

***Tendinitis and Bursitis  
around knee joint &  
Role of USG***

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# **Cyst and masses around knee**

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- Popliteal cyst
- Meniscal cyst
- Ganglion cyst
- Bursitis
- Synovial chondromatosis
- Synovial sarcoma
- Villonodular synovitis

# Tendinitis around knee

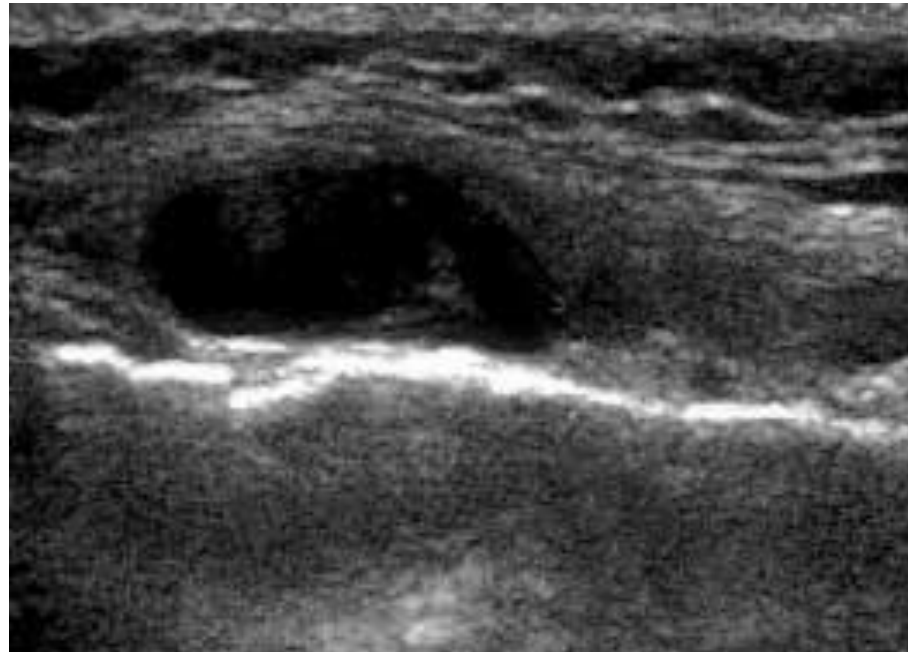
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- Infrapatellar tendinitis
- Jumper's knee
- Hoffa's fat pad syndrome
- Popliteal tendinitis
- PATB (Pes Anserinus Tendinitis & Bursitis) Syndrome
- Muscle/ Tendon rupture
  - Quadriceps
  - Gastrocnemius
  - Hamstring
  - Patellar Tendon

# USG & SOFT TISSUE AROUND JT

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- USG is excellent technique for imaging superficial soft tissue
- Can be used widely and routinely for diagnosis.



- bursitis (circumscribed anechoic fluid collection of 2 mm or greater).

# USG EQUIPMENT & TECHNIC



# Role of USG in Knee Joint

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- Intraarticular assessment- effusions and synovitis
- Assessment of paraarticular disease
  - Regional tendons
  - Collateral ligaments
  - Patellar retinaculum
  - Bursae
- Lumps and bumps- localization, origin and relationship to adjacent structure

# EFFUSION Vs SYNOVITIS

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- Acute Effusion- anechoic
- Chronic Effusion-fibrous adhesions and echogenic debris
- Synovitis- synovial thickening & erosions in inflammatory arthritis
  - intra articular loose bodies-in suprapatellar pouch/ Baker's cyst
  - Power doppler- acute inflammation

# **EFFUSION Vs SYNOVITIS**

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## Clinical Importance of USG

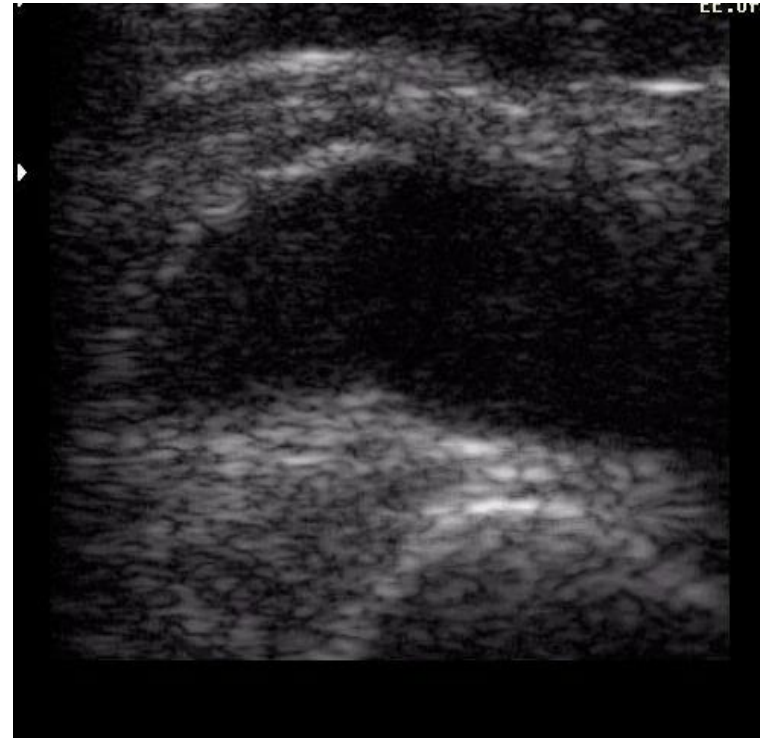
- Effusion Vs Significant Synovitis
  - Both can give same doughy feel
  - Even Fluctuation test can be misleading, sometimes
- Plain effusion Vs Effusion with Loose bodies
  - Synovial Chondromatosis
  - Rice bodies
- Plain synovitis Vs Inflammatory effusion
  - Chronic Infection/ Gout



# EFFUSION Vs SYNOVITIS



Synovitis knee



Synovial Effusion

# Lateral Meniscal cyst

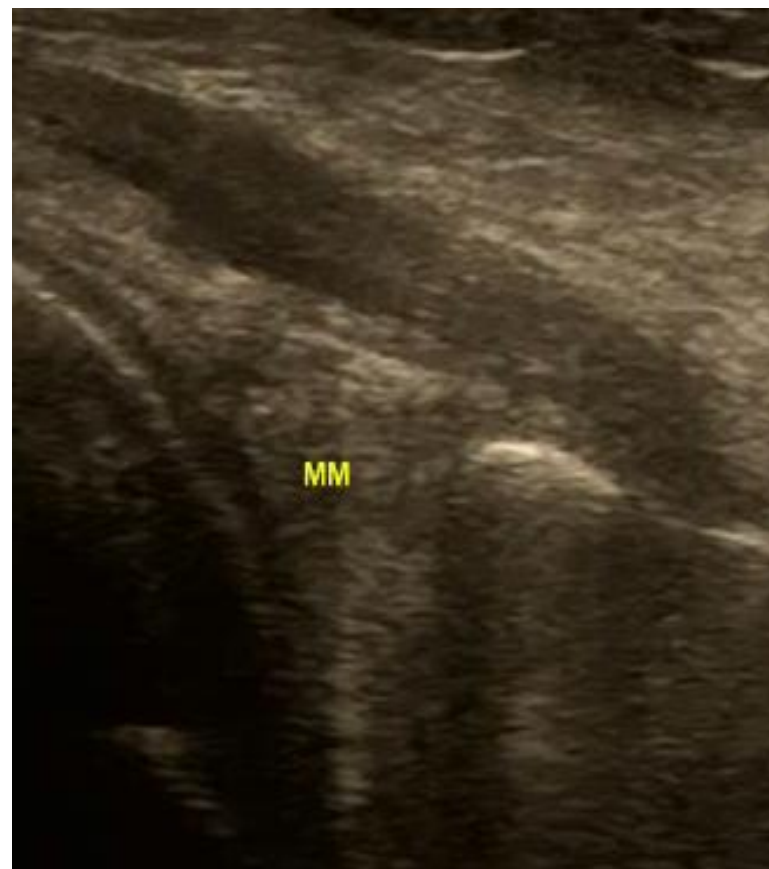
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## Clinical Importance of USG

- D/D with Ganglion cyst
- Course of the Cyst

# Lateral Meniscal cyst

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# Popliteal Cysts

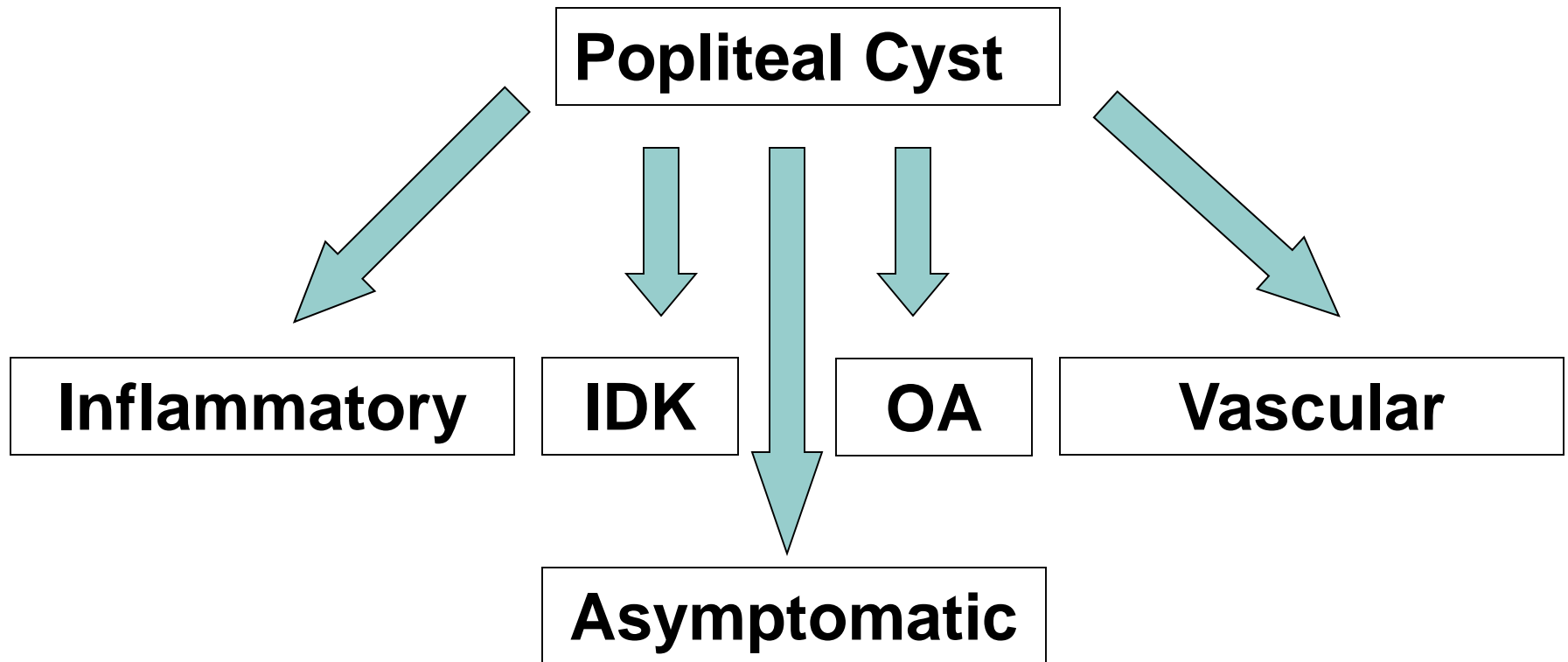
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## Incidence and associations

- 2<sup>nd</sup> Decade-16%
- 3<sup>rd</sup> decade-36%
- 5<sup>th</sup> decade-54%
- 80% to 90% of popliteal cysts are associated with a meniscal tear, usually medial, although 15% are lateral tears

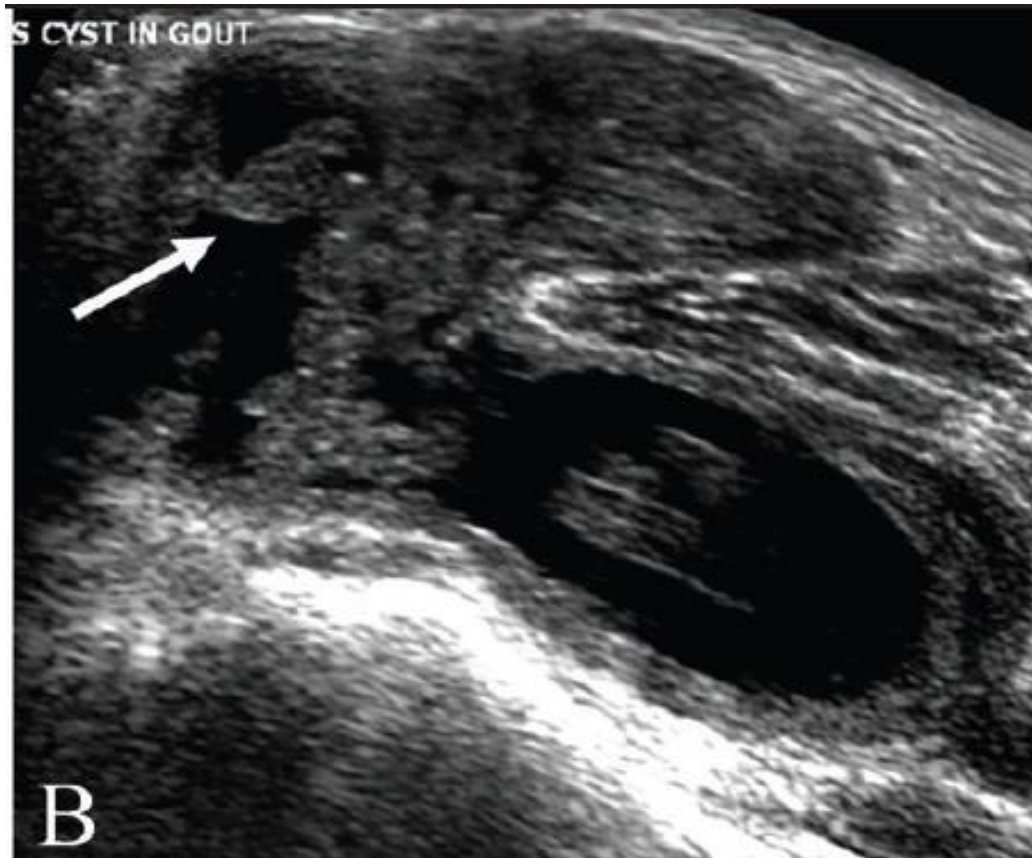
# Clinical Significance of Popliteal Cyst

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# Popliteal Cyst : Inflammatory

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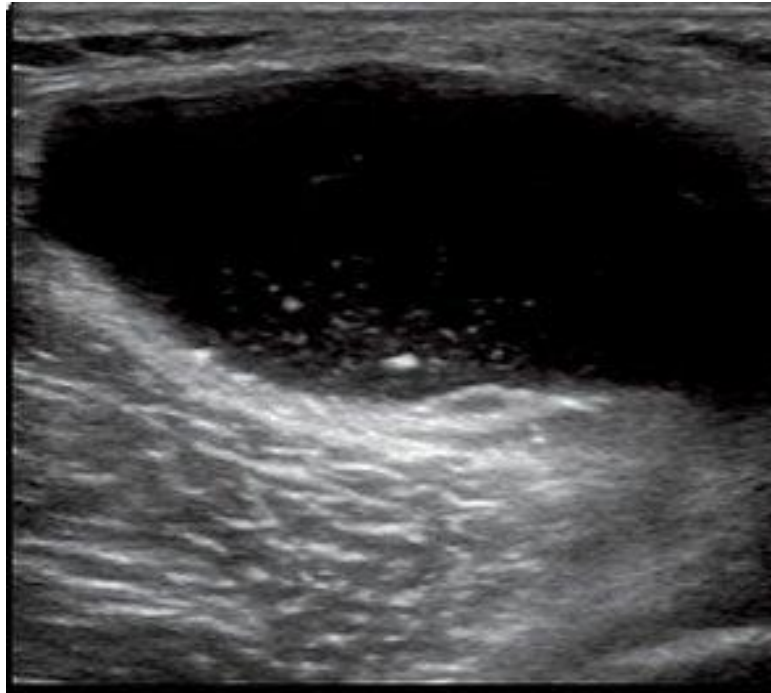


Loose Bodies

# Popliteal Cyst: OA KNEE

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- USG diagnosed 40% of popliteal cysts
- MR diagnosed 35%



# Popliteal Cysts: IDK

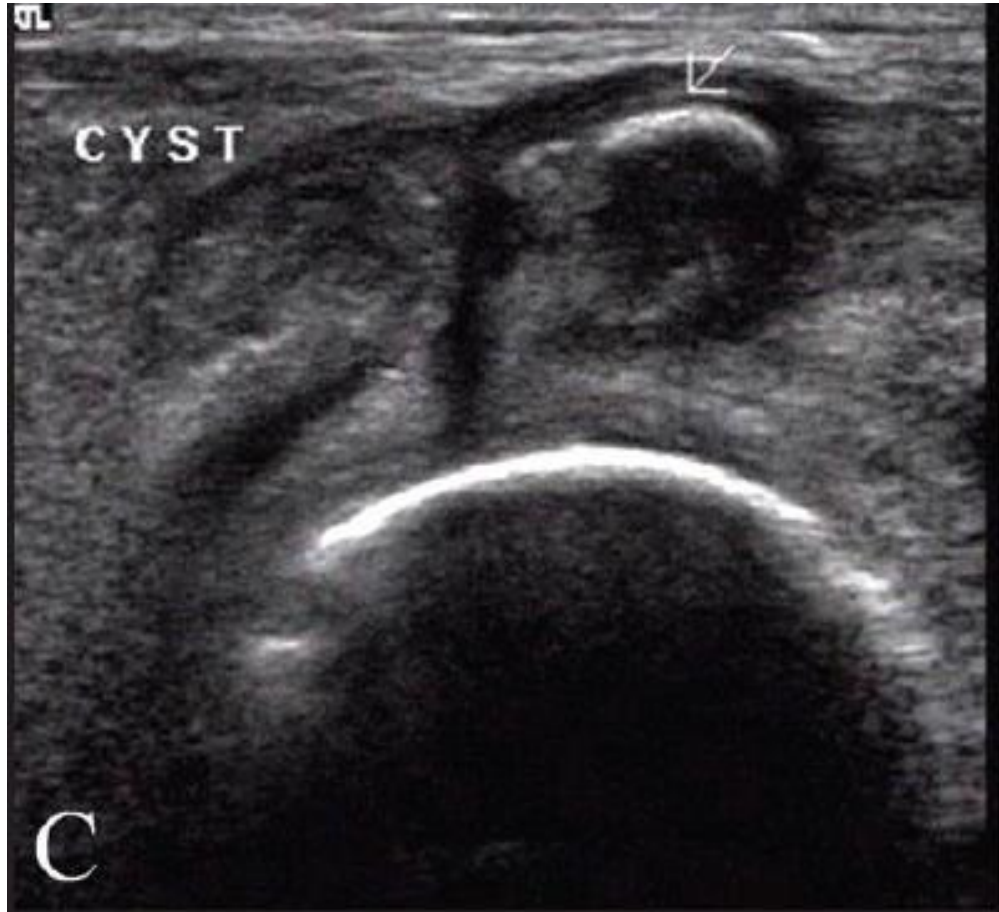
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- Previous meniscectomy
- Articular cartilage damage
  - chondromalacia patella
  - degenerative arthritis
- Collateral and cruciate ligament injury



# Popliteal Cysts: IDK

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## **Popliteal Cysts: Vascular Asso**

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- Cysts may dissect into the calf, or rupture and simulate thrombophlebitis
- This can lead to hemorrhaging and produce blood products within the cyst
- Pseudothrombophlebitis syndrome - DVT secondary to a ruptured popliteal cyst.

# Popliteal Cysts: Vascular Asso

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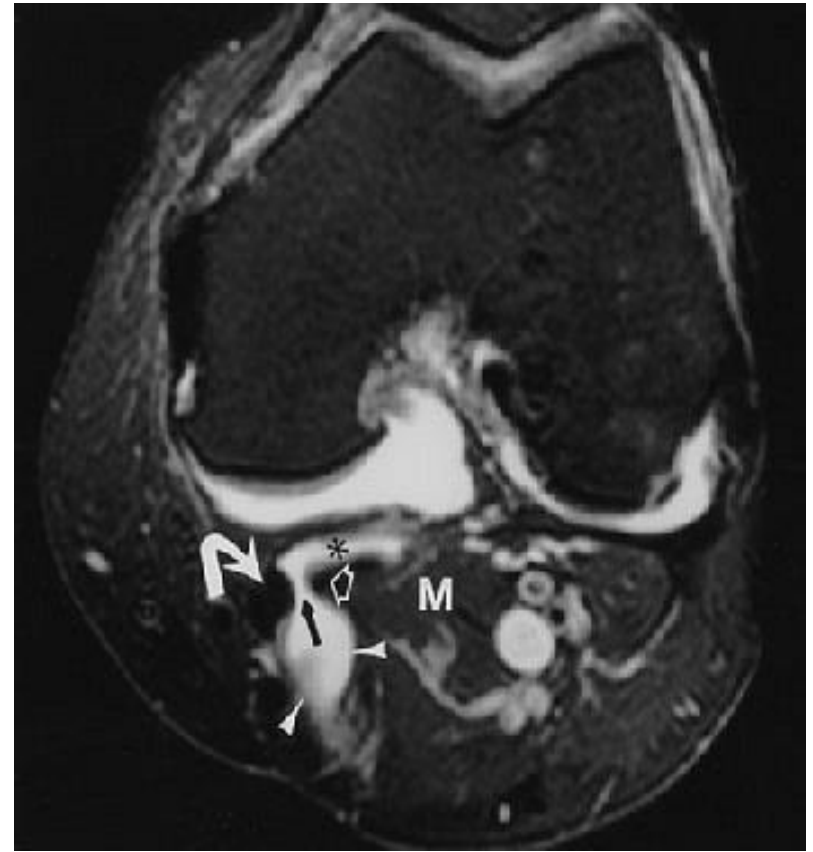
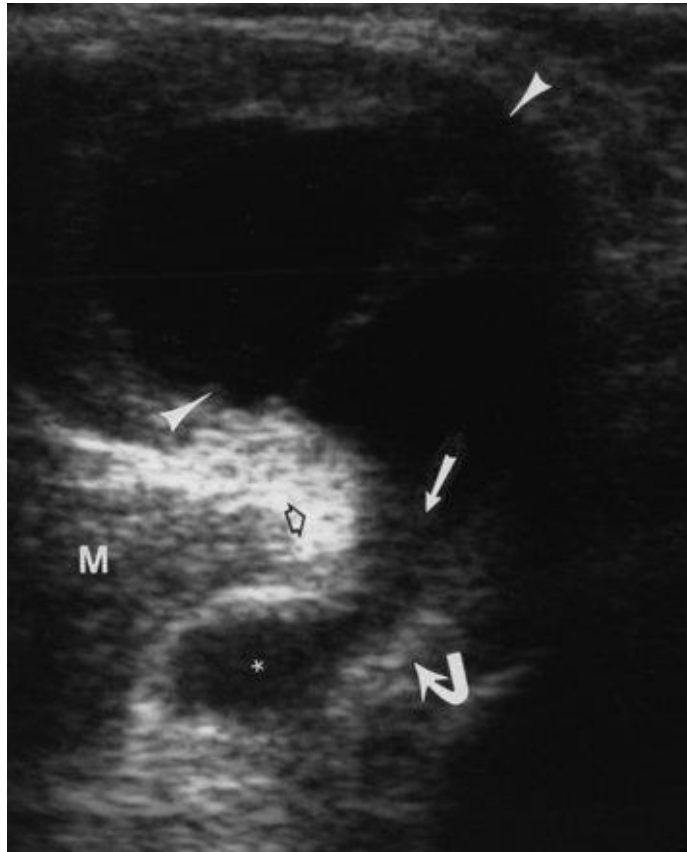
?? DVT

# Popliteal Cysts: Vascular Asso

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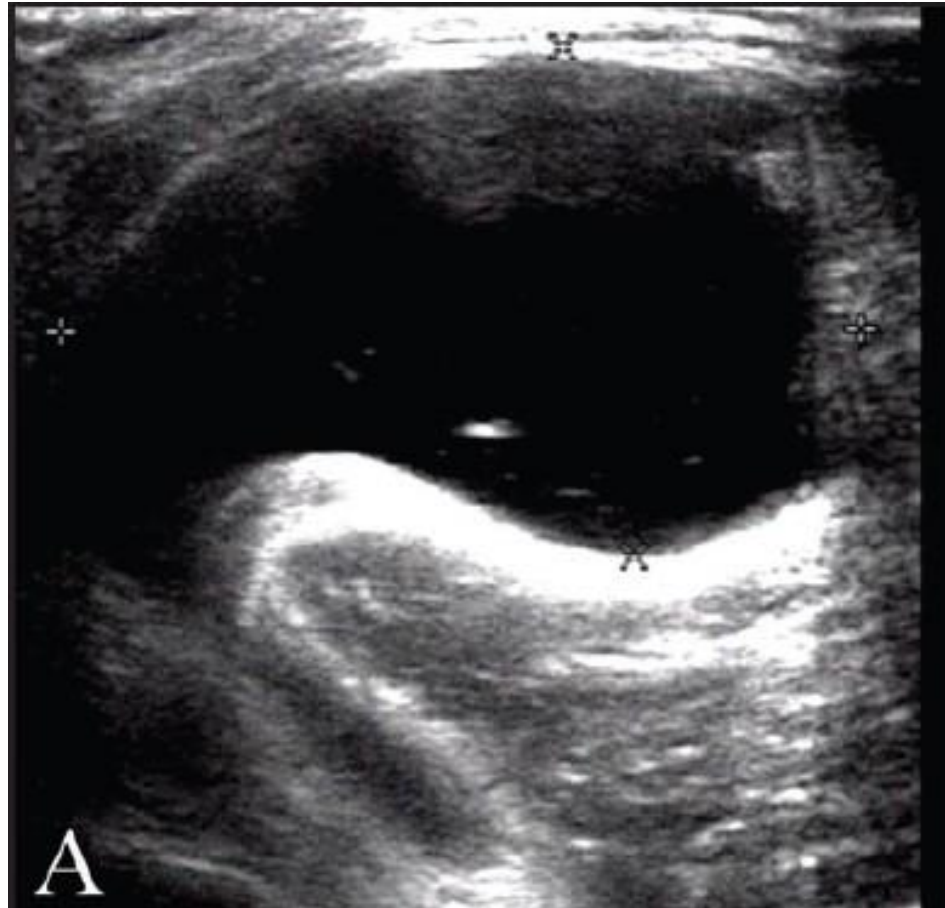


# MB CYST -USG Vs MRI



# Popliteal Cysts: Simple

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## **USG VS MRI IN KNEE**

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- For the knee, ultrasound is the test of choice for tendons, medial collateral ligament tear (for chronic cases), Baker's cysts, and effusions. MRI should be the test of choice for pretty much everything else, including cruciate ligaments, menisci, fractures, and osteochondral injuries

## **PATB SYN (*Pes anserinus* tendino-bursitis) : Diagnosis**

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- 1) Have you had knee pain in the last 2 weeks?
- 2) Does your knee hurt when ascending or descending stairs?
- 3) Does your knee hurt when performing weight bearing activity?
- 4) Do you have trouble getting out of a car?



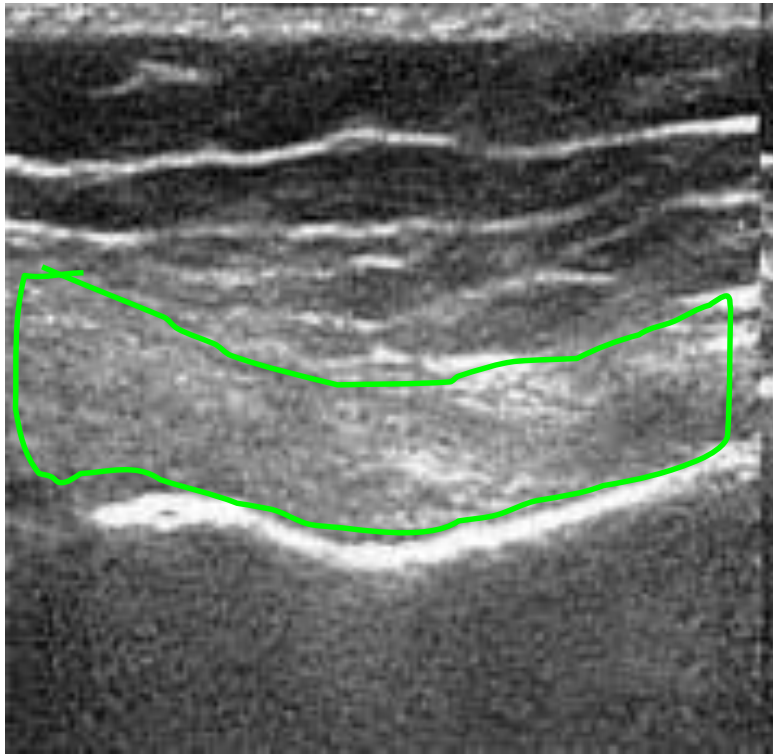
## ***Pes anserinus tendino-bursitis: clinical and imaging corelation***

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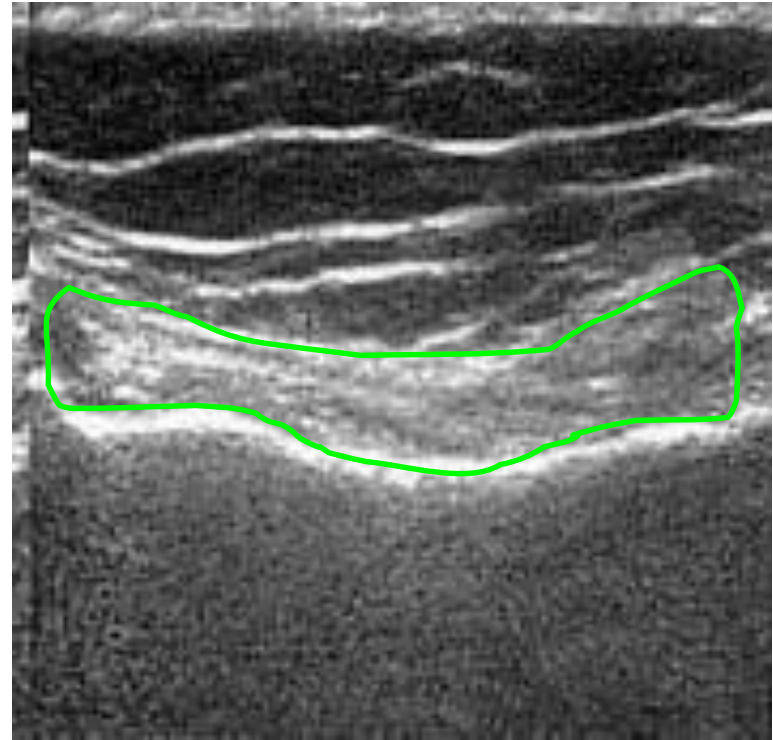
- 37 clinical PATB patients,
  - USG→3 Anserine bursitis  
1 Pes Anserinus tendinitis
- clinical PATB syndrome with type 2 DM  
28.6% had PA tendinitis

# PES ANSERINUS TENDINITIS

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RIGHT 5 MM-THICKENING + LOSS  
OF NORMAL ECHOTEXTURE



LEFT 3.5 MM

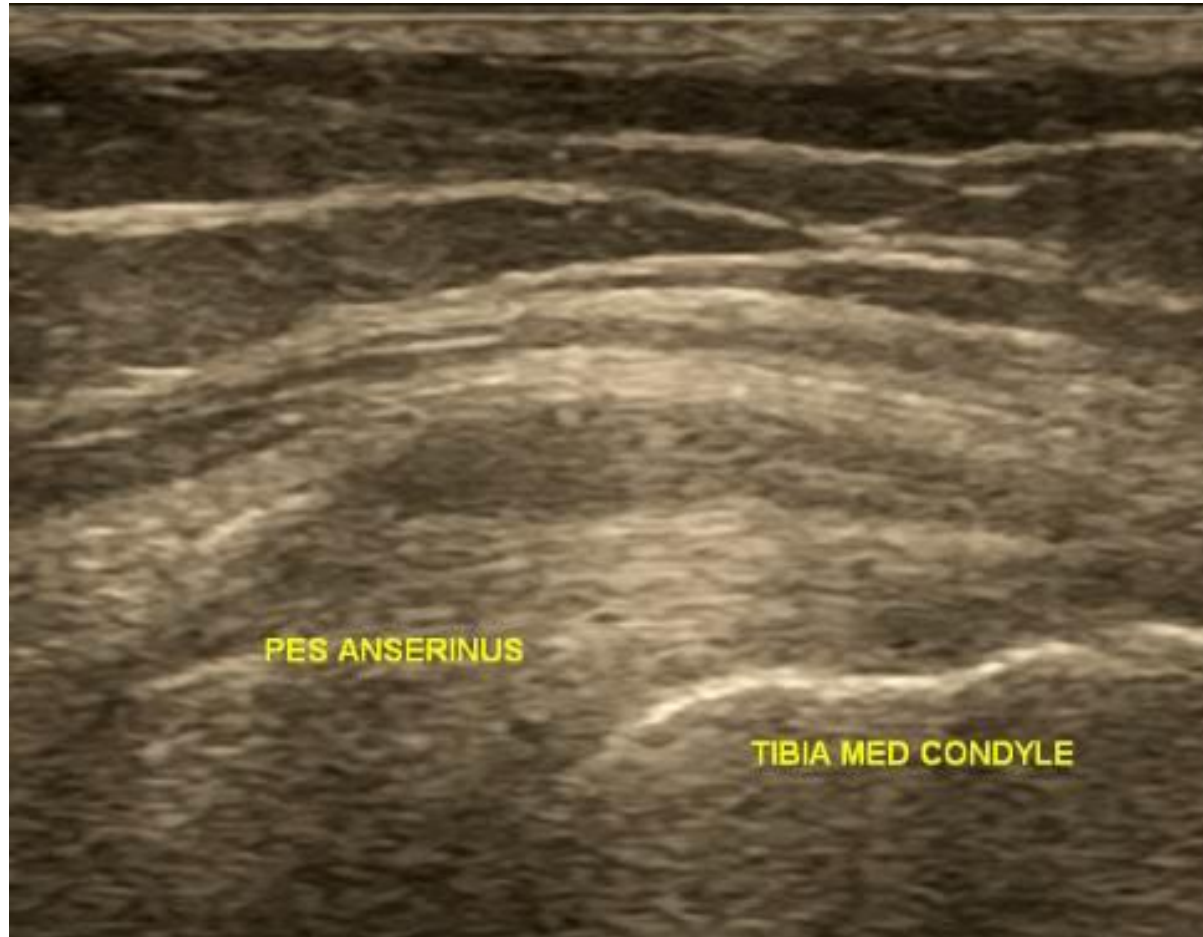
## **PATB AND OA KNEE**

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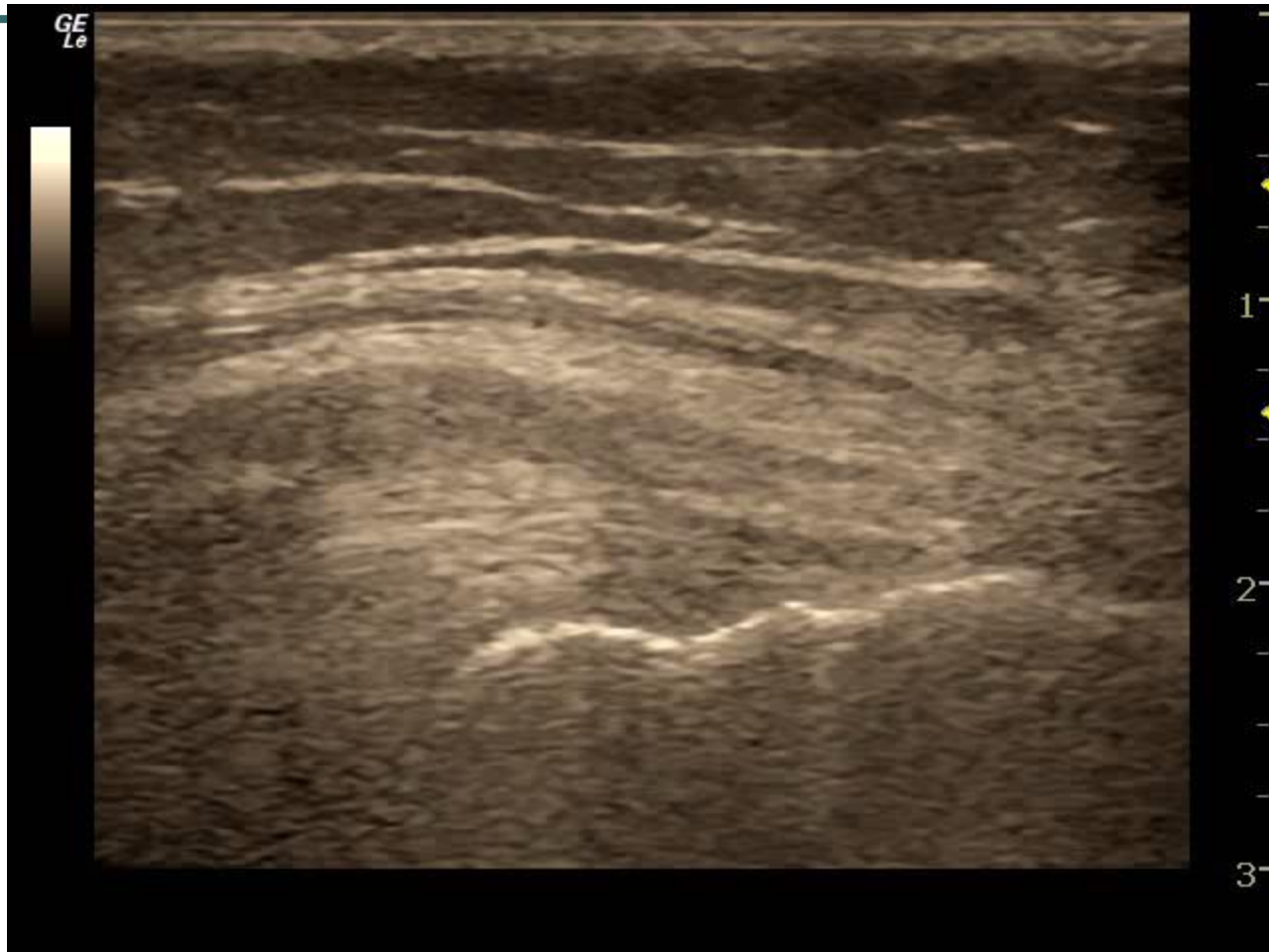
- “Pain of OA could have a cause due to periarticular problems, such as anserine bursitis”
- Local corticosteroid injection resulted in complete relief of pain only in those patients with US findings of PATB.
- USG exam can serve as a useful tool to determine the usage of NSAIDs Vs Acetaminophen

# Pes anserinus tendinitis

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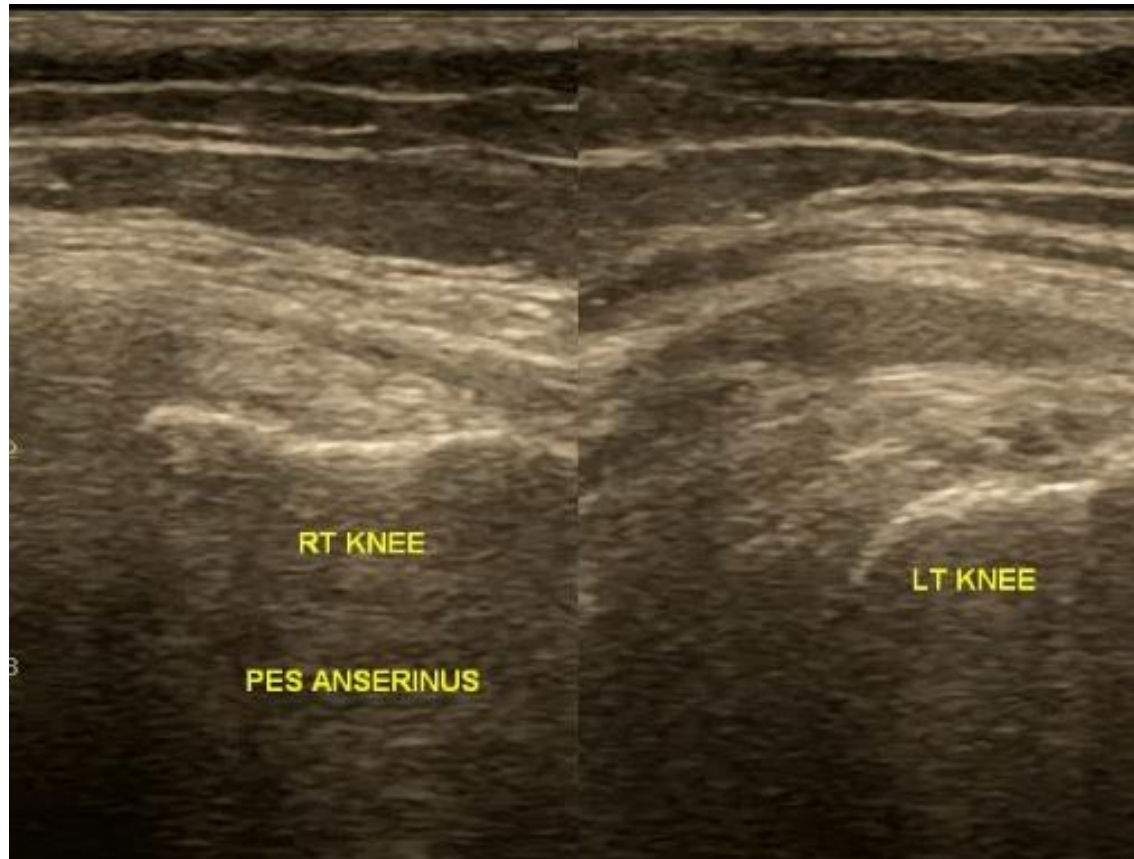


# Movie clip of Pes anserinus tendinitis



# Pes Anserinus-comparative views

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# Quadriceps injury



- In a 2005 study examining the quadriceps tendon, knee ultrasound was positive in all 28 patients

# TENDINOPATHY

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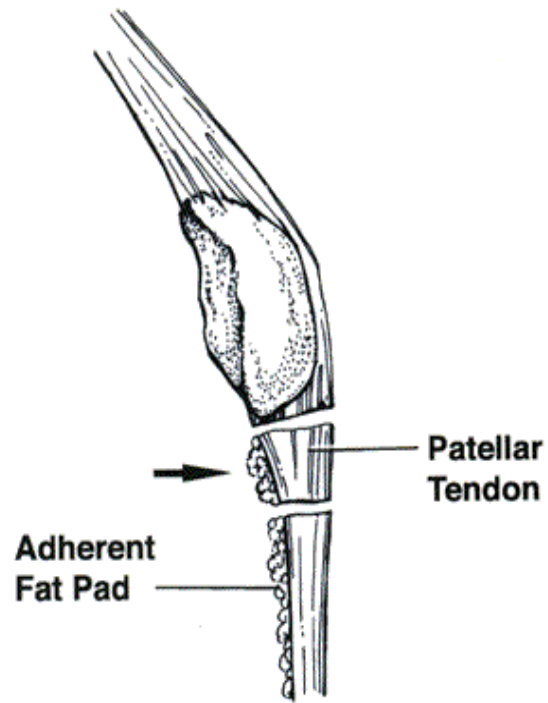
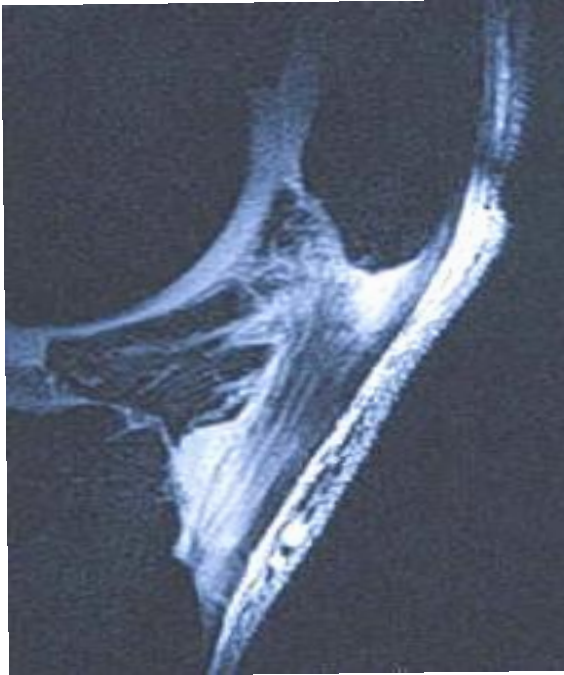
## **Patellar tendinopathy in athlete**

- USG → hypoechogenicity
- MRI → increased signal
- Histopathology → collagen degeneration and mucoid degeneration



# Infrapatellar Tendinopathy

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# USG Vs arthroscopy

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- High-resolution microconvex probes, which better fit the anatomic concavity of the popliteal fossa
- 6.5-MHz microconvex probe to prospectively evaluate 408 knee joints with knee pain and a clinical indication for arthroscopy
- USG → 60 medial meniscal tears and 47 lateral meniscal tears
- Sensitivity of 100% and specificity of 95% in detecting meniscal tears

# Carry home message

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- USG is noninvasive, economical
- Accessible next door investigation
- Under utilised, operator dependent
- Scores over MRI in tendon imaging
- Dynamic and real time study
- Ability to compare contra lateral side
- Various planes can be traced
- Advantage of repetitive study
- Ease of documentation

***Thank You***