

Knee MSUS



Adham Aboul Fotouh Khalil

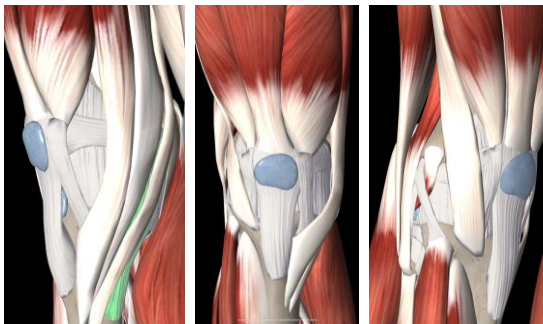
EULAR certified MSUS trainer
Scientific Director of the Egyptian School
for Musculoskeletal Ultrasonography

Agenda

- Sonoanatomy
- Standardized scanning technique
 - reliability
- Semiology of pathology



Anatomy



Standardized scanning method

- Anterior
 - Suprapatellar
 - Patella
 - Articular cartilage
 - Infrapatellar
 - Parapatellar
- Medial
 - AHMM
 - MCL
 - Pes Anserine
- Lateral
 - ITB
 - AHLL
 - LCL
 - Popliteus
- Posterior
 - Medial
 - Lateral

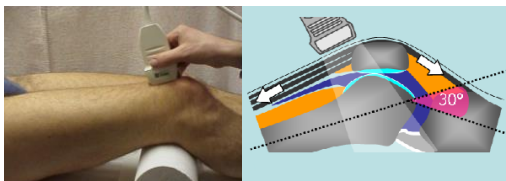


Anterior scan

- Quadriceps tendon
- Patella
- Patellar tendon
- Patellar retinaculum
- Suprapatellar recess
- Medial and lateral recesses
- Anterior knee bursae
- Femoral articular cartilage



Anterior examination



Suprapatellar longitudinal

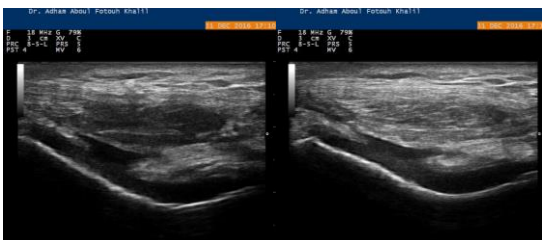


Anterior - Suprapatellar

Transverse



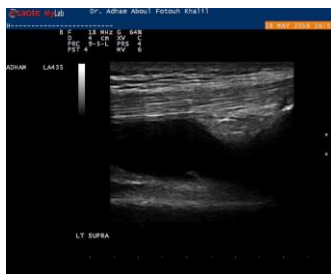
Anterior – Suprapatellar Transverse



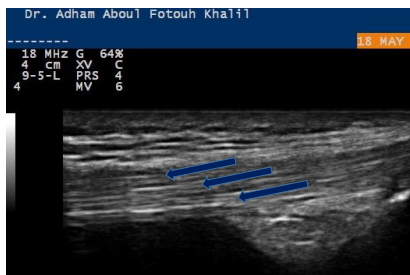
Suprapatellar



Quadriceps



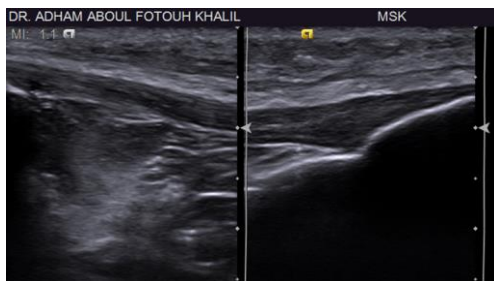
Quadriceps



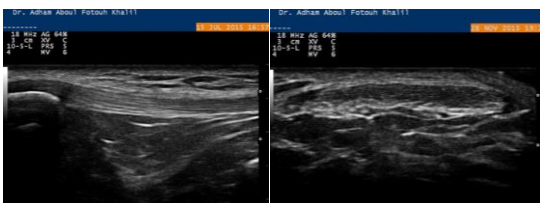
Patellar tendon



Patellar tendon



Patellar tendon



Panoramic image



Femoral articular cartilage



Lateral parapatellar recess



Medial parapatellar recess

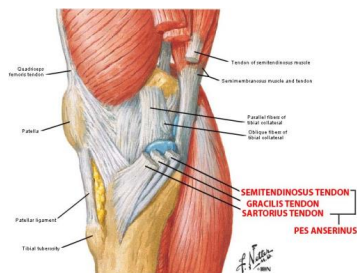


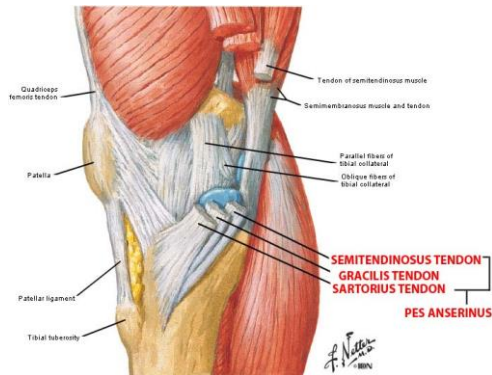
Medial scan

- AHMM
- MCL
- Pes Anserine



Medial

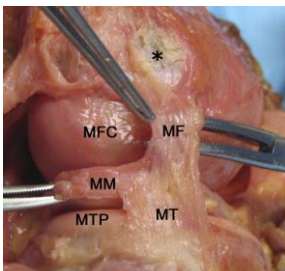




Medial scan



Medial Collateral Ligament (MCL)



LaPrade R F et al. J Bone Joint Surg Am
2007; 89:2000-2010

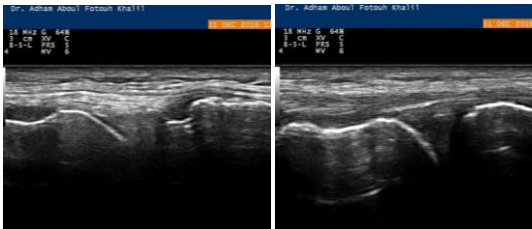
MCL - superficial



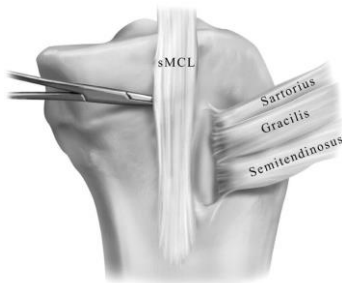
Medial Collateral Ligament (MCL)

Superficial

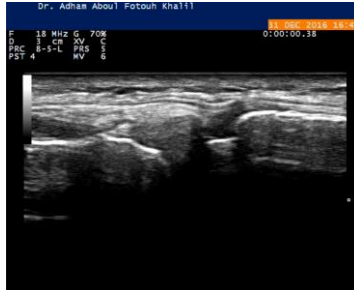
Deep



MCL – Pes anserine

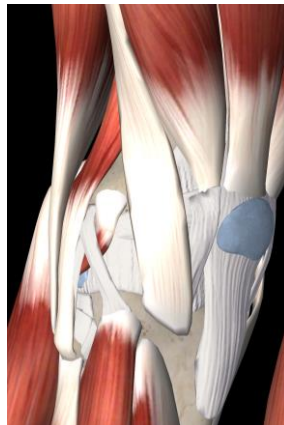


Pes Anserine



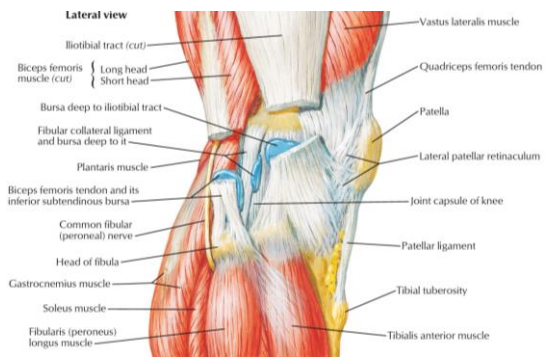
Lateral scan

- ITB
- AHLL
- LCL
- Biceps femoris
- Popliteus



Lateral





Lateral scan



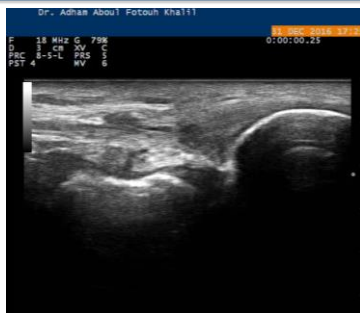
Ilio-tibial band (ITB)



Lateral Collateral Ligament (LCL)



LCL / Biceps femoris



Posterior scan

- Medial
 - MHGC
 - SM
 - Bursa
 - PHMM
- Lateral
 - LHGC
 - Biceps femoris
 - PHLM



Posterior scan



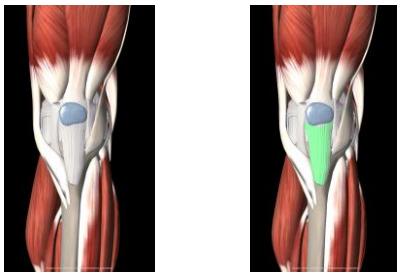
Knee Pathology



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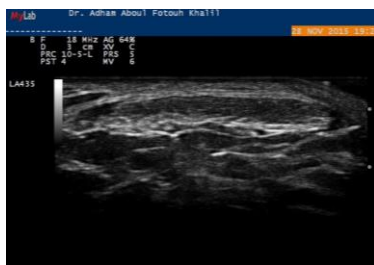
Patellar tendon



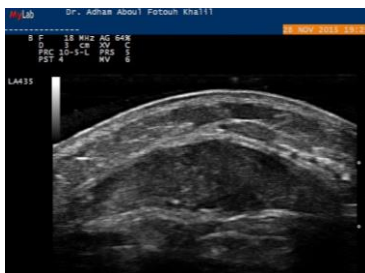
Patellar tendon



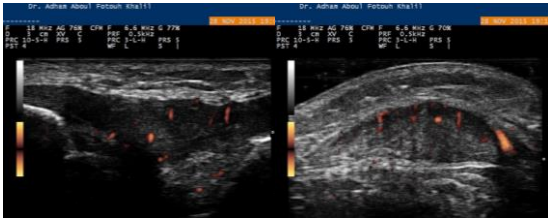
Patellar tendon



Patellar tendon



Patellar tendon



Patellar tendon



Distal patellar tendon



Osgood-Schlatter disease



Osgood-Schlatter disease



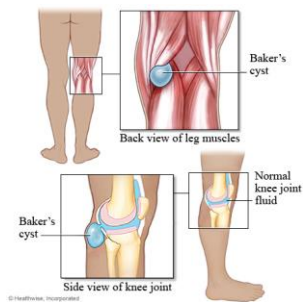
Bursitis



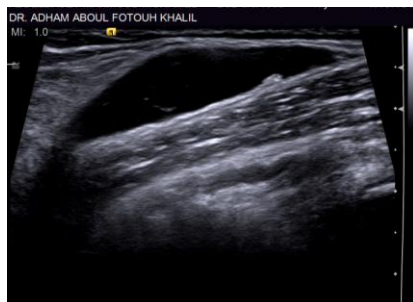
Normal posterior view – long medial



Baker cyst



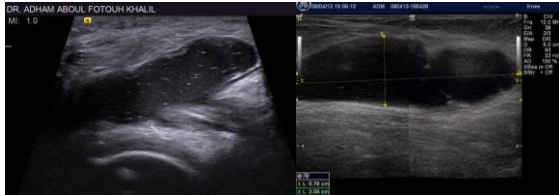
Baker cyst



Baker cyst

Inclusions

Measurements



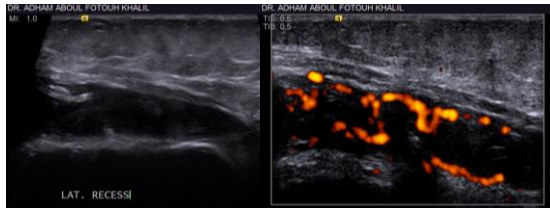
Baker cyst – Transverse (C)



Baker cyst

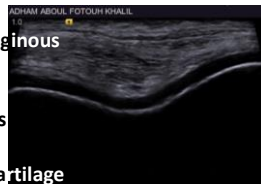


Synovial hypertrophy - knee



Cartilage changes

1. Loss of normal sharpness of the synovial space-cartilage interface
2. Thickening of the synovial space-cartilage interface
3. Loss of clarity of the cartilaginous layer
4. Focal or extensive areas of increased intracartilaginous echogenicity
5. Focal or extensive loss of cartilage
6. Irregularities of the outer bone-cartilage interface



MSUS reliability for cartilage abnormalities

Osteoarthritis and Cartilage 20 (2012) 1542–1546

**Osteoarthritis
and Cartilage**

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RESEARCH SOCIETY
INTERNATIONAL

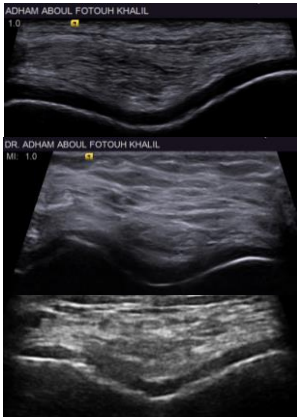
The reliability of musculoskeletal ultrasound in the detection of cartilage abnormalities at the metacarpo-phalangeal joints

A. Iagnocco ¹*, P.G. Conaghan ¹, P. Aegerter ², I. Möller ³, G.A.W. Bruyn ⁴, I. Chary-Valckenaere ⁵, E. Filippucci ¹, F. Gandjbakhch ¹, D. Loeuille ⁶, E. Naredo ¹, M.A. D'Agostino ¹

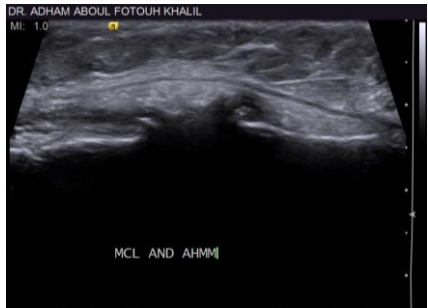
Conclusion: US is a reliable imaging modality for the detection of cartilage abnormalities in patients with cartilage pathology in the MCP joints. The analysis of specific cartilage measures showed more variable results that may be improved by modifying definitions and further standardization of US techniques.

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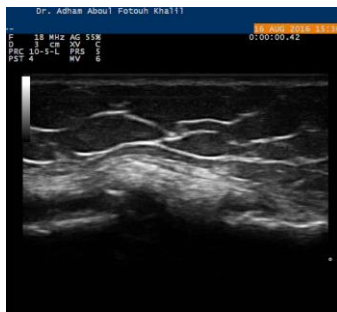
Femoral hyaline cartilage



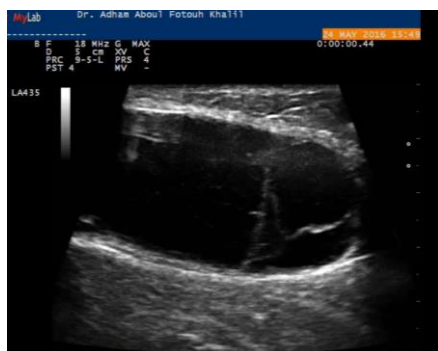
AHMM / MCL



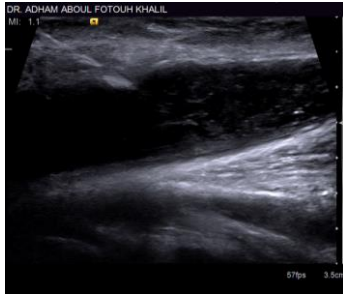
MCL - Dynamic



Local injection



Injection in a complicated bursa



References

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- Fundamentals of Musculoskeletal Ultrasound. Jon A. Jacobson. 2013.
- Standardized Scanning of the Knee. David Kane. EULAR 2013.



Thank you