

CAOS ACL SLARD 2008 Mexico

Navegacion en chirugia de ligamento cruzado anterior

- Burt Klos MD ICONE Netherlands
- Raymond Habets PhD Techn University Eindhoven
- Scott Banks PhD University of Florida

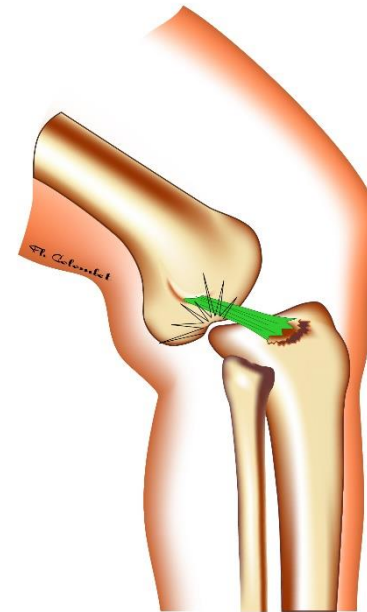


ICONE

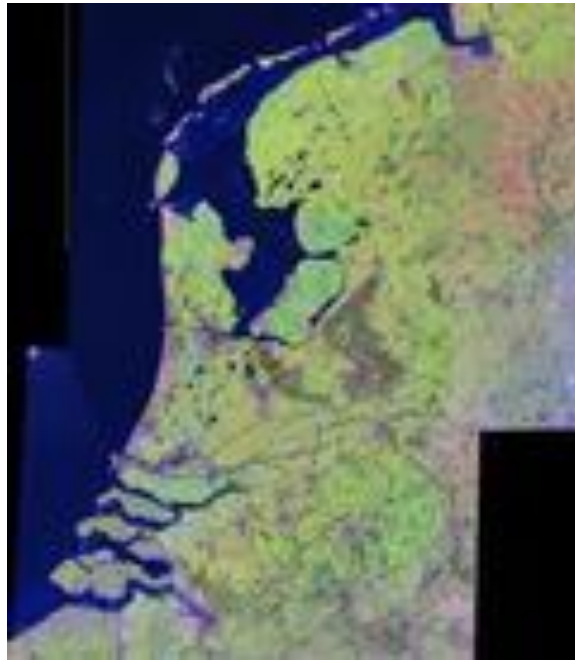


Anterolateral Ligament Complex Lesions in ACL Combined Injuries

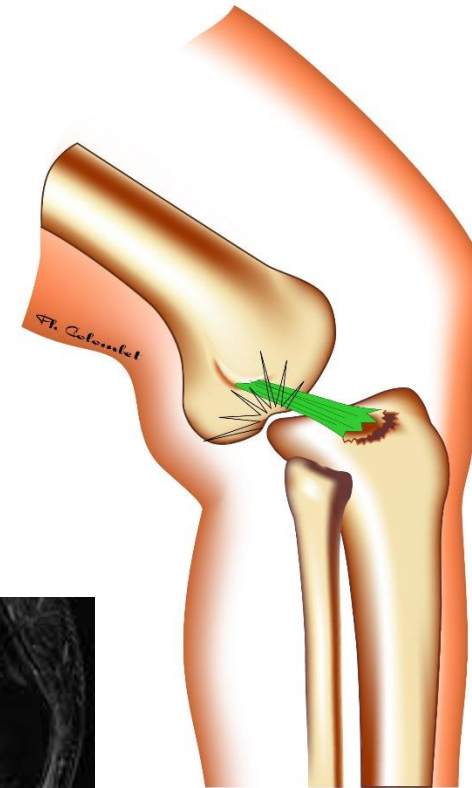
Burt Klos
Stephan Konijnenberg
The Netherlands



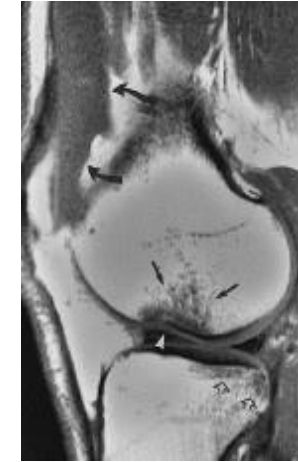
ICONE EINDHOVEN NL



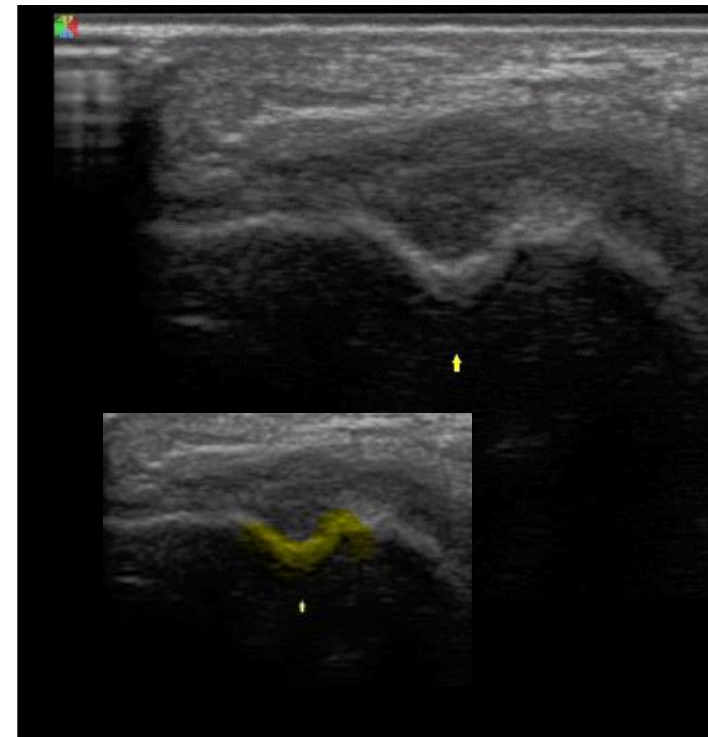
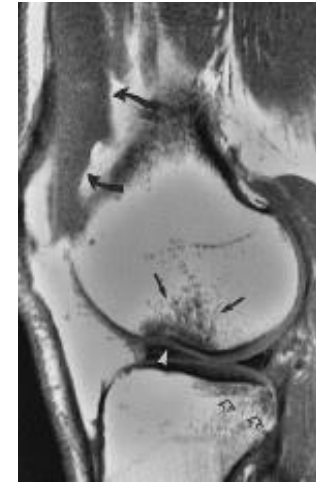
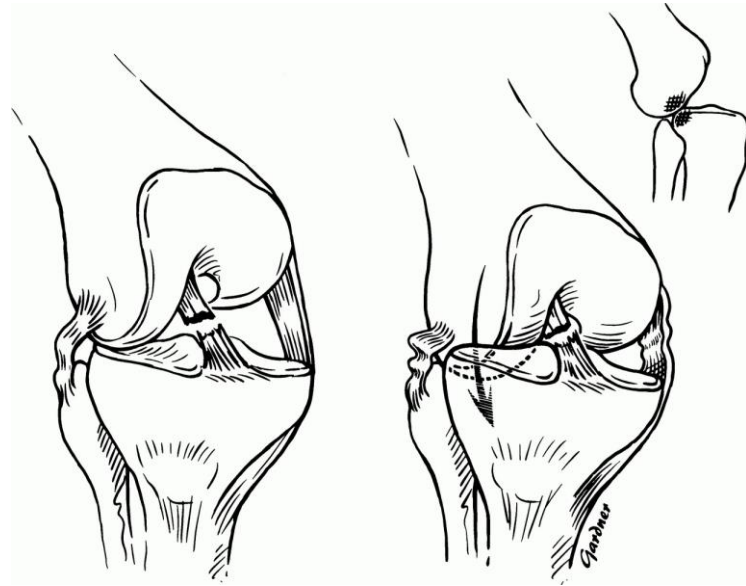
Primary injury / plain X ray information



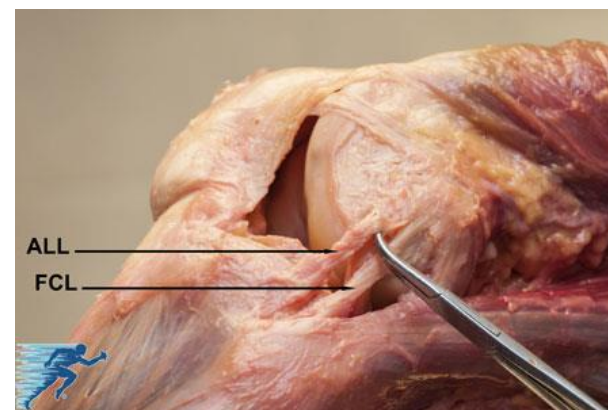
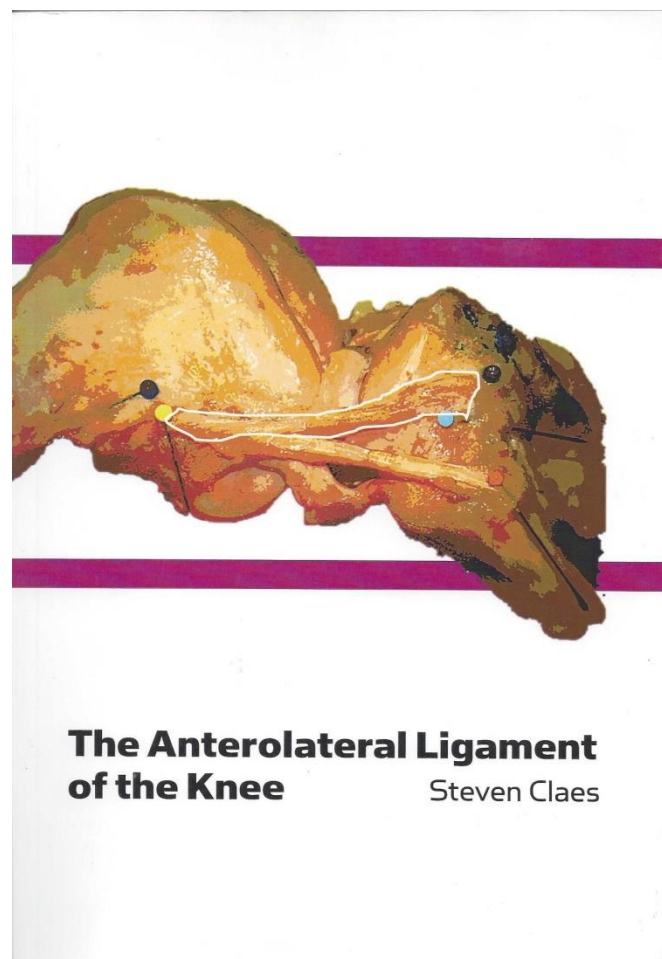
Segond and Impression fractures



Impaction lateral FC



ALL ligament ?



In flexion

- Anterior meniscus
- ACL
- Bone lesions



Prone

- Posterior meniscus
- PCL



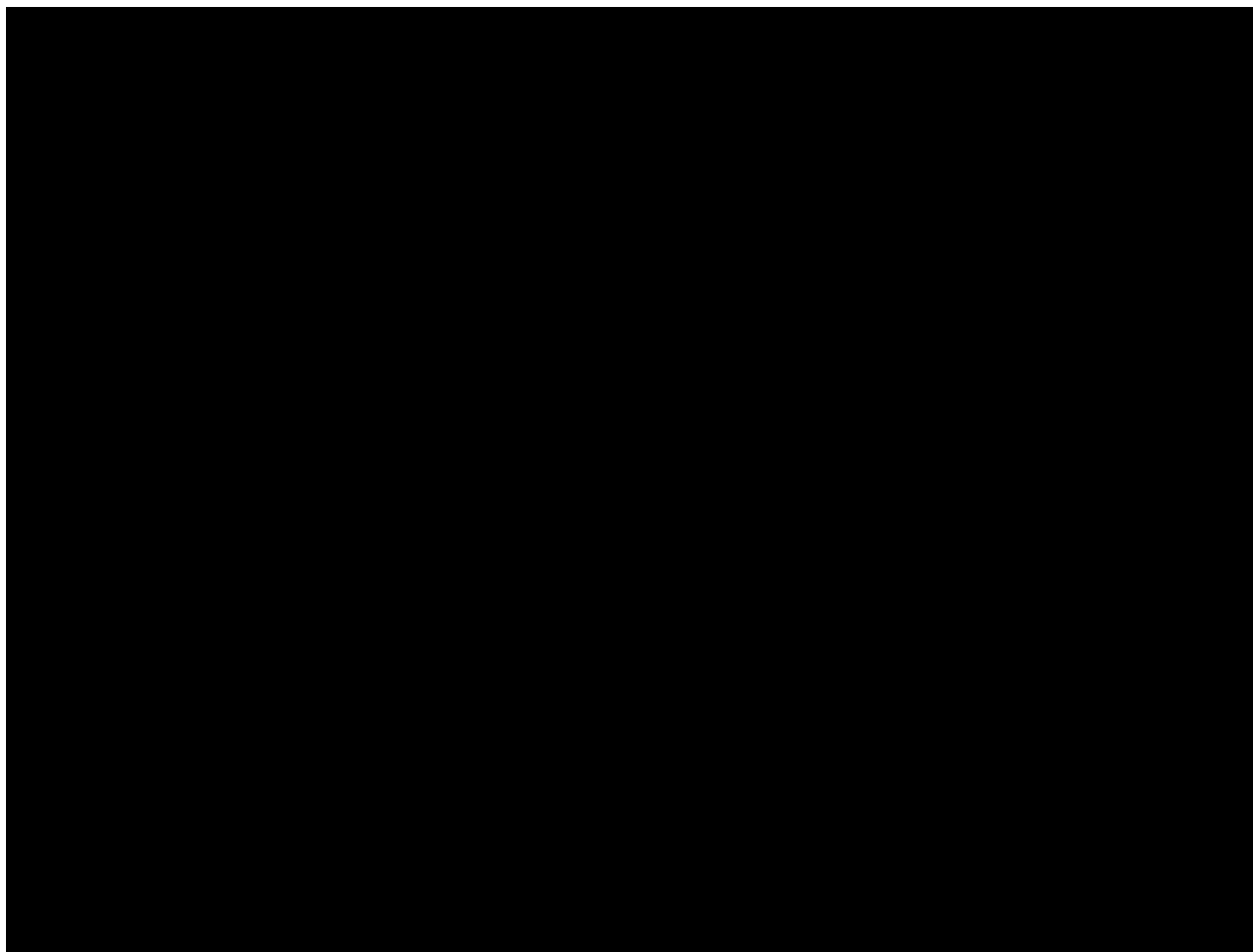
Segond fractuur



Postoperative fixation Staple



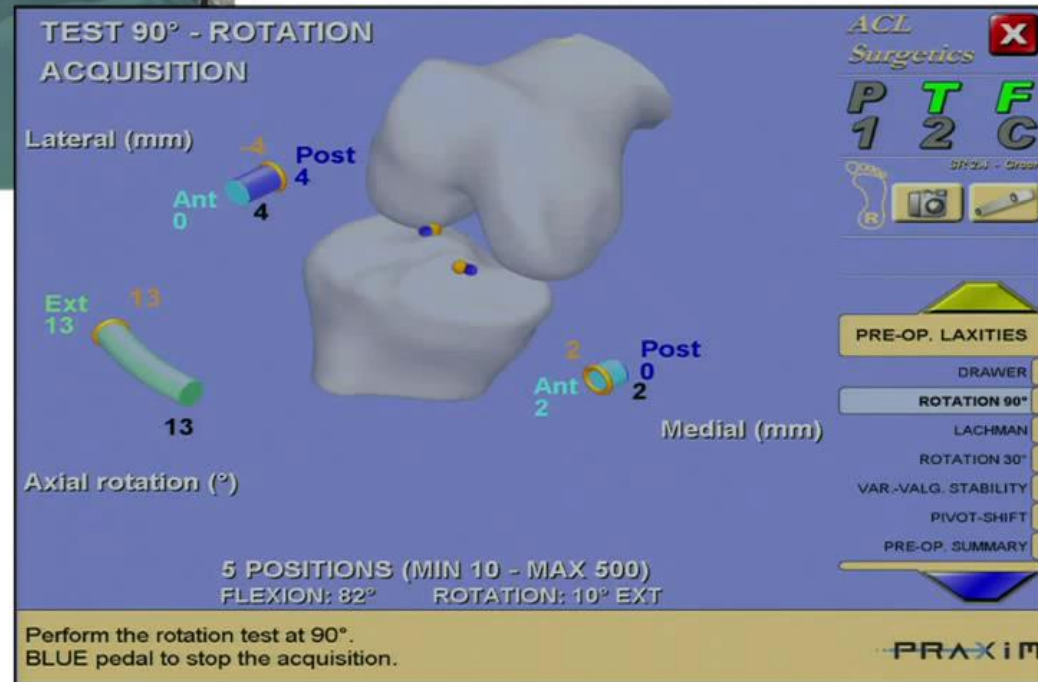
Staple fixation dynamic check



Misunderstanding :

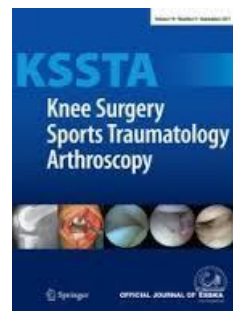
- Segond avulsion is only a minor small fragment (on X ray)
- Segond fracture is not attached to strong ligament complex (not just small ALL)
- Segond fracture is rare (hard to find)
- Segond fracture itself needs no treatment .
- Segond fracture cannot be fixed (with a implant)

Rotation



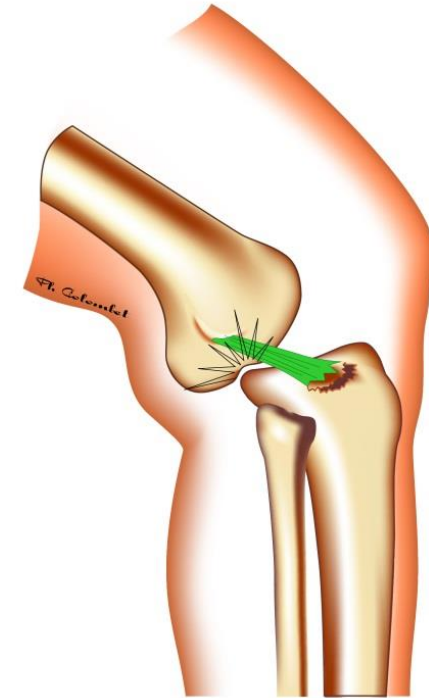
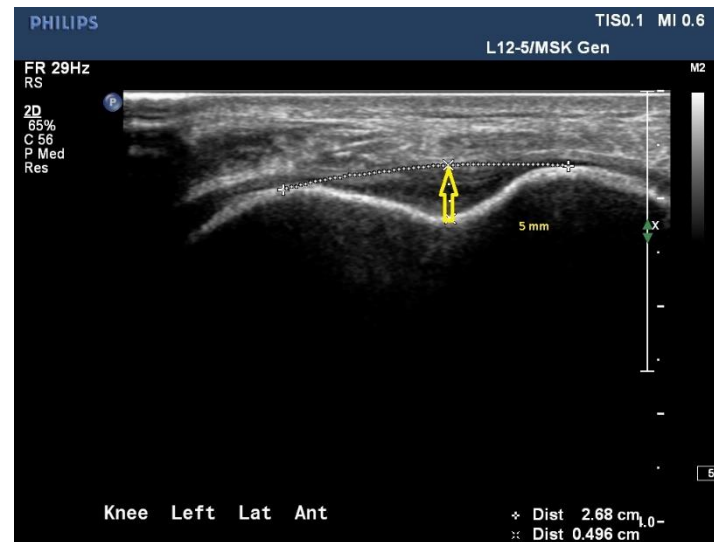
KSSTA April 2017

- 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%)

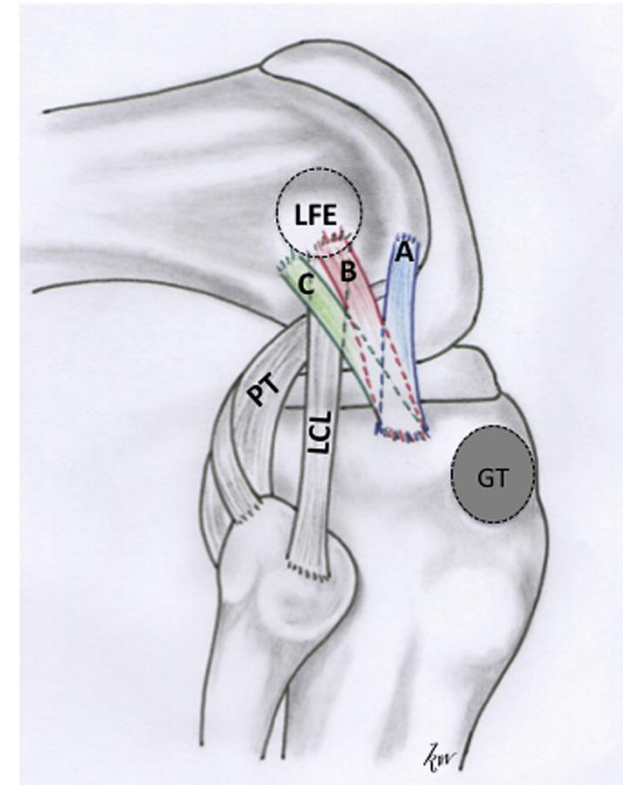
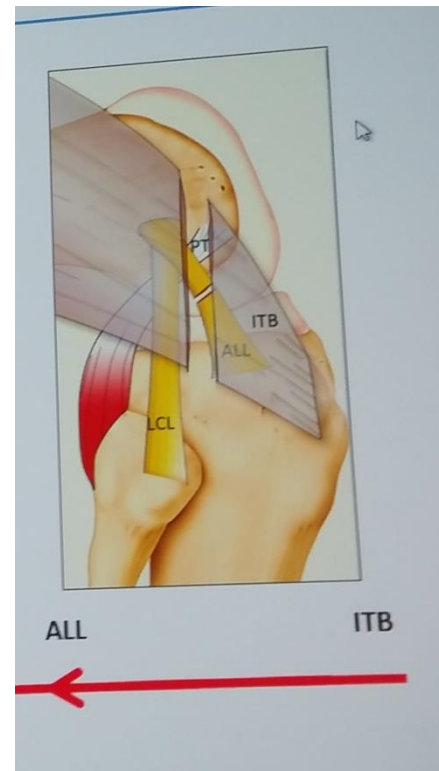
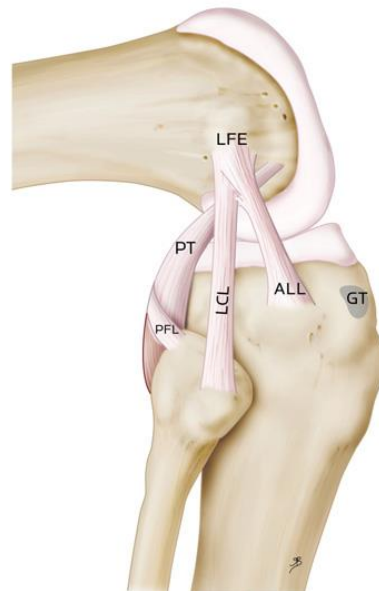
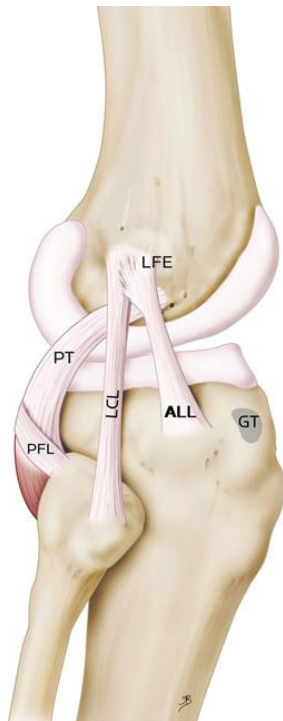


ALL anatomy 2016

Belgium

Lyon

Toulouse



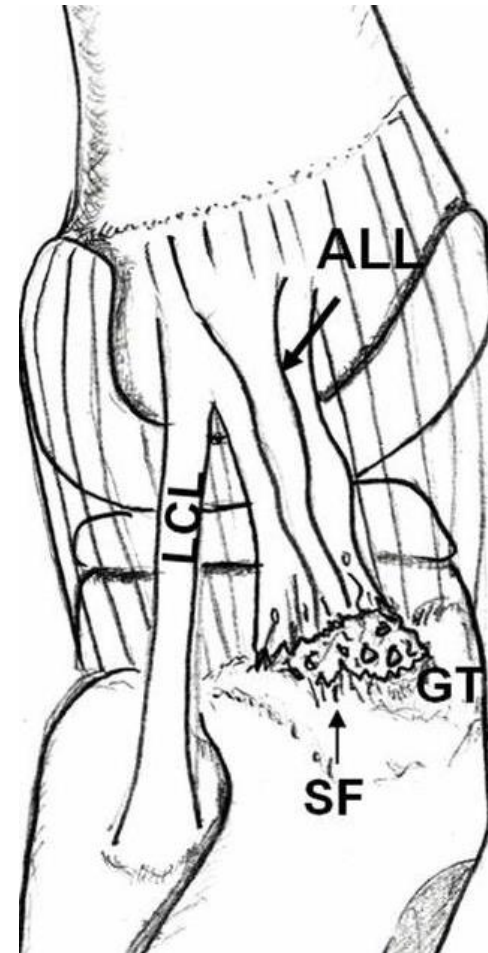
Ferretti Arthroscopy 2016

- Prevalence and Classification of Injuries of Anterolateral Complex in Acute Anterior Cruciate Ligament Tears
- Andrea Ferretti, M.D.
- Purpose: To report on the prevalence of injuries of the lateral compartment occurring in cases of apparently isolated ACL

ALL lesions (courtesy Ferretti)

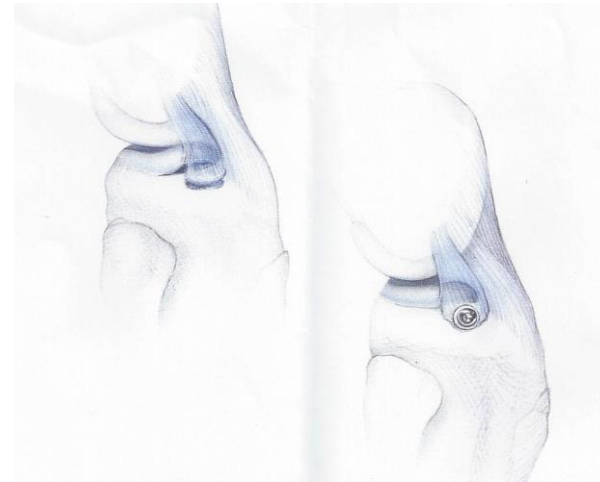
60 ACL lateral exploration.

- Type 0 No lesion 6 /60 patients (10%)
- Type I Multilevel with macroscopic hemorrhage involving ALL 19/60 patients (31.6%)
- Type II Multilevel rupture in which individual layers are torn extended from ALL and capsule to PL corner 16/60 patients (26.7%)
- Type III Complete transverse tear involving ALL near its insertion to the lateral tibial plateau 13/60 patients (21.7%)
- Type IV Bony avulsion (Segond's fracture) 6/60 patients (10%)

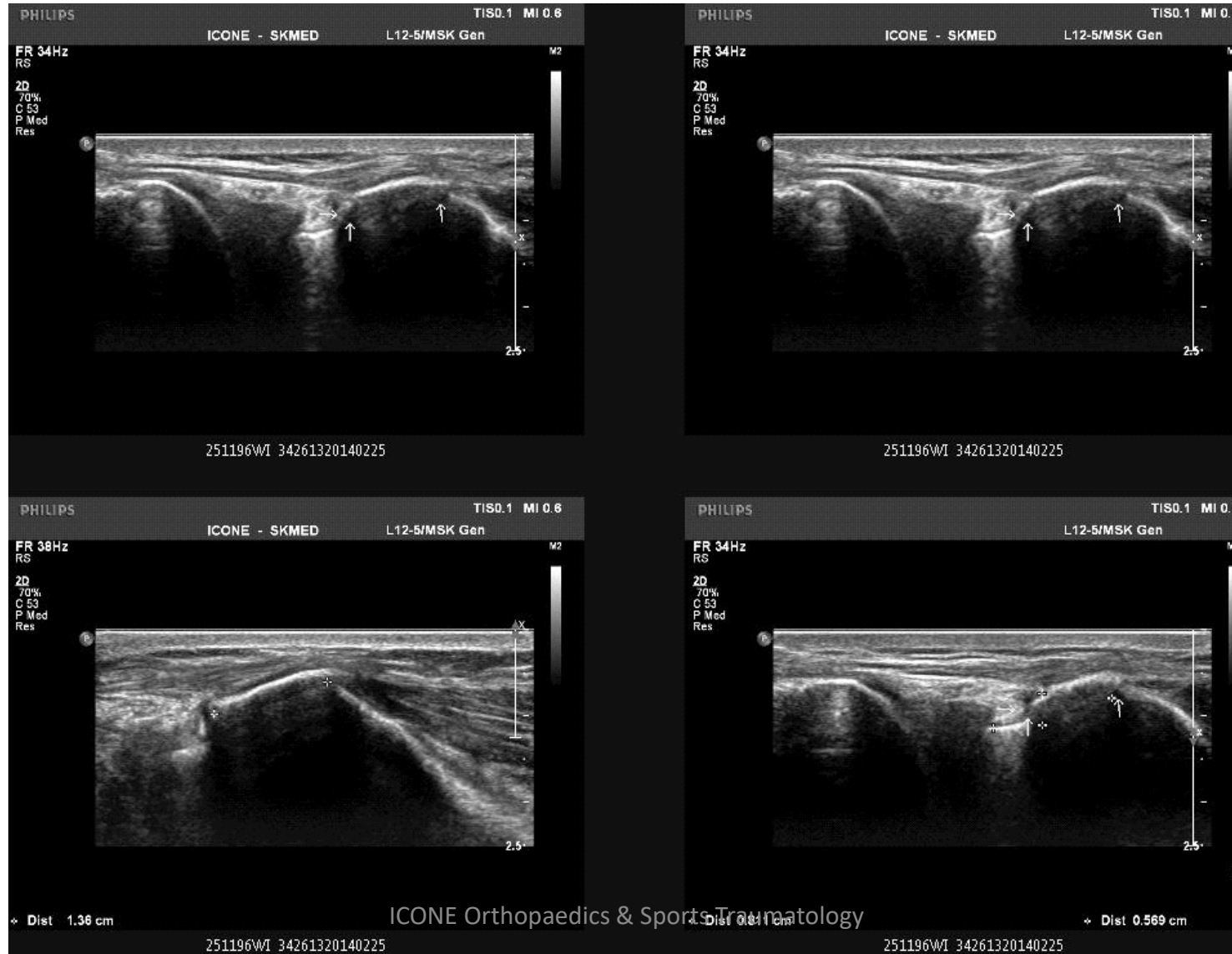


Imaging Segond avulsion

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



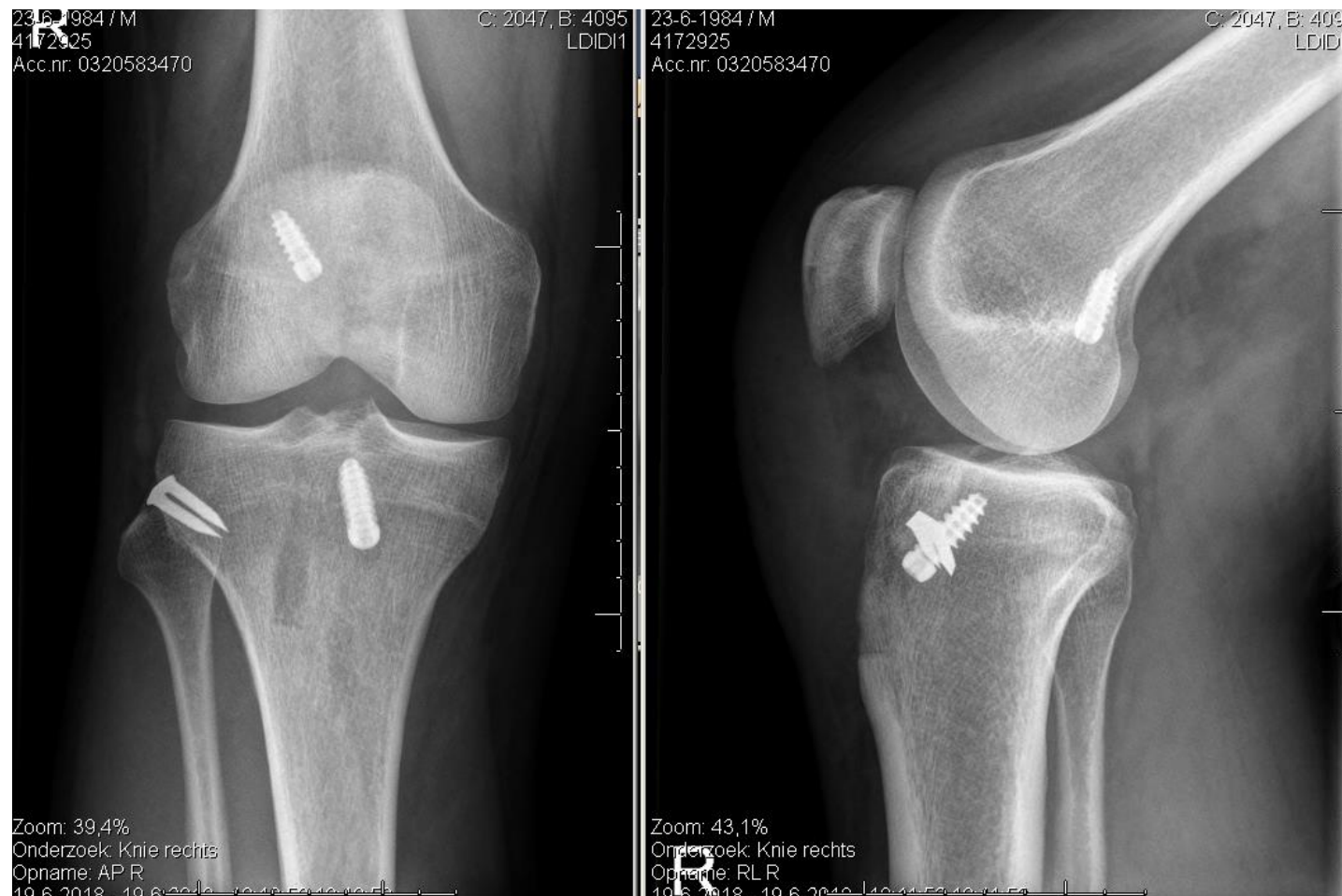
US patho anatomy ALL complex



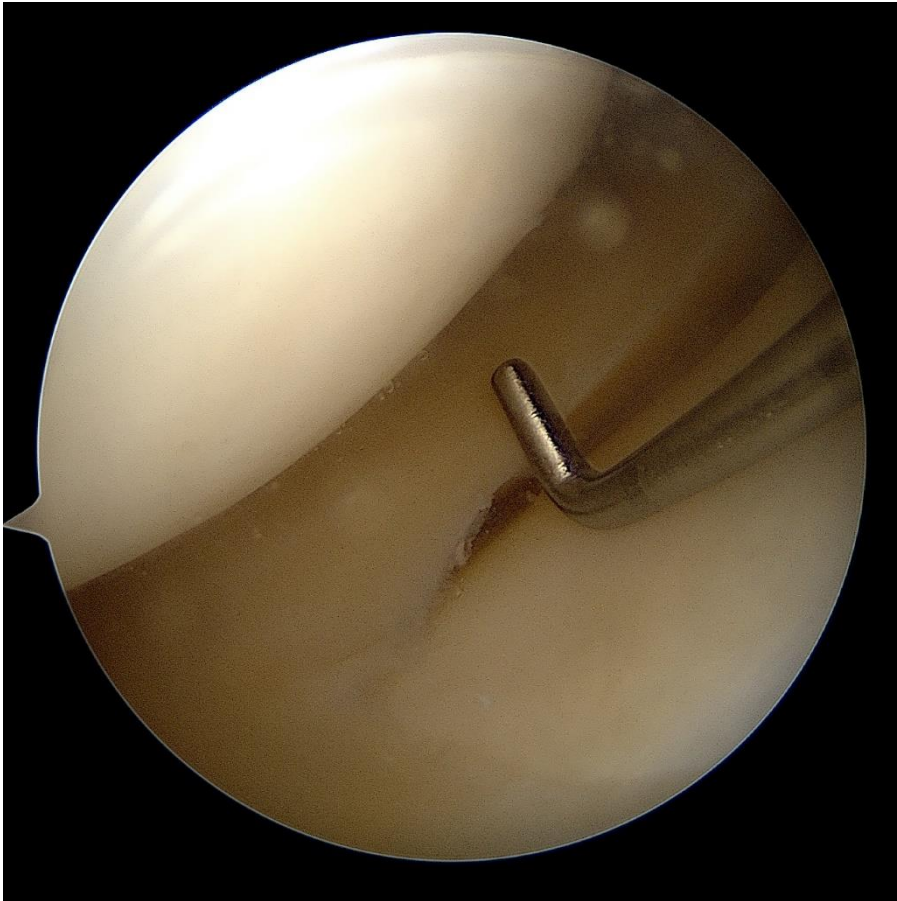
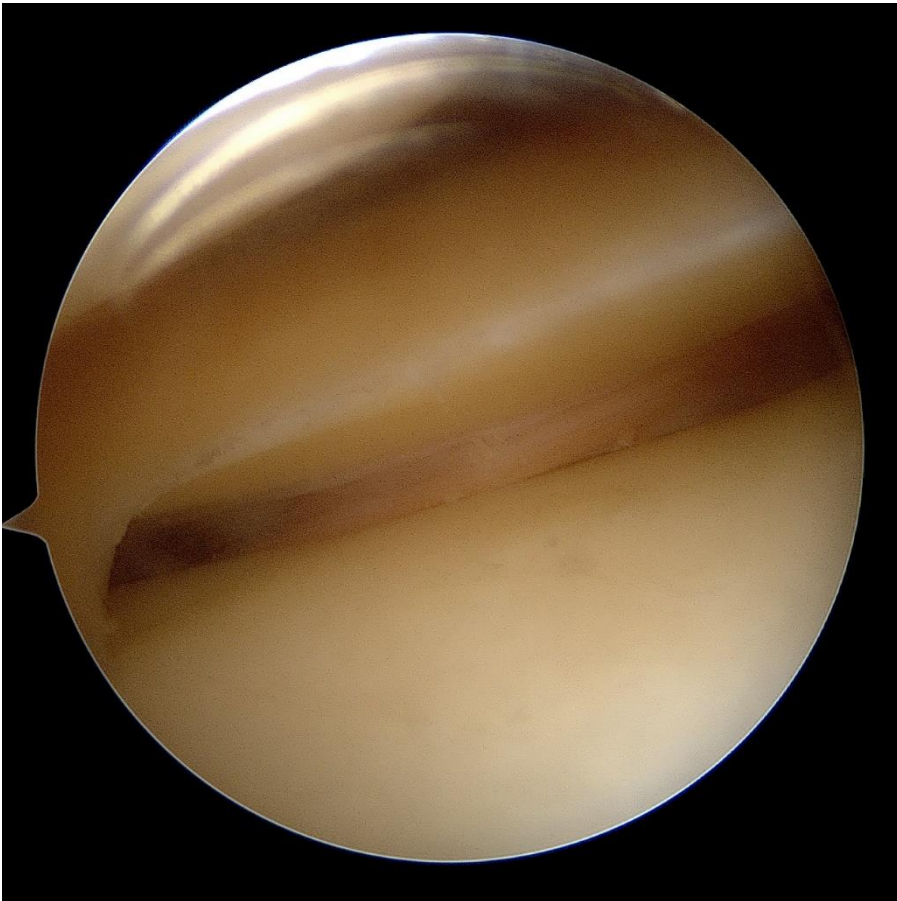
Preoperative marker of Segond avulsion / ultrasound



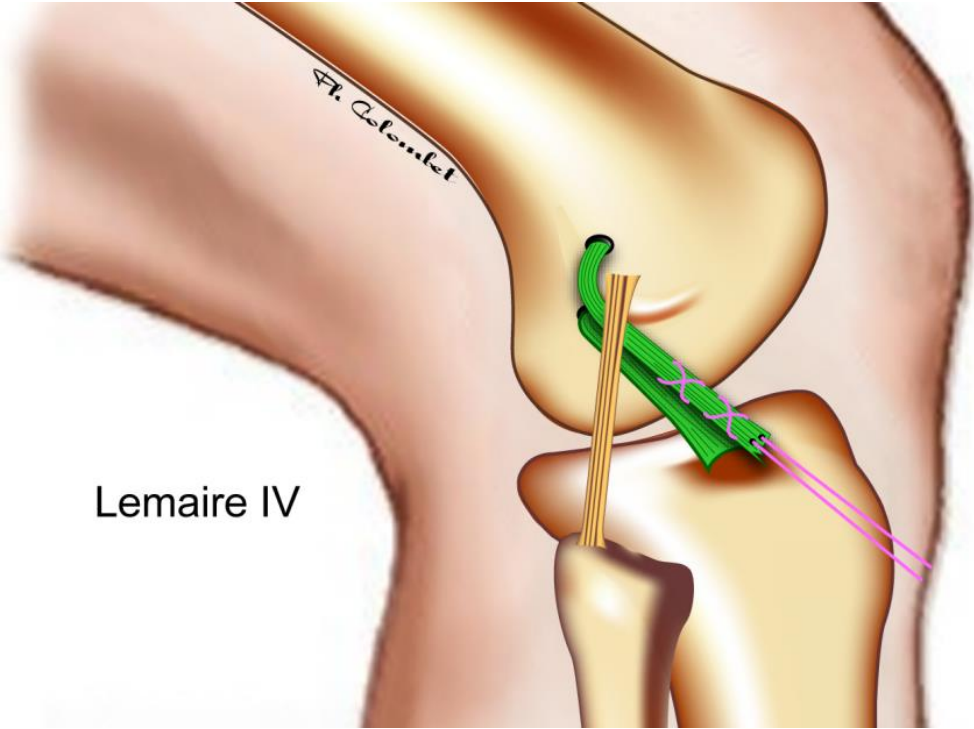
Refixation Segond fracture



Arthroscopic evaluation



Refixing Segond or reconstruction AL tenodesis?



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 %)

ALL complex refixation

- Two groups ACL reconstruction
- ACL R / Segond fracture not treated N = 12
- ACL R / Segond refixation with staple N = 16



Conclusion

- ALL complex lesions and Segond avulsion 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 ?