雙和急診POCUS訓練

急診下肢關節評估
Low extremity joints

陳國智醫師 雙和醫院急診醫學科
juice119@gmail.com
POCUSacademy.com

陳國智 醫師 / POCUSacademy.com

急診超音波臨床評核醫師
醫用超音波學會指導醫師
WINFOCUS director / instructor
Certified Interventional Pain Sonologist

急診 / 重症 / 介入 / 急性疼痛

經歷
新光急診超音波訓練中心主任
西園醫院急診醫學科主任
急診醫學會超音波委員會主委
台灣疼痛醫學會大體模擬手術講師
急救加護醫學會重症超音波負責人

Core Applications (2023 ACEP Emergency Ultrasound Guidelines)
15項急診超音波核心應用

陳國智醫師

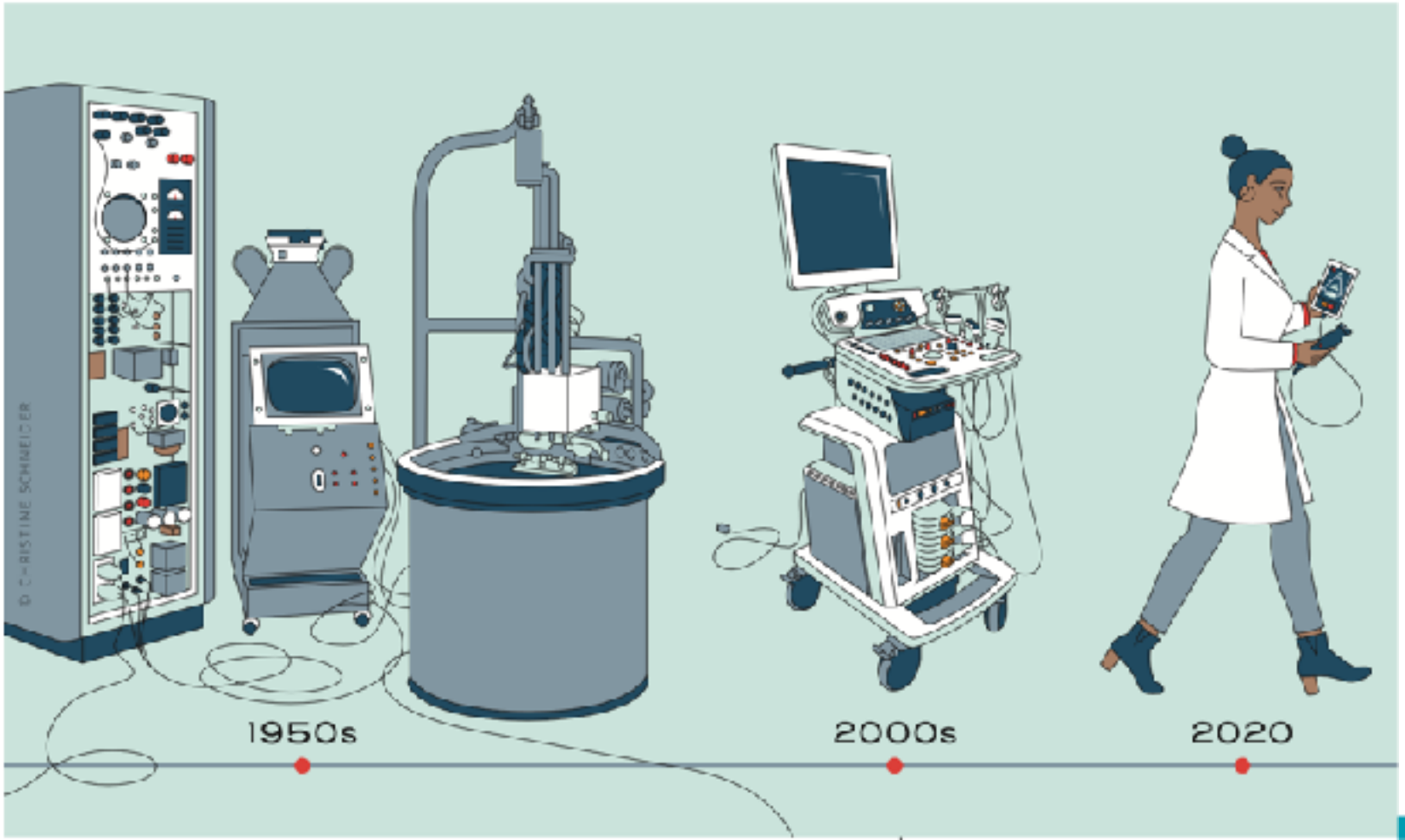
- Aorta
- DVT
- Trauma
- Thoracic/Airway
- Cardia/HD assessment

- Procedural Guidance
- US-guided NB
- Testicular
- Ocular
- Skin & Soft tissue

- Hepatobiliary
- Urinary tract
- Pregnancy
- Bowel
- MSK

JOY SHEN-WAGNER, MD, FAAFP, AND MARK DEUTCHMAN, MD, FAAFP

Point-of-Care Ultrasound: A Practical Guide for Primary Care



Point-of-Care Ultrasonography

Michael J. Arnold, MD, and Christopher E. Jonas, DO
Uniformed Services University of the Health Sciences, Bethesda, Maryland
Rachel E. Carter, MD, Naval Hospital Jacksonville, Jacksonville, Florida

The hands-on, "showing while telling" nature of POCUS advances physical diagnosis skills, fosters doctor-patient communication, and increases patient satisfaction.

Institute of Ultrasound in Medicine, the Society for Academic Emergency Medicine, the American College of Radiology, and others offer POCUS training. Training standards for POCUS have been defined for residency programs but are less established for credentialing. (*Am Fam Physician*. 2020;101(5):275-285. Copyright © 2020 American Academy of Family Physicians.)

Illustration by

POCUS FOR BEGINNERS

The best procedures for point-of-care ultrasound (POCUS) beginners are impactful for the patient, easy to perform (require a small number of quickly obtained views), simple to interpret (limited diagnostic endpoints), and low liability for patient and physician.

Tissue/system	Learn this first	Then proceed to	Transducer type
Skin and soft tissue	Cellulitis vs. abscess	Lumps and bumps	High frequency
Musculoskeletal	Knee effusions	Needle guidance	High frequency
Pelvis and obstetrics	Bladder obstruction	Intrauterine pregnancy labor and delivery	Low frequency
Abdomen	Abdominal ascites	Hydronephrosis	Low frequency
Chest	Pleural effusion	Pulmonary edema	Low frequency

Tools of the Trade: Point-of-Care Ultrasonography as a Stethoscope

Hiroshi Sekiguchi, MD[1]

[1] Division of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, Minnesota

Address for correspondence Hiroshi Sekiguchi, MD, Division of Pulmonary and Critical Care Medicine, Mayo Clinic, 200 First St SW, Rochester, MN 55905 (e-mail: sekiguchi.hiroshi@mayo.edu).

Semin Respir Crit Care Med 2016;37:68–87.

Inspection Palpation Percussion Auscultation Insonation

JAMA cardiology 2018

Soft tissue infection
Joint effusion
Foreign body
Long bone fracture
Muscle & Tendon injury
Vascular occlusion
Procedures

Chen et al. Journal of Intensive Care (2016) 4:55
DOI 10.1186/s40560-016-0179-0

Journal of Intensive Care

REVIEW Open Access

An overview of point-of-care ultrasound for soft tissue and musculoskeletal applications in the emergency department

Kuo-Chih Chen[1,2], Aming Chor-Ming Lin[3,4*], Chee-Fah Chong[1,2] and Tzong-Luen Wang[1,2]

Musculoskeletal Ultrasound in the Emergency Department

Vito Chianca, MD[1] Francesco Di Pietto, MD, PhD[2] Marcello Zappia, MD, PhD[3]
Domenico Albano, MD[1,4] Carmelo Messina, MD[1,5] Luca Maria Sconfienza, MD, PhD[1,5]

[1] IRCCS Istituto Ortopedico Galeazzi, Milano, Italy
[2] Dipartimento di Diagnostica per Immagini, Pineta Grande Hospital, Castel Volturno (CE), Italy
[3] Department of Medicine and Health Sciences, Università del Molise, Campobasso, Italy
[4] Section of Radiological Sciences, Department of Biomedicine, Neurosciences and Advanced Diagnostics, University of Palermo, Palermo, Italy
[5] Dipartimento di Scienze Biomediche per la Salute, Università degli Studi di Milano, Milano, Italy

Address for correspondence Vito Chianca, MD, IRCCS Istituto Ortopedico Galeazzi, Via Riccardo Galeazzi 4, 20161 Milano, Italy (e-mail: vitochianca@gmail.com).

Semin Musculoskelet Radiol 2020;24:167–174.

ELSEVIER

Seminars in ROENTGENOLOGY

Musculoskeletal Ultrasound in the Emergency Department: Is There a Role?

Michael V. Perone, MD, and Corrie M. Yablon, MD https://doi.org/10.1053/j.ro.2020.09.004

Limitations of US

In the hands of highly skilled practitioners, the performance of MSK US in the assessment of superficial soft tissue and tendon injury is equal to MRI. A barrier to the performance of MSK US in the ED is the high degree of training that is required of personnel, both to scan and to interpret the images. Sonographers must be able to recognize the artifacts inherent to MSK US and must be able to manipulate the various parameters in order to optimize image quality. It is vital to have a sophisticated understanding of MSK anatomy and the varied sonographic appearances of tissues such as skin, subcutaneous fat, muscle, tendon, ligament, and synovium, both when normal and abnormal. Without this high level of understanding, the resulting images can be confusing at best, and cause missed diagnoses at worst.

https://doi.org/10.1053/j.ro.2020.09.004

Steady Hand

探頭　　操作者的手　　皮膚

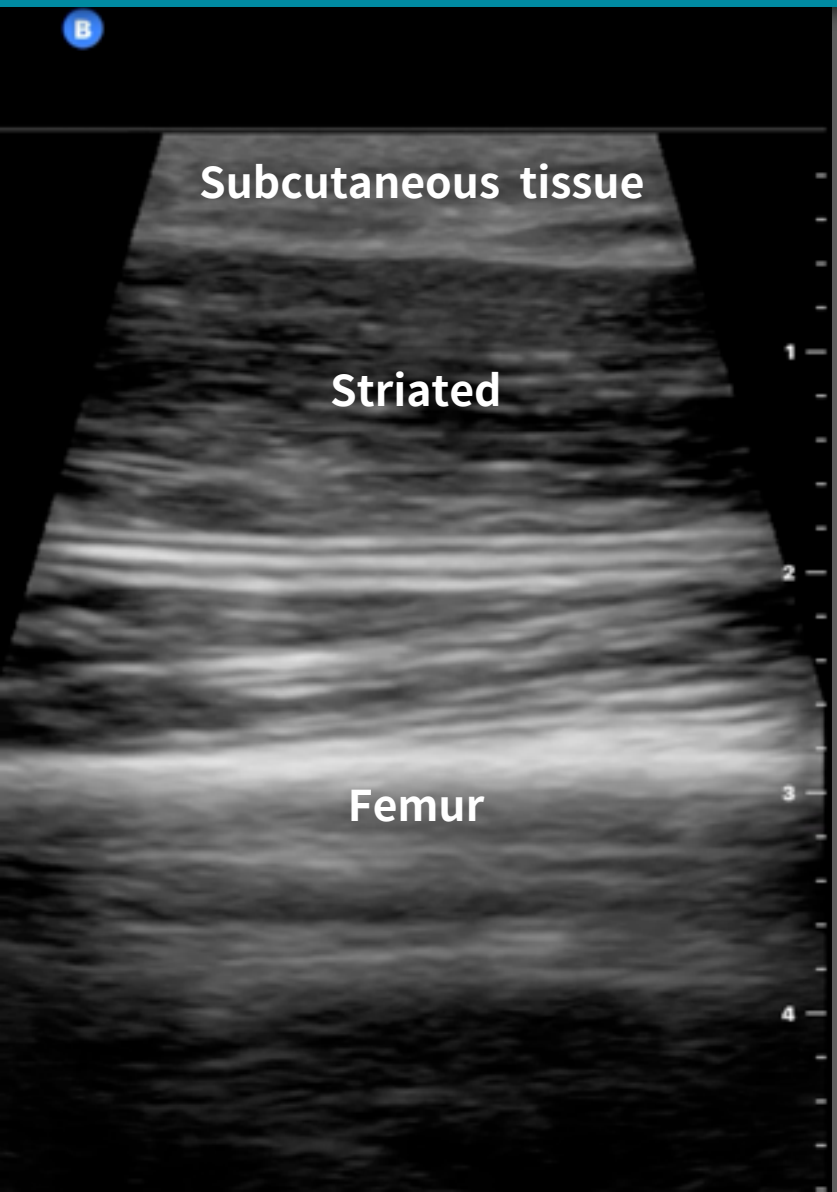
MSK掃描原則

管狀構造橫掃優先

先找外在明顯定位

確認內在明顯標的

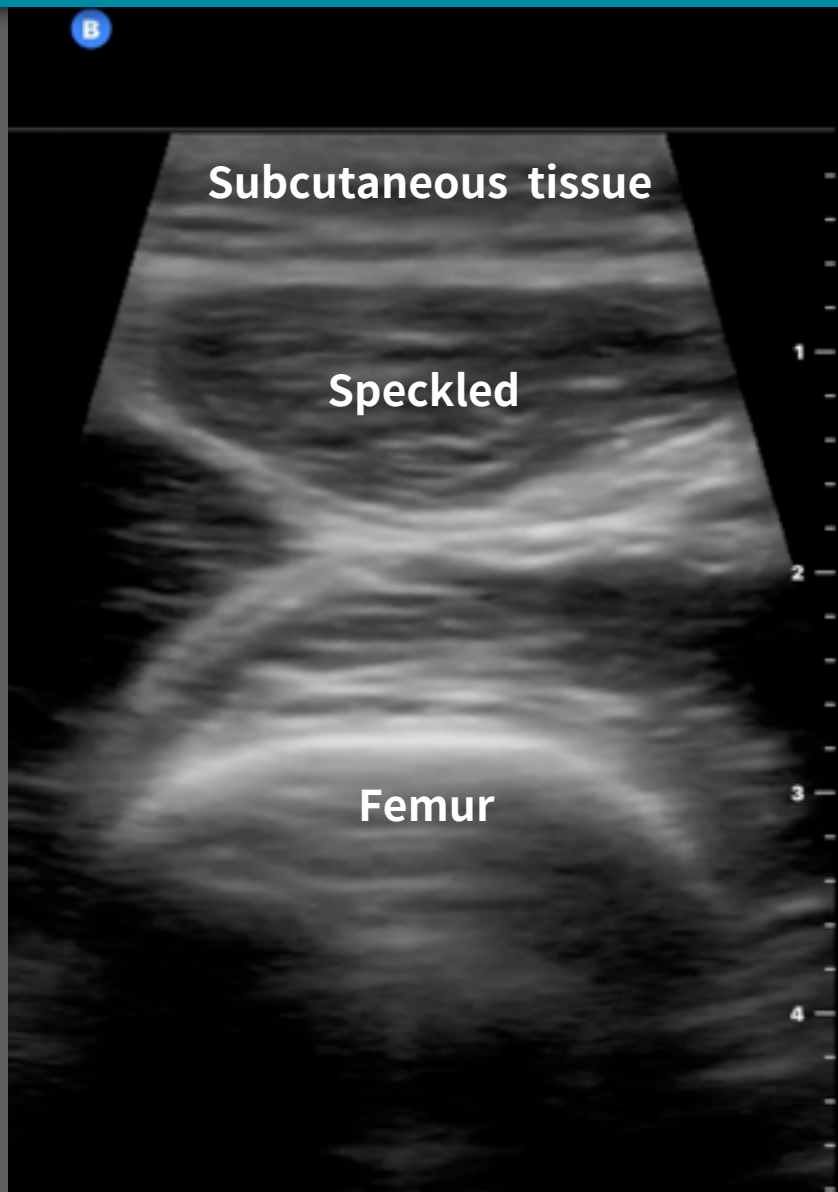
MSK的重要三界線(白線)



皮膚

筋膜

骨頭

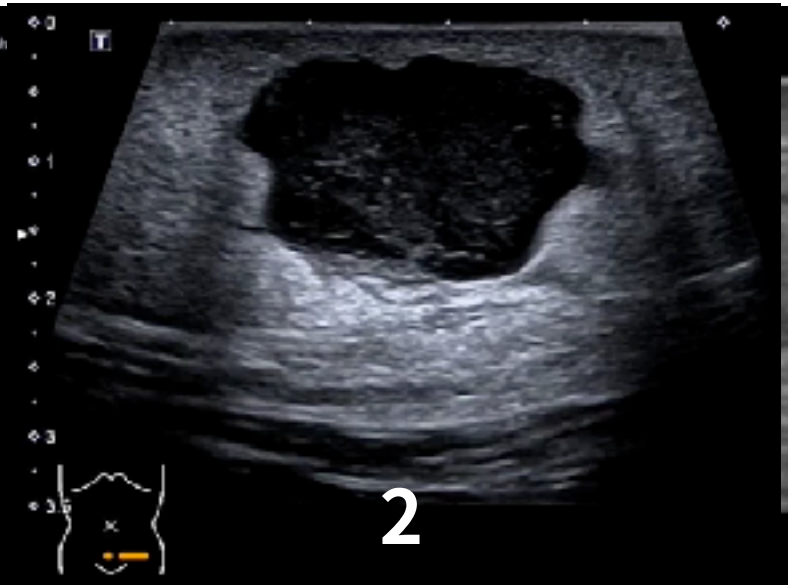


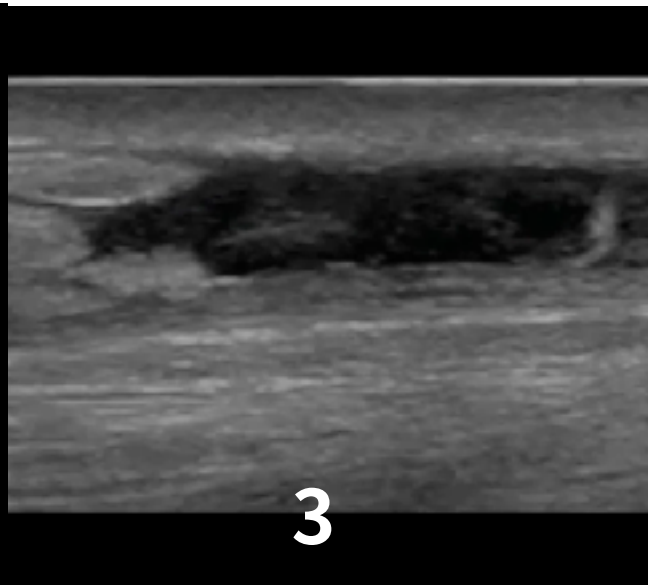
軟組織感染症

蜂窩性組織炎

膿瘍

壊死性筋膜炎





Cobblestone

Collection

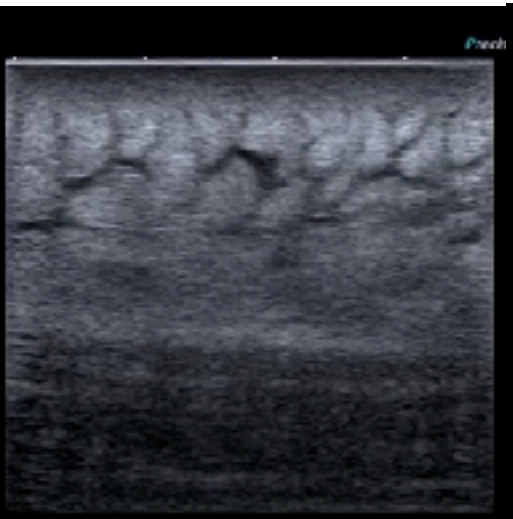
Fascial fluid >4mm

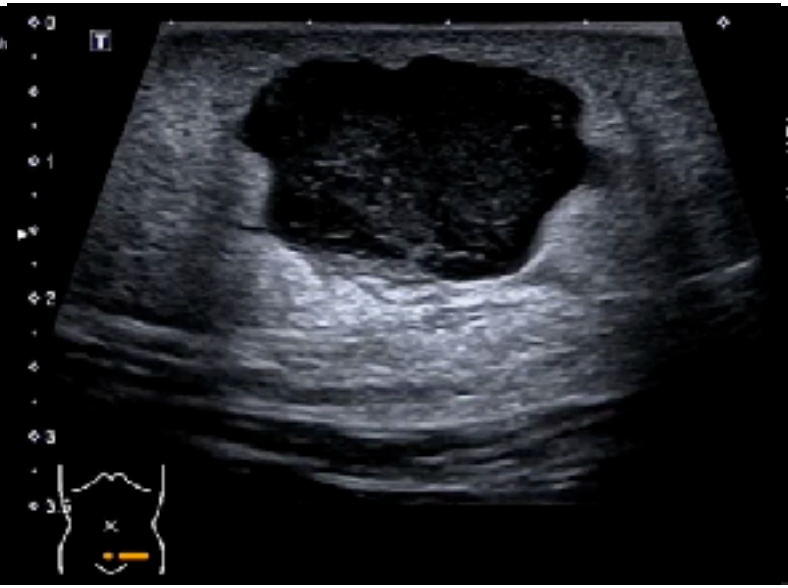
軟組織感染症

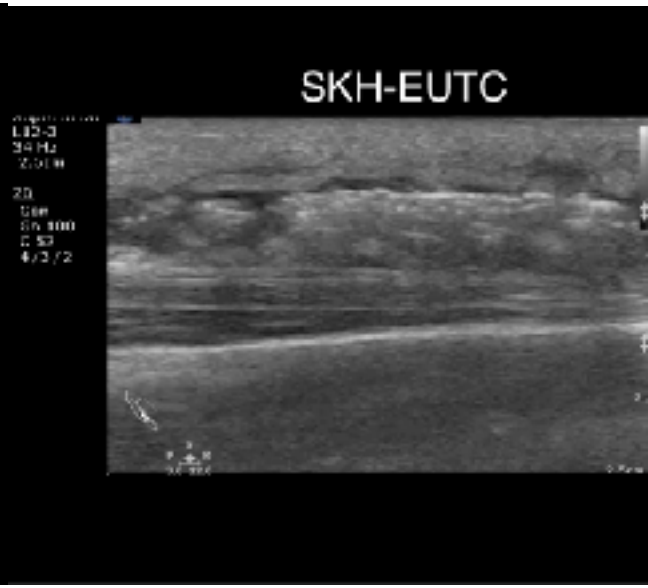
蜂窩性組織炎

膿瘍

壞死性筋膜炎





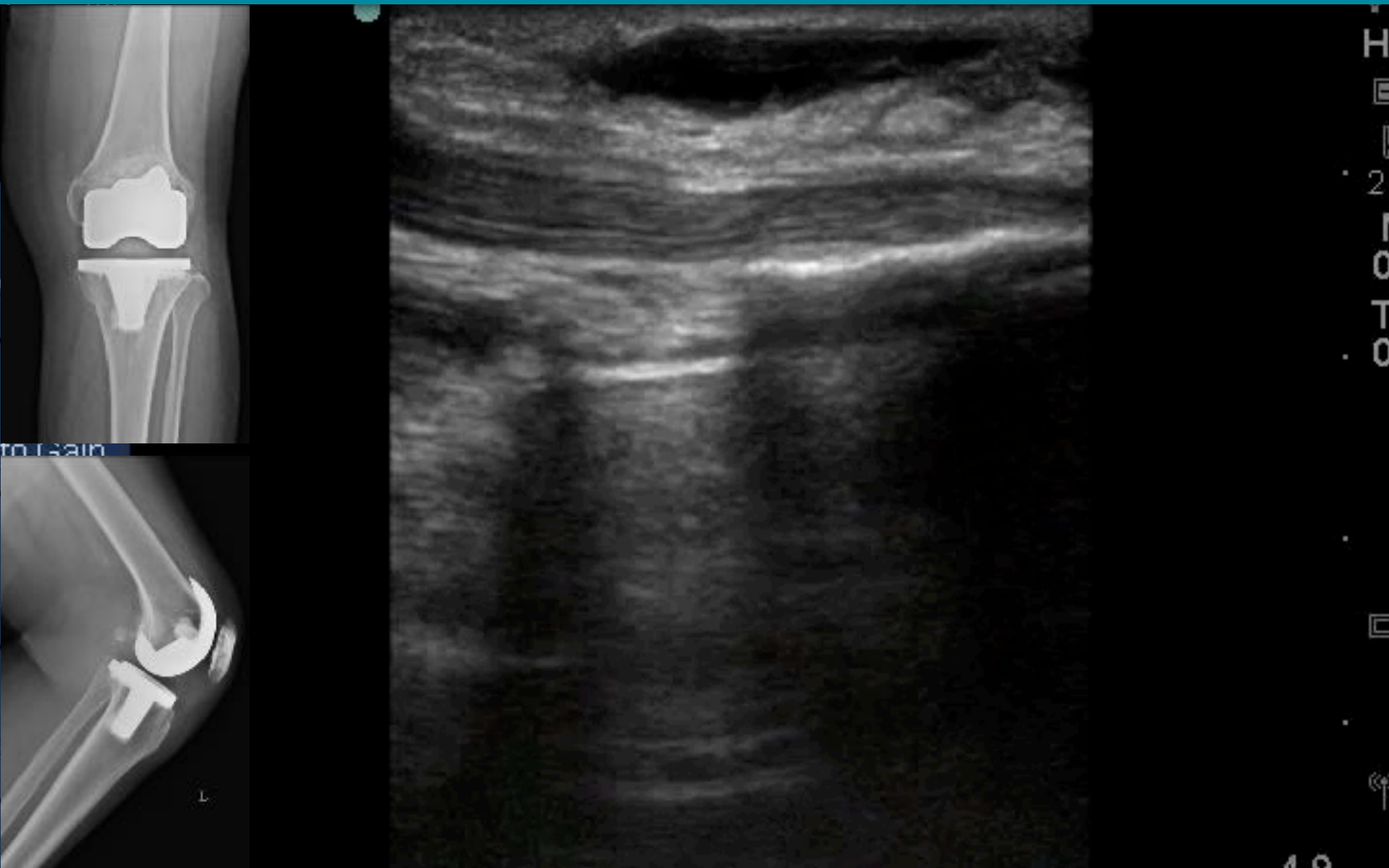


Cobblestone

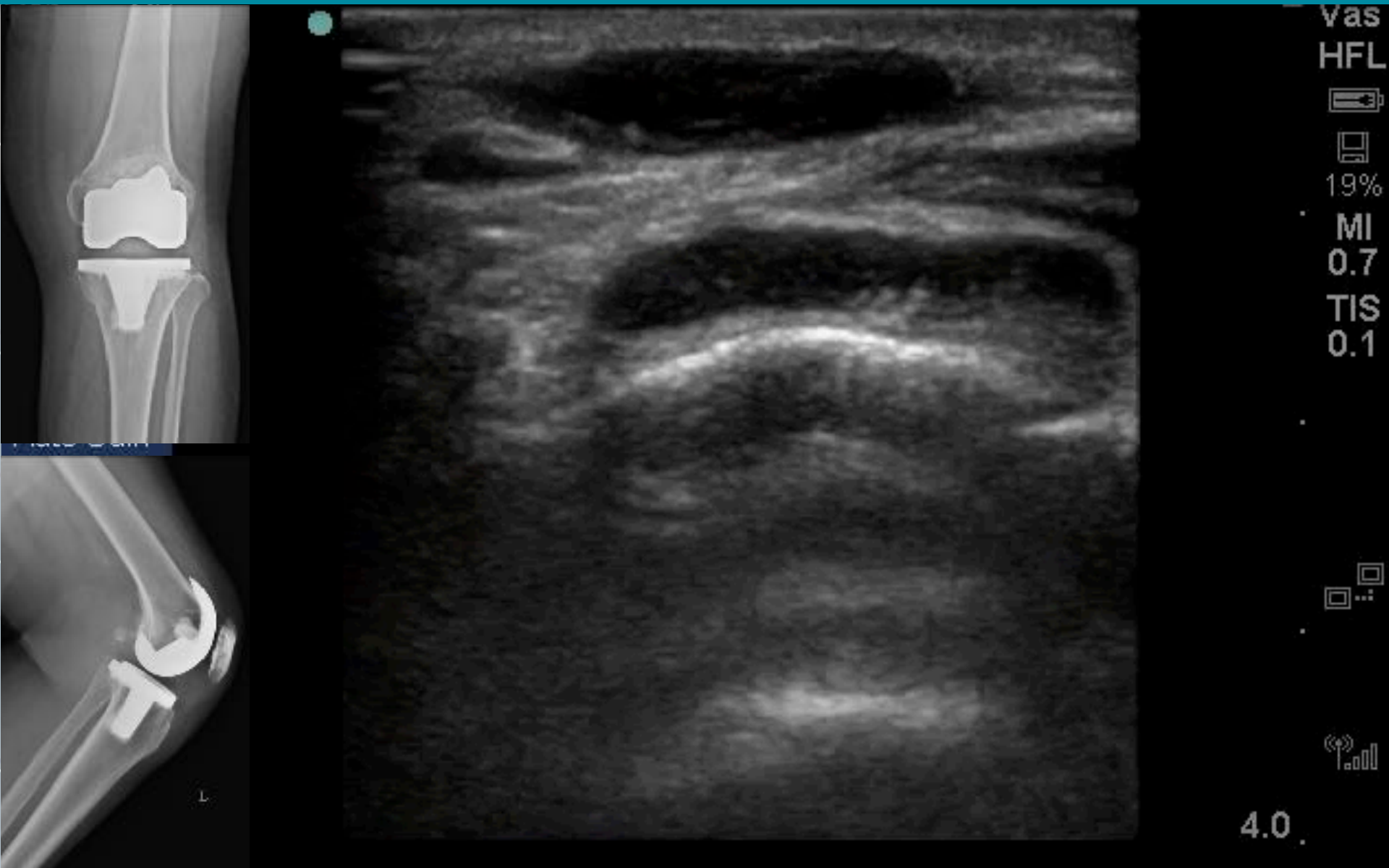
Collection

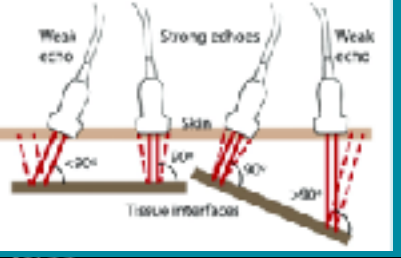
Subcutaneous
Thickening
Air
Fascial
Fluid

72F, left knee cellulitis

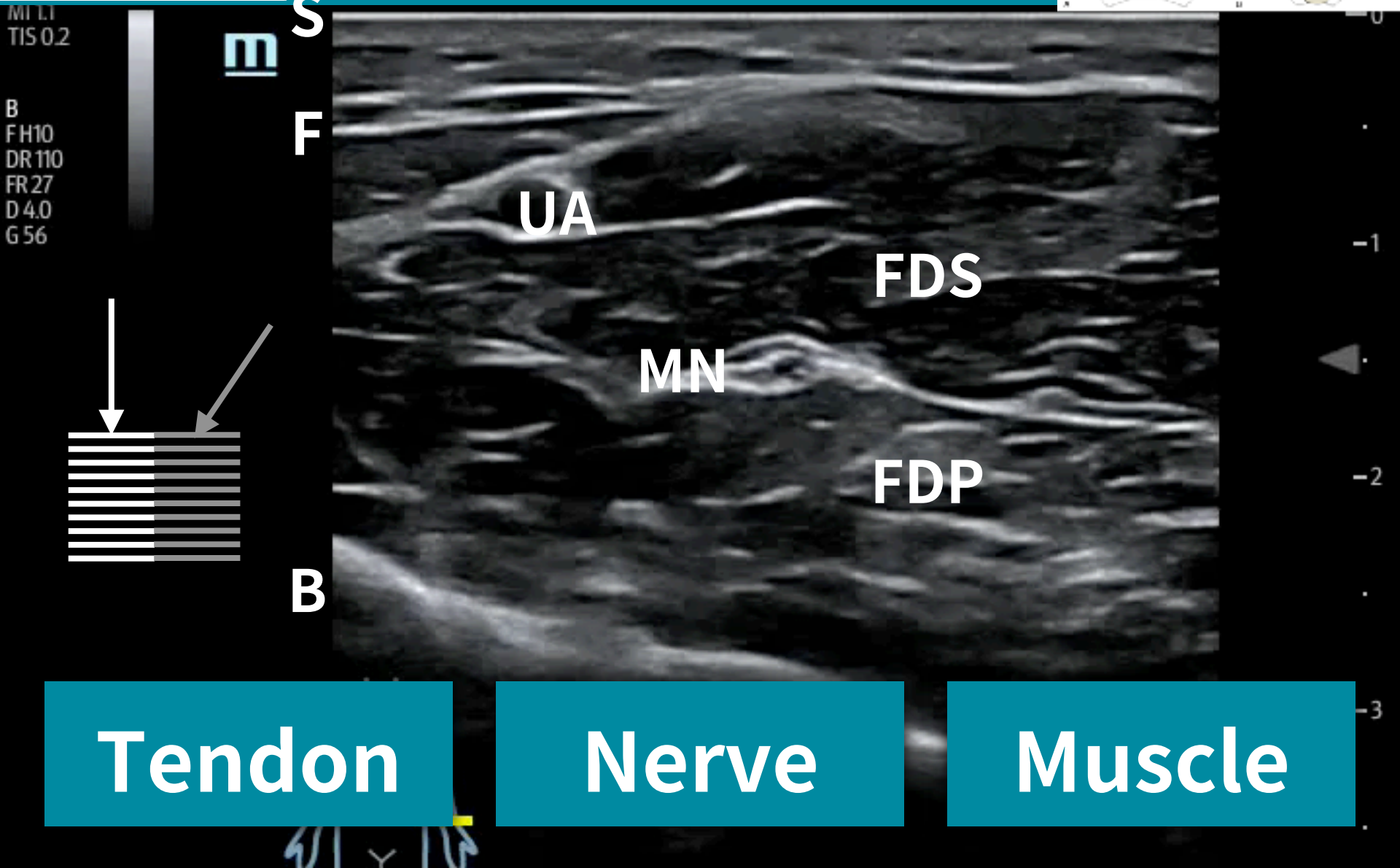


72F, left knee cellulitis





Anisotropy



Tendon | **Nerve** | **Muscle**

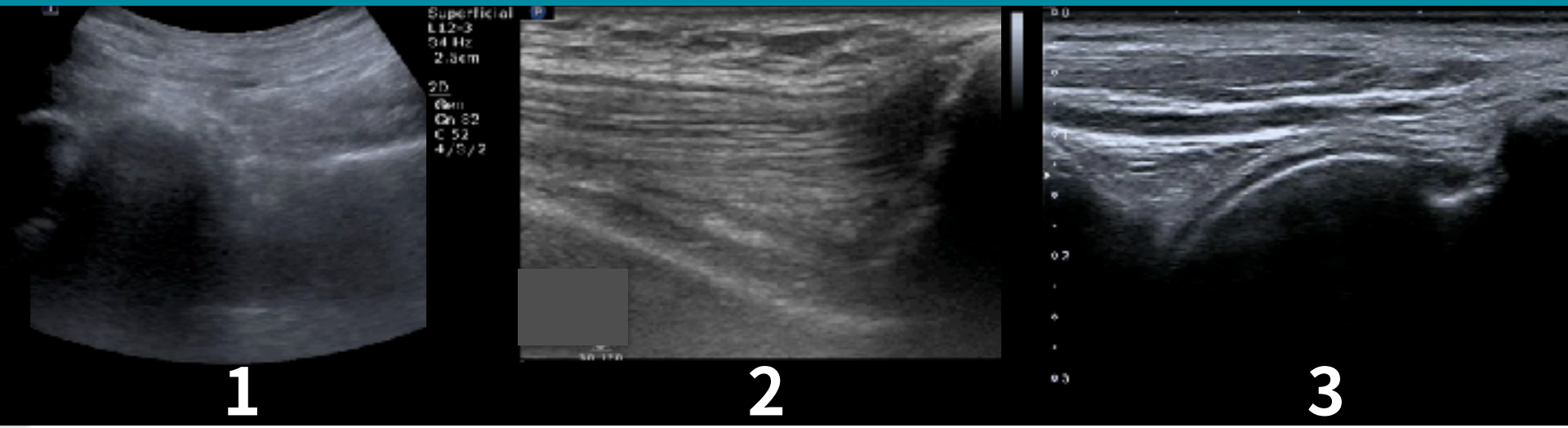
23M，車禍，右膝腫痛

23M，車禍，右膝腫痛

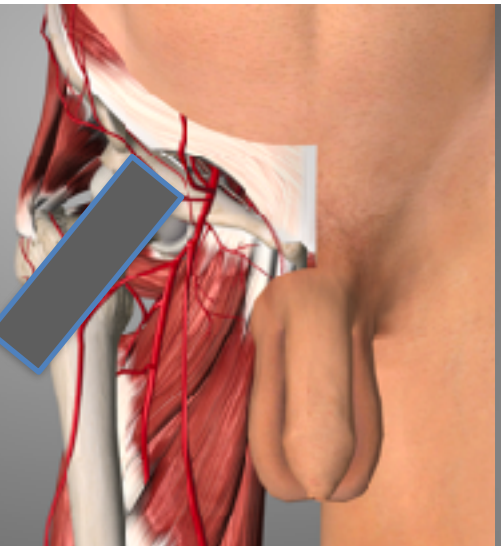

R
R


Patient
Auto Gain

Lower extremity joints

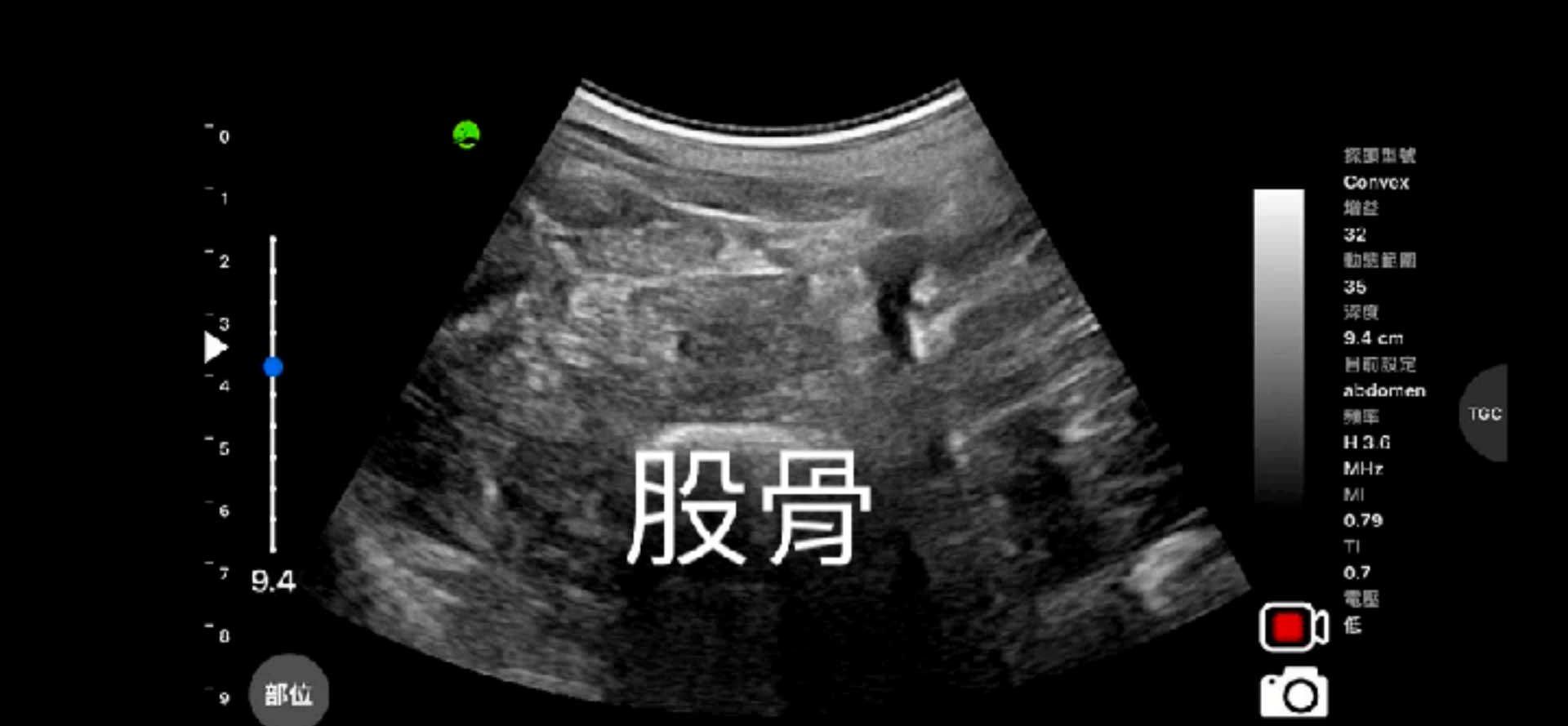


Hip



Knee

Ankle


0
1
2
3
4
5
6
7
8
9
9.4
部位
股骨
探頭型號
Convex
增益
32
動態範圍
35
深度
9.4 cm
目前設定
abdomen
頻率
H3.6
MHz
MI
0.79
TI
0.7
電壓
低
TGC

右大腿橫向掃描

*關節積液觀察部位

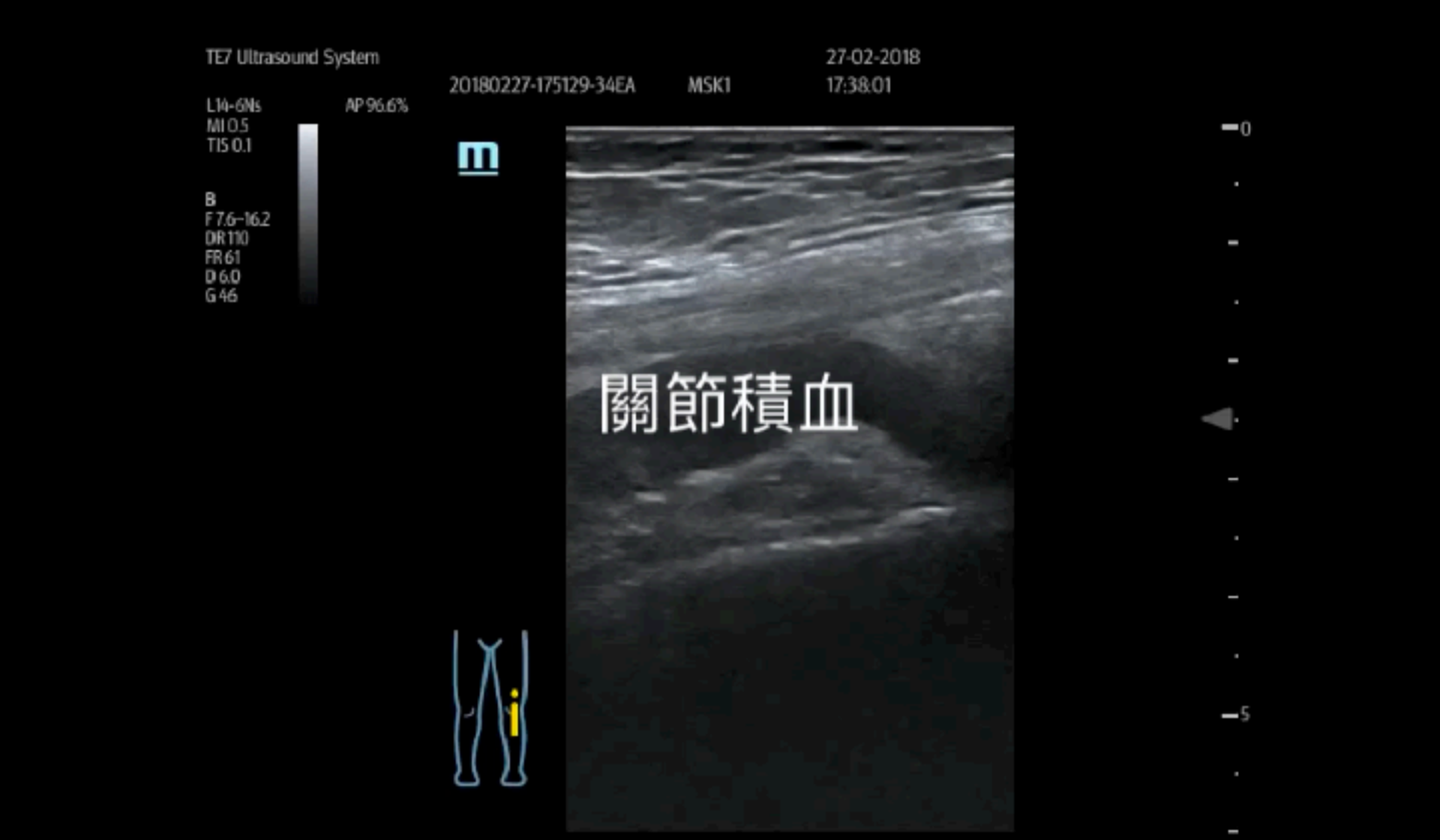
髕關節縱向掃描

*關節積液觀察部位

膝關節縱向掃描

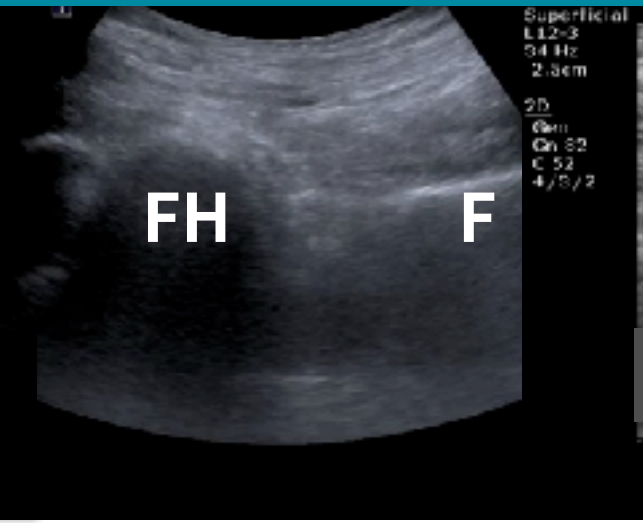
*關節積液觀察部位

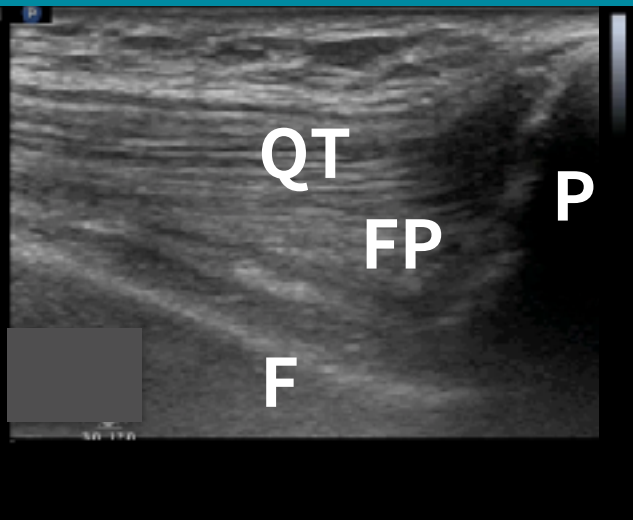
踝關節縱向掃描

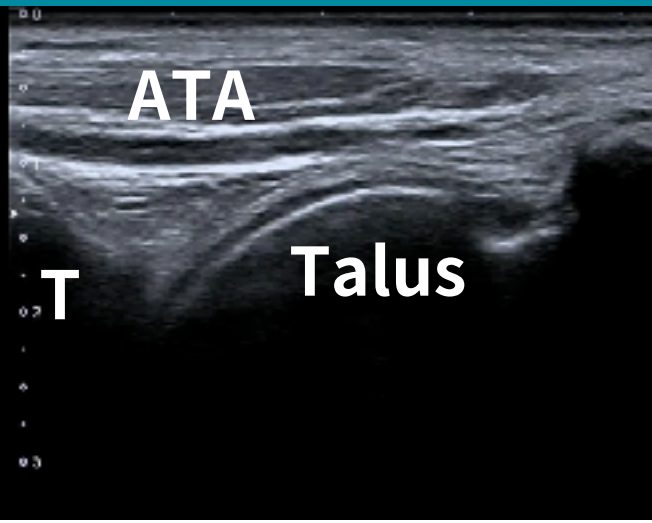

TE7 Ultrasound System
27-02-2018
20180227-175129-34EA
MSK1
17:38:01
L14-6Ns
AP 96.6%
MI 0.5
TIS 0.1
B
F 7.6–16.2
DR 110
FR 61
D 6.0
G 46
關節積血
0
5

膝關節縱向掃描

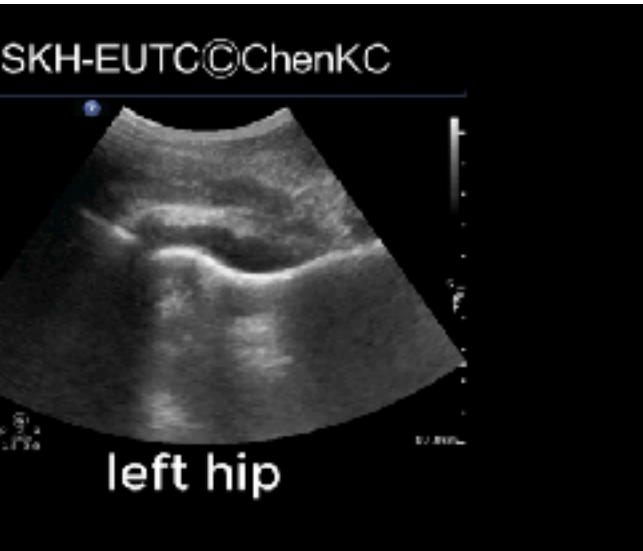
LE Joint effusion





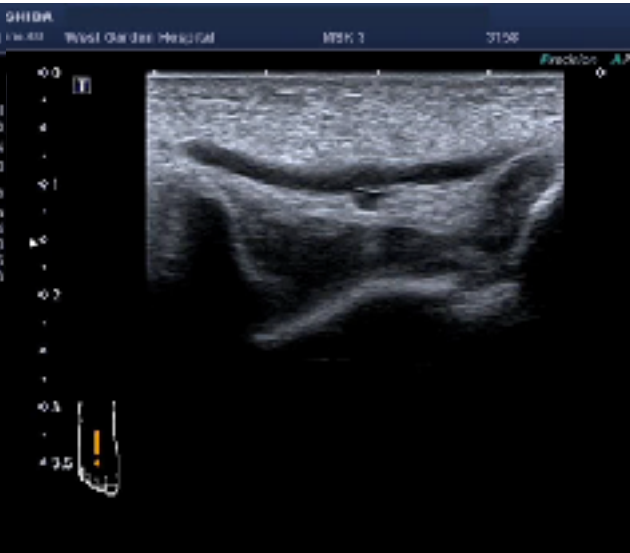


Hip

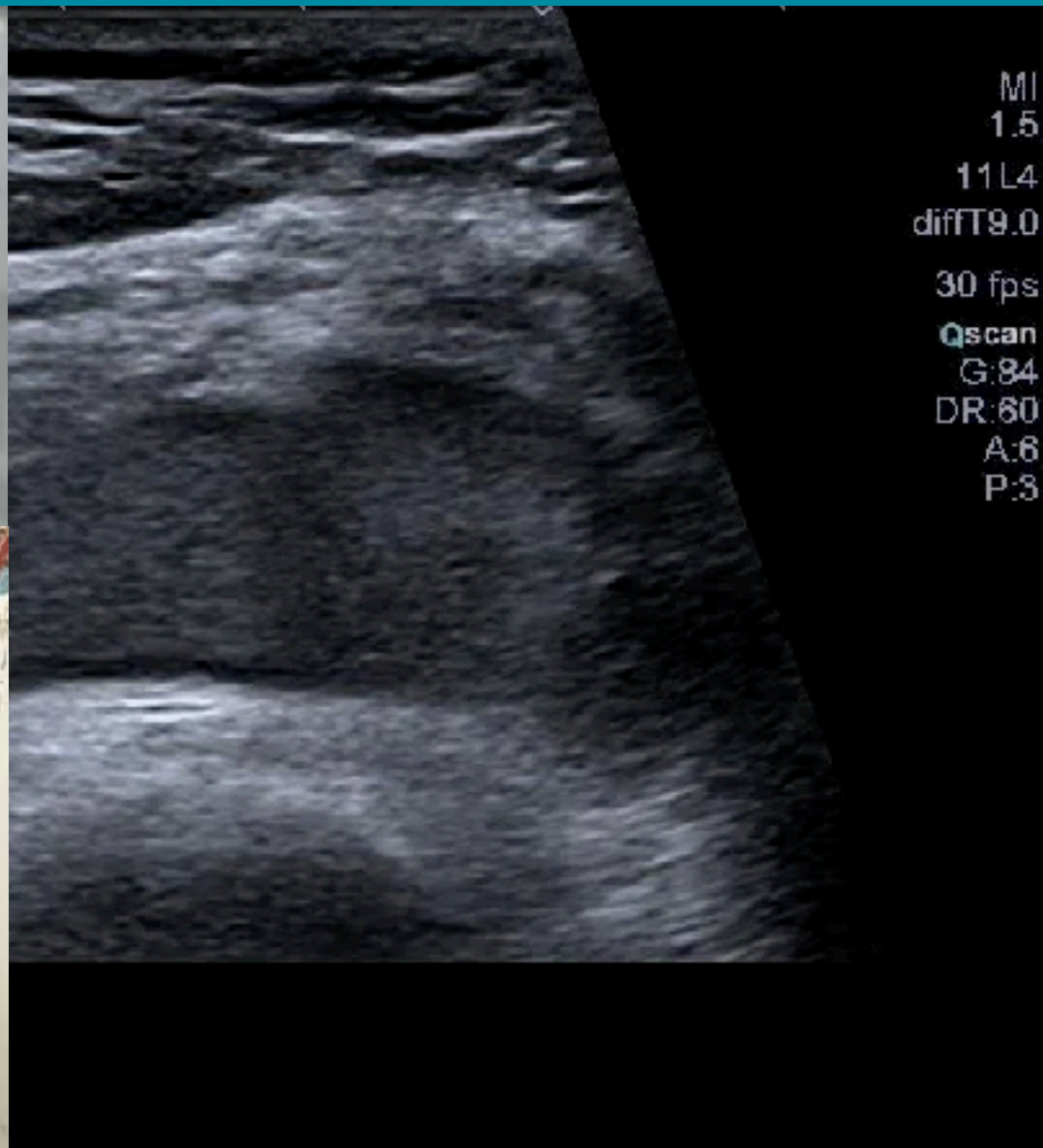


Knee

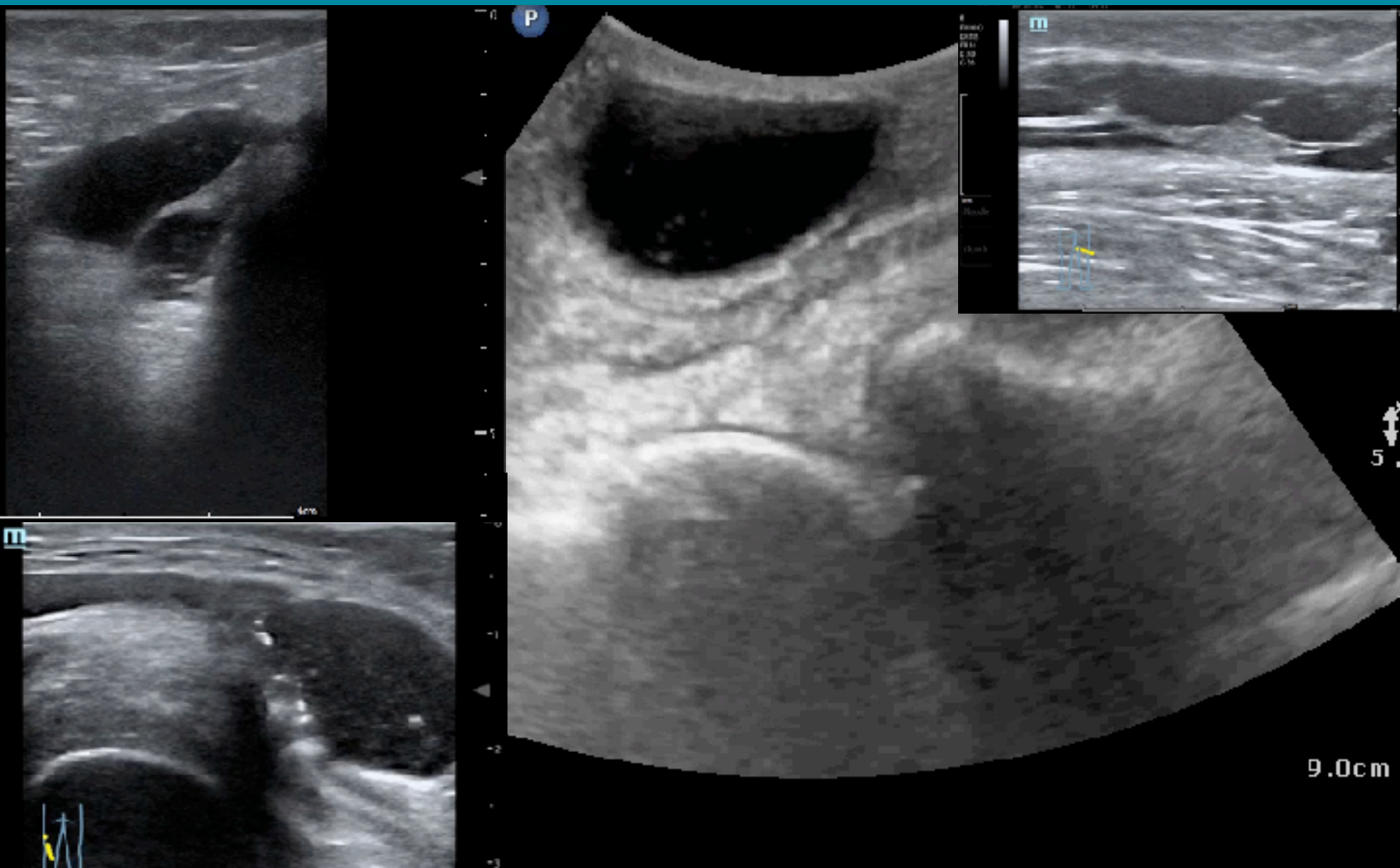
Ankle



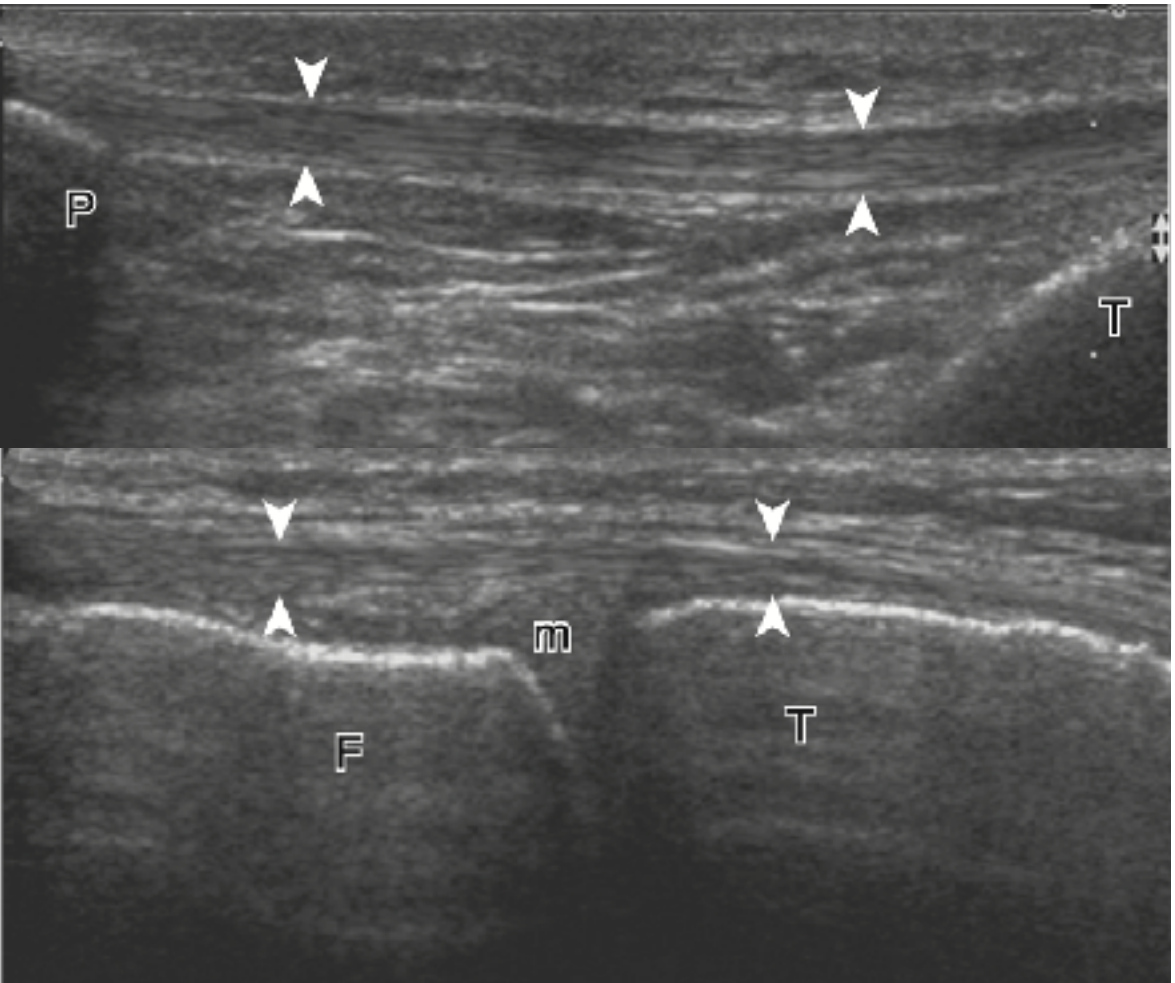
Needling for hemarthrosis



Baker’s cyst



Tendon 靭帯



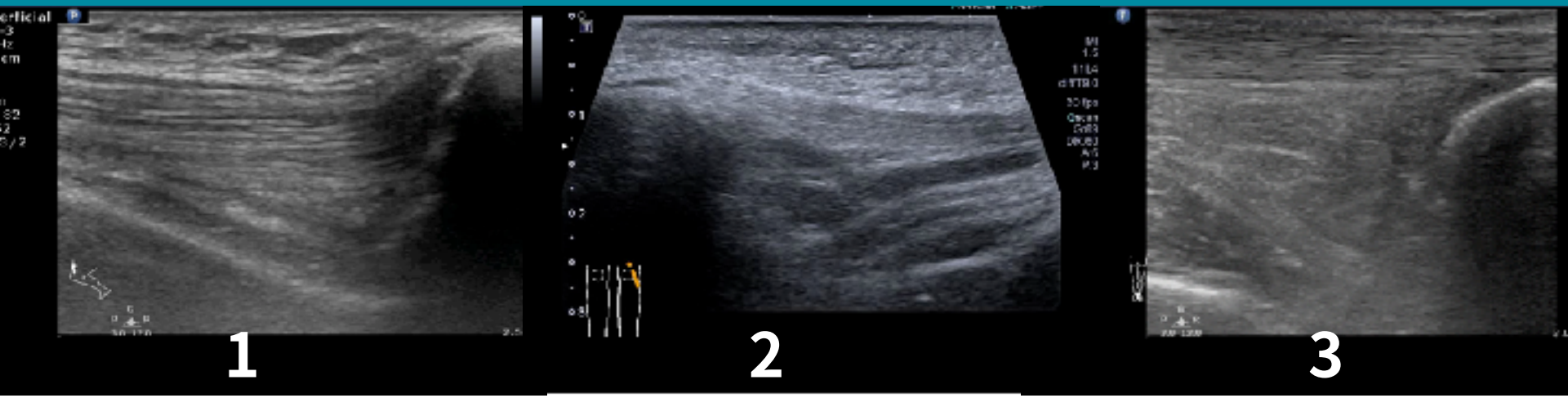
高回音

Fibrillar

Grade of Injury

I : no fiber disruption
II : partial fiber disruption
III: complete fiber disruption

Tendon

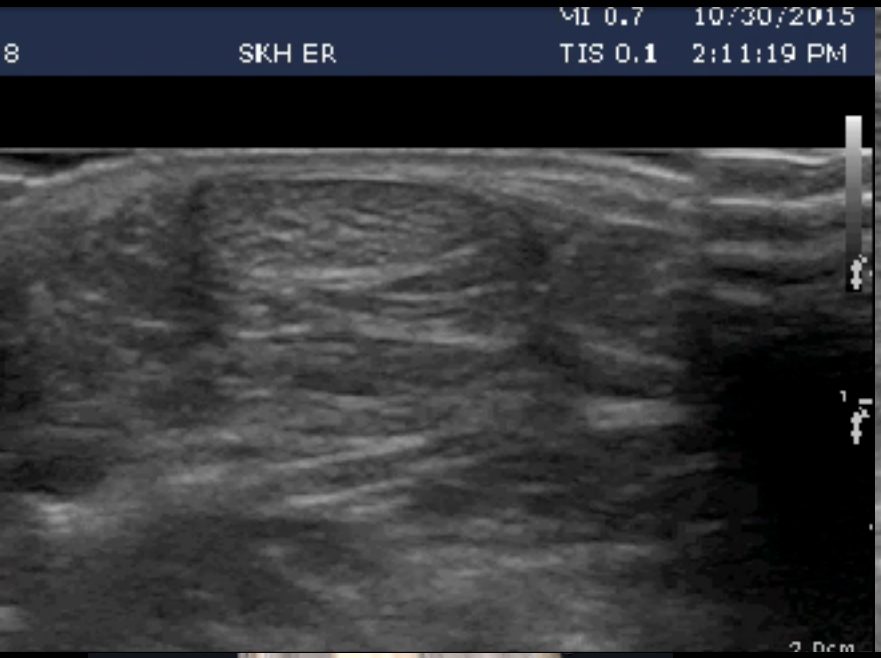


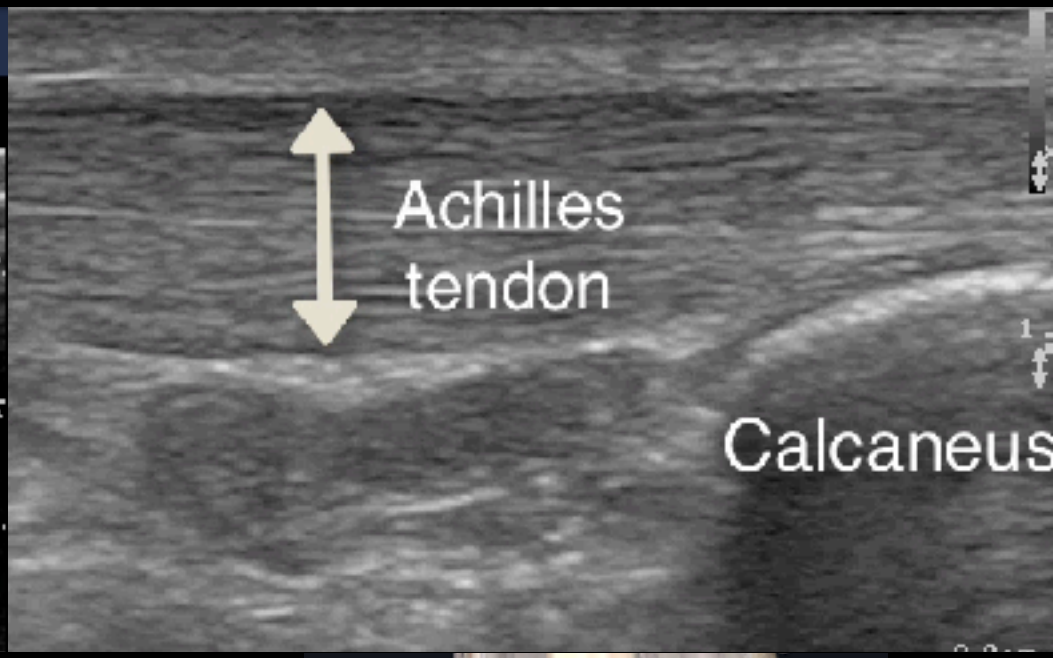
Qudriceps Tendon

Patellar Tendon

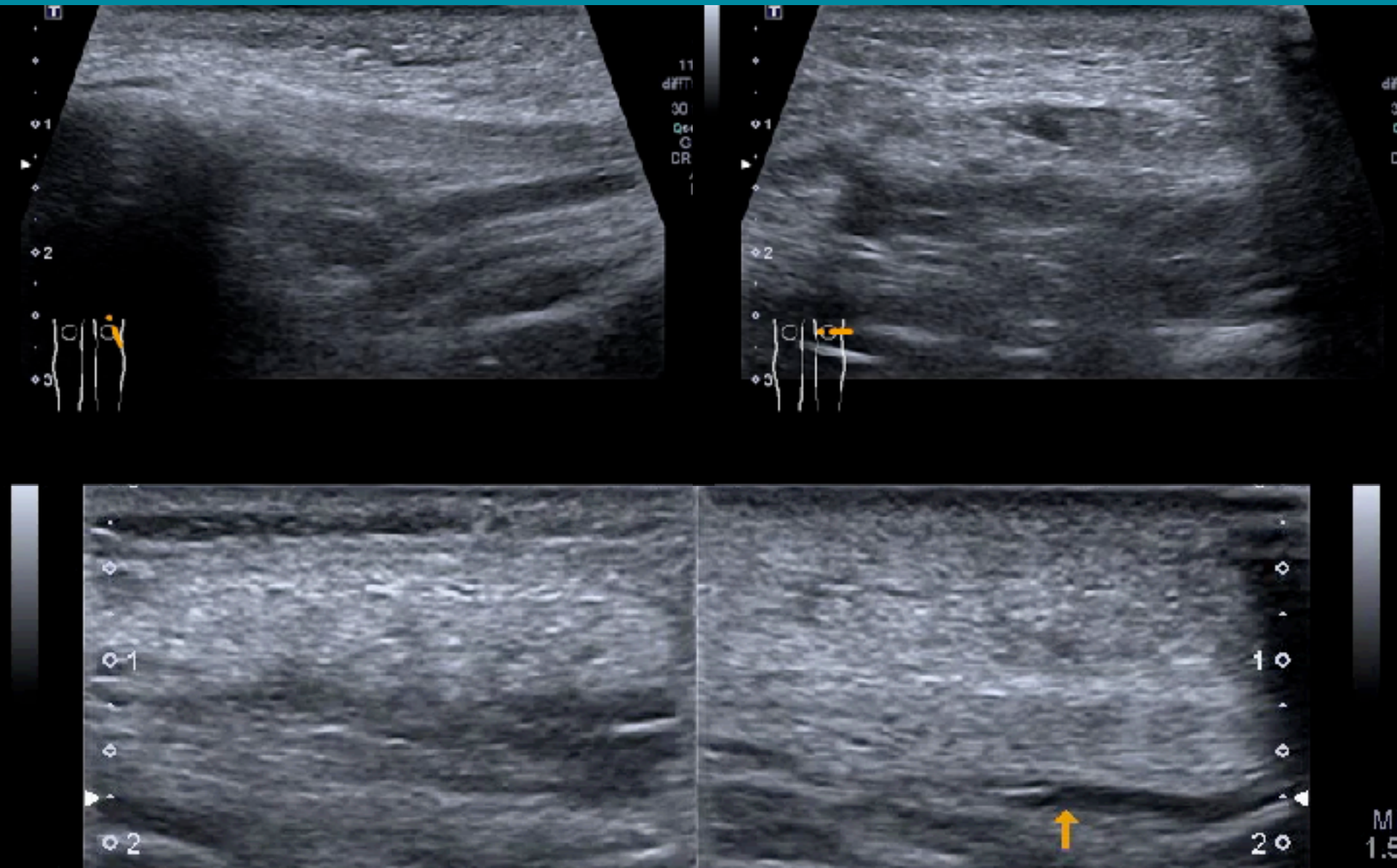
Achilles Tendon

Achilles tendon rupture





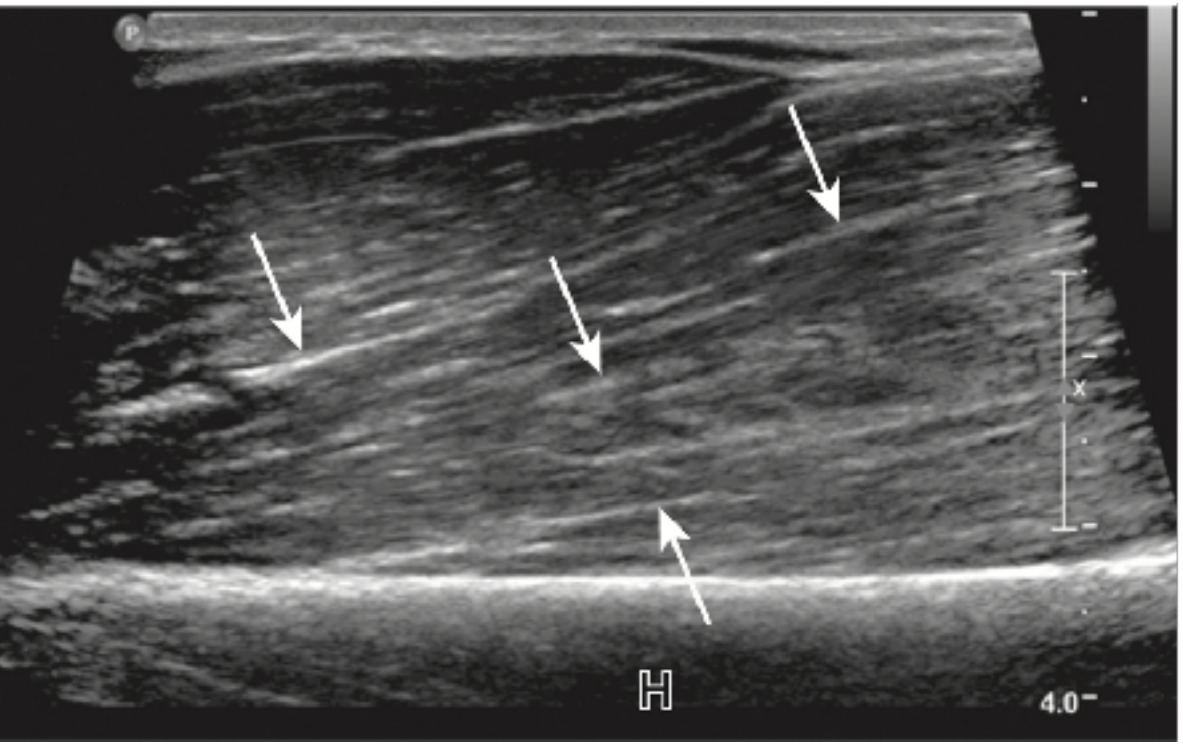
Patellar tendon injury



Muscle 肌肉

Grade of Injury

I : no fiber disruption
II : partial fiber disruption
III: complete fiber disruption



Bristal brush

Hypoechoic mucle

Hyperechoic fibroadipose tissue

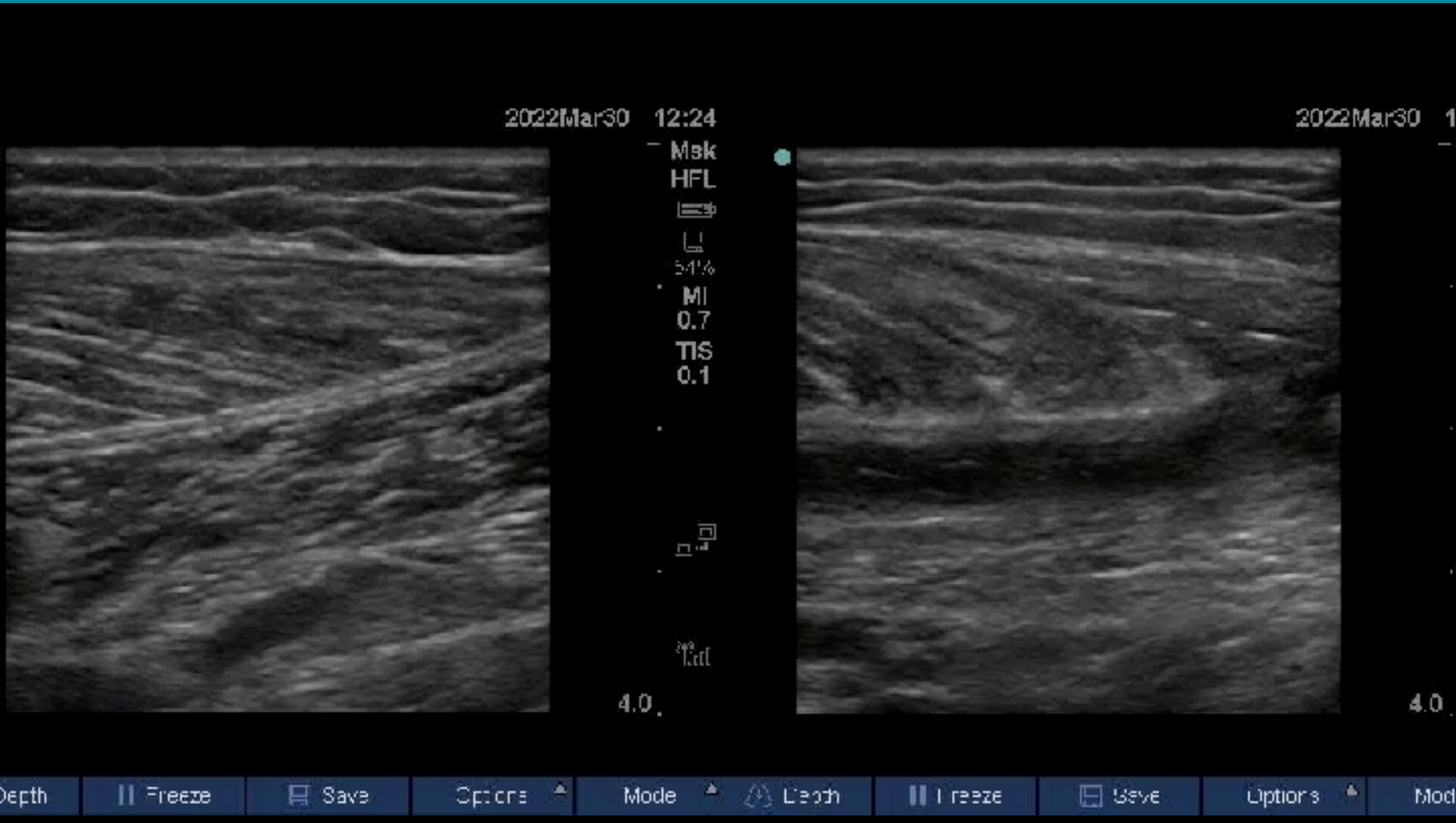
58M, right leg pain while running

Calf muscle tear

Left calf

Right calf

Calf muscle tear

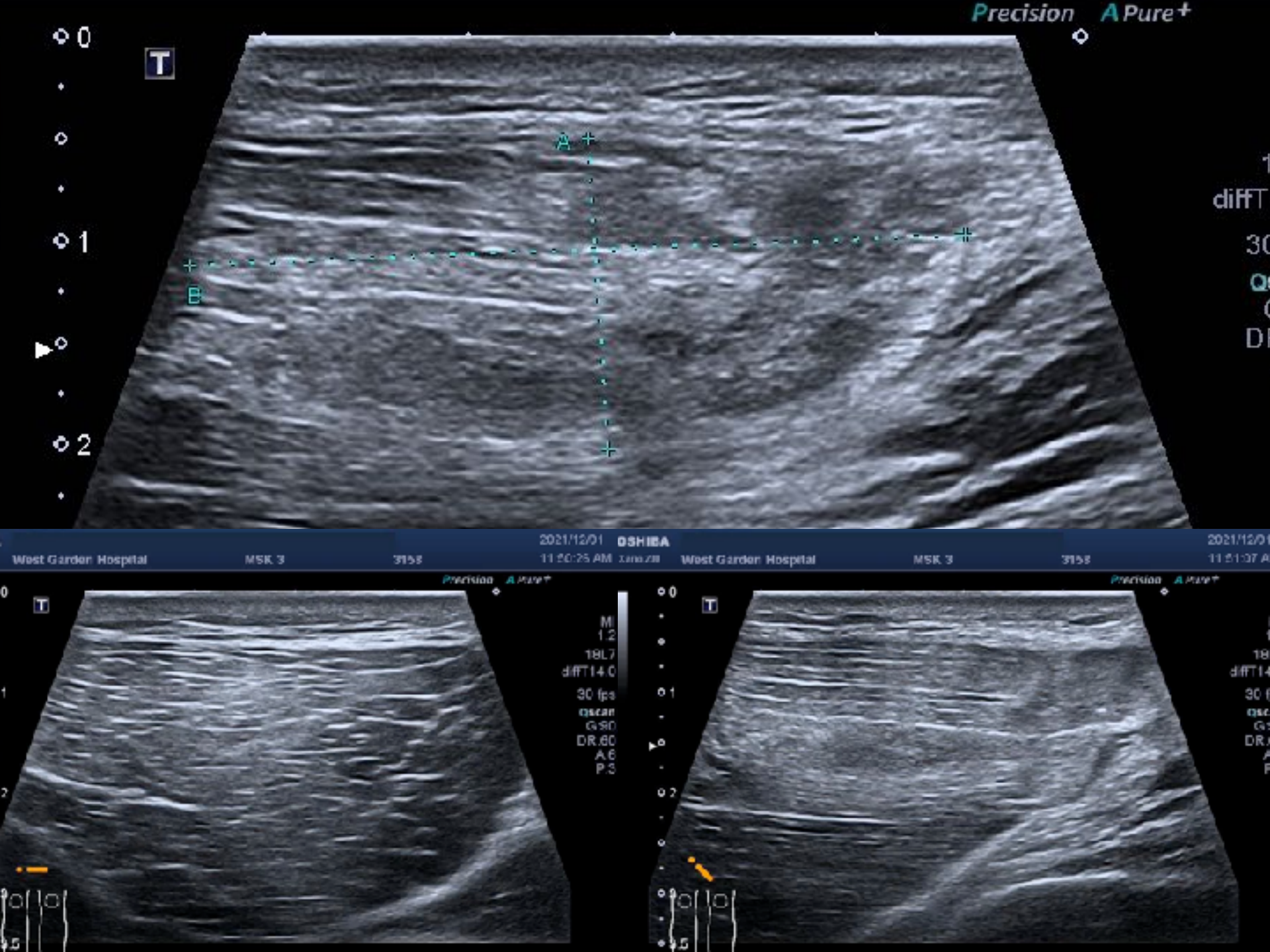


Calf muscle tear

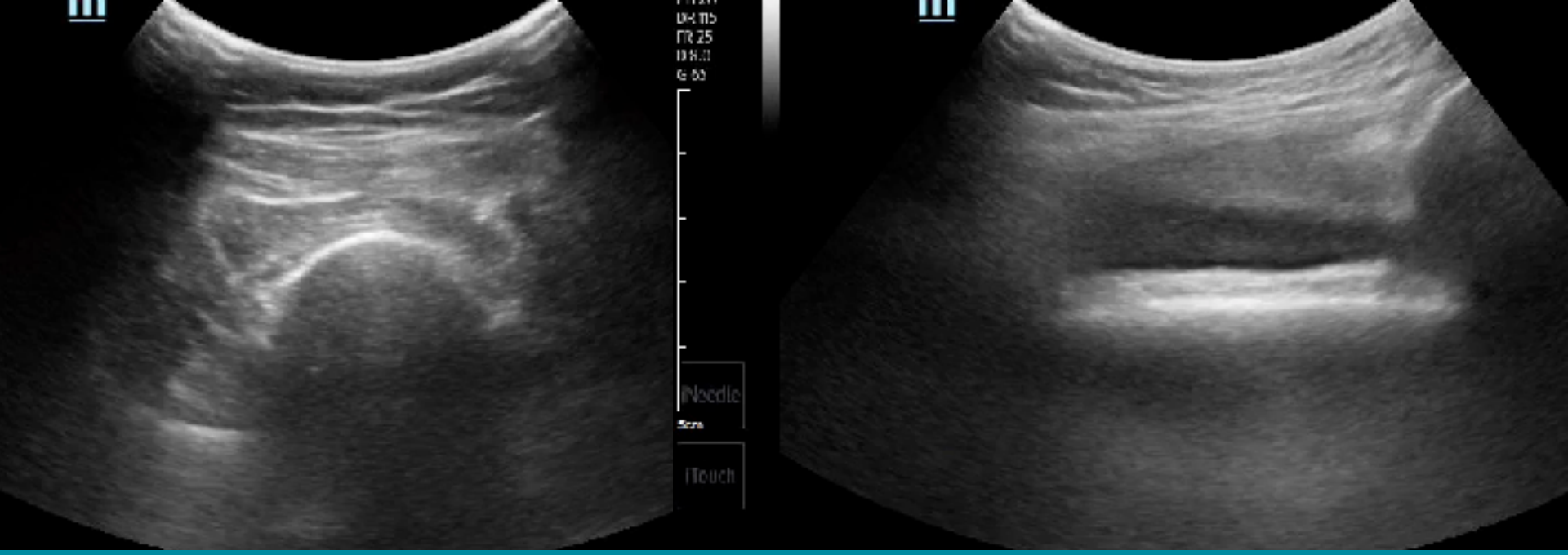
226 游: 3.8Km - 騎180Km - 跑42km

秀姑巒溪　　新白陽　　武嶺

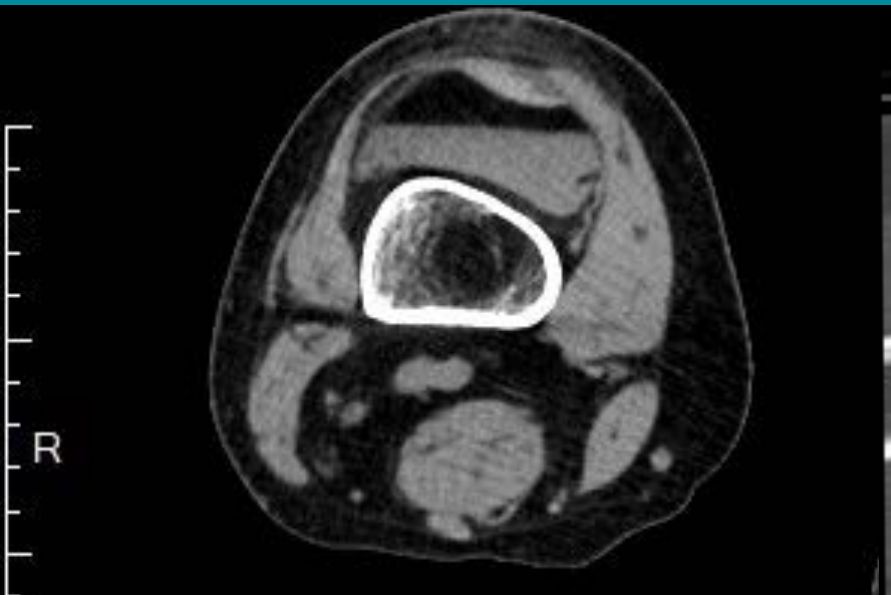
4天前
左腳不小心
撞到石頭.
致血腫疼痛

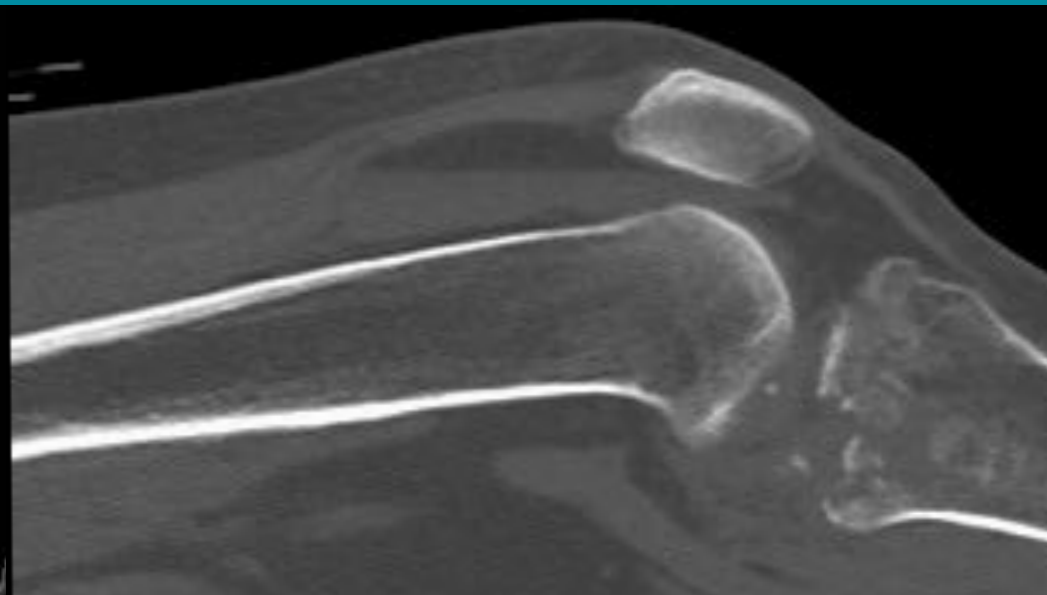

Precision
A Pure+
T
A
B
diffT
2021/12/01
OSHIBA
West Garden Hospital
MSK 3
3158
18L7
30 fps
qscan

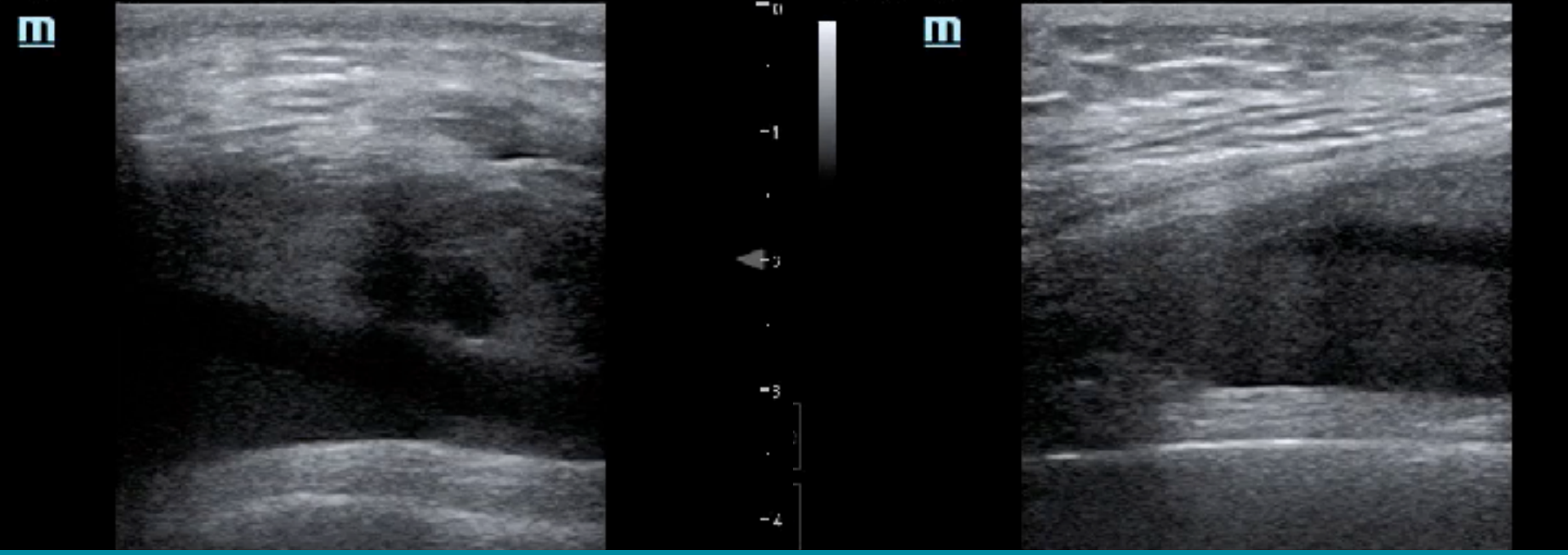
61F , MBA , RK INJURY



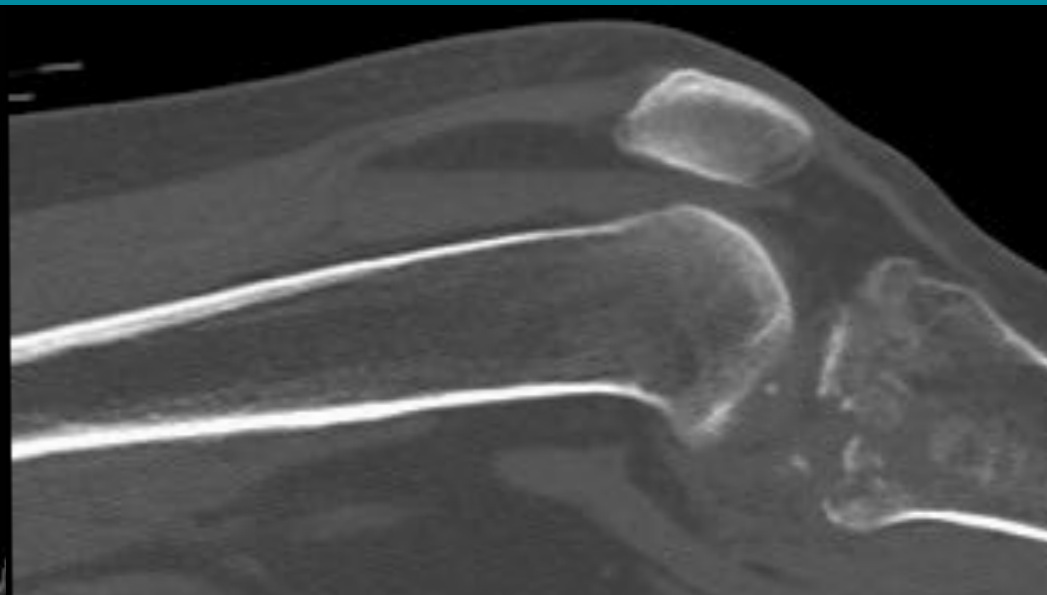
LIPOHEMARTHROSIS



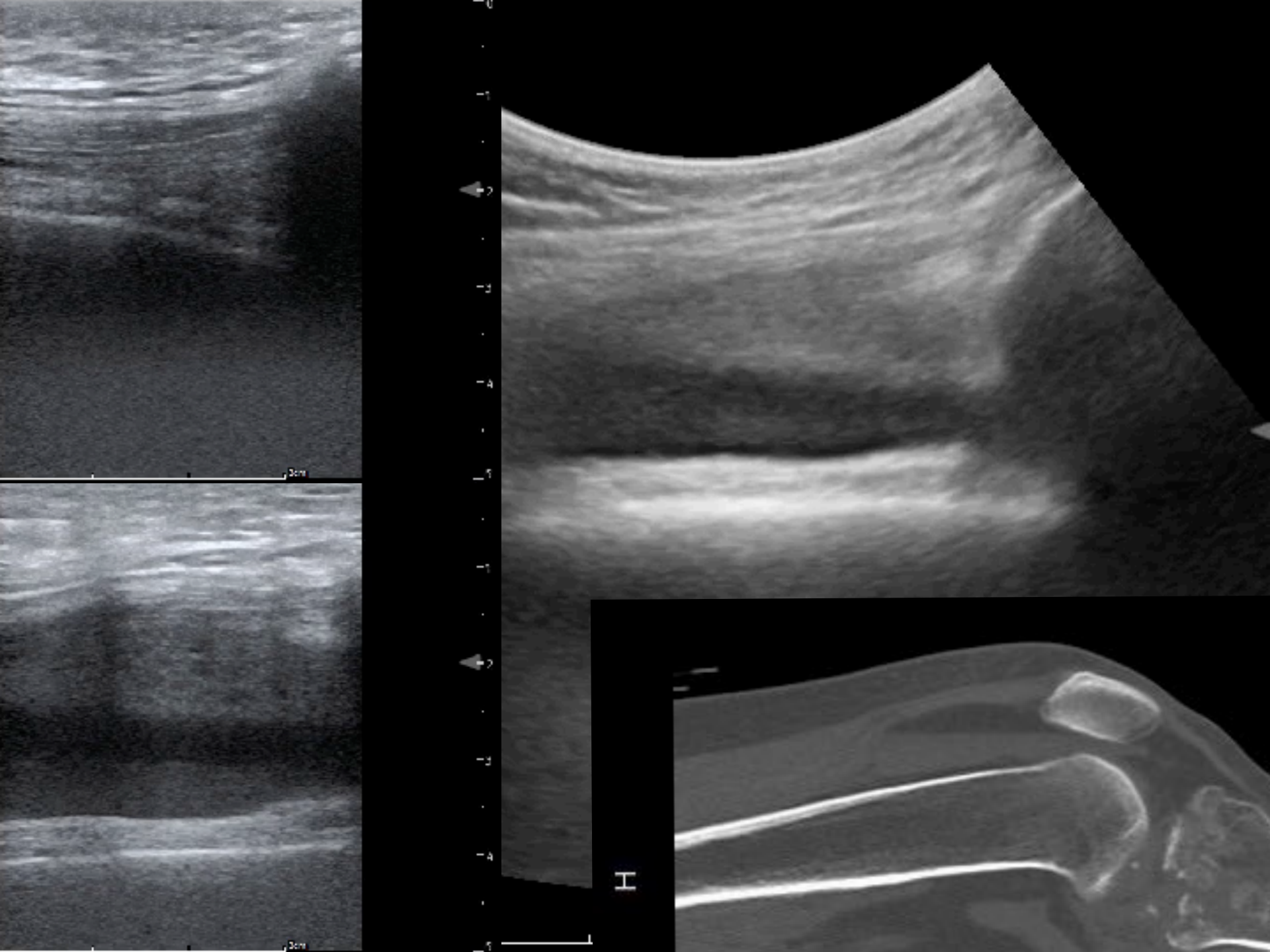




LIPOHEMARTHROSIS




SINGLE USE ONLY
ml



TAKE HOME SKILLS