



6th Advanced Course on Knee Surgery

January 31st – February 5th, 2016 Val d'Isère - France

www.kneecourse.com

Segond fracture , Fixation

Burt Klos

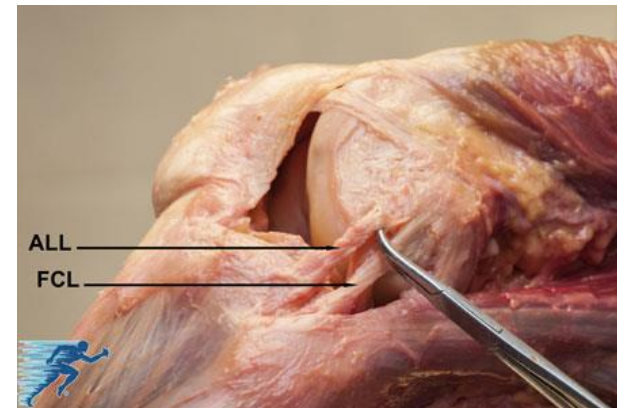
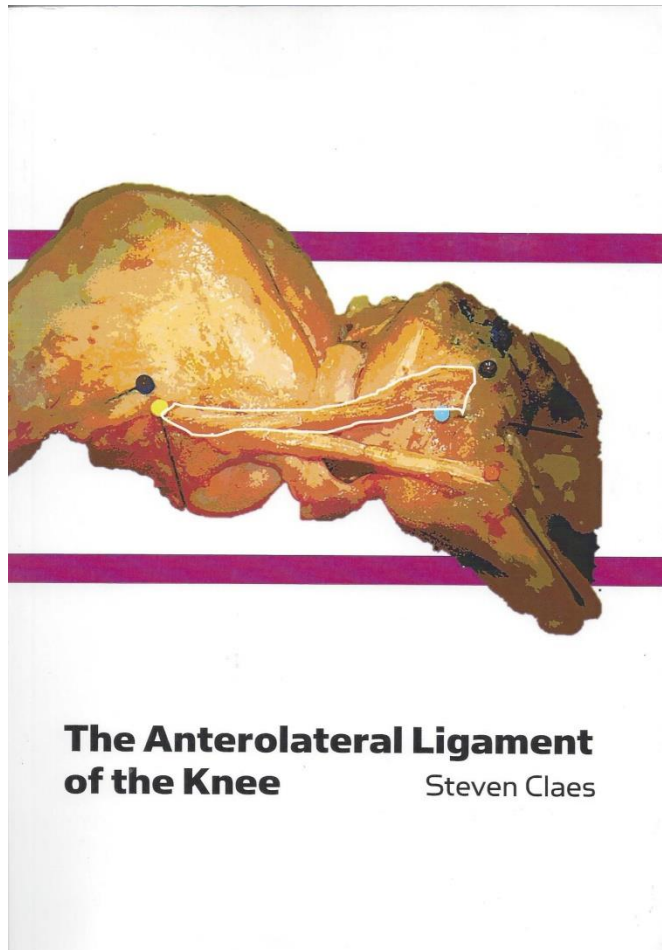
ICONE

The Netherlands



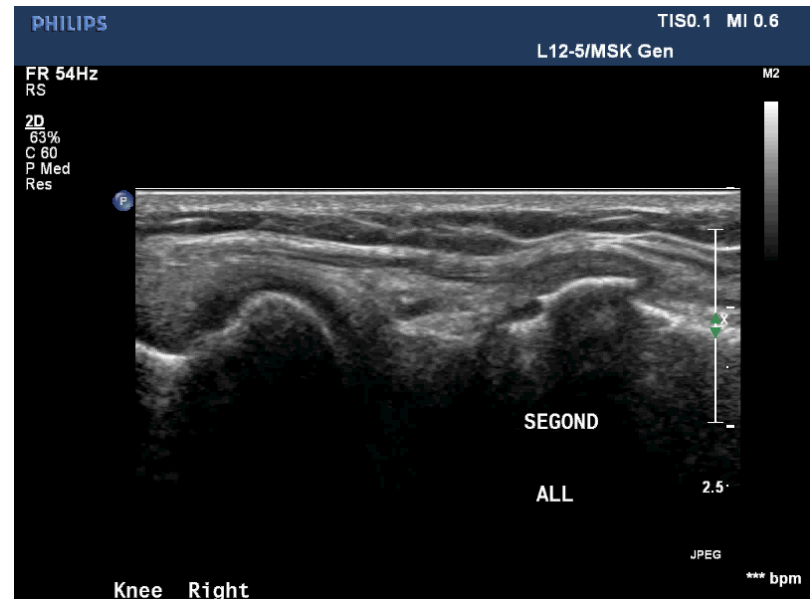
ALL ligament ?

November 2013 Belgium



Ultrasound anatomy

- Arthroscopy 2016
- Ultrasonographic Identification of the Anterolateral Ligament of the Knee
- Etienne Cavaignac, M.D. et al Toulouse



Fluoroscopic laxity AP



Laxity check





TEST 90° - DRAWER
REFERENCE POSITION



ACL
Surgeries X

P T F
1 2 C

DR24 - Drawn

R  

PRE-OP. LAXITIES

- DRAWER**
- ROTATION 90°
- LACHMAN
- ROTATION 30°
- VAR.-VALG. STABILITY
- PIVOT-SHIFT
- PRE-OP. SUMMARY

FLEXION: 89° ROTATION: 15° INT

Place the leg in the reference position for the drawer test (90°), without any drawer.

PRAXIM

Rotation



TEST 90° - ROTATION ACQUISITION

Lateral (mm)

Ant 0 4 Post 4

Ext 13 13

13

3 2 Post 0 2

Ant 2

Medial (mm)

Axial rotation (°)

5 POSITIONS (MIN 10 - MAX 500)
FLEXION: 82° ROTATION: 10° EXT

Perform the rotation test at 90°.
BLUE pedal to stop the acquisition.

ACL Surgeries X

P T F
1 2 C

PRE-OP. LAXITIES

DRAWER

ROTATION 90°

LACHMAN

ROTATION 30°

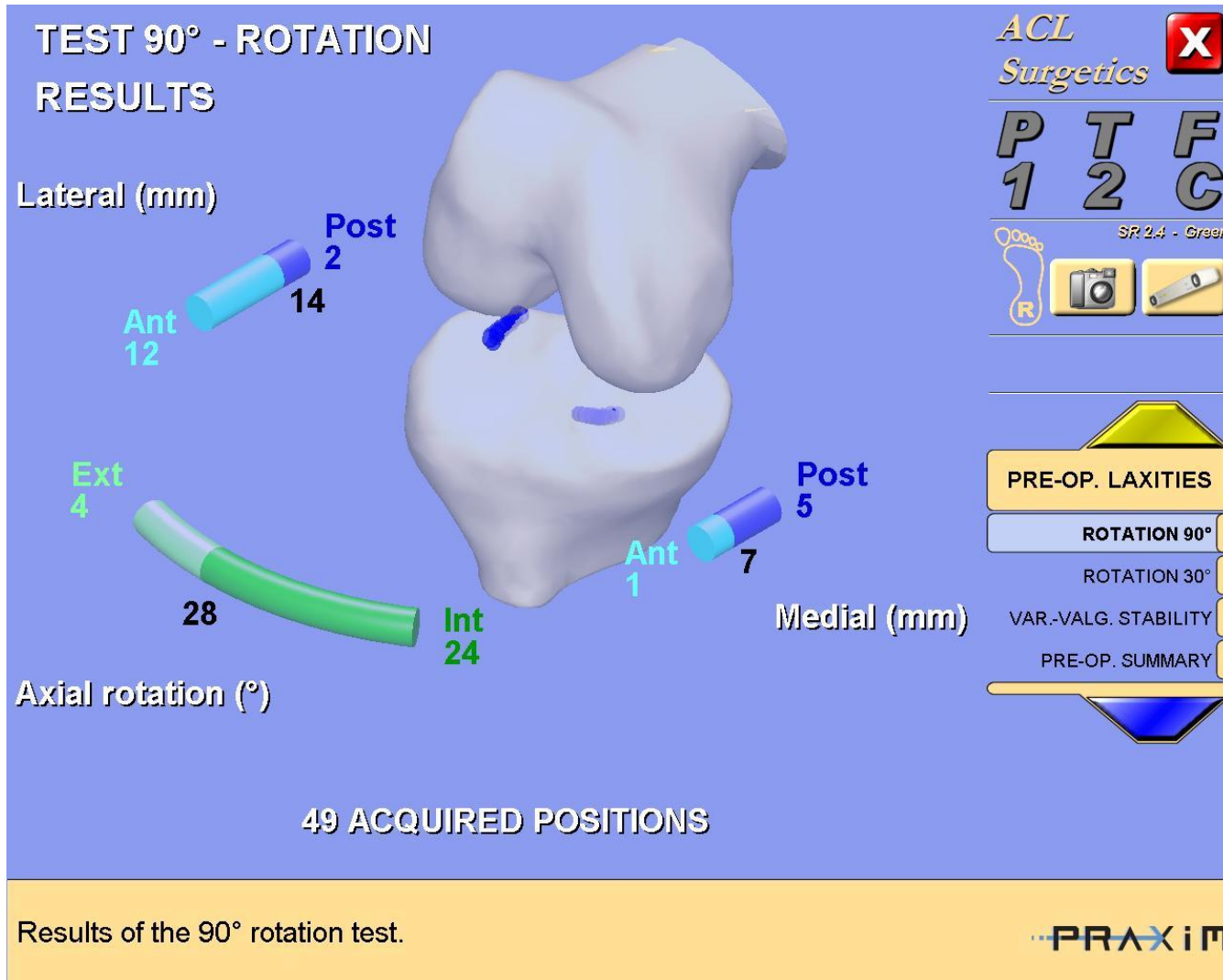
VAR.-VALG. STABILITY

PIVOT-SHIFT

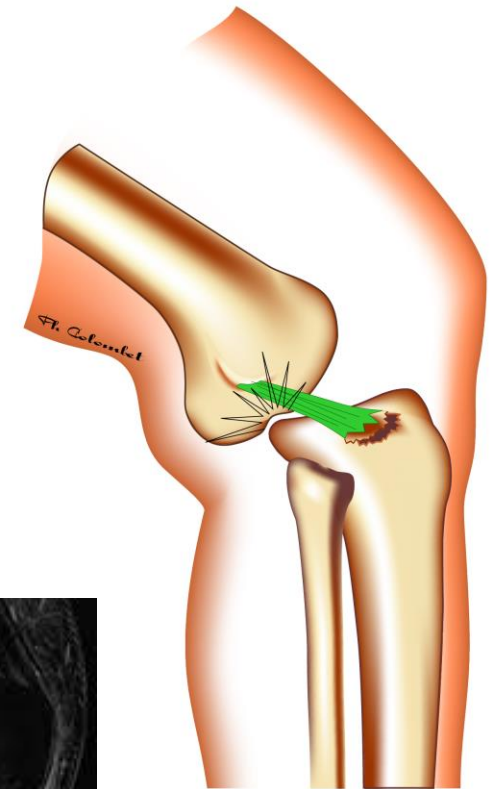
PRE-OP. SUMMARY

PRAXIM

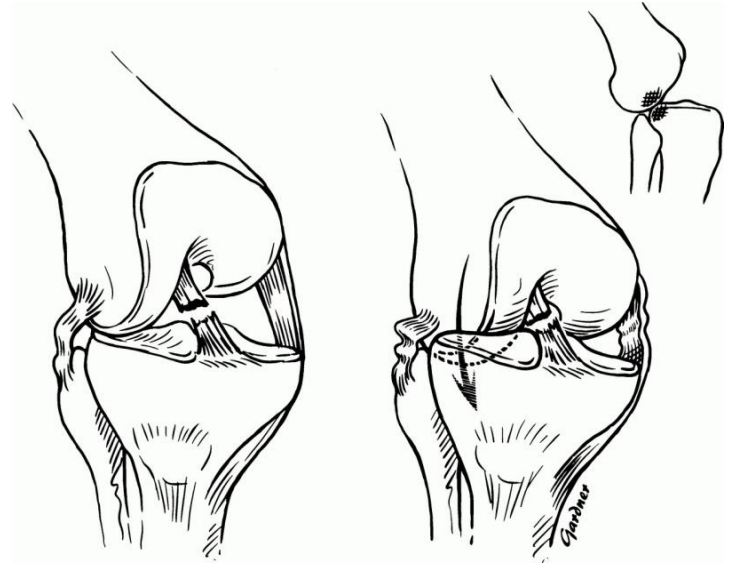
ALL instability ?



Primary injury / plain X ray information

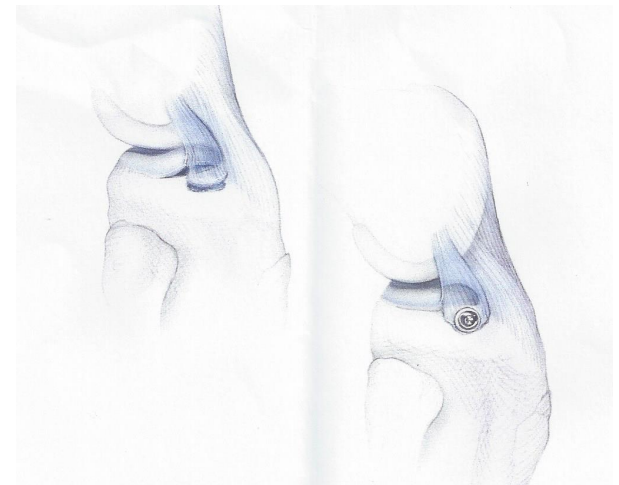


Segond fractuur



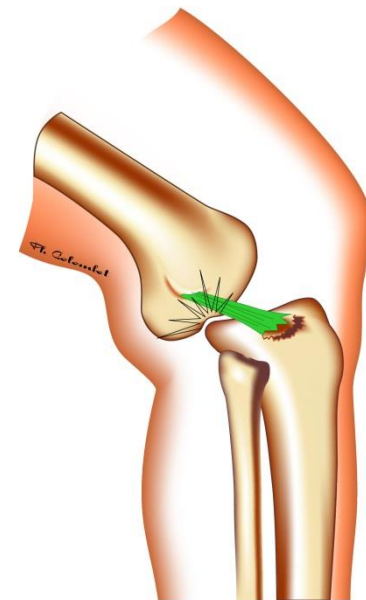
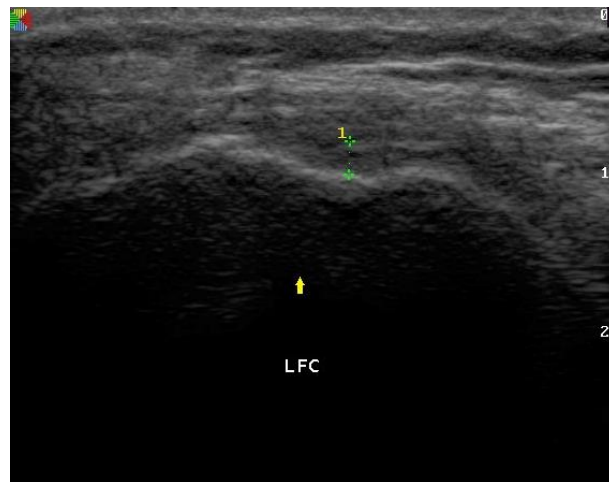
Imaging Segond avulsion

- Incidence in MRI 3 % Resnick USA
- Incidence in X ray CORR Hess D 9 %
- Incidence ultrasound 29 % (ICONE)
- Higher velocity trauma ?
- Refixation / Feagin :



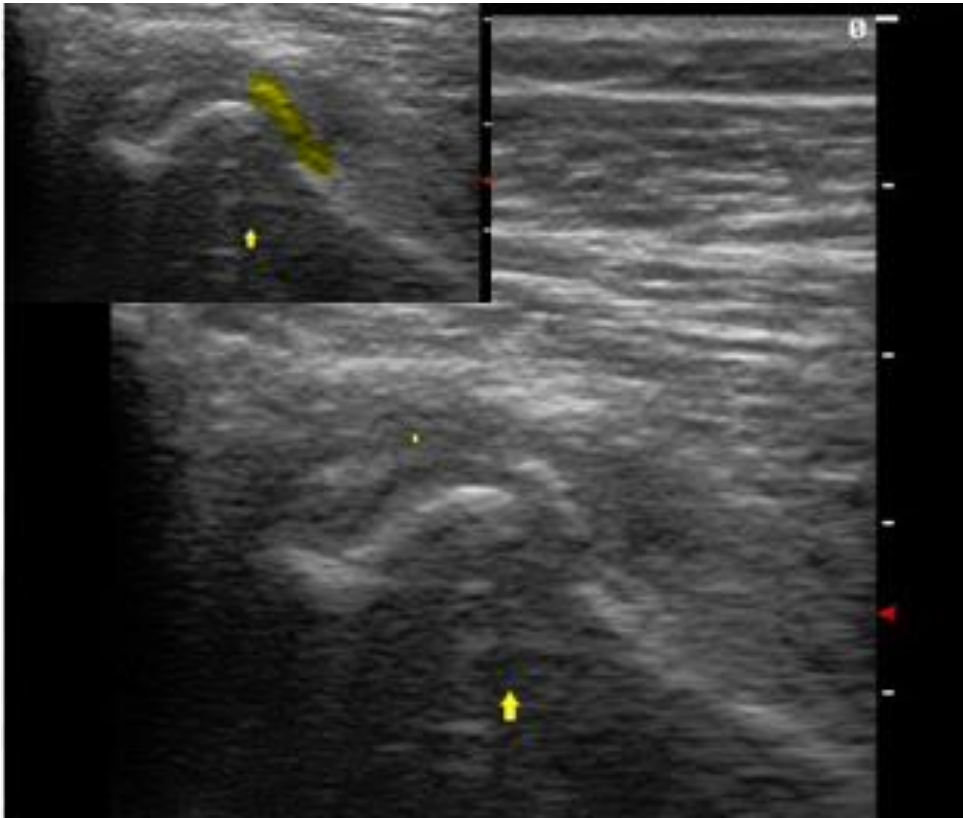
Ultrasound imaging

- 88 patients with ACL #
- 25 Segond lesions
- 70 Impaction # lateral FC



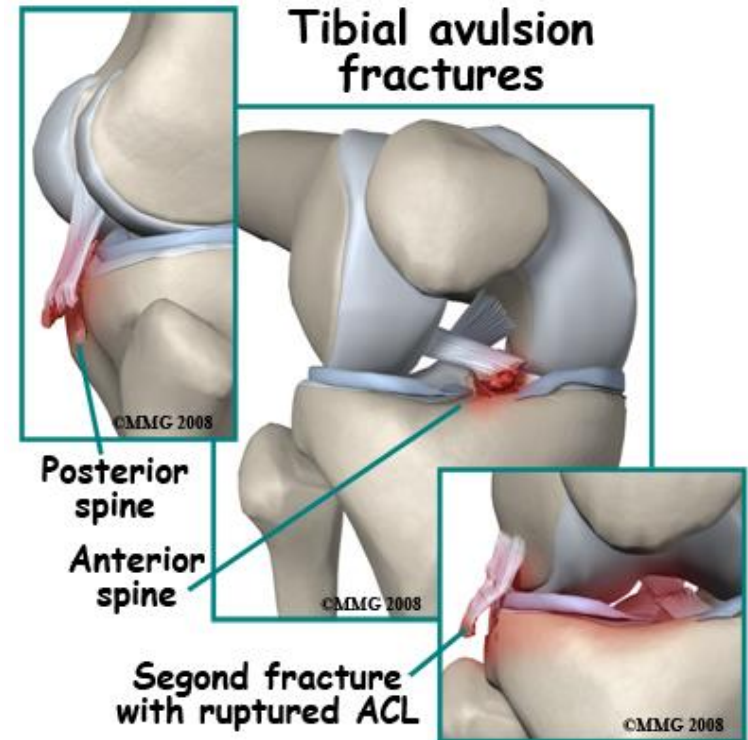
ALL relation with Segond # ?



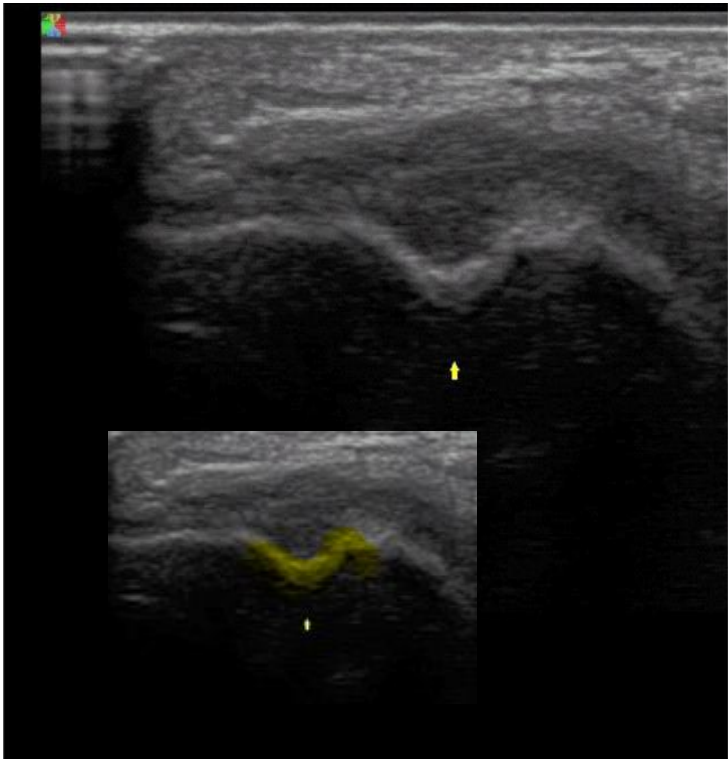
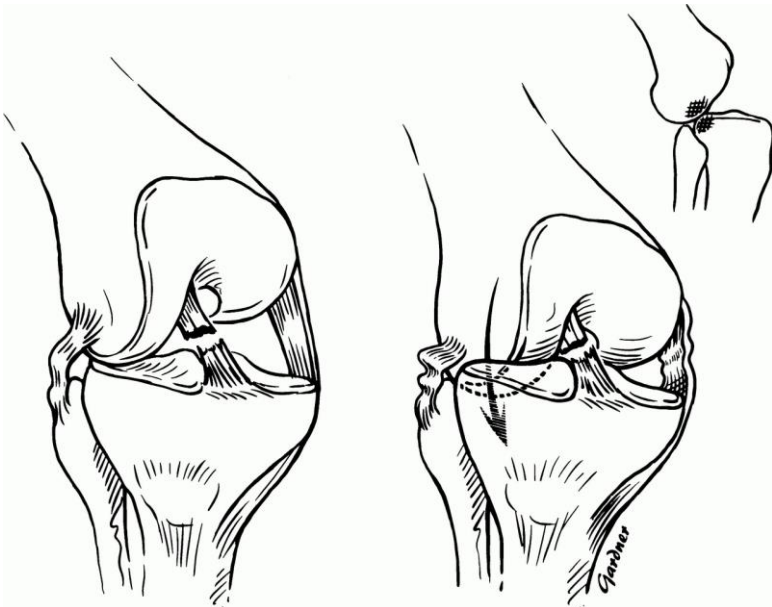


Bone lesions

- Segond fracture
- Tibia plateau lateral posterior avulsion
- Impaction LFC

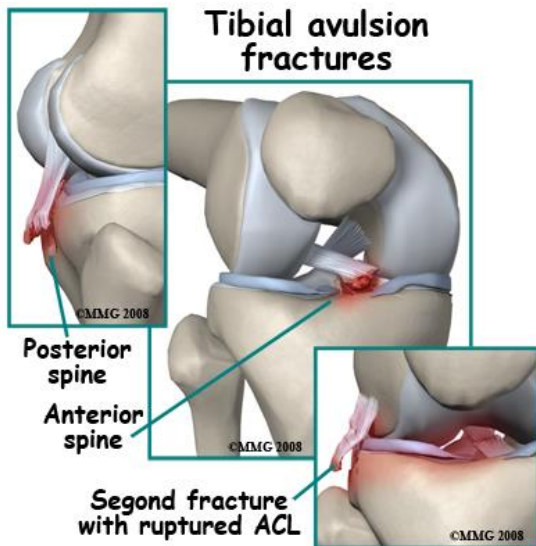


Impaction lateral FC

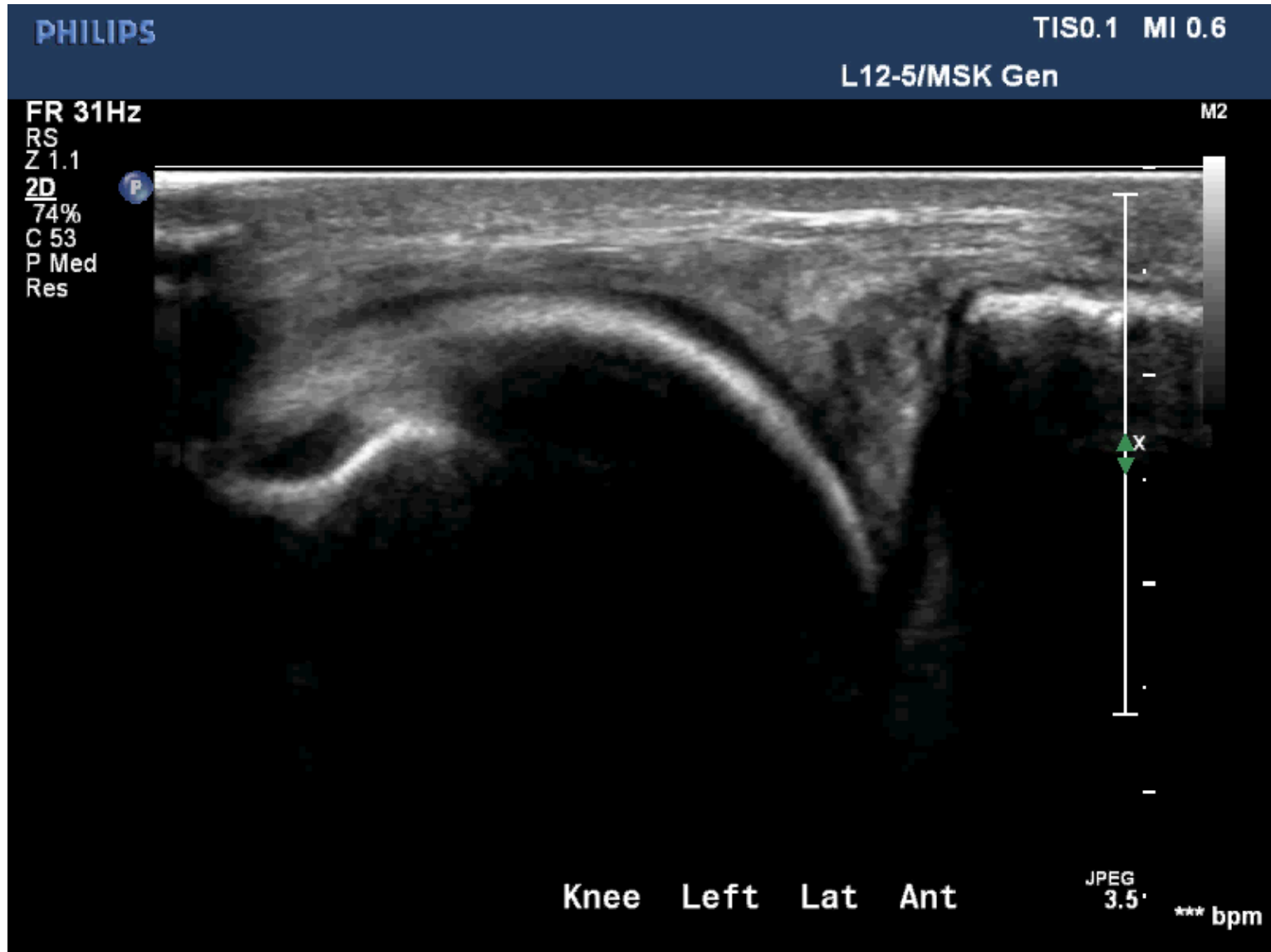


Hypothesis

- Avulsion lesions are a possible goal for refixing important lateral structures.
- The same approach we have for lateral fibula and tibial spine avulsion fractures



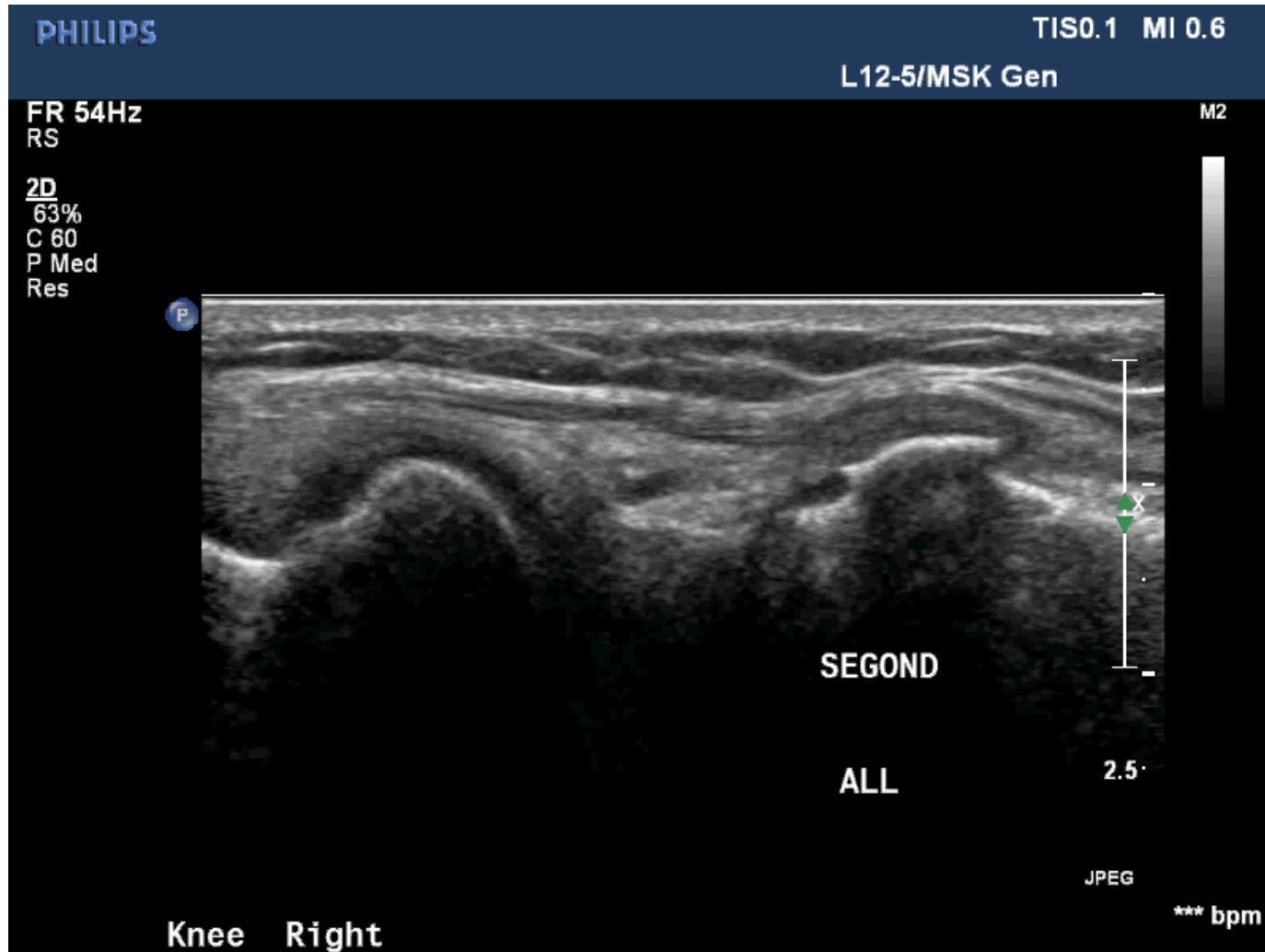
Dynamic Imaging



Preoperative marker of Segond avulsion / ultrasound



US ALL ligament and



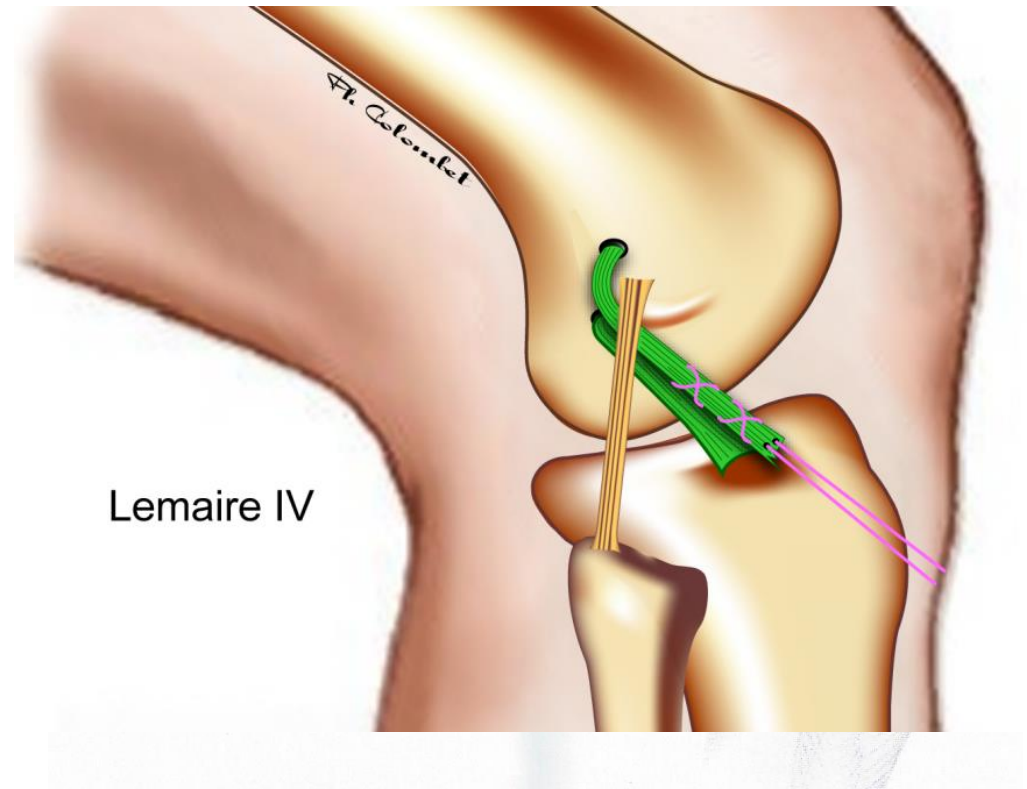
Peroperative imaging lift off lateral meniscus



Case Report : Refixing ALL / second # Checking the pivot on the table is pulling the staple off / prove of importance in stability ?



Refixing Segond or reconstruction AL ?



Data

- 18 patients / knees
- Second fracture with intraoperative signs
- Staple fixation
- 5 cases with navigation .

Conclusion

- We have new questions
 - Imaging
 - Indications
 - Surgical treatment fix or reconstruct
 - Some questions can be addressed by CAOS