



# Shoulder Therapeutics

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# Objectives

- Discuss pros/cons of USG procedures
- Discuss types of shoulder therapeutics
- Review USG procedure basics



# Acknowledgement

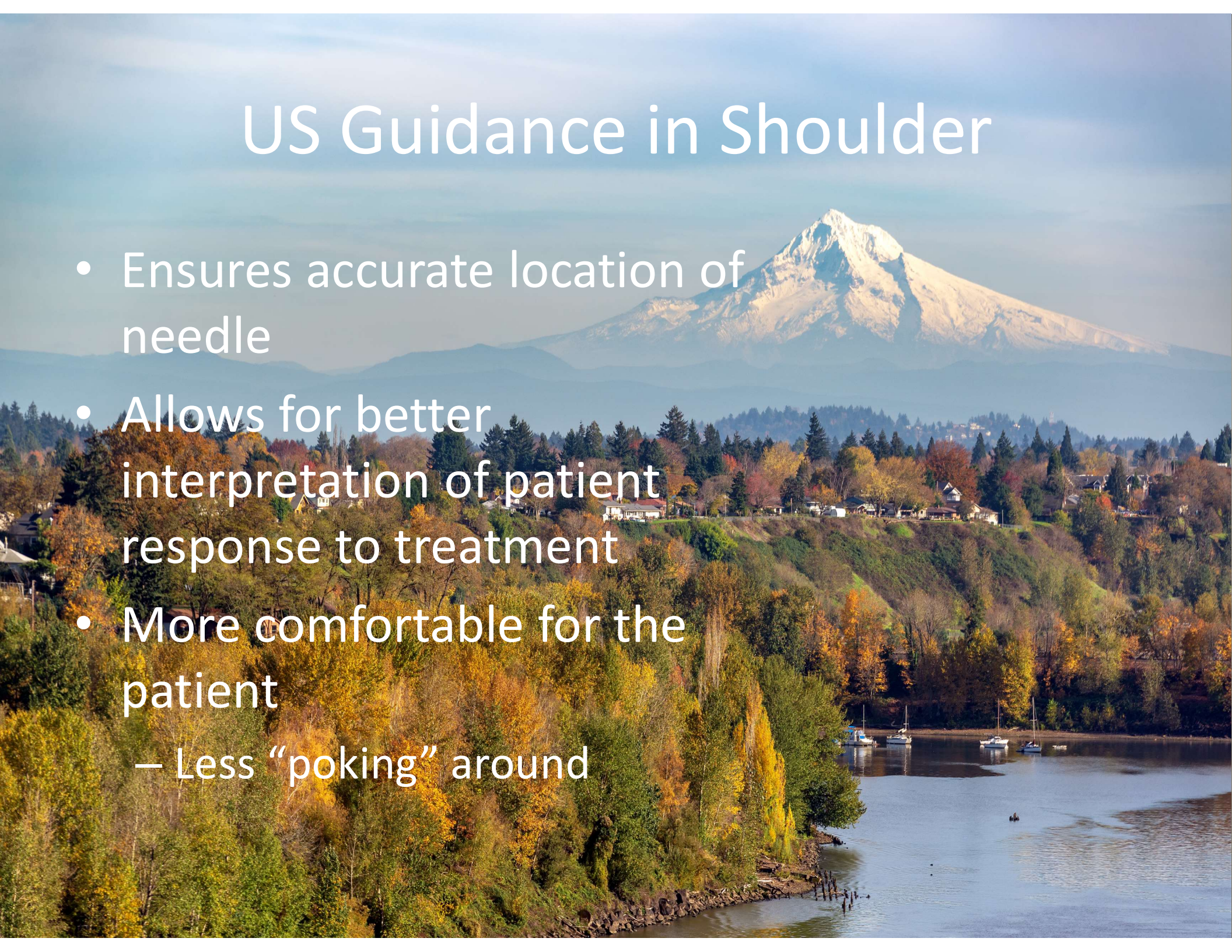
- Jacobson, Jon. Fundamentals of Musculoskeletal Ultrasound. 3rd Ed. 2018
- Bianchi, S. and Martinoli, C. Ultrasound of the Musculoskeletal System. 2007
- Netter Atlas of Human Anatomy. 6th Edition. 2014

# Guiding Shoulder Injections

- Takes longer than doing by palpation
- May require authorization
- Requires greater technical skill
- Approach may be different than palpation guided
- Additional variables to consider
  - Assistant, gel
- Need to develop your own technique

# US Guidance in Shoulder

- Ensures accurate location of needle
- Allows for better interpretation of patient response to treatment
- More comfortable for the patient
  - Less “poking” around



# Accuracy

## US Guided

- Sub acromial bursa
  - 100%
- GHJ
  - 92-95%
- ACJ
  - 100%
- Bicep Tendon Sheath
  - 100%

## Palpation

- Subacromial bursa
- 60-75%
- GHJ
  - 40-79%
- ACJ
  - 40-67%
- Bicep Tendon Sheath
  - 67%

# Subacromial USG Injections

- Only accurately placed injections provided pain reduction and improvement in functional scores 6 wks post injection
  - Henkus, HE et al. *The Accuracy of Subacromial Injections...* Arthroscopy, 2006. 22(3): p 277-82
- More improvement in VAS (day, night, and rest) and more responders at 2 and 6 wks post injection
  - Zufferey, P et al. *A Controlled trial of the benefits of USG injection for Shoulder pain.* Joint Bone Spine, 2011. 79(2): p 166-169

# GHJ Injections

- More successful on first attempt, less time consuming, less painful, no radiation, and no iodine contrast when compared to fluoro-guided injection
  - Rutten, M et al. GHJ injection: A comparative study of US and fluoro guided techniques... *Eur Radiol*, 2009. 19: p 722-730



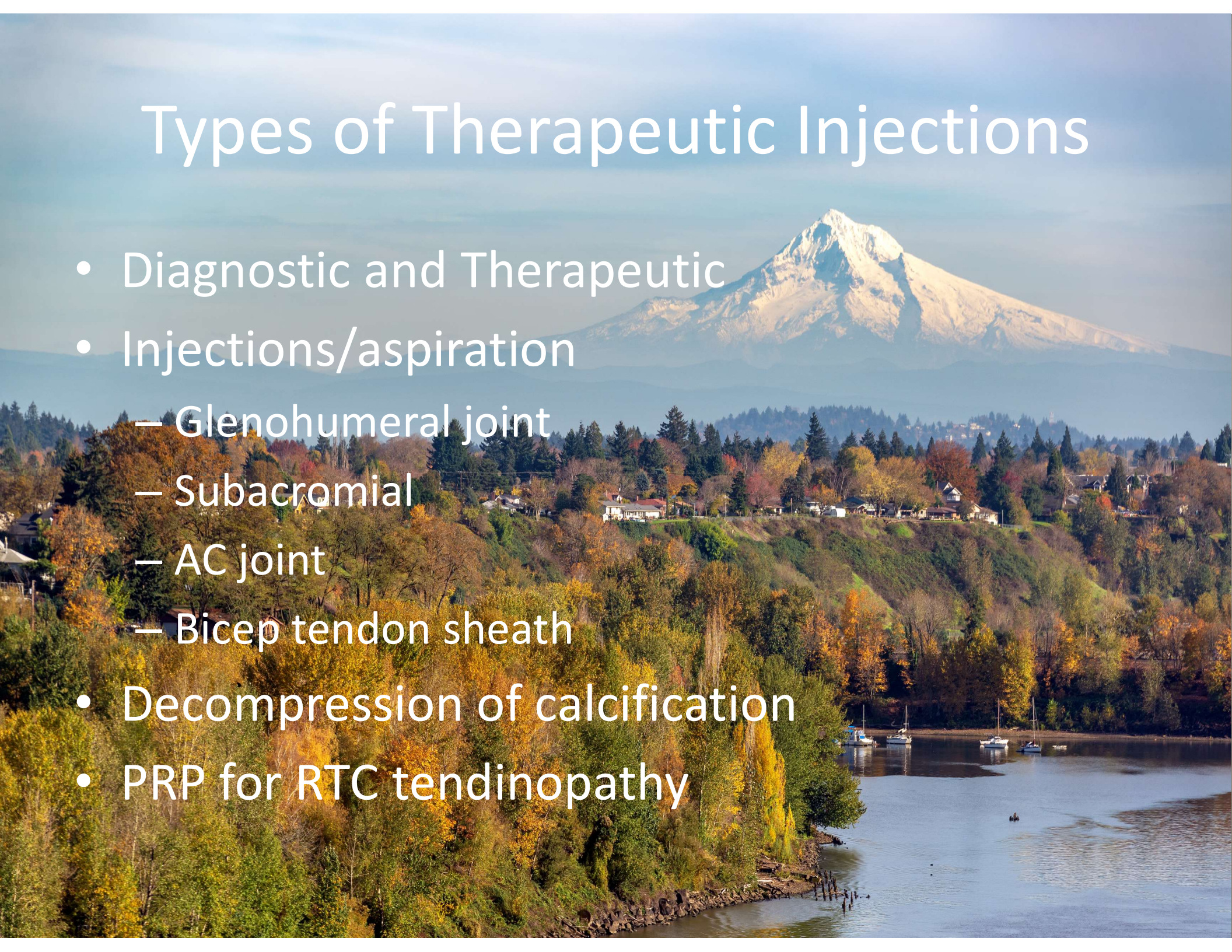


# Good News

- Even inexperienced practitioners are more accurate performing joint injections with US guidance (83%) than experienced practitioners performing palpation-guided joint injections (66%)
  - Cunnington, J et al. *A randomized, double-blind, controlled study of usg steroid into the joint of patients with inflammatory arthritis.* Arthritis Rheum, 2010. 62(7): p 1862-1869

# Types of Therapeutic Injections

- Diagnostic and Therapeutic
- Injections/aspiration
  - Glenohumeral joint
  - Subacromial
  - AC joint
  - Bicep tendon sheath
- Decompression of calcification
- PRP for RTC tendinopathy



# Probe Choice

- Linear probe
- Hockey Stick
  - AC joint
  - Subacromial space in thin individuals
- Curvilinear
  - GHJ and subacromial in larger individuals
- Real time technique
  - Long or short axis under US guidance

INVITED SPECIAL COMMUNICATION

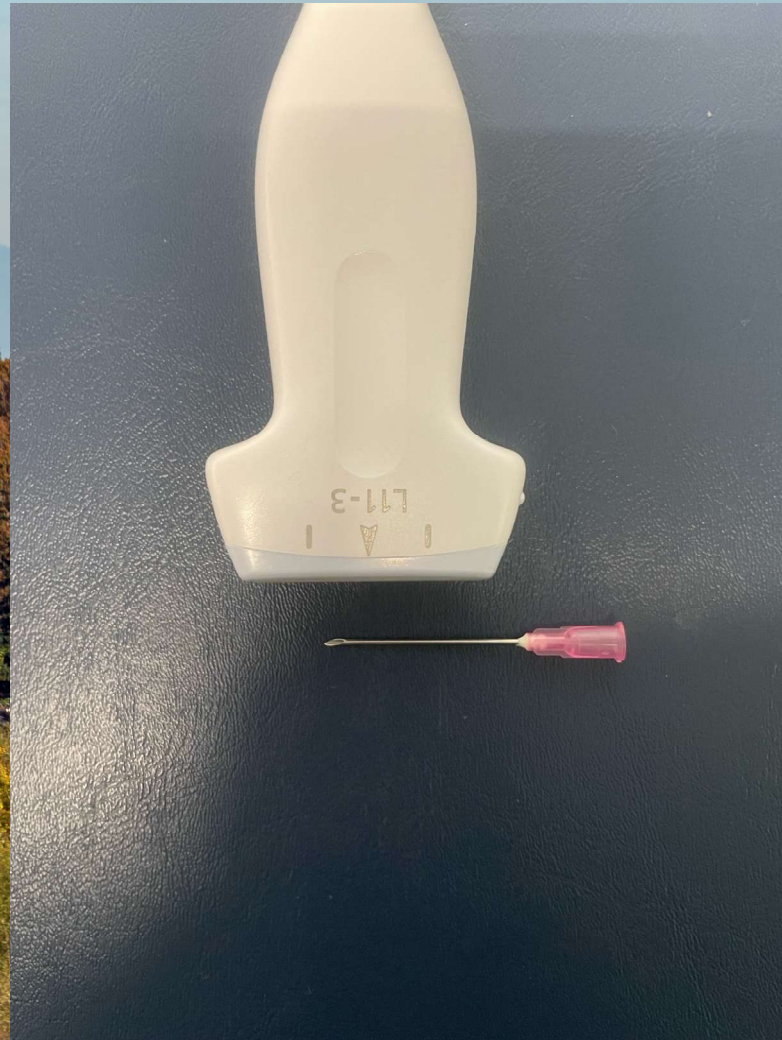
## Disinfection of Ultrasound Transducers Used for Percutaneous Procedures

Intersocietal Position Statement

**W**e, the undersigned organizations, wish to address the issue of disinfection of transcutaneous ultrasound transducers used for percutaneous procedures or for the purpose of monitoring other invasive procedures.

Current guidelines from multiple clinical societies have endorsed the use of low-level disinfection (LLD) for transcutaneous ultrasound transducer cleaning and disinfection used for guid-

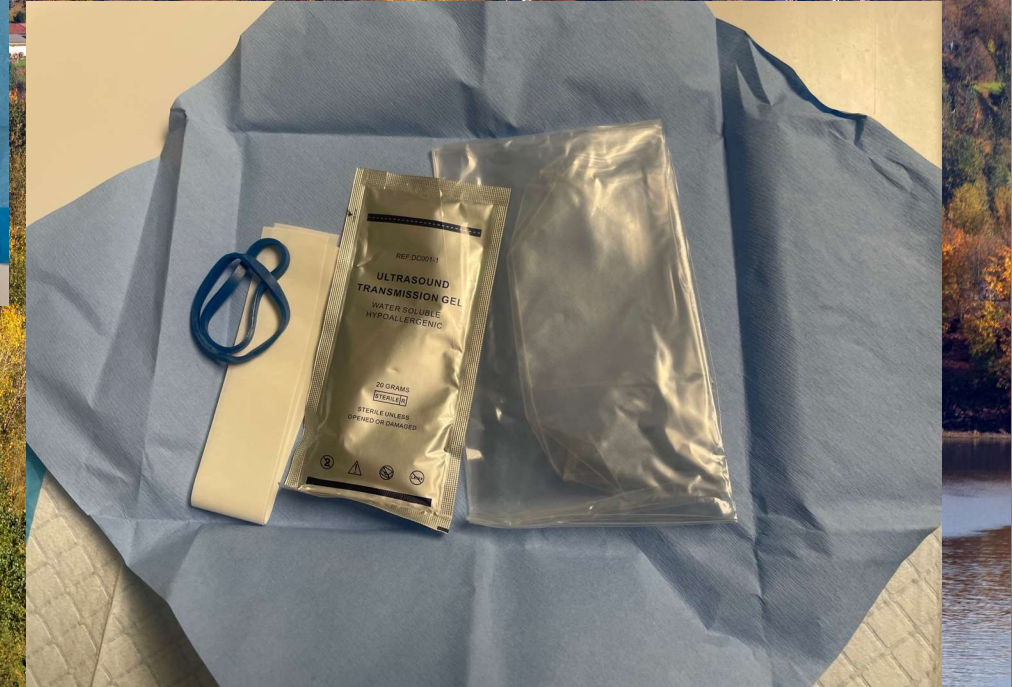
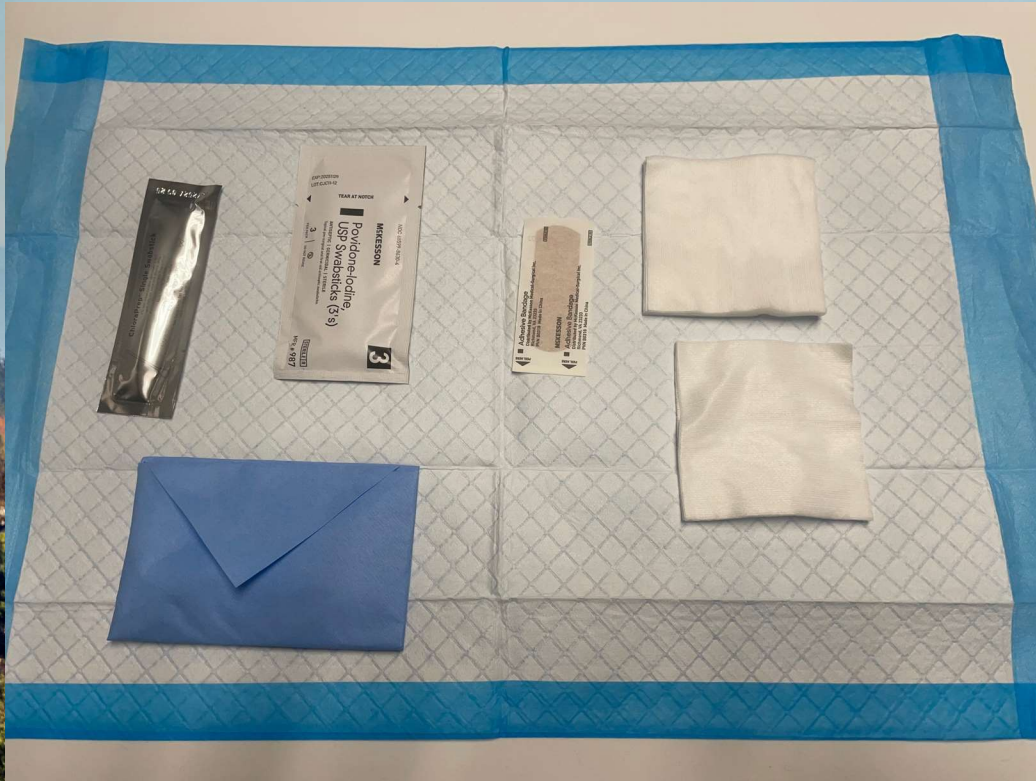
# In vs Out of Plane



# Informed Consent

- Systemic
  - Facial flushing and diabetic control
- Local
  - Lipoatrophy, post injection flare
  - Bruising/bleeding
- Aseptic Technique
  - Sterile disposable needles/syringes
  - Gloves
  - Skin prep (chloraprep or betadine)
  - Probe cover
- Post injection instructions

# Sterile Technique

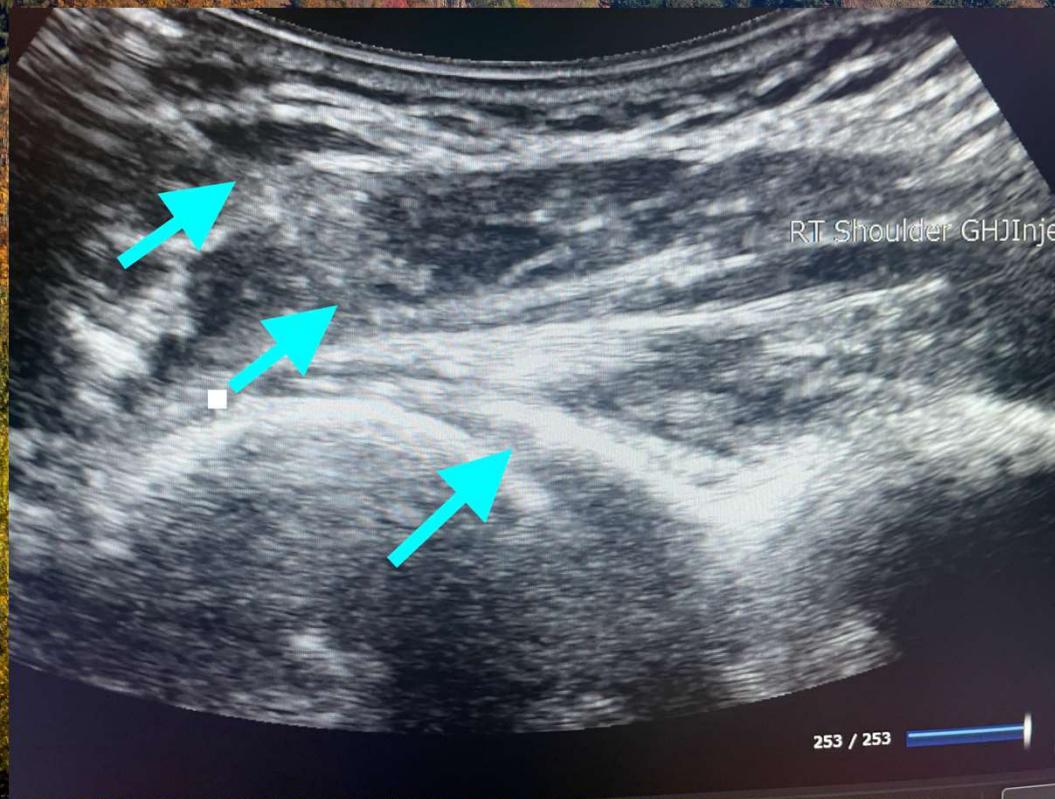


# Procedure Positioning

- Subacromial and GHJ injection
  - Pt lies on the unaffected side
    - Provides easy access
    - Reduces risk of vaso-vagal reaction
  - Alternate approach for SA injection
    - Patient seated with palm of affected side resting on hip
  - Position arm to get best view
- AC Joint
  - Supine or beach chair
- Doctor positioning
  - Comfort, safety, efficacy

# GHJ Injection

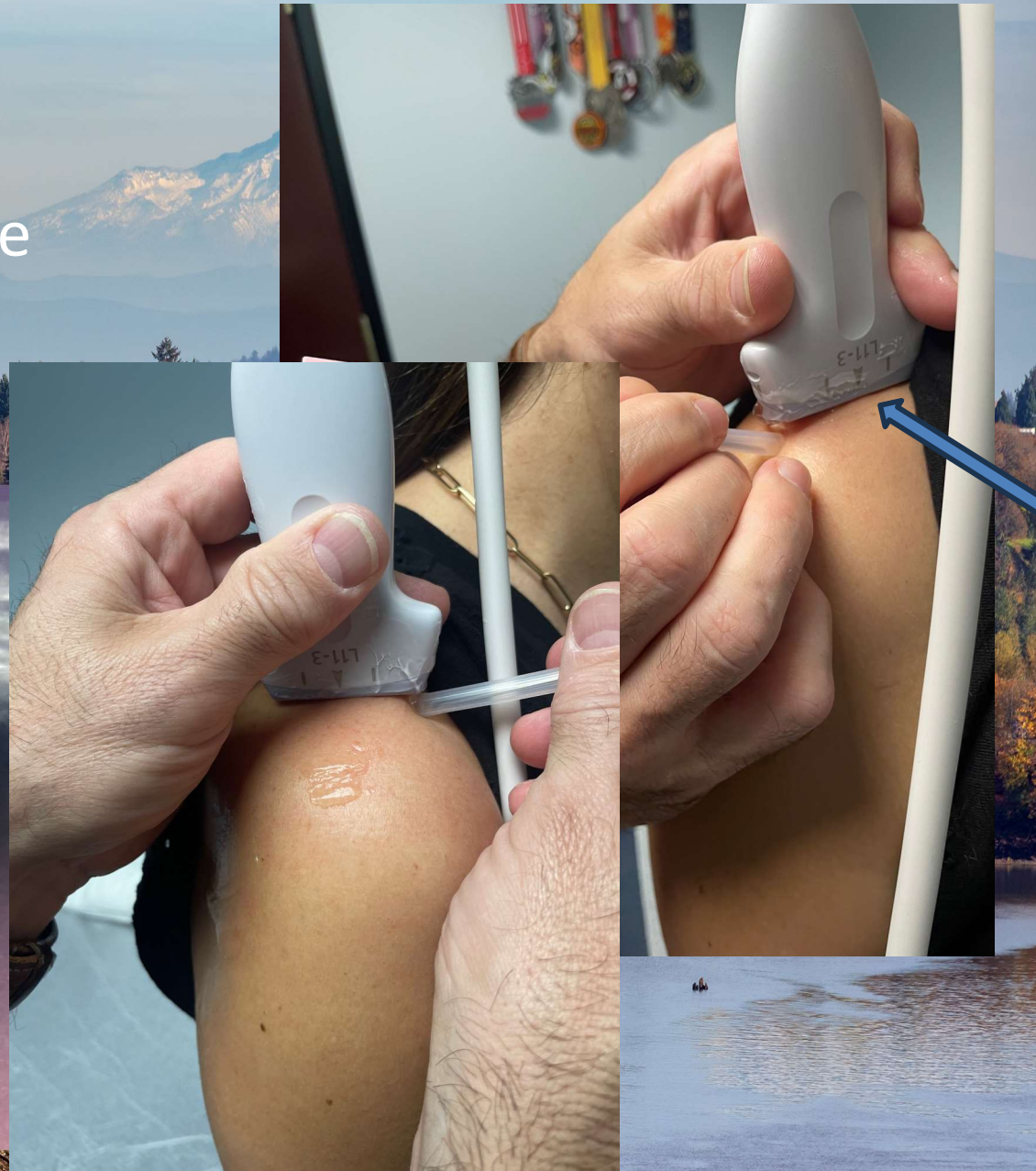
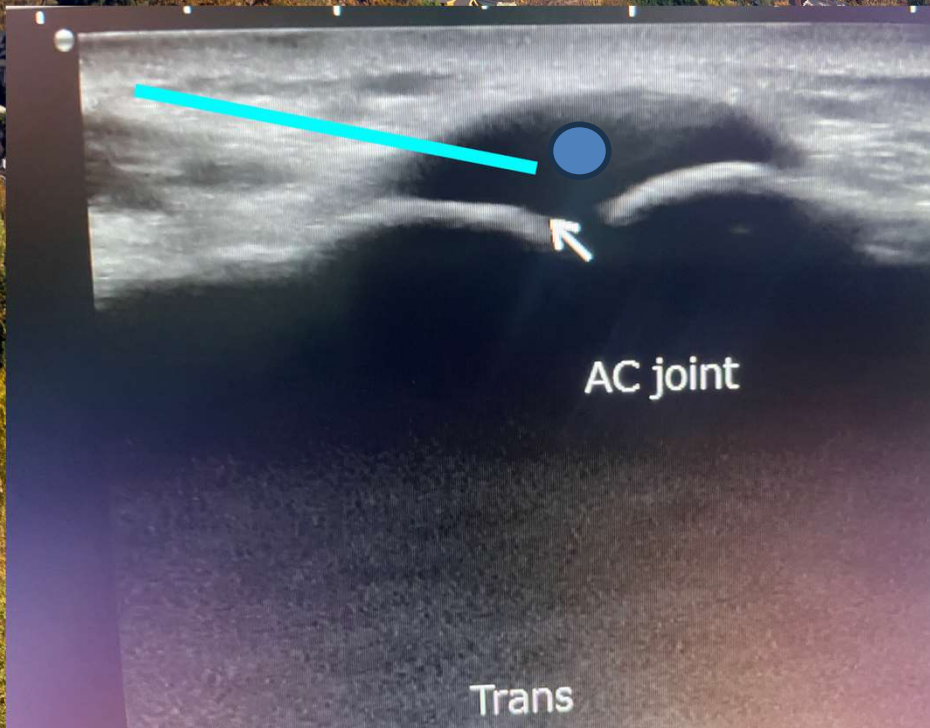
- Posterior approach
- Posterior ghj recess
- Long axis to infraspinatus tendon





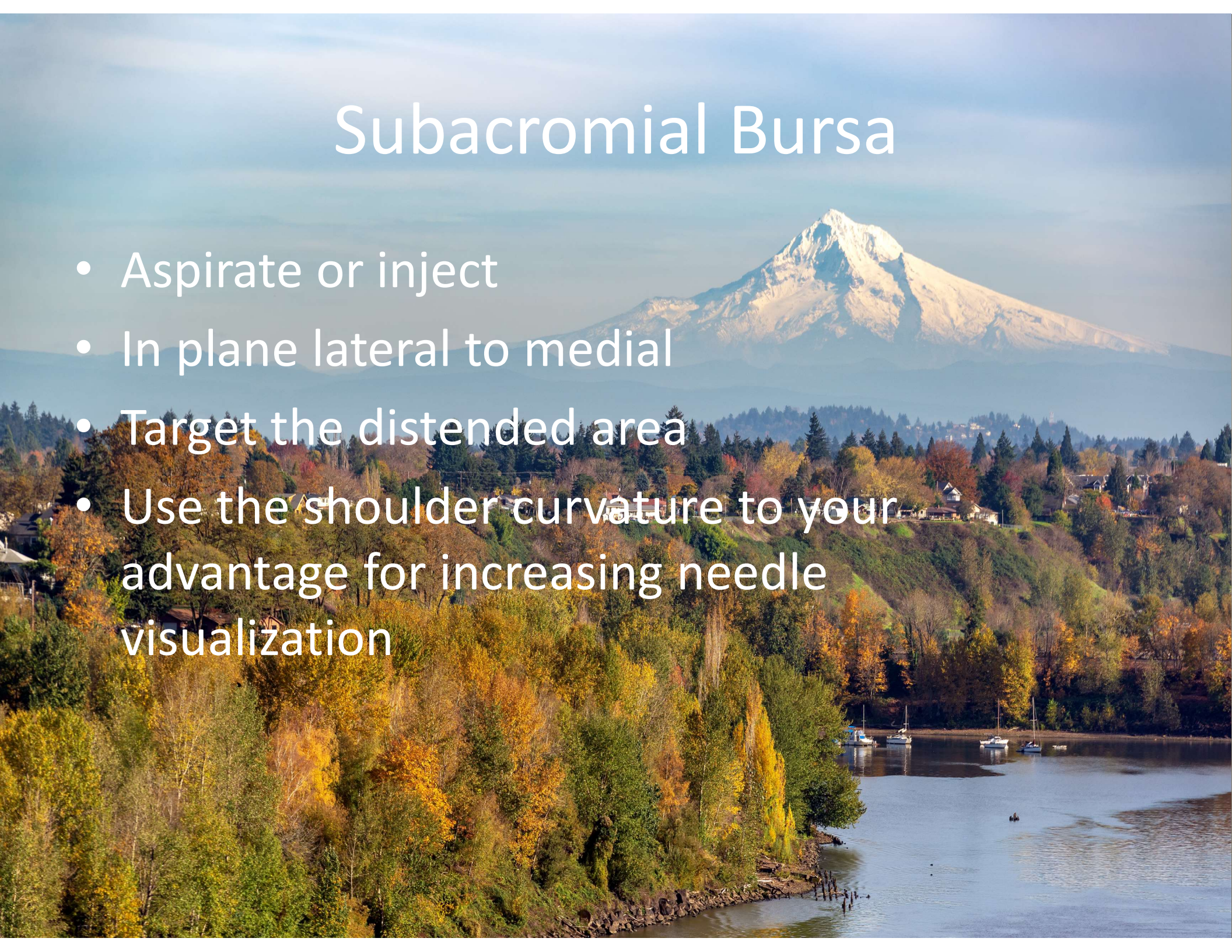
# ACJ Injection

- ACJ can be accessed several different ways
  - Lateral to medial in-plane
  - Ant to post in-plane
  - Ant to post out-of-plane

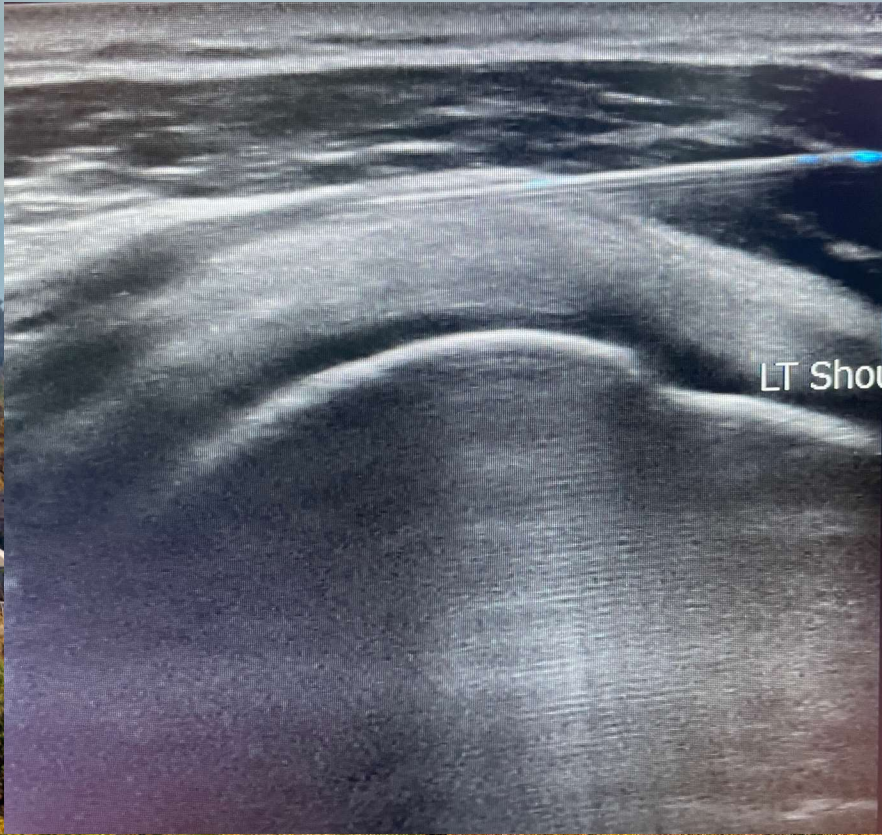


# Subacromial Bursa

- Aspirate or inject
- In plane lateral to medial
- Target the distended area
- Use the shoulder curvature to your advantage for increasing needle visualization



# Subacromial Bursa



LT Shoulder Injection

SA Bursa



RT Shoulder SA B

Injection

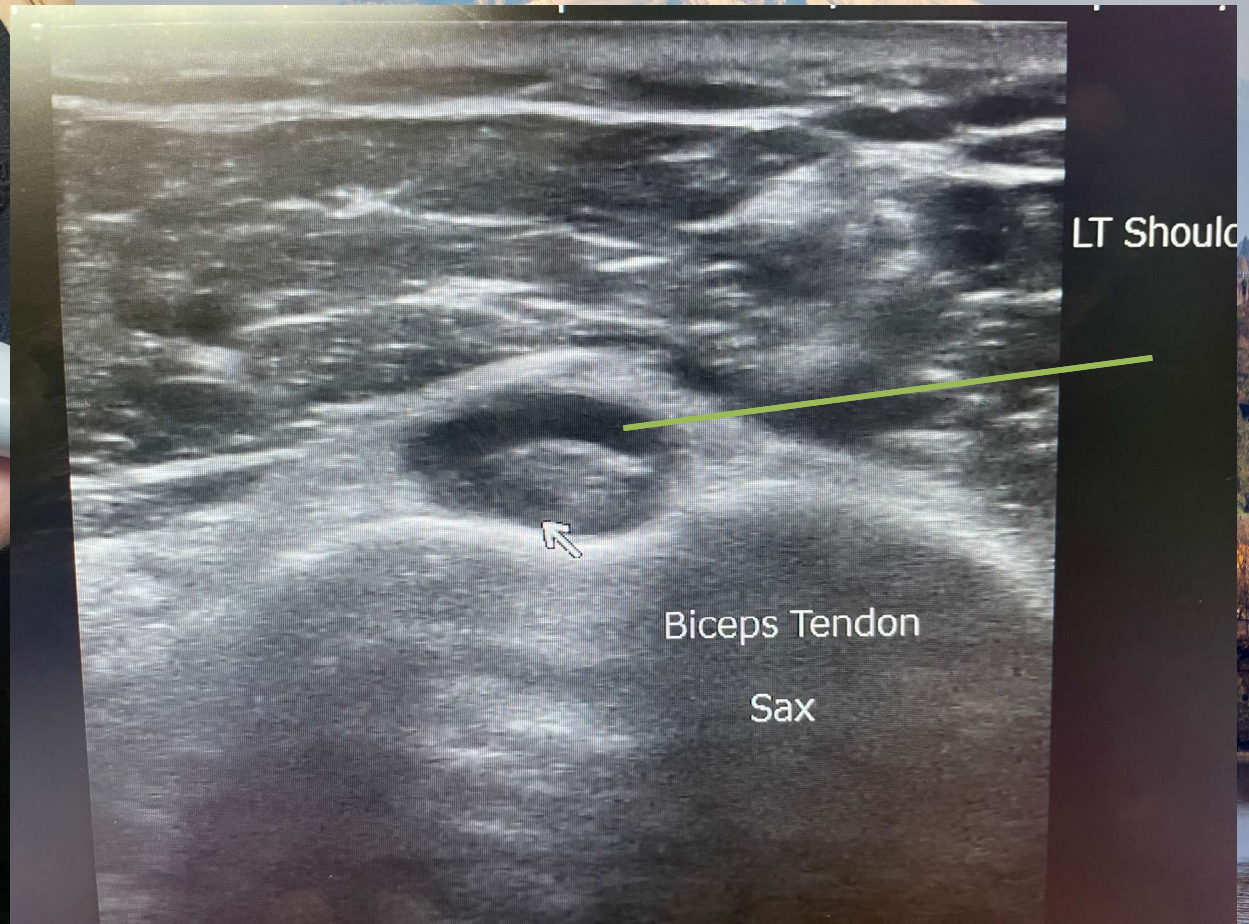


# Biceps Brachii Long Head

- Tendon sheath injection
- In-plane approach
- Transducer in short axis to tendon and long axis to needle
- Lateral to medial
- Check doppler for the anterior circumflex humeral artery and its branches



# Biceps Brachii LH



# Conclusions

- Ultrasound guidance is a precise way to guide therapeutic injections in the shoulder
- Patients prefer ultrasound for comfort
- Allows for accurate post-injection interpretation of response
- **Can get into trouble very easily**
- Being skilled at diagnostic US makes therapeutics easier and much safer