Case Vignettes and Clinical Pearls

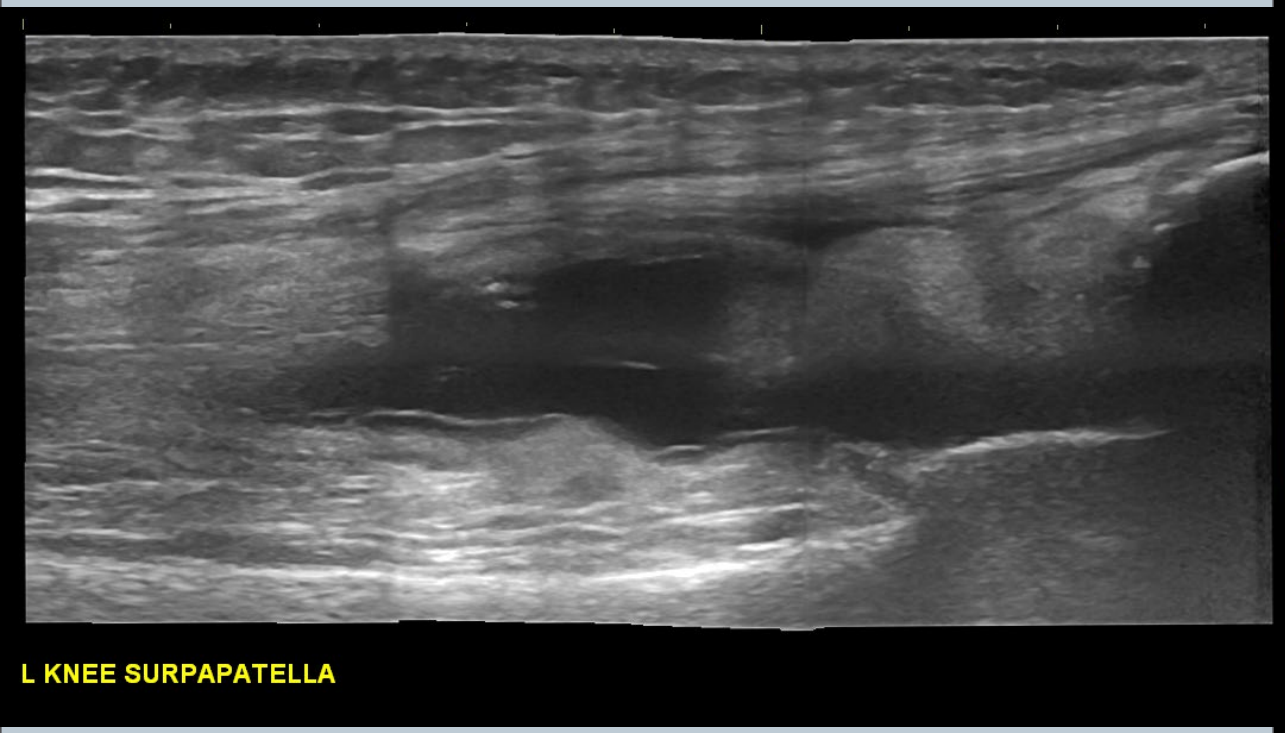
Case 1: 38 y/o male with severe hemophilia A with increased Left knee swelling s/p TKA (Hemlibra)

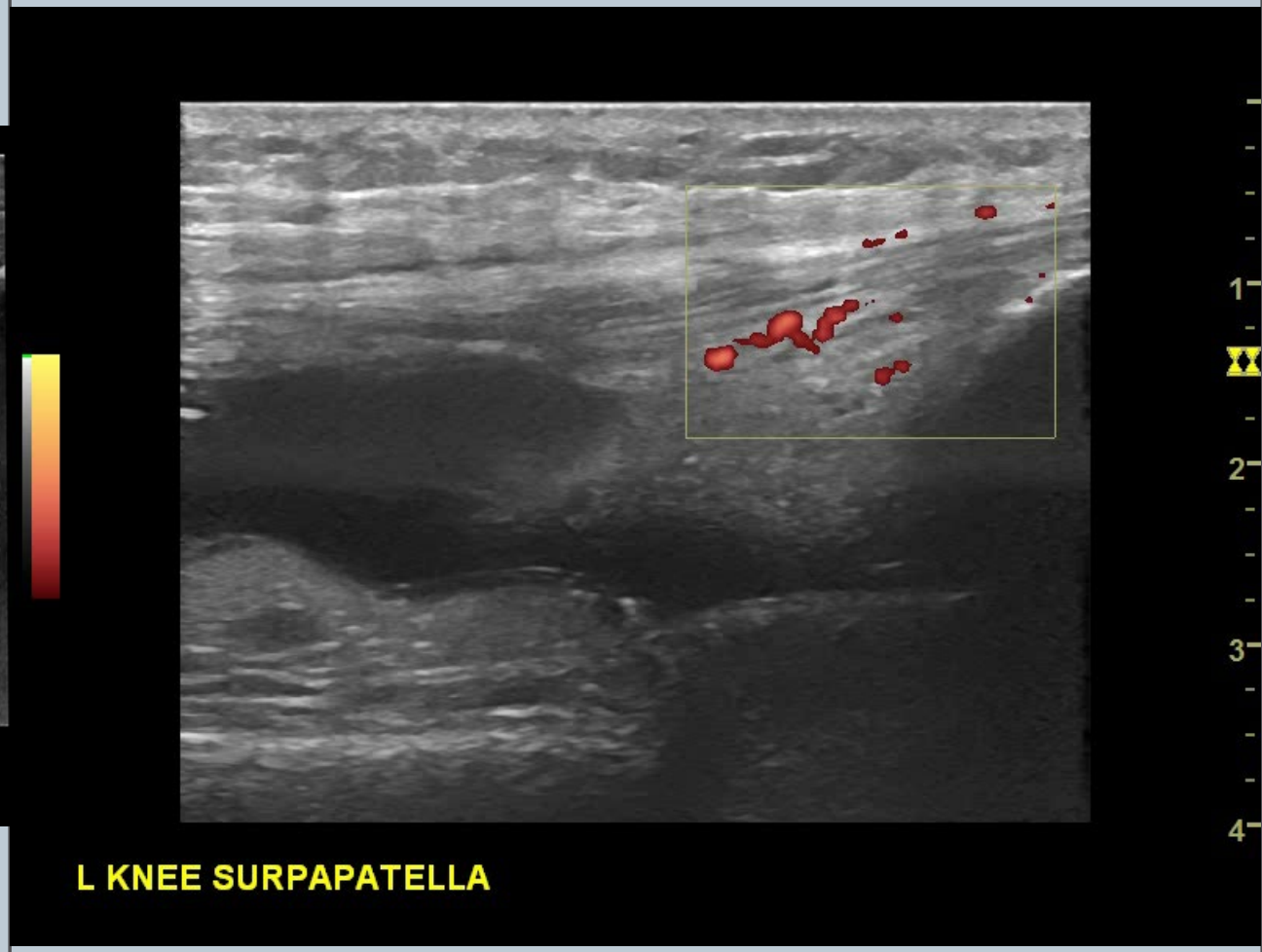
Patient History/Subjective

1. Patient unsure why he is swollen
2. Moved into a new apartment 5 days ago, swelling began 3 days ago. Consequently he infused but without change in symptoms.
3. Patient reports that over the last 3 days there has not been an improvement. Has stopped exercises 2/2 to swelling. Pain has improved over the last 3 days.
4. Surgery 5/26, visit 6/14 (close to 3 weeks post-op)
5. Discontinued NSAID 7 days ago

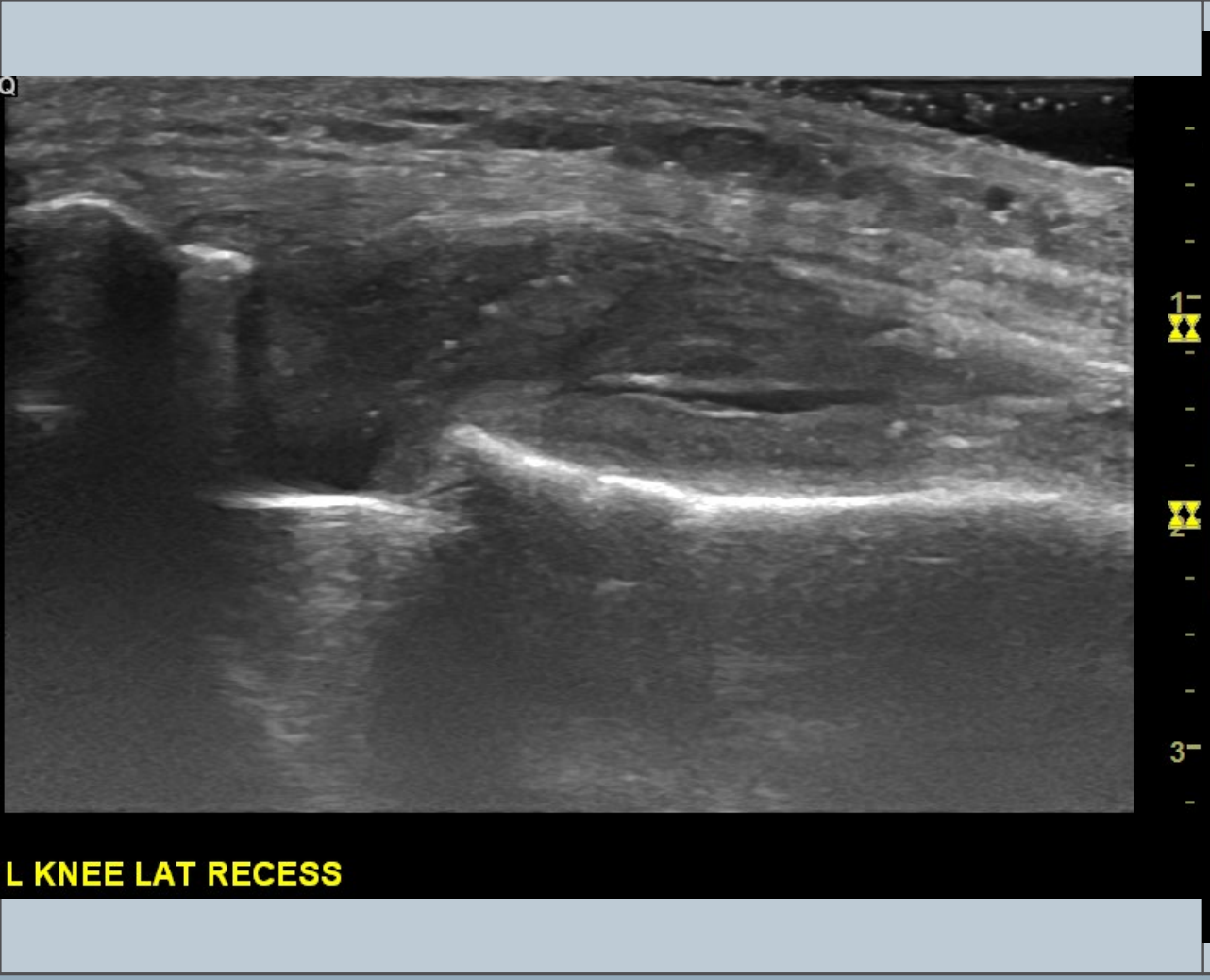
Patient Presentation

1. L knee AROM = 0-100
2. Increased swelling and redness in the L knee
3. Gait: Decreased stance time on L, reduced stride length on L, decreased knee flexion during swing phase.

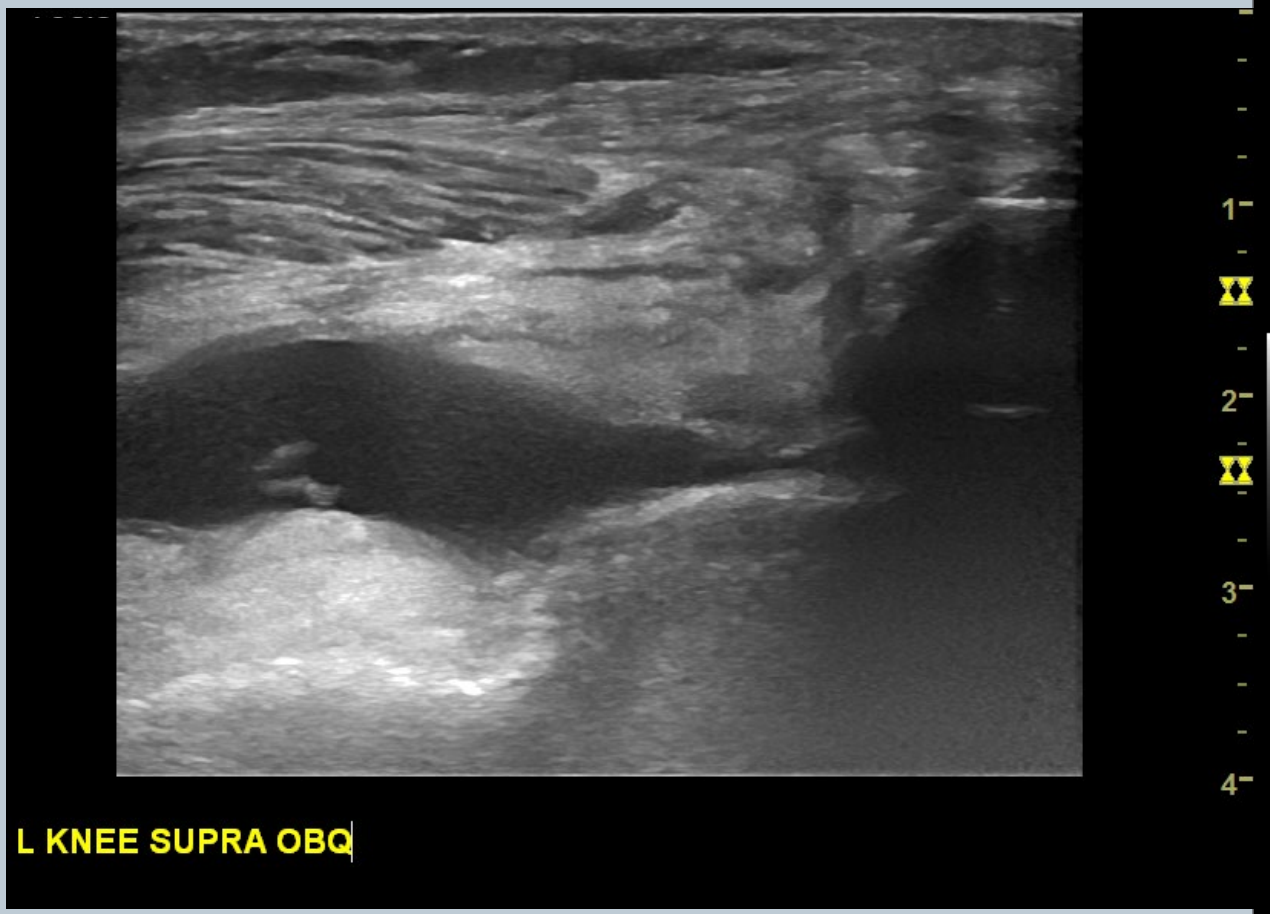


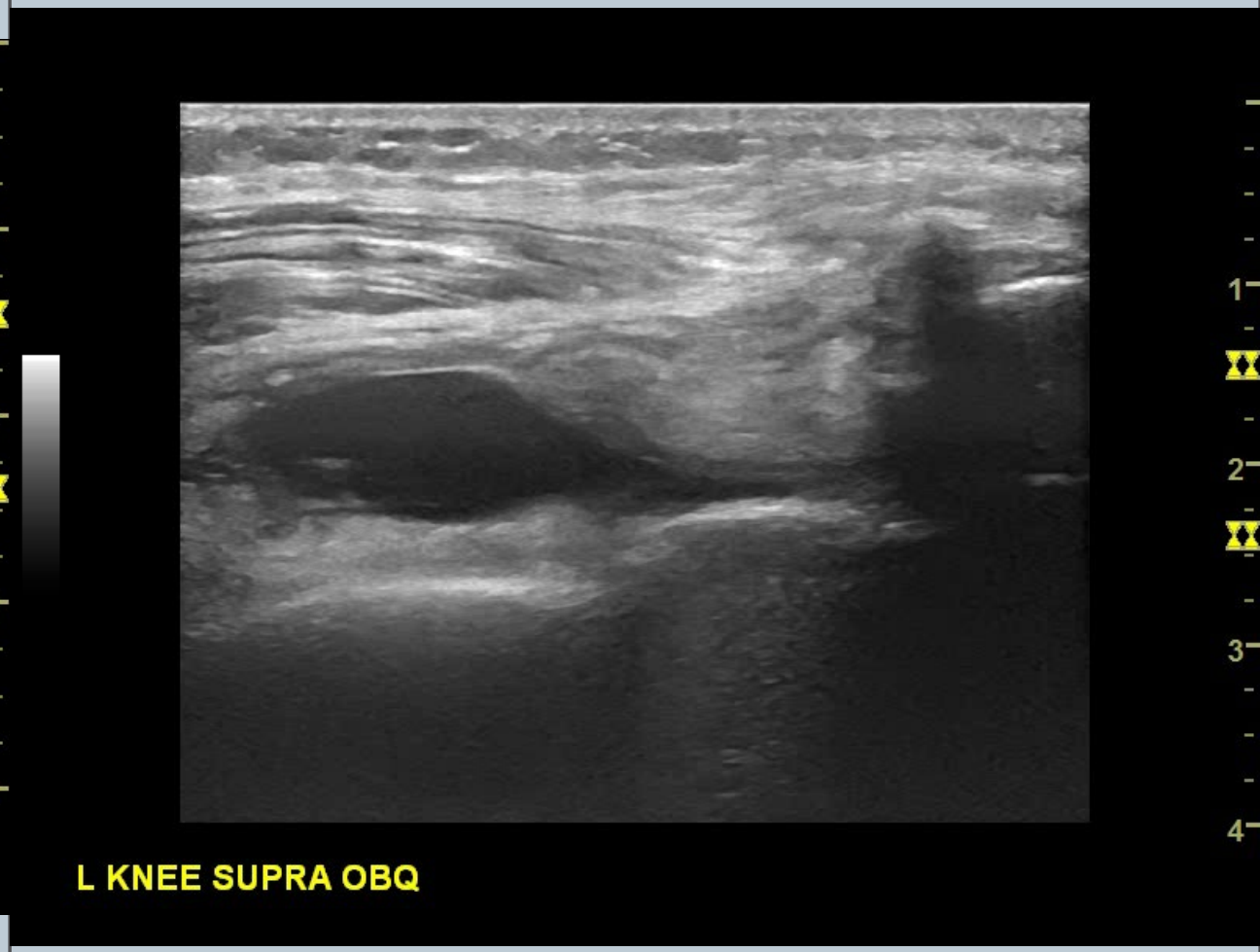


Left SupraPatellar Bursa LAX



Left Knee Lateral Recess SAX





Left SupraPatellar Bursa LAX (oblique)

Results/Treatment Plan

Findings

1. Anechoic simple fluid with positive PD

Treatment

1. Encourage use of NSAID
2. Continue Physical Therapy

Clinical Pearls

1. 6/20 (6 days later): Patient reports that he is doing better than last week. Thinks that he had new onset of swelling 2/2 to discontinuing NSAID for 2 days leading up in swelling. Has since restarted NSAID.

Knee flexion = 116

Knee extension = -3

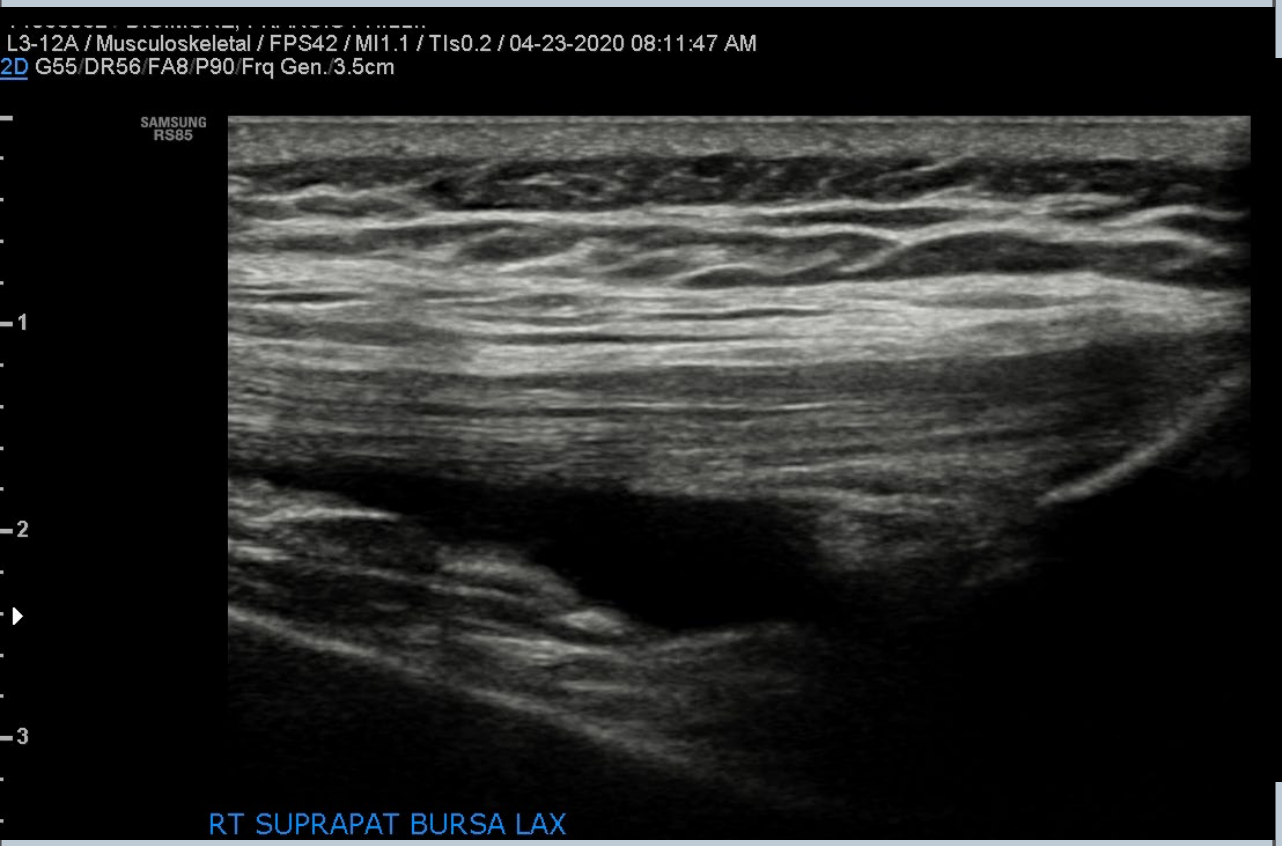
Case 2: 73 y/o male with mild hemophilia A with Right knee pain after loss of balance

Patient History/Subjective

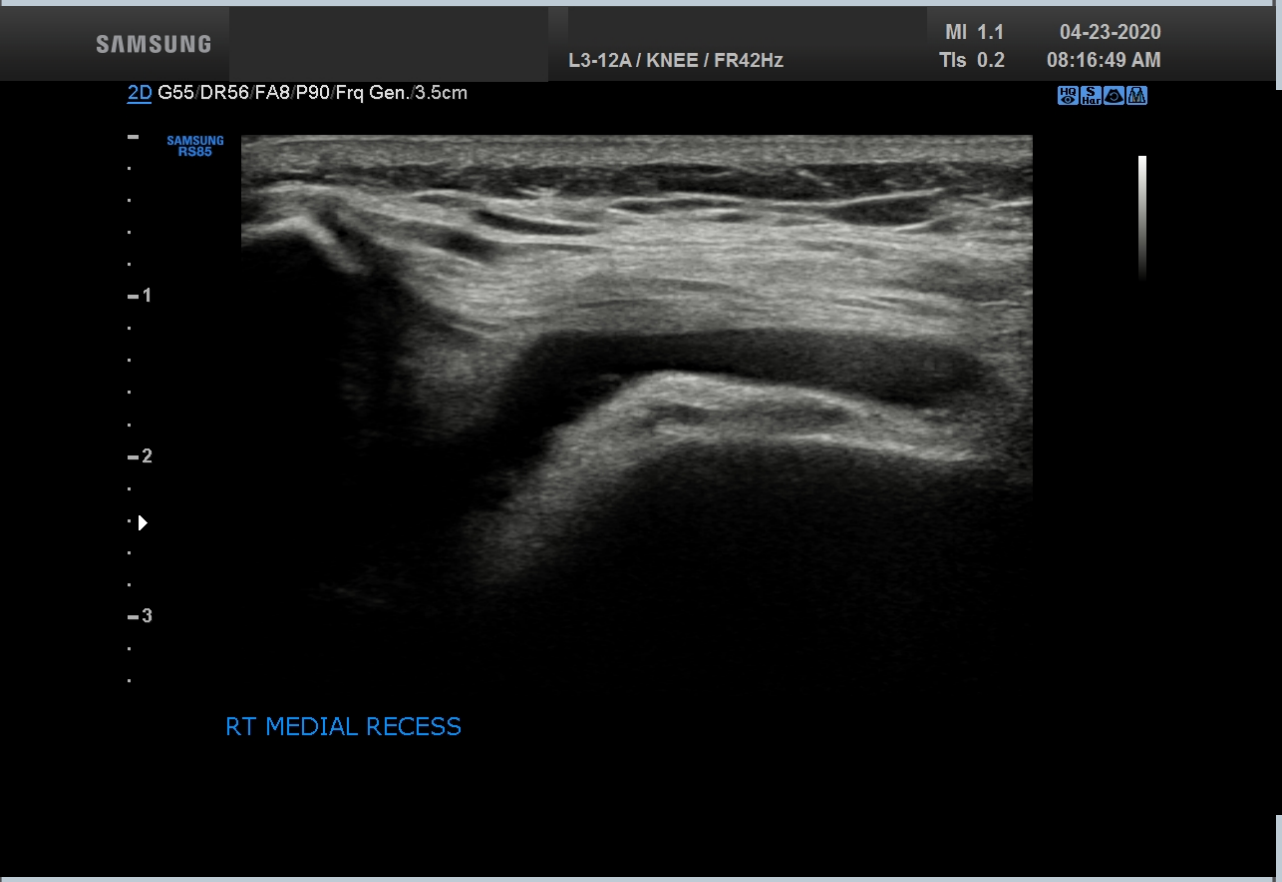
1. Patient reports that he was walking in his garden 2 days ago when he tried to avoid stepping on an object at the last second and “twisted” his knee. Patient lost his balance but was able to catch himself
2. Since the LOB, PRICE has helped a little.
3. Per patient, it feels like a bleed and “gelatinous-like.” Also, feels like it is going to give out
4. Patient is unable to self-infuse

Patient Presentation

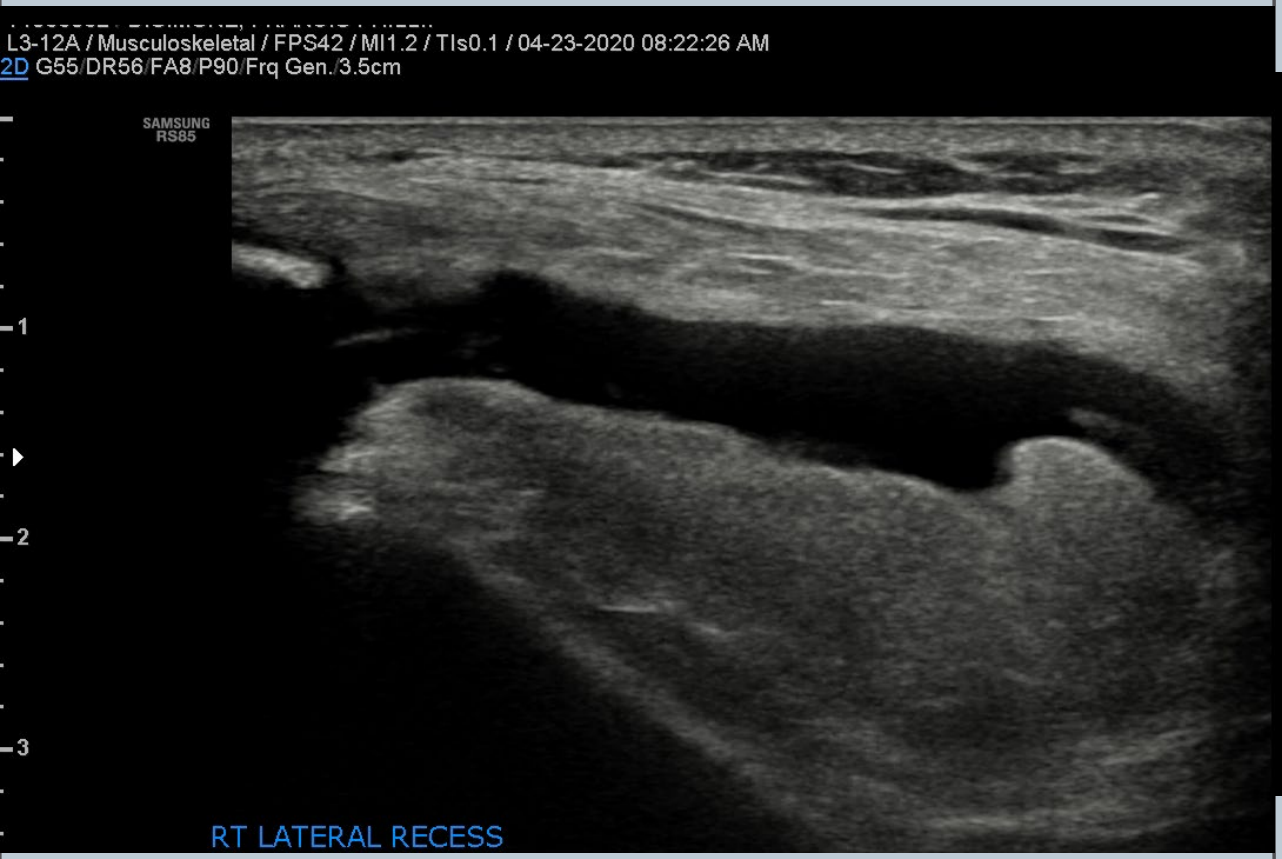
1. ROM: Approximately 25% reduction
2. Swelling: increased warmth and edema noted
3. Gait: Severely antalgic, decreased WB on R
4. Palpation: Generalized tenderness surrounding knee



Right SupraPatellar Bursa LAX



Right Knee Medial Recess SAX



Right Knee Lateral Recess SAX

Results/Treatment Plan

Findings

1. Suprapatellar Bursa LAX: **Anechoic simple fluid and soft tissue proliferation**
2. Medial Recess SAX: **Hypoechoic complex fluid, soft tissue proliferation and irregular bony margin**
3. Lateral Recess SAX: **Anechoic simple fluid, soft tissue proliferation and irregular bony margin**

Treatment

1. Aspiration
2. Physical Therapy

Clinical Pearls

1. Don’t be afraid to compress
2. Confirmation bias

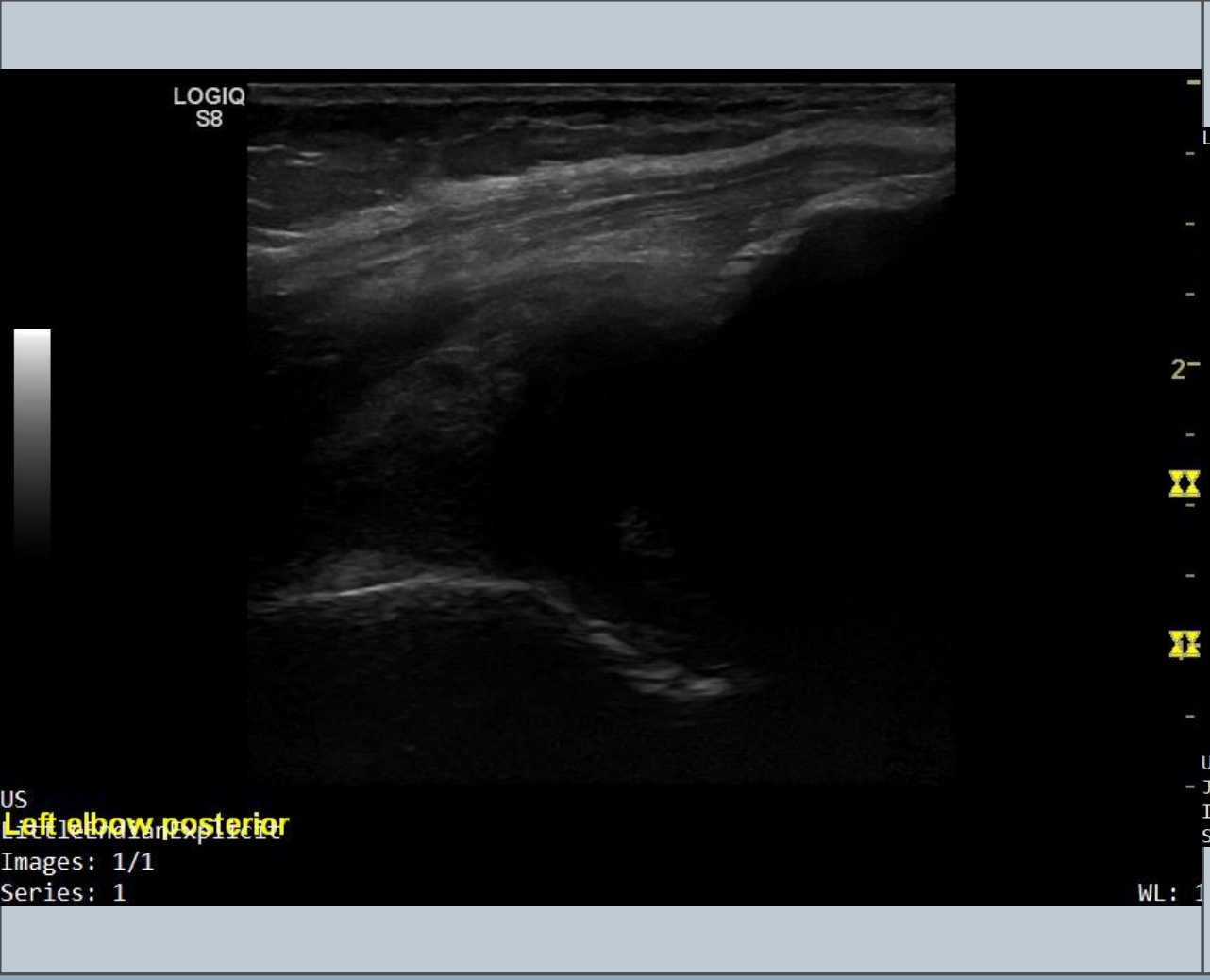
Case 3: 38 y/o male with moderate hemophilia A with Left elbow swelling and loss of ROM

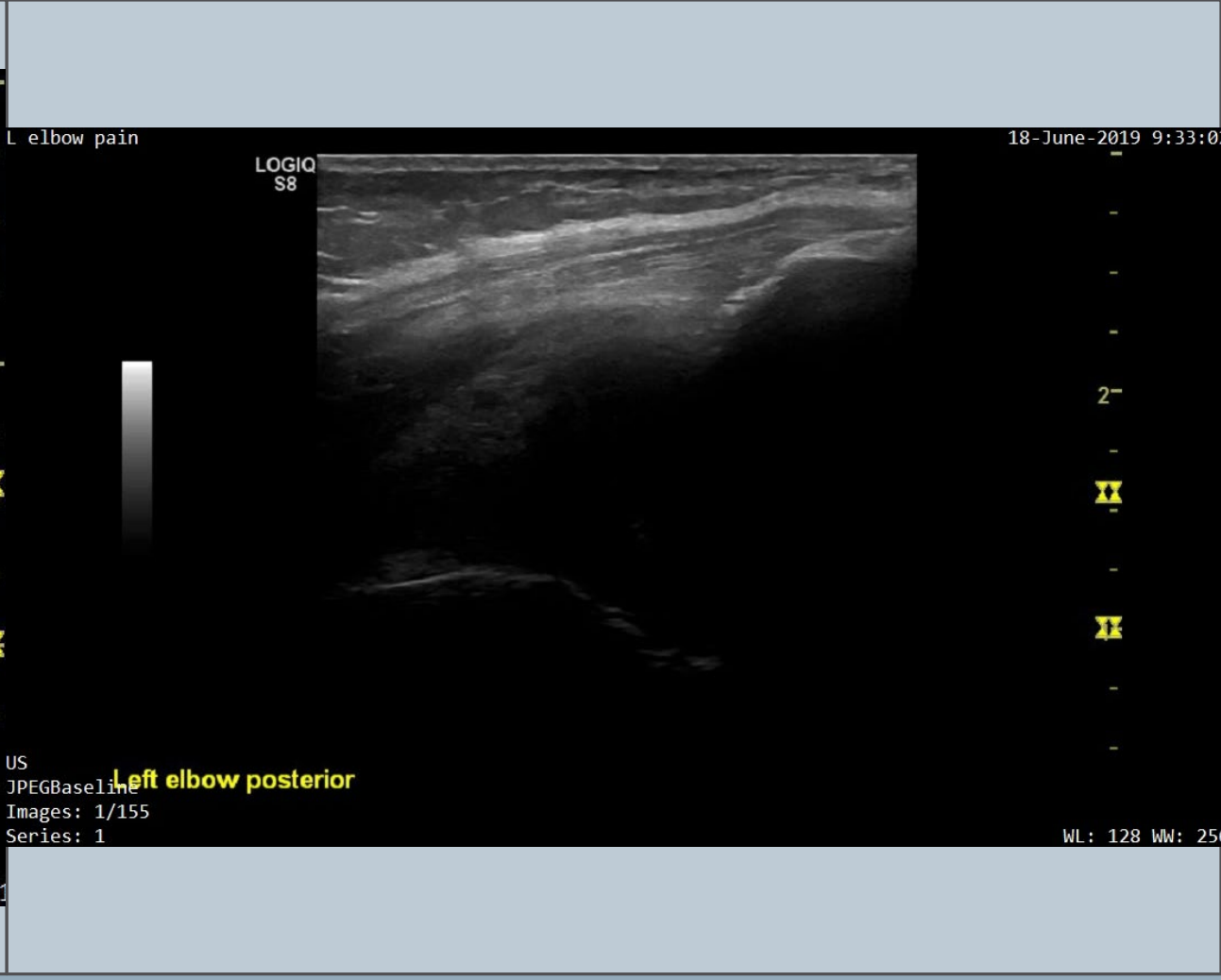
Patient History/Subjective

1. New patient at HTC, had been infusing PRN
2. Reports increased swelling/reduced ROM but there has not been any change in activity. Did not infuse
3. Weight lifts 3-4 days/week, works as a Physical Therapy Assistant
4. Patient reports that it did not feel like a bleed
5. Per patient, has bled into his L elbow at least 7 times per year

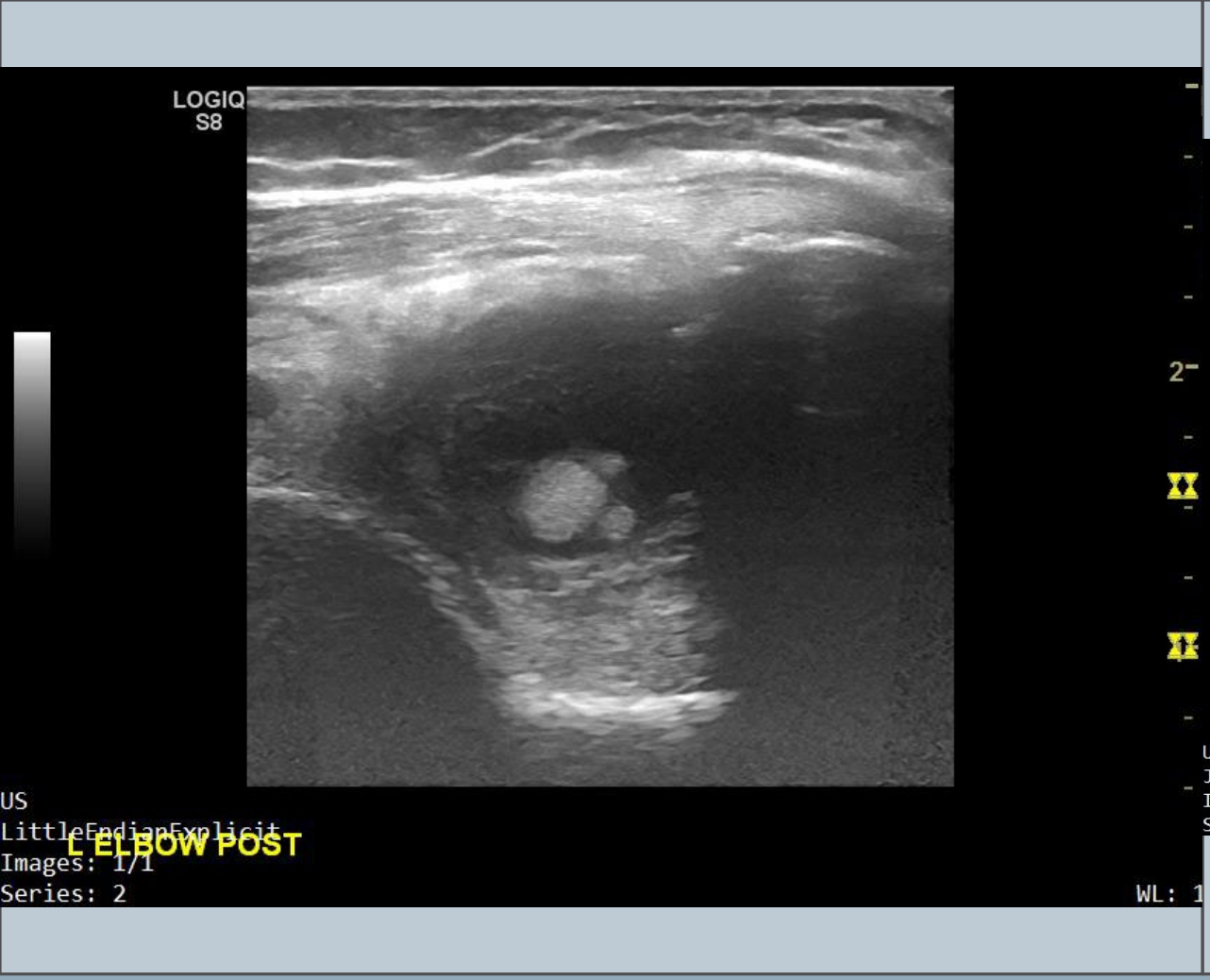
Patient Presentation

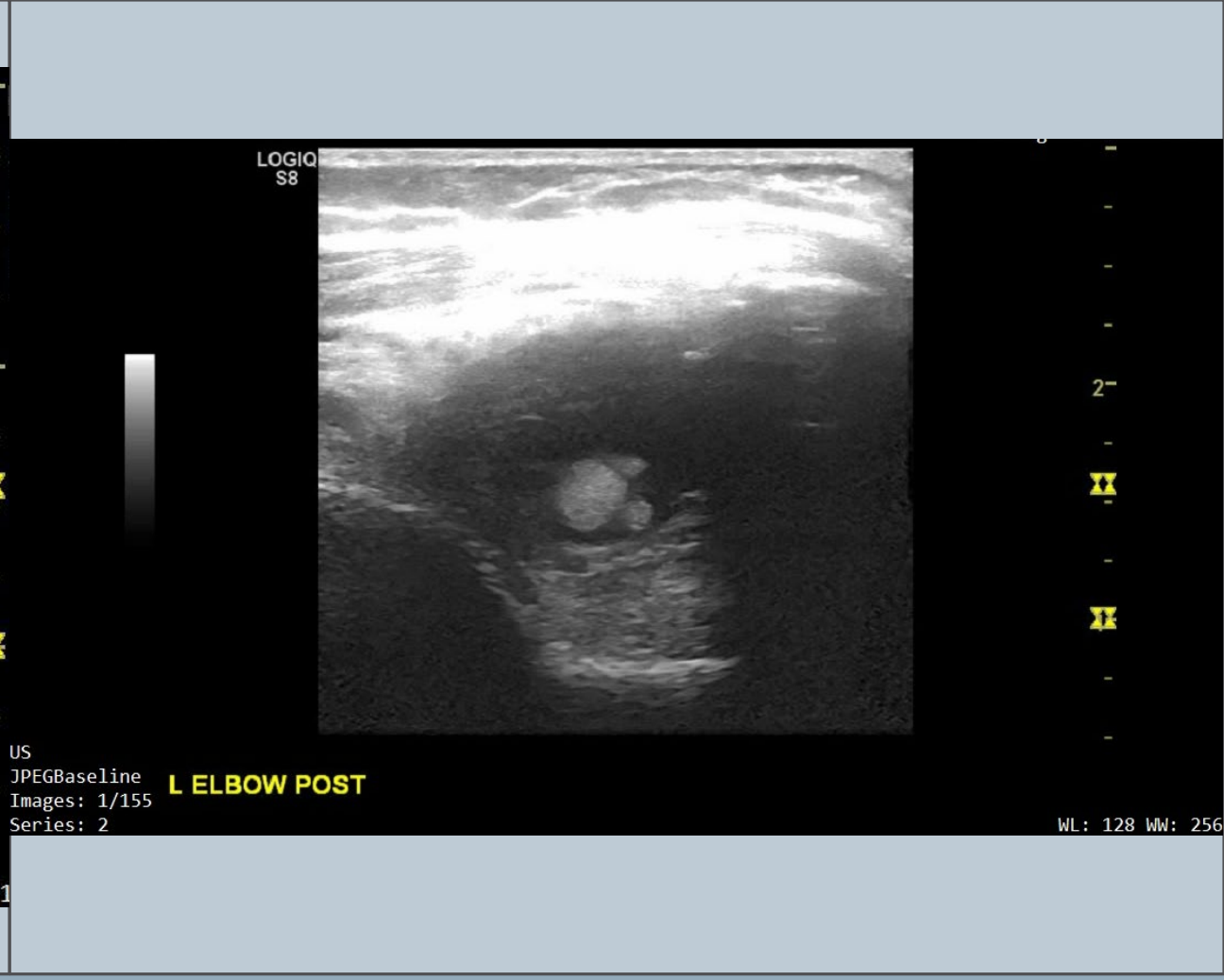
1. Swelling: Increased swelling without presence of warmth in the L elbow
2. Palpation: Mild TTP to lateral epicondyle, edema 1+ around posterior elbow
3. Pain: 4/10 at rest





Left Posterior Elbow LAX





Left Posterior Elbow LAX

2 Months Later

Results/Treatment Plan

Findings

1. Posterior Elbow LAX: **Anechoic simple fluid, displacement of fat pad, tendon abnormality and hyperechoic soft tissue fronds noted in the olecranon fossa**

Treatment

1. Prophylaxis 2x/week
2. Elastic adhesive taping
3. Patient education

Clinical Pearls

1. Baseline images
2. Image Optimization

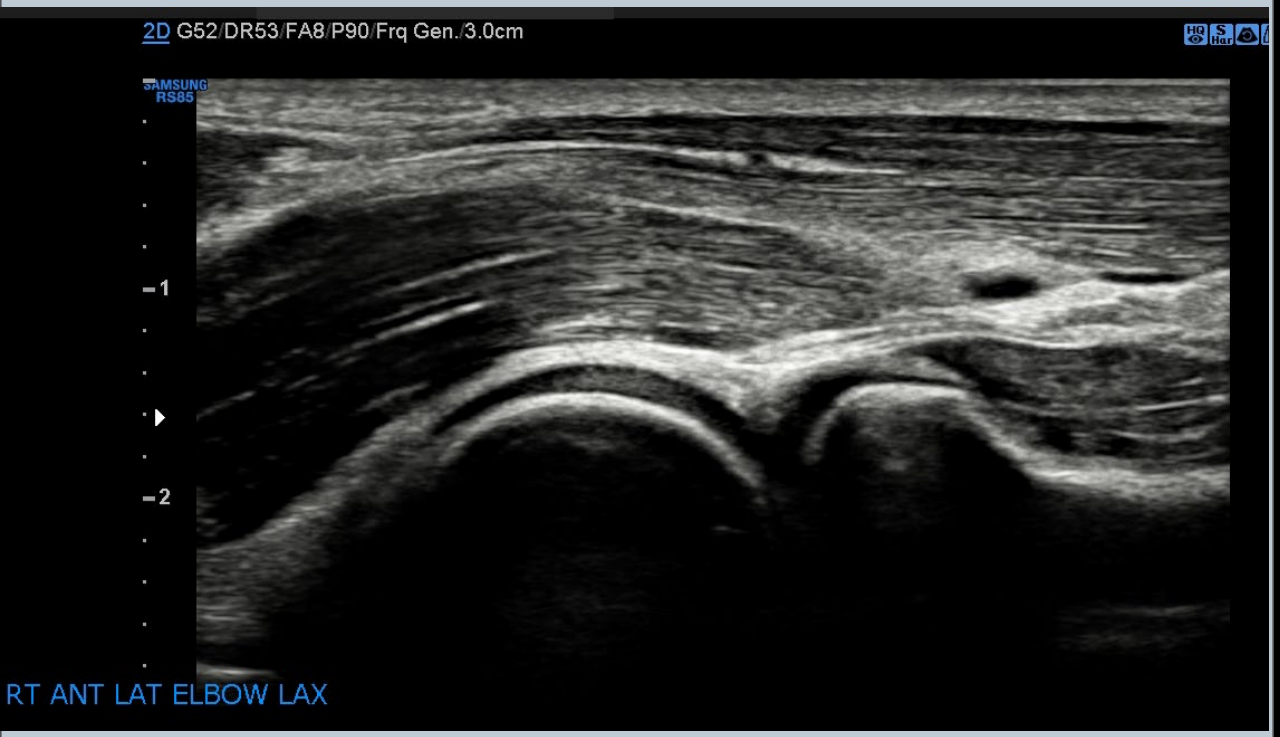
Case #4: 59 y/o male with severe hemophilia B with Left elbow arthropathy

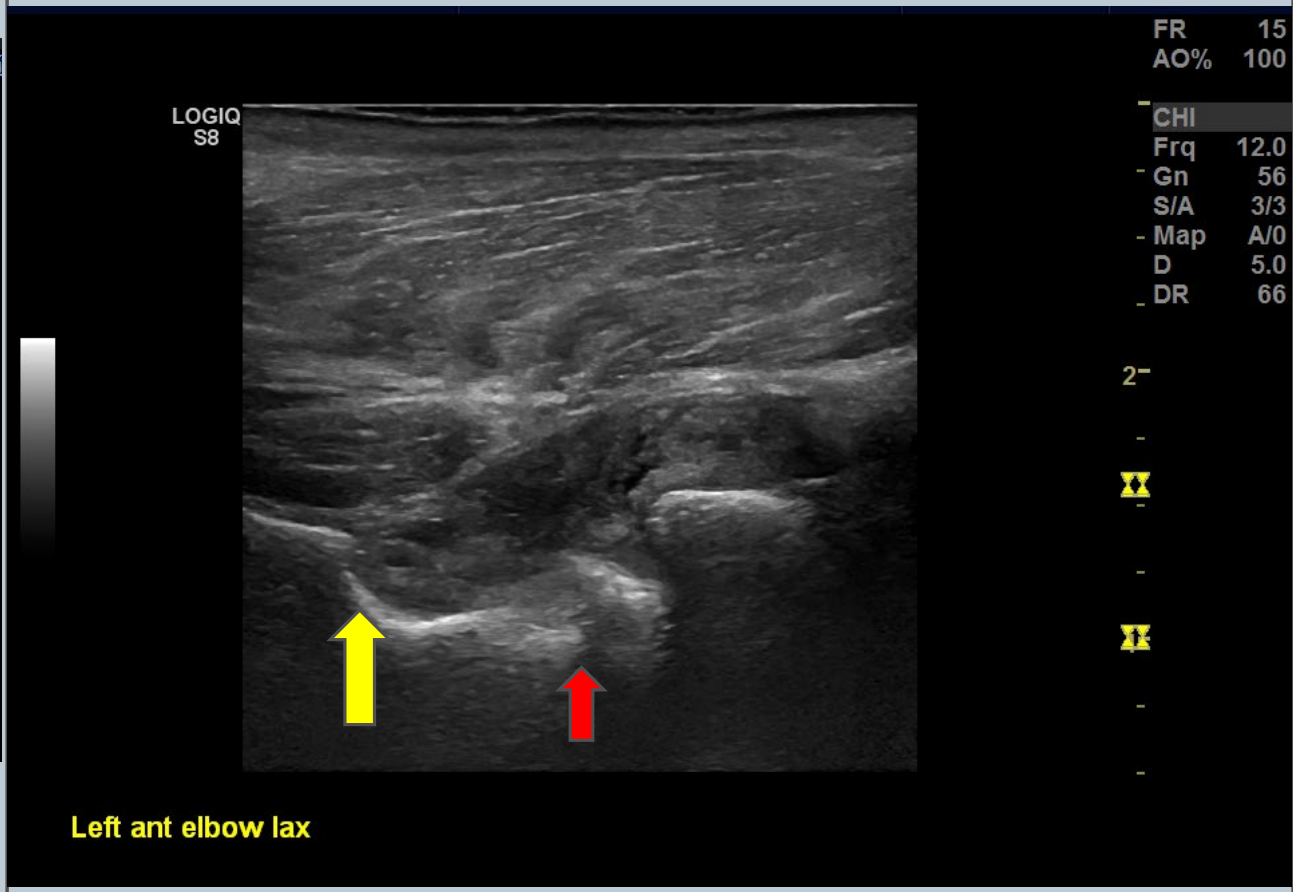
Patient History/Subjective

1. Patient at the clinic for a repeat baseline MSKUS
2. Left elbow considered one of the patient's "target joints"

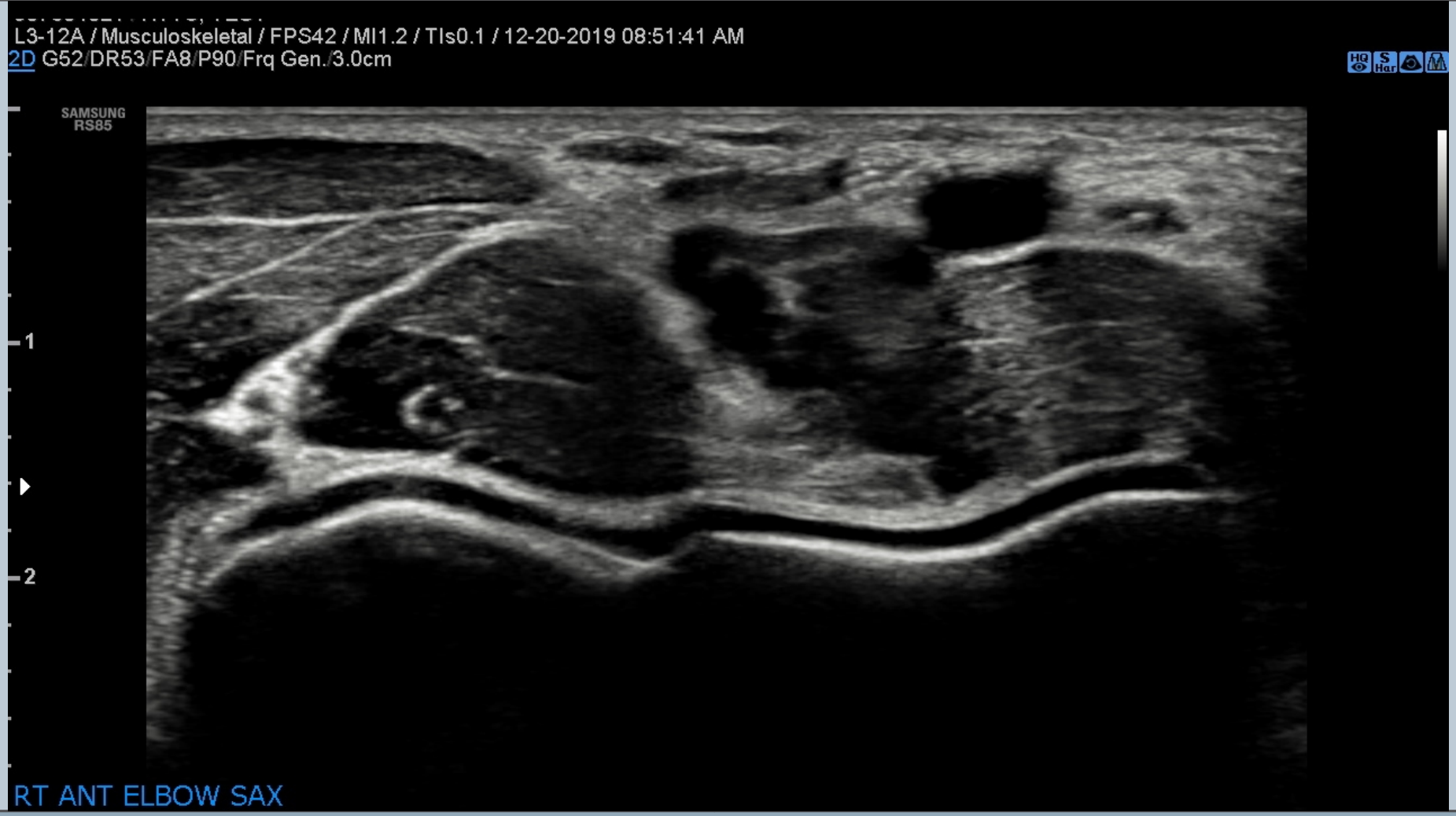
Patient Presentation

1. ROM:
    1. Elbow flexion = 102
    2. Extension = -24
    3. Supination = 51
    4. Pronation = 78

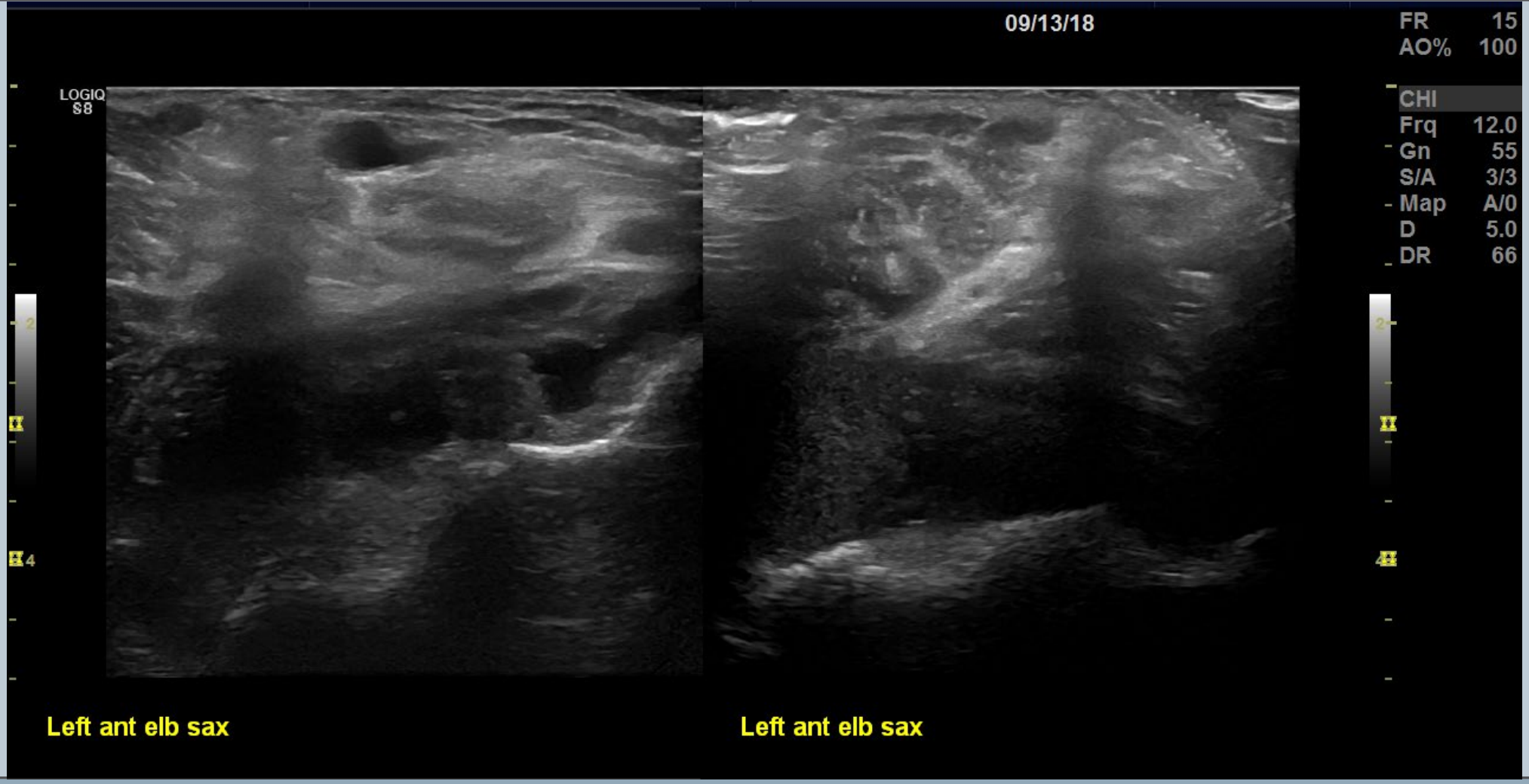




Anterior-Lateral Elbow LAX



Left Anterior Elbow SAX



Left Anterior Elbow SAX

Results/Treatment Plan

Clinical Pearls

1. Don’t be afraid to compress (“Heel-Toe” or “Rocking”)
2. Work within the patient’s ROM
3. Use Real-Time imaging to find Joint line or appropriate acoustic window

https://www.youtube.com/watch?v=RskrEsAGzec&t=3s

Case Vignettes and Clinical Pearls

Tibio-talar imaging complexities

NAVIGATING SEVERE OSSEOUS IRREGULARITIES IN A 65 YEAR OLD MALE WITH MODERATE TYPE A HEMOPHILIA

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Washington Center for Bleeding Disorders, Seattle, WA
Physical Therapy and MSKUS Program Manager
Instructor, UCSD: MSKUS in Hemophilia
Clinical Instructor: UW Department of Rehabilitation Medicine

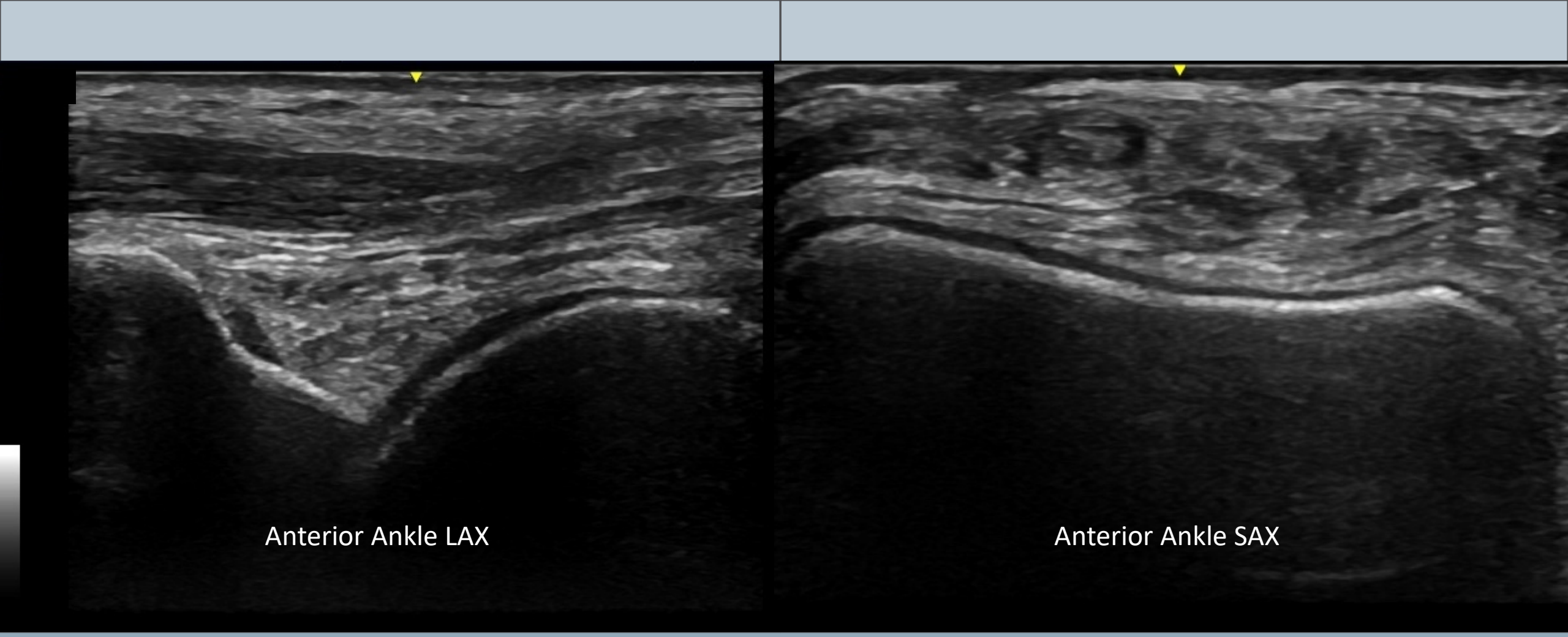
65 y/o male with moderate hemophilia A with L ankle pain

Patient History/Subjective

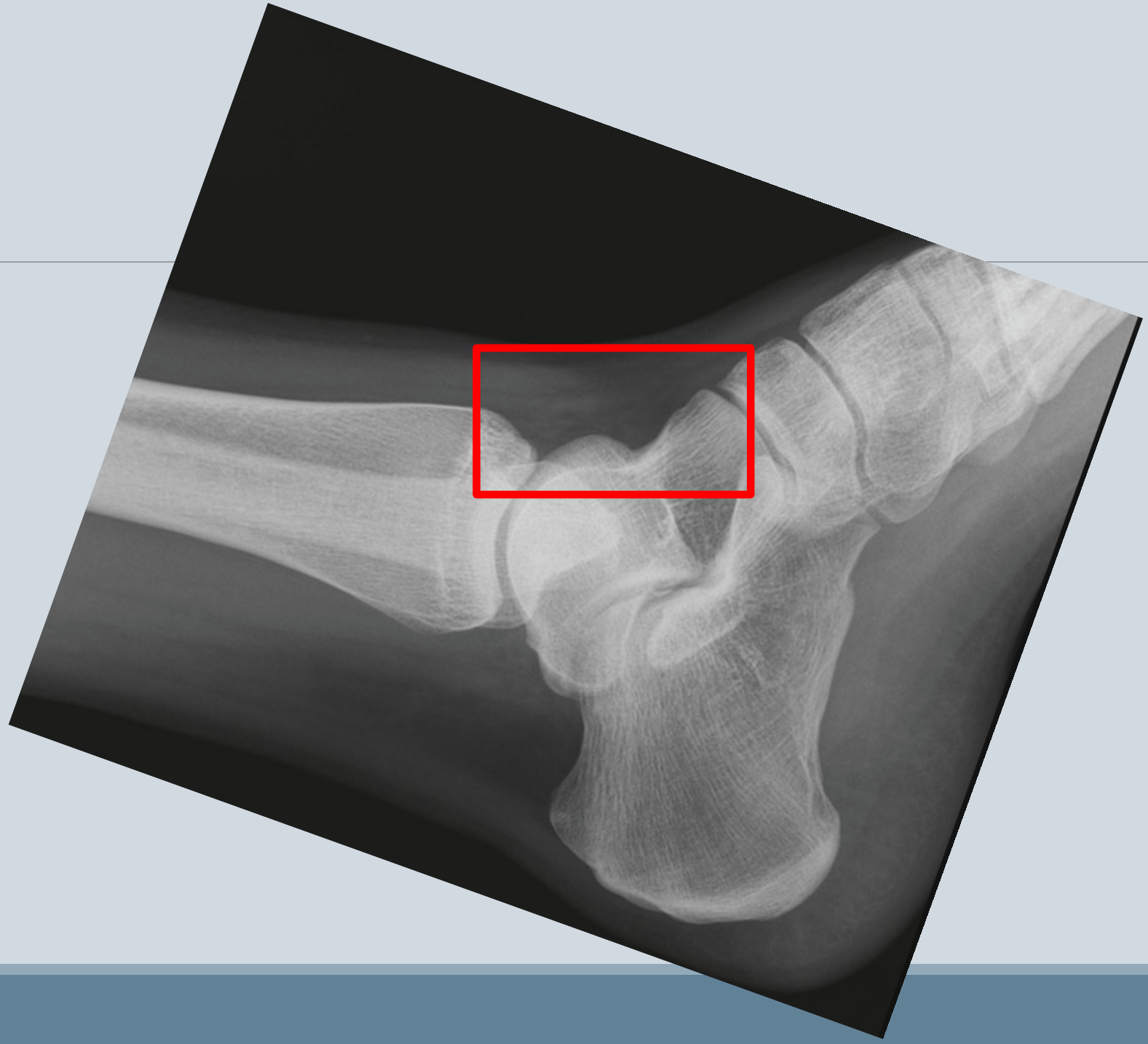
1. Advanced bilateral ankle hemarthropathy
2. Painful catching of left ankle along anterior joint line
3. Chronic complaint of stiffness and ache
4. Doesn’t necessarily feel he’s suffering hemarthrosis but unsure
5. Interferes with prolonged ambulation
6. Very stiff when he begins motion

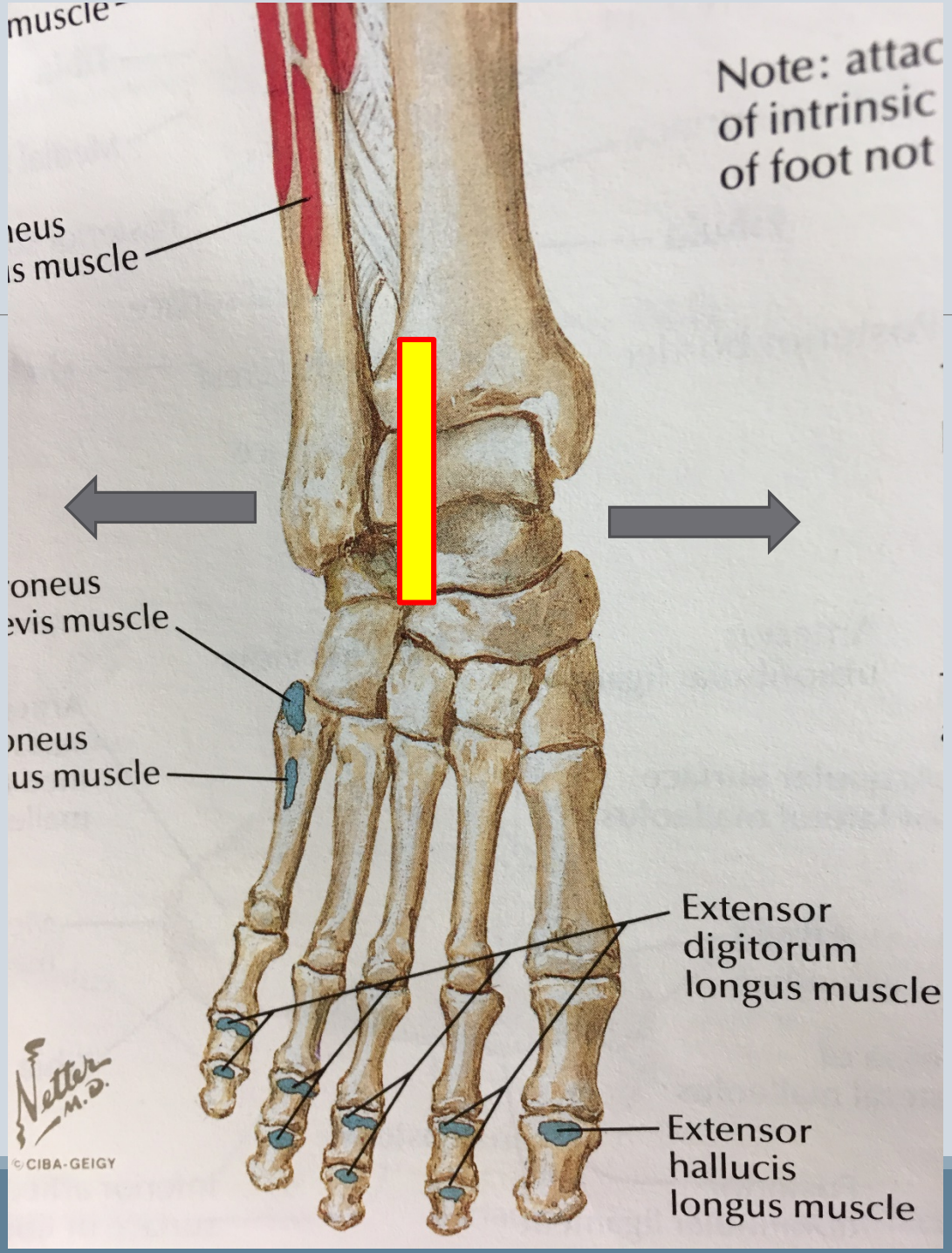
Patient Presentation

1. ROM Left ankle: Dorsiflexion 0; plantarflexion 20 (worse than right)
2. Swelling: moderate but diffuse and obscures bony landmarks
3. Gait: compensated and swing phase is affected by lack of dorsiflexion
4. Palpation: TTP to anterior talo-tibial joint line
5. Special tests: manual distraction provides relief
6. Strength: impaired by pain and marked ROM deficit



Anterior Ankle Views in LAX and SAX

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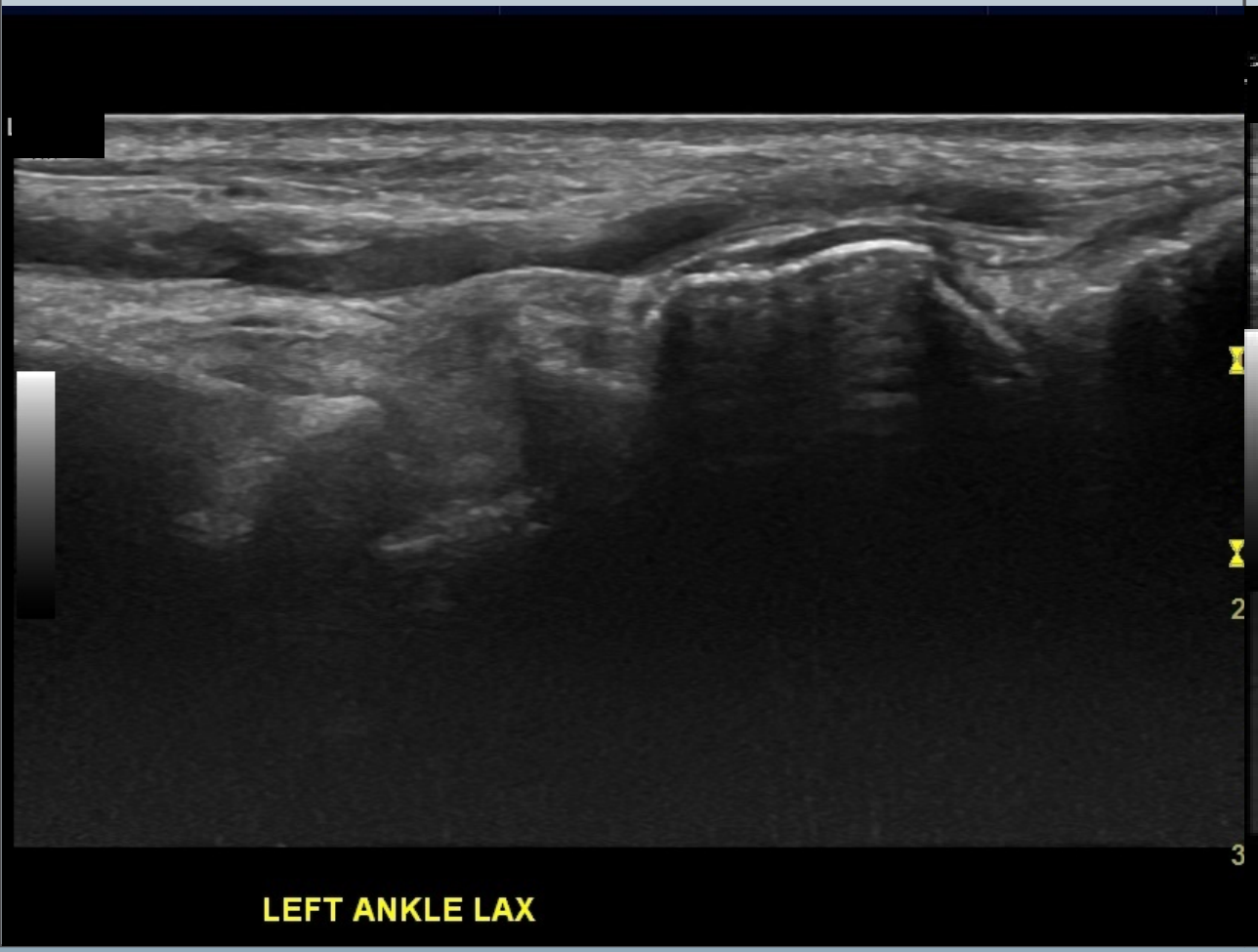
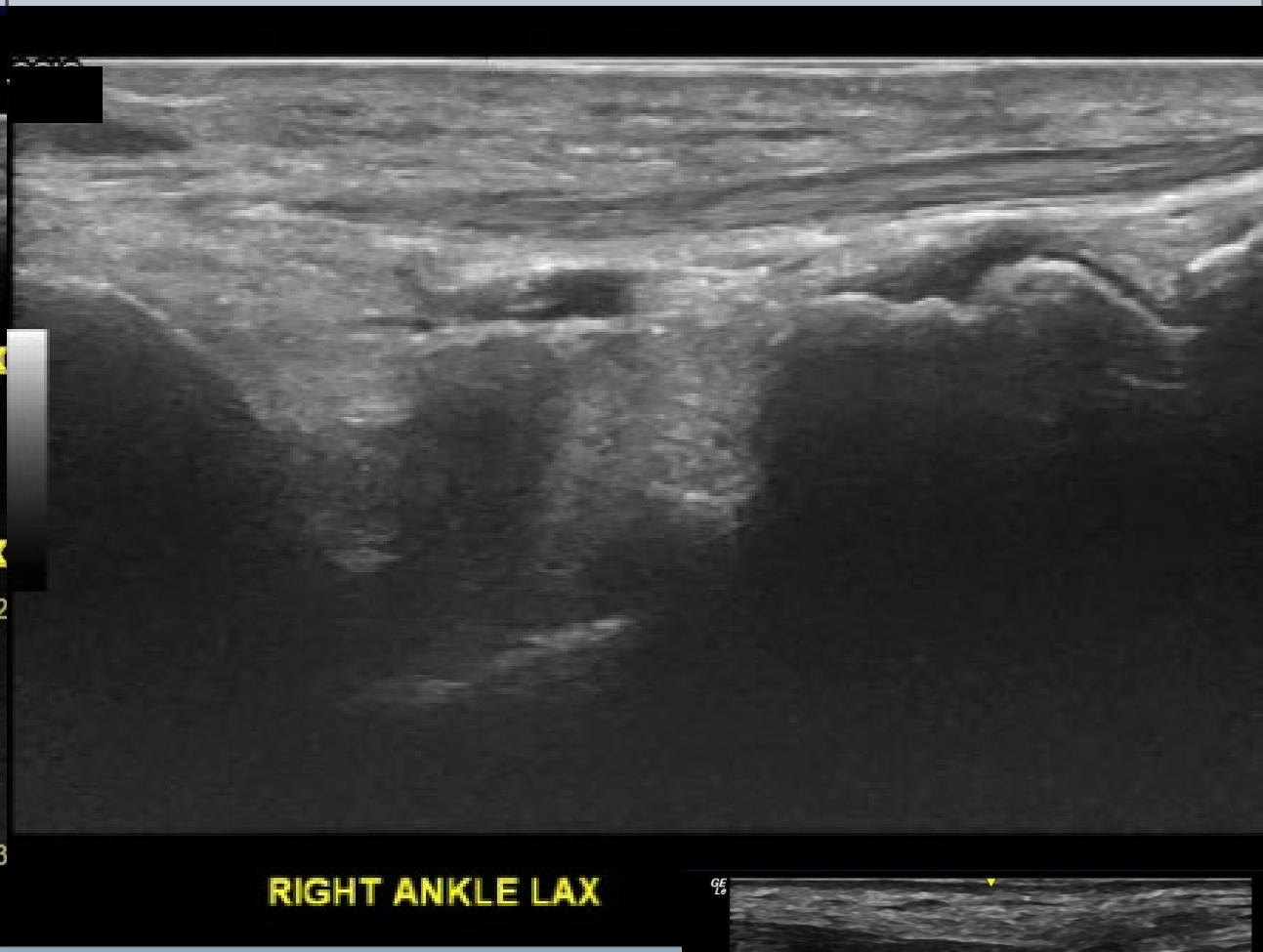
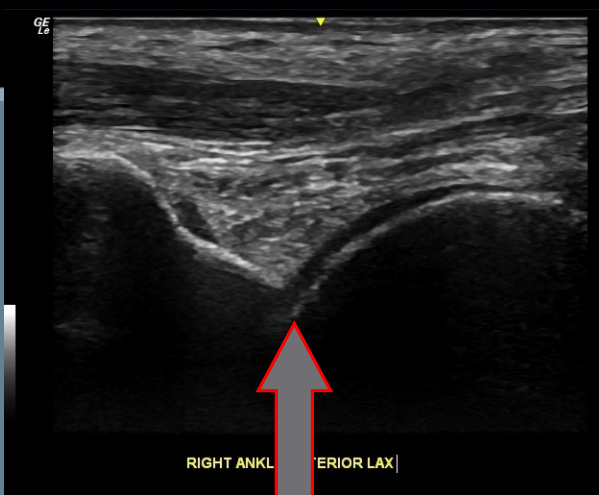
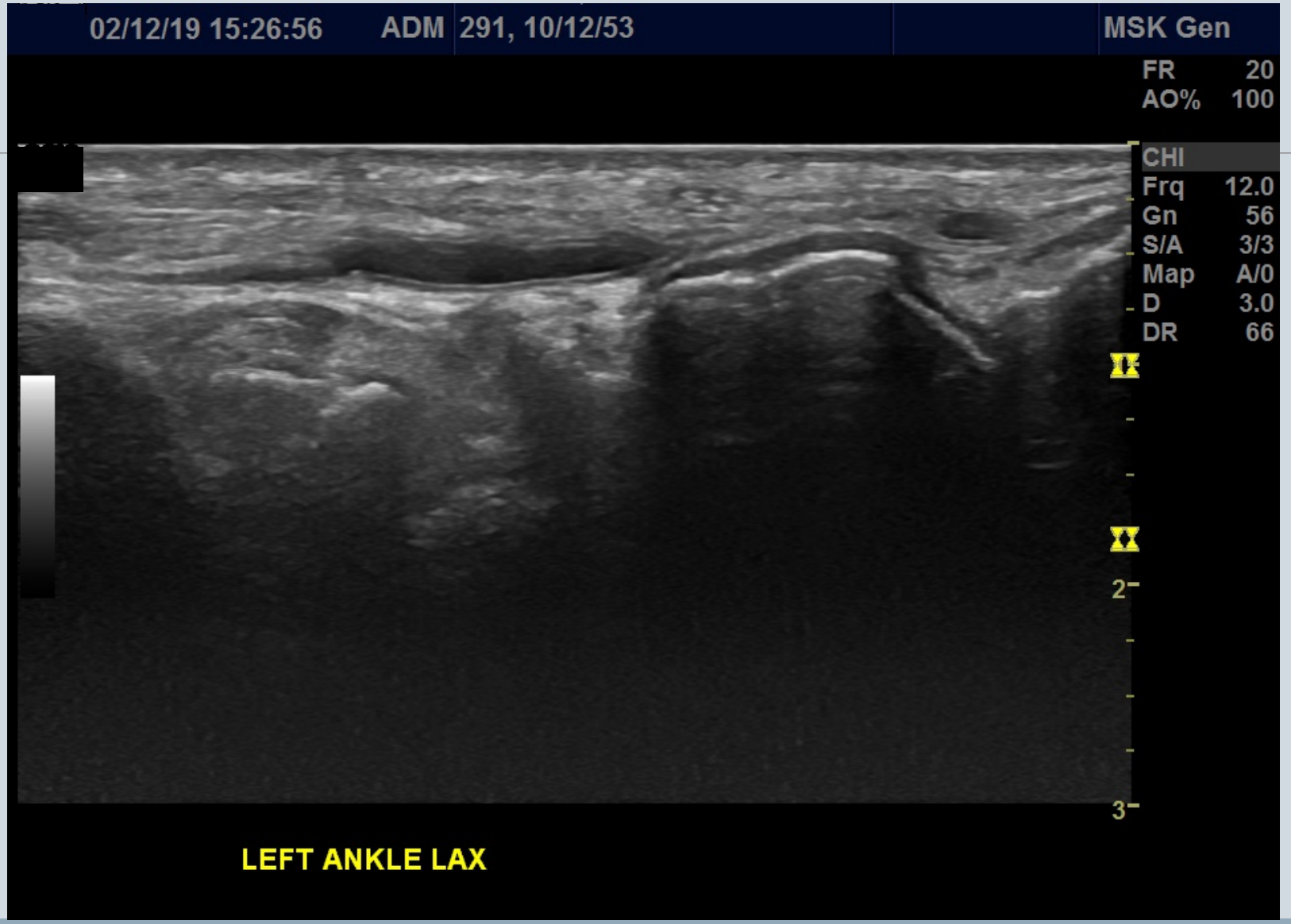




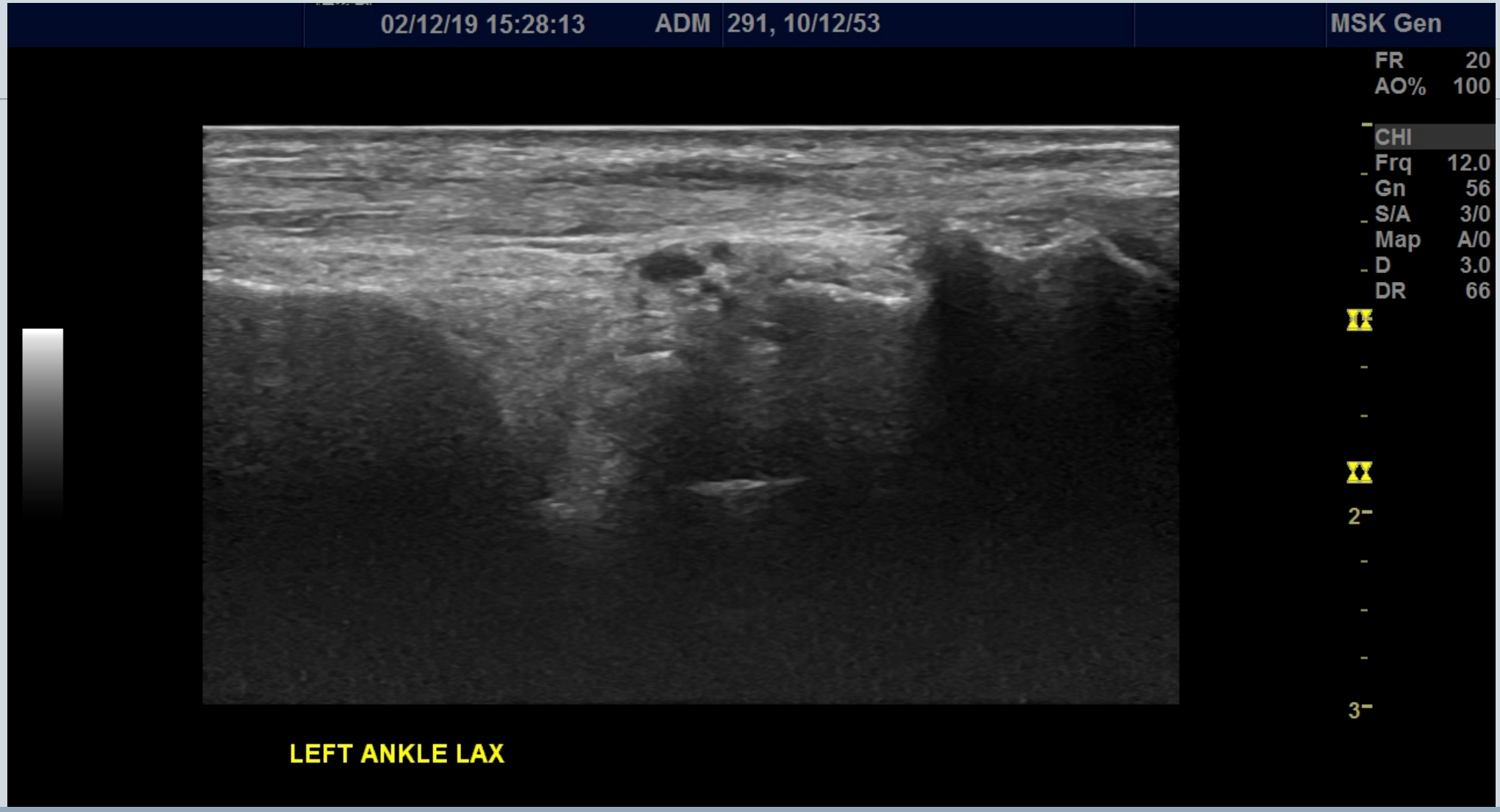
Bilateral Anterior Ankle LAX



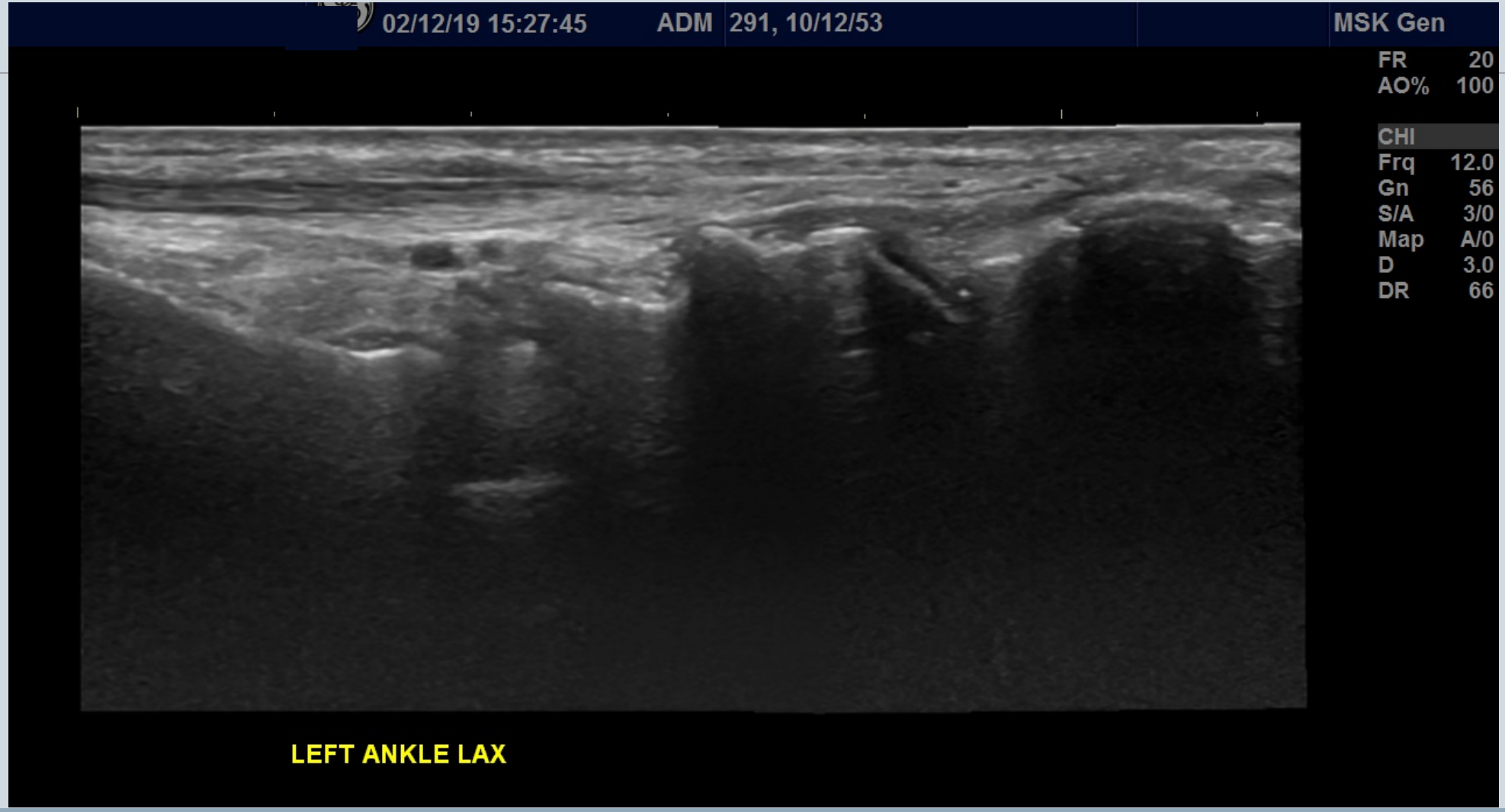
Anterior Ankle LAX



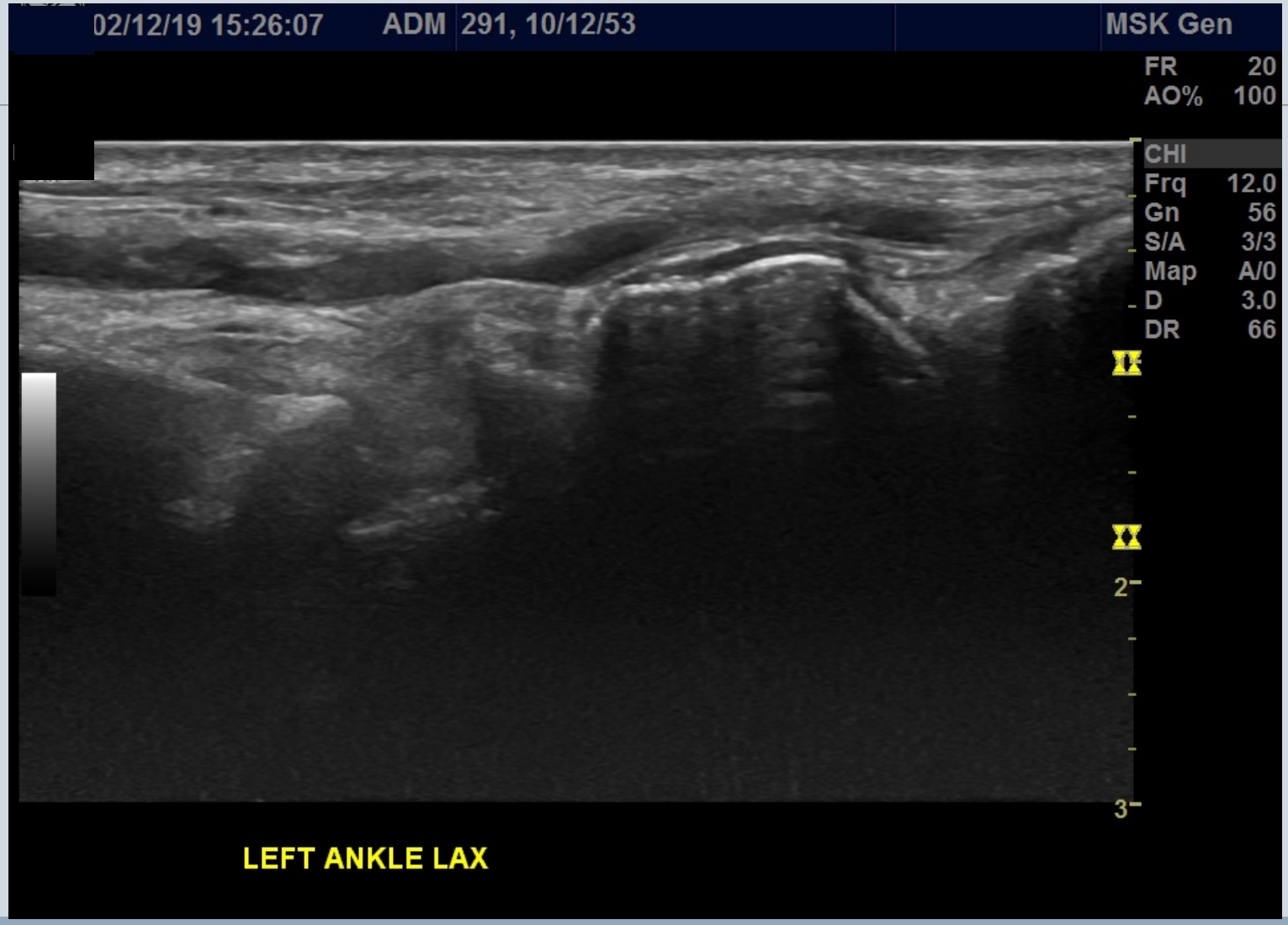
Where's the Ankle joint line/recess?



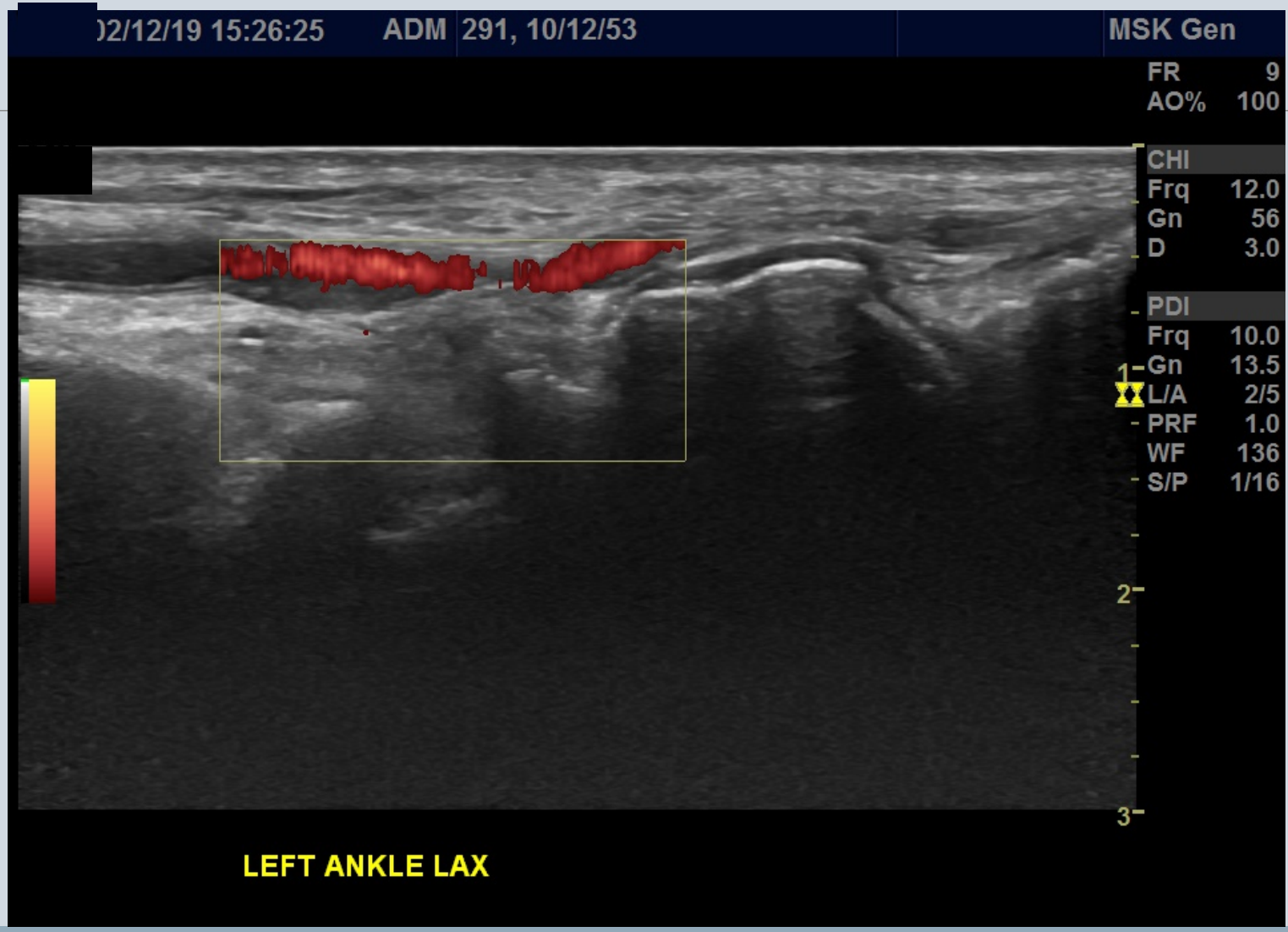
Panorama view Anterior Ankle LAX



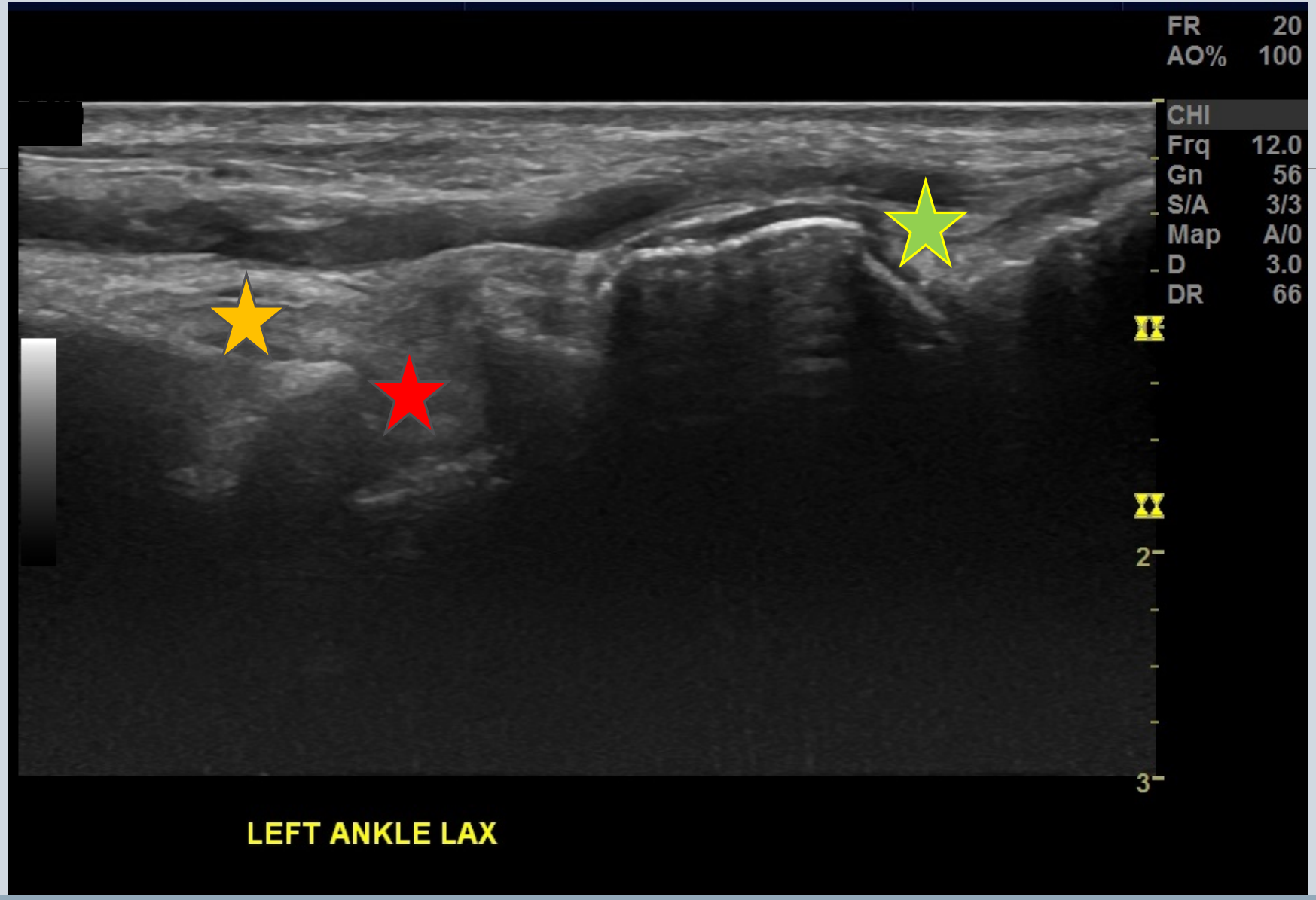
Panorama of Anterior Left Ankle LAX



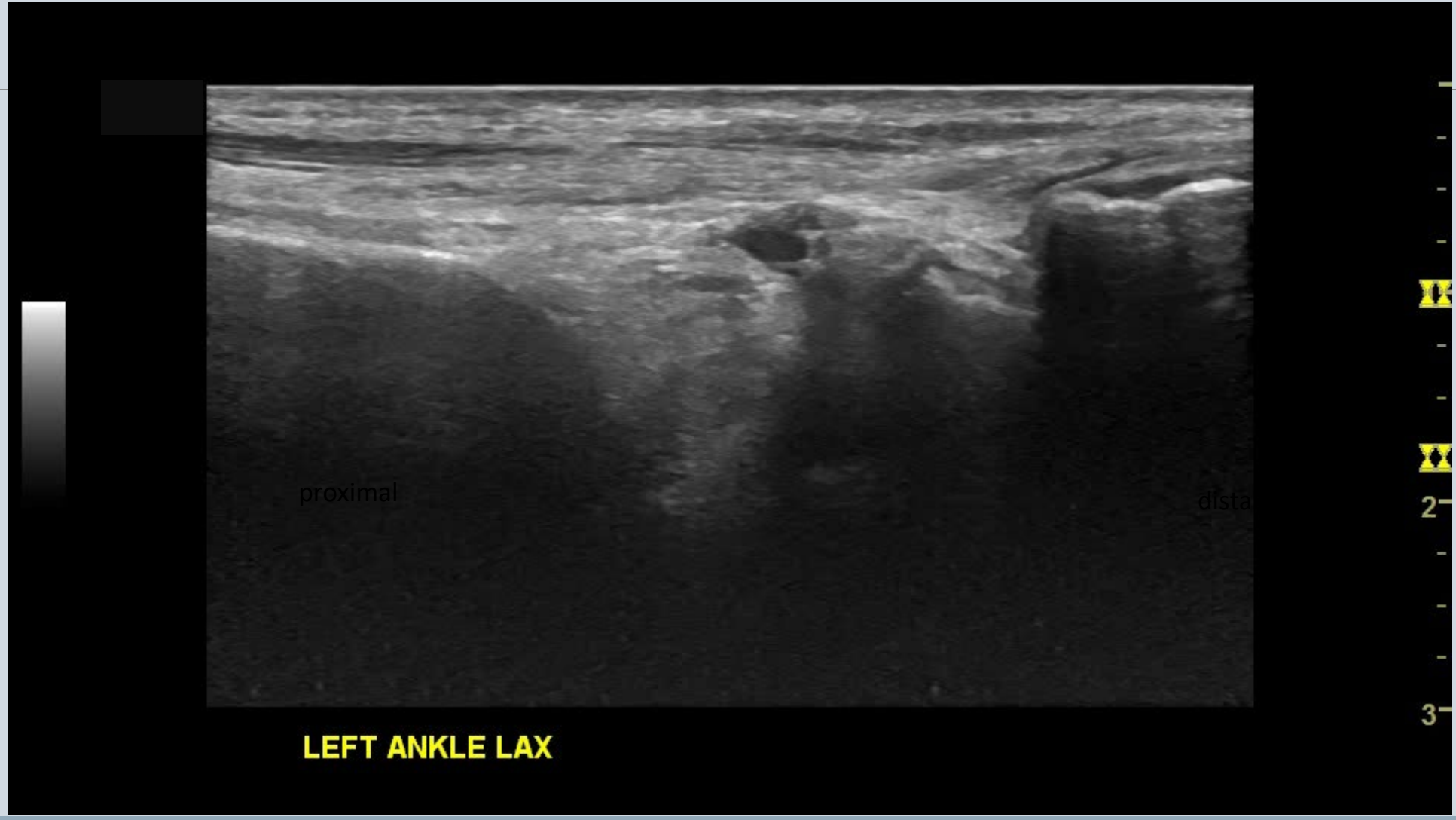
Panorama of Anterior Left Ankle LAX



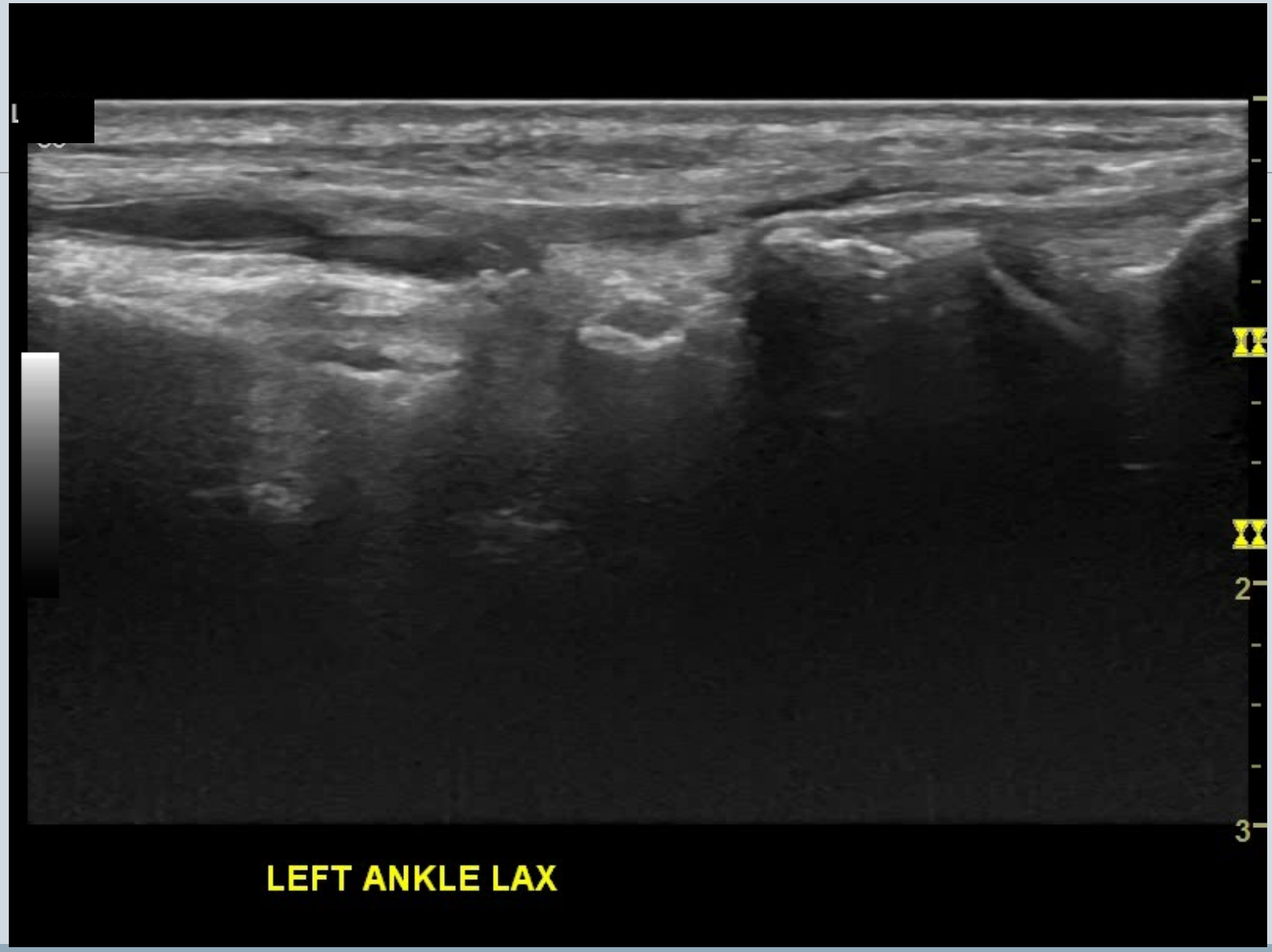
Anterior Ankle LAX Panorama



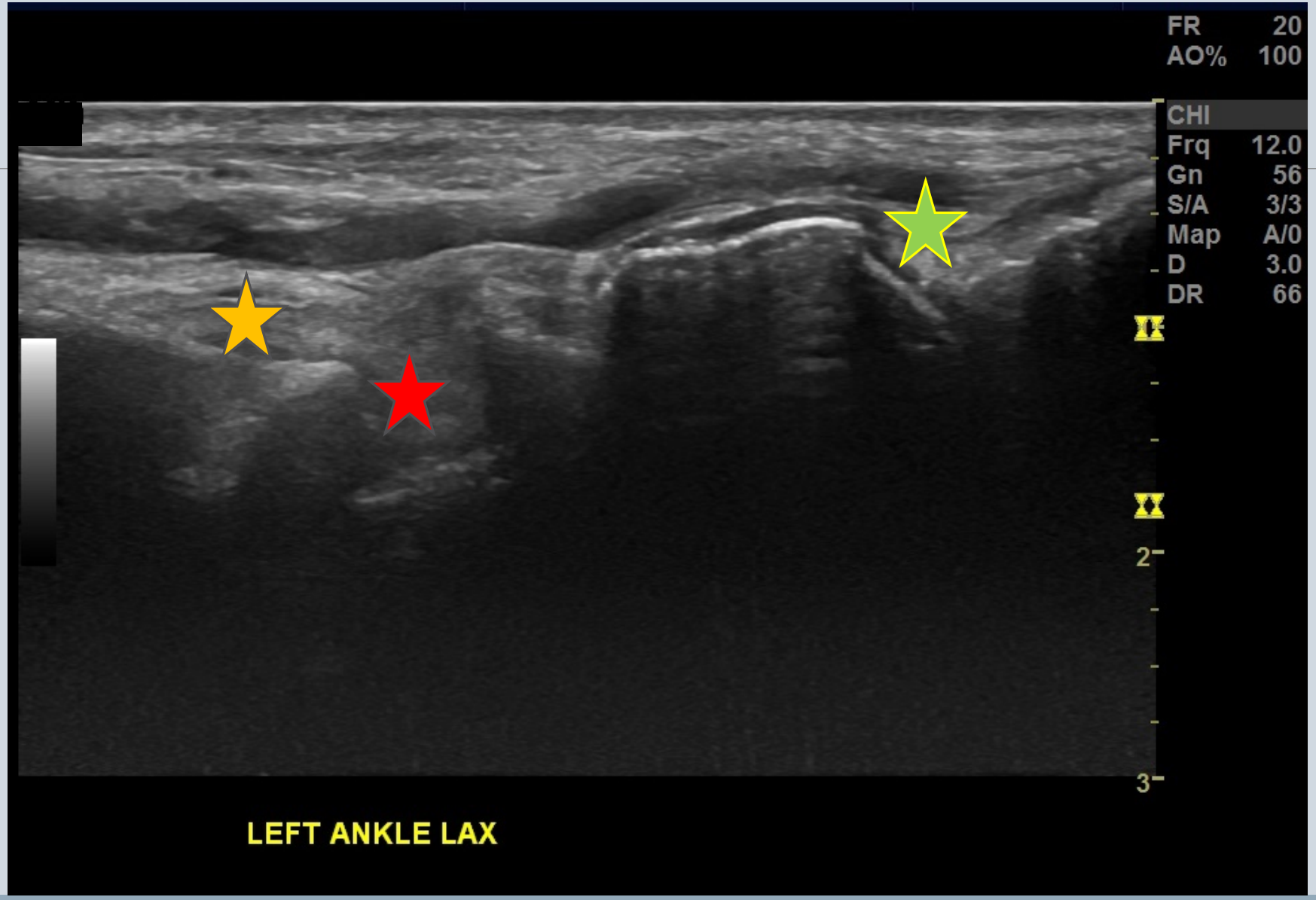
Introduce Dorsi/Plantarflexion to differentiate



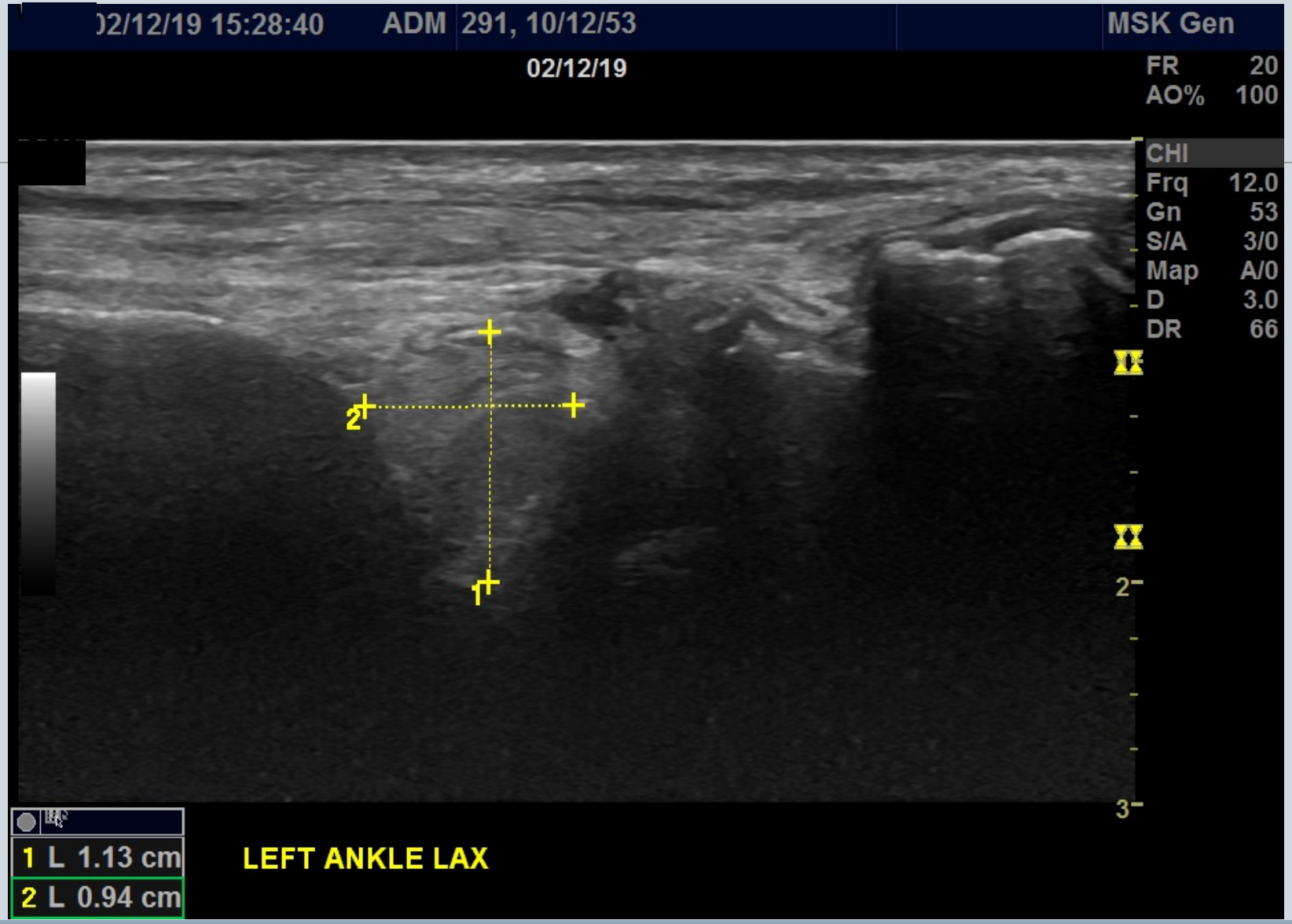
Active Dorsiflexion



Anterior Ankle LAX Panorama



Distal Tibial Erosion



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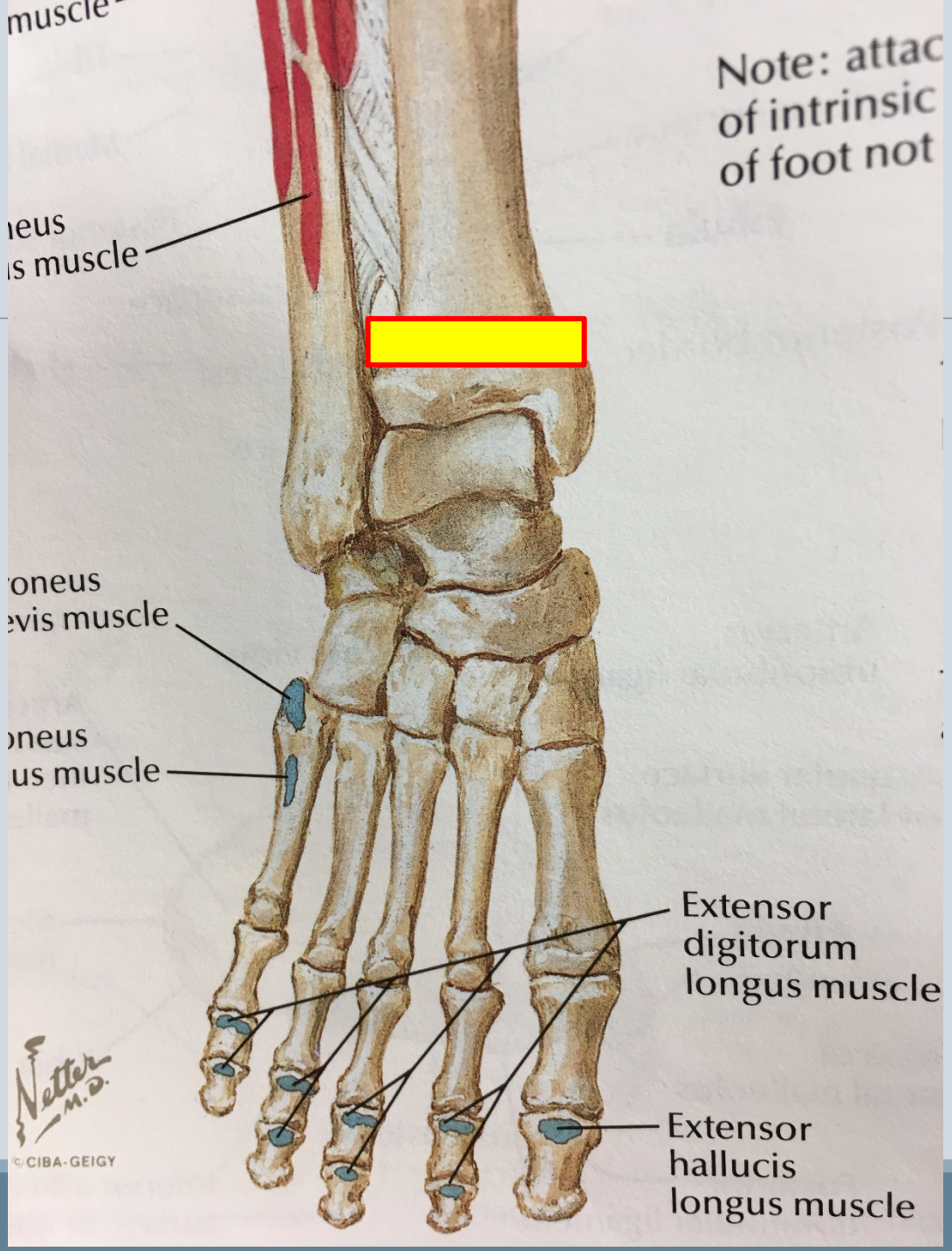
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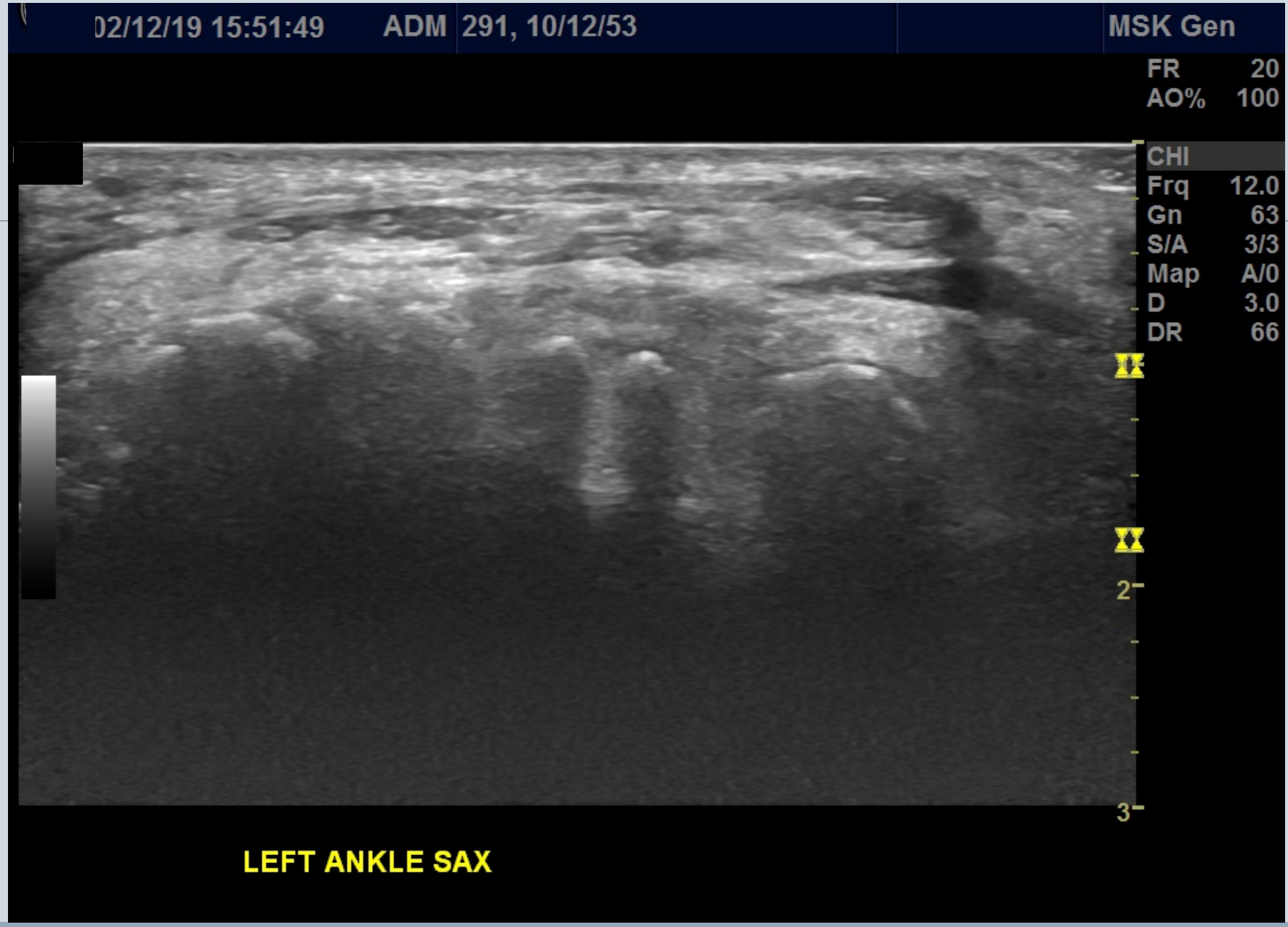
Distal Tibia SAX



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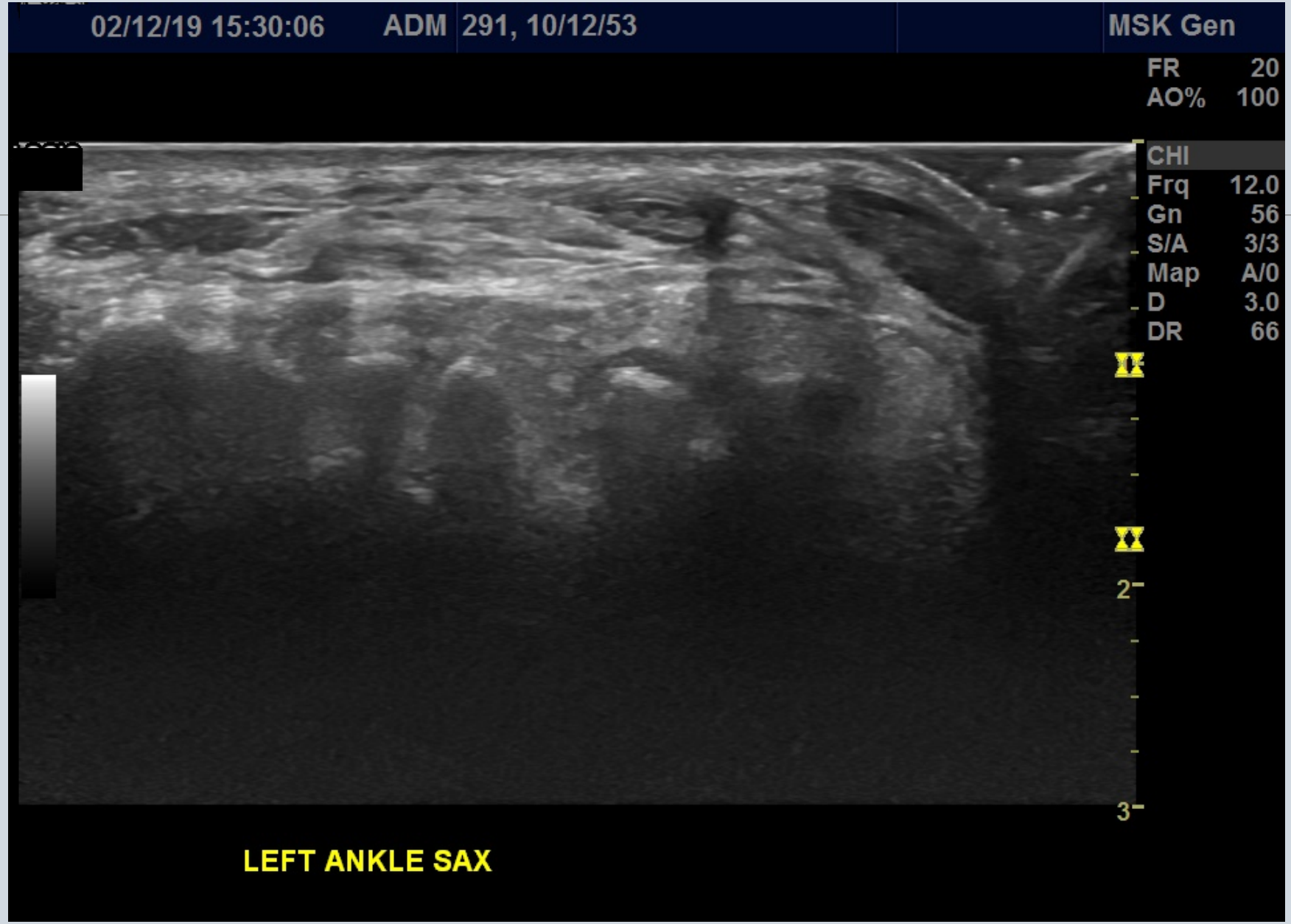

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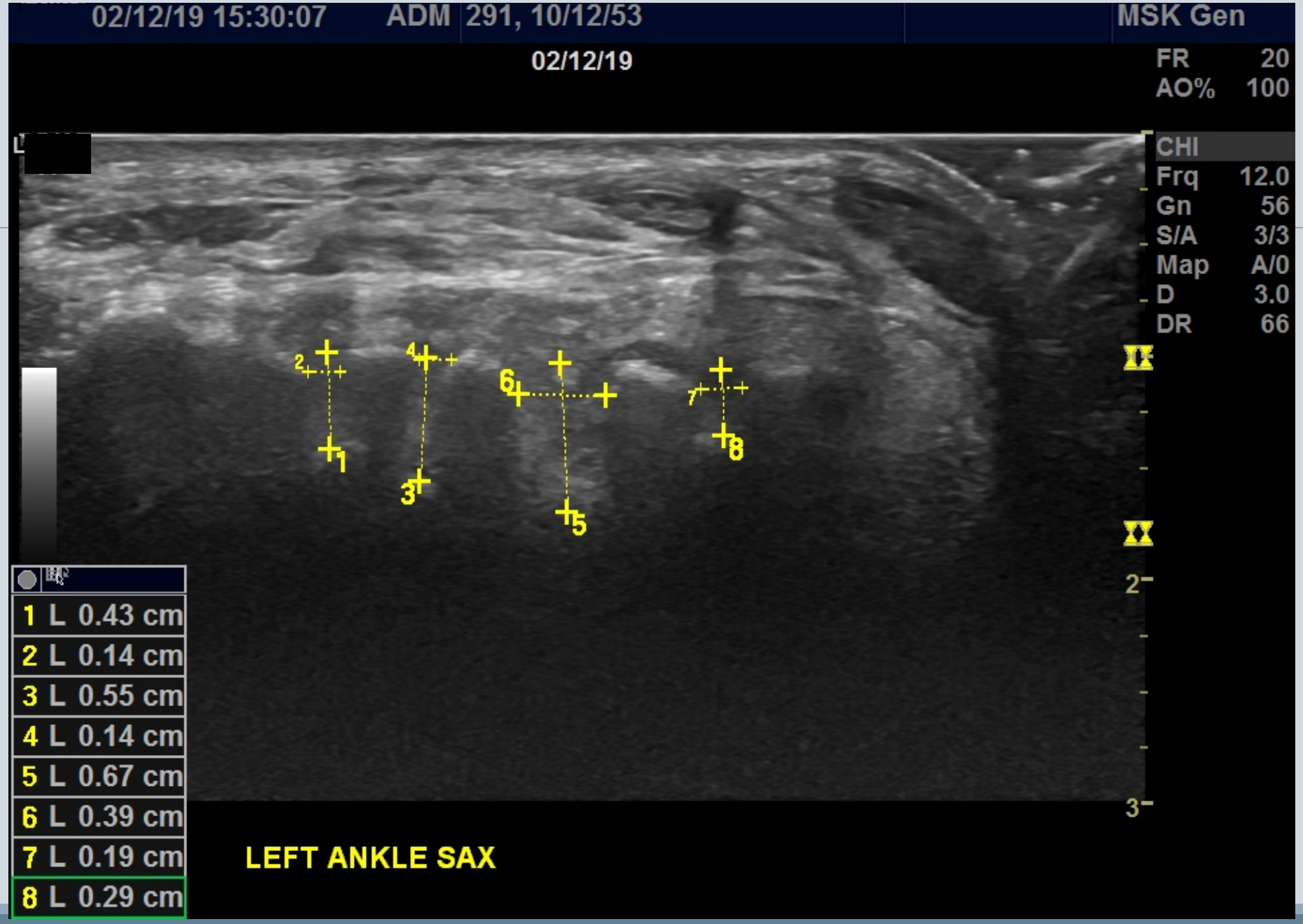

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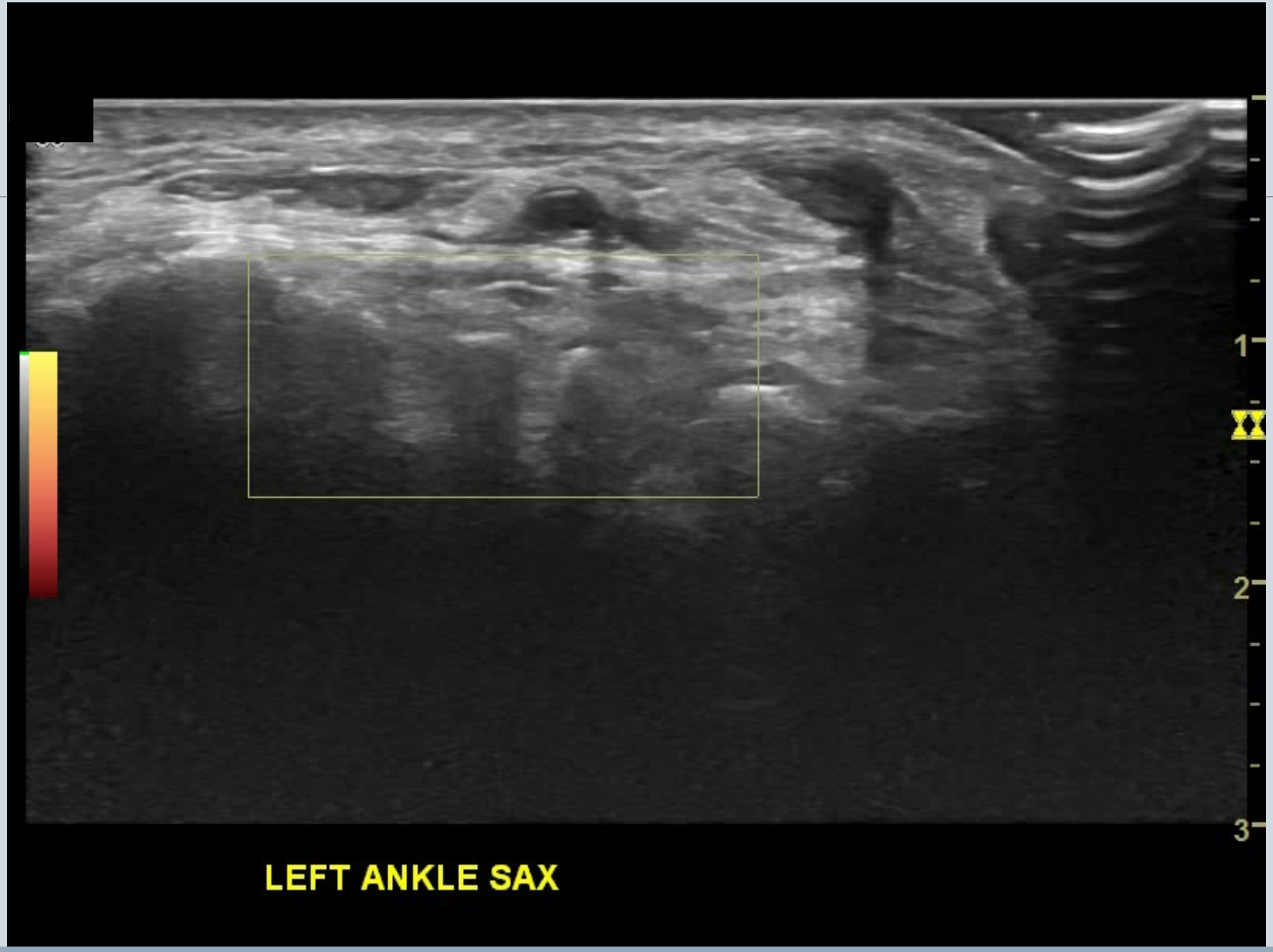

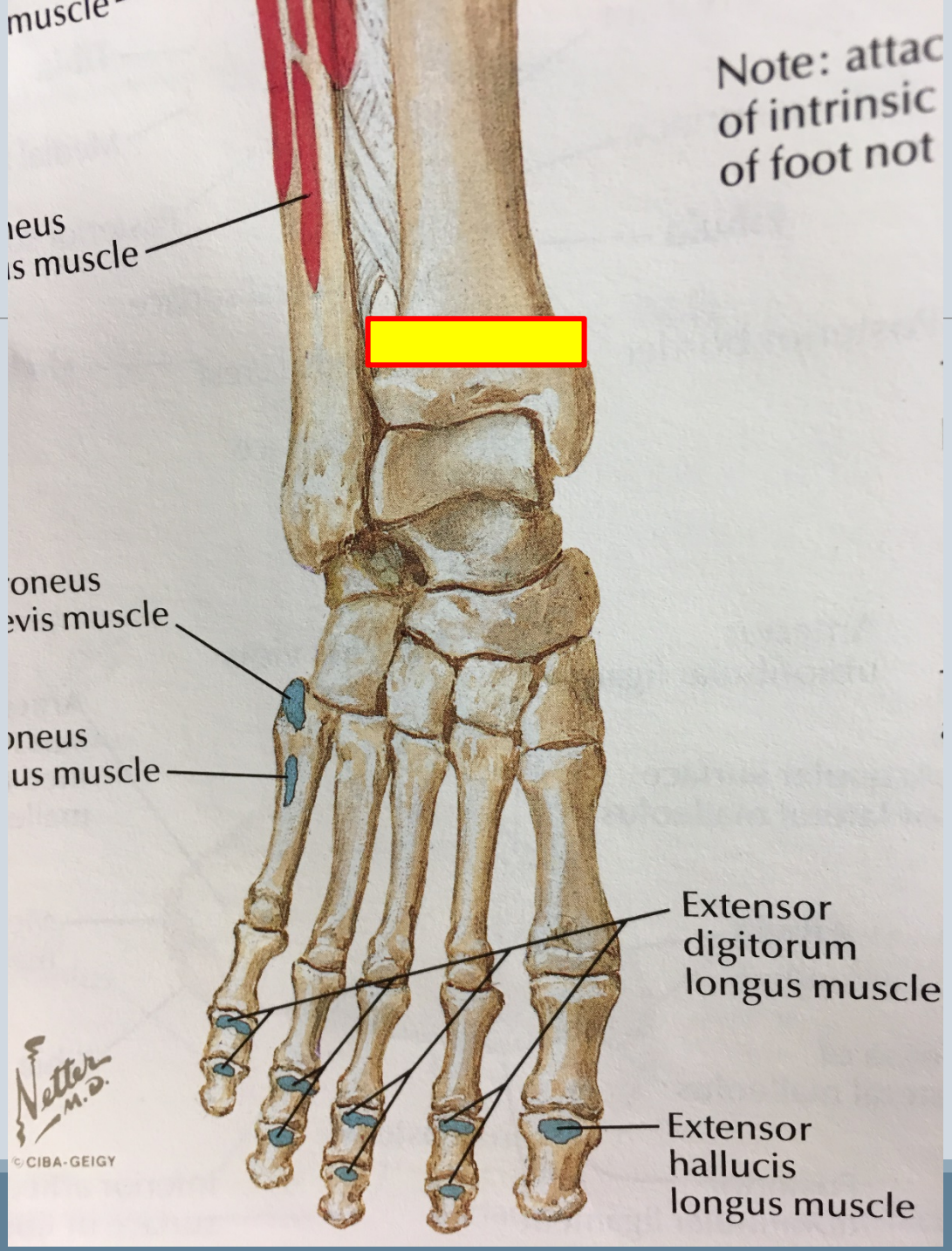
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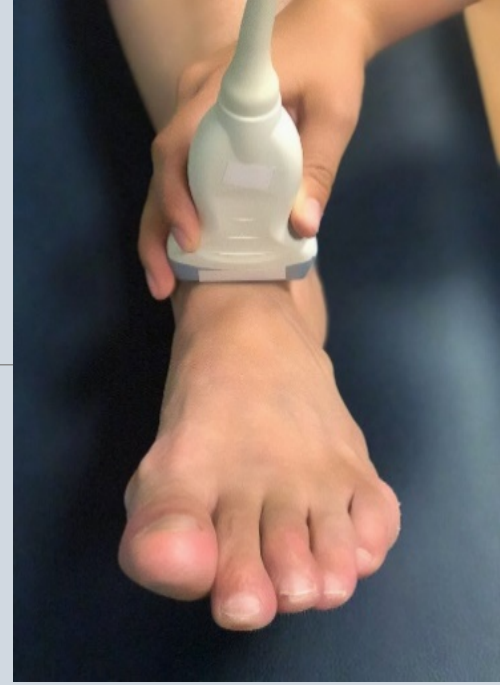
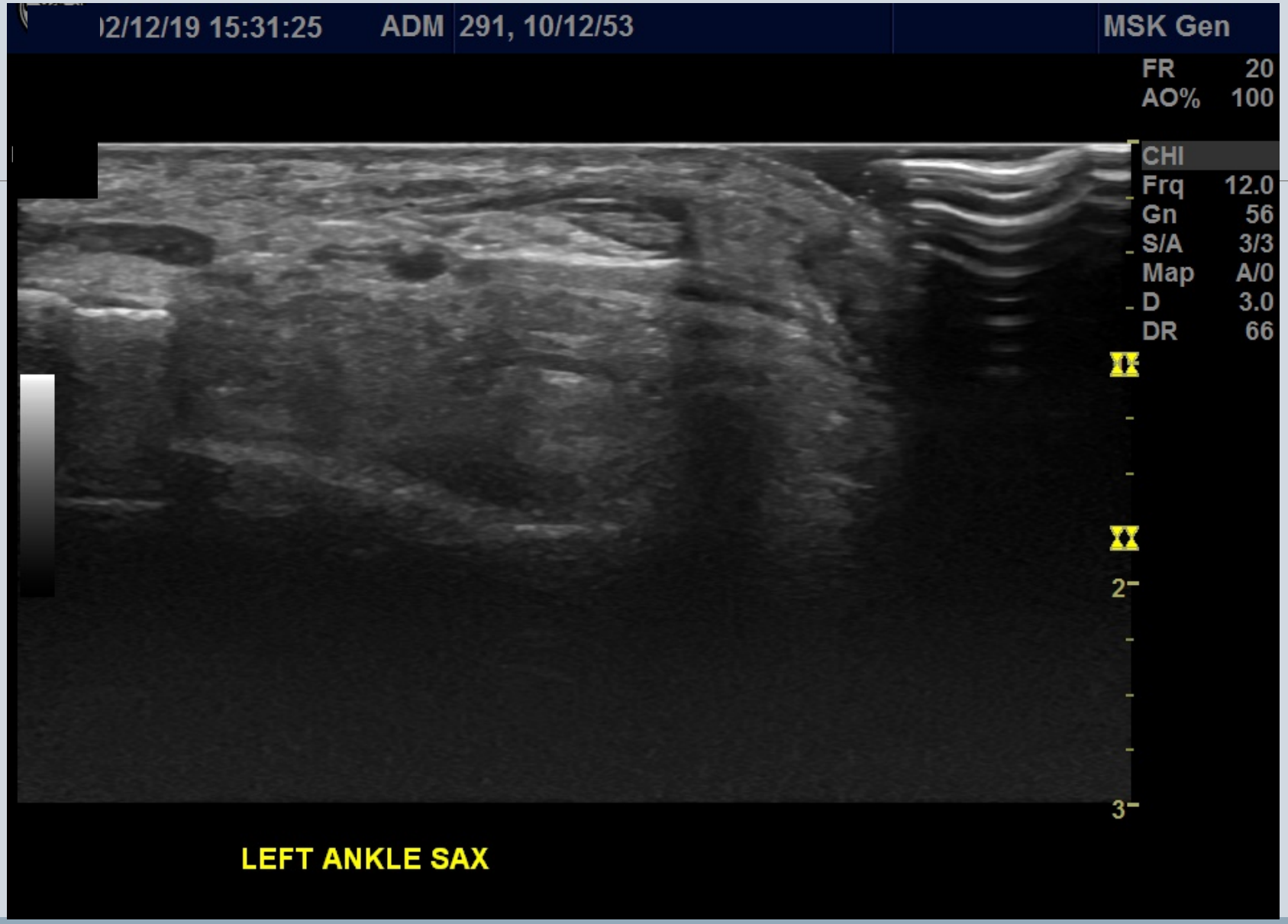
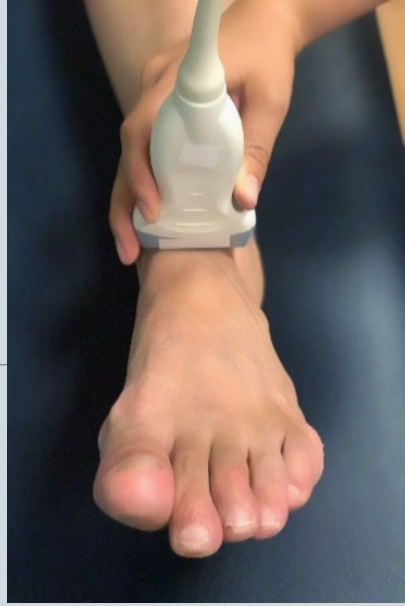
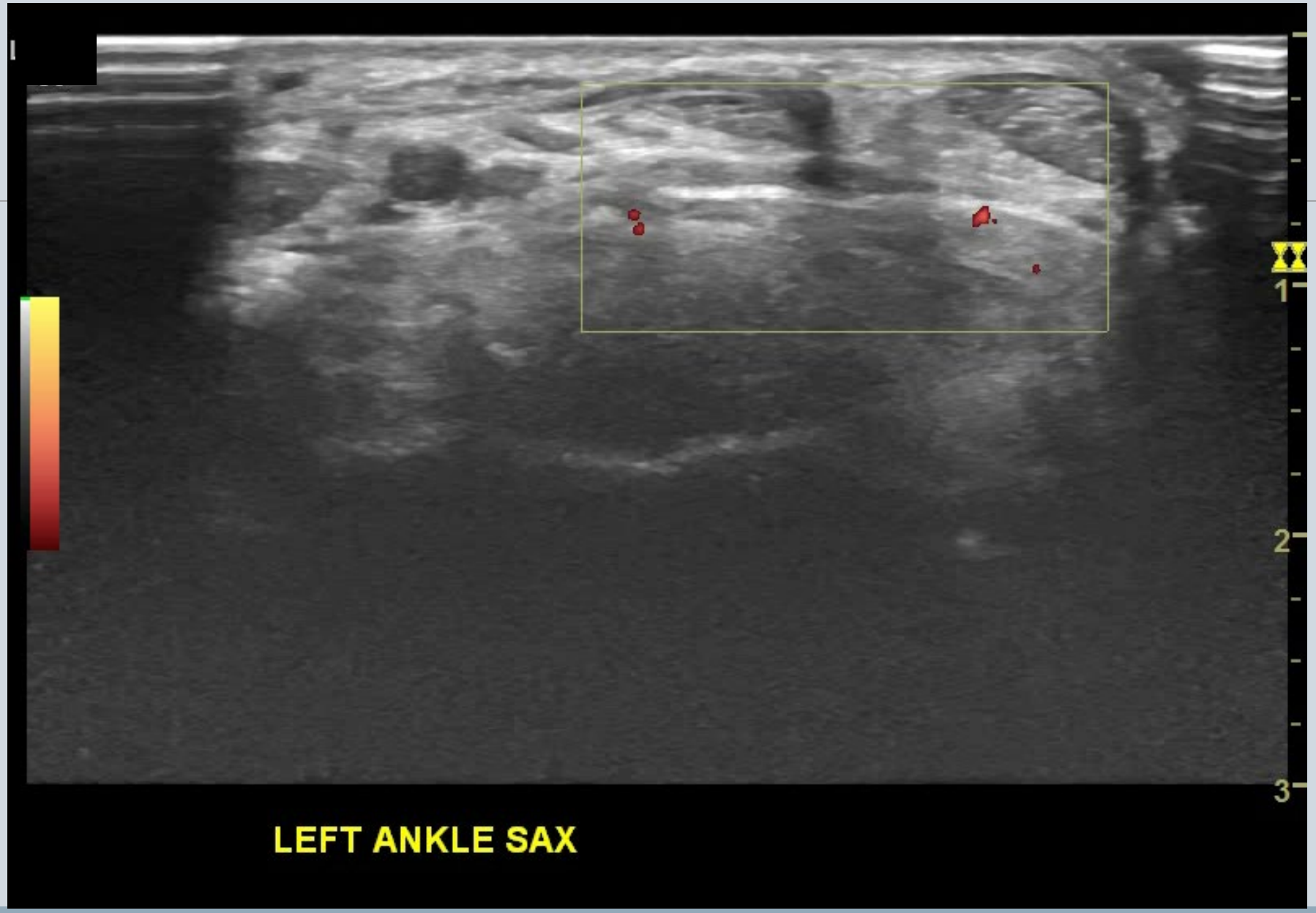


Left Ankle SAX Talus






LEFT ANKLE SAX
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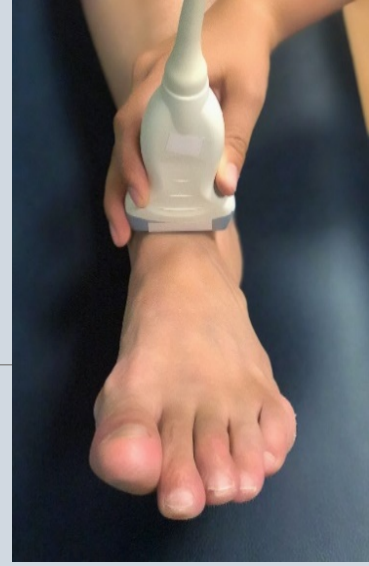
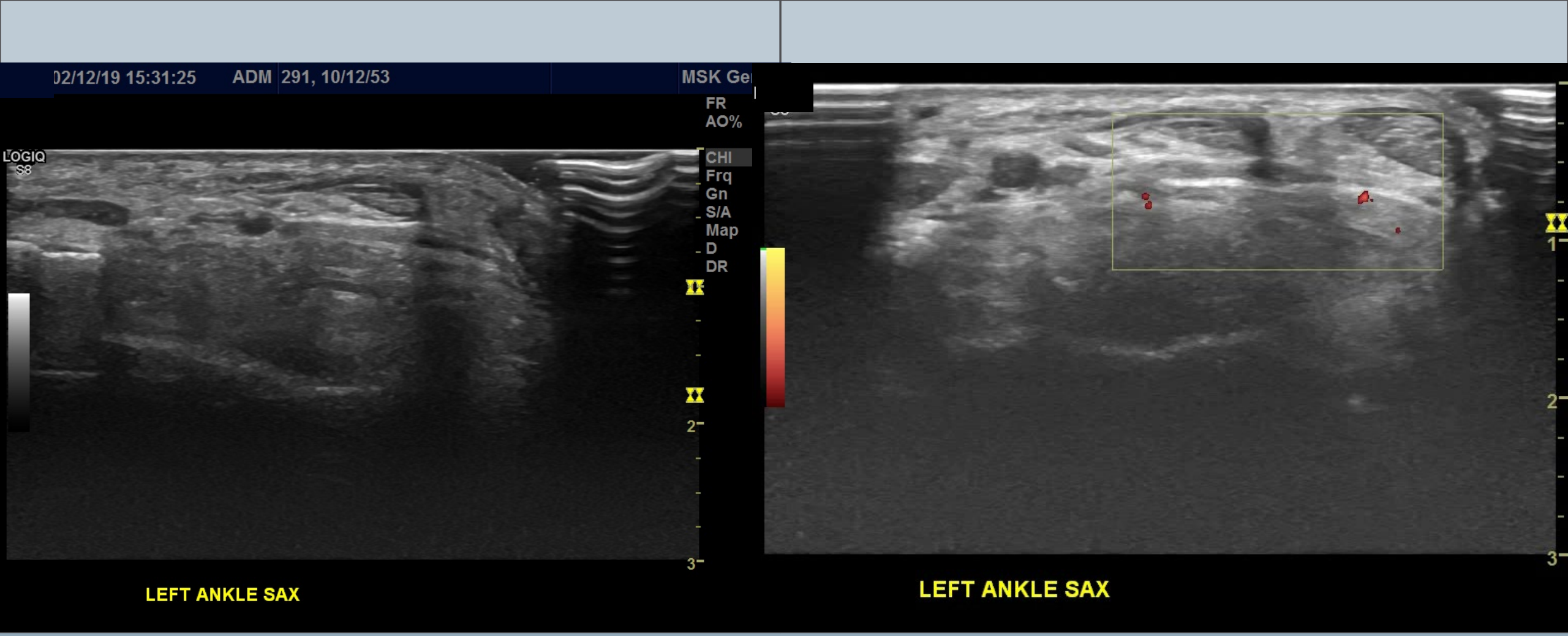
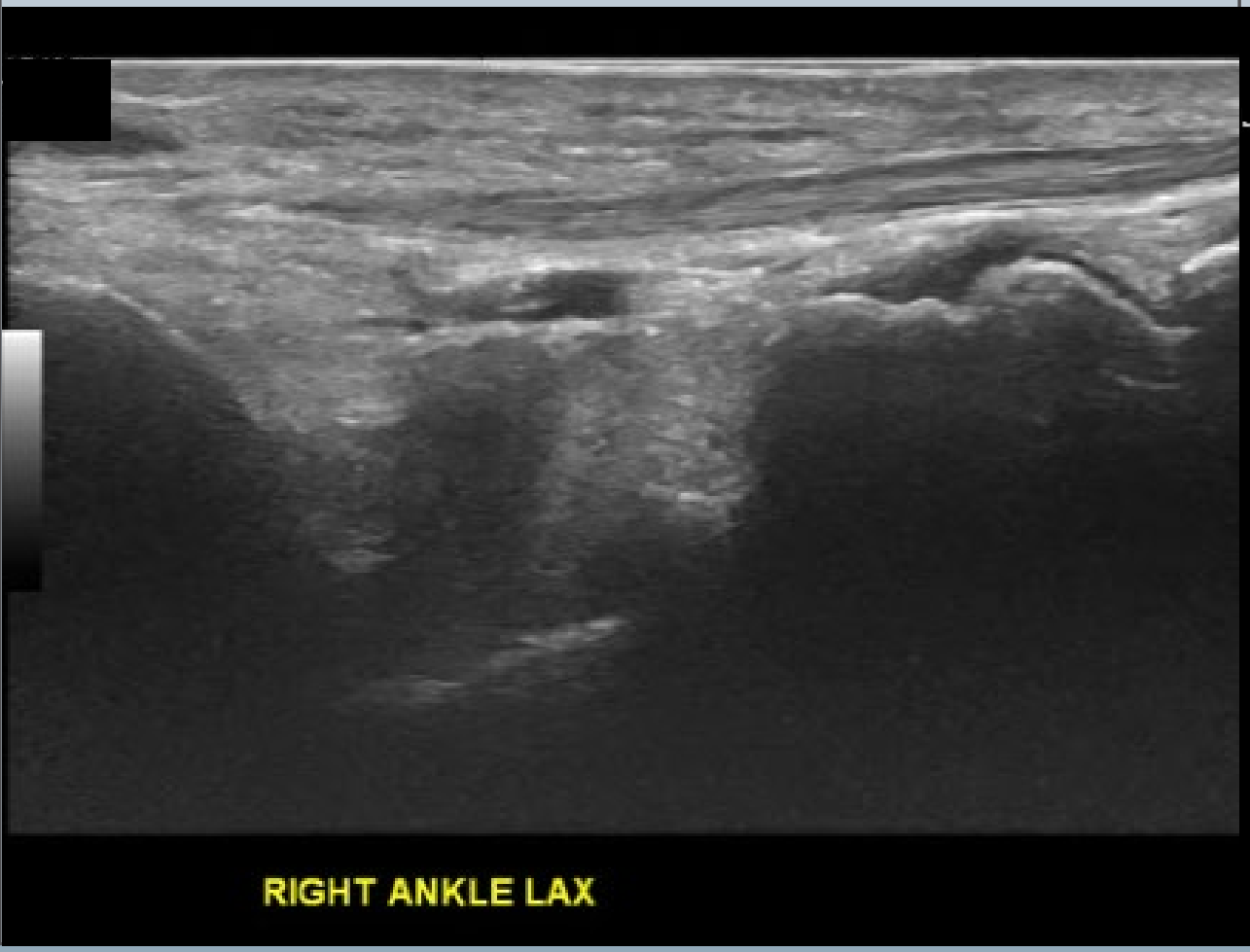
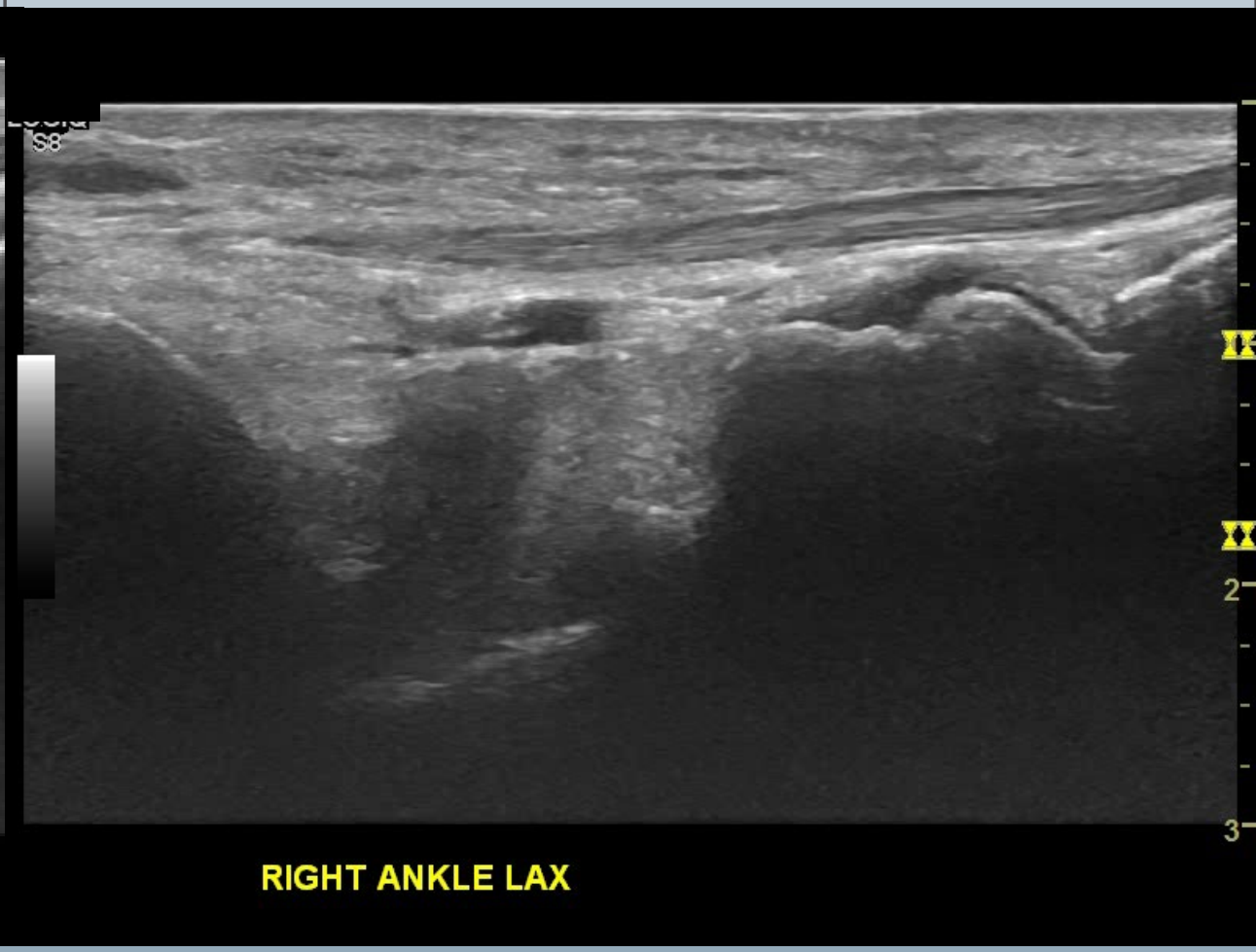




Left Ankle Talus SAX

Right Ankle
Comparison Contralateral

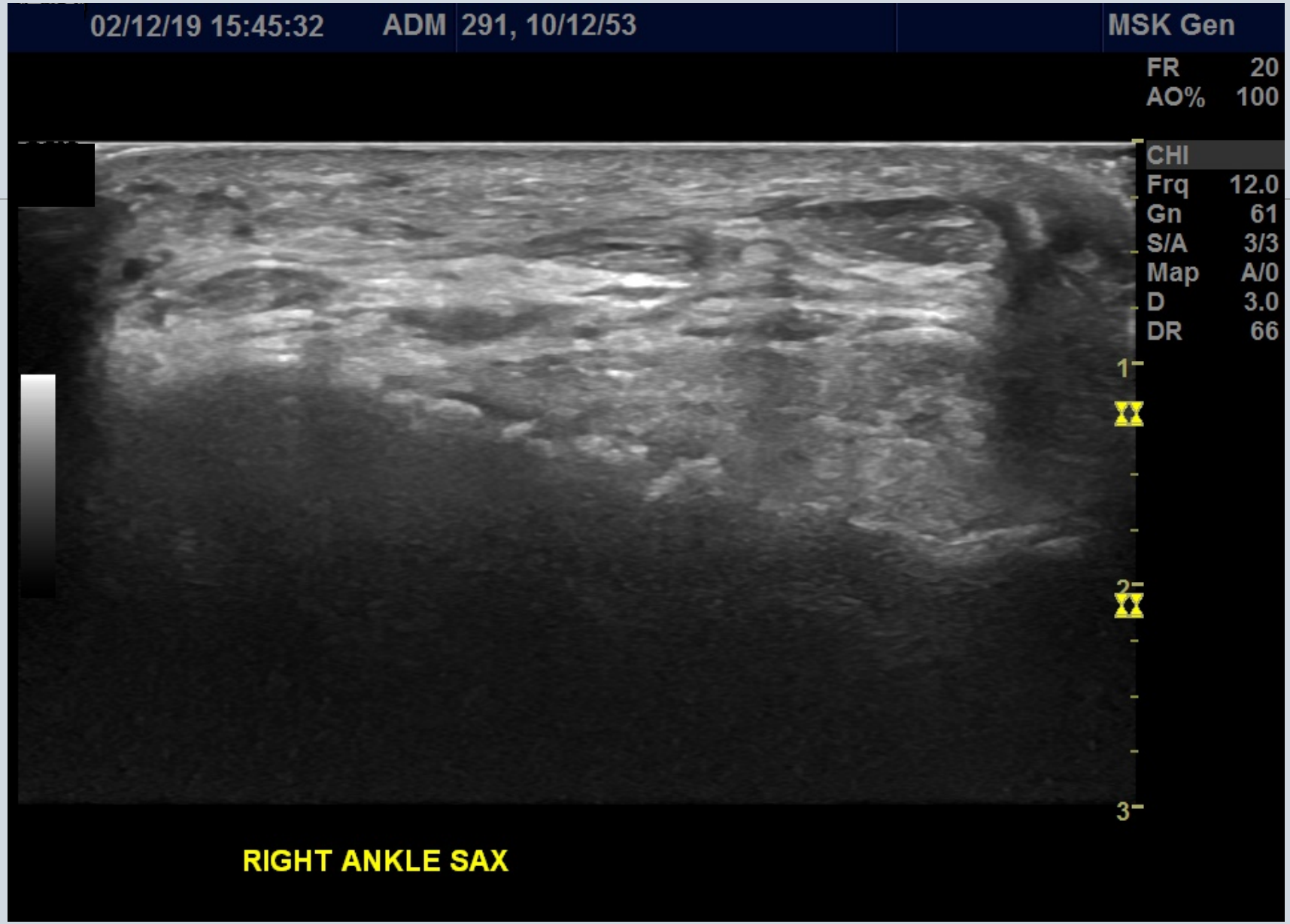




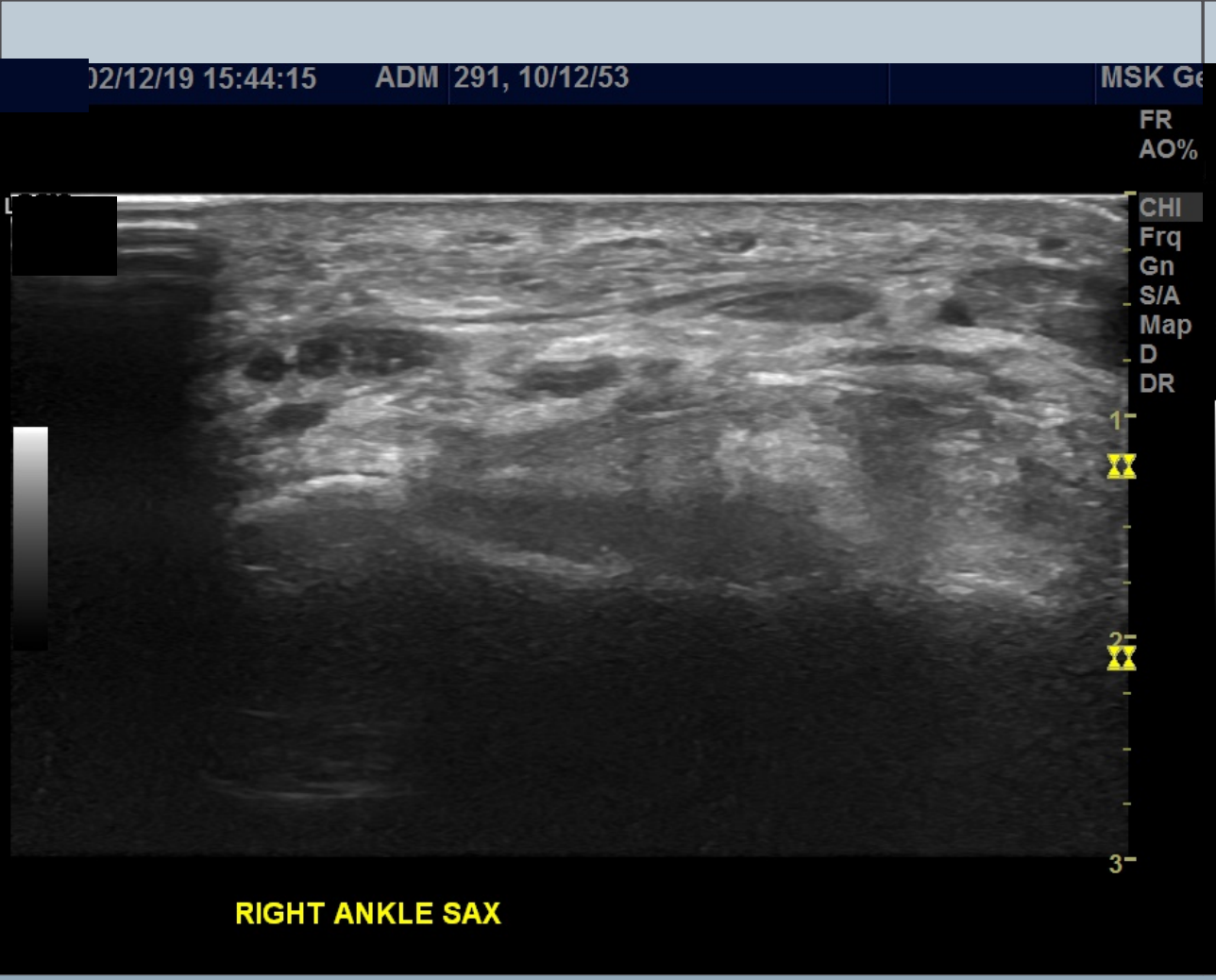
Right Ankle LAX

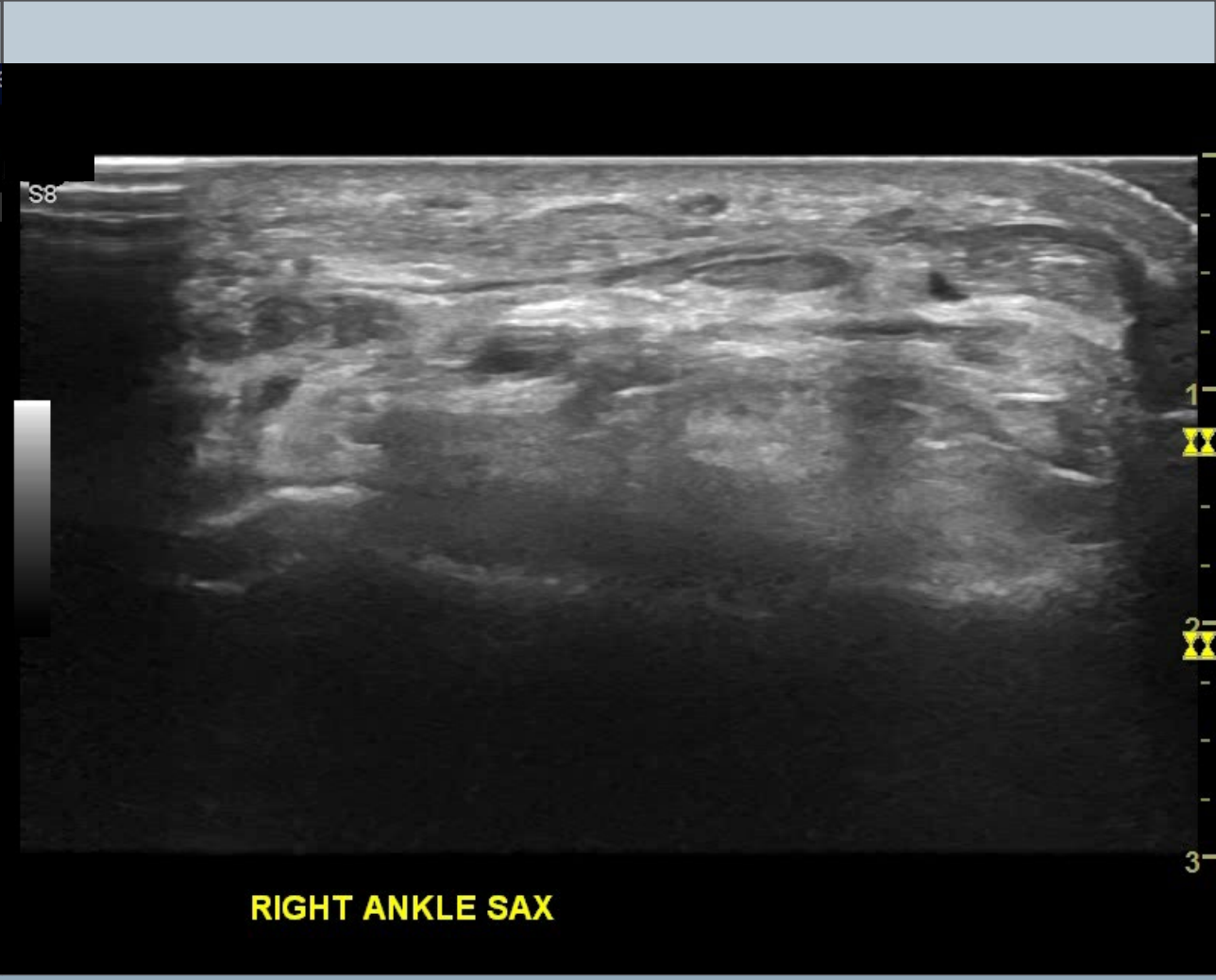
Use Dorsiflexion and plantarflexion motion to locate joint line and to move intra-articular soft tissue expansion and fluid

Distal Tibia SAX



Right Distal Tibia SAX





Right Ankle SAX of Talus

Use Compression real-time technique, and locate Dorsalis Pedis

Results/Treatment Plan

Findings

1. Severe left anterior ankle ROM limiting impingement
2. Severe talar dome destruction
3. Severe distal Tibial bone erosion
4. Bilateral intra-articular soft tissue expansion
5. Absence of acute hemarthrosis

Treatment suggestions

1. Bracing/higher heel
2. PT
3. IASI
4. Referral to Orthopedics/Podiatry for surgical options including articular debridement.

Clinical Pearls

1. Mobilize the articulation to verify joint line
2. Do not force ROM beyond bony impingements
3. Acknowledge impingement vs. hemarthrosis in MSK differential screening
4. Sweep translation from proximal to distal in SAX
5. Sweep translation from lateral to medial in LAX
6. Check contralateral limb
7. Consider using Panorama view across the ankle from the tibia to the talonavicular joint
8. Locate Dorsalis Pedis to ascertain the upper margin of the combined synovium/fat/fibrous capsule interface

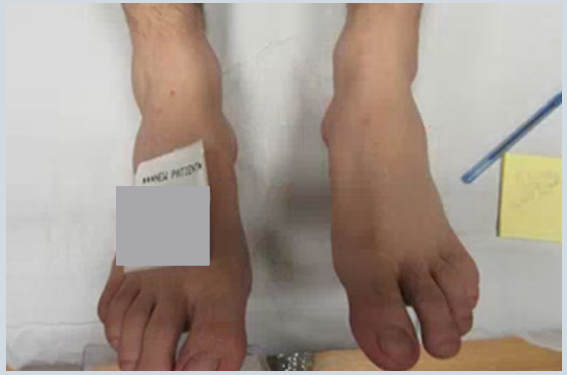
Case Vignettes and Clinical Pearls

LENA VOLLAND PT, DPT

Case: 21 y/o male with severe hemophilia A with R ankle pain

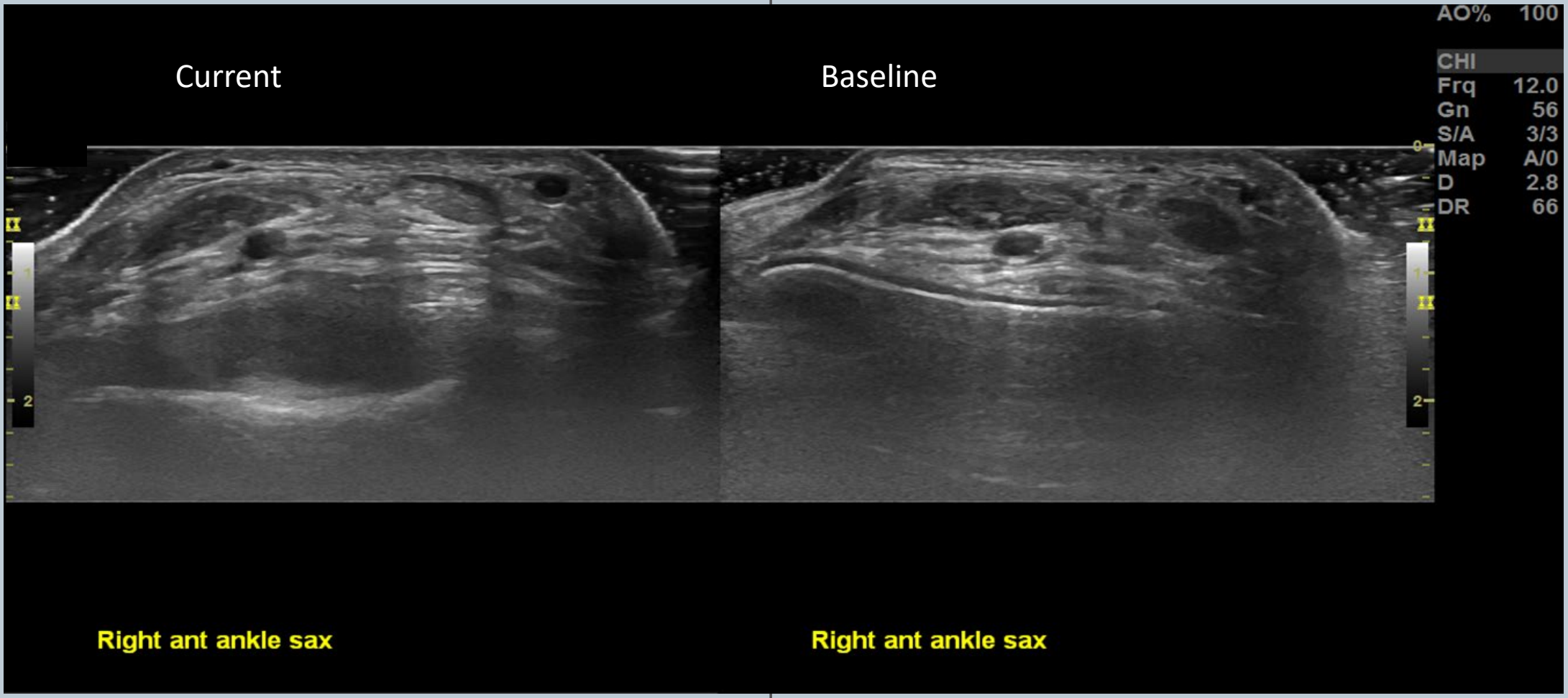
Patient History/Subjective

1. Spontaneous onset of R ankle pain in the morning
2. Prophylaxis
3. Infused 45 minutes before arriving at the clinic

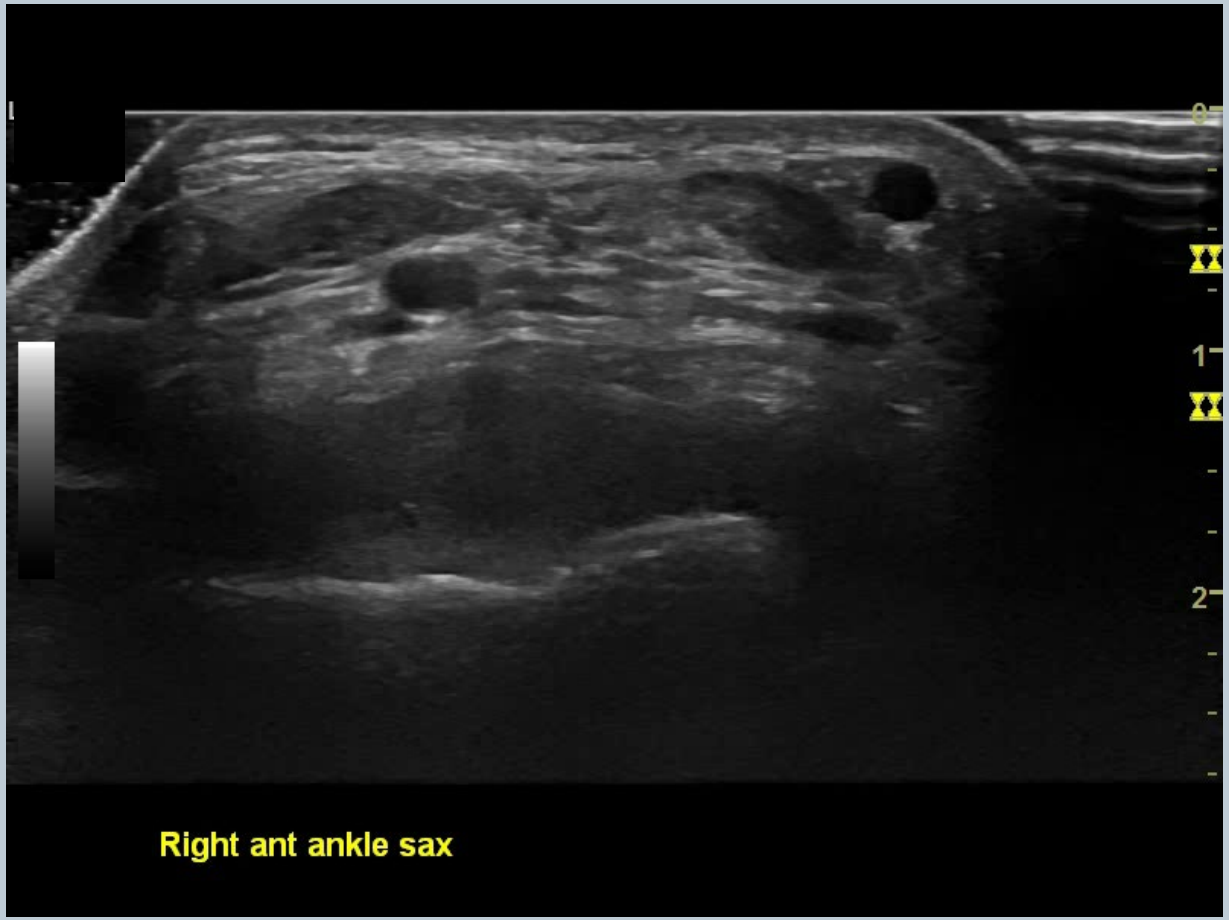


Patient Presentation

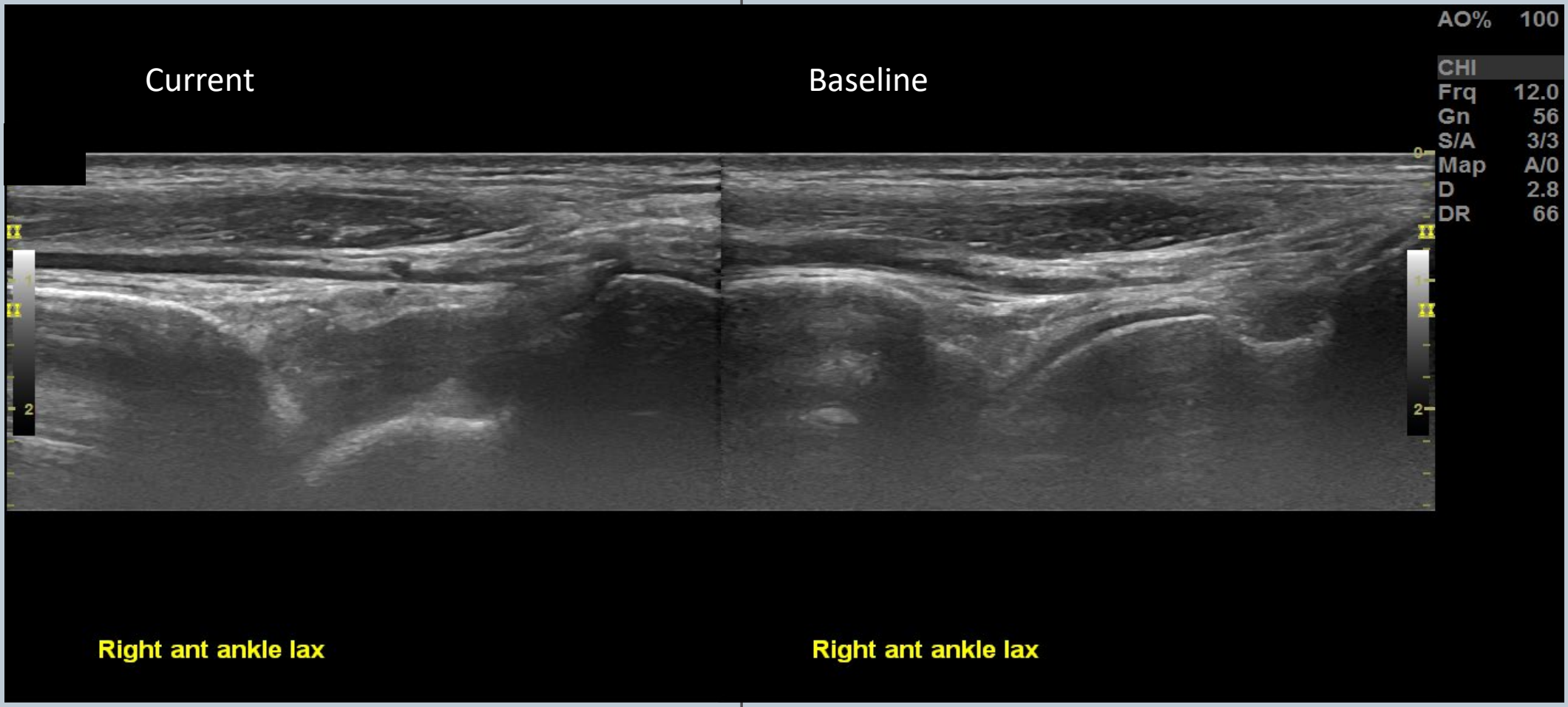
1. ROM limited in all direction by pain
2. Tender to palpation on anterior aspect of right tibiotalar joint and right ATFL region
3. Very mild palpable swelling over R ATFL
4. Decreased ability to tolerate WB



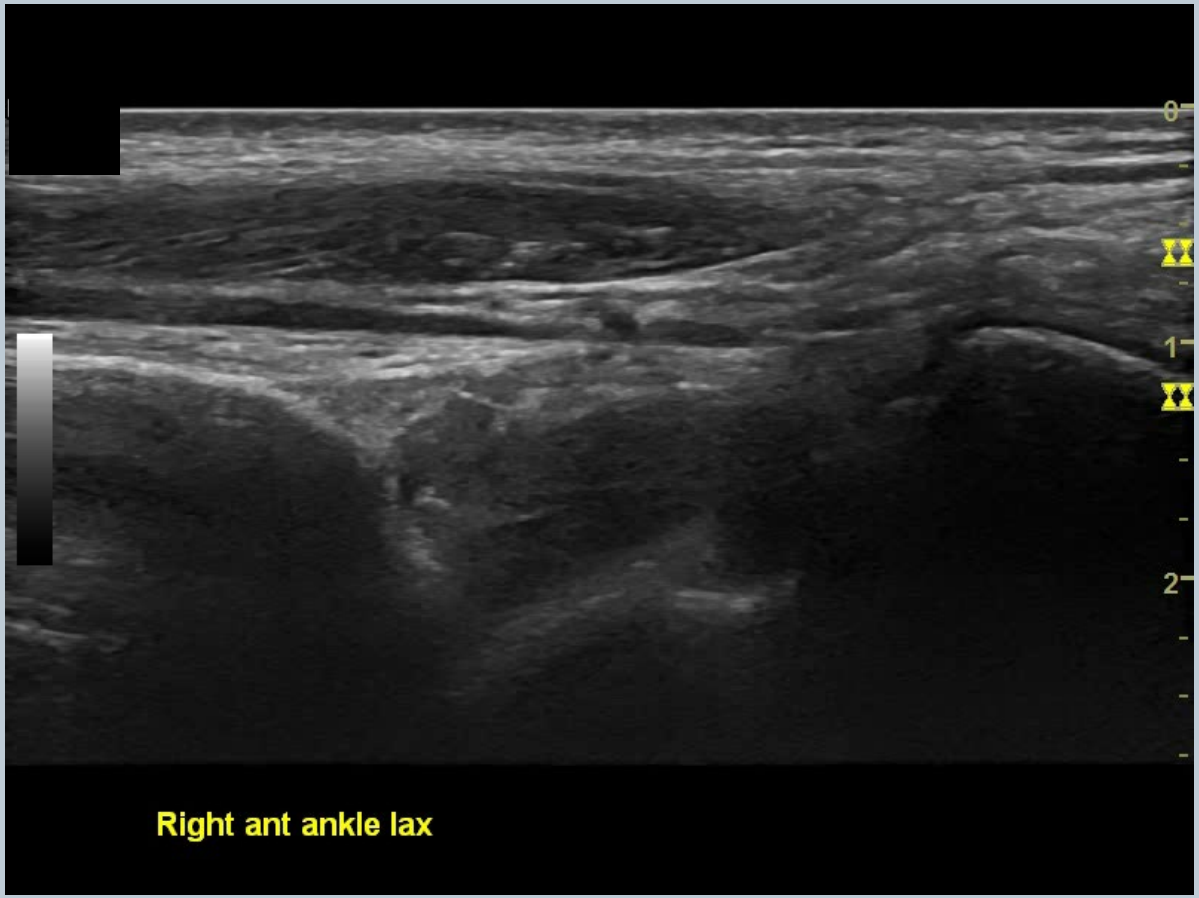
Right Anterior Ankle SAX

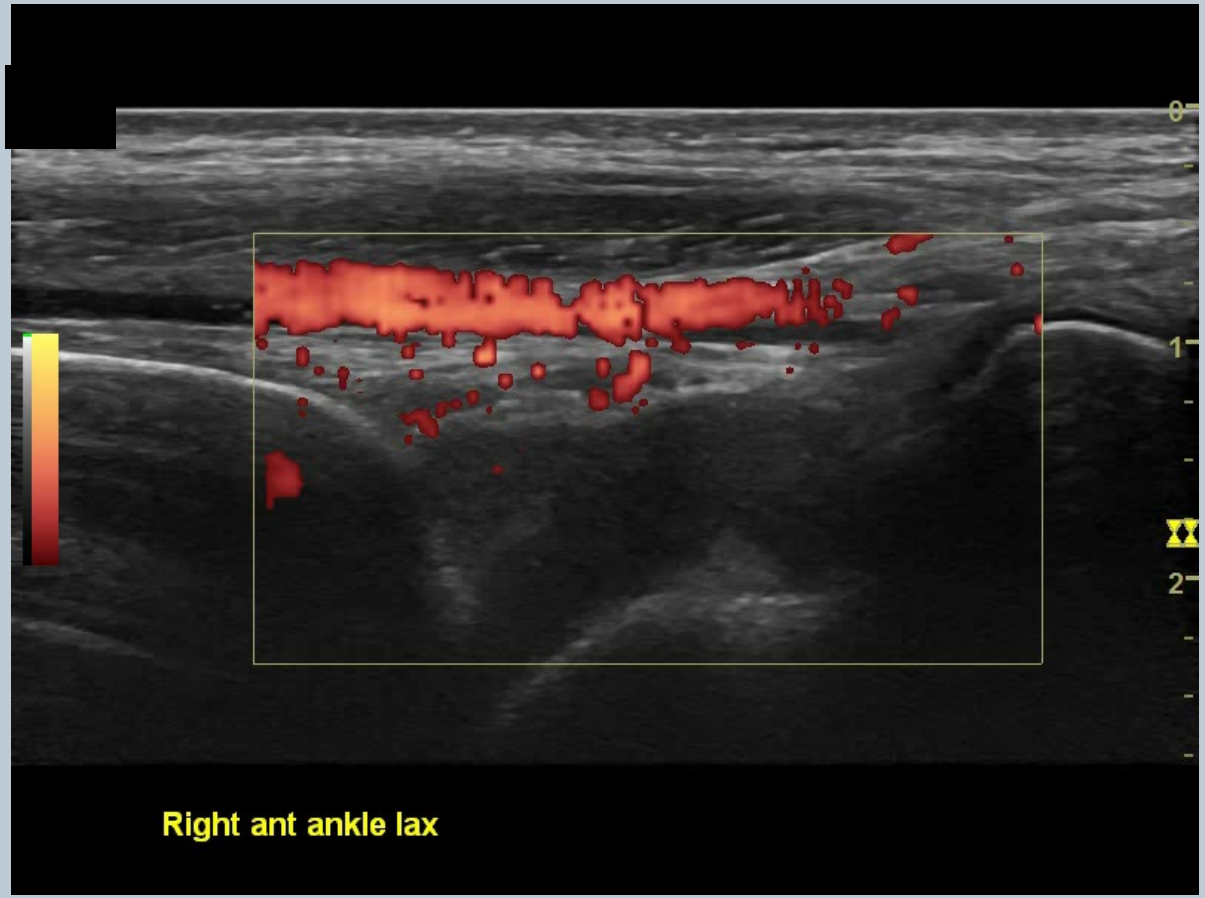


Right Anterior Ankle SAX

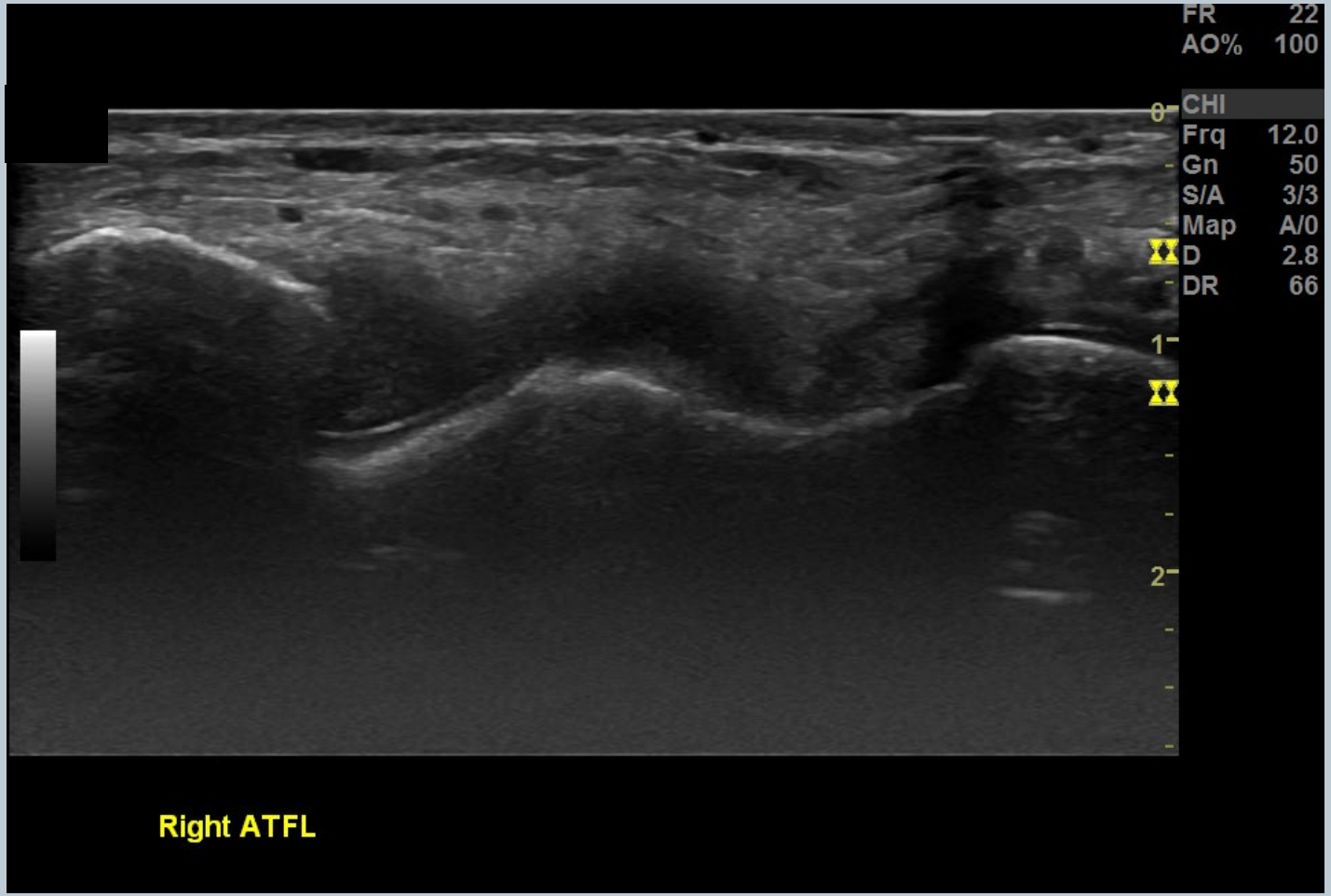


Right Anterior Ankle LAX

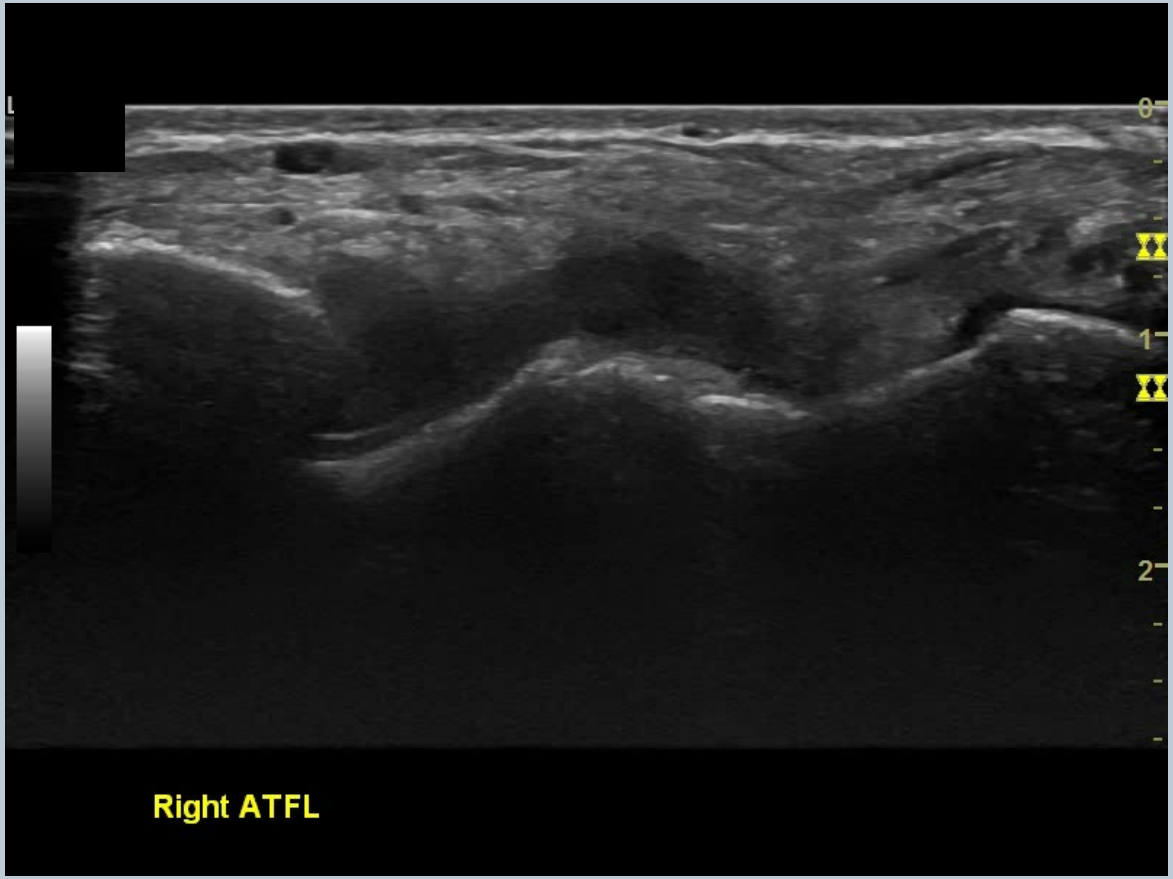


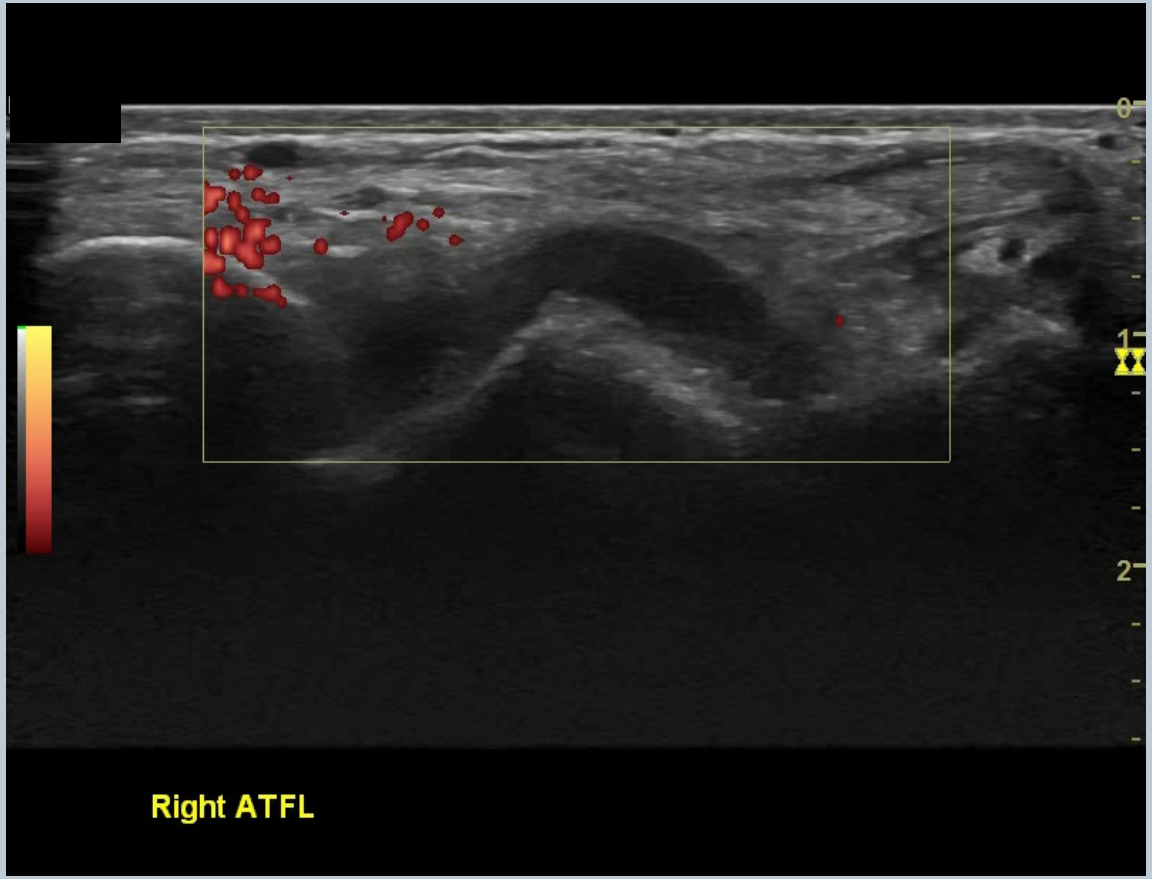


Right Anterior Ankle LAX

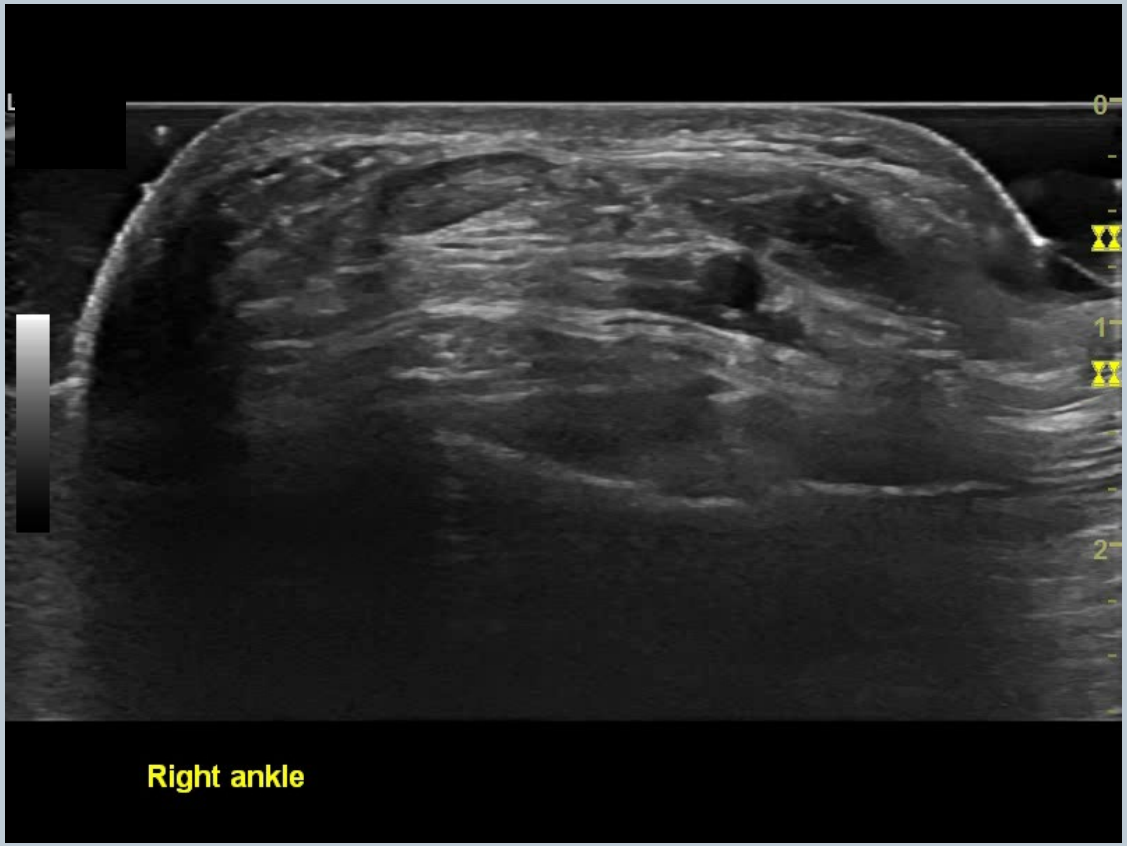

FR 22
AO% 100
CHI
Frq 12.0
Gn 50
S/A 3/3
Map A/0
D 2.8
DR 66
0
1
2
Right ATFL

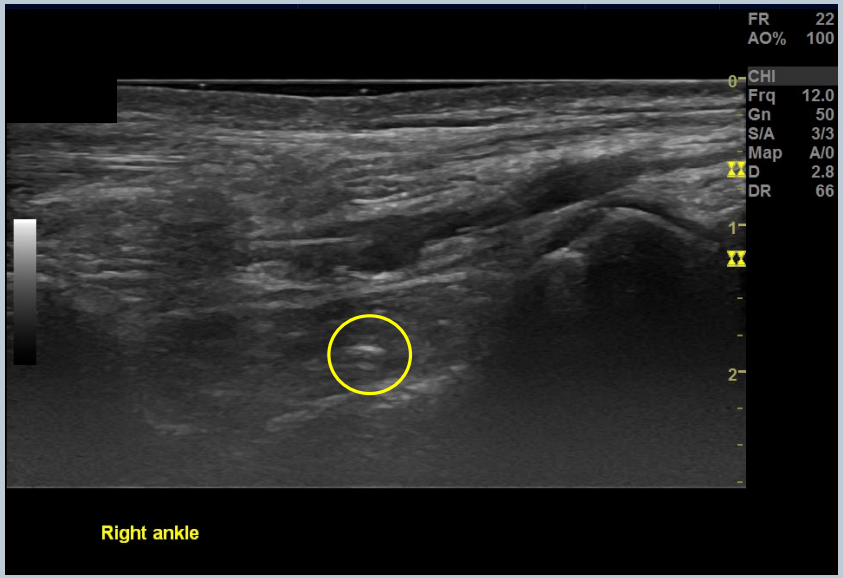
Right ATFL





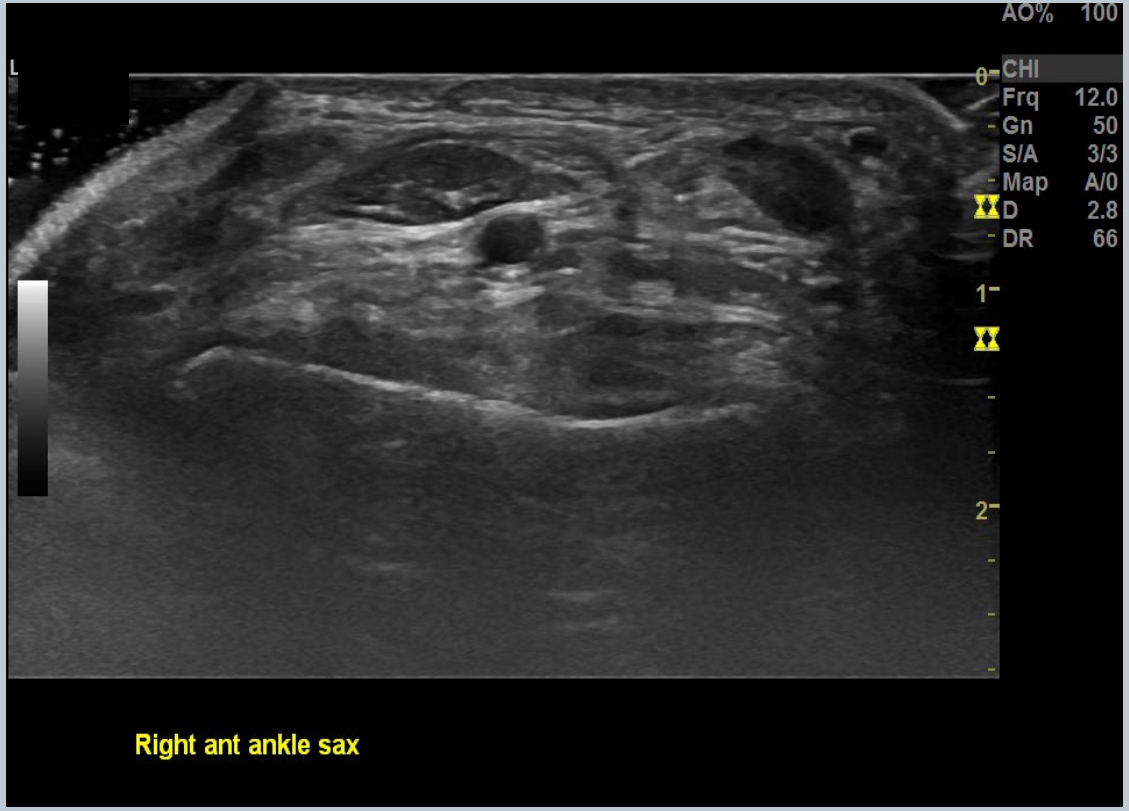
Right ATFL


Right ankle

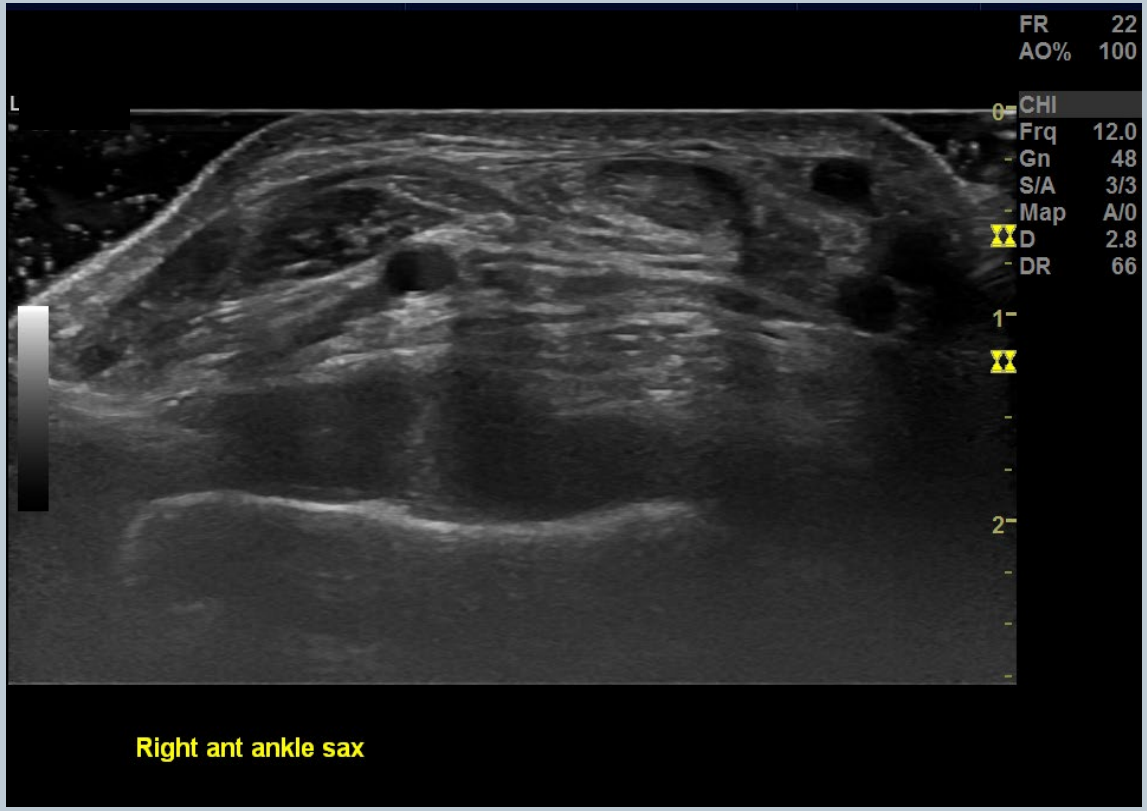

FR 22
AO% 100
CHI
Frq 12.0
Gn 50
S/A 3/3
Map A/0
D 2.8
DR 66
Right ankle

Aspiration

Post Aspiration

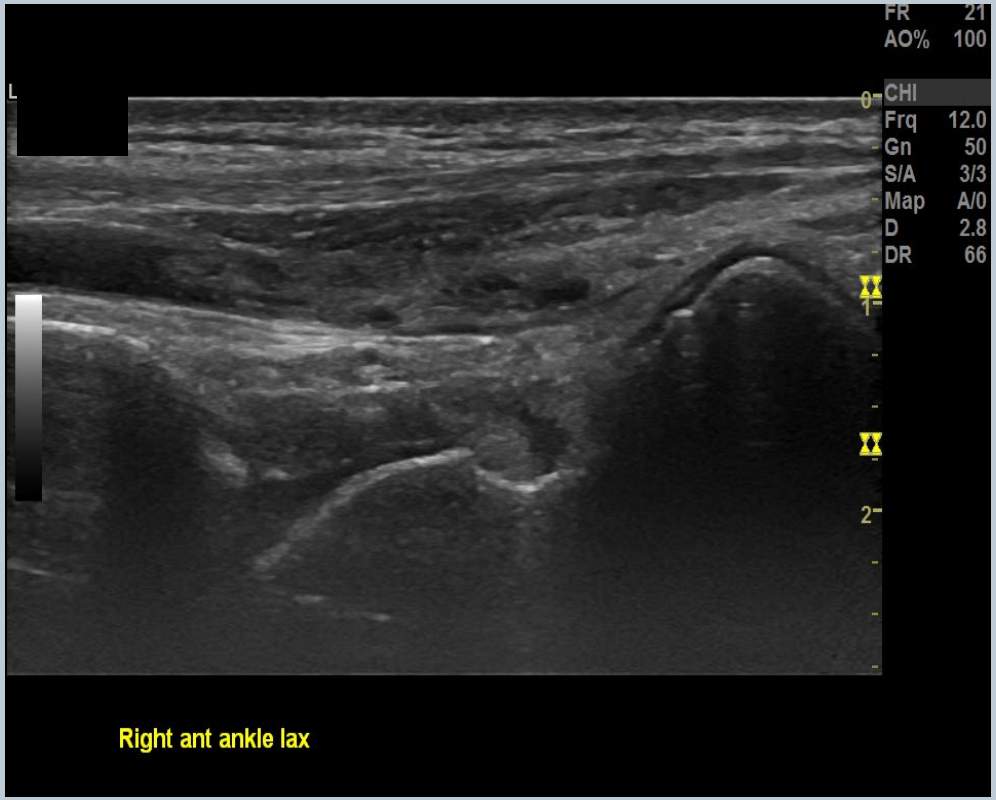


Pre Aspiration

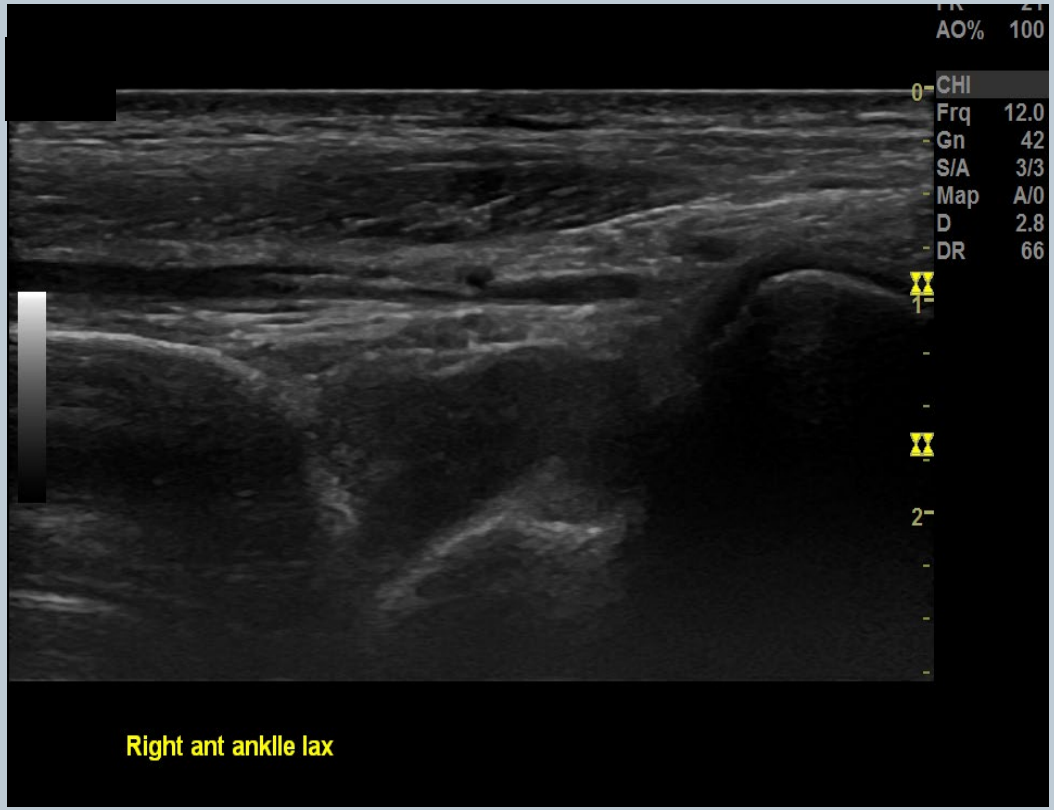


Right Anterior Ankle SAX

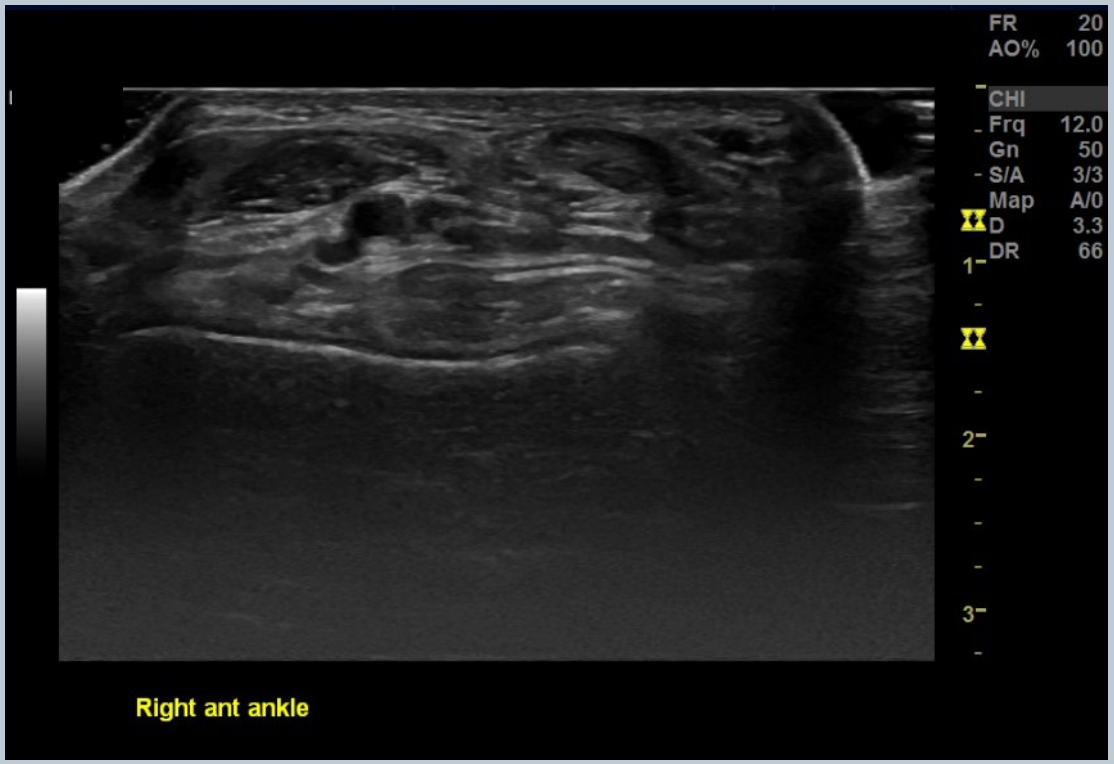
Post Aspiration

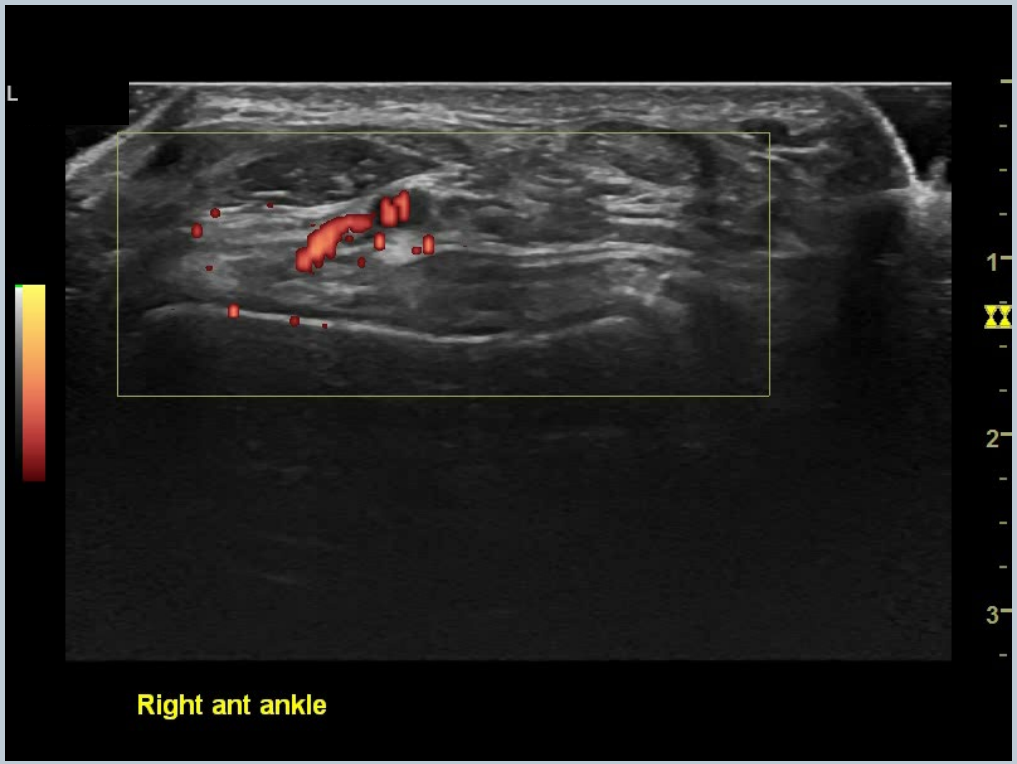


Pre Aspiration

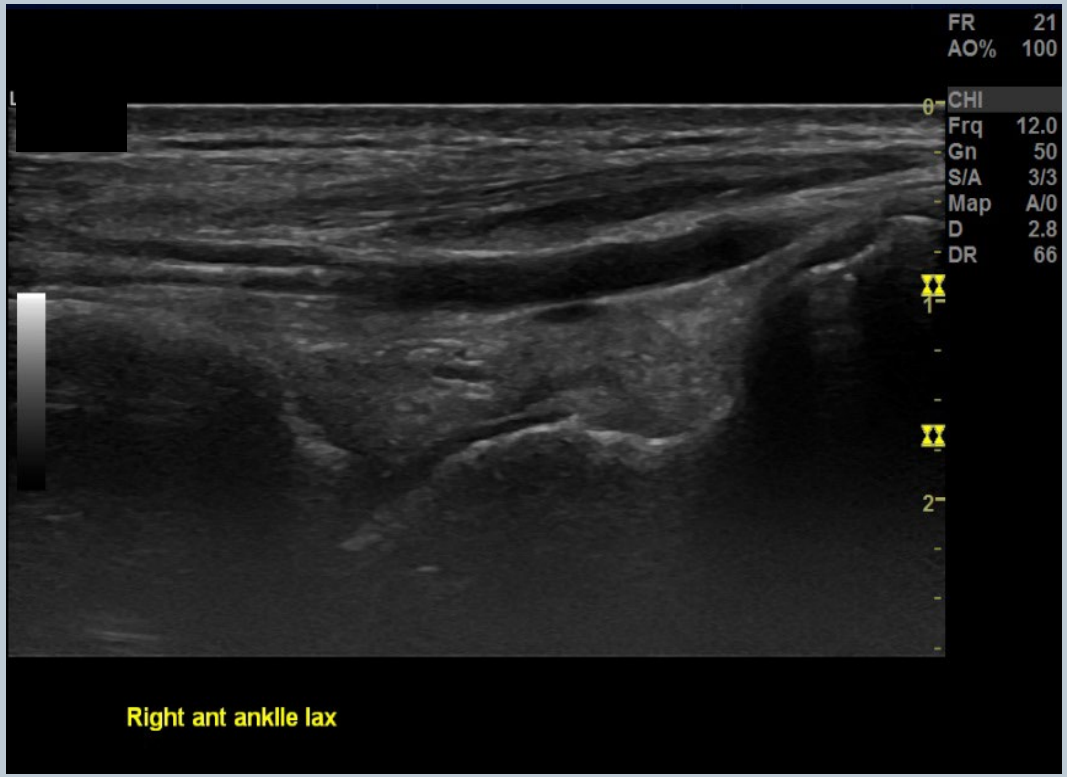


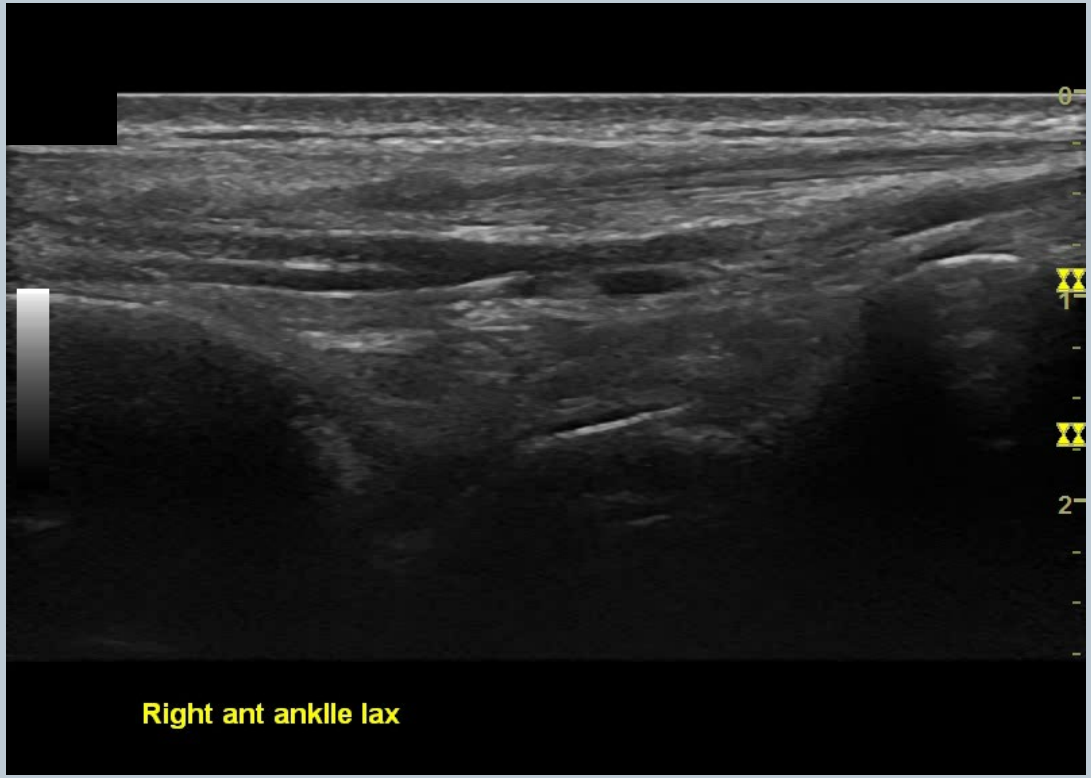
Right Anterior Ankle LAX





Right Anterior Ankle SAX – 1 week later





Right Anterior Ankle LAX – 1 week later

Results/Treatment Plan

Findings

1. Hypoechoic complex effusion visible in anterior ankle LAX and SAX

Treatment

1. Aspiration
2. Daily factor
3. PT rehabilitation once bleed had resolved

Clinical Pearls

1. Visual inspection alone is not reliable in detecting bleeds or assessing the extend of a hemarthrosis
2. MSKUS supplements the clinical examination
3. Comparison to baseline images is beneficial
4. MSKUS supports procedure accuracy
5. Follow up imaging directly post aspiration and a week later assist in visualization of the treatment effect

Acute joint pain in a patient with mild VWD

Can it be joint bleeding

?

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UNIVERSITY OF CALIFORNIA SAN DIEGO

Case : 48 y/o male with mild VWD (40% VWF activity)

Presentation

Felt a snap in his ankle when stepping down from a bike

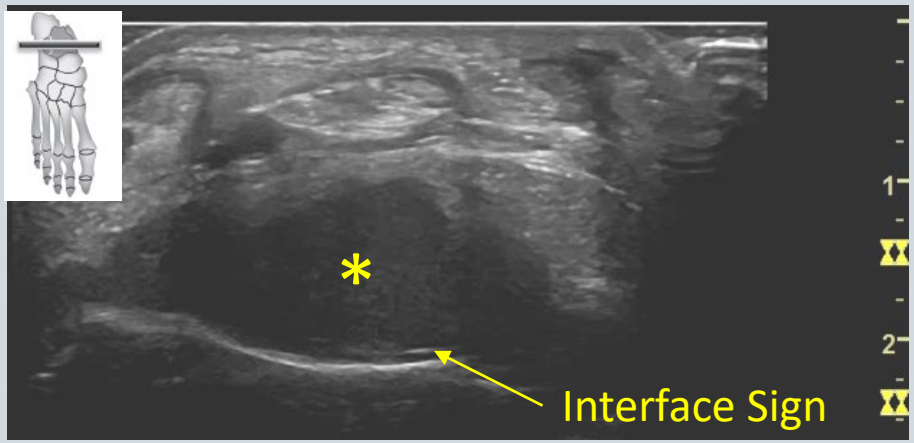
Ankle swelling and pain

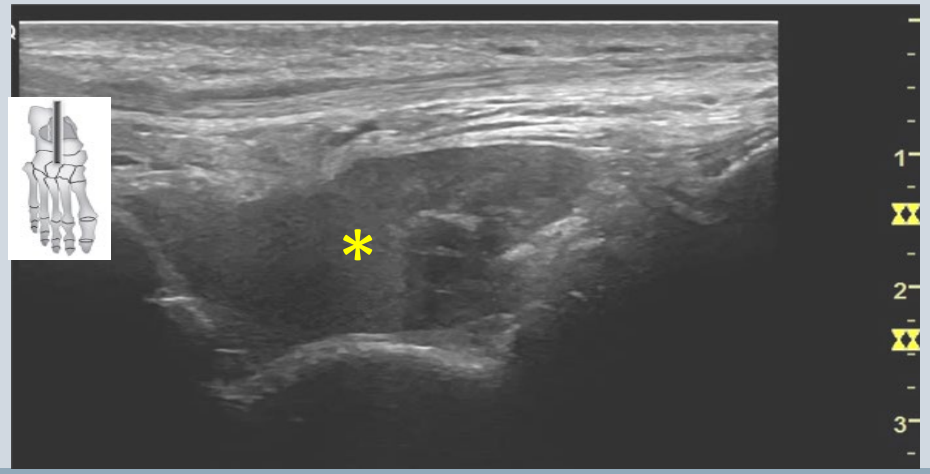
The patient wishes to undergo MSKUS to determine if he suffered from a joint bleed

Our suspicion is low due to the mild nature of the bleeding disorder and a lack of bleeding history in this patient

Clinical question: Bleeding or not ?

Acute Presentation





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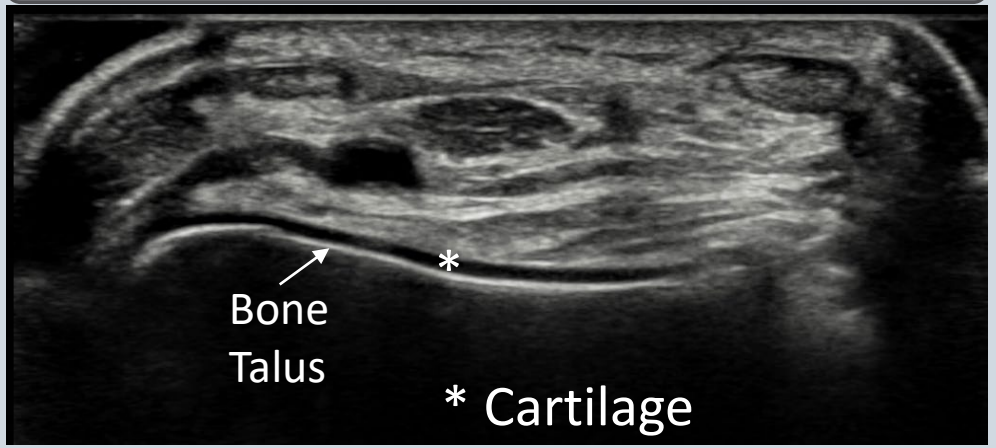
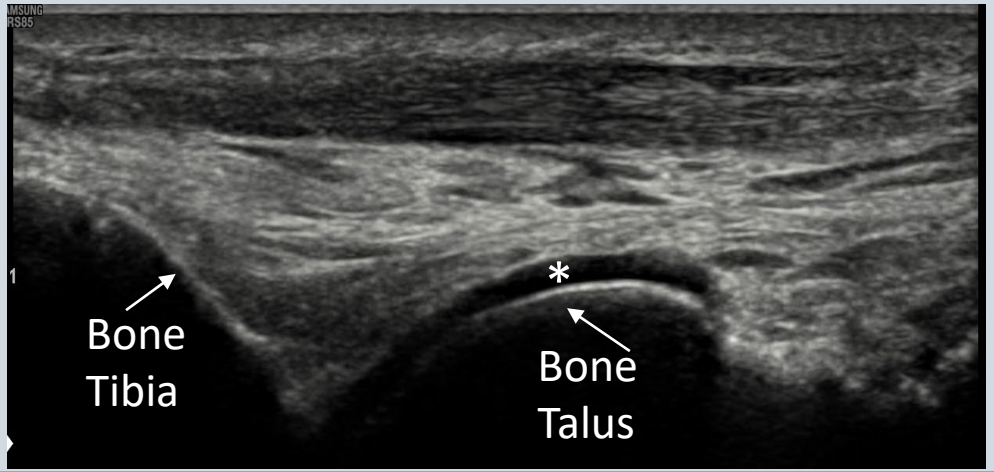


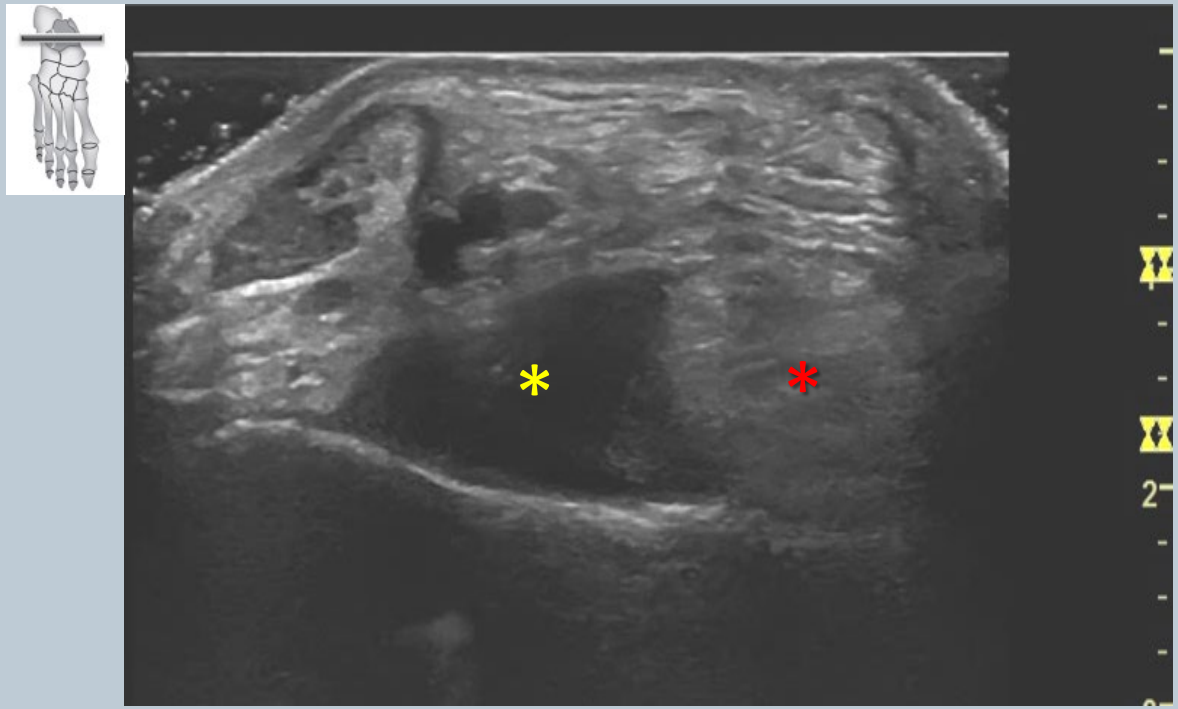


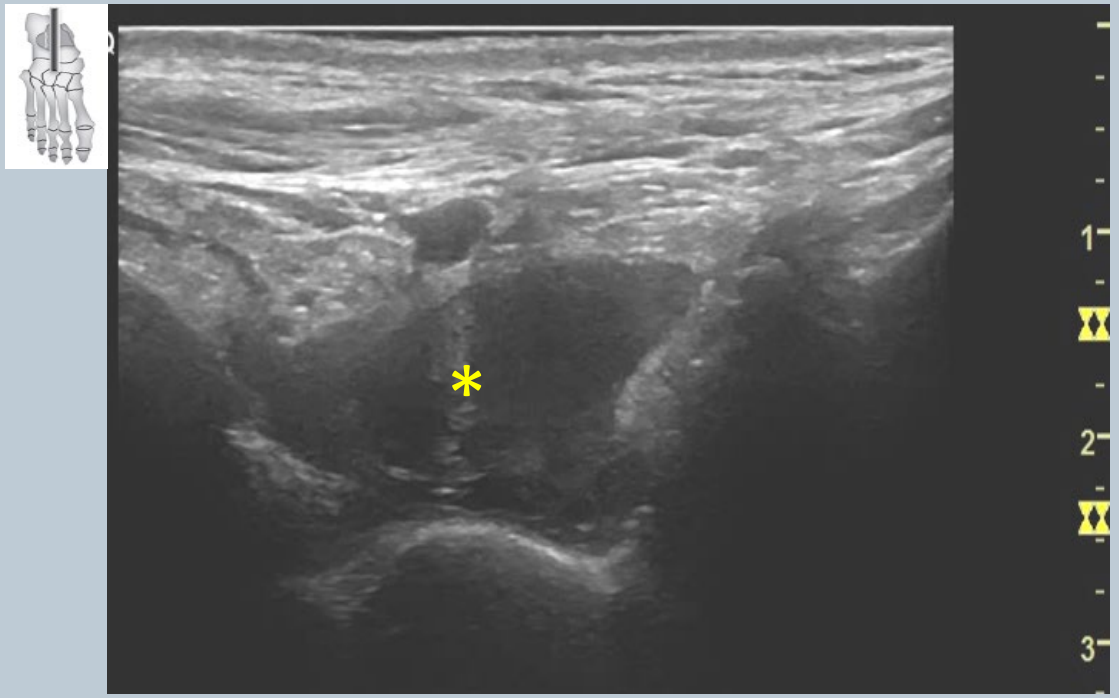
Right ankle
Tibio-talar joint space: short and long axis

* Findings: Large complex effusion
Consistent with hemarthrosis

Treatment: Administration of VWF concentrate daily until symptom relief

Presentation 3 days later

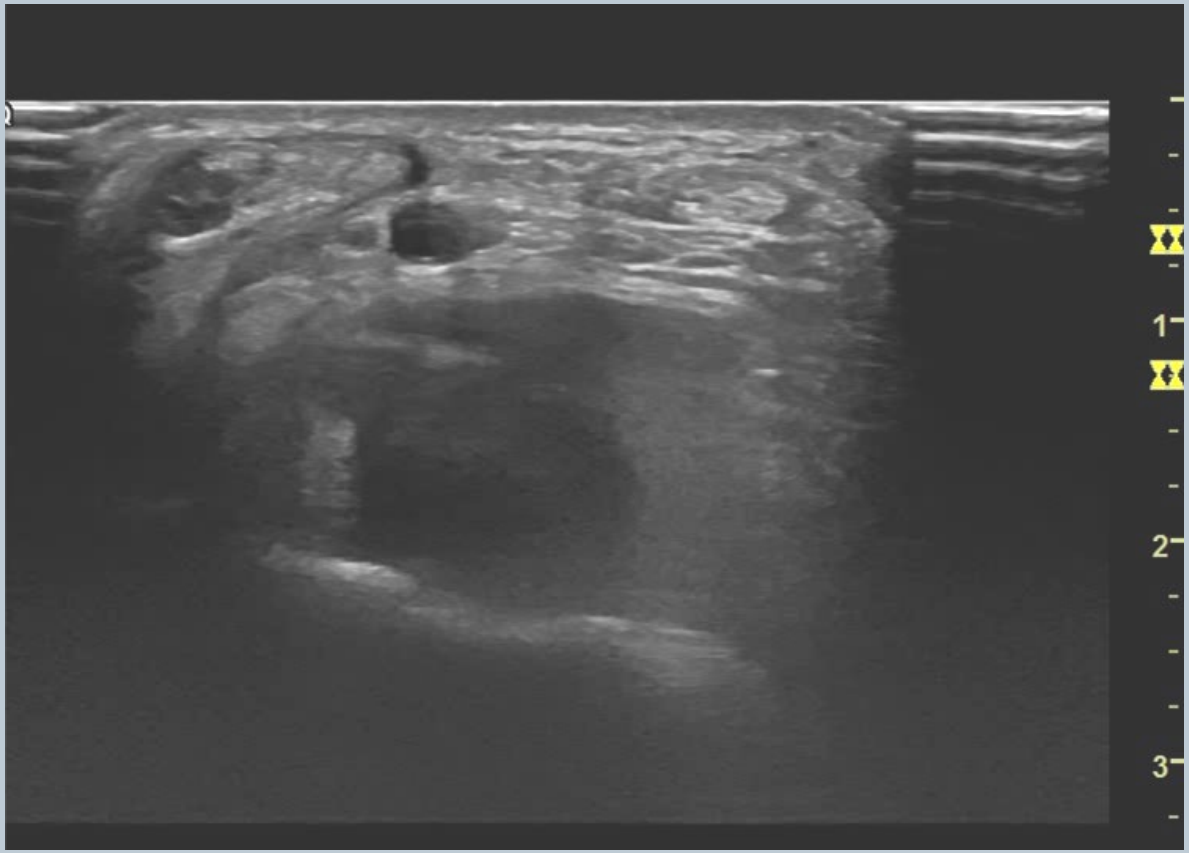


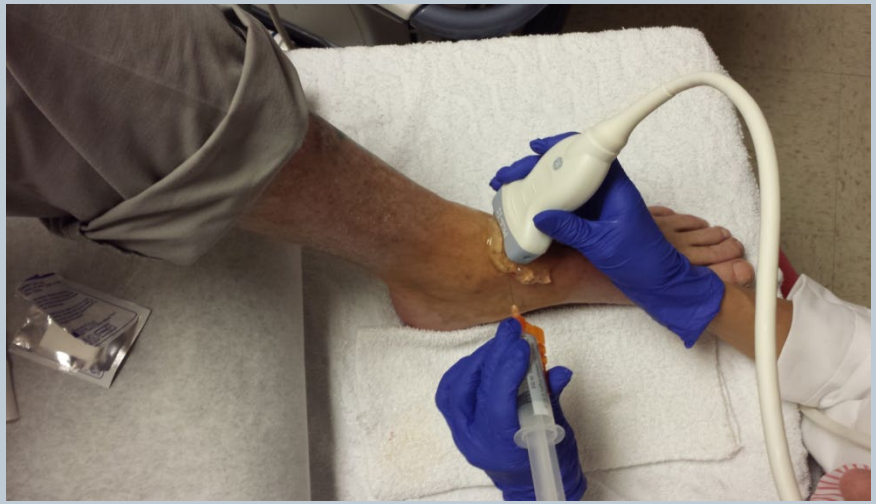


Right ankle
Tibio-talar joint space: short and long axis

Findings: Continued large complex effusio
Possible clot formation/blood coagulation

Joint aspiration





Findings: Confirmed large hemarthrosis

Additional x-rays: Unremarkable

Results/Treatment Plan

Findings

Complex effusion (compressible)

Without other abnormalities on x-ray

Diagnosis

Hemarthrosis in mild VWD patient

Treatment

Continued infusions with VWF concentrate daily for 2 weeks daily

Aspiration for pain relief

Conservative rehabilitation

Teaching points:

1) Patients with mild VWD may suffer from traumatic hemarthrosis

2) Clotting factor administration alone was unable to resolve the bleeding in a timely fashion

3) Aspiration was effective to reduce blood volume and prevent bleed recurrence

Hemophilia
A case of acute joint pain
?
Bleeding or not

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PROFESSOR OF CLINICAL MEDICINE

DIRECTOR, HEMOPHILIA & THROMBOSIS TREATMENT CENTER

UNIVERSITY OF CALIFORNIA SAN DIEGO

Case: 37 y/o male with severe Hemophilia A and inhibitor

Presentation

Acute knee pain

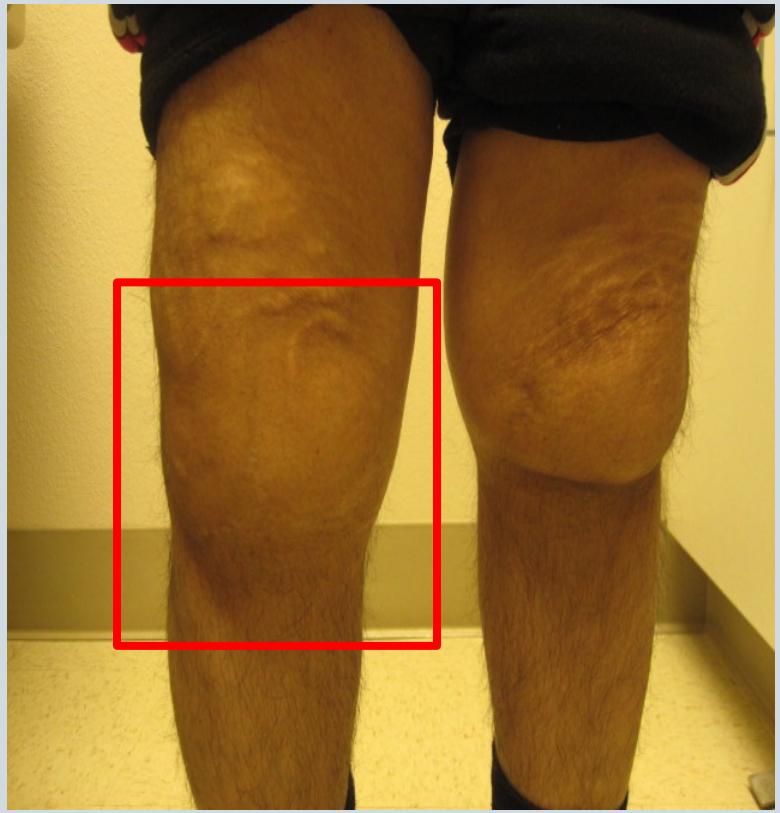
Swelling

Warmth

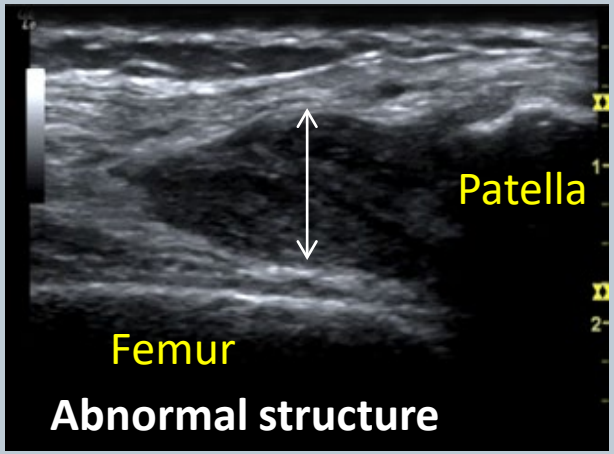
Perceived joint bleeding

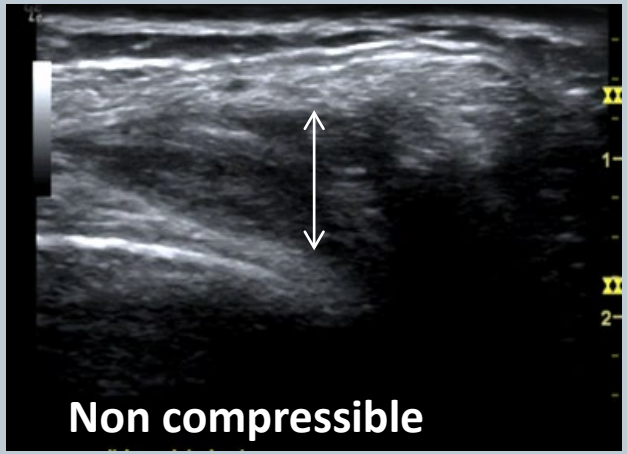
Clinical question:Bleeding or not ?

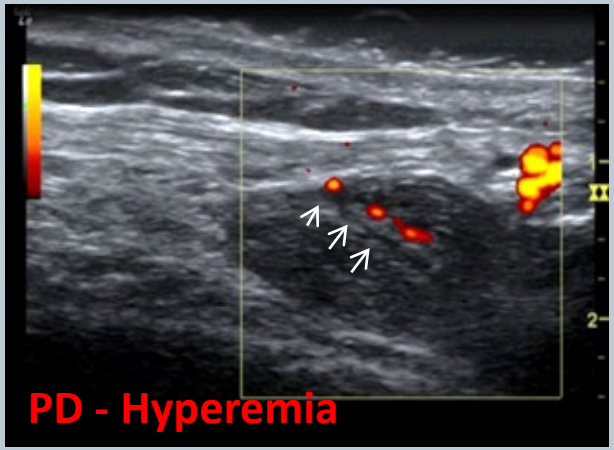
“not”= Synovitis, Arthritis, +/- Effusion

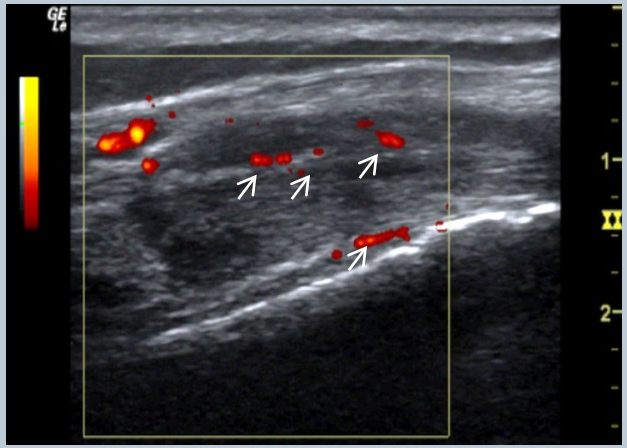


Patient









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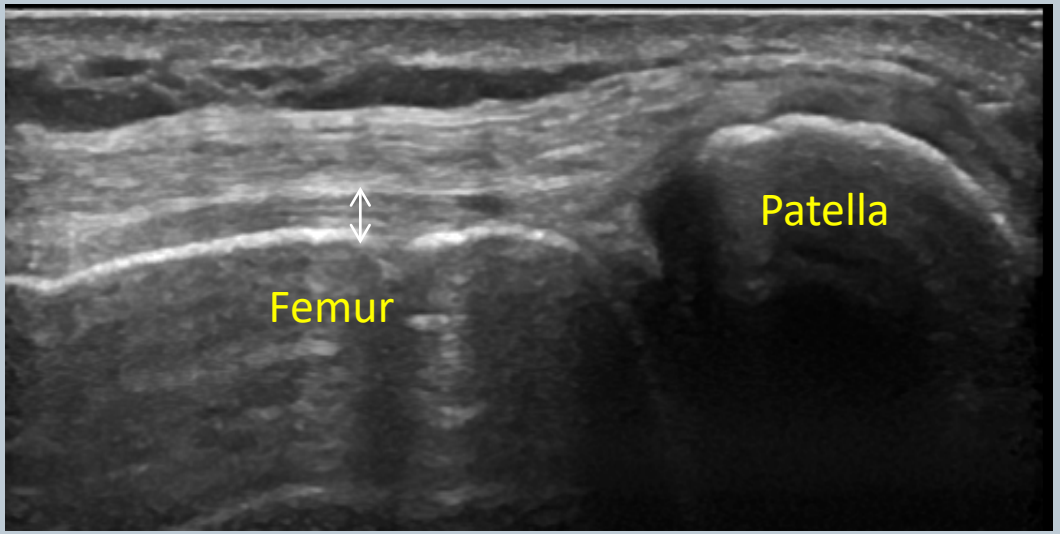

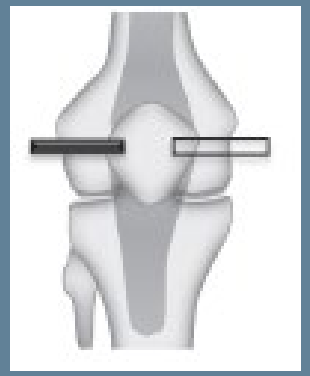

Right knee
Lateral recess

Results/Treatment Plan

Findings Lateral Recess SAX

Soft tissue expansion (non compressible)

Inflammation (PD signal present with the soft tissue)

Diagnosis

Findings most suggestive:

Synovial hypertrophy with synovitis

Treatment

Bypassing infusion x 1 with simultanous ultrasound-guided cortico-steroid injection

Teaching points:

1) It’s not bleeding but synovitis

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2) MSKUS-guided management provided long-lasting symptom relief

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3) Saved patient and payers from multiple, repeated intravenous injections of bypassing agents based on clinical suspicion only

Hemophilia
A case of acute joint pain
?
Bleeding or not

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Case : 23 y/o male with severe Hemophilia B

Presentation

History of non-adherence and denial

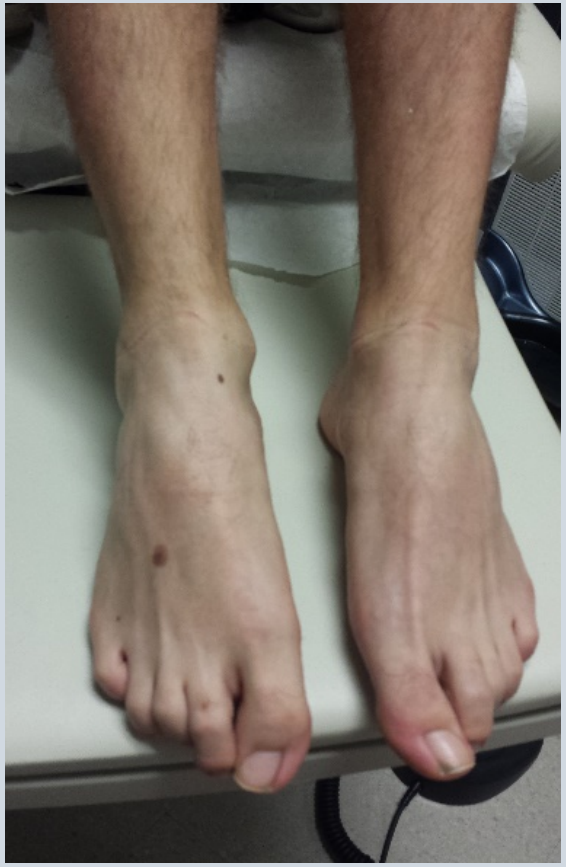
Beliefs that all his pains are “arthritic”

Acute joint pain, ROM deficit and difficulty walking

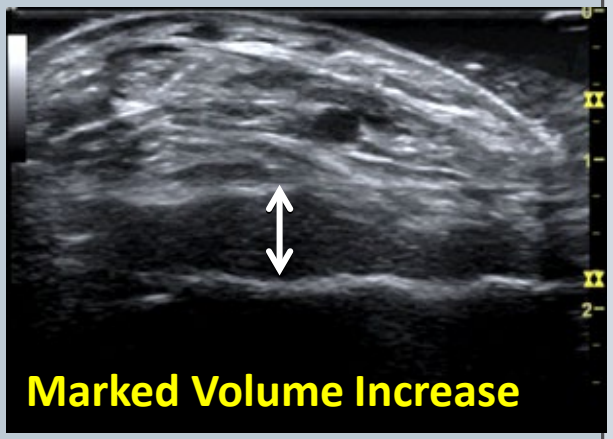
Perceived “arthritic pain”

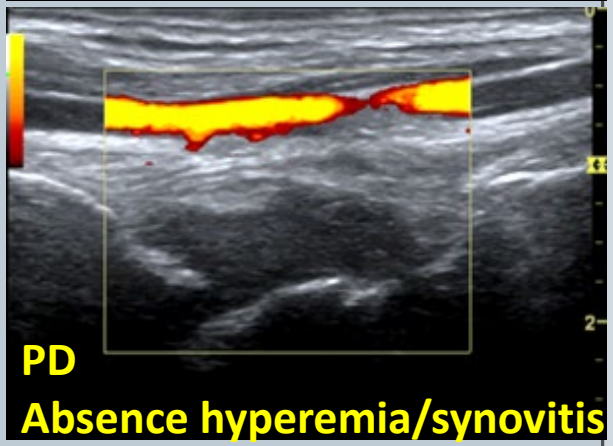
Clinical question:Bleeding or not ?

“not”= Synovitis, Arthritis, +/- Effusion



Patient





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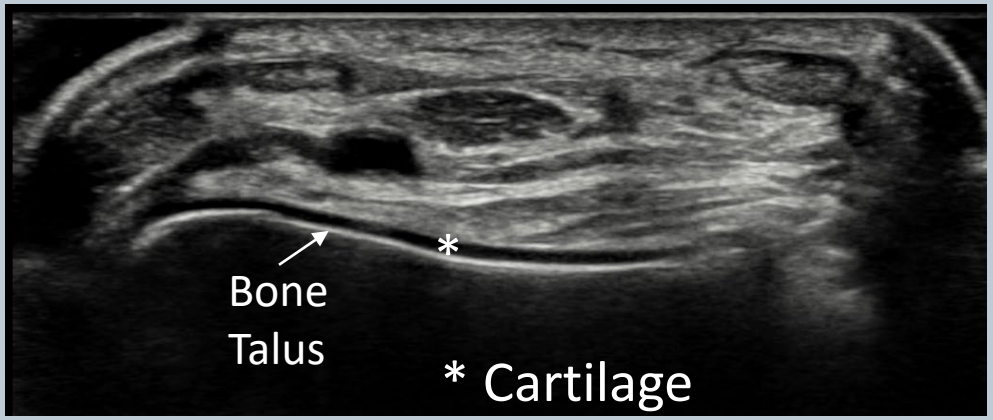

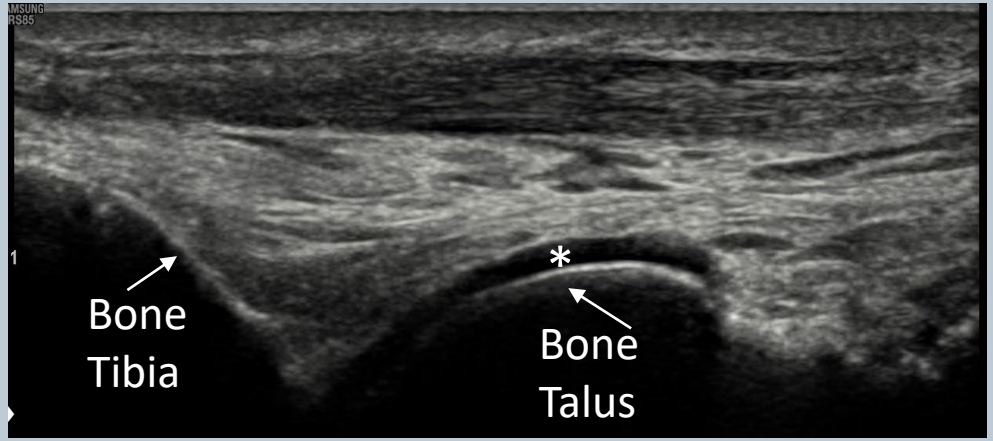

Right ankle
Tibio-talar joint space: short and long axis

Results/Treatment Plan

Findings Tibio-Talar Joint Space

Complex effusion (compressible)

Absent PD signal

Diagnosis

Findings most suggestive:

Acute Hemarthrosis

Treatment

FIX-infusion daily x3

Education regarding the importance of clotting factor prophylaxis

Teaching points:

1) It's not arthritis but hemarthrosis

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2) Clinical presentation can be inconspicuous

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3) Ultrasound images supported patient education with improved adherence thereafter