



Elbow Ultrasound

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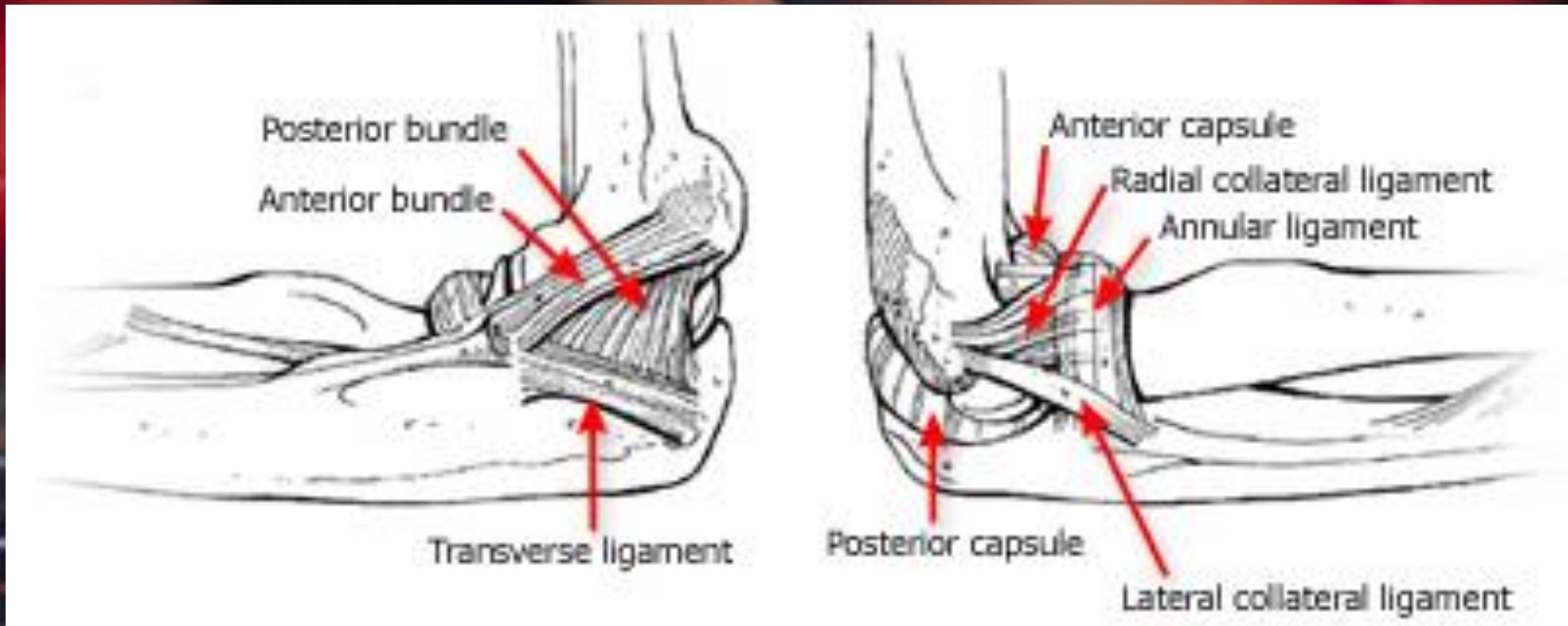
Kaiser Permanente

Sports Medicine

South Sacramento/Promenade

Anatomy

Medial/Lateral Elbow



Medial Elbow – Anterior bundle most important



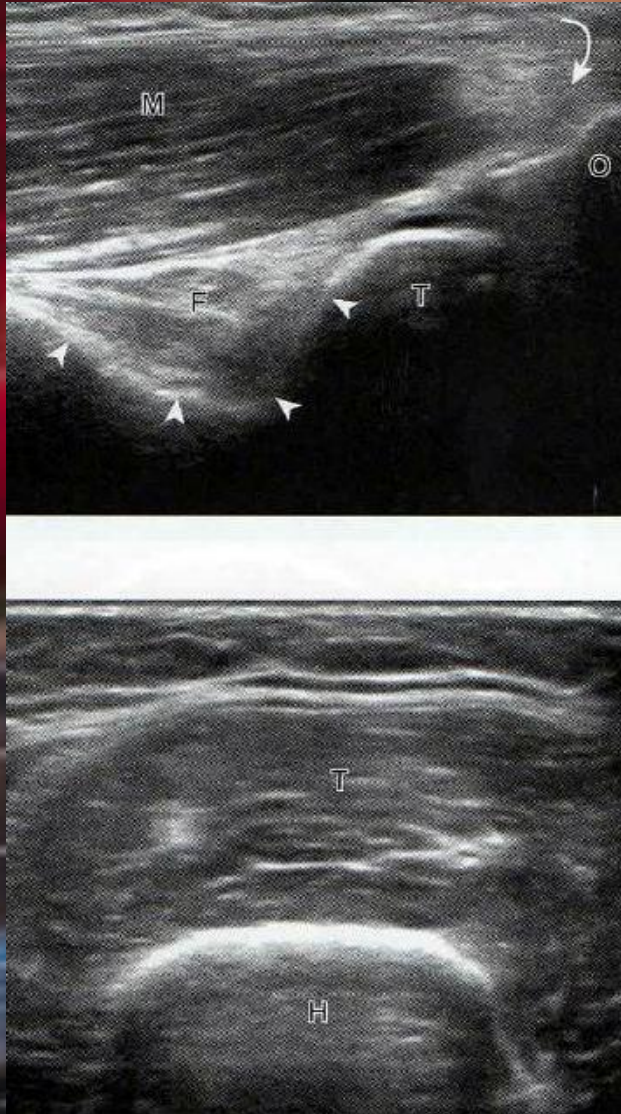
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Anatomy

Biceps



Posterior Elbow



- Top: curved arrow – triceps tendon, arrowheads – olecranon fossa (elbow flexed), T – trochlea, F – fat pad
- Look for loose bodies, effusion in fossa
- Below: transverse view



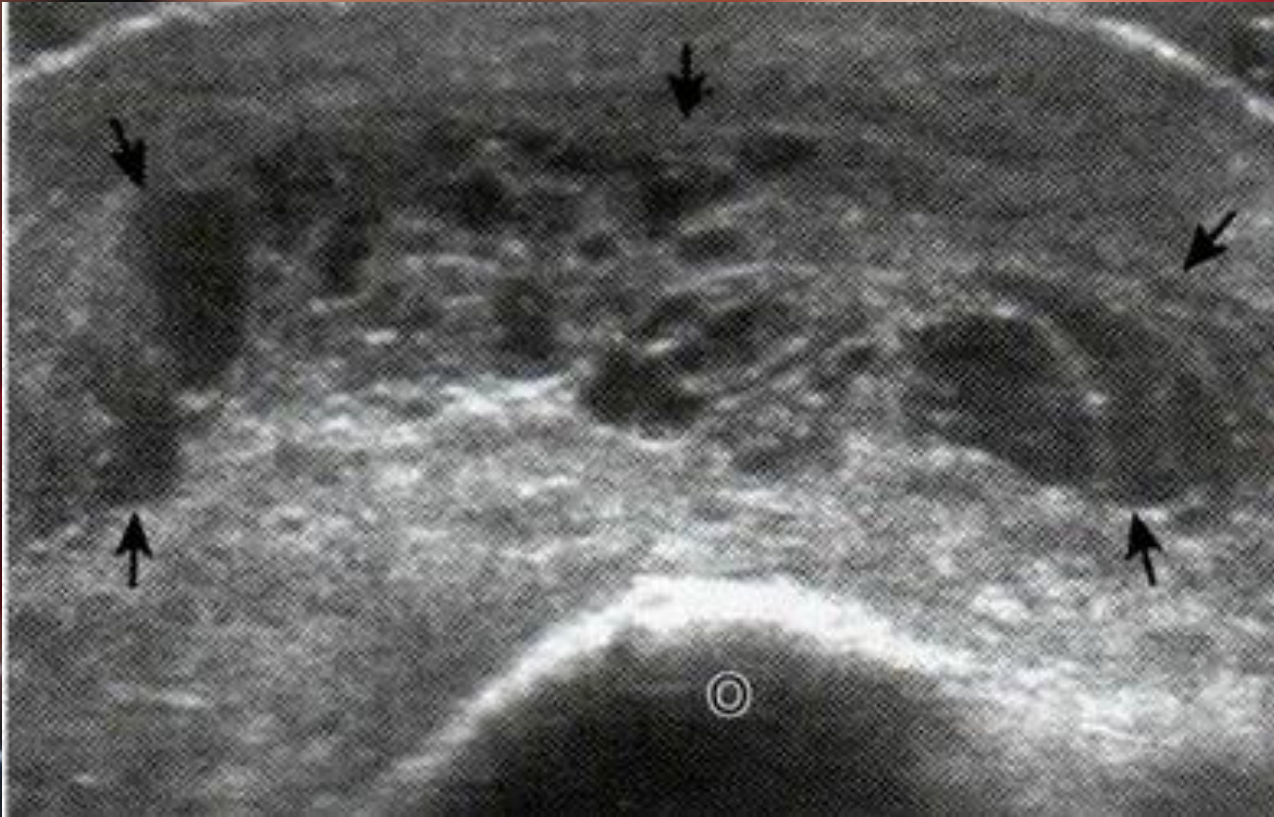
Triceps Avulsion



- Arrow – avulsion fragment, open arrow – tear of superficial fibers, arrowheads – intact fibers



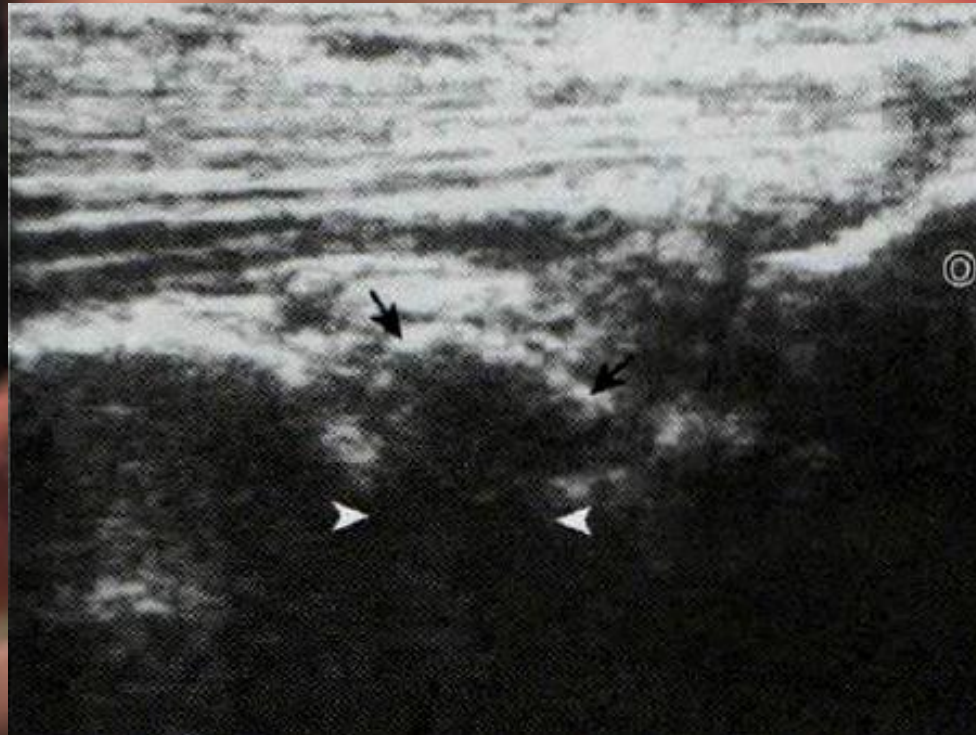
Olecranon Bursitis from Trauma



- Transverse view over olecranon.
- Float the transducer



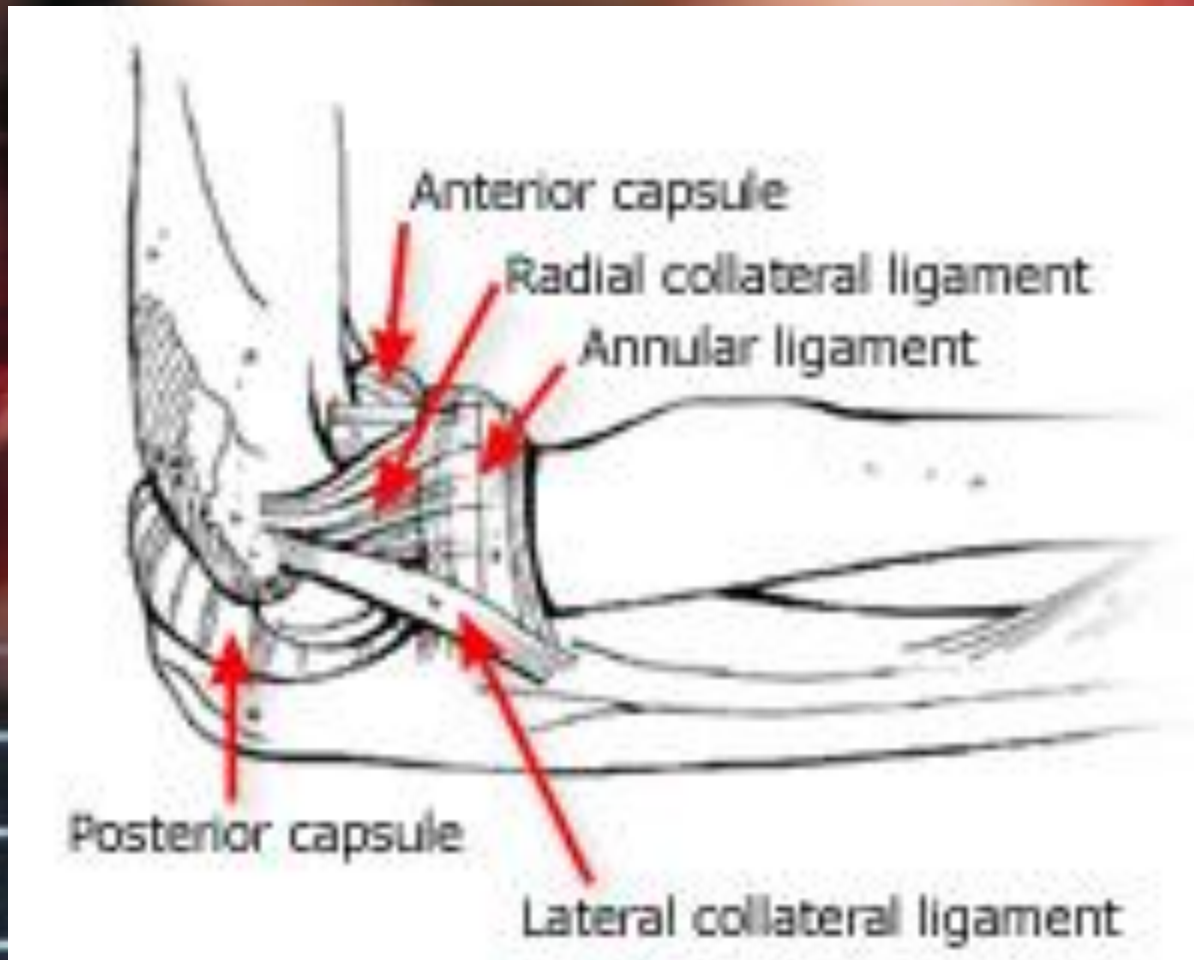
Intra-Articular bodies



- Top: sagittal/longitudinal view over olecranon fossa
- hyperechoic body with posterior shadowing

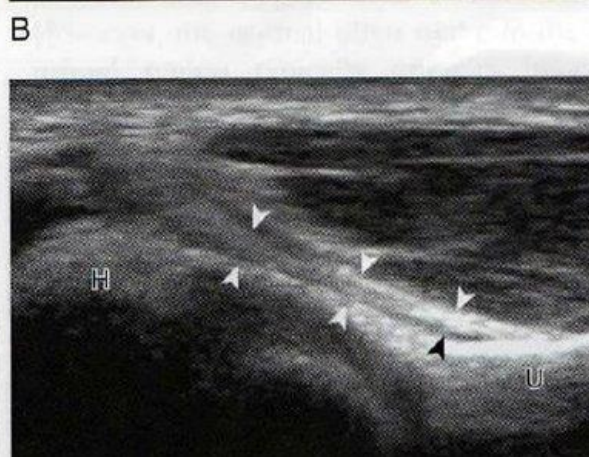
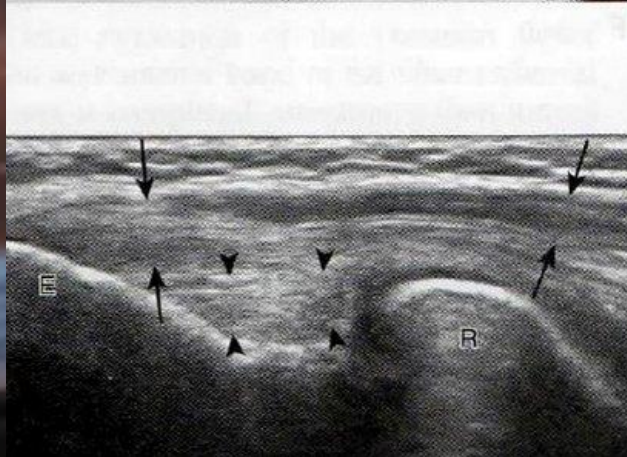
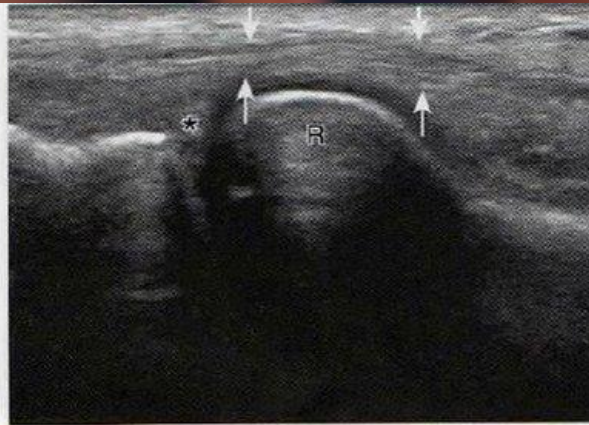


Lateral Elbow



Lateral Elbow

- Internally rotate the arm
- Arrows – common extensor tendon, * - synovial fold, R – radial head
- Bottom left: arrowheads are RCL
- Bottom right: pivot distal probe posteriorly to see lateral UCL (arrowheads, humerus → ulna)



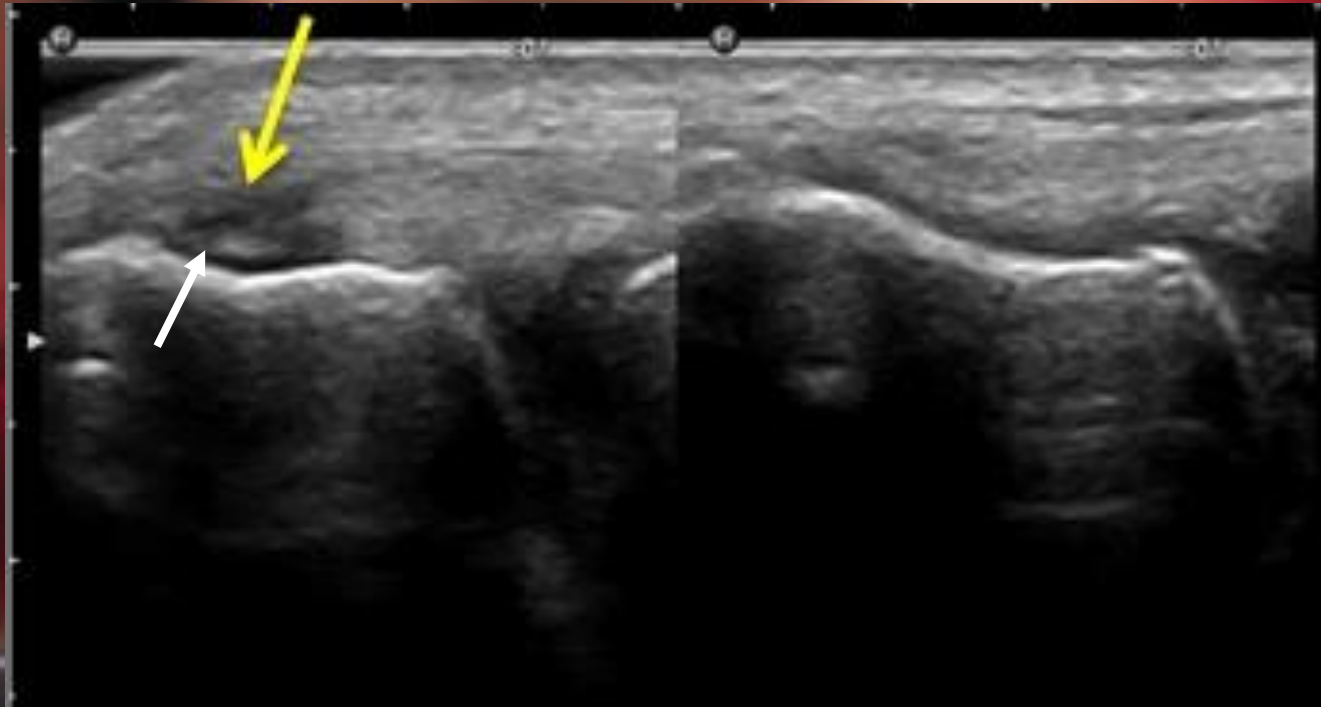
Radial neck fx



- R – radial head,
C – capitellum,
arrows -
hemorrhage



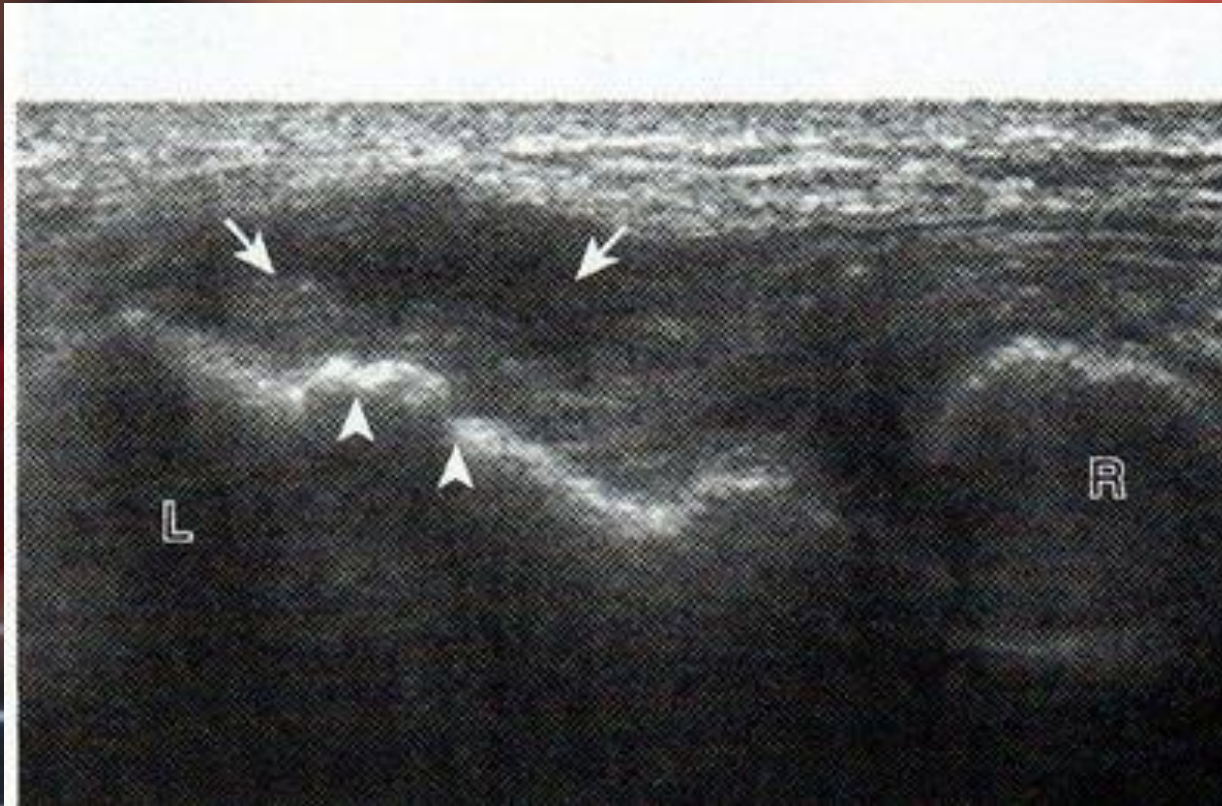
Lateral epicondylitis



- Right – normal elbow
- Left – affected elbow – note hypoechoic tendon origin (yellow arrow) and small partial tear (white arrow)



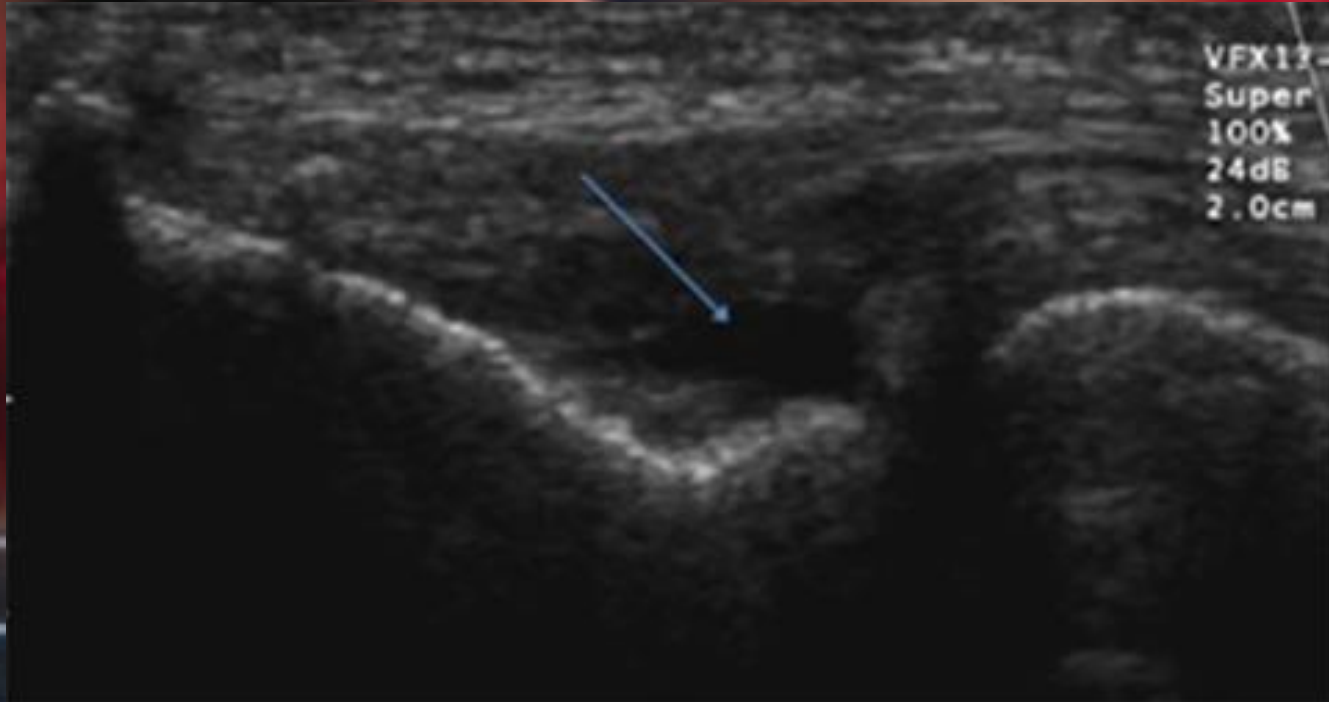
Complete tendon tear



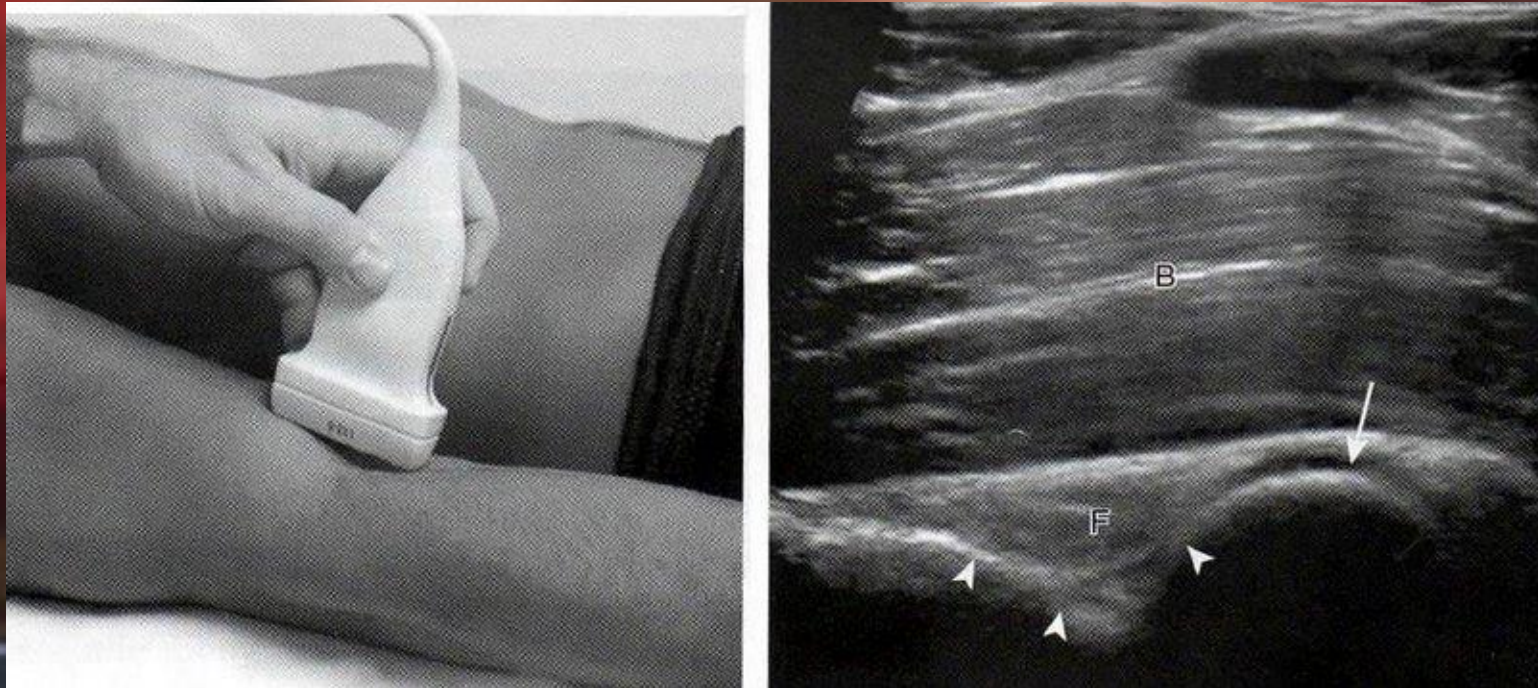
- Arrows - Hypoechoic-anechoic fiber disruption
- Arrowheads – cortical irregularity



RCL tear



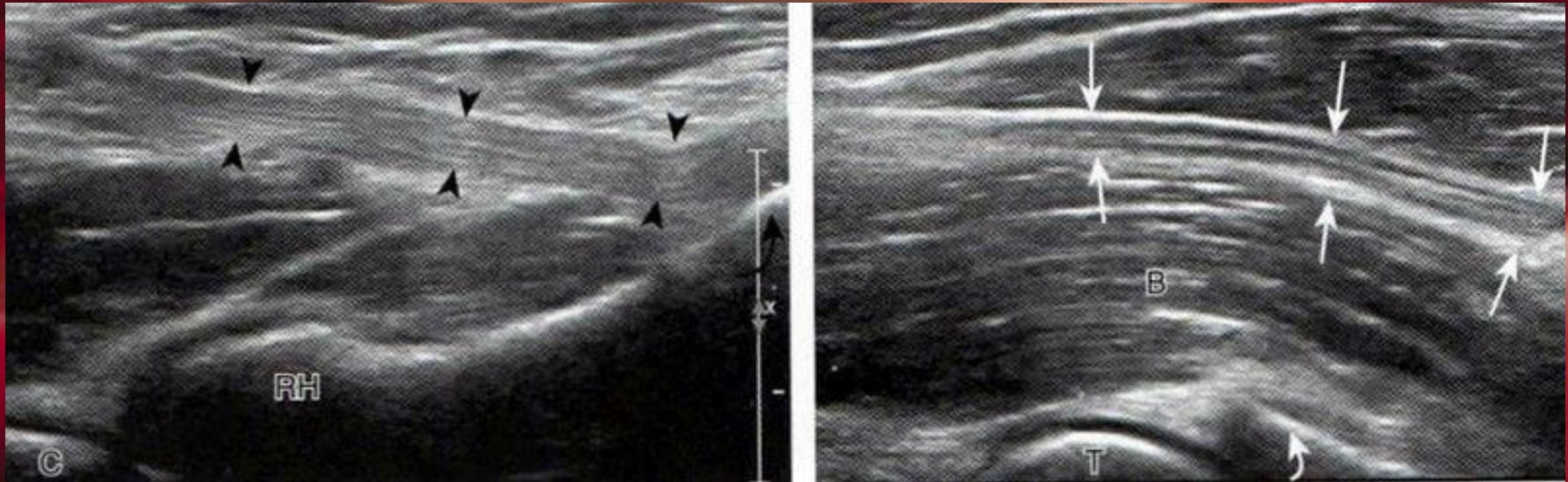
Anterior Elbow, Long



- Elbow extended, forearm supinated
- B – brachialis (follow its landing on ulna), F – anterior fat pad, arrowheads - coronoid fossa, arrow – hyaline cartilage on trochlea



Anterior Elbow, Long

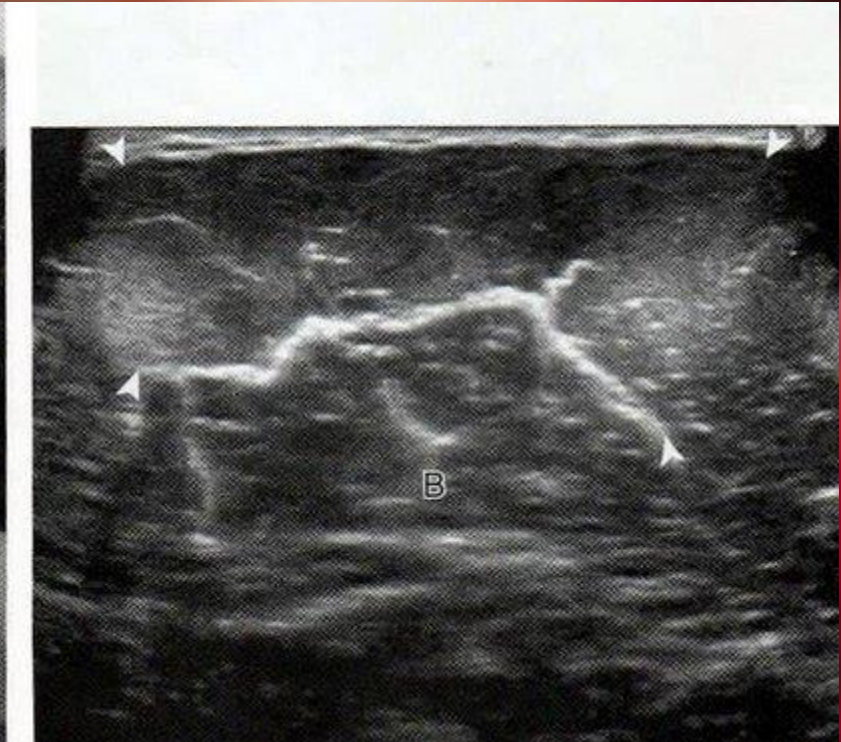
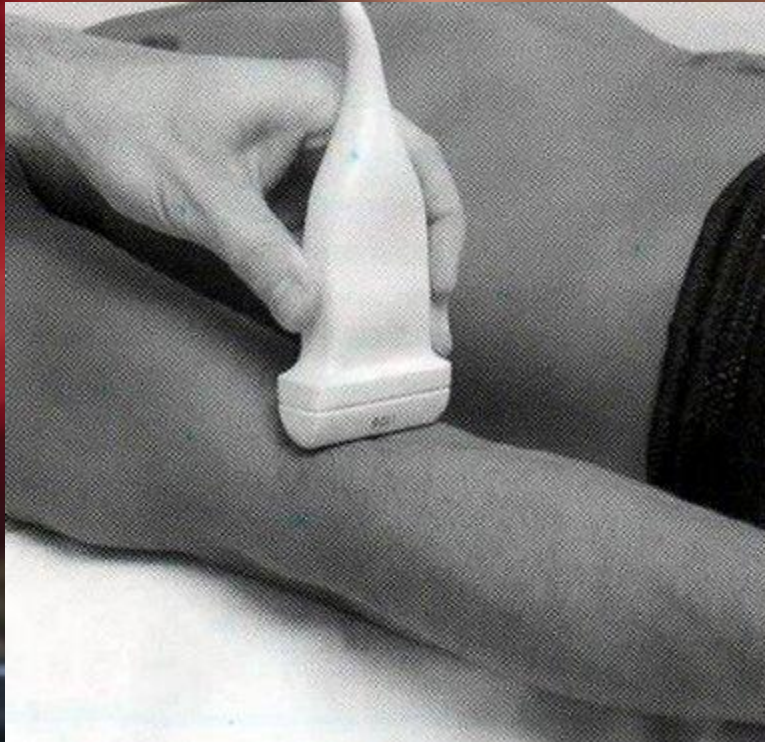


- Laterally will see distal biceps tendon (arrowheads) over radial head (RH) and capitellum, inserting on radial tuberosity
- Possible anisotropy due to oblique course

- Go back medially to see median nerve (arrows) next to brachialis (B), overlying trochlea (T)



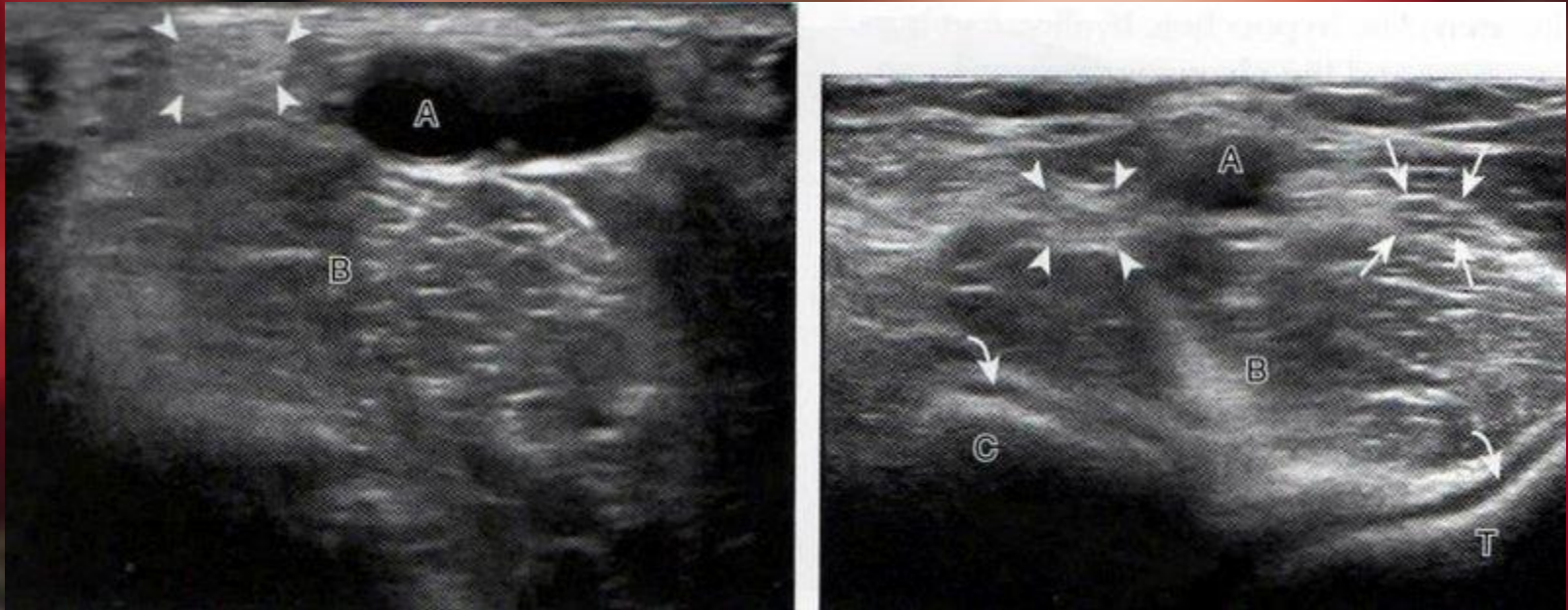
Anterior Elbow, Trans



- Brachialis muscle (B) under biceps (arrowheads)
- If you're lost, find the brachial artery as a landmark



Anterior Elbow, Trans



- Sweeping distally, see TAN - becoming biceps tendon (arrowheads), lateral to brachial artery, which is lateral to median nerve (arrows)
- Brachialis (B) deep to these



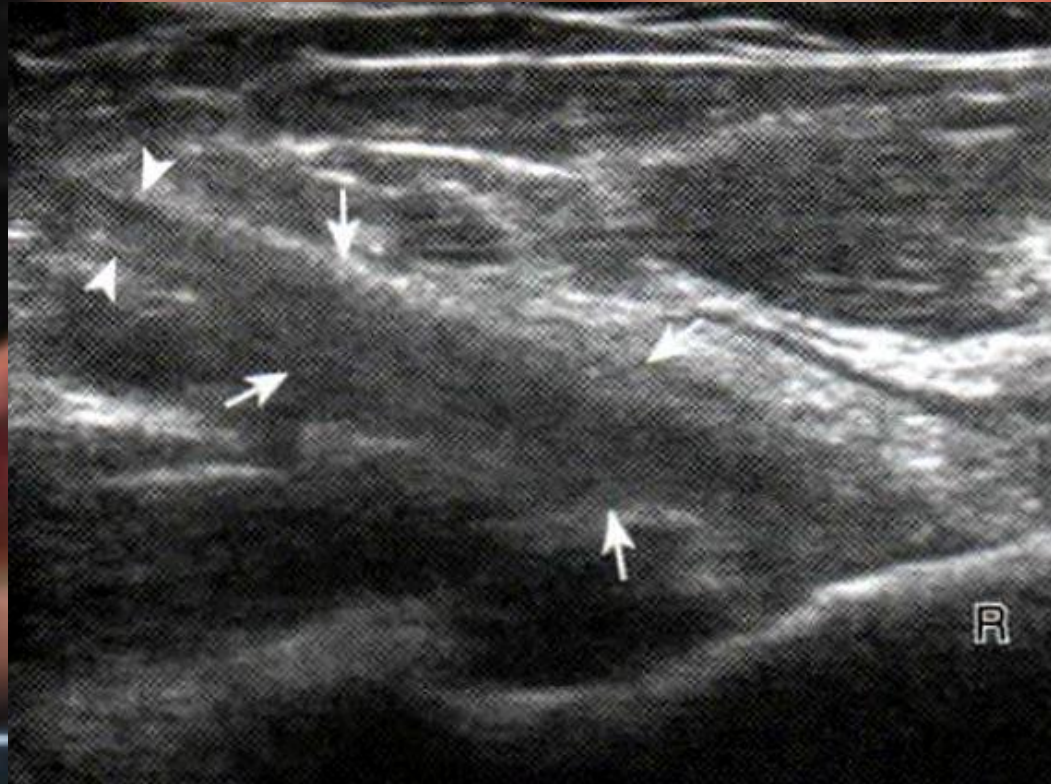
Intra-articular Loose Body



- Arrow – ossified intra-articular body with acoustic shadowing (arrowheads) at coronoid recess. C – coronoid process, T - trochlea

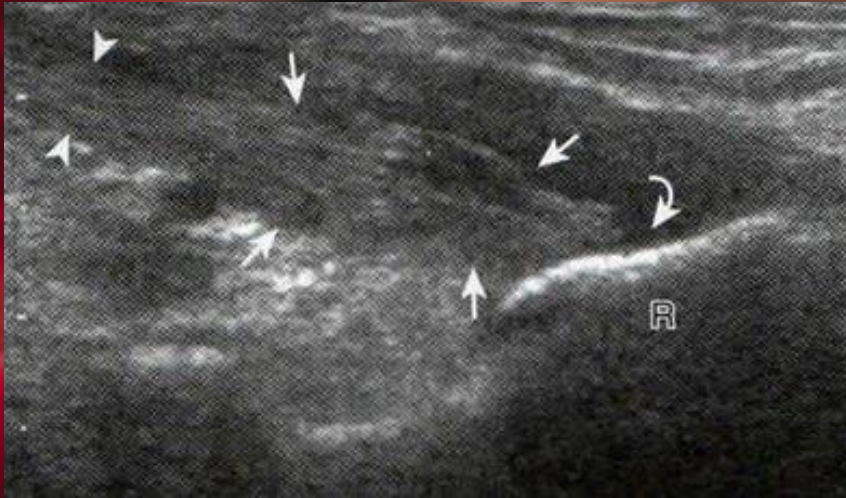


Biceps Tendinosis



- Swollen, hypoechoic distal biceps tendon
- May be hypoechoic due to anisotropy, helpful to measure thickness and compare to other side

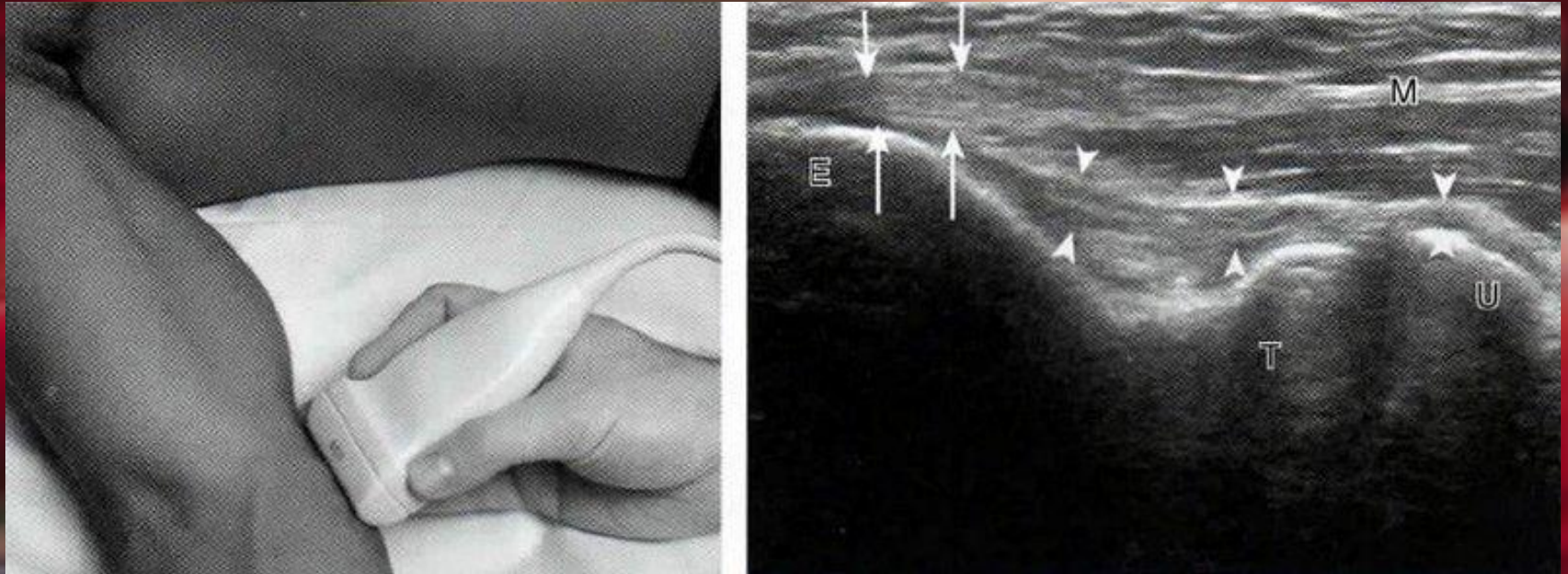
Biceps Tear



- Left – partial tear. R- Radial tuberosity. Curved arrow partial disruption. Arrowheads – normal caliber; arrows – increased caliber
- Right – complete tear. Arrows – hematoma and complete disruption of tendon



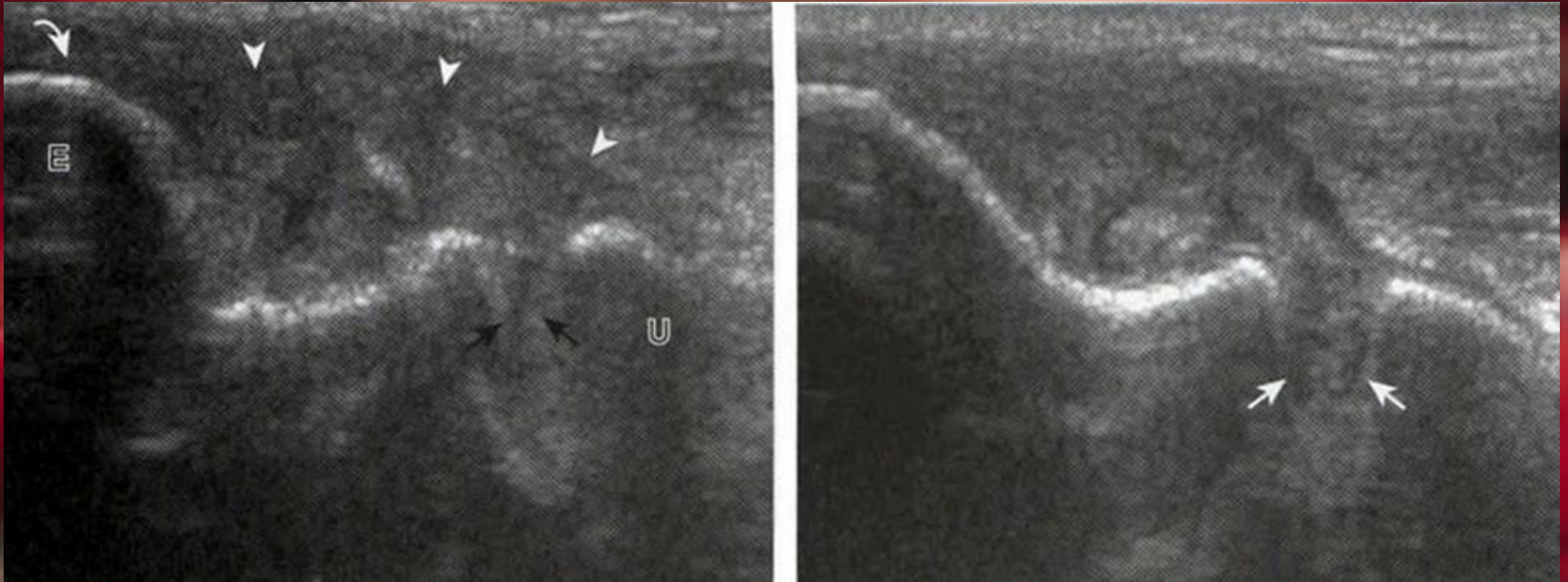
Medial Elbow



- Ext rotate shoulder and slight flexion in elbow
- Find the ski jump! Arrows- common flexor tendon, arrowheads – anterior band of UCL, T – trochlea. U – Ulna



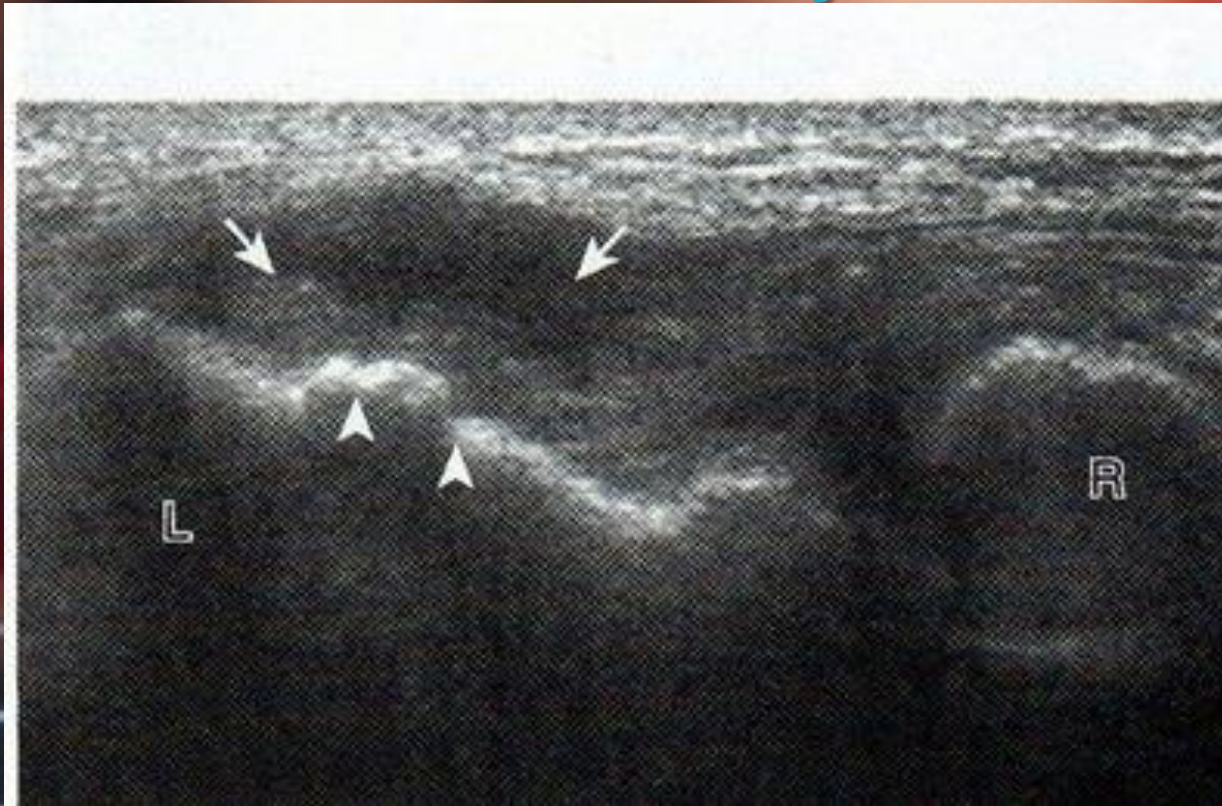
UCL Tear



- Arrowheads – hypoechoic swelling no discernible fibers
- Using knee/bed as fulcrum, you pull on arm and valgus stress → joint opens (arrows)
- Can compare to other side



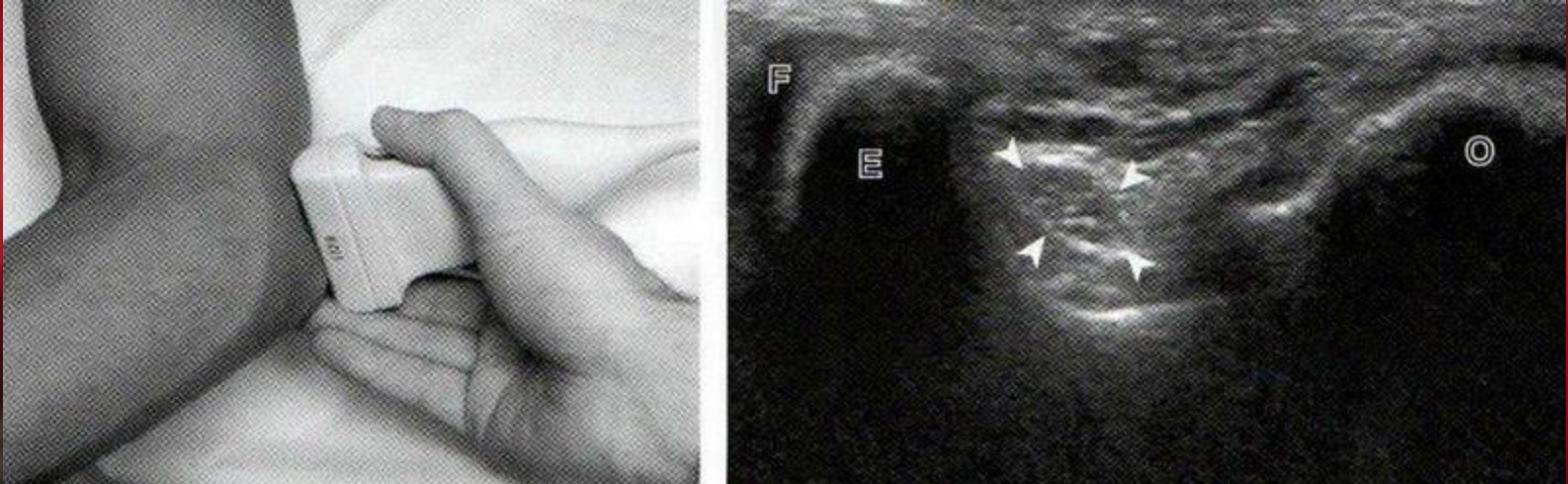
Complete tendon tear (same slide for lateral – just a reminder)



- Arrows - Hypoechoic-anechoic fiber disruption
- Arrowheads – cortical irregularity



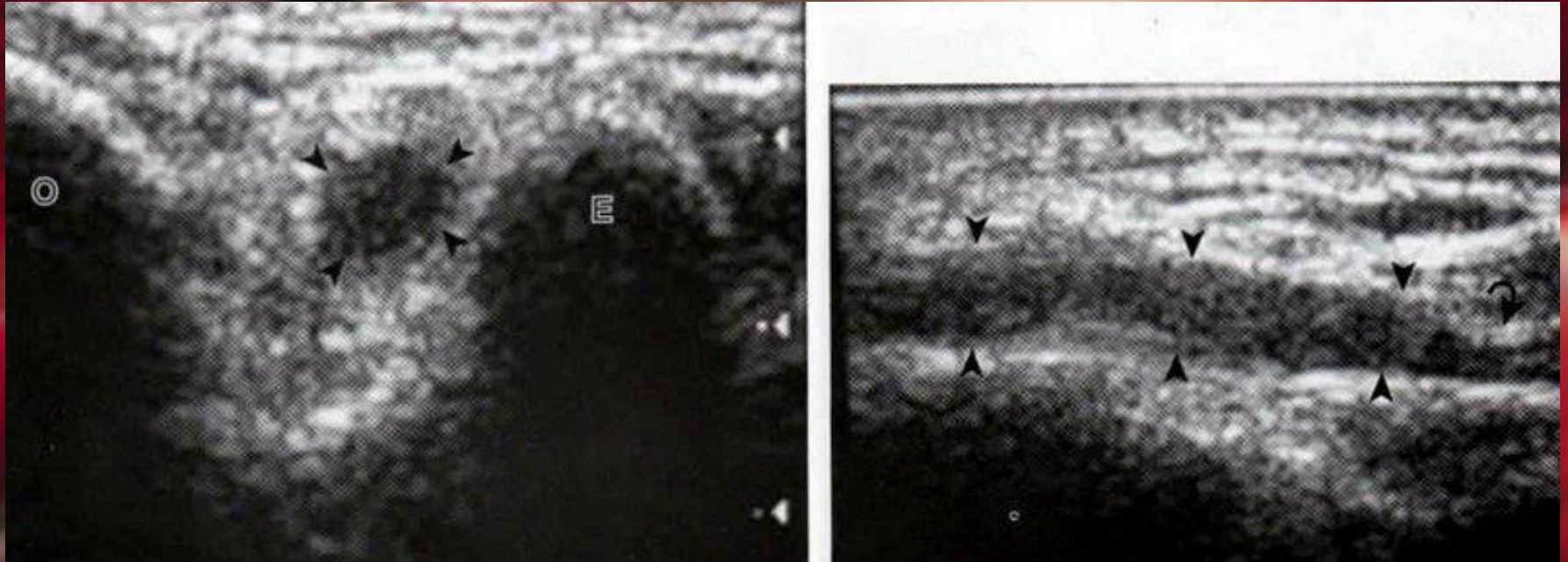
Ulnar Nerve



- ulnar nerve (honeycomb; speckled)



Ulnar neuropathy at the elbow

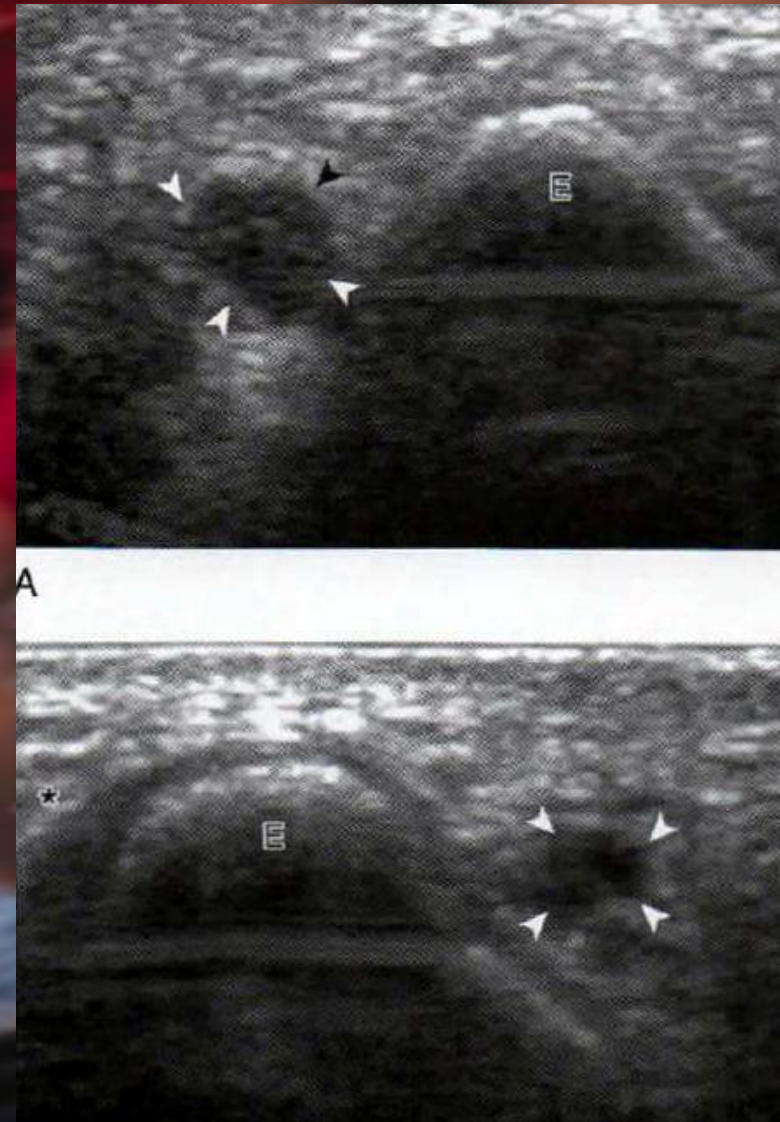


- Transverse on left, longitudinal on right
- Hypoechoic swelling (cross-sectional area $> 7.5 \text{ mm}^2$ is abnormal)



Snapping Nerve

- Dynamic exam: top – elbow extended, normal position
- Bottom – with elbow flexion subluxes to medial side of medial epicondyle (E)
- May feel a snap with transducer
- Need to float transducer
- Seen in 20% of asymptomatic individuals



Summary

- Practice, Practice, Practice
- Don't forget to use the other side to compare.
- Take your time.
 - Biceps is hard to follow due to depth at end and oblique angle it takes
 - Nerves are easy to find, but hard to track if you rush
- Stressing the UCL is easier to diagnose a tear than just seeing the tear on ultrasound



Thank You



Dr. Meier's children