

Ultrasound-Guided Knee Injection

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ابو ترابی

فلوشیپ درد

Ultrasound- Guided Knee Intra- Articular Injection

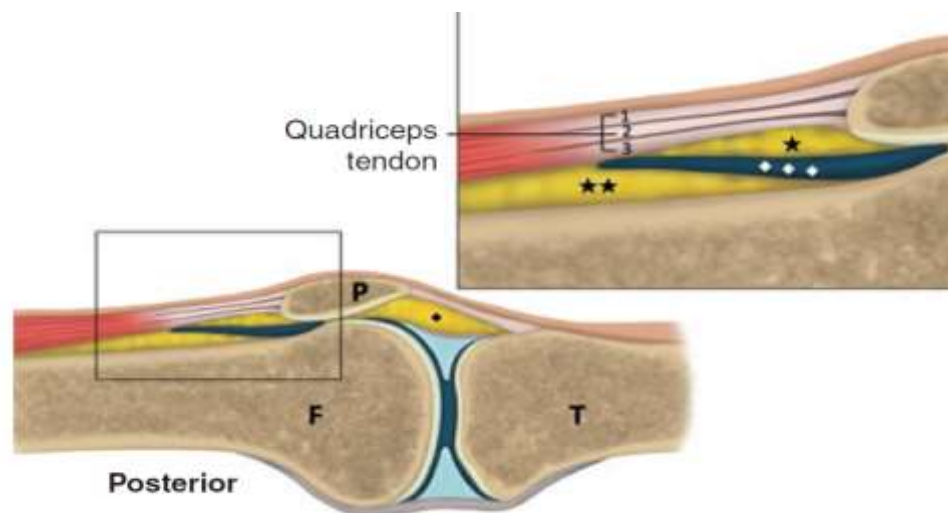
Patient Selection

Osteoarthritis

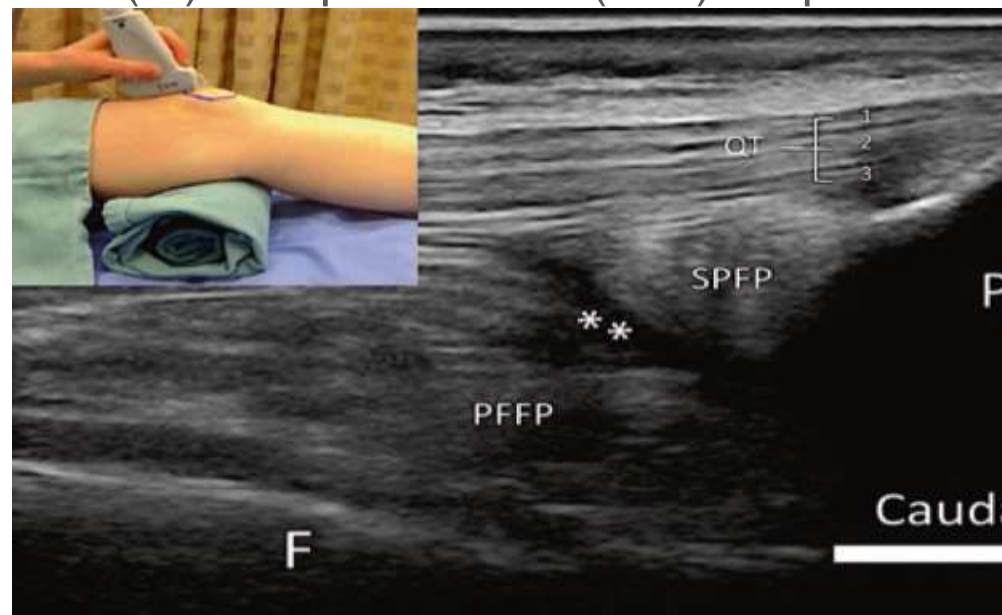
Can be used for other arthritis conditions

Ultrasound Scan

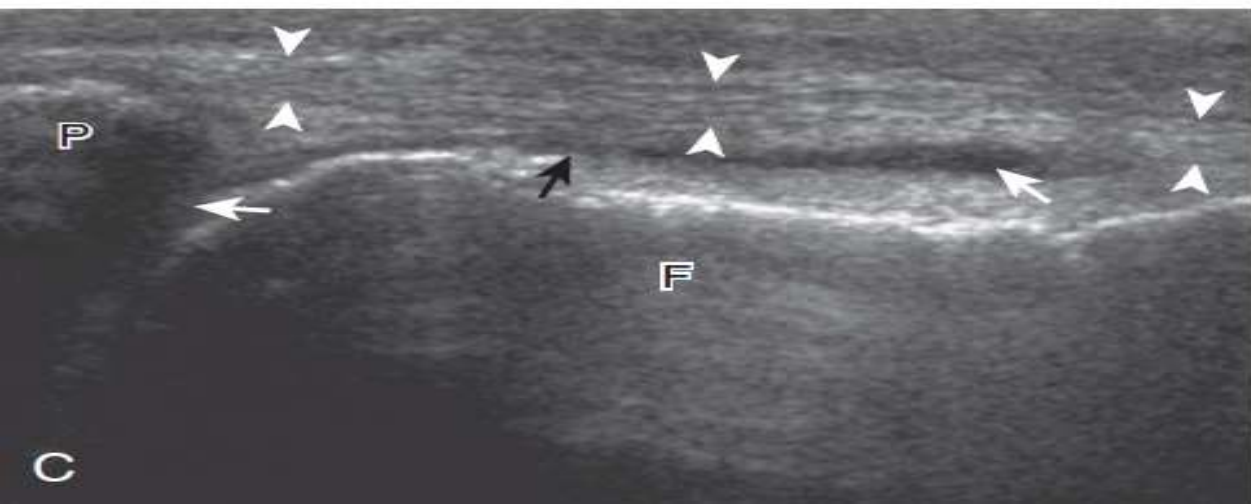
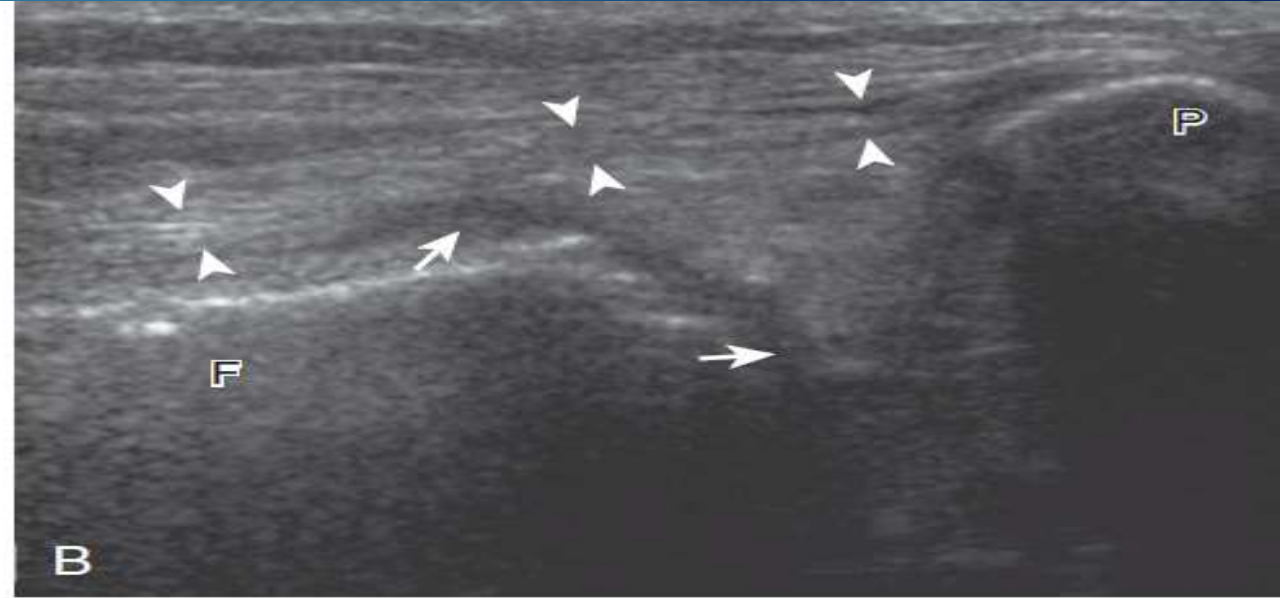
- Position: Supine with support underneath the knee to keep it slightly flexed
- Probe: Linear 6–13 MHz

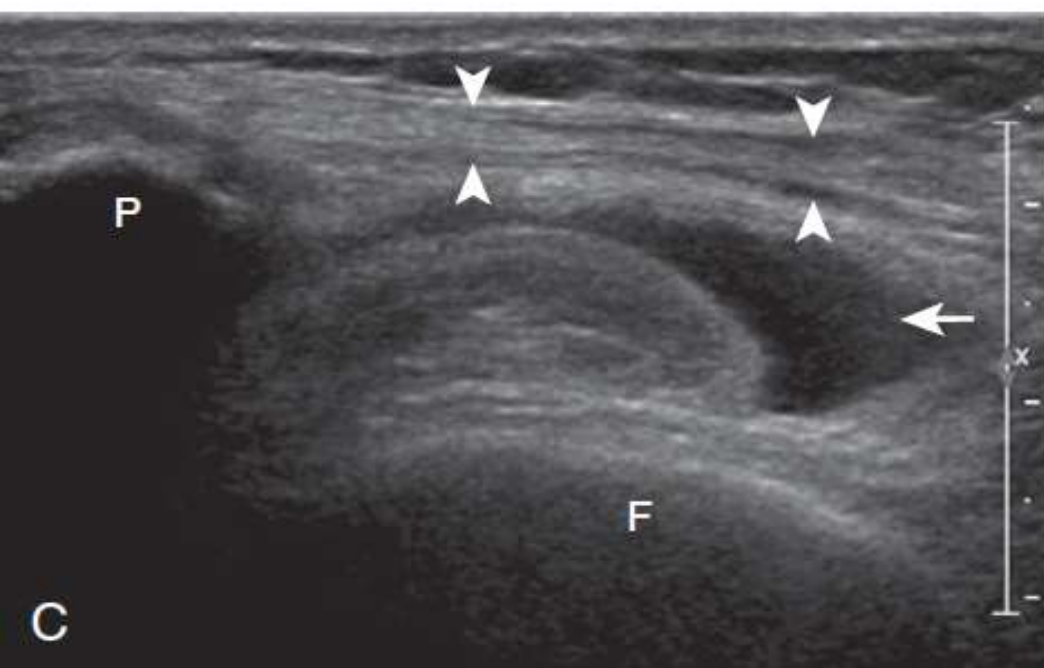
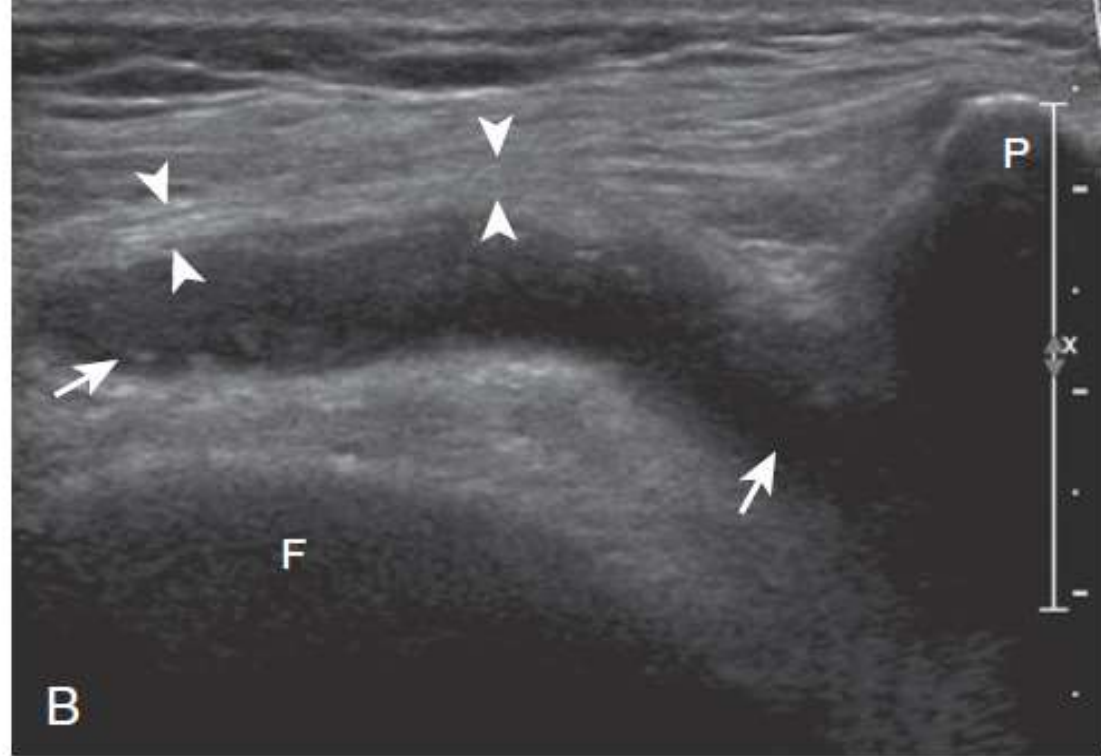
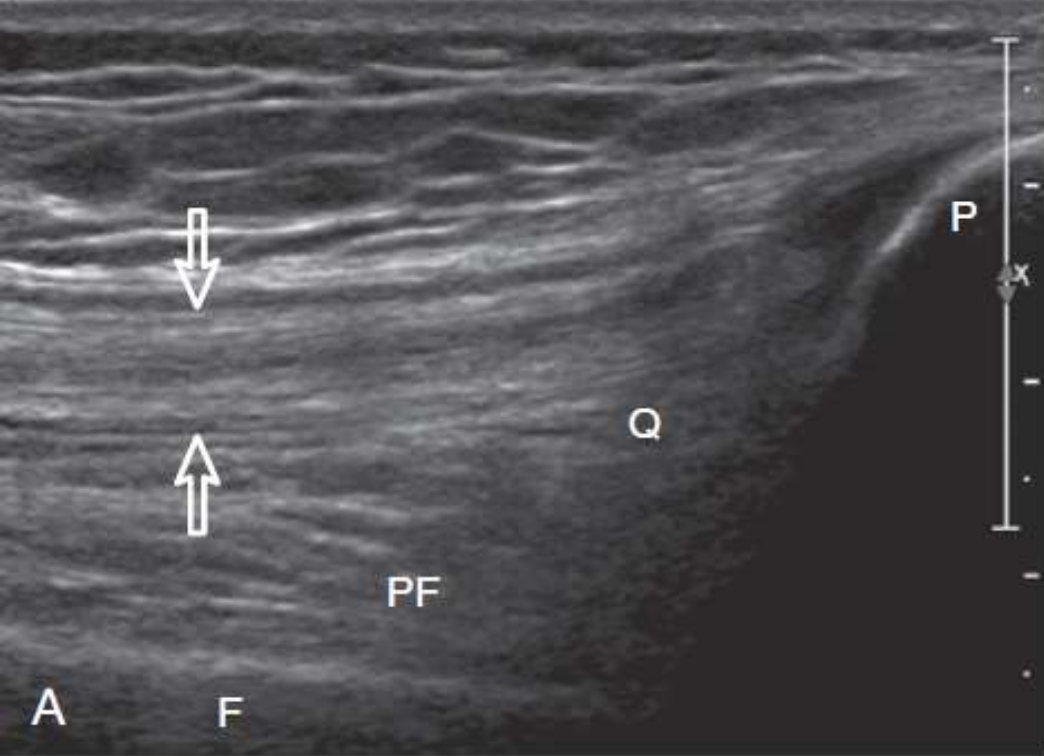


The target is **suprapatellar recess SPR** (♦), which is a recess that connects with the knee joint and is bounded by the suprapatellar (★) and prefemoral (★★) fat pad



FLEXTION



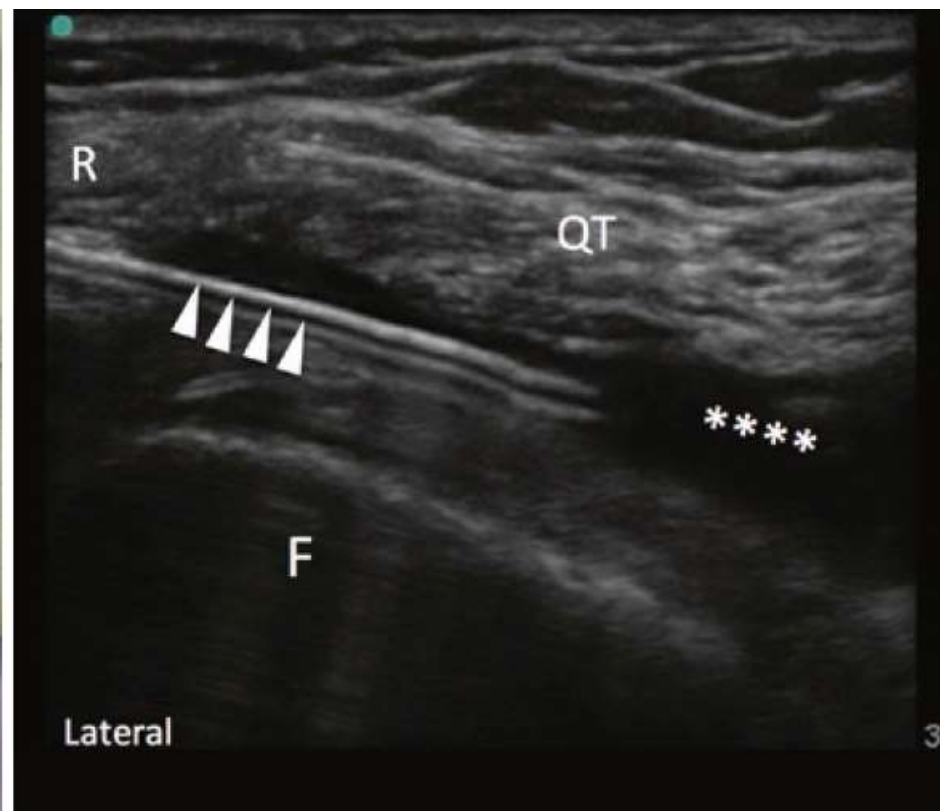
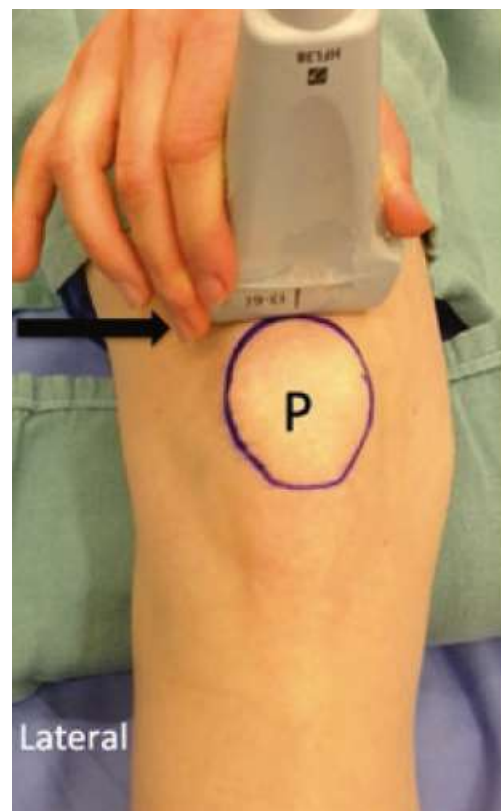




Alternatively,
the ultrasound
probe is rotated
45 degrees with
the cephalad
end directed to
the lateral side

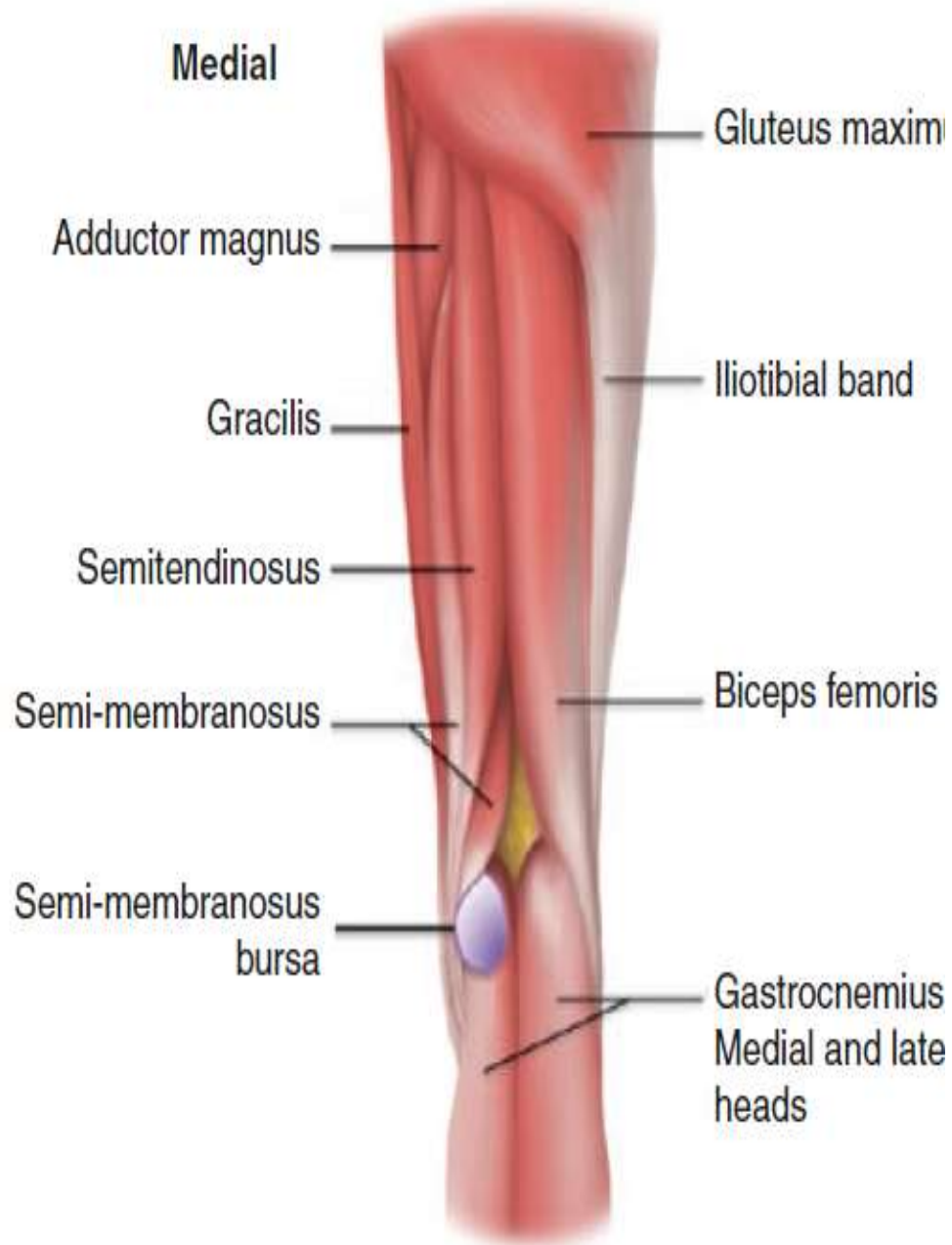
Superolateral
approach with ultrasound
probe rotated to 45° to
long axis of femur.



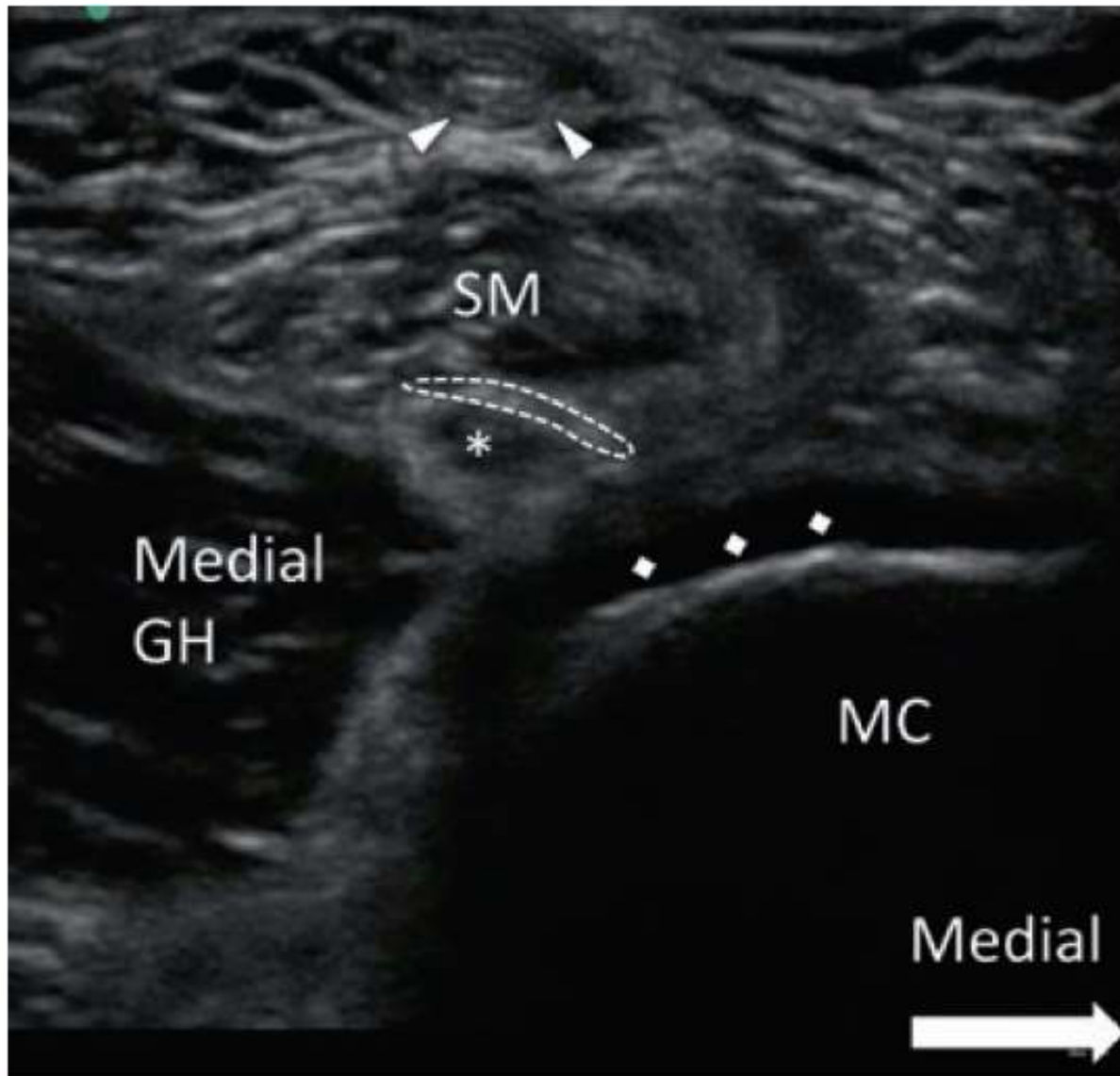


Ultrasound-Guided Popliteal (Baker's) Cyst Aspiration,

- distention of the semimembranosus-gastrocnemius bursa.
- The incidence of concomitant intra-articular disorders with popliteal cysts is high (94%).



- A Baker's cyst can be classified as a **primary cyst** if the distended semimembranosus-gastrocnemius bursa arises independently without communication to the knee joint or
- a **secondary cyst** if there is an open communication between the bursa and the knee joint cavity. Whereas most of Baker's cysts are secondary cysts and associated **with degenerative knee joint diseases**,
- ***primary cysts are less common and occur primarily in children.***





reza : :

Dr. Abootorabi

MSK : Shoulder-Knee-El...

2021/05/12

14:33:55



FR32

P75

THI On

HRes1

17M

BG32

DR70

MI 1.1

TIS 0.1

TIB 0.1

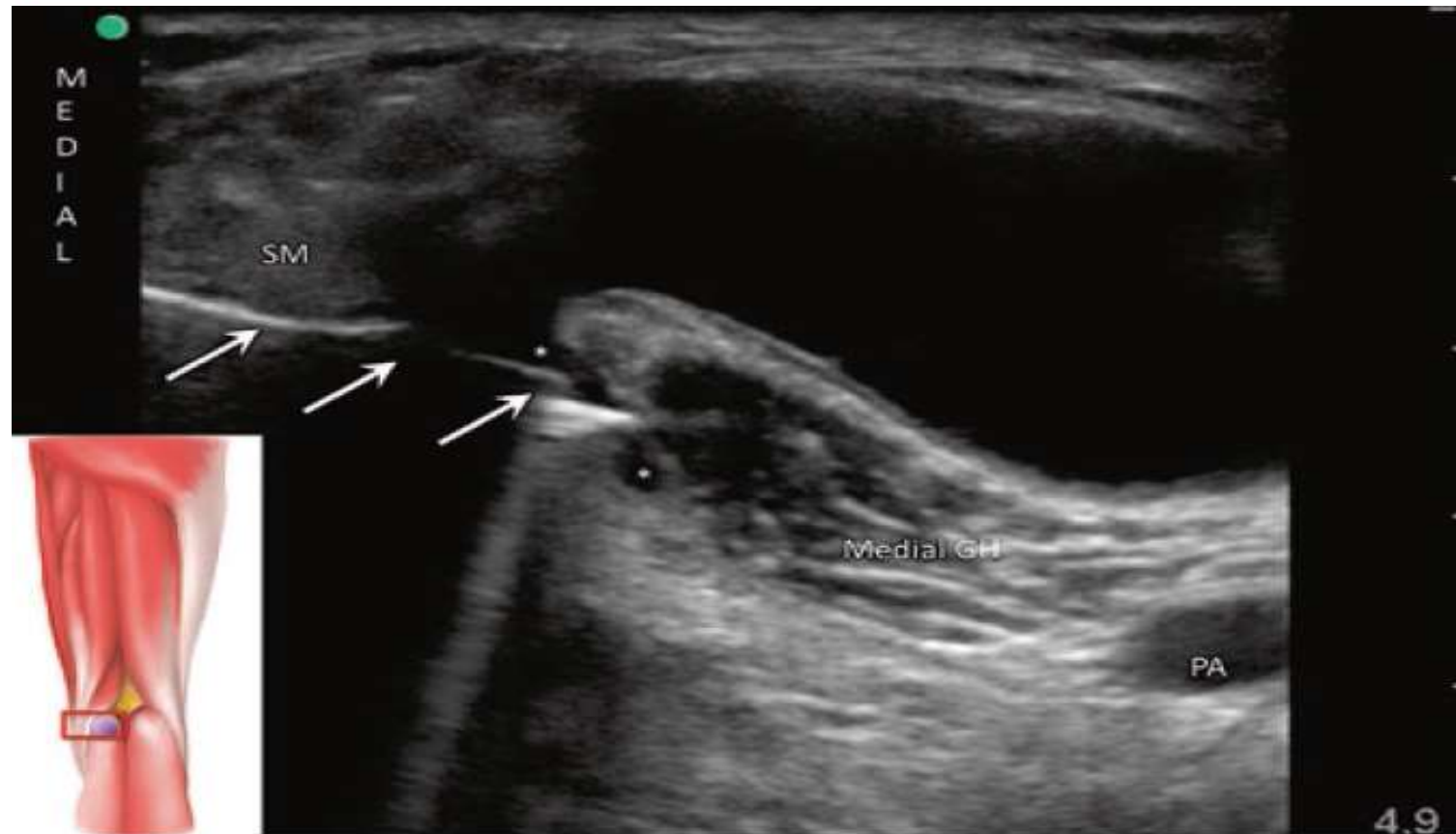


L18-4

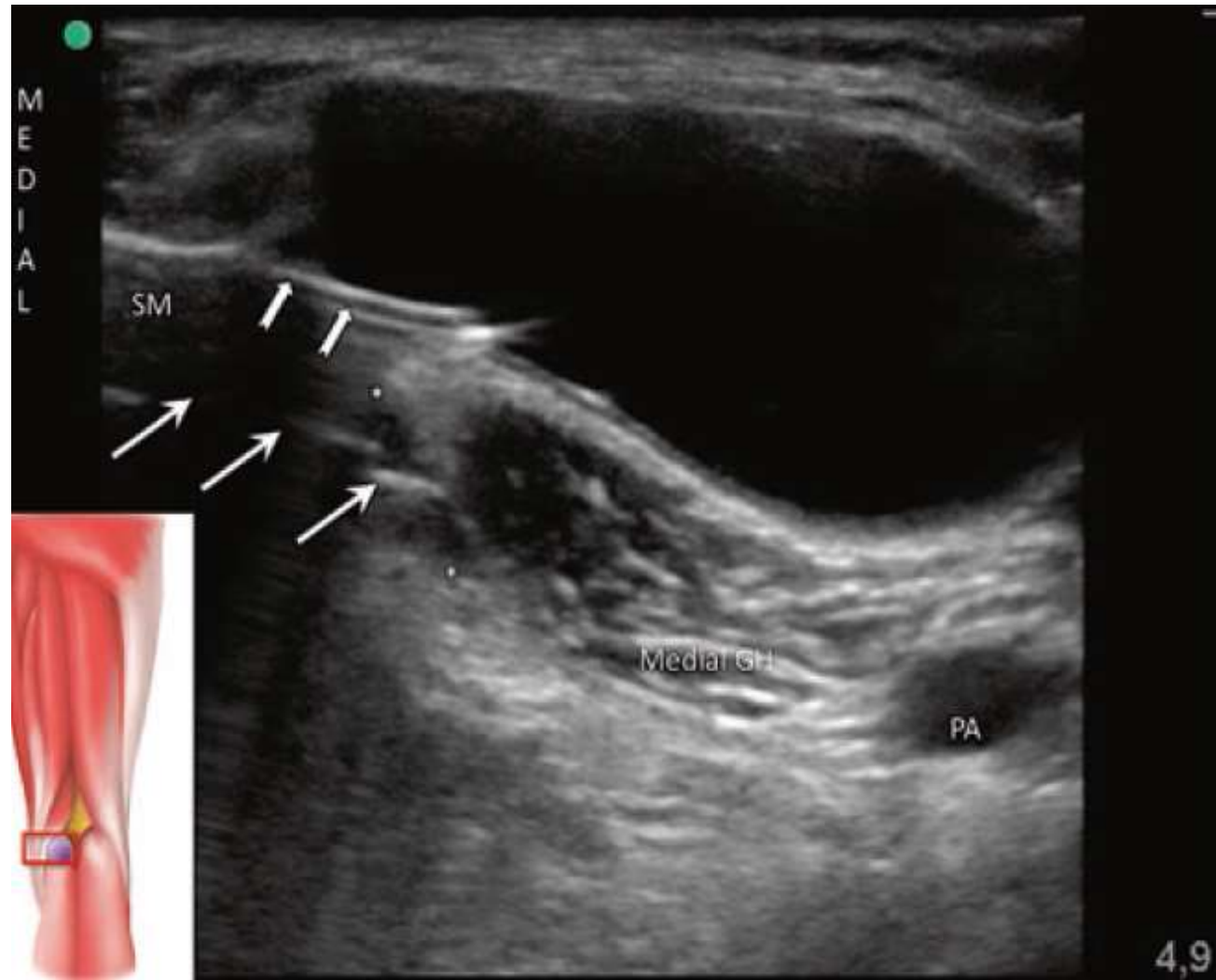
Step 1

Procedure

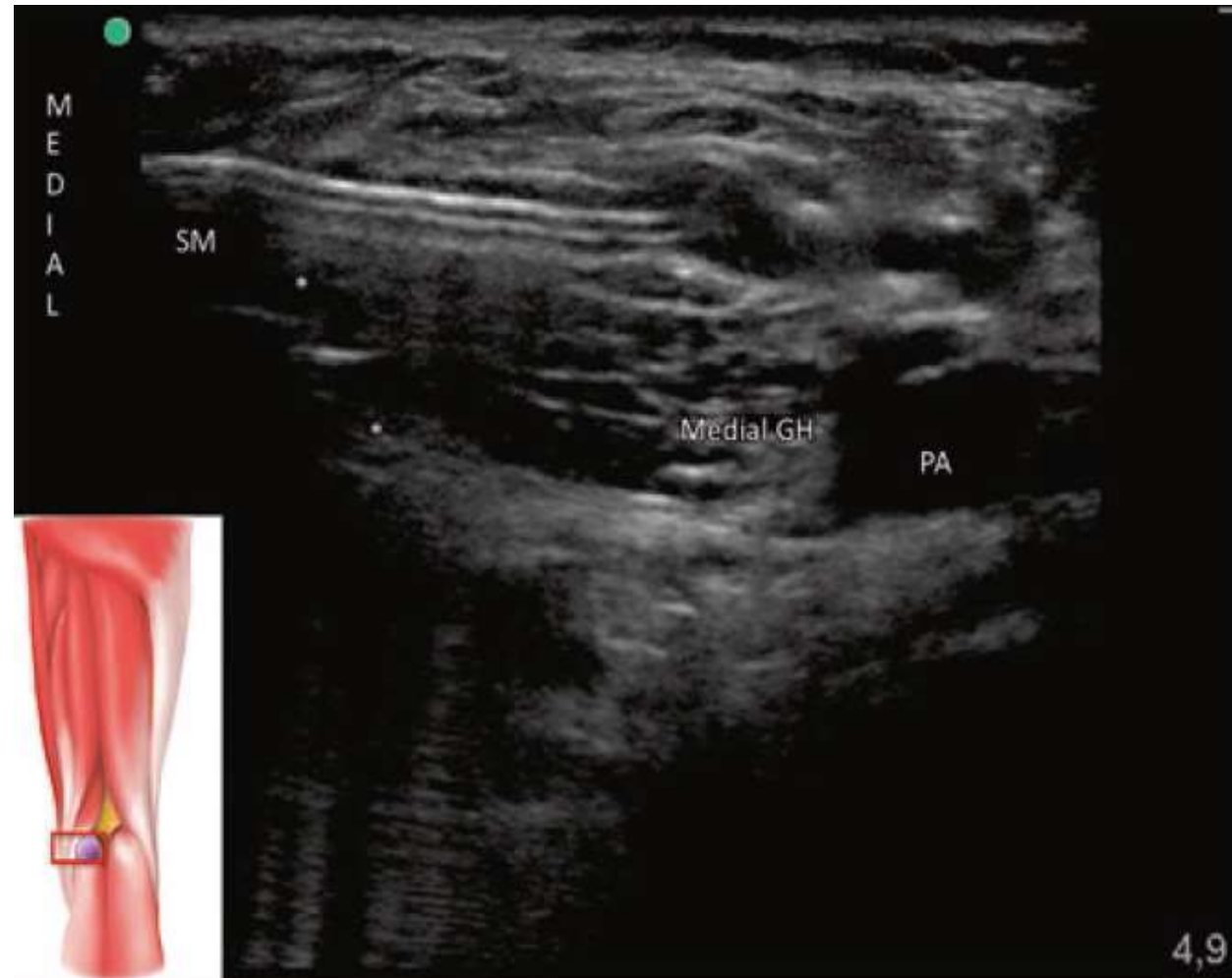
- Needles: 16G needle
- Approach: Linear probe in plane medial to lateral



Step 2



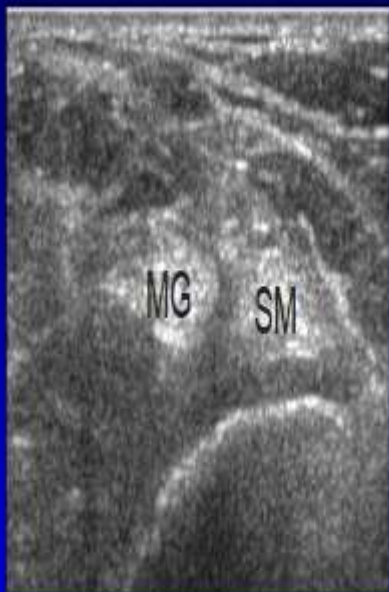
Step 3



Step 4

- **Finally, injection of steroid into the intra-articular space**
- After procedure the patient is advised to wear a moderate or strong compression elastic knee brace **for 4 weeks** to keep cyst and pedicle walls together and keep same pressure in anterior and posterior knee.

Baker Cyst Evaluation: pitfall



reza : :

Dr. Abootorabi

MSK : Shoulder-Knee-El...

2021/05/15

15:24:41



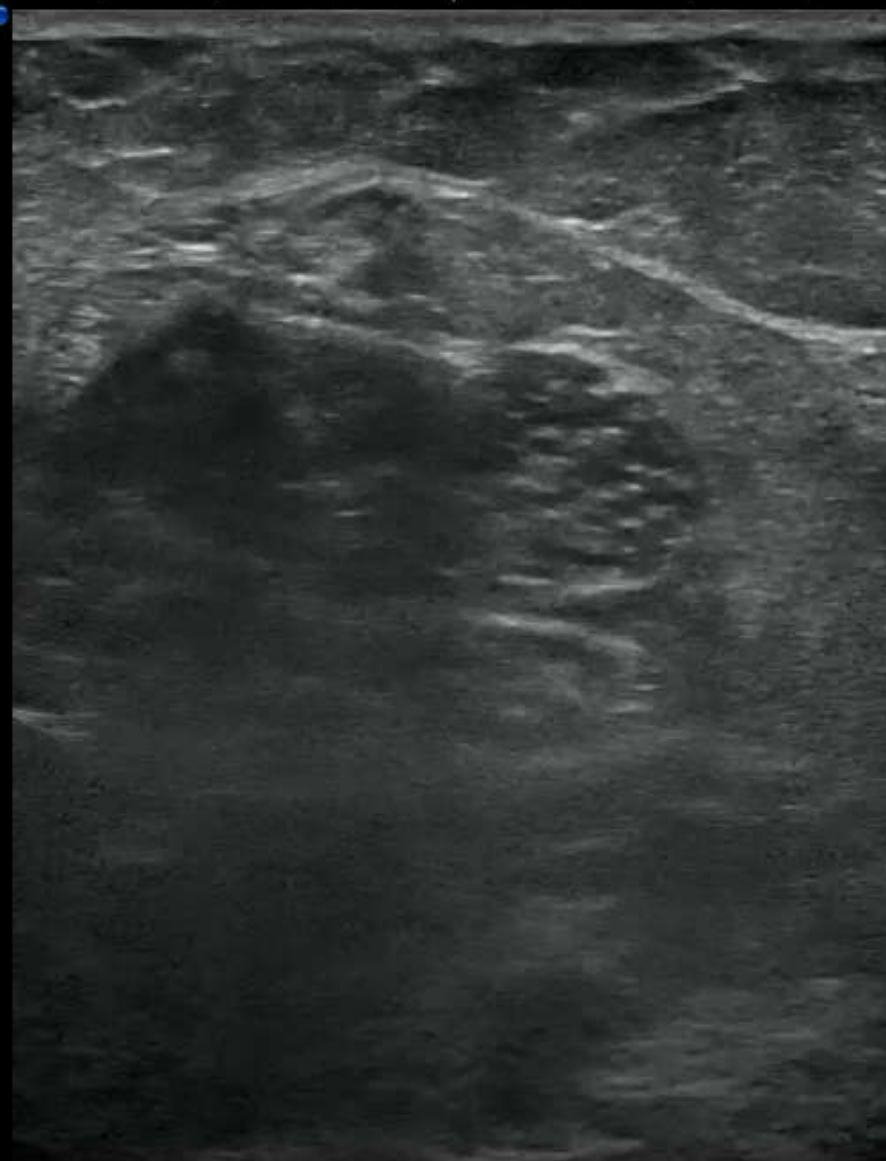
- 0

- 1

- 2

- 3

- 4



FR32

P75

THI On

HRes1

17M

BG30

DR70

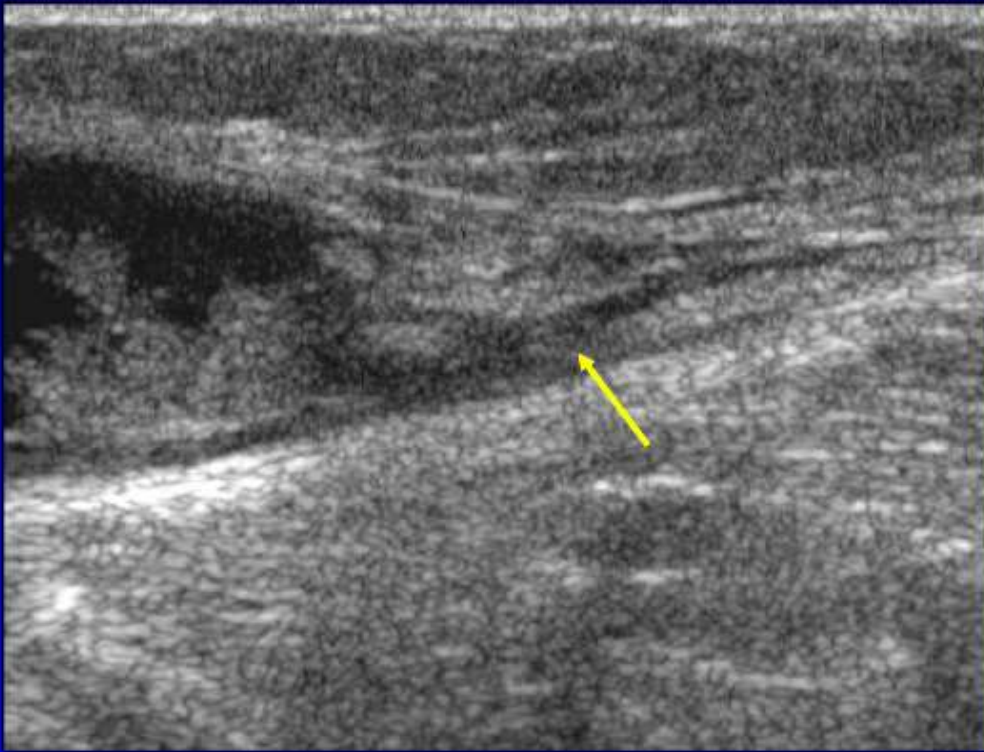
MI 1.1

TIS 0.1

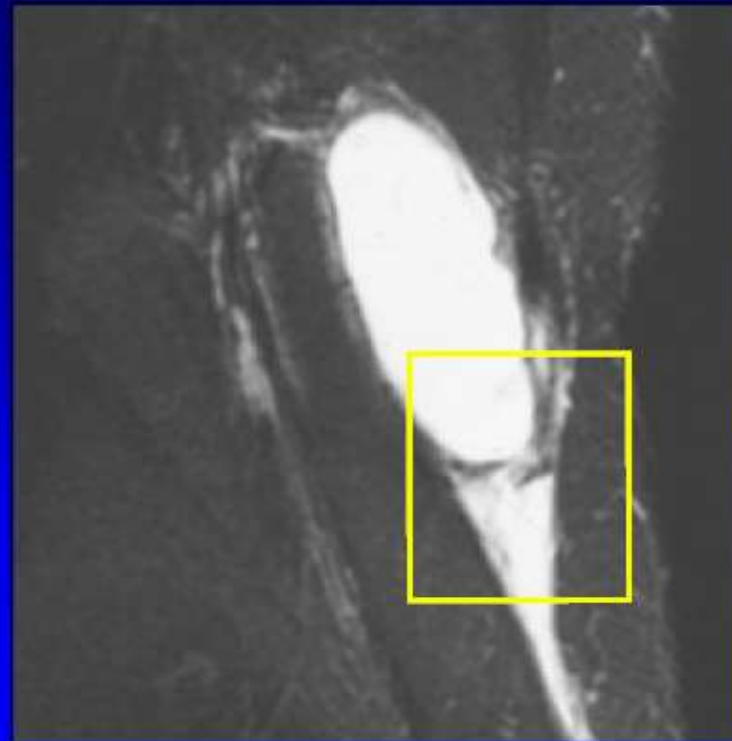
TIB 0.1



Baker Cyst: rupture



Longitudinal



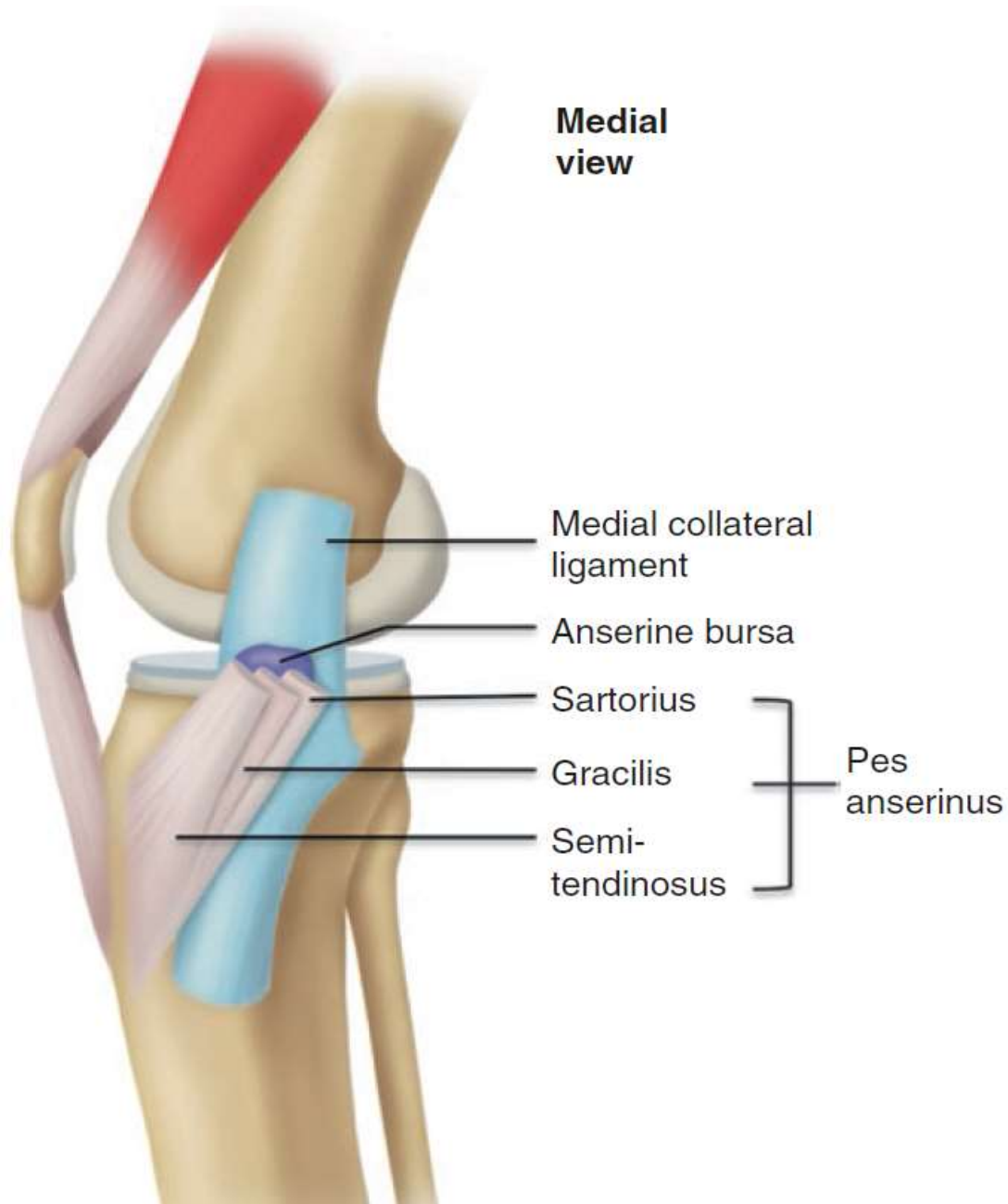
Coronal T2w

Baker Cyst: rupture



Ultrasound-Guided Pes Anserinus Bursa and Peri tendon Injection

- Its name comes from the webbed-foot appearance of the tendons of **sartorius, gracilis, and semitendinosus** insertion onto the tibia.
- Between the tibia (medial collateral ligament) and the conjoined tendons,



Both pes anserinus tendons and bursa can be injured in **valgus** deformities and **medial compartment osteoarthritis** deformities and it can be a very important source of extra-articular pain generator.



Ultrasound Scan

- Position: Supine with the knee flex and hip externally rotated, assuming “Figure of 4” position
- Probe: Linear 6–15 mHz



knee : :

Dr. Abootorabi

2021/02/16



MSK : Shoulder-Knee-El...

16:20:19

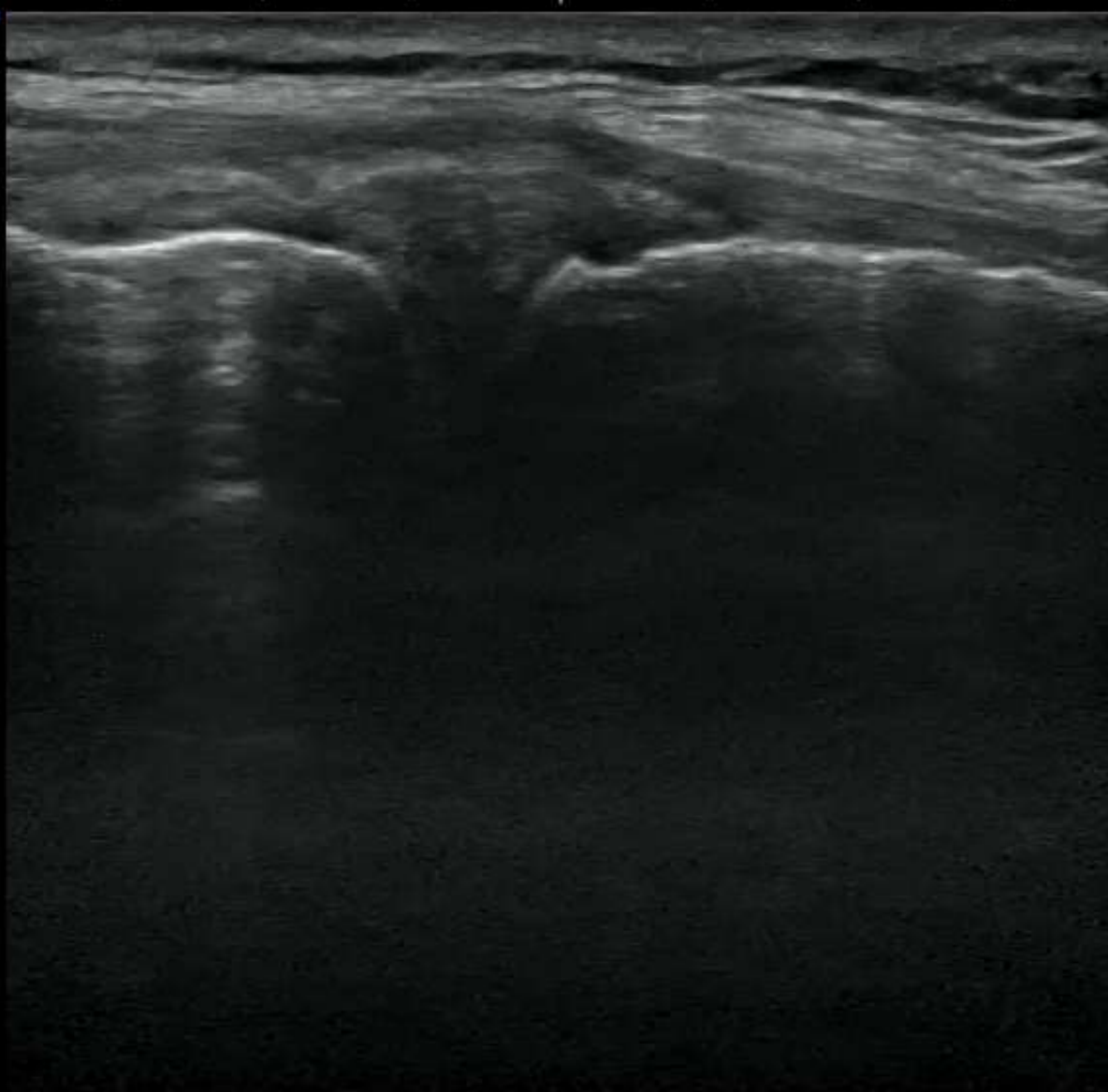
- 0

- 1

- 2

- 3

- 3.5



FR35

P75

THI On

HRes1

17M

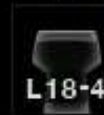
BG29

DR70

MI 1.1

TIS 0.1

TIB 0.1



L18-4

Procedure

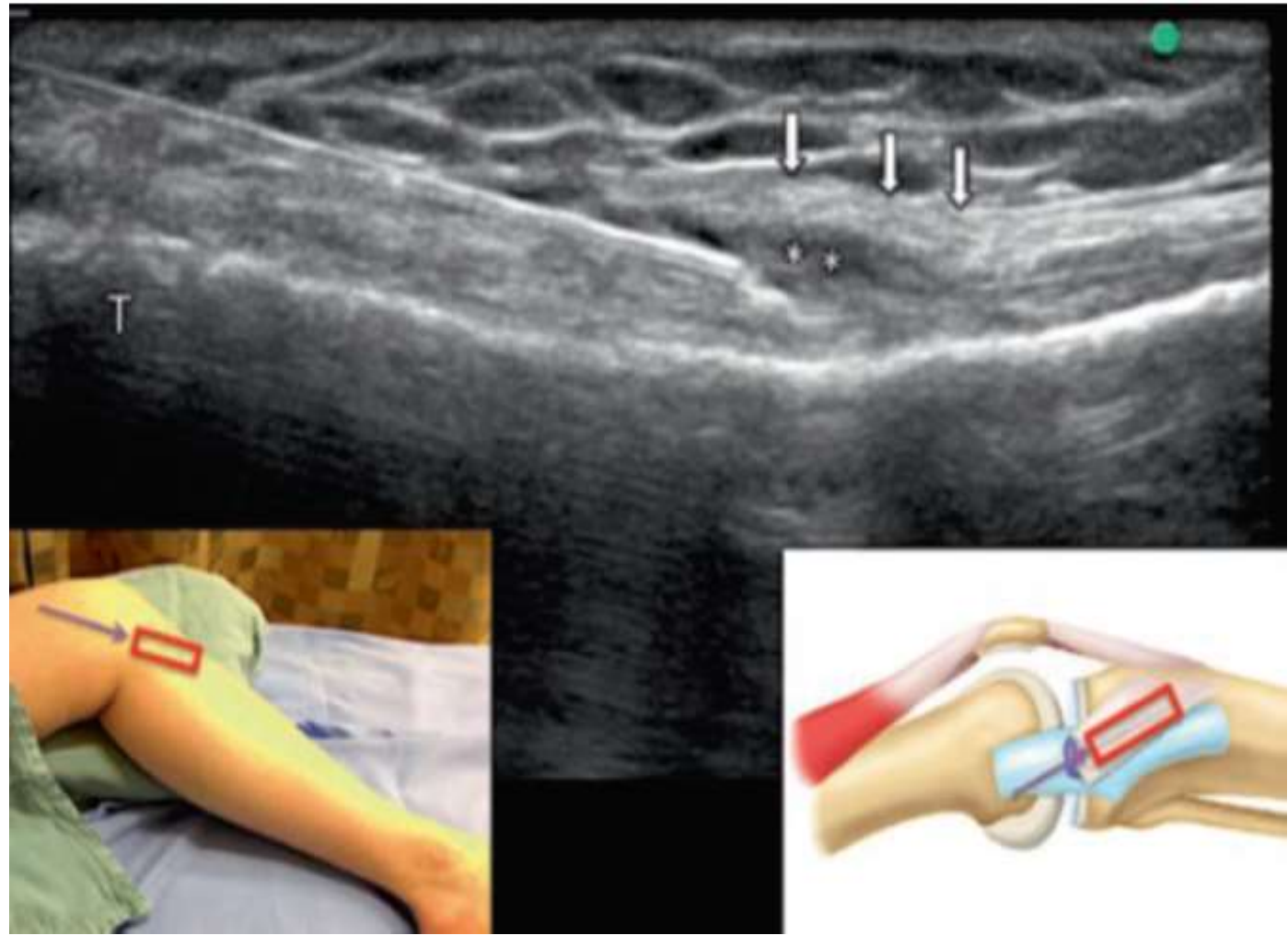
- Needle: 25G 1.5-inch needle
- Drugs: 3 mL 20 mg Depo-Medrol mixed with bupivacaine 0.25

Pes Anserinus: bursal fluid

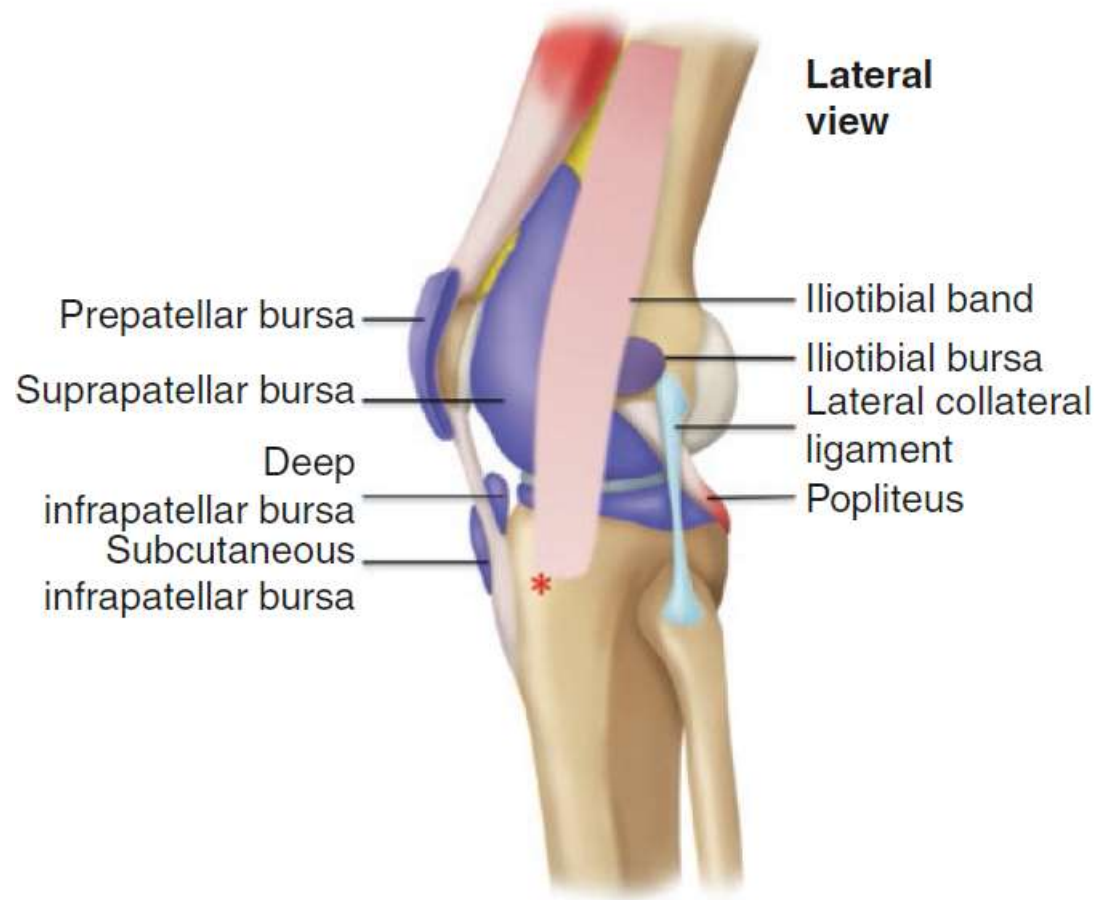


Longitudinal

Transverse



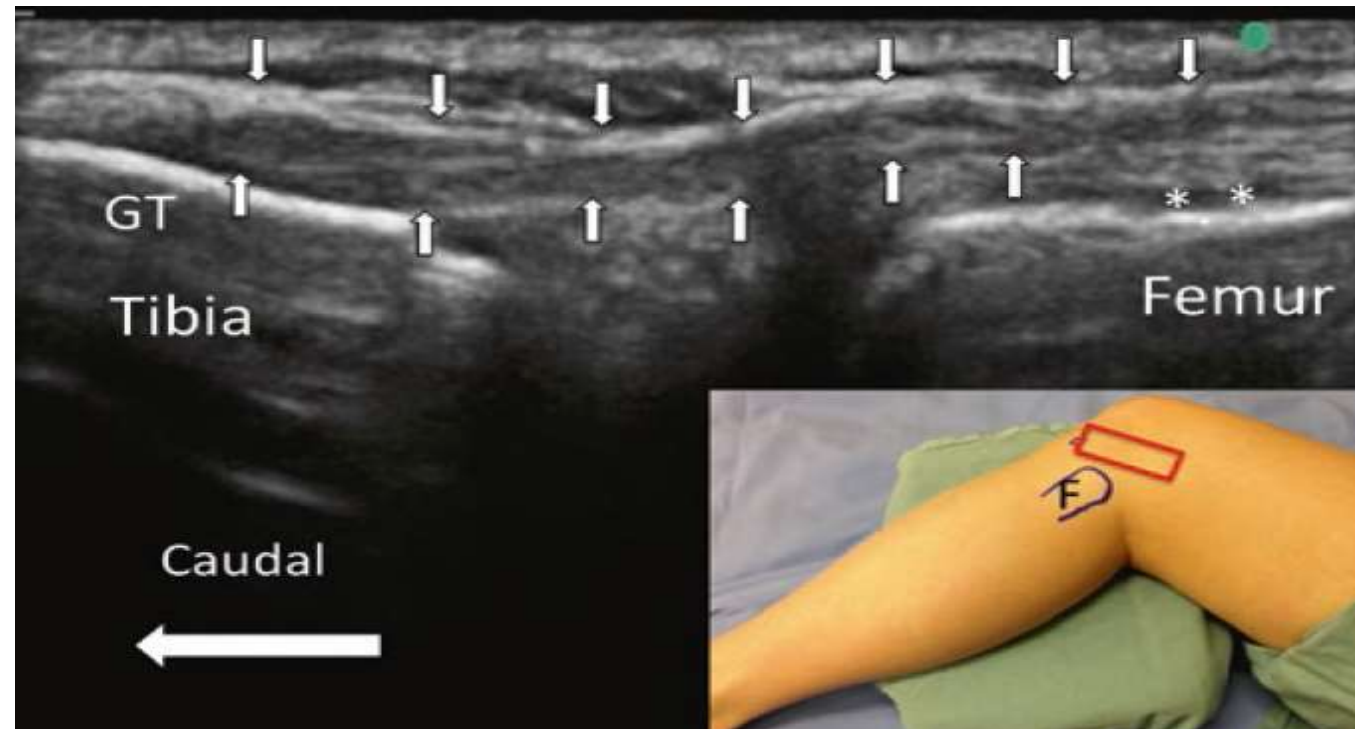
Ultrasound-Guided Distal Iliotibial Band Bursa Injection



- Iliotibial band (ITB) syndrome is an **overuse injury** usually observed in the active athletic population, but can happen in patients with **varus deformity** and or **lateral compartment** osteoarthritis. The main reason of this pathology is related to the **friction** of ITB against the lateral femoral epicondyle during flexion and extension, resulting in compression of the fat and connective tissue deep to the ITB, and chronic **inflammation of the ITB bursa**.

Ultrasound Scan

- Position: In lateral or semi-lateral position with the scan area in the non-dependent side
- Ultrasound probe: Linear 6–15 MHz



Procedure

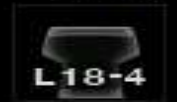
- Needle: 25G 1.5-inch needle
- Drugs: 3–5 mL of Depo-Medrol (20 mg) mixed with 0.25% bupivacaine





FR32
P75
THI On
HRes1
17M
BG30
DR70

MI 1.1
TIS 0.1
TIB 0.1



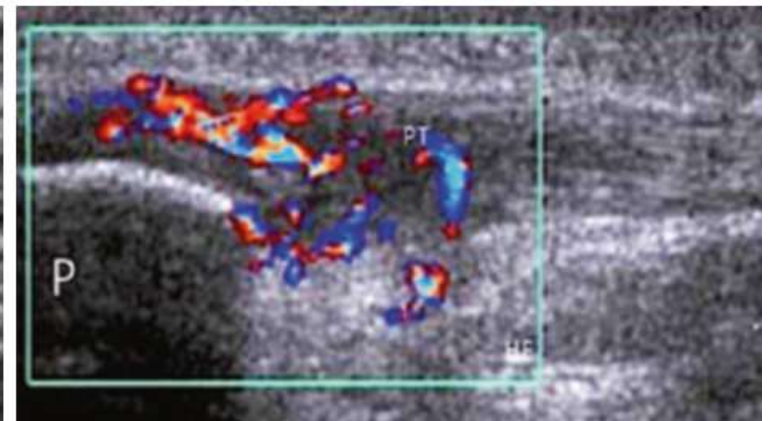
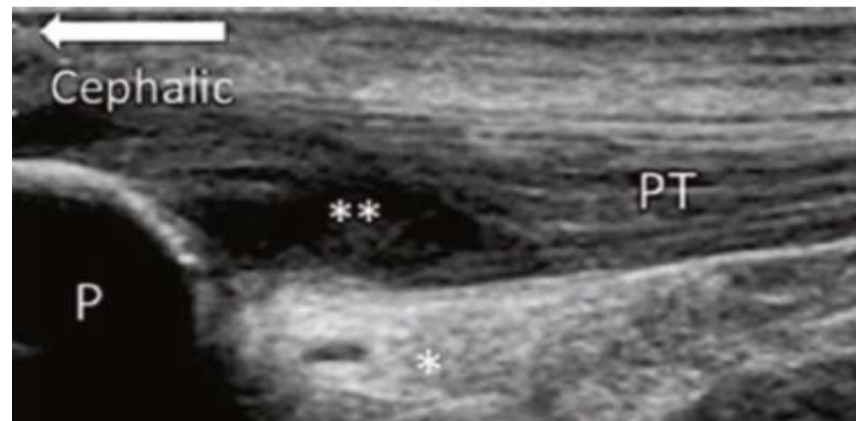
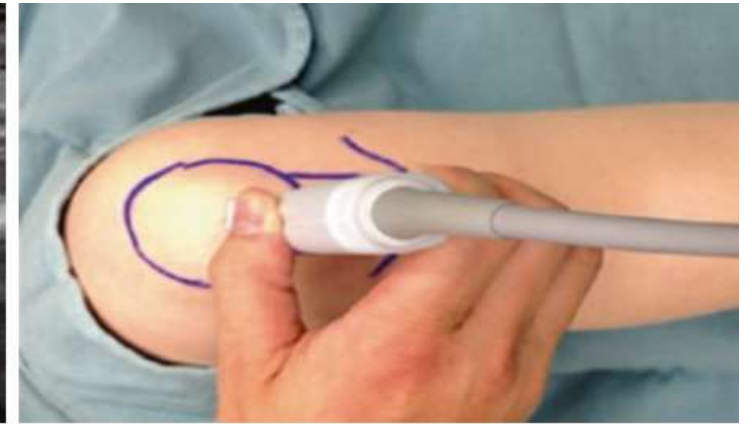
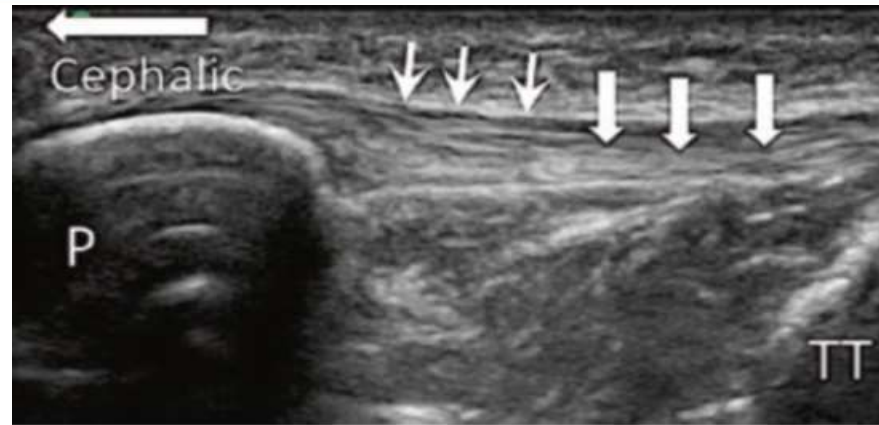
Ultrasound-Guided Patellar Tendon Injections

- Patellar tendinopathy (“jumper’s knee”) is a painful and disabling condition caused by **chronic repetitive stress** of the proximal patellar tendon at its origin from the inferior pole of the patella. It is particularly prevalent in athletic populations, **affecting 40–50% of persons** in those sports requiring repetitive,

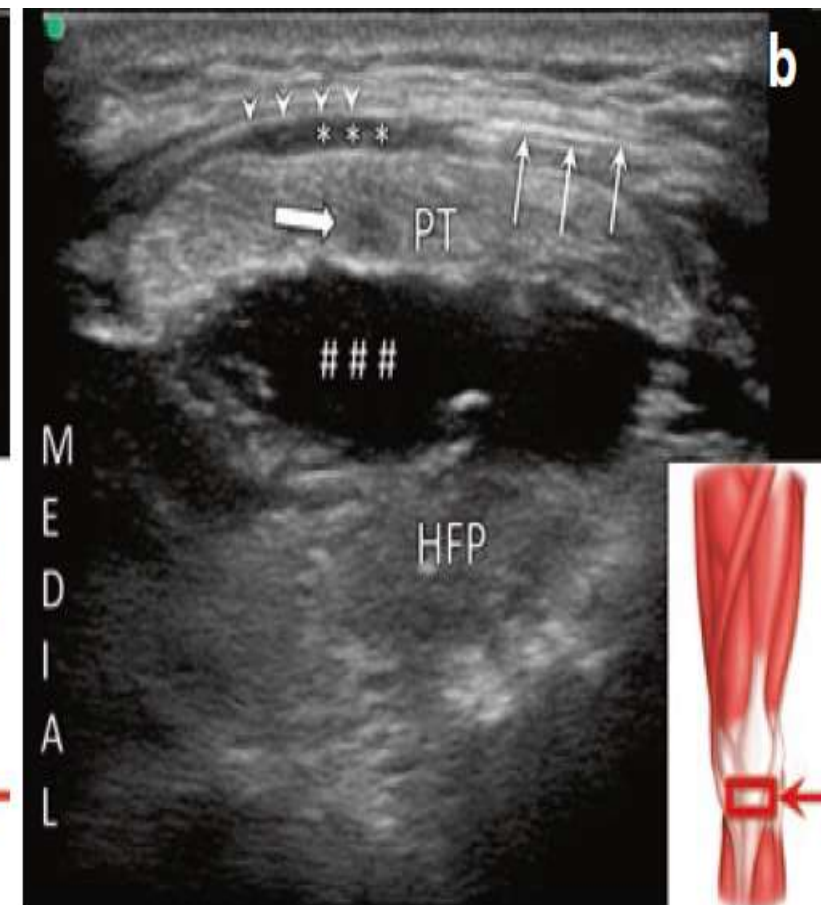
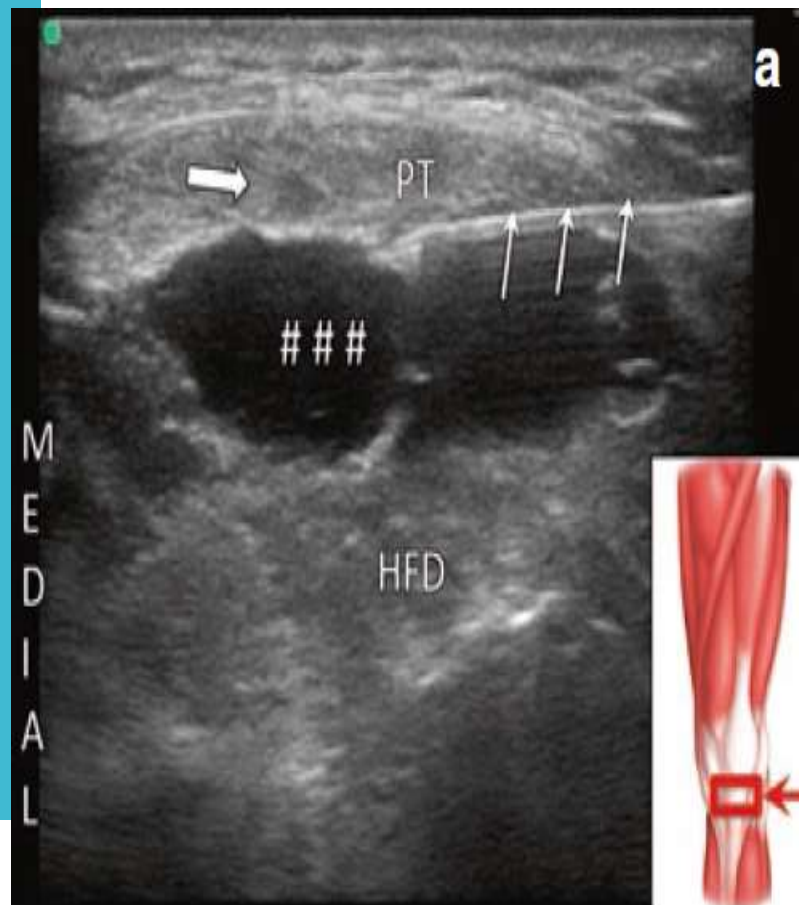
Ultrasound Scan

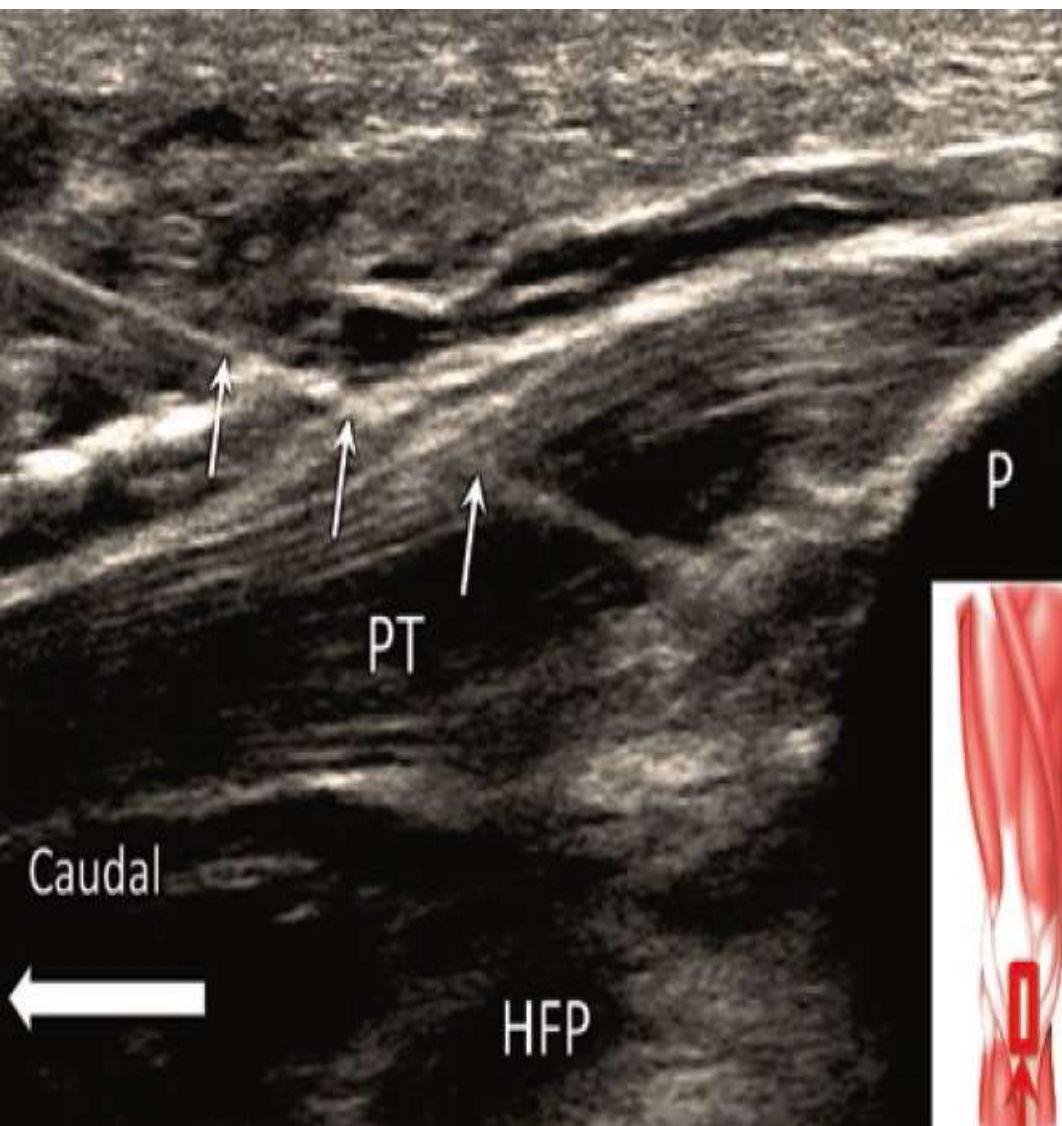
- Position: Supine with knee slight flexed
- Probe: Linear 6–15 MHz

Neovascular infiltration suggesting inflammation can be seen using Doppler ultrasound



- Needle: 25G 1.5-inch needle (peritendon injection); 20–22G needle (fenestration)
- Drug: Depo-Medrol 20 mg mixed with 3 mL of bupivacaine 0.25% (peritendon injection) and mixed with 20 mL dextrose 5% for high-volume injection





- Long-axis view of patellar tendon is used for intratendinous procedures as needlefenestration tenotomy and/or injection of platelet-rich plasma and other regenerative strategies

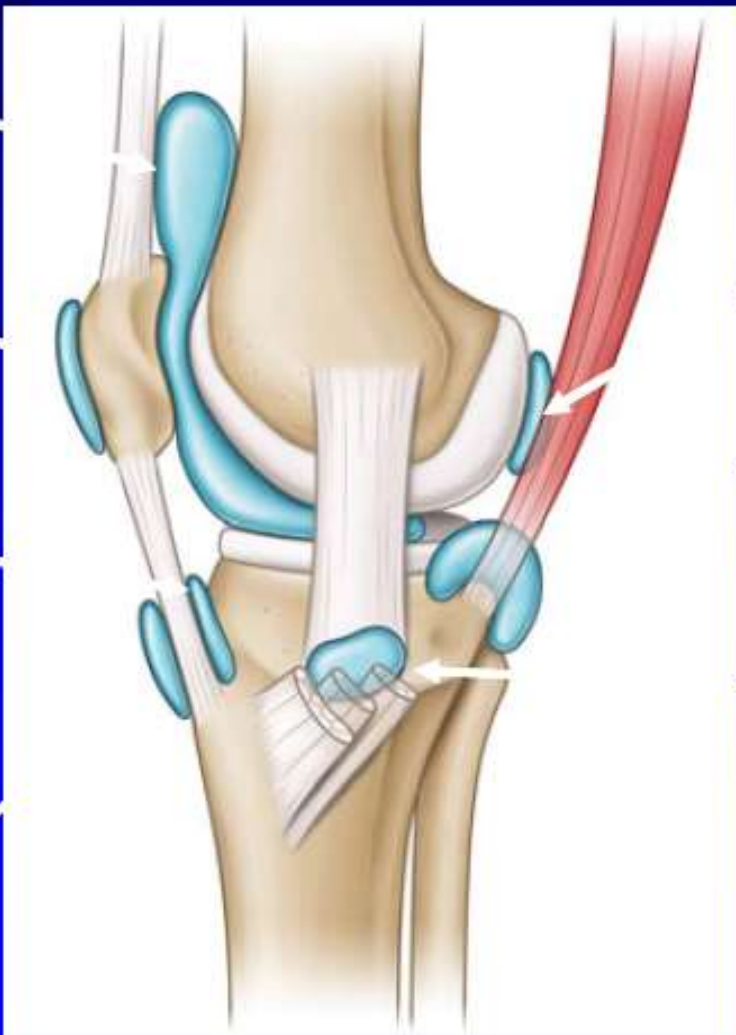
Knee Bursae

*Suprapatellar
Recess

Prepatellar
Bursa

Deep
Infrapatellar
Bursa

Superficial
Infrapatellar
Bursa



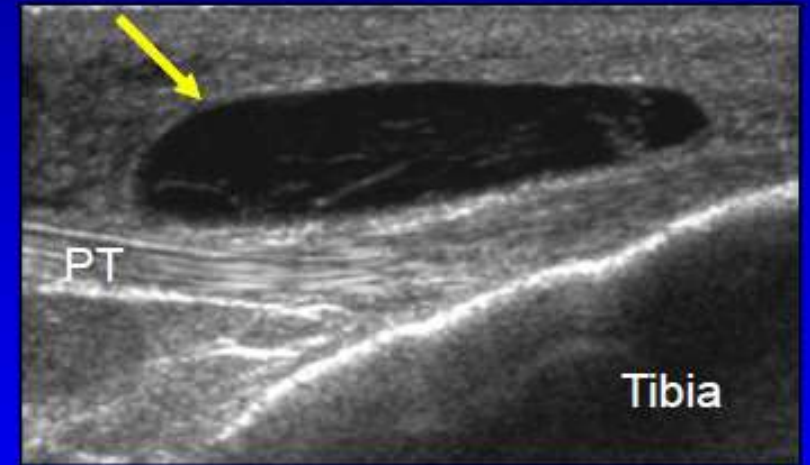
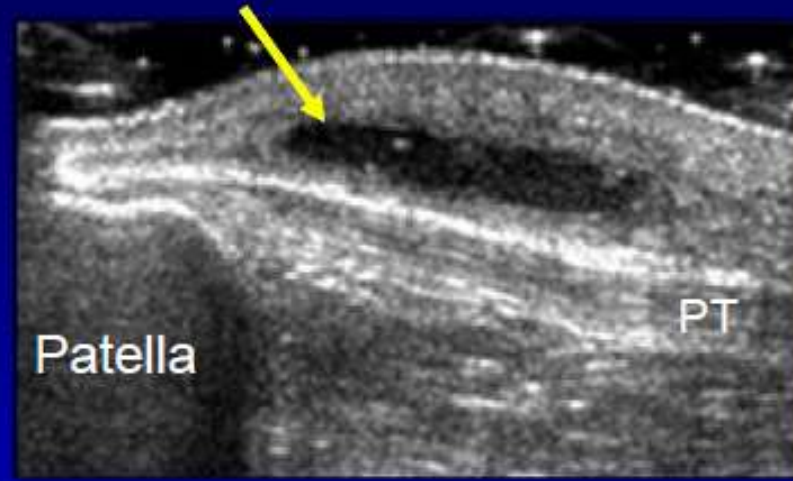
Baker
Cyst

Semimembranosus
-Tibial Collateral
Ligament Bursa

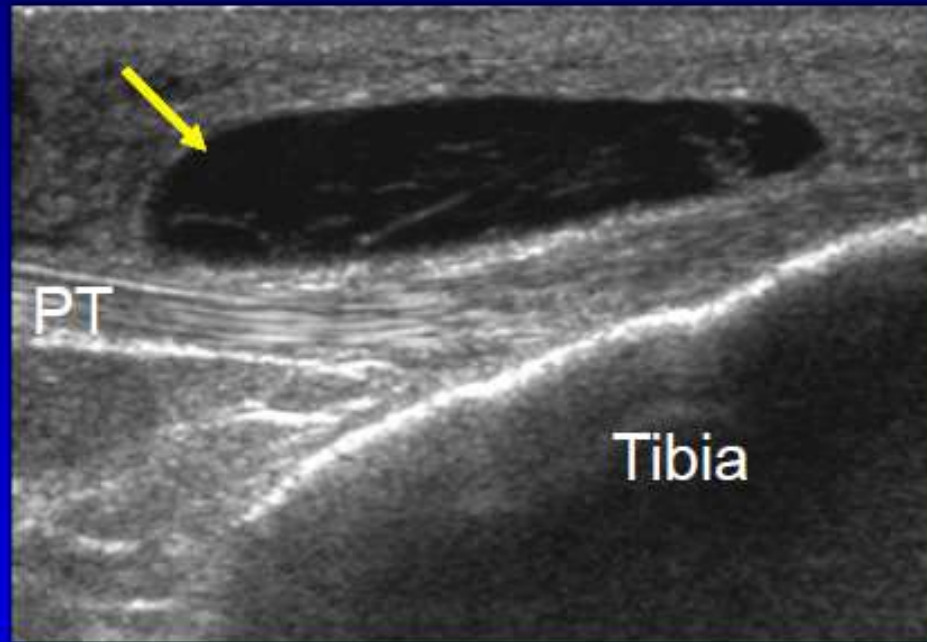
Pes
Anserinus
Bursa

Anterior Knee Bursa

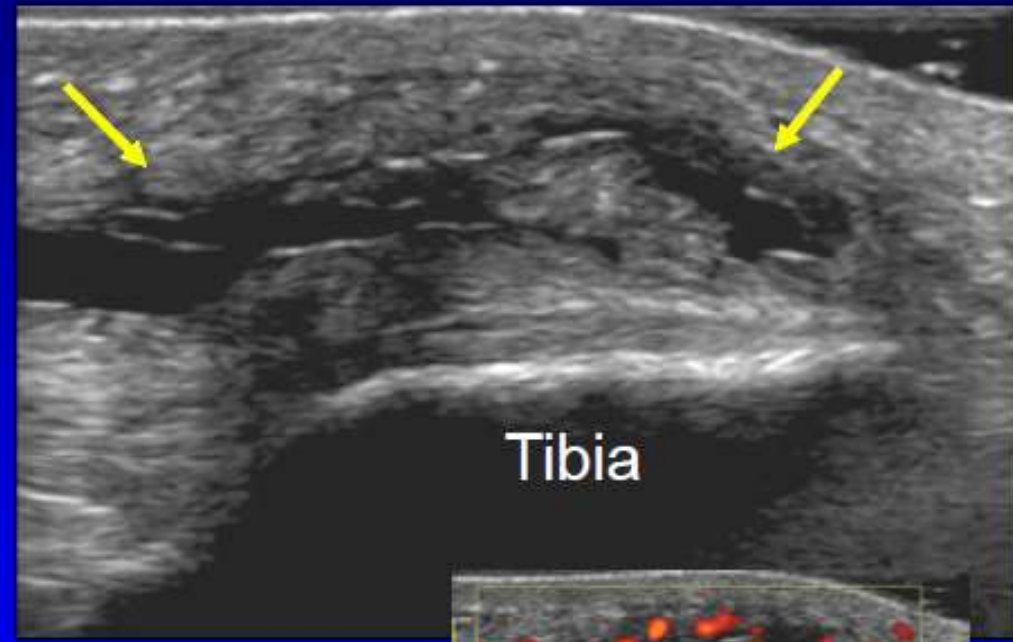
- Prepatellar bursa
- Superficial infrapatellar bursa
- Deep infrapatellar bursa



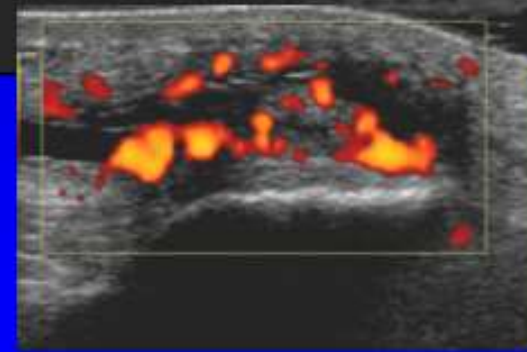
Superficial Infrapatellar Bursa

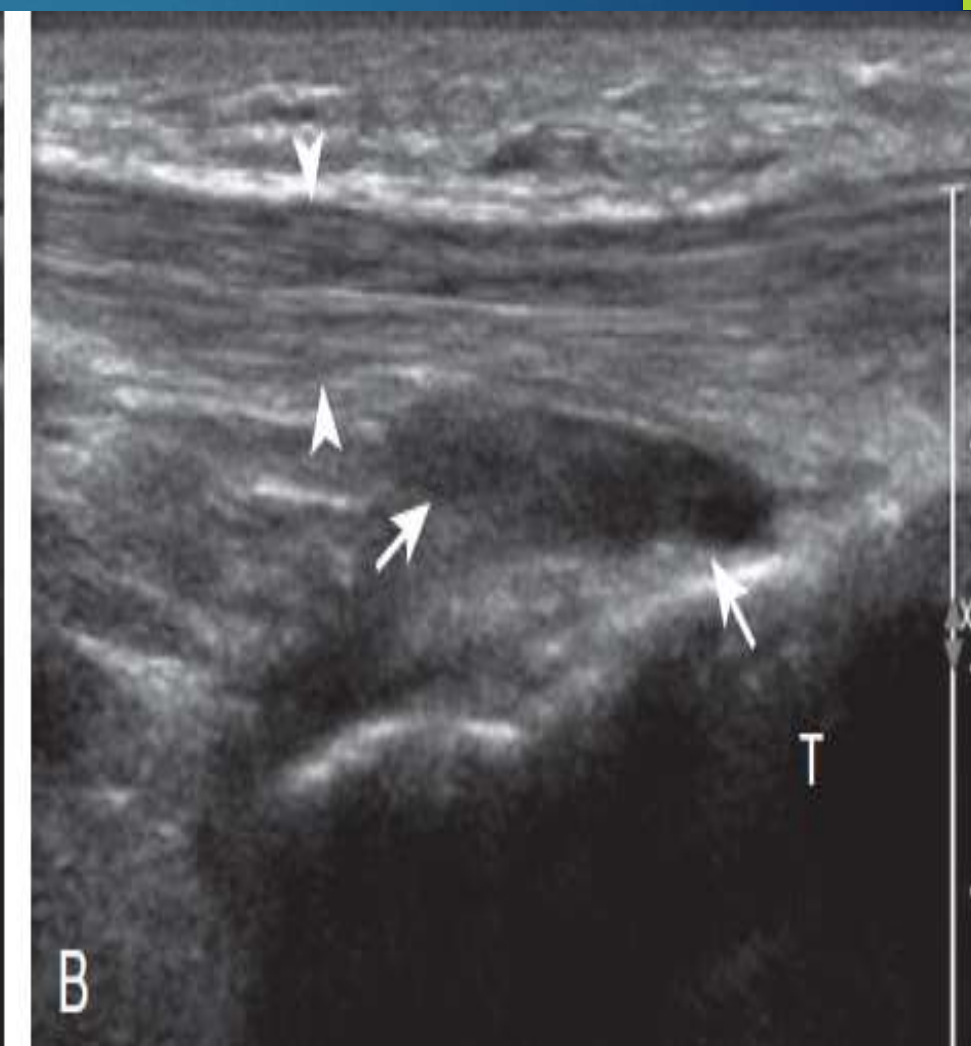
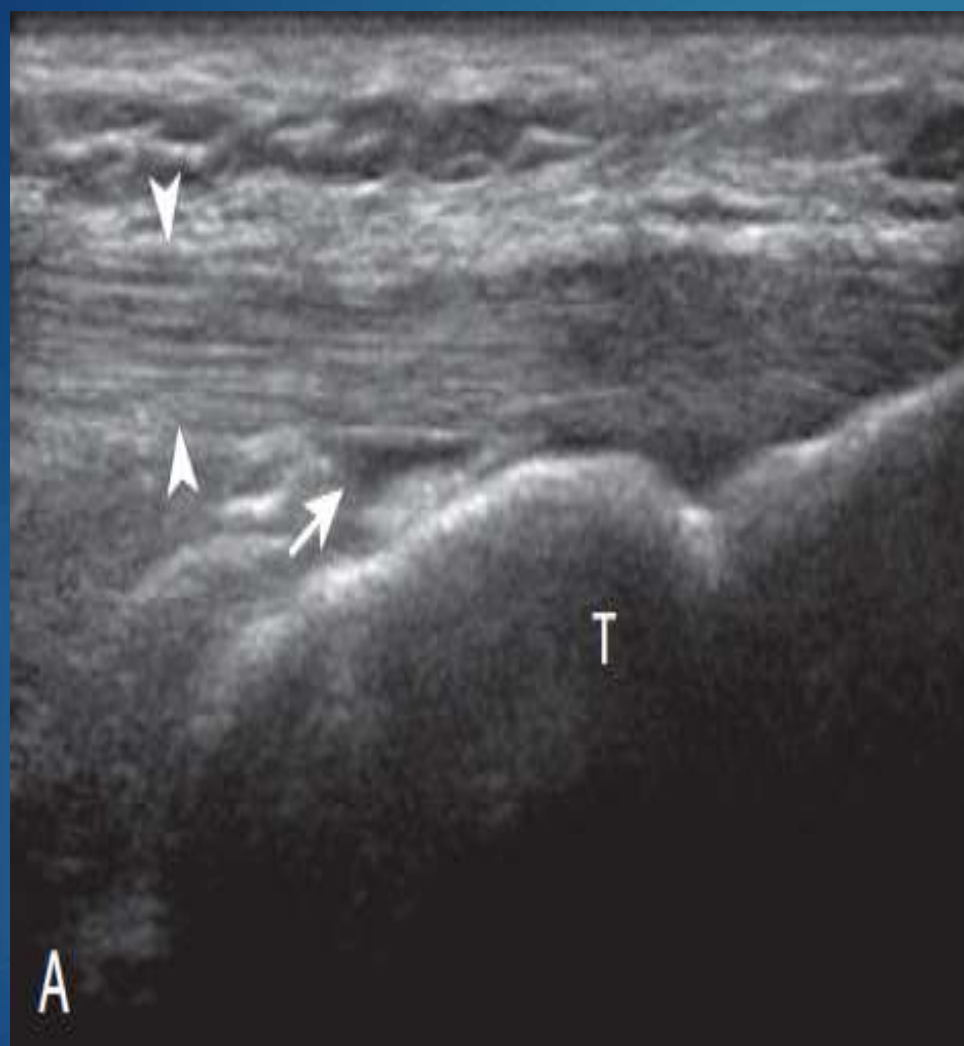


Case #1



Case #2





FR32

P75

THI On

HRes1
17M

BG22

DR70

MI 1.1

TIS 0.1

TIB 0.1



L18-4



**THANK YOU
FOR YOUR ATTENTION**

