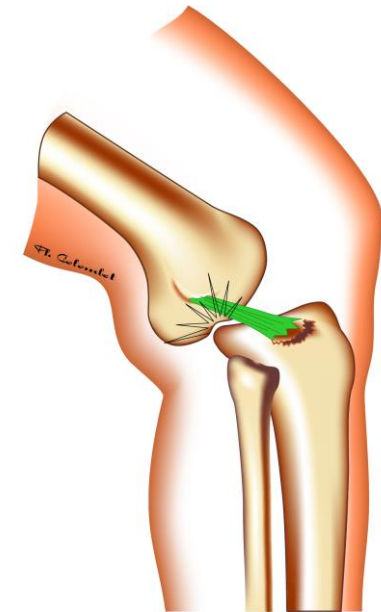
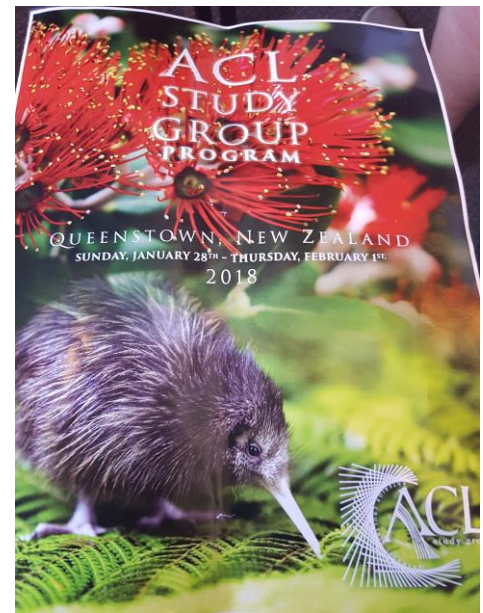


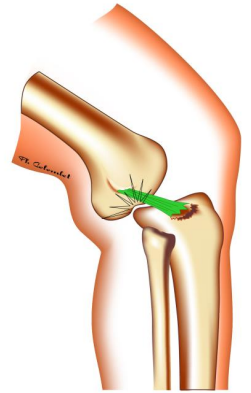


# High incidence of ALL Segond avulsion in Ultrasound imaging

Burt Klos  
Marlon Scholtes  
Stephan Konijnenberg  
The Netherlands



# Misunderstanding :



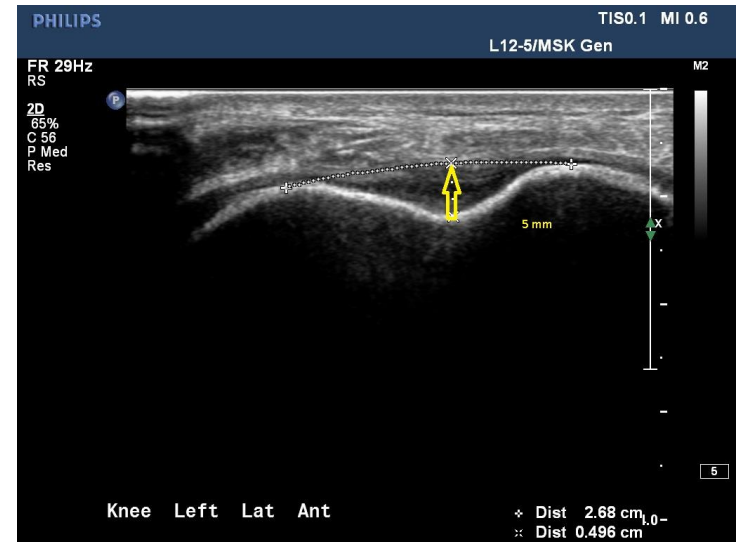
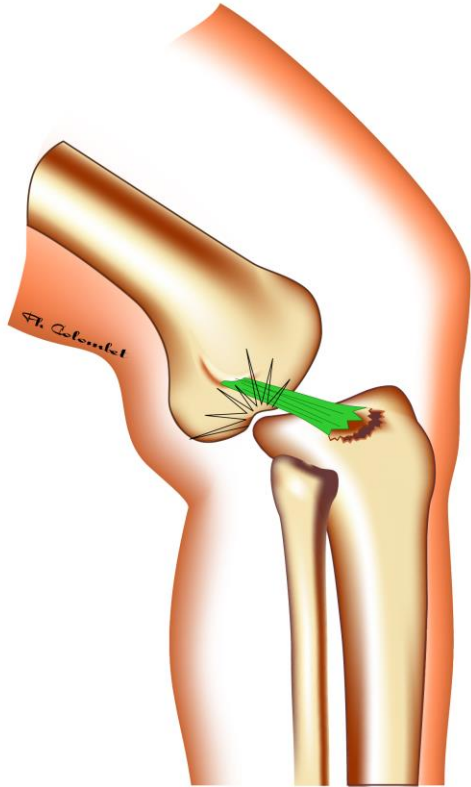
- Segond avulsion is only a minor small fragment (on X ray )
- Segond fracture is not attached to strong ligament complex ( not just small ALL )
- Segond fracture is rare ( hard to find )
- Segond fracture itself needs no treatment .
- Segond fracture cannot be fixed ( with a implant )



# Segond fractuur



# Primary injury / X ray information



# Rotation



**TEST 90° - ROTATION ACQUISITION**

Lateral (mm)

Ant 0 4 Post 4

Ext 13 13

Ant 2 2 Post 0 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

P T F  
1 2 C

PRE-OP. LAXITIES

DRAWER

**ROTATION 90°**

LACHMAN

ROTATION 30°

VAR.-VALG. STABILITY

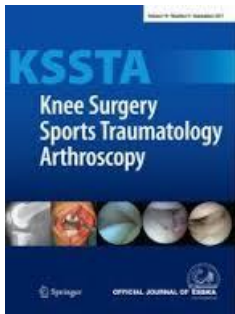
PIVOT-SHIFT

PRE-OP. SUMMARY

PRAXIM



ICONE



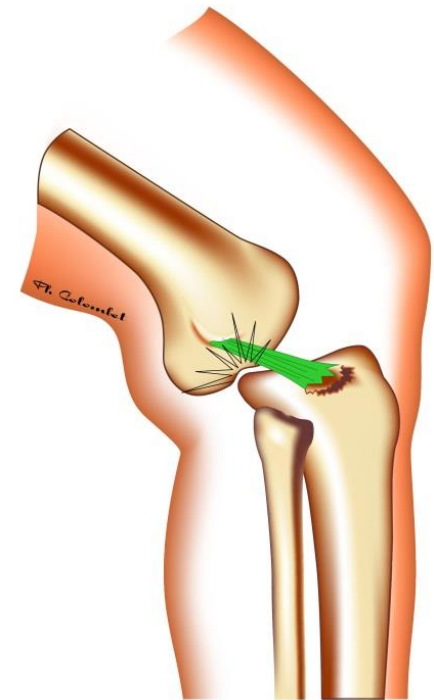
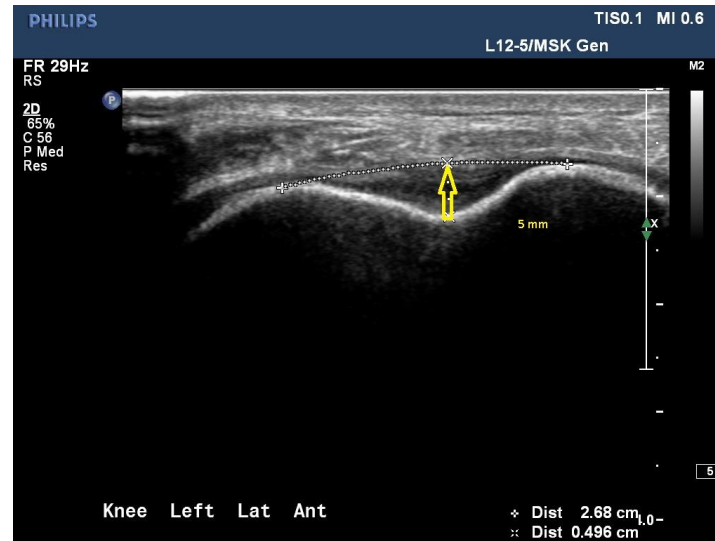
# KSSTA April 2017

- High prevalence of ALL complex Segond avulsion using ultrasound imaging .
- Klos / Scholtes / Konijnenberg
- Ultrasound should be considered in case of impaction fracture to check for Segond avulsion.



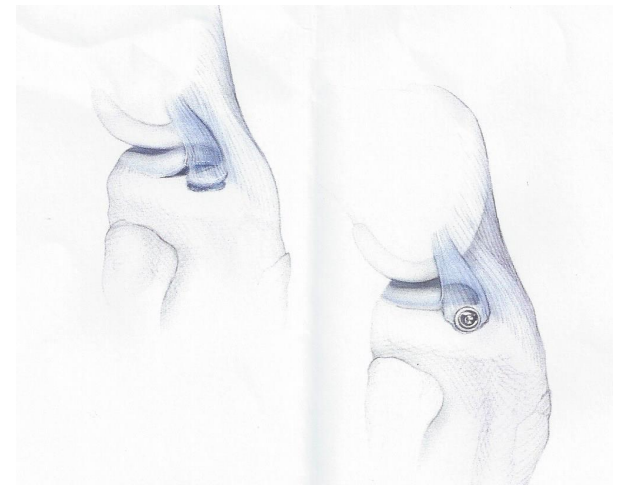
# Ultrasound imaging

- 88 patients with ACL #
- 25 Segond lesions (29 %)
- 40 Impaction # lateral FC (46%)



# Imaging Segond avulsion

- Incidence in MRI 3-6 % Resnick USA
- Incidence in X ray CORR Hess D 9 %
- Incidence ultrasound 29 % (ICONE)
- Refixation / Feagin
- N = 1





# US patho anatomy ALL complex



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Dist 1.36 cm

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Dist 0.81 cm

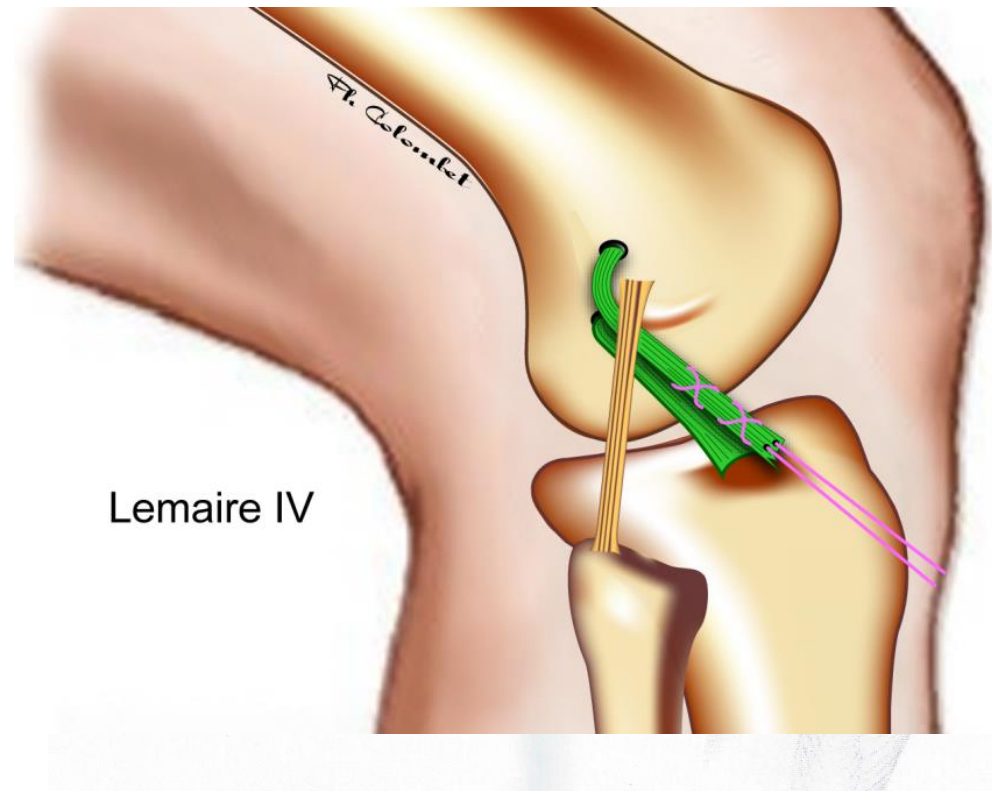
Dist 0.569 cm

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# Preoperative marker of Segond avulsion / ultrasound



# Refixing Segond or reconstruction AL tenodesis?



ICONE

# Discussion ALL lesions location

- Ferretti I : surgical dissection in ACLR :
- Arthroscopy 2016 ALL 54/60 lesions
- Distal lesions 19/60 (32 %)
- Cavaignac F
- Arthroscopy 2017 : Ultrasound Segond avulsion 15/ 30 (50 %) / MRI 4/30 (13 %)



# Conclusion

- Segond avulsions are not rare
- Improving diagnosis and treatment
  - Improved Imaging Ultrasound (vs MRI)
  - Segond avulsion is attached to ITB / ALL complex
  - Surgical treatment or neglect /reconstruction ?
  - Fixation method ?

