Burt Klos

The Netherlands

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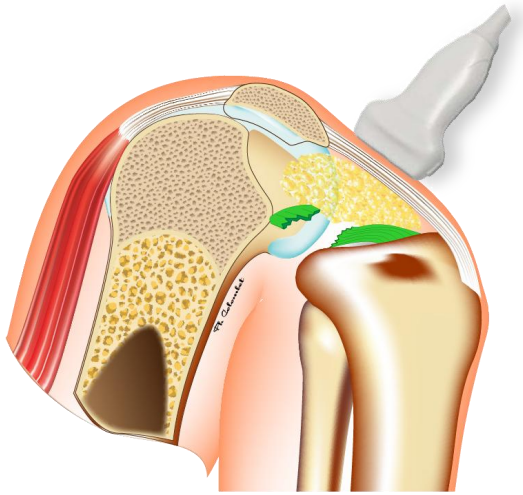

Misunderstanding Knee Imaging

- Knee X ray is of little value in acute knee injury
- Ultrasound can not detect meniscus / ACL lesions
- Most intra articular lesions can be detected with MRI

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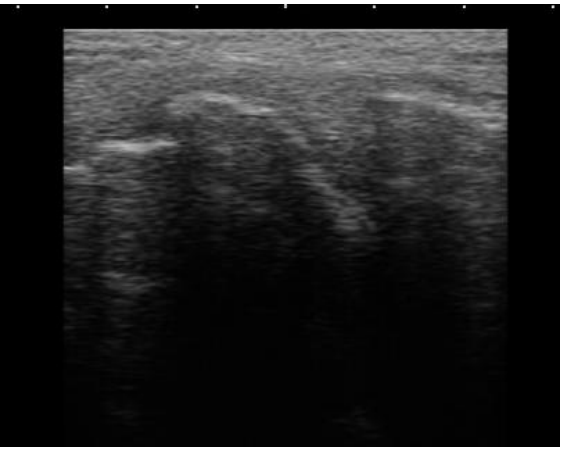
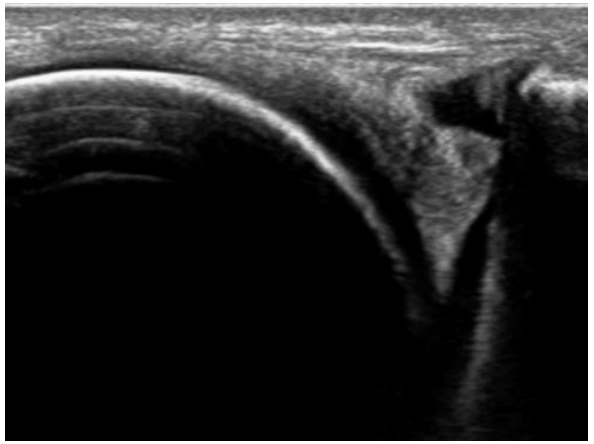
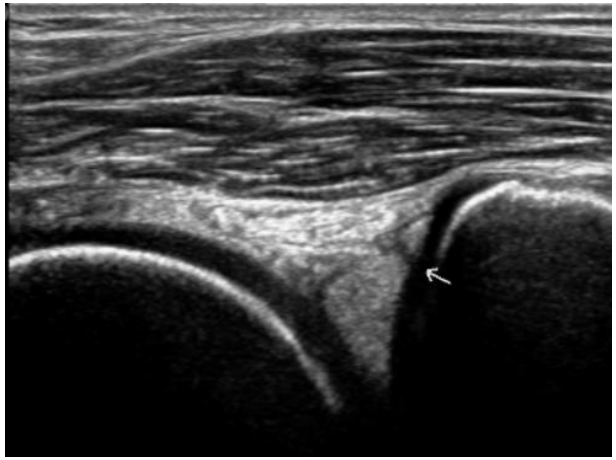
Improvements image quality

2006-2008 2008-2010 2011-2014





2015-2018



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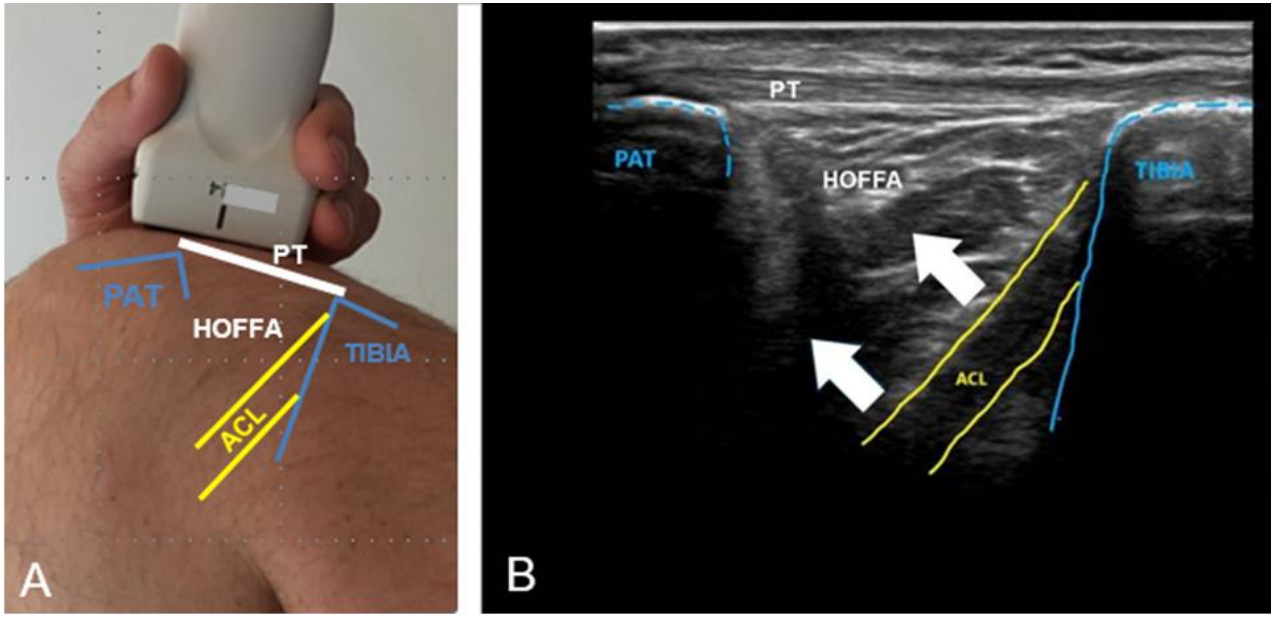
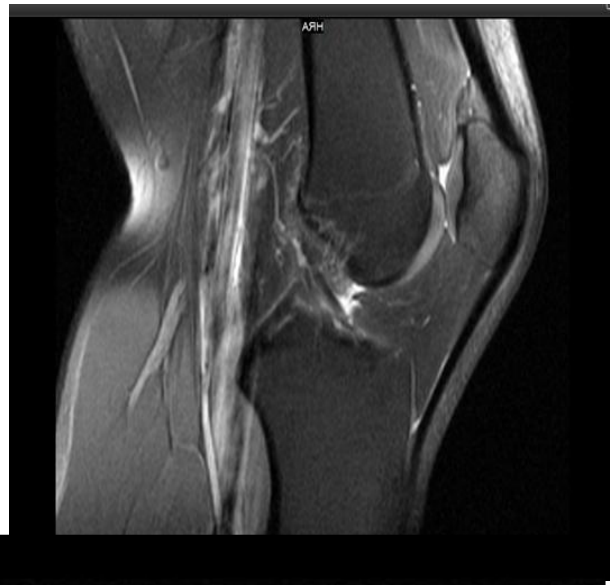
HR Dynamic Ultrasound

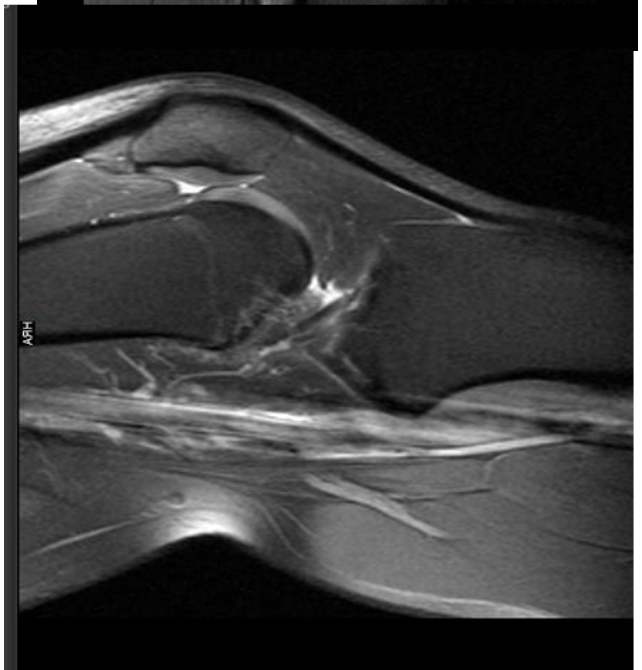
- Meniscus video

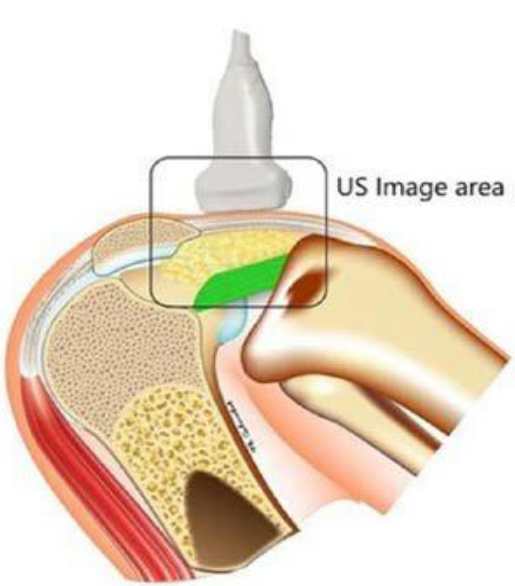
Direct visual ACL

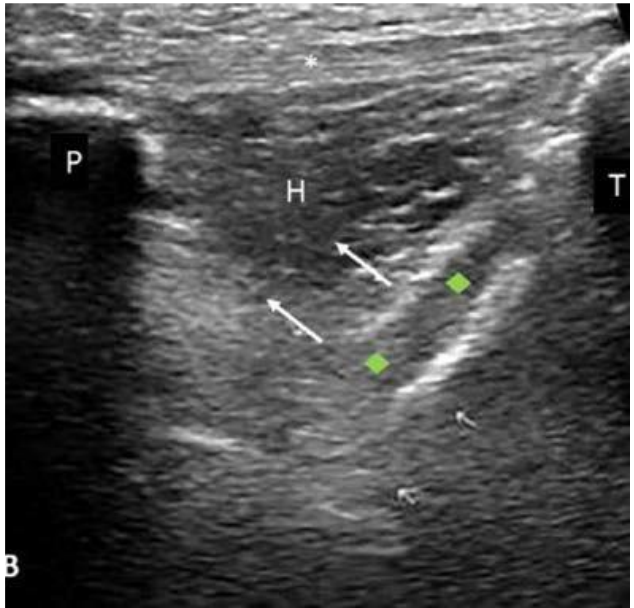


MRI/MSU intact ACL ?

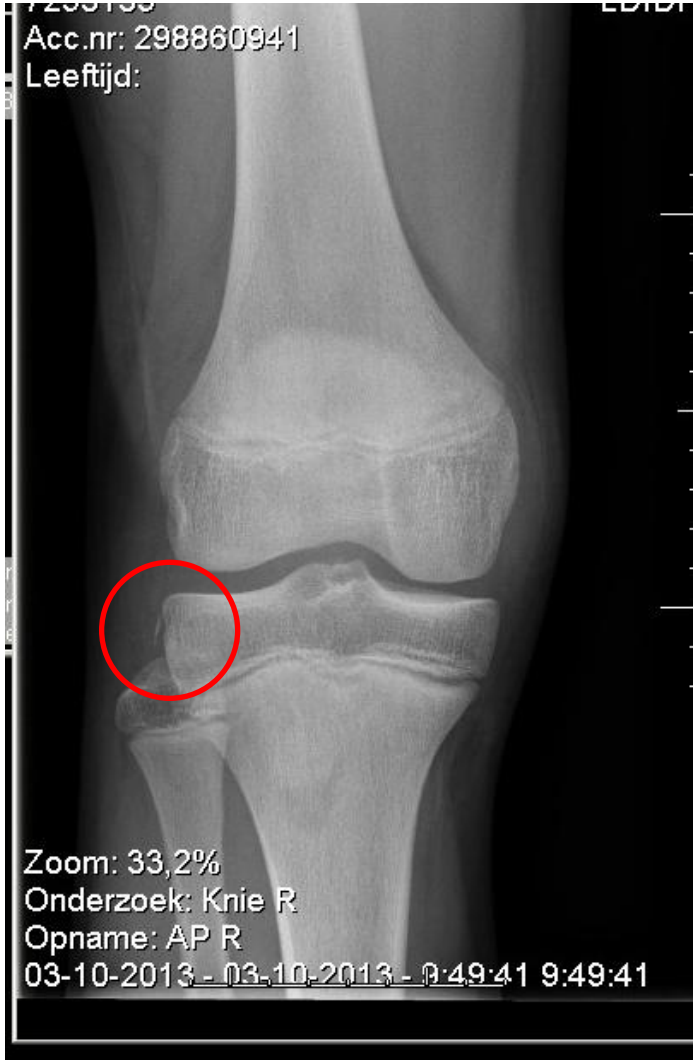


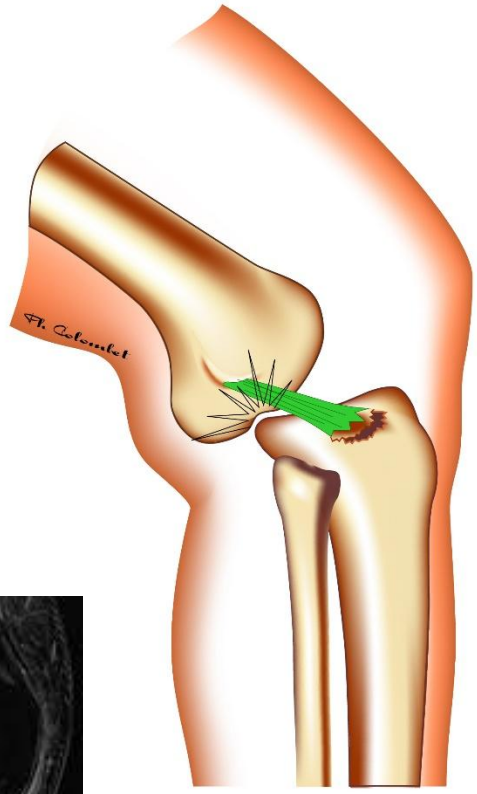




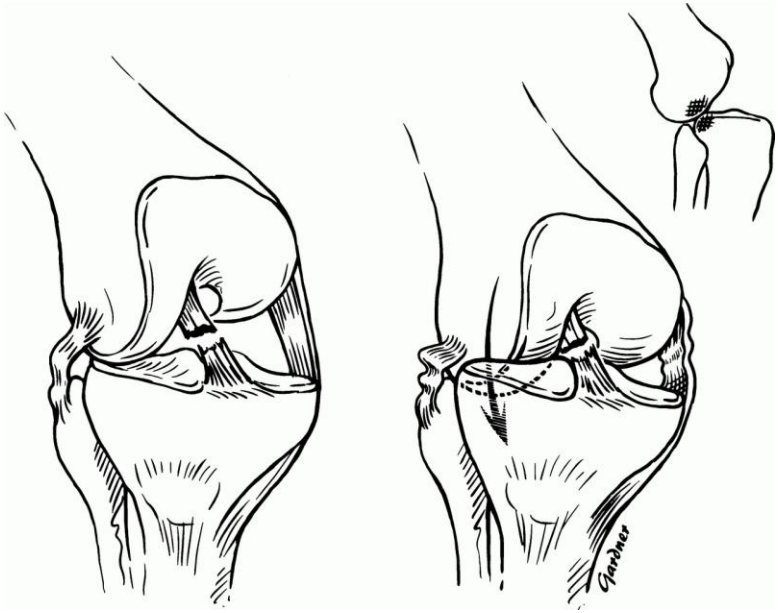


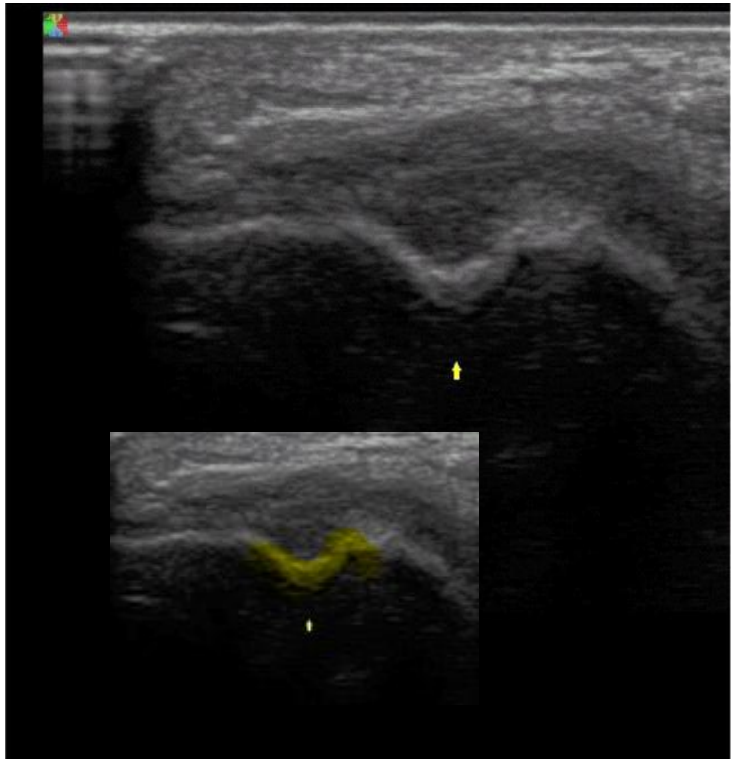
Primary injury / plain X ray information





Impaction lateral FC





In flexion

- Anterior meniscus
- ACL
- Bone lesions

Prone

- Posterior meniscus
- PCL

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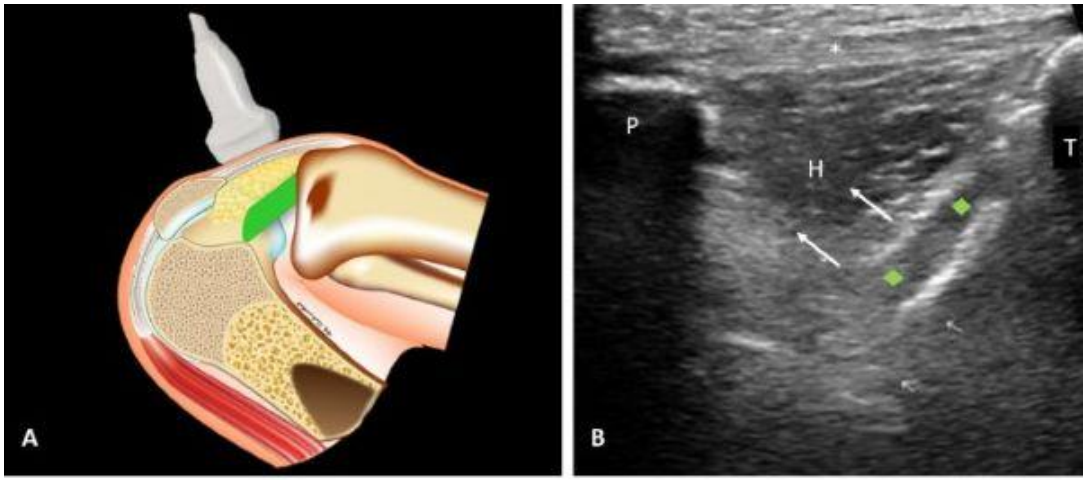

Normal ACL: anatomic drawing and corresponding ultrasound image

BMJ Open Sport & Exercise Medicine

Diagnostic *accuracy of dynamic* ultrasound imaging in partial and complete anterior cruciate ligament tears: a retrospective study in 247 patients

Manon Breukers,[1,2] Dorieke Haase,[1,2] Stephan Konijnenberg,[2] Tiburtius V S Klos,[2] Geert-Jan Dinant,[1] Ramon P G Ottenheijm

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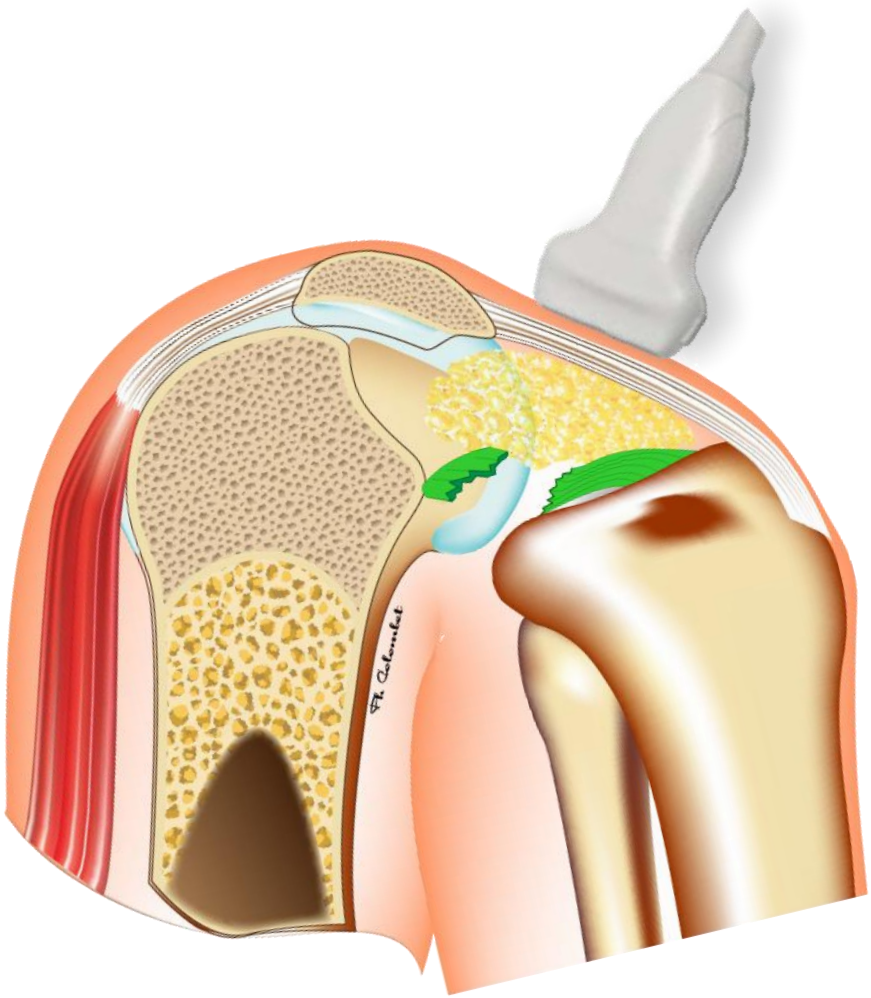
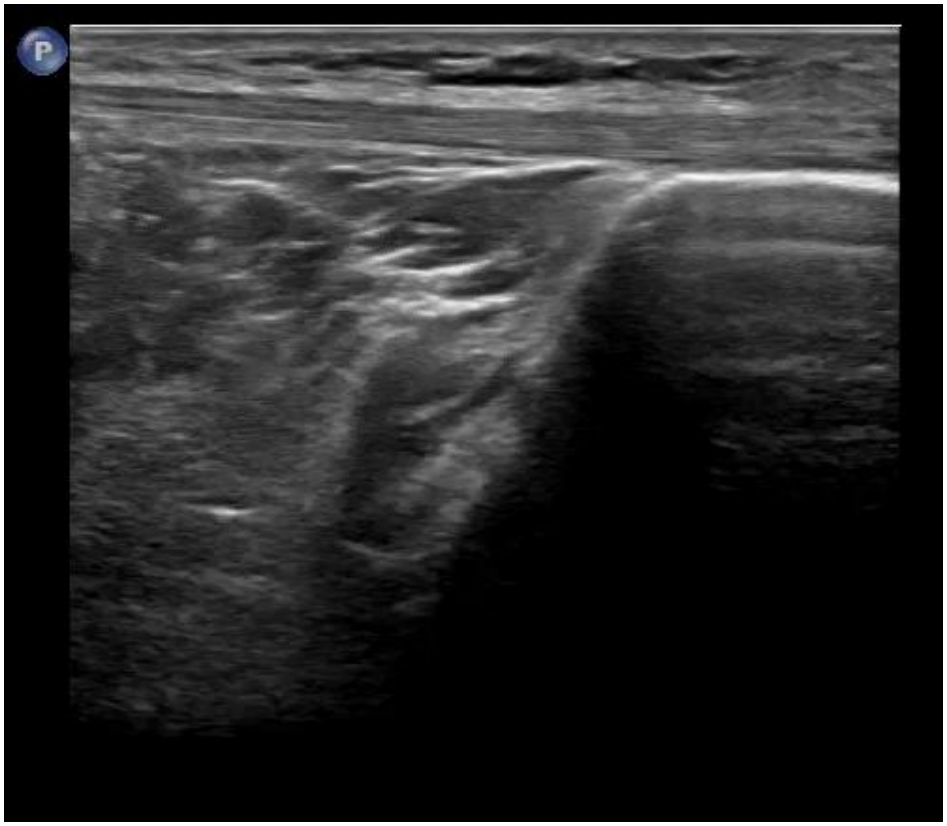
December 2019

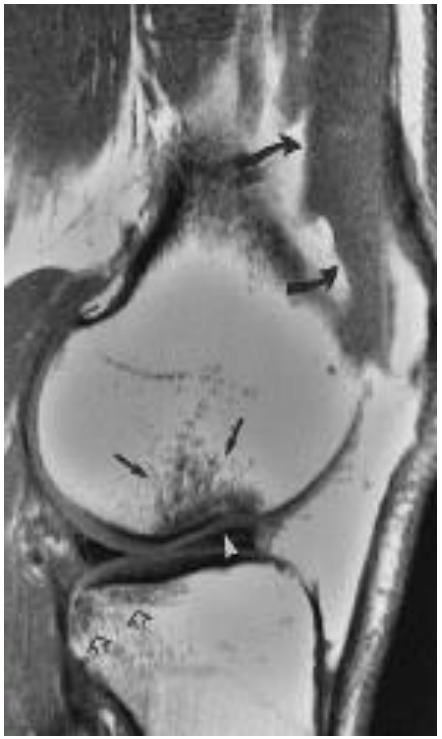


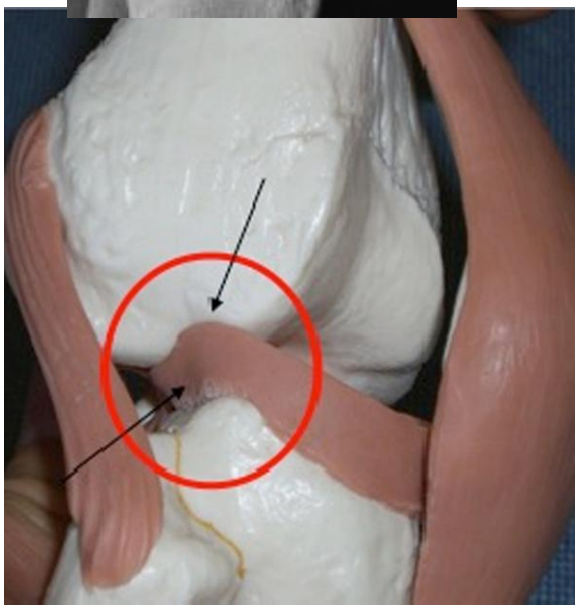


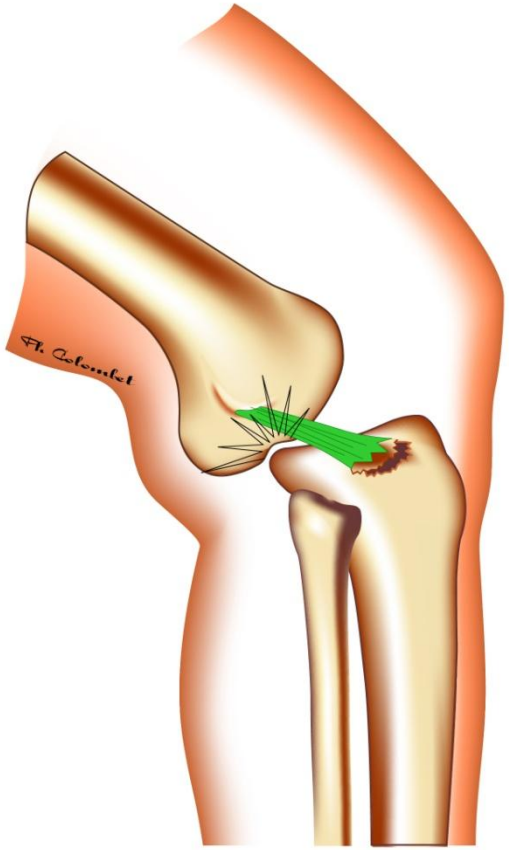
247 Ultrasound / Arthroscopy

- 95/ 108 Ultrasound confirmation /ACL lesion
- Sensitivity 88 %
- Specificity 92 %
- Partial ACL 60/108 (incl subtotal)
- Sensitivity 52 %
- Specificity 85 %
- MRI
- Sensitivity 87 % (partial 55%)
- Specificity 93 % (partial 75 %)

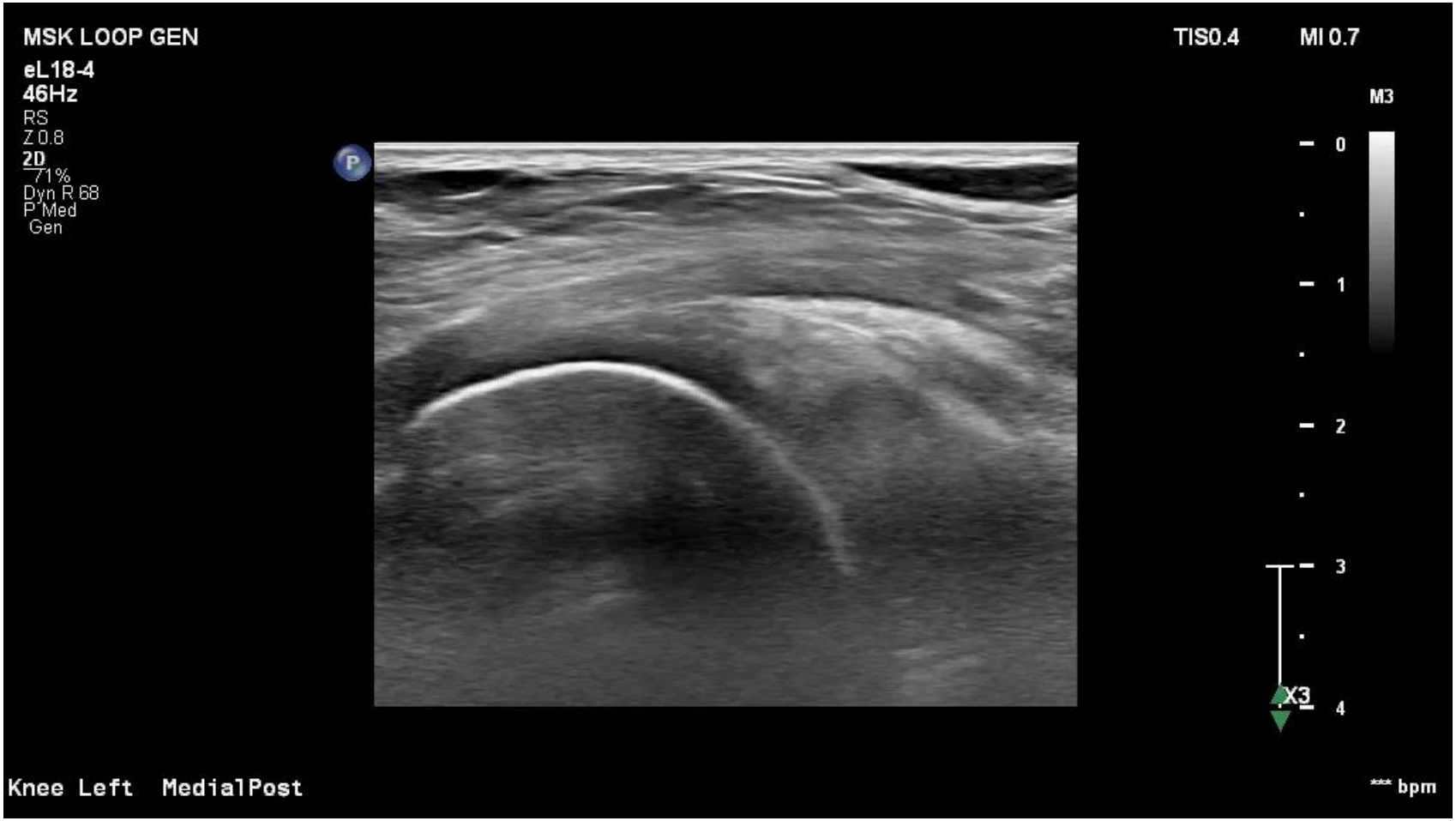
Combined lesions.





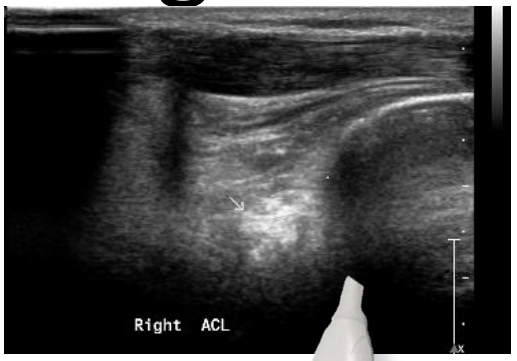


Combined ACL / MM

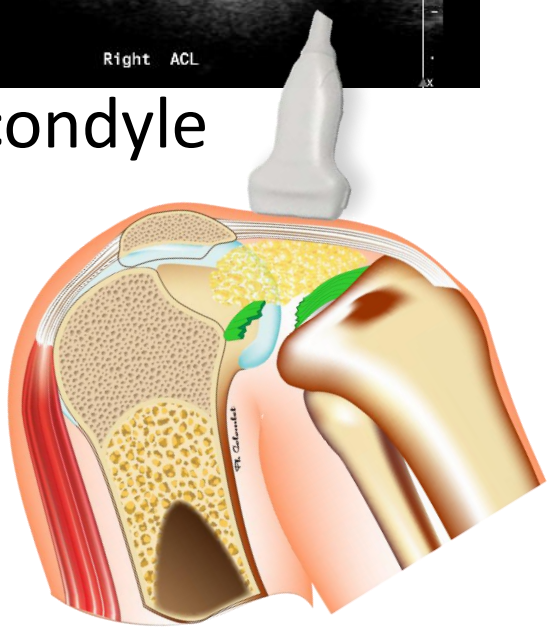


Knee instability

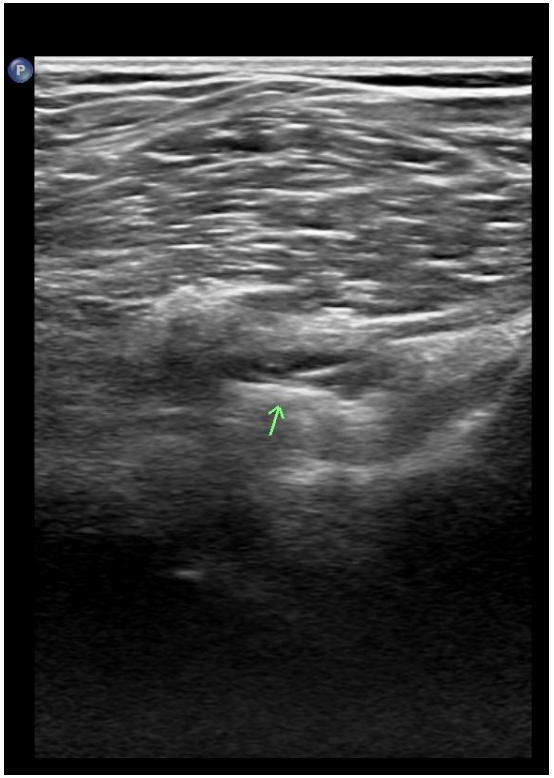
ACL # ultrasound findings



- Anterior findings
  - Cyclops / scar tissue
  - Impaction fracture lateral femoral condyle
- Hyperflexion stress
  - Dynamic resistance / elongation
- Posterior findings
  - Scar tissue PCL
  - Rotation / translation posterior med plateau



MRI bugling PCL



Conclusion

- Preoperative MSU vs MRI dynamic possibilities
- Small lesions (avulsion , peripheric meniscus)
- ACL elongation

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