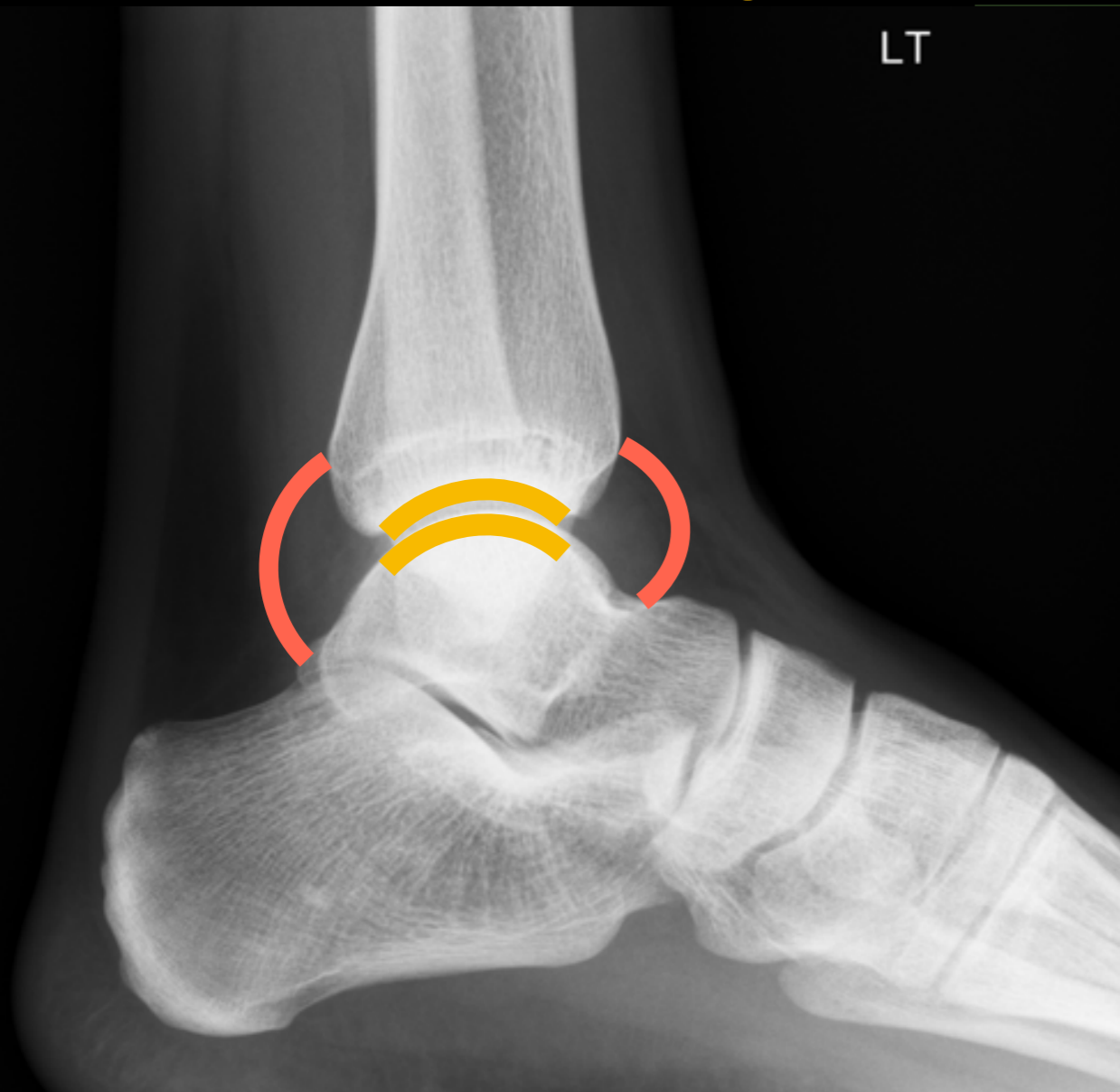


# Move from “joint space” to “joint capsule”

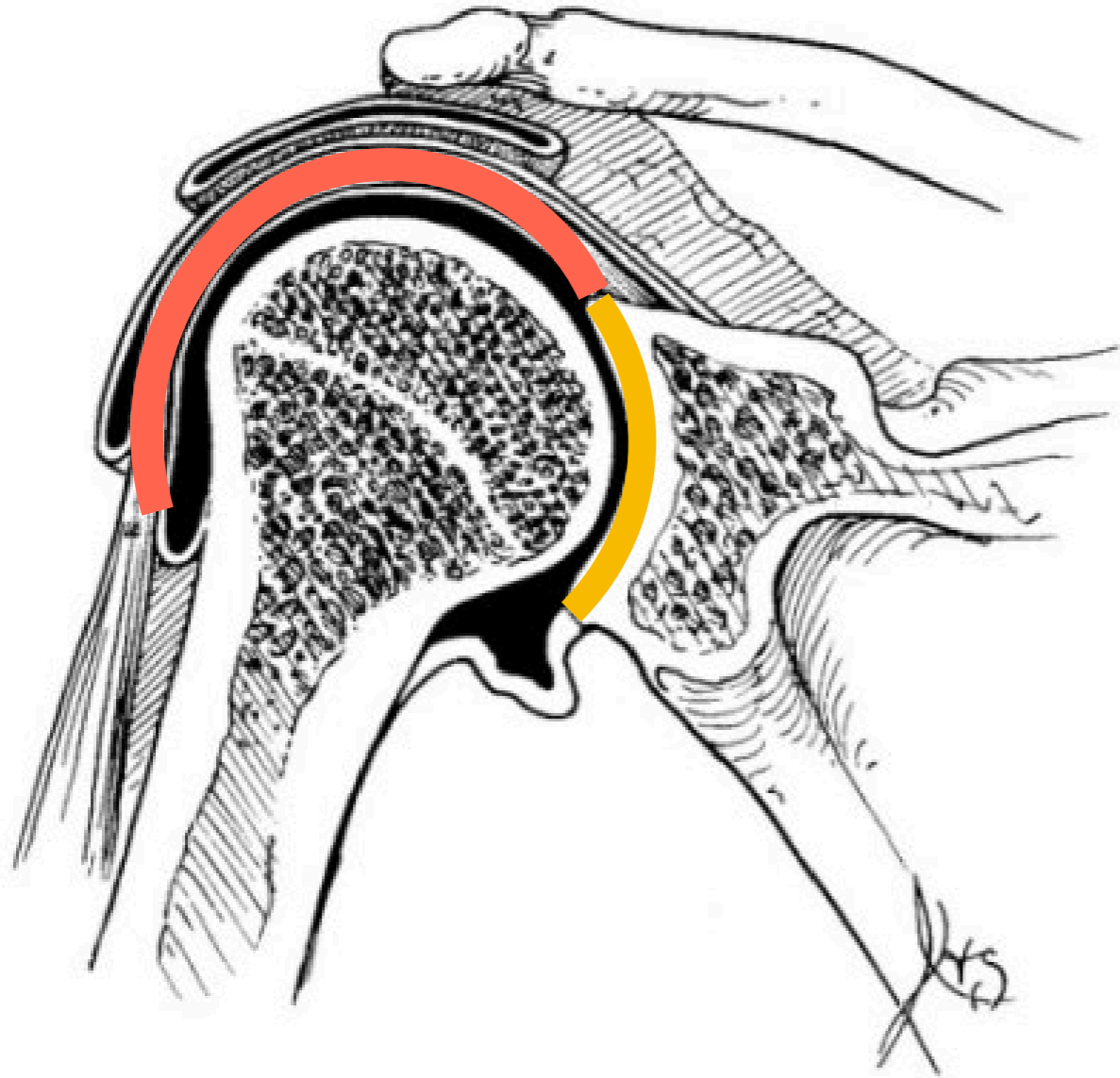


Cut-away view of joint

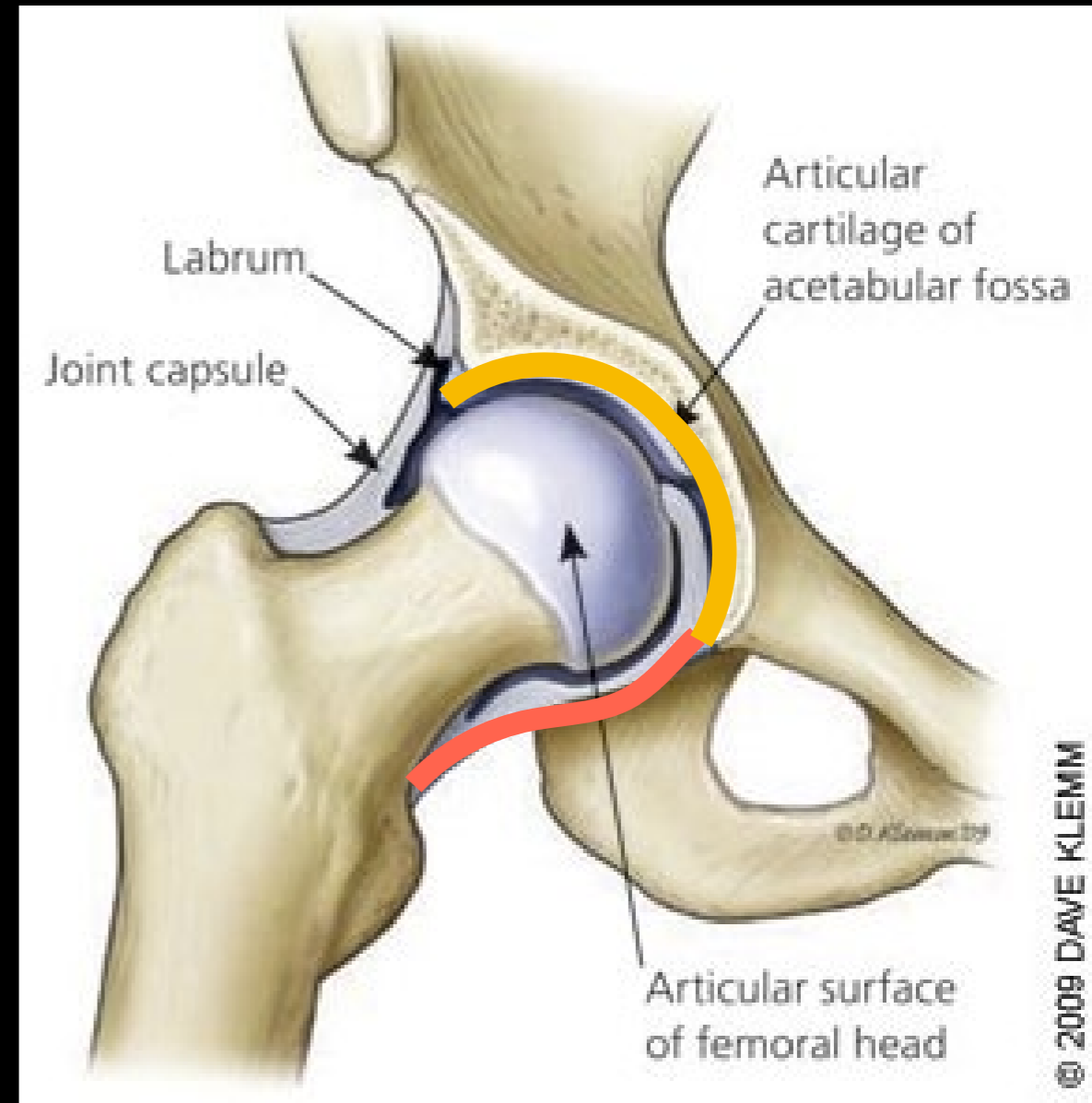
# Move from “joint space” to “joint capsule”



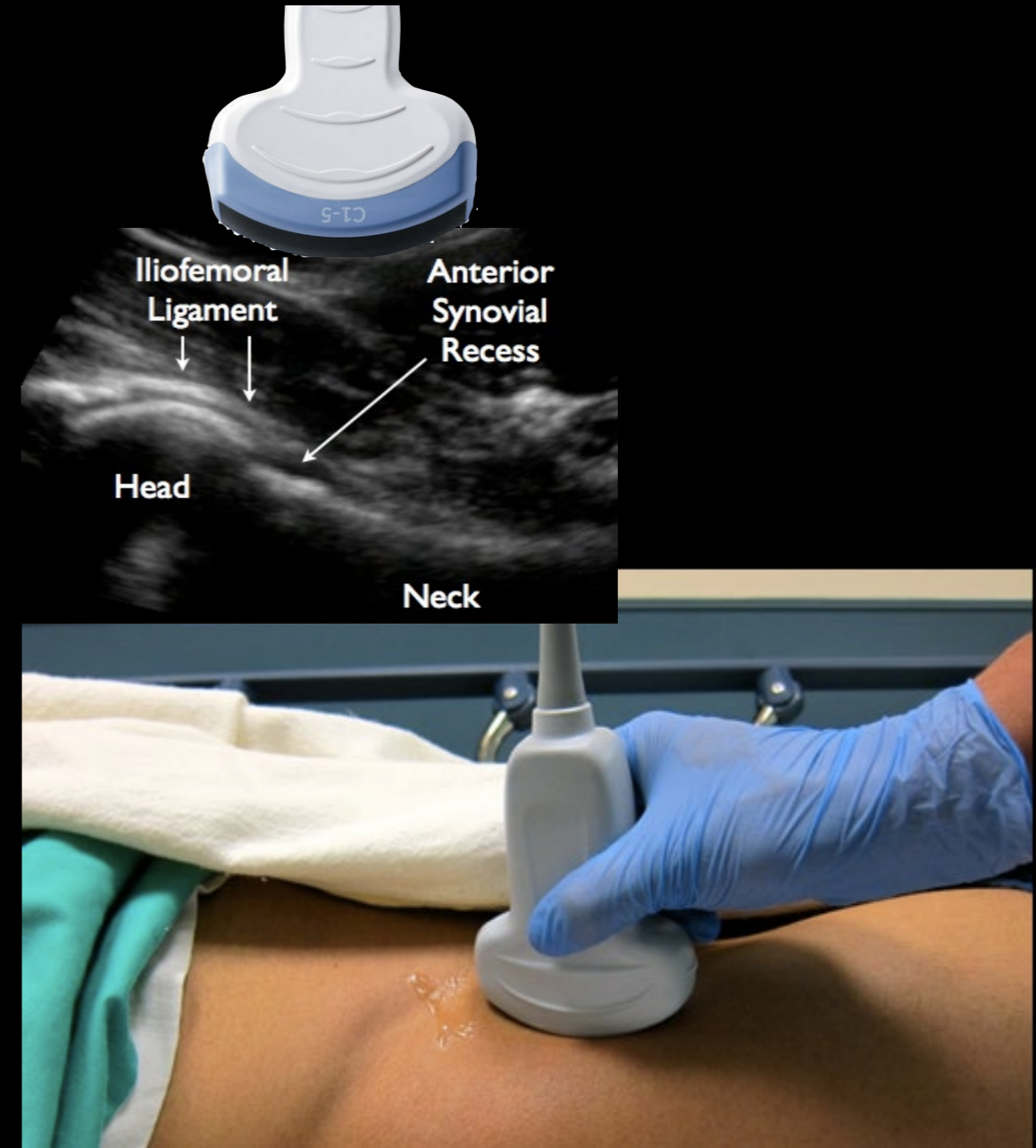
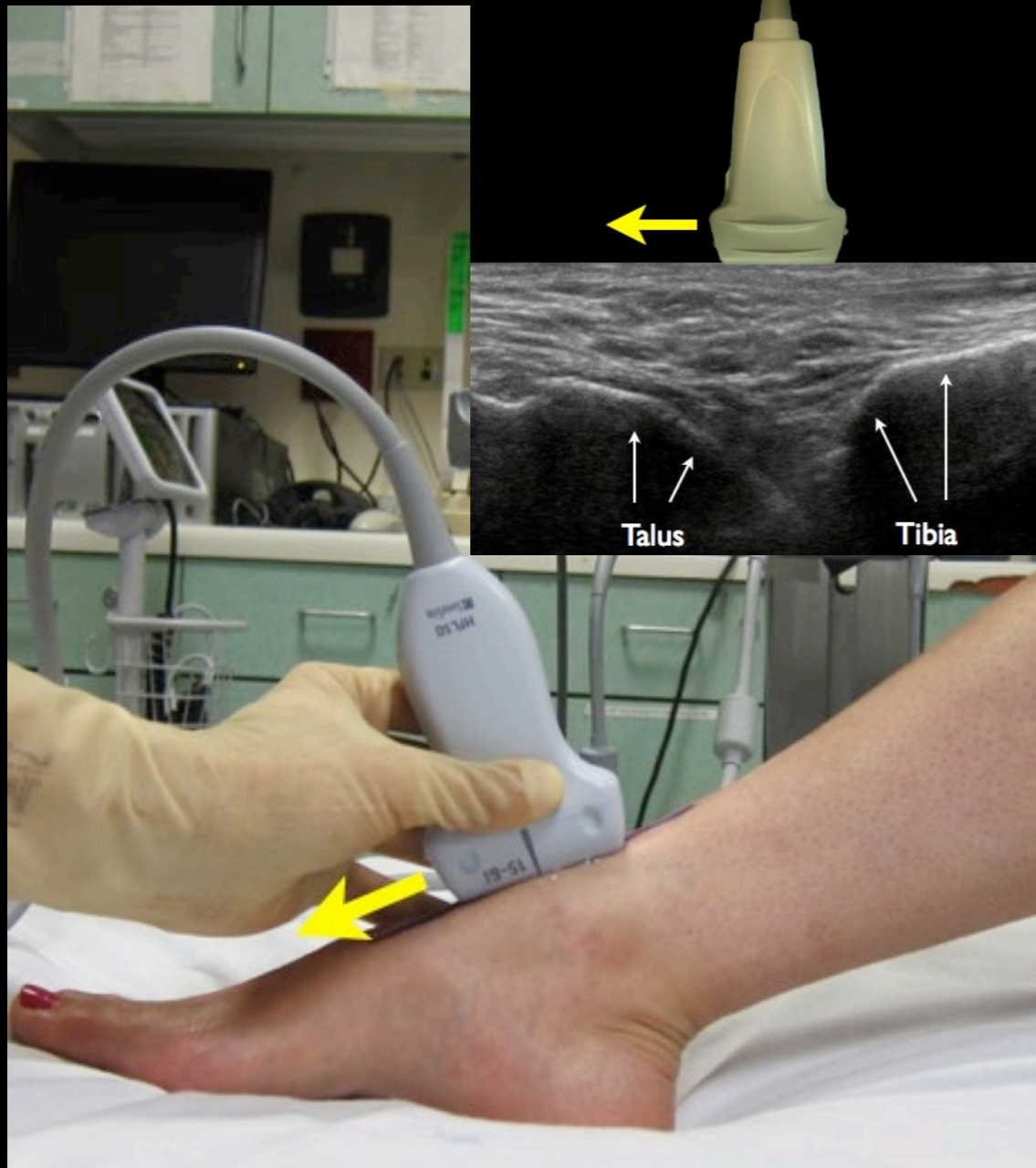
# Move from “joint space” to “joint capsule”



The Glenohumeral (Shoulder) Joint

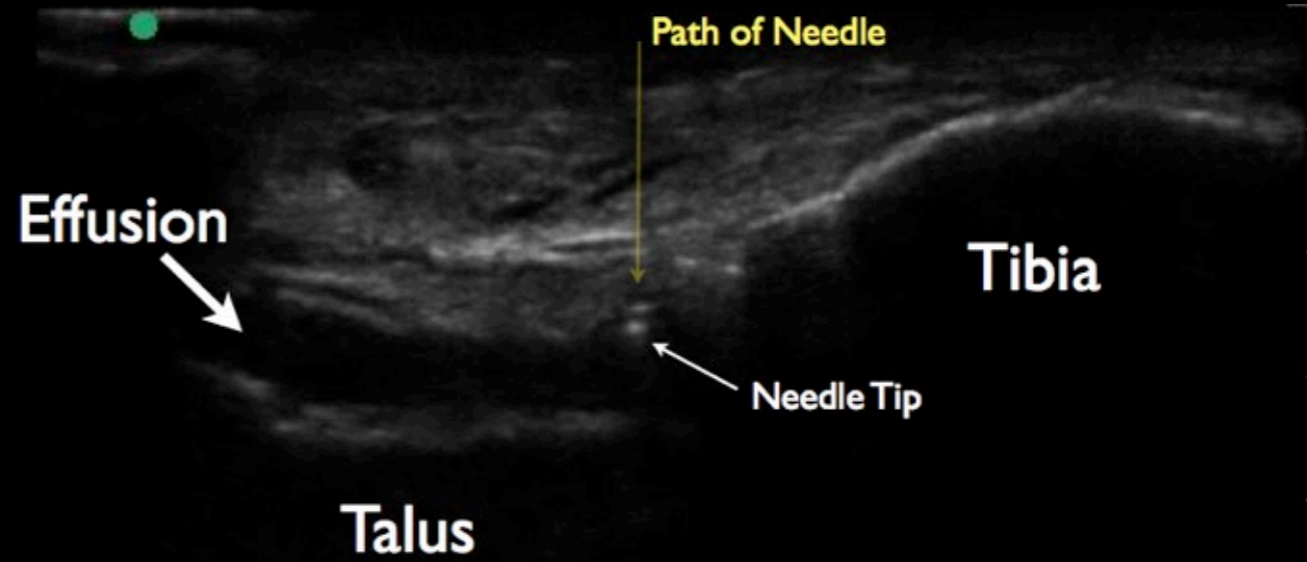
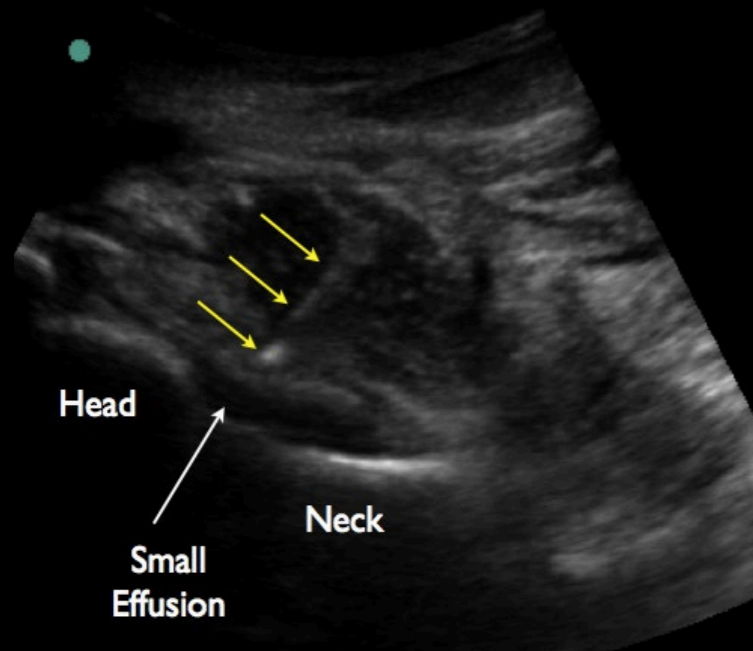


# Choose your probe

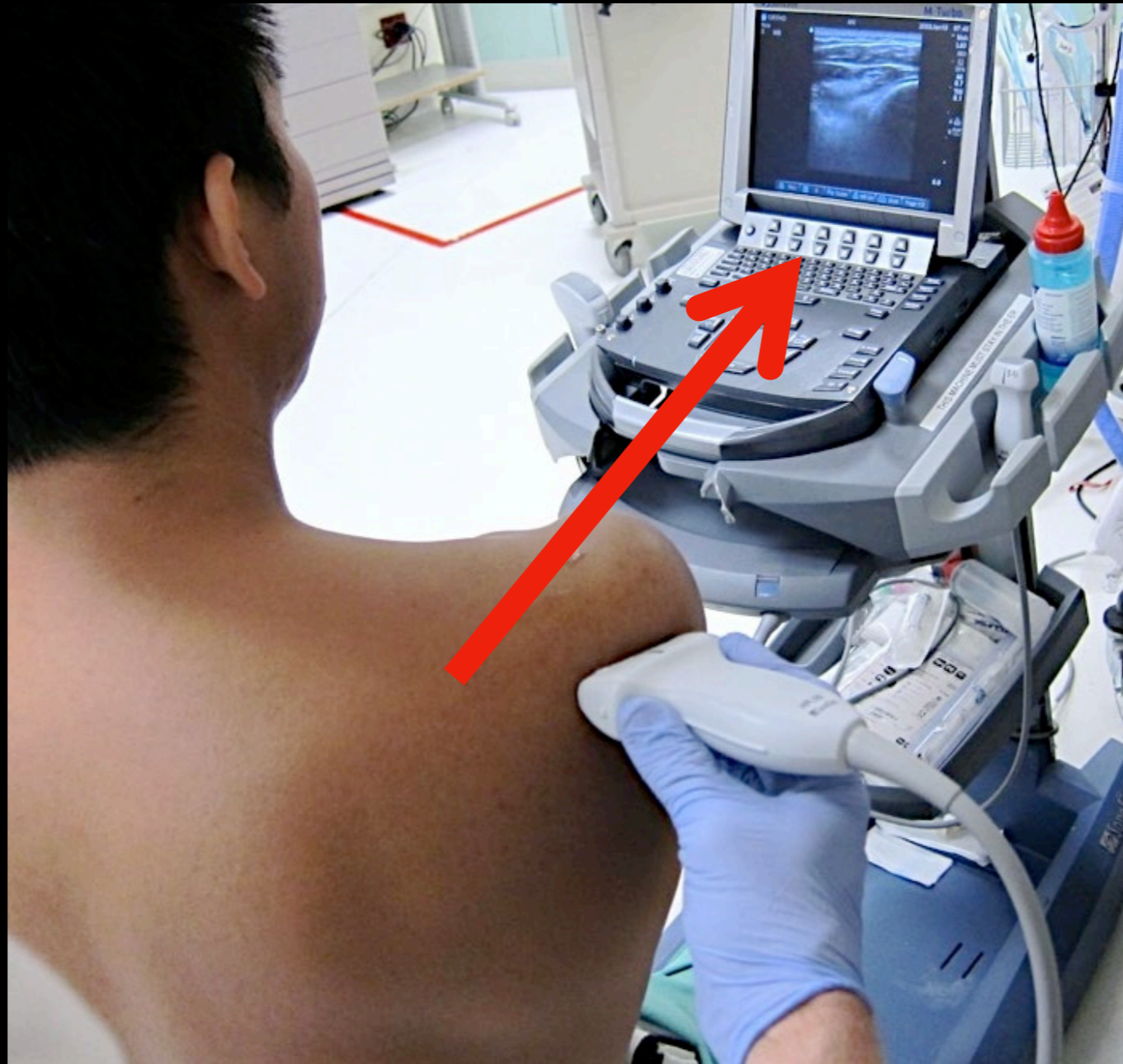




# Choose your approach



# Aim for the screen!



# Should we even be injecting steroids?



**Cochrane**  
**Library**

Cochrane Database of Systematic Reviews

## **Intra-articular corticosteroid for knee osteoarthritis (Review)**

Jüni P, Hari R, Rutjes AWS, Fischer R, Sillelta MG, Reichenbach S, da Costa BR

“An analysis of multiple time points suggested that effects decrease over time, and our analysis provided no evidence that an effect remains six months after a corticosteroid injection.”



Should we even be  
injecting steroids?

I still do it for acute pain.

I don't have access to PRP etc.

Diagnosis - dependent



Specific examples to  
elevate your practice

# Lower extremity

Plantar fasciitis

Gout

# Upper extremity

Biceps tendonitis

Adhesive capsulitis

Shoulder dislocation

# Plantar fasciitis



# Plantar fasciitis



# Plantar fasciitis

Knee Surgery, Sports Traumatology, Arthroscopy (2019) 27:5–12

<https://doi.org/10.1007/s00167-018-5234-6>

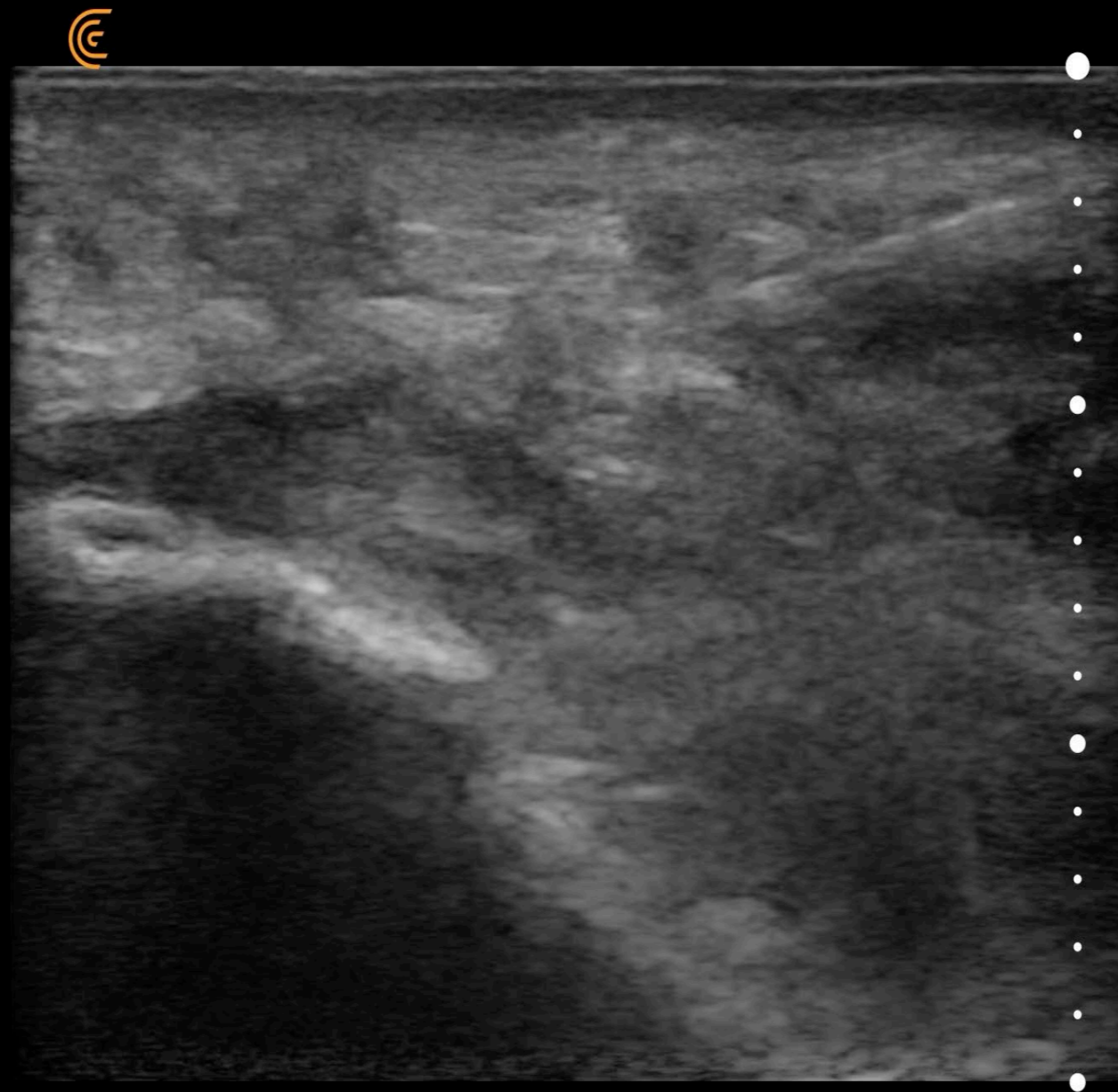
AWARD WINNER: BEST PAPER AT THE ESSKA CONGRESS IN GLASGOW 2018



## **Corticosteroid injection is the best treatment in plantar fasciitis if combined with controlled training**

Johannsen, F.E., Herzog, R.B., Malmgaard-Clausen, N.M. *et al.* Corticosteroid injection is the best treatment in plantar fasciitis if combined with controlled training. *Knee Surg Sports Traumatol Arthrosc* **27**, 5–12 (2019). <https://doi.org/10.1007/s00167-018-5234-6>

# Plantar fasciitis



3 cm

# Gout

## Recommendation

### EULAR recommendations for intra-articular therapies

'Recommended first-line options for acute flares are colchicine (...), oral corticosteroid (...) or articular aspiration and injection of corticosteroids.'

Uson J, Rodriguez-García SC, Castellanos-Moreira R, O'Neill TW, Doherty M, Boesen M, Pandit H, Möller Parera I, Vardanyan V, Terslev L, Kampen WU, D'Agostino MA, Berenbaum F, Nikiphorou E, Pitsillidou IA, de la Torre-Aboki J, Carmona L, Naredo E. EULAR recommendations for intra-articular therapies. *Ann Rheum Dis*. 2021 Oct;80(10):1299-1305. doi: 10.1136/annrheumdis-2021-220266. Epub 2021 May 25. PMID: 34035002; PMCID:

PMC8458067

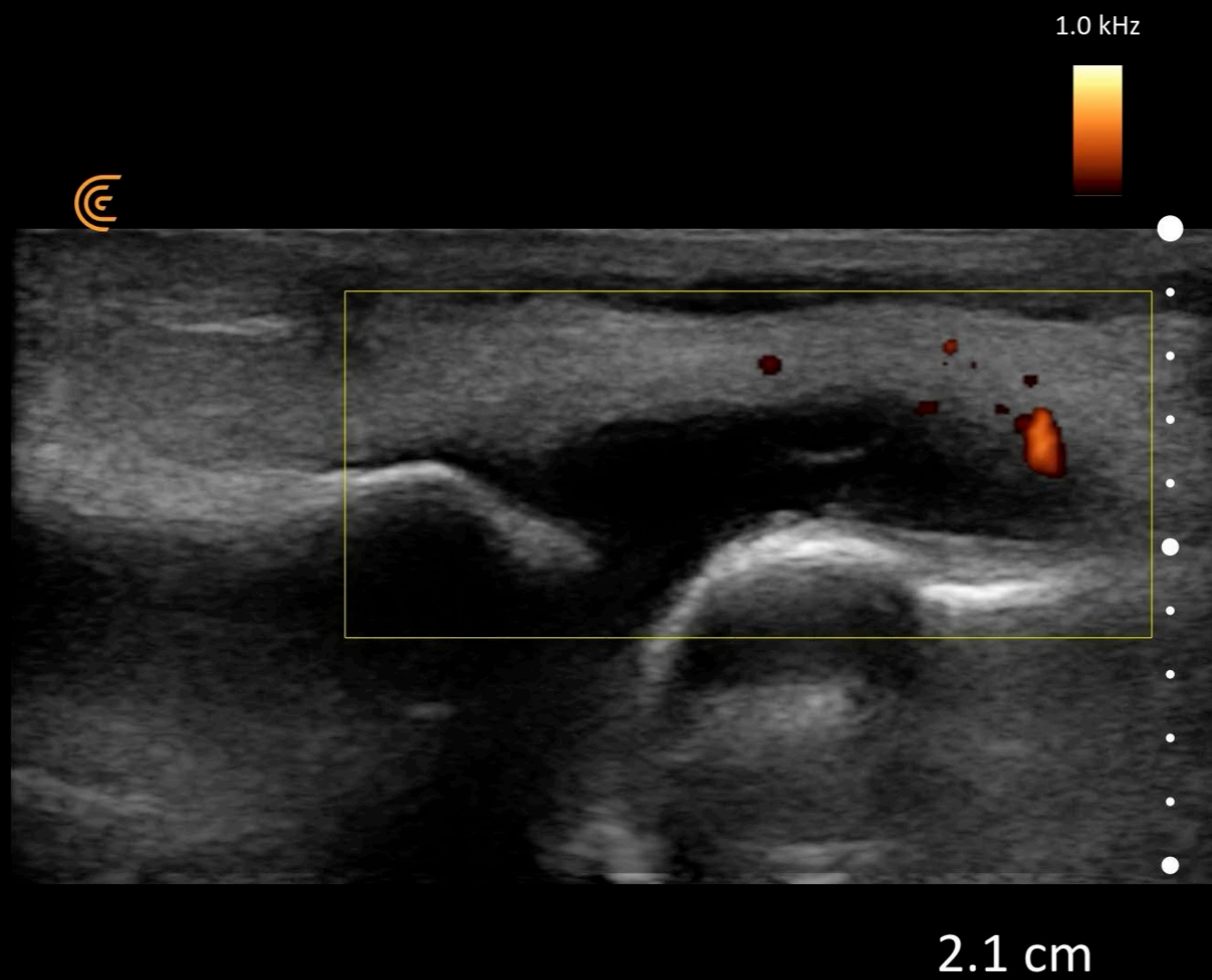


# Gout





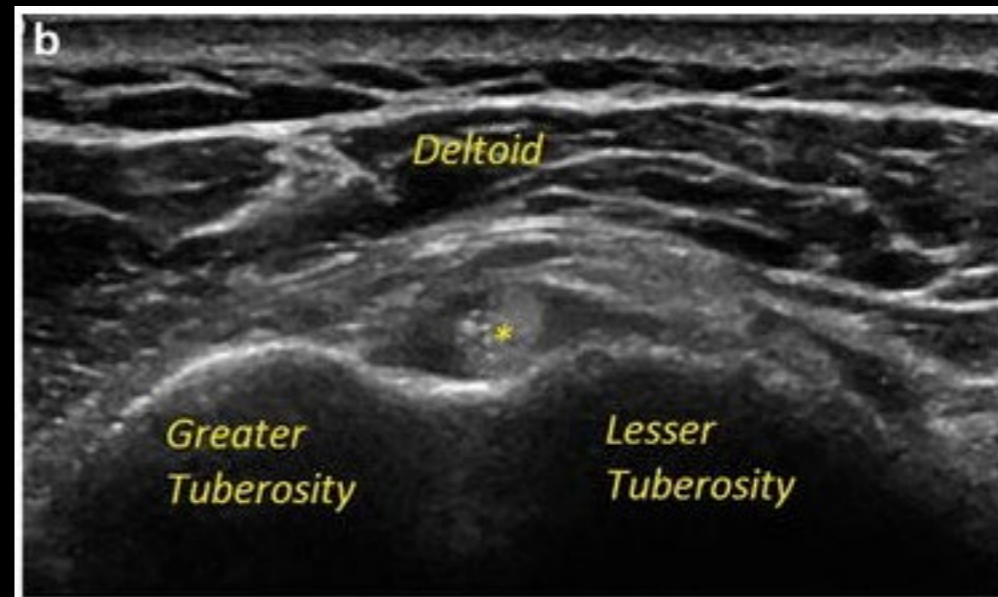
# Gout



# Gout



# Biceps tendonitis

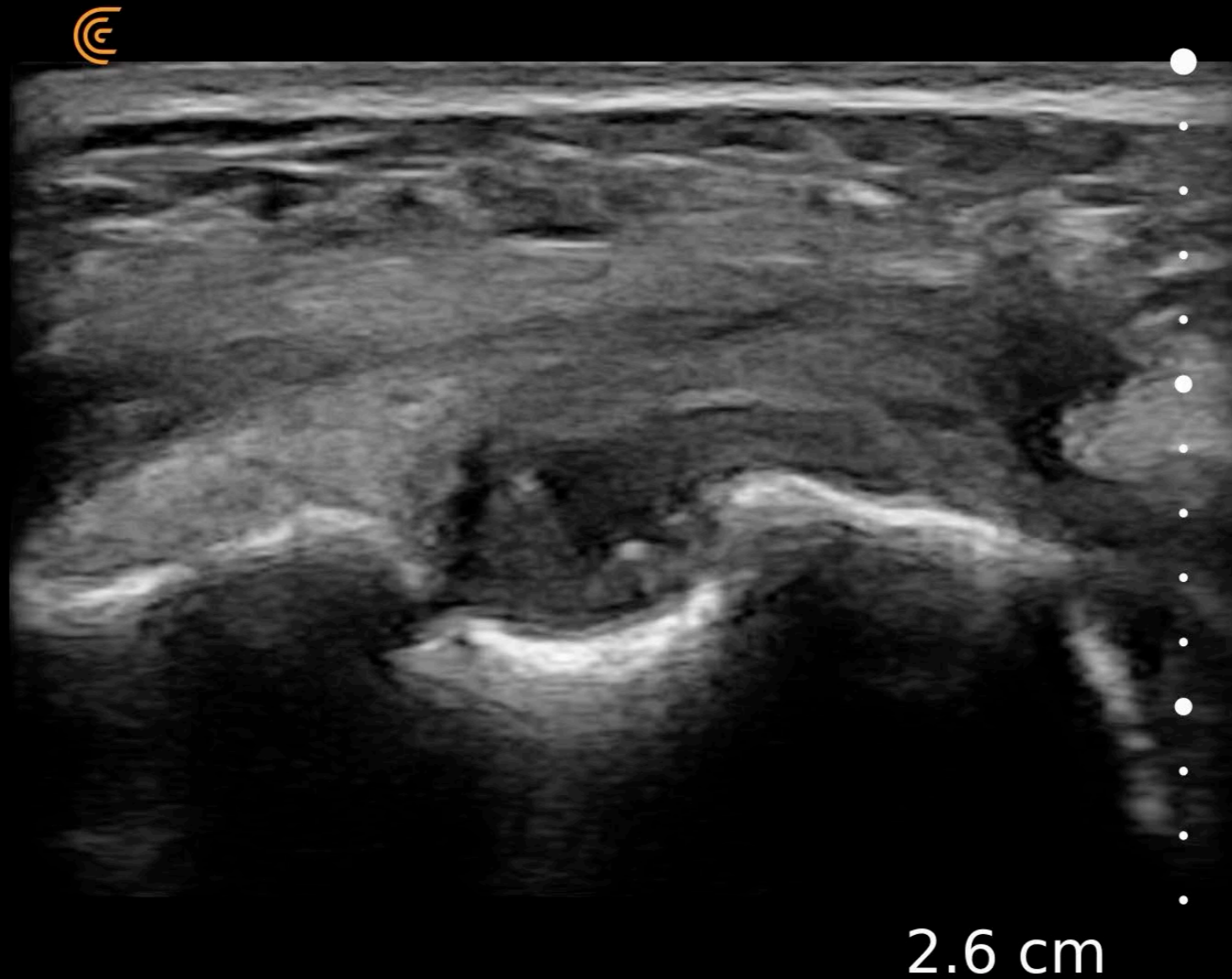


# Biceps tendonitis

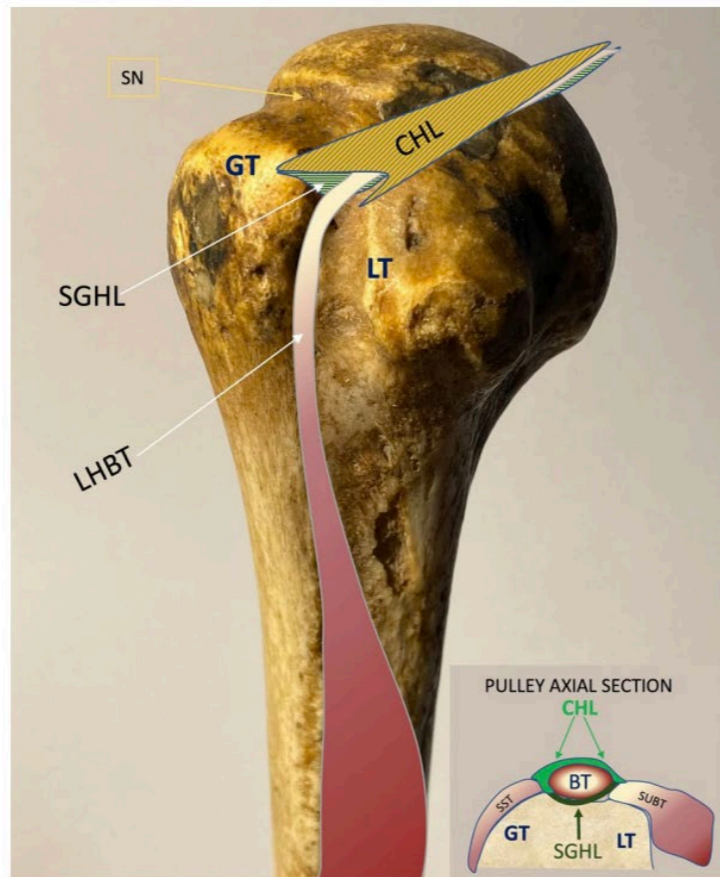




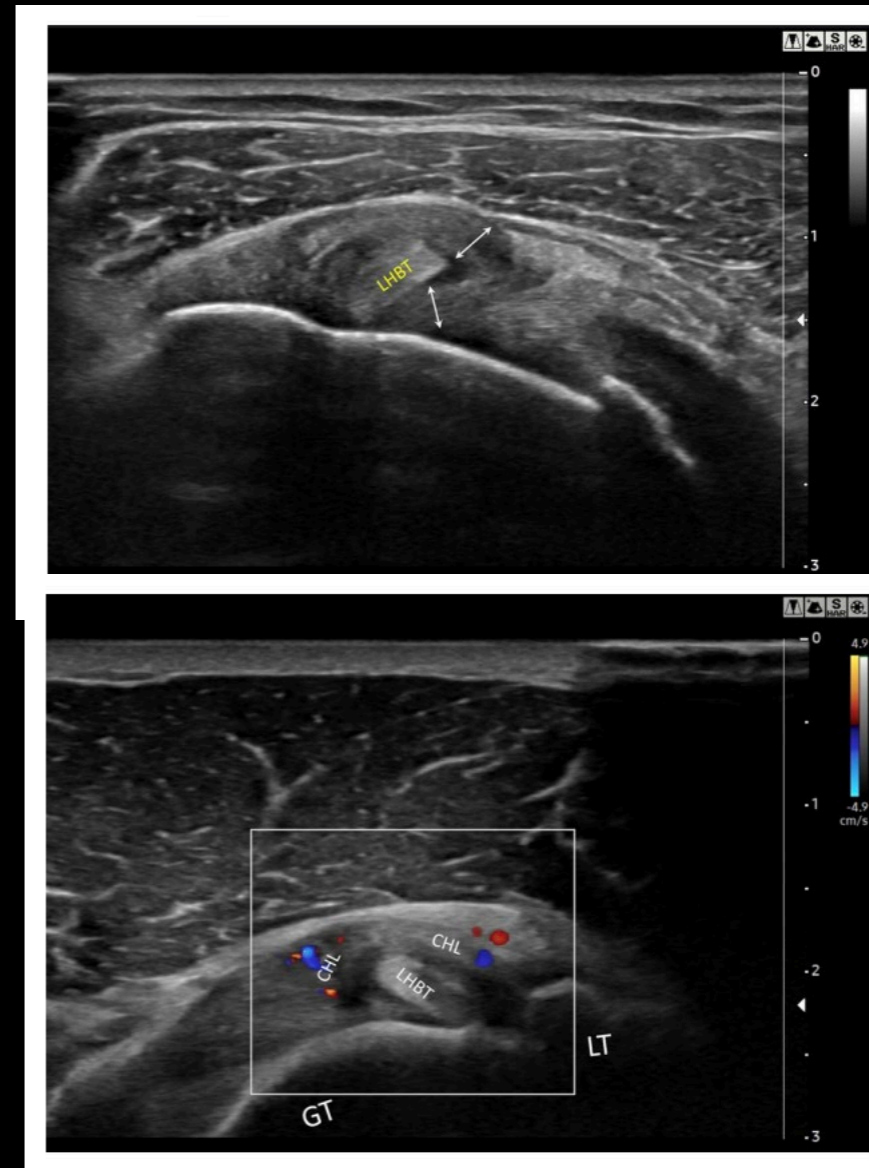
# Biceps tendonitis



# Adhesive capsulitis: dx



**Fig. 1** Right humerus. *GT* great tuberosity; *LT* lesser tuberosity; *CHL* coracohumeral ligament; *SGHL* superior glenohumeral ligament; *LHBT* long head biceps tendon; *SN* surgical neck. In the small box, pulley axial section of RI. *SST* supraspinatus tendon; *SUBT* subscapularis tendon; *BT* biceps tendon



Al Khayyat SG, Falsetti P, Conticini E, Frediani B, Galletti S, Stella SM. Adhesive capsulitis and ultrasound diagnosis, an inseparable pair: a novel review. *J Ultrasound*. 2023 Jun;26(2):369-384. doi: 10.1007/s40477-022-00725-9. Epub 2022 Oct 25. PMID: 36284048; PMCID: PMC10247624.

Adhesive capsulitis: tx

Suprascapular N block

+

Intra-articular injection

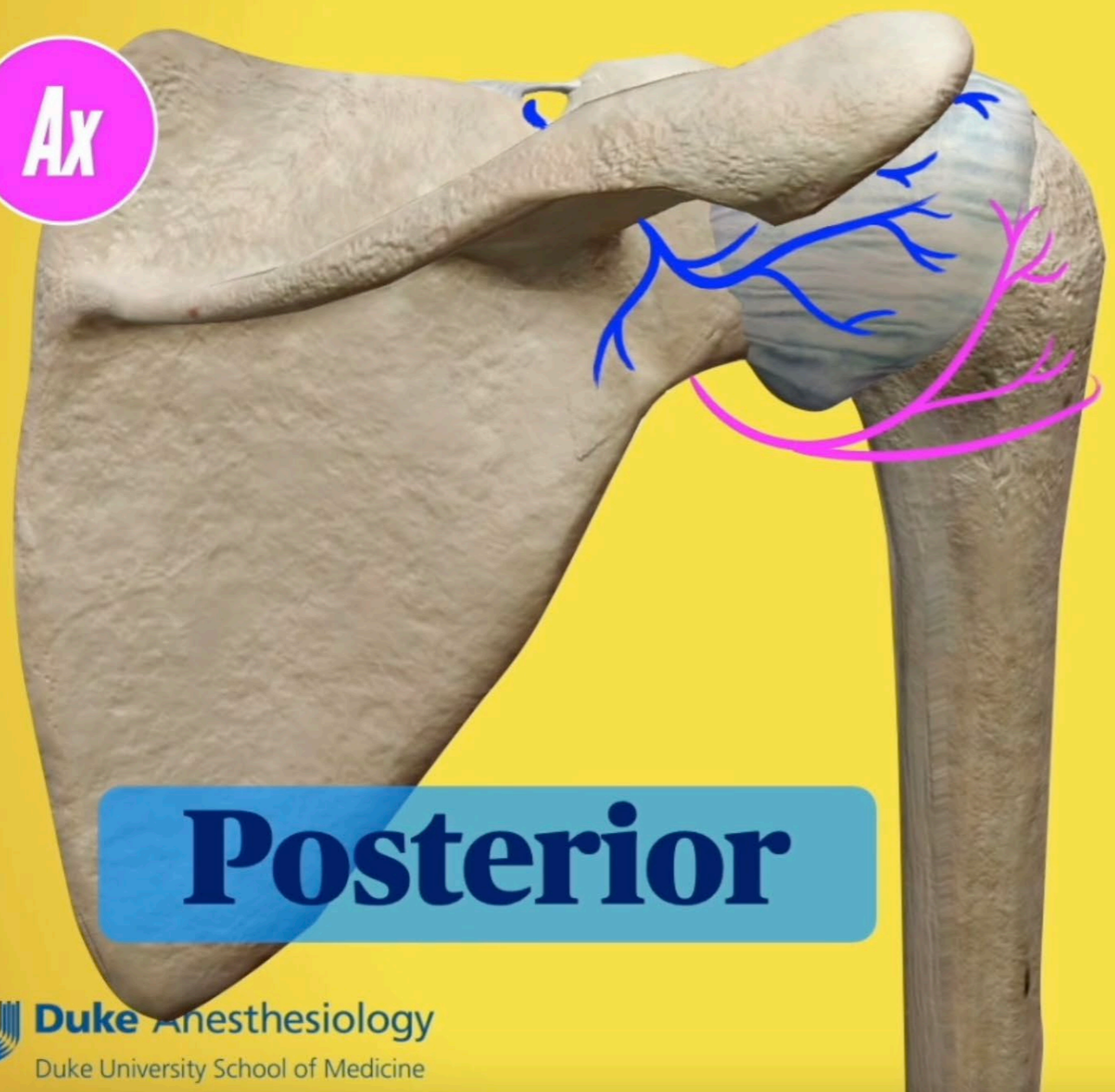


# Suprascapular (SS) N block

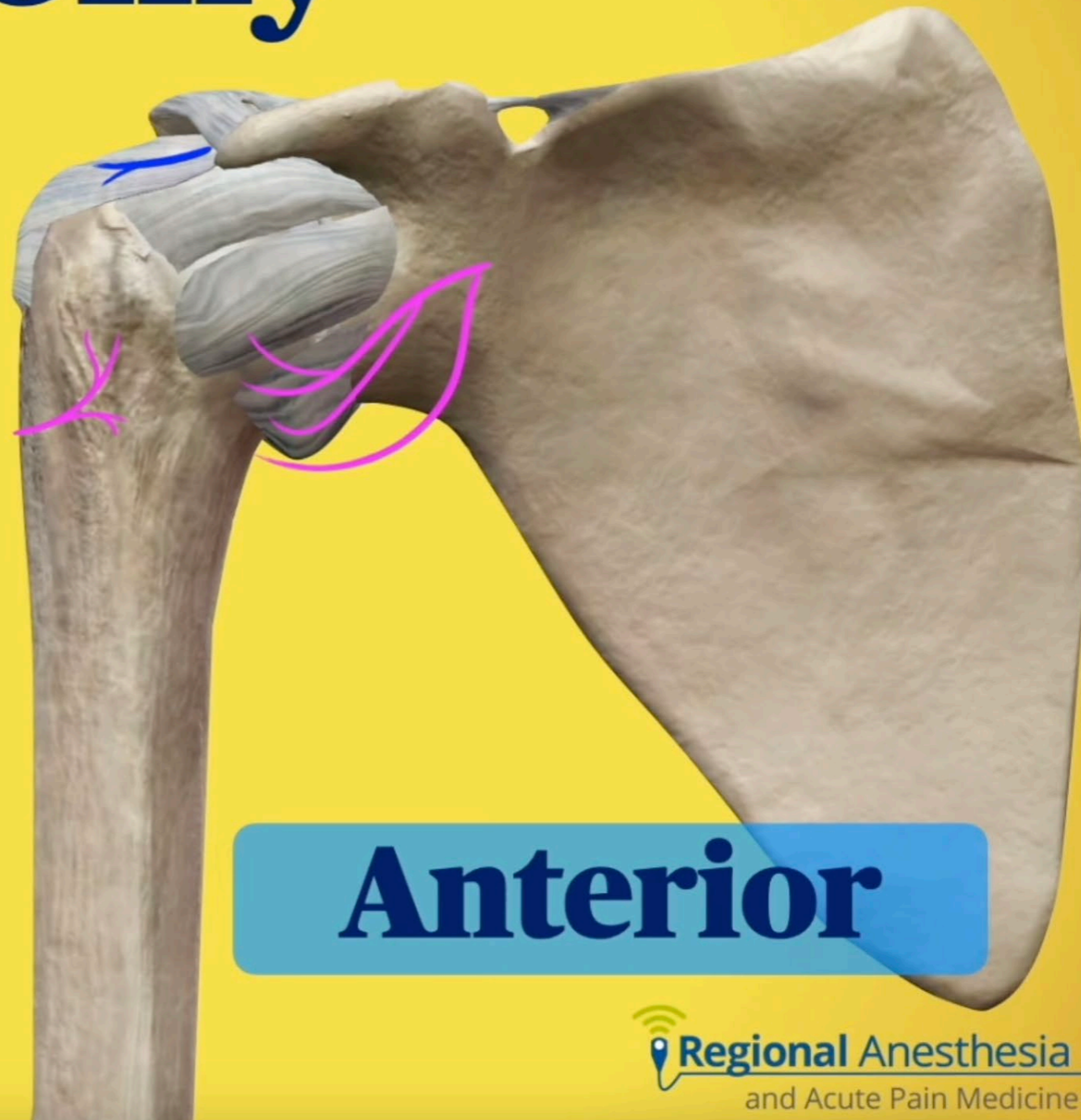
SS

## Anatomy

Ax



Posterior

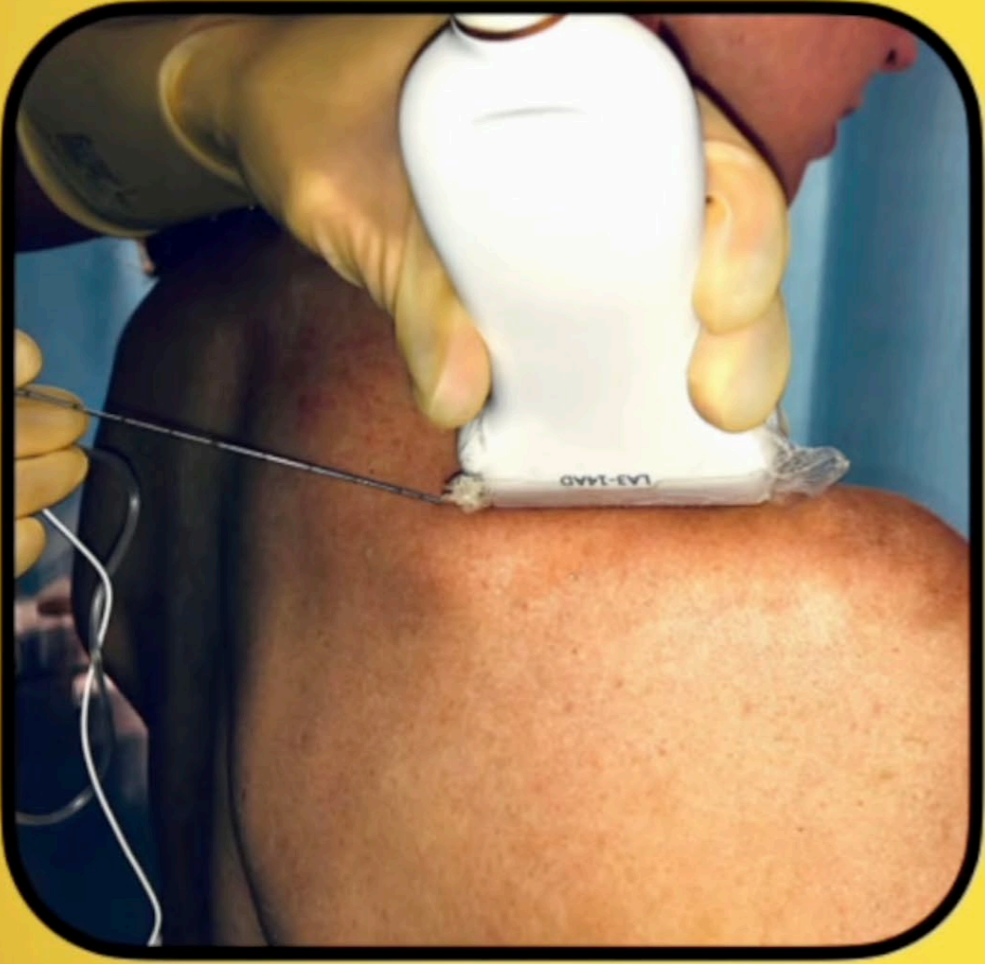


Anterior



# Suprascapular (SS) N block

## Suprascapular nerve



medial

lateral

trapezius

supraspinatus

suprascapular nerve and vessels

supraspinatus fossa

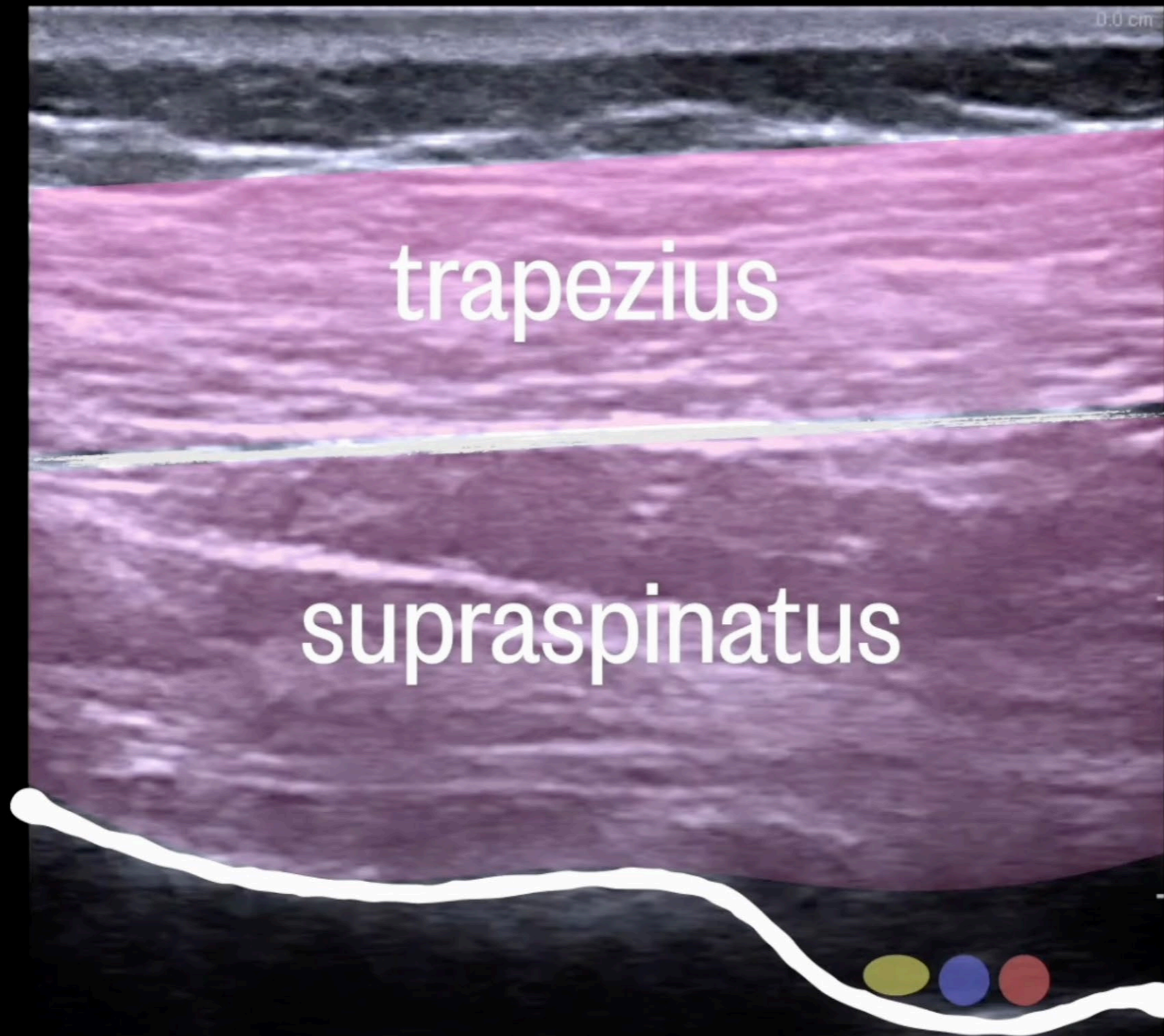
spinoglenoid notch



# Suprascapular (SS) N block

medial

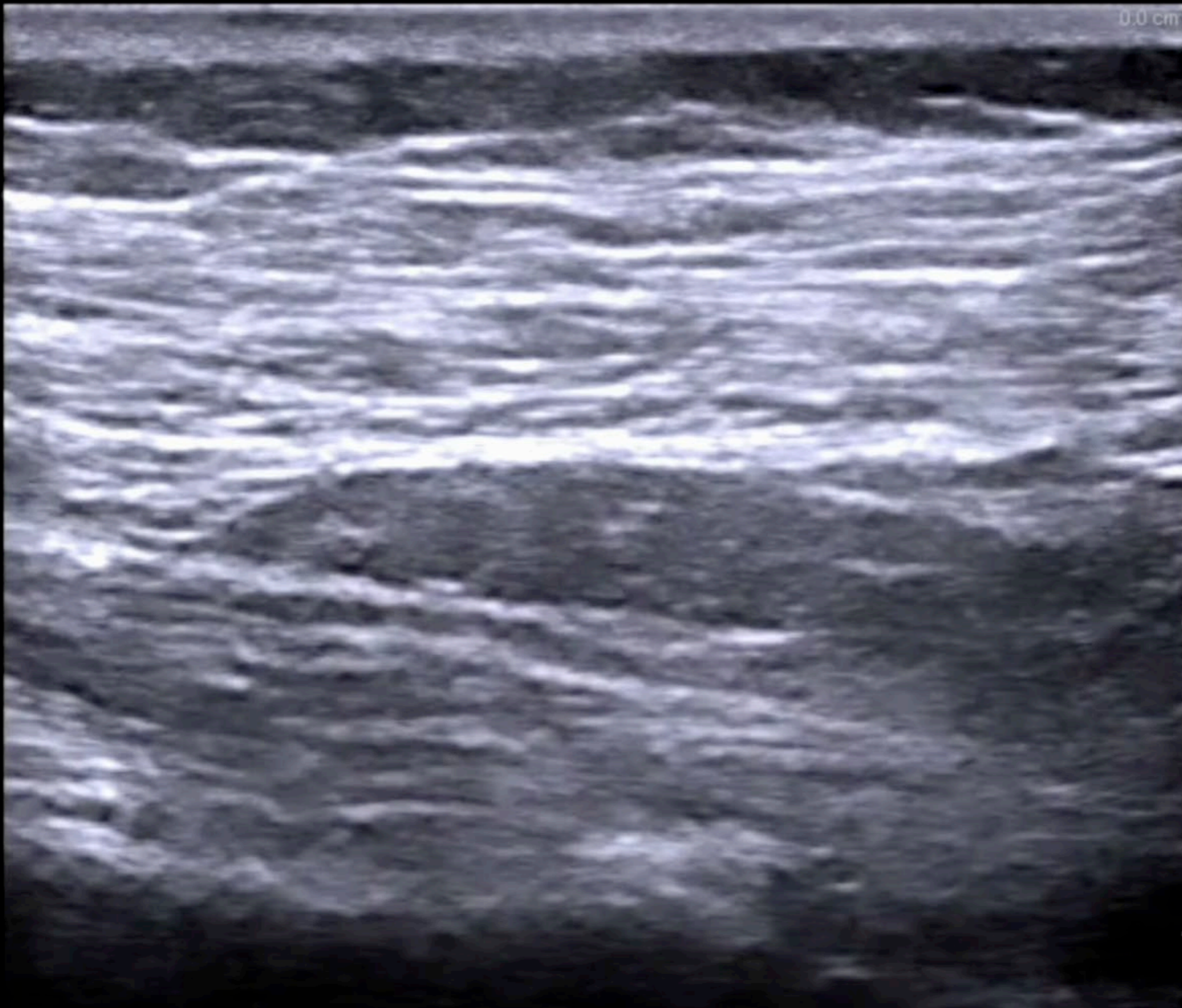
lateral





# Suprascapular (SS) N block

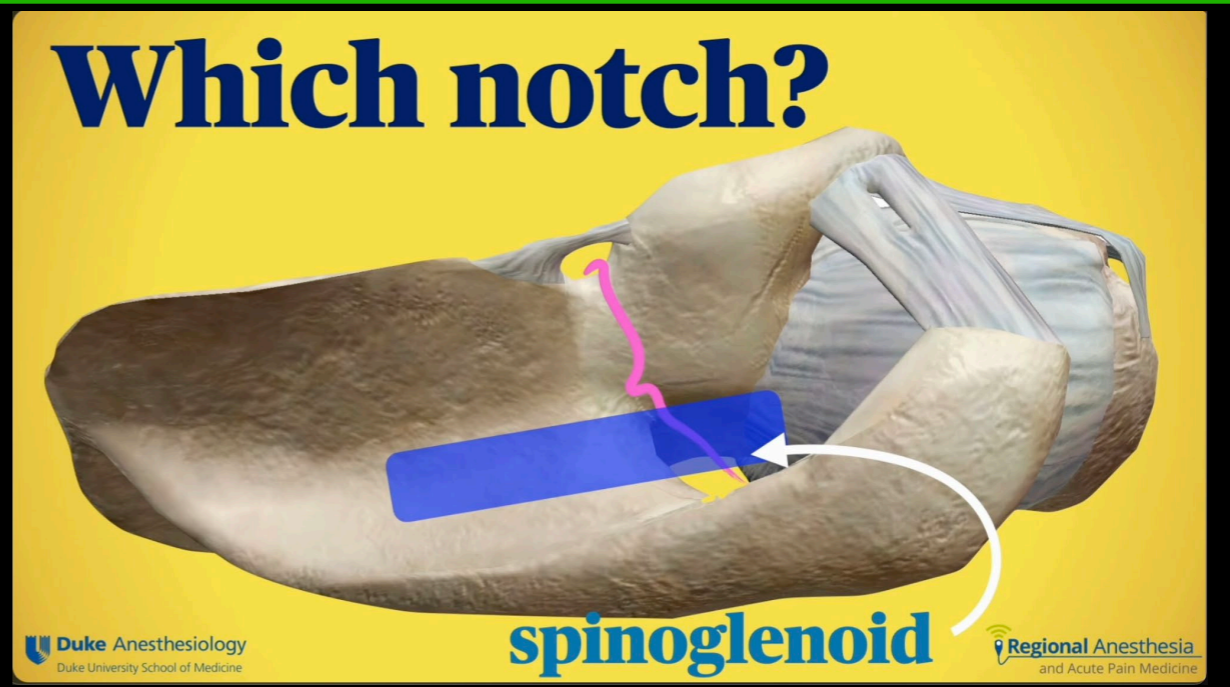
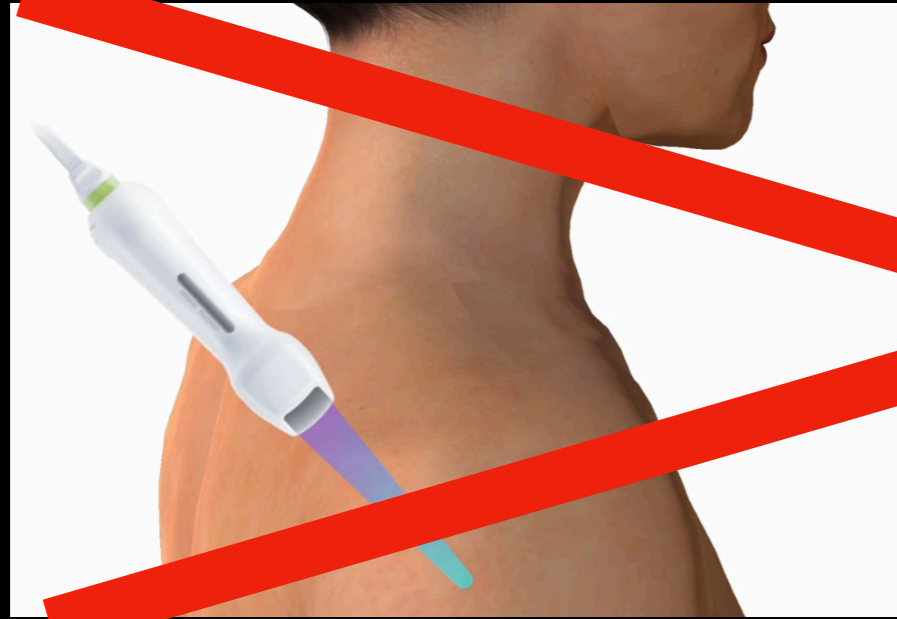
medial



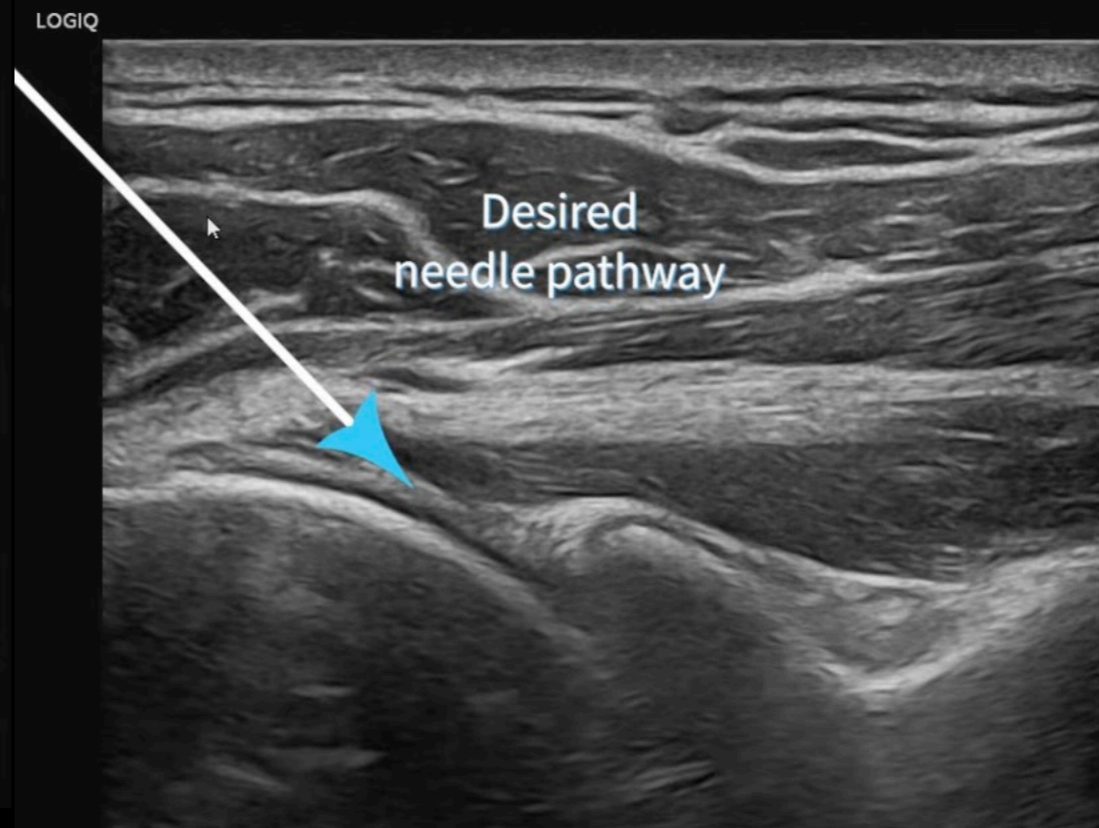
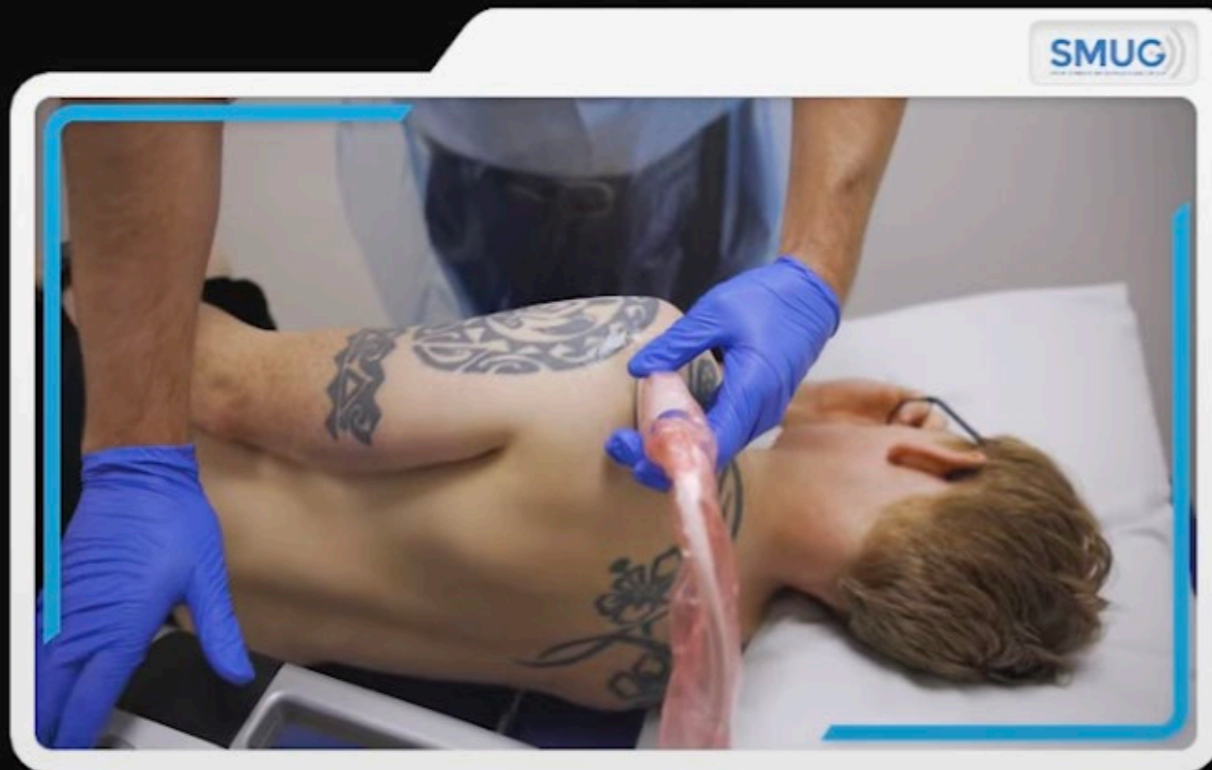
lateral



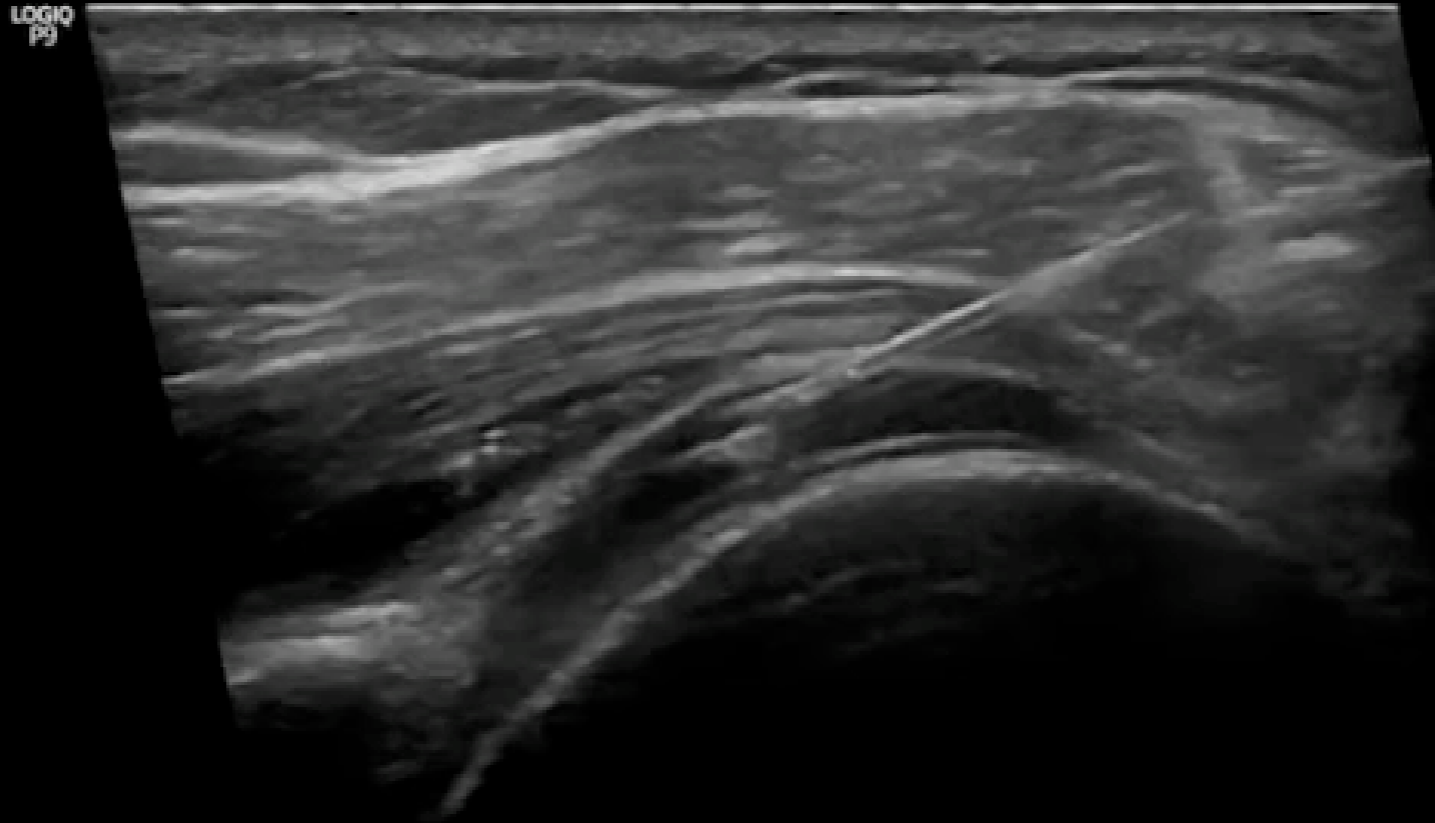
# Suprascapular (SS) N block



# Glenohumeral injection



# Glenohumeral injection





# Shoulder dislocation

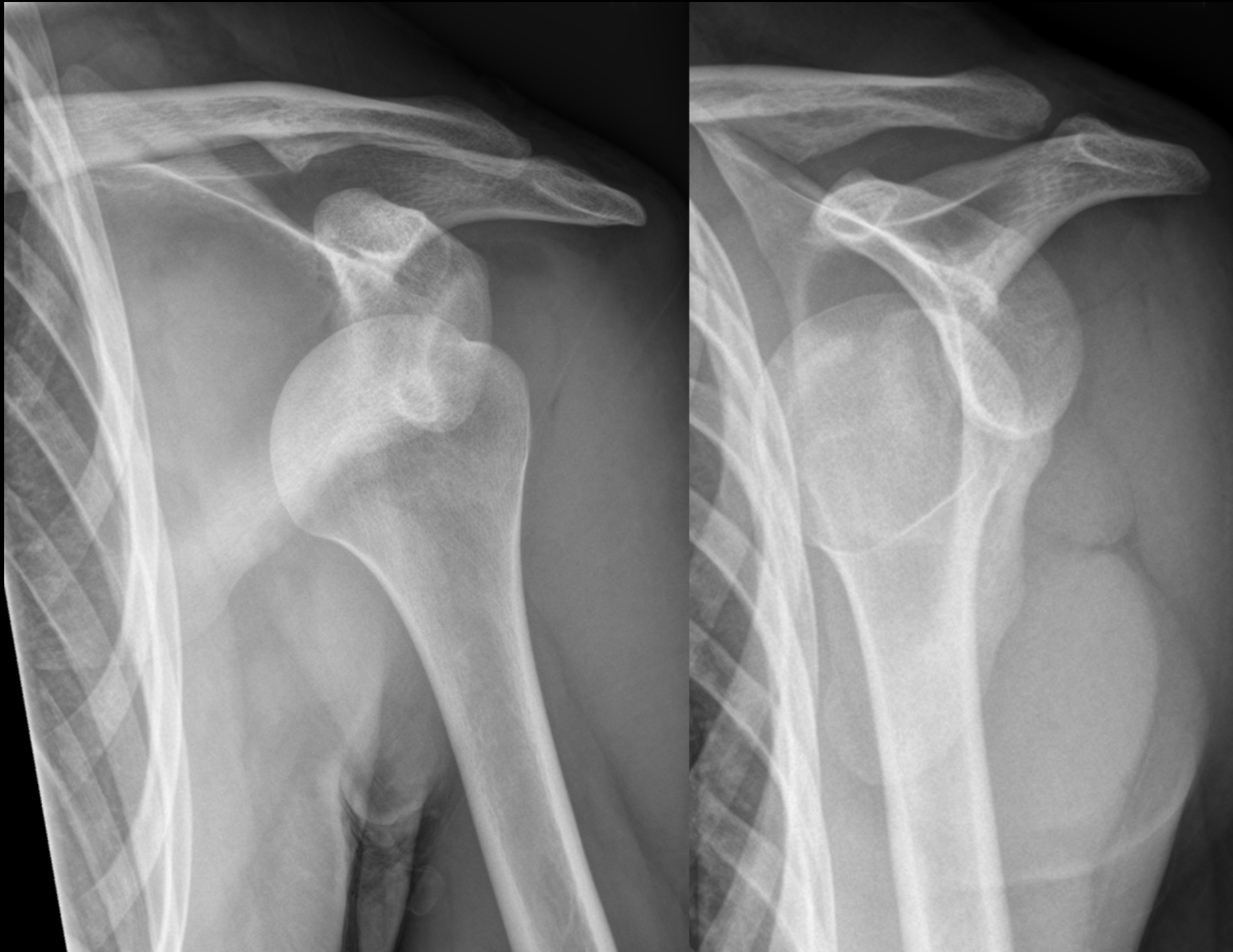


# Shoulder dislocation





# Shoulder dislocation



# Diagnostic Accuracy of Ultrasonographic Examination in the Management of Shoulder Dislocation in the Emergency Department

Saeed Abbasi, MD; Hooshyar Molaie, MD; Peyman Hafezimoghadam, MD; Mohammad Amin Zare, MD; Mohsen Abbasi, MD; Mahdi Rezai, MD; Davood Farsi, MD

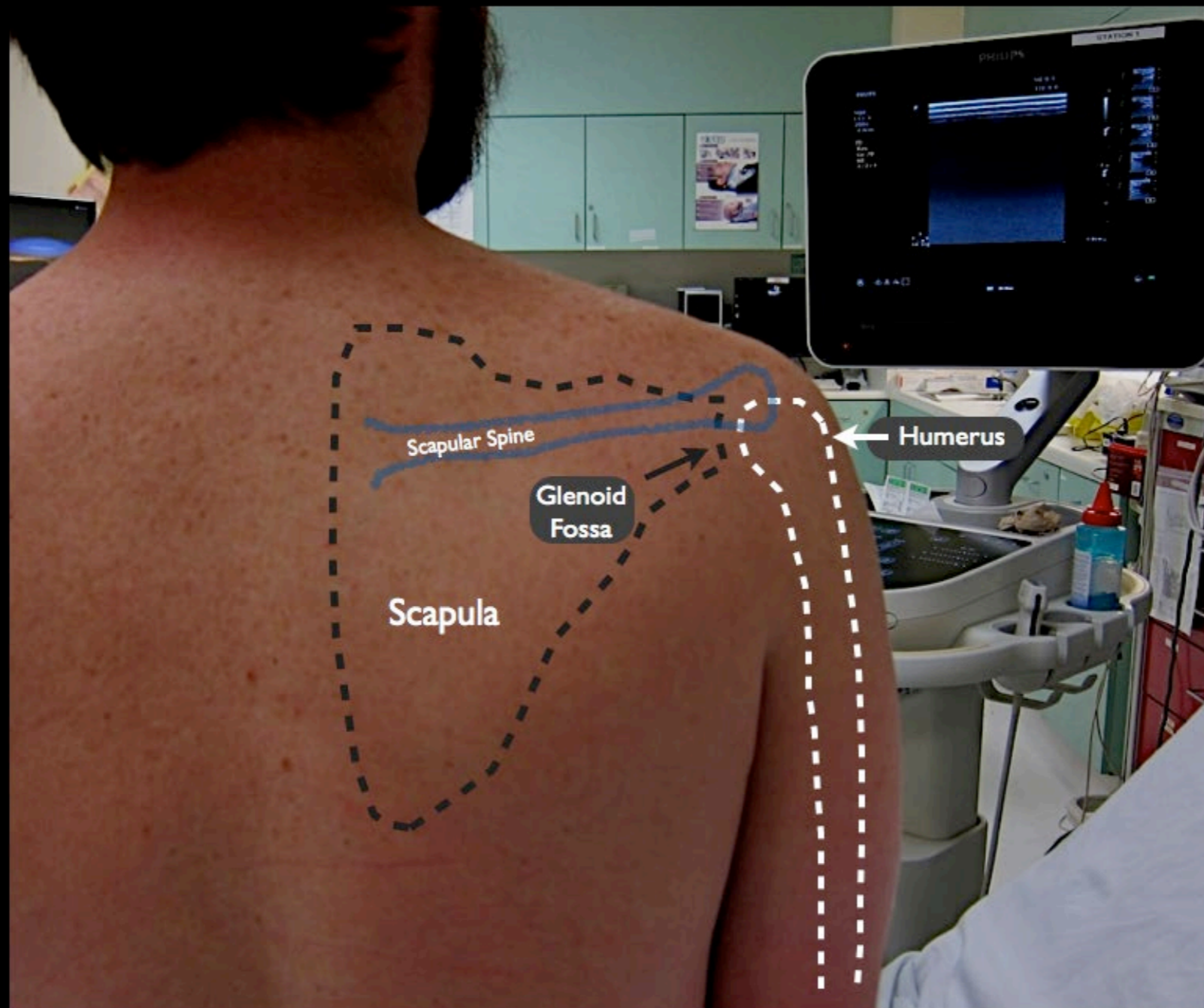
## Sensitivity

Shoulder dislocation 100%

Successful relocation 100%

Abbasi, et al. (2013). Ann of Emerg Med.

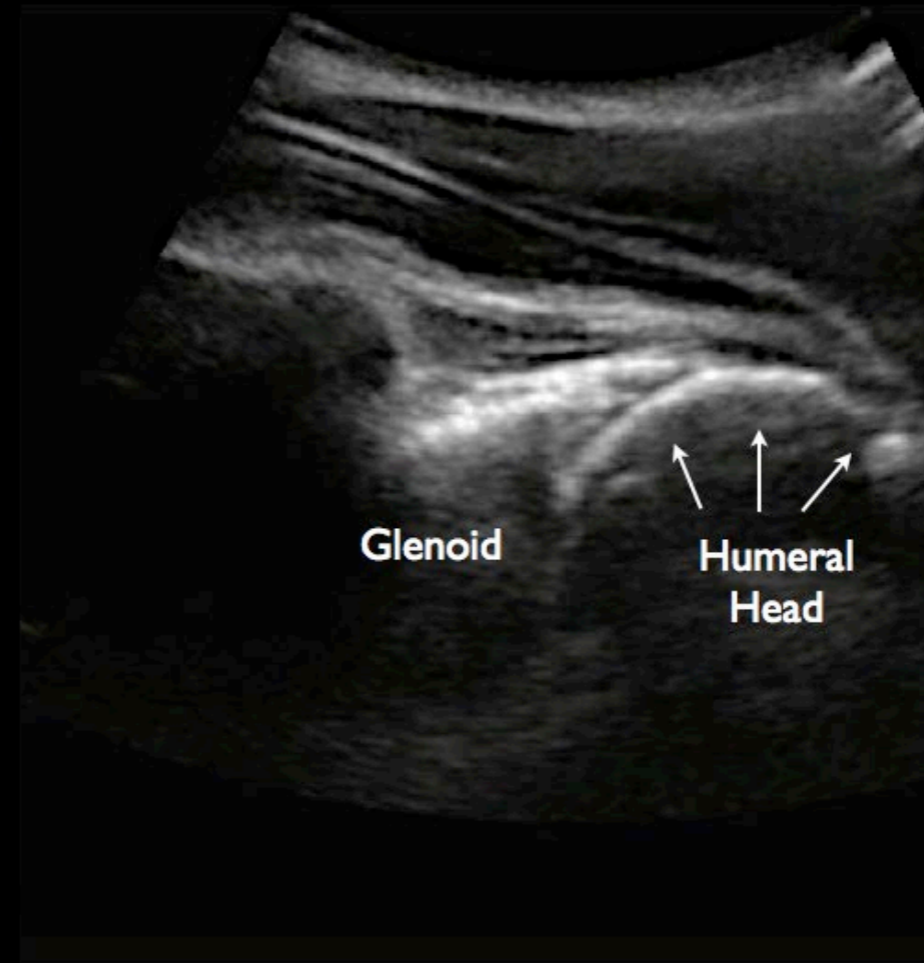
# Shoulder dislocation



Courtesy Arun Nagdev, MD



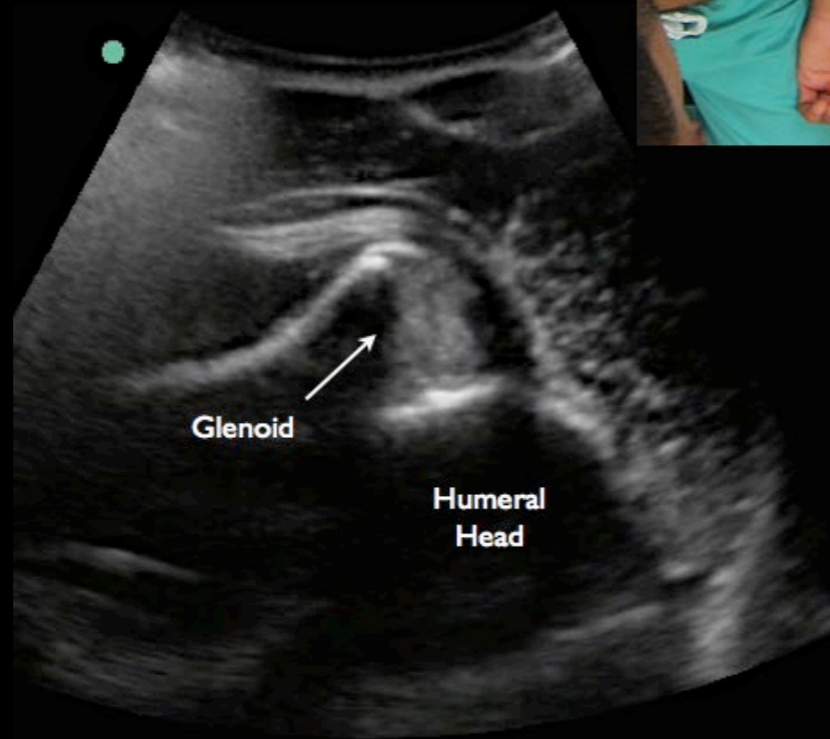
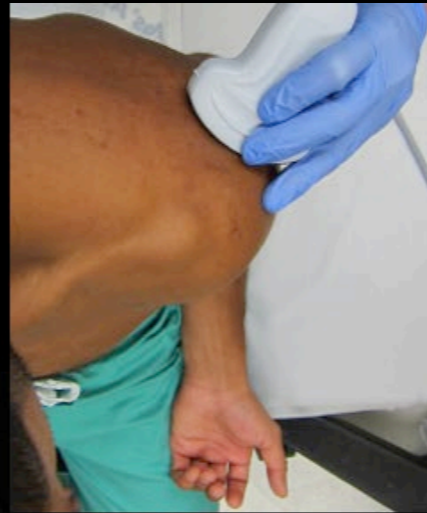
# Shoulder dislocation



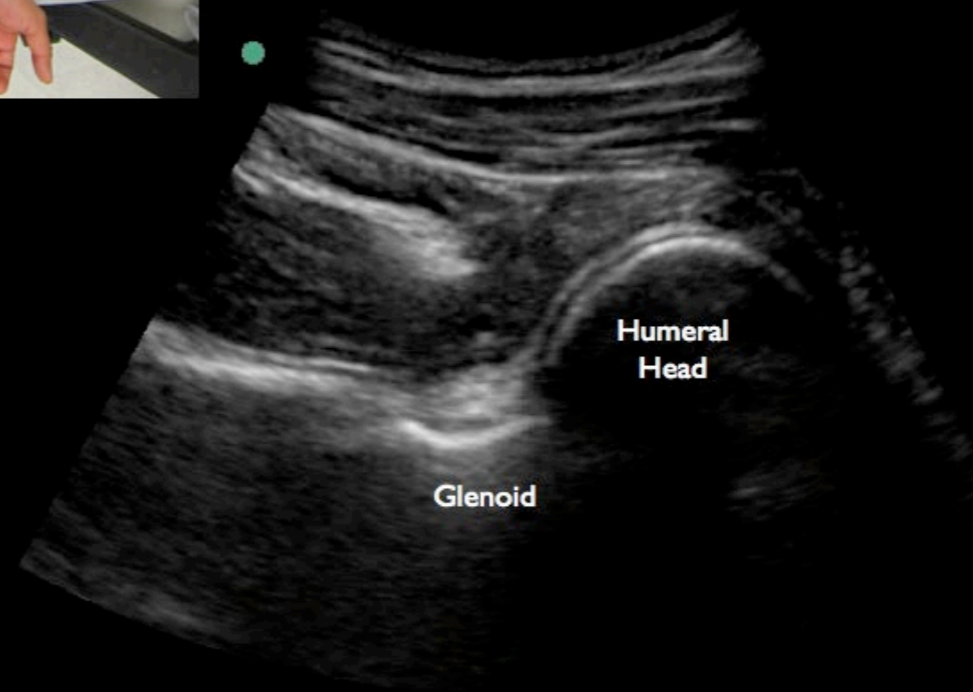
Courtesy Arun Nagdev, MD



# Shoulder dislocation



**A) Anterior  
Dislocation**



**B) Posterior  
Dislocation**

Courtesy Arun Nagdev, MD

# Shoulder dislocation



# Shoulder dislocation

Gen S  
THI MB

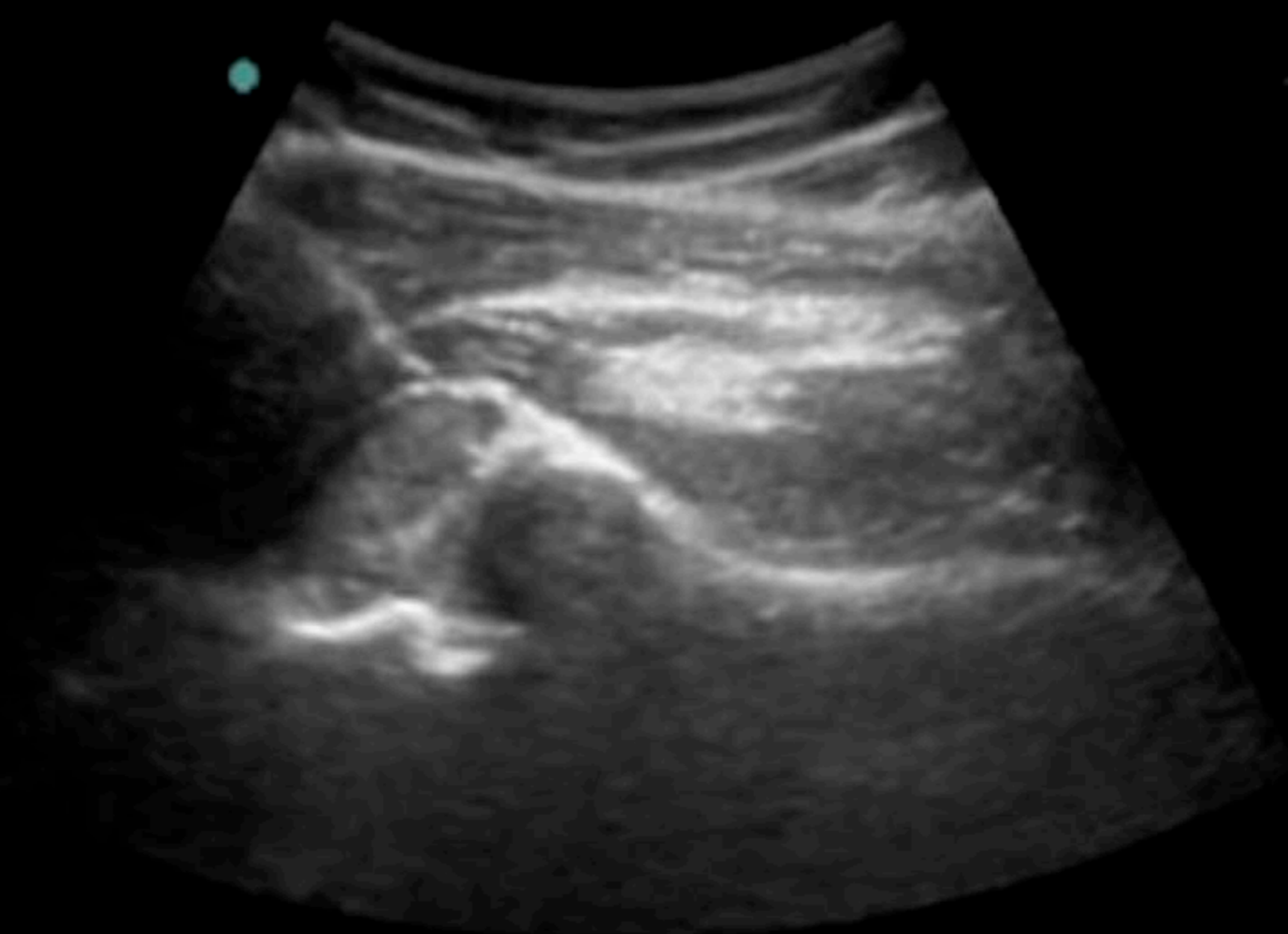


Abd C50  
09%  
MI 0.0  
A  
B

# Shoulder dislocation

Gen  
S

THI  
MB



Abd  
C60



MI  
0.8





Gout

Shoulder dislocation

Subacromial

Hip

Adhesive capsulitis

Peritendinous /bicep tendon

Adjuncts: beyond the steroids