CENTRE DE CONGRÈS

LYON KNEE SCHOOL of SURGERY

Chronic Lateral/Posterolateral Deficiency

G DEMEY & Société Française d'Arthroscopie
Lyon Ortho Clinic – Clinique de la Sauvegarde
Lyon France

Ramsay Santé Clinique de la Sauvegarde

LYON ORTHO CLINIC

Symposium SFA 2013

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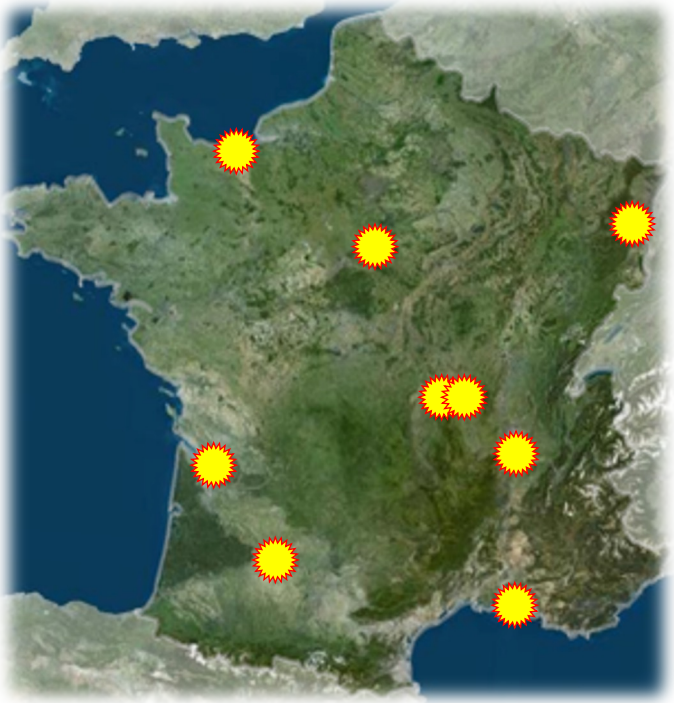
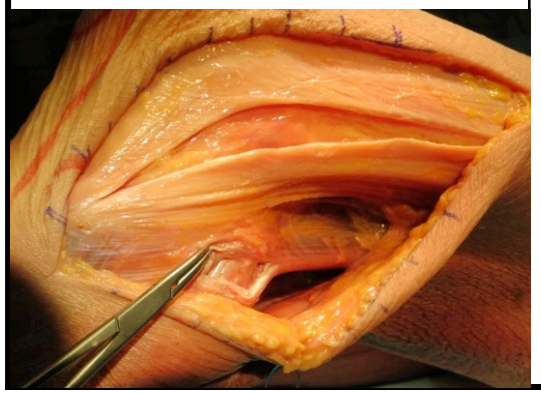
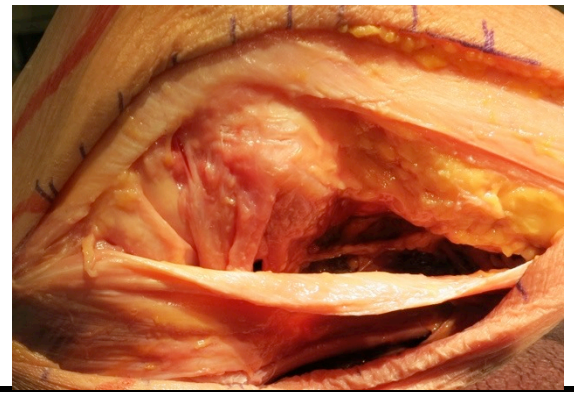
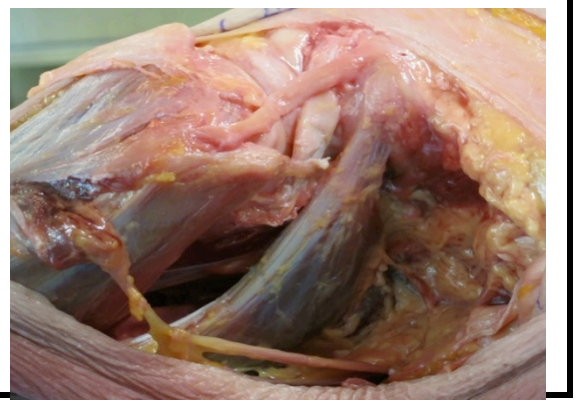
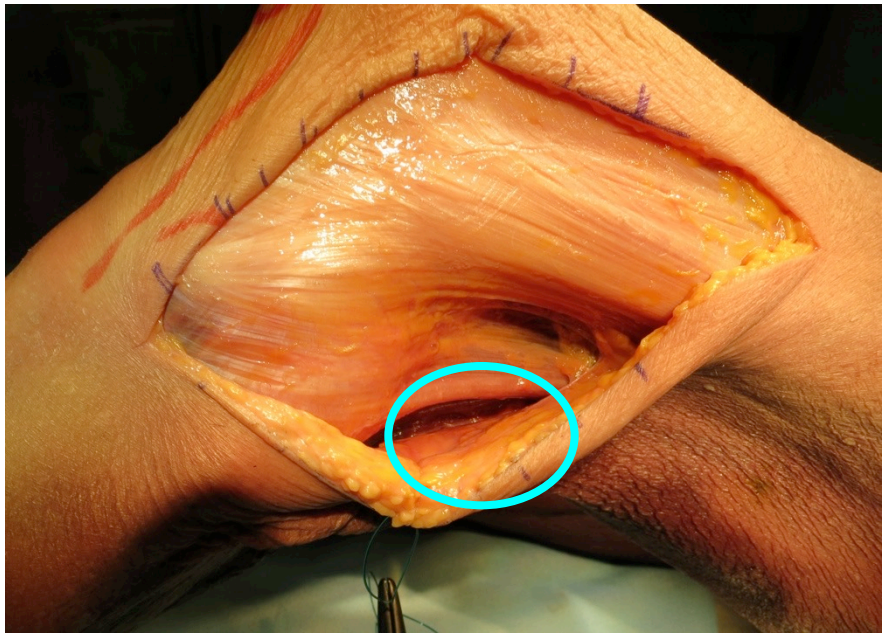


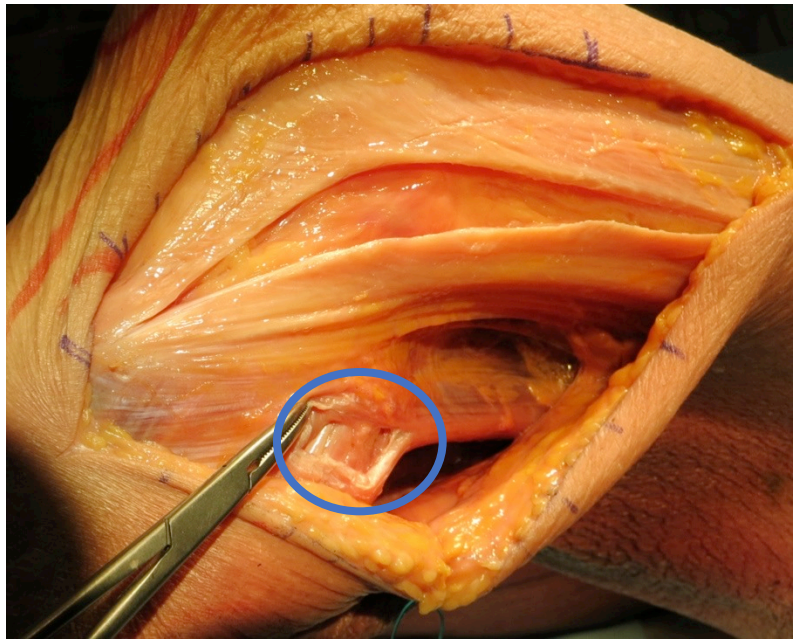
SURGICAL ANATOMY : 3 layers

Superficial	Middle	Deep
Ilio-Tibial Band Femoral Biceps Common Peroneal nerve	Lateral Collateral Lgt Lateral Gastrocnemius	Popliteus Tendon Popliteo-Fibular lgt Lateral Meniscus Popliteo-meniscal Fascicles
		

Superficial

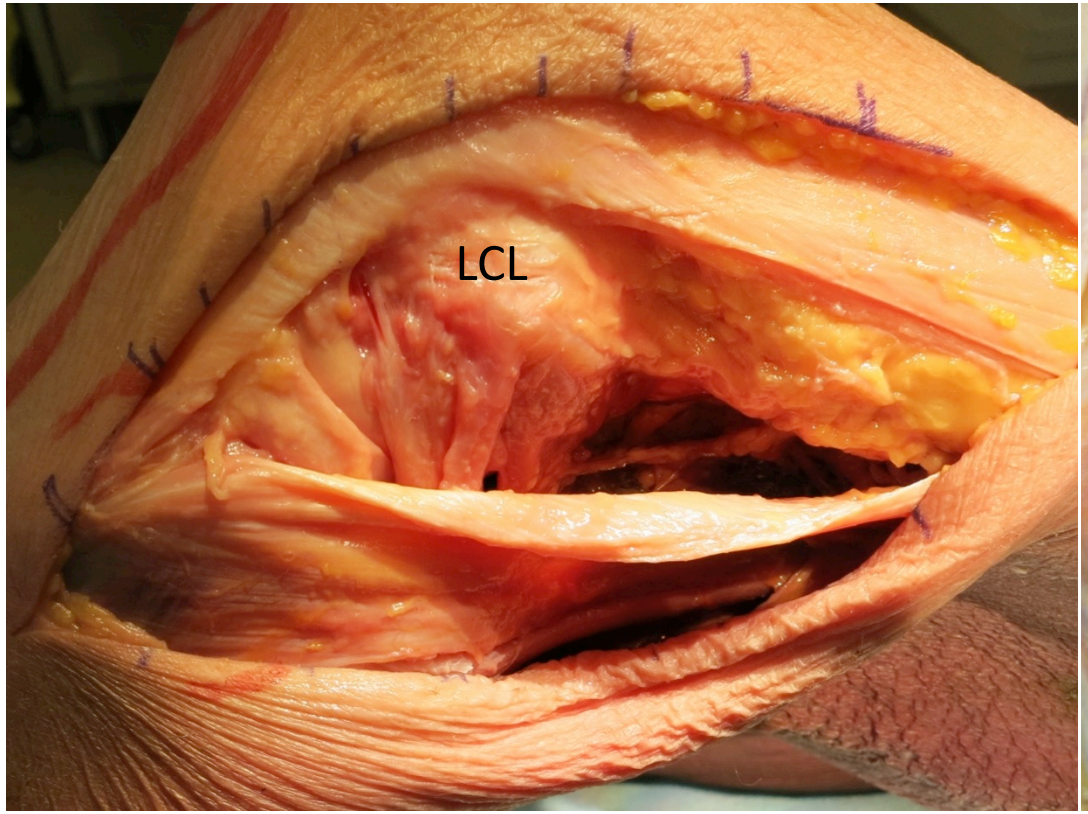
Ilio-Tibial Band
Femoral Biceps (protects the CP Nerve)

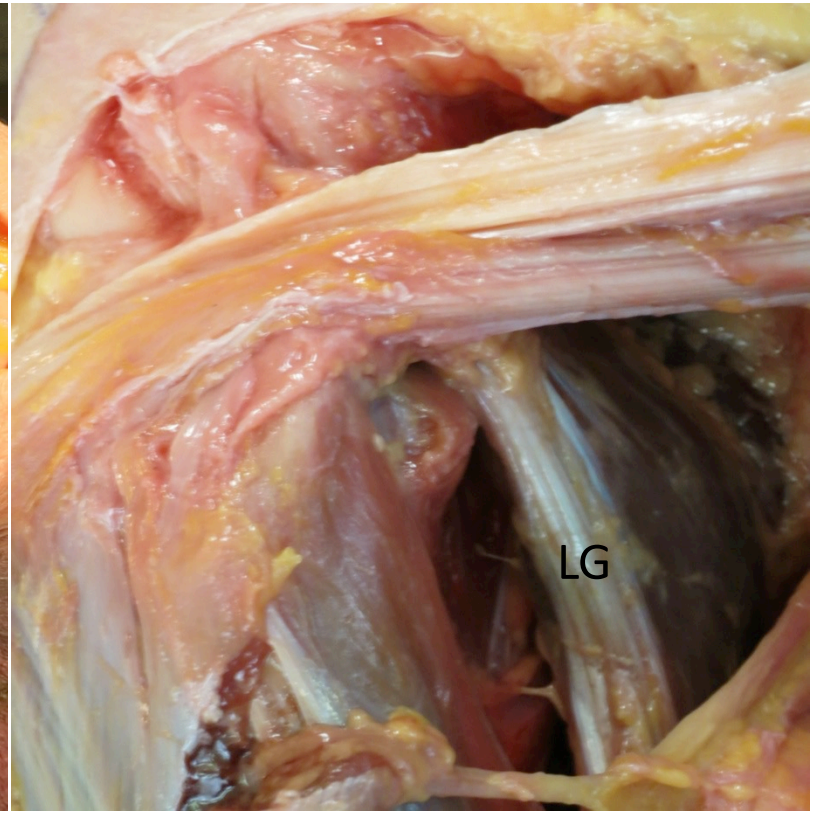




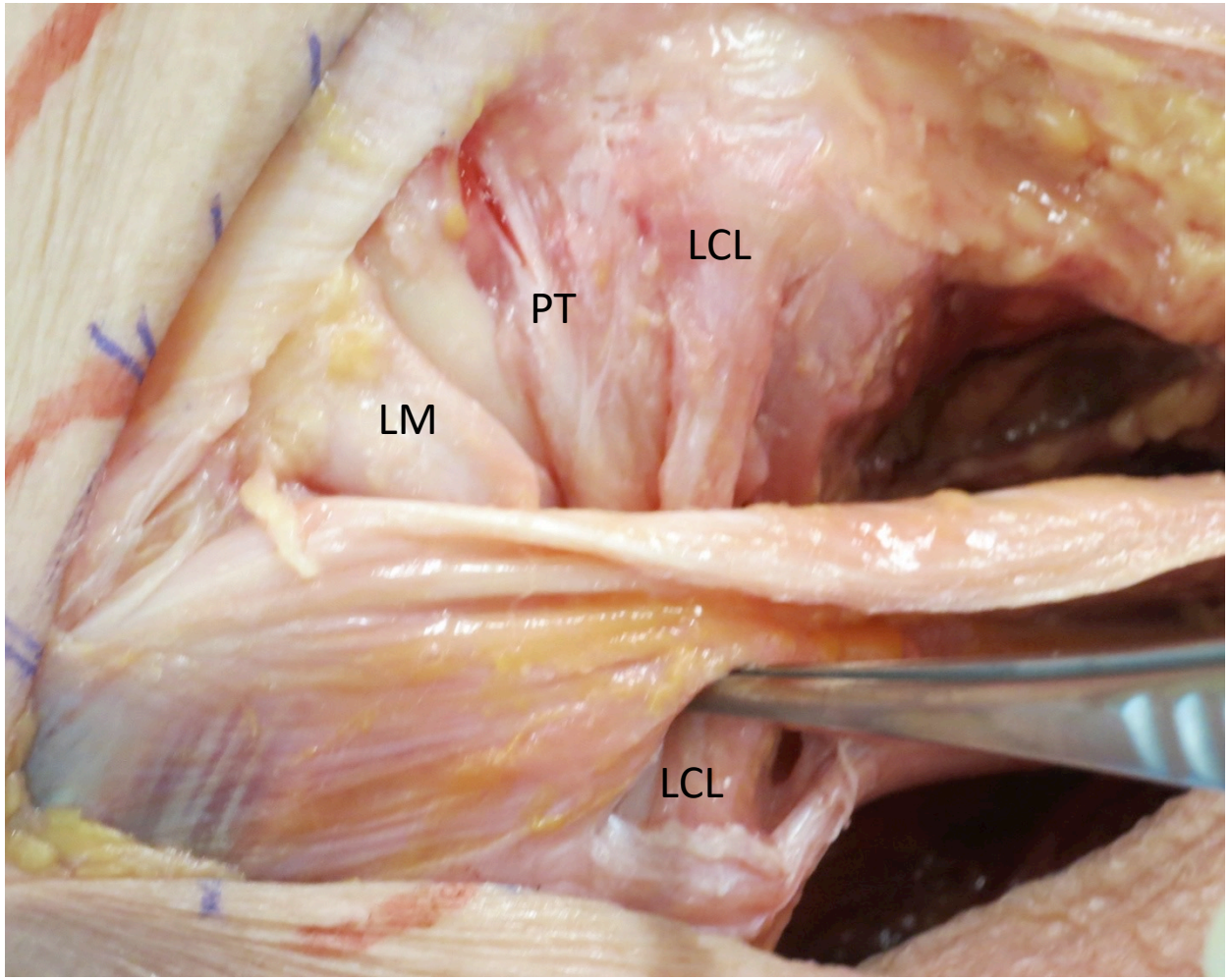
Left knee at 90°

Middle

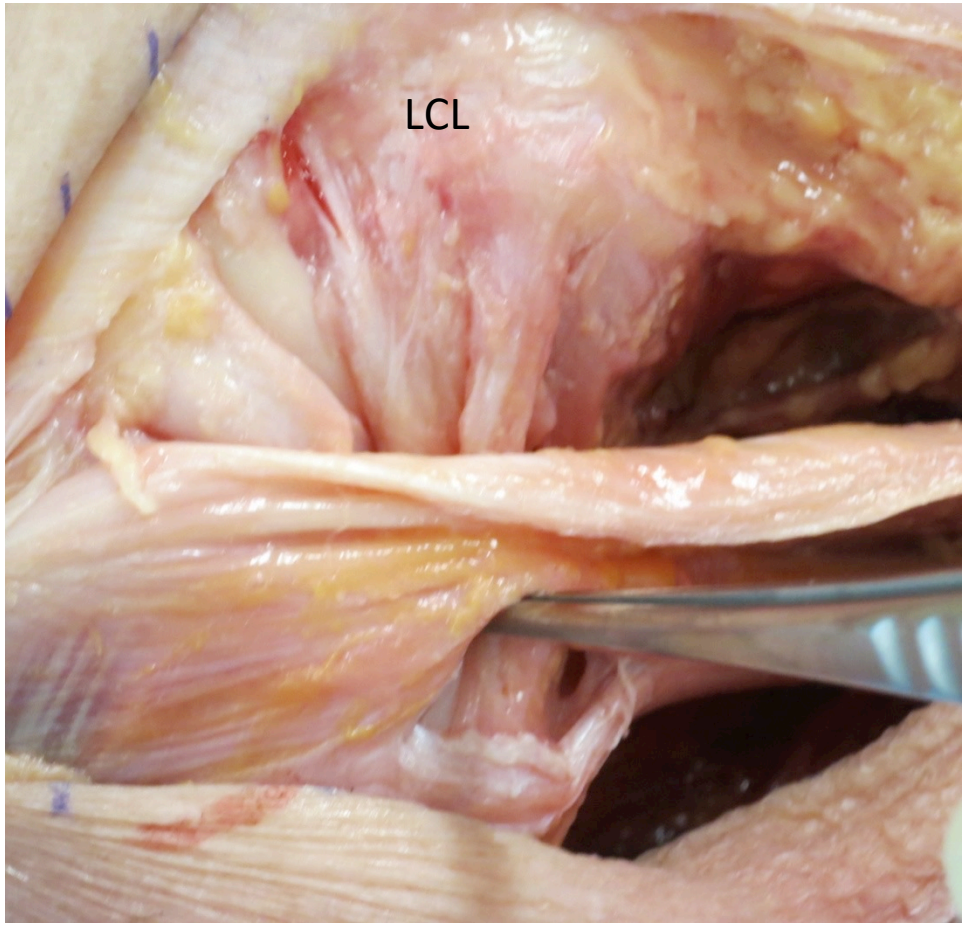


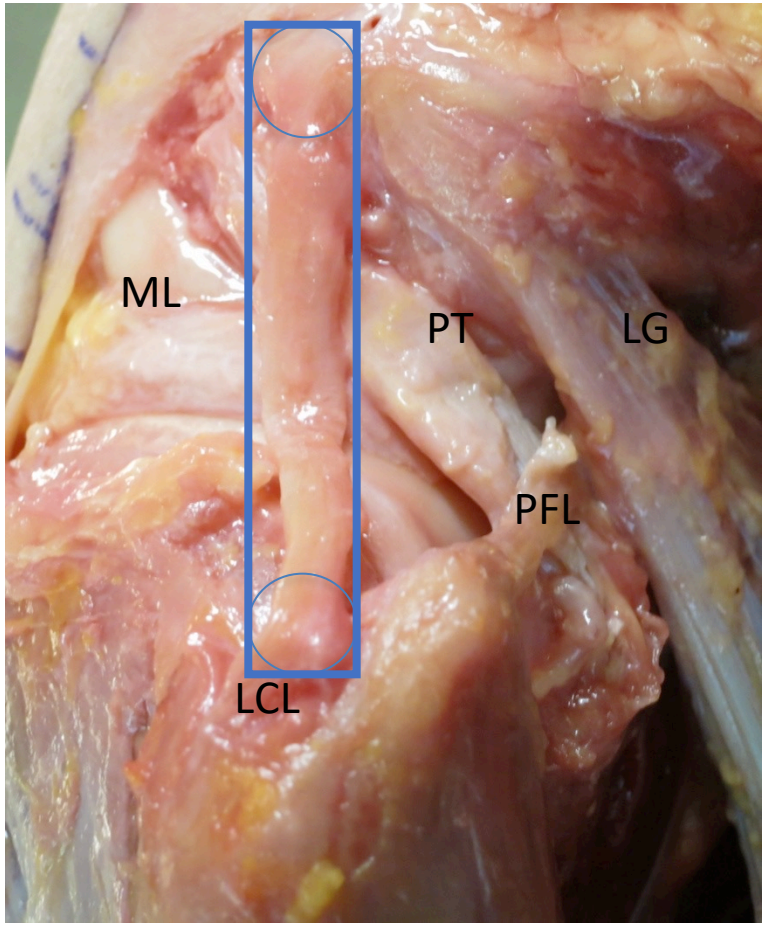


Deep

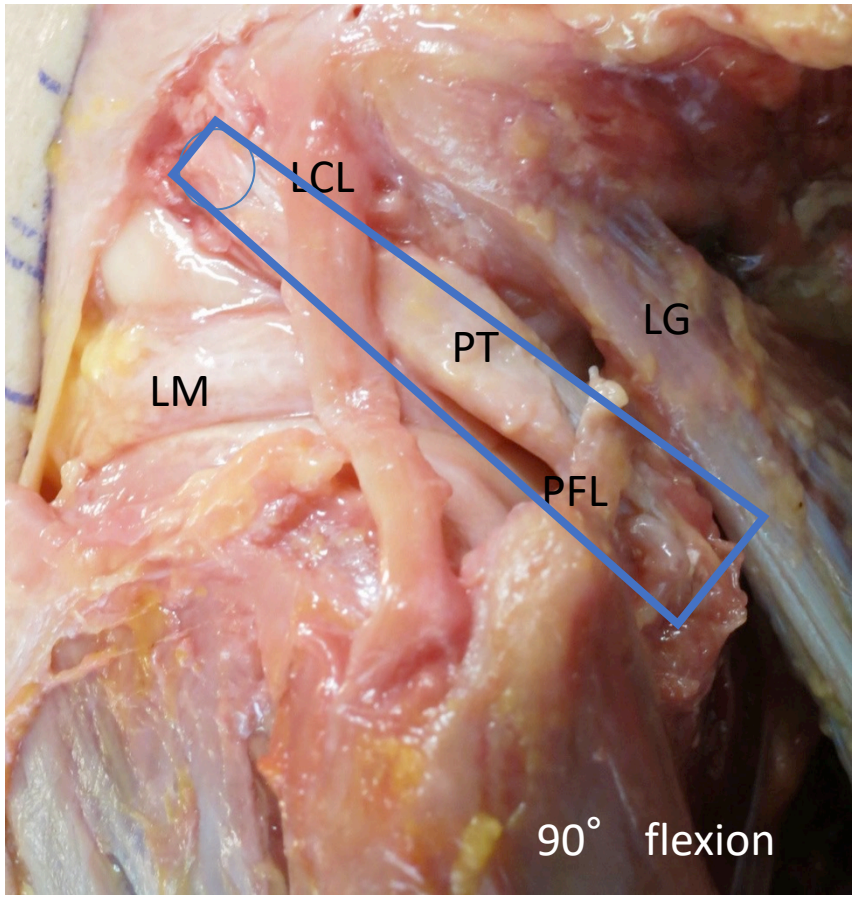


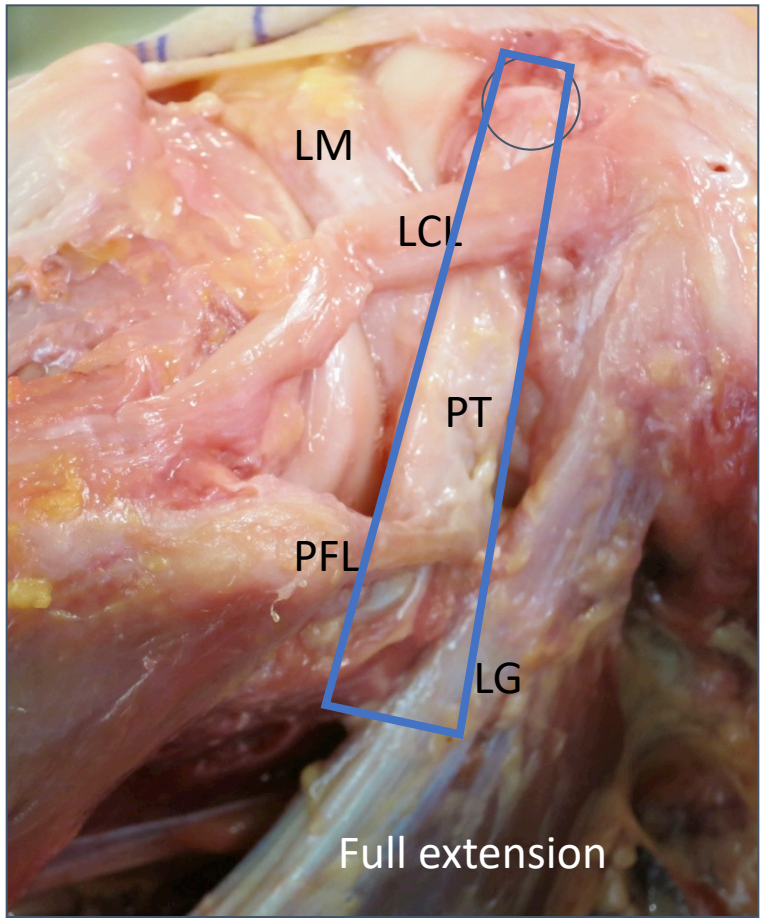
Lateral Collateral Ligament



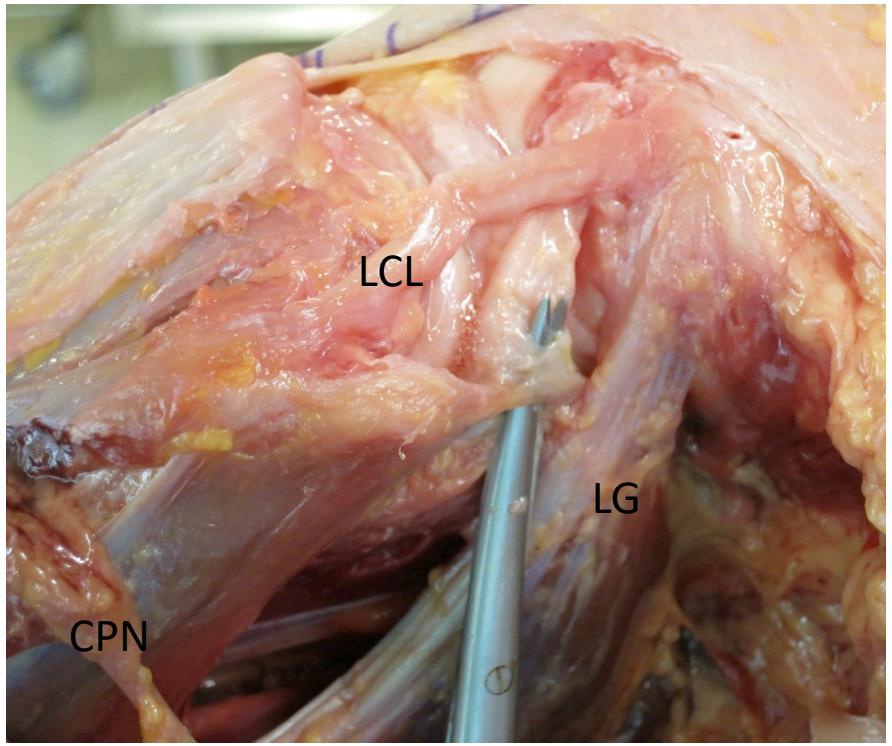


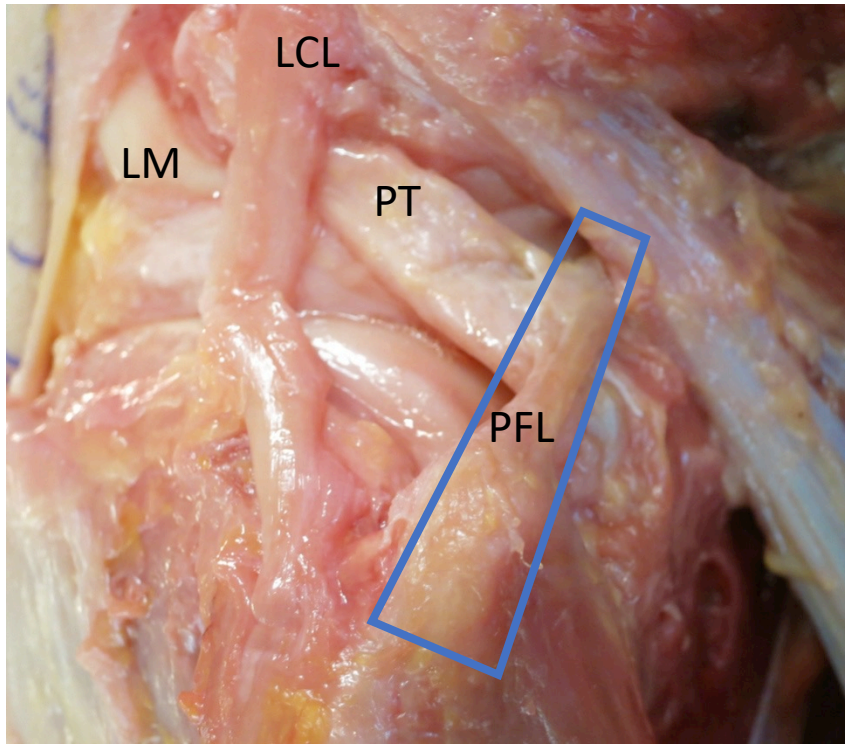
Popliteus Tendon





Popliteo-Fibular Lgt (PFL)





Popliteo-Meniscal Fascicles

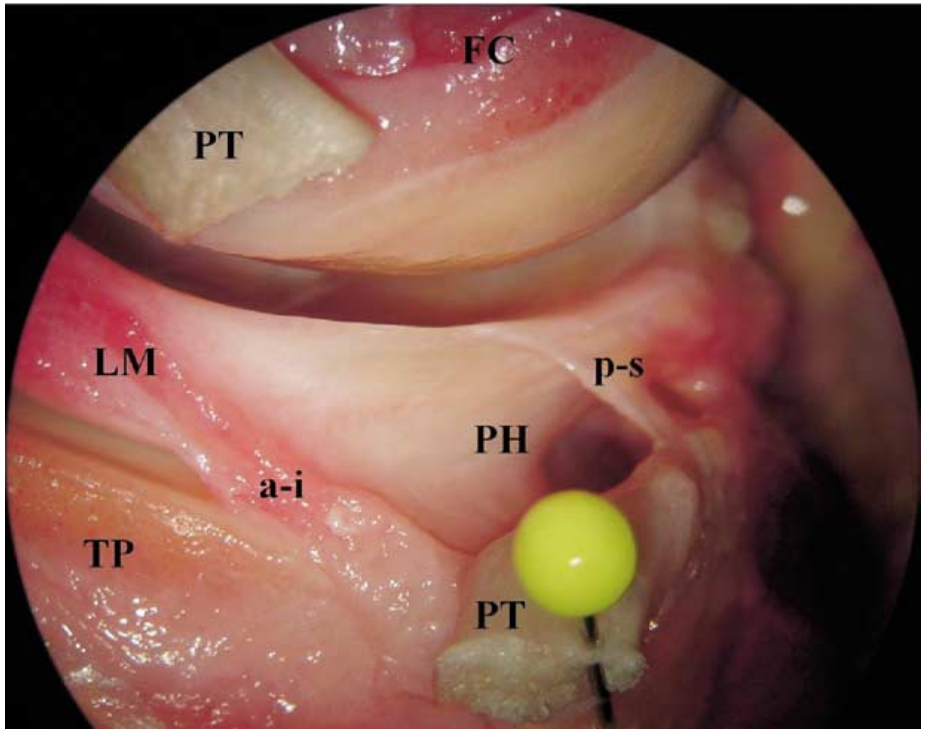
- Increase lateral meniscus stability
- 2 to 3 fascicles

  Staubli and Birrer 1990;

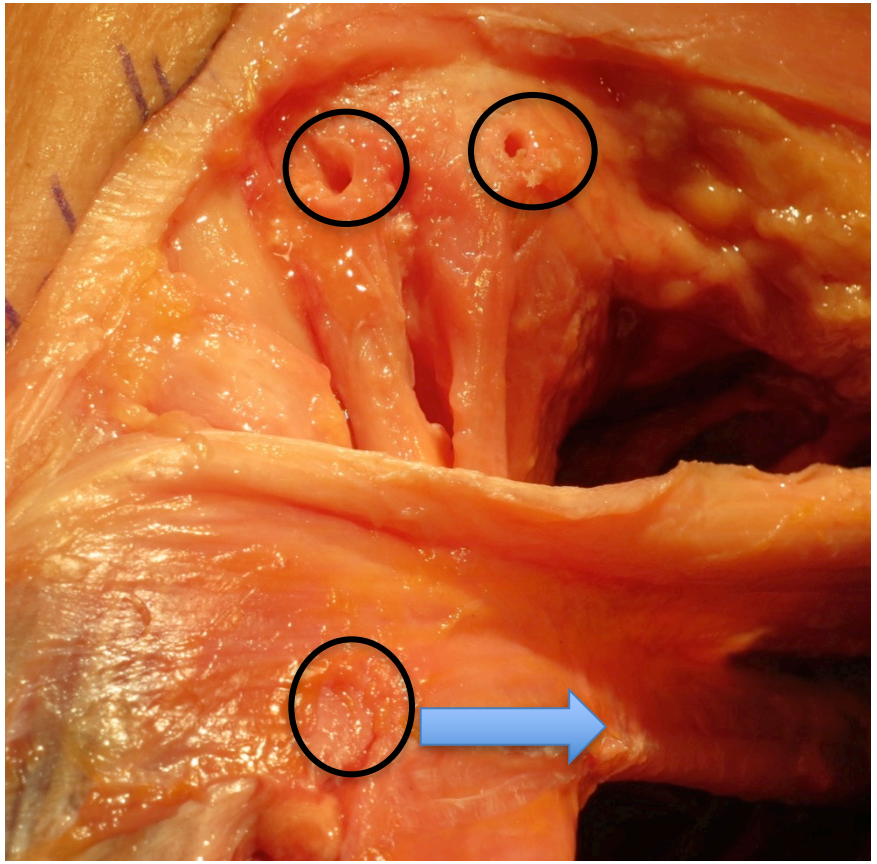
  Diamantopoulos, Tokis *et al*. 2005

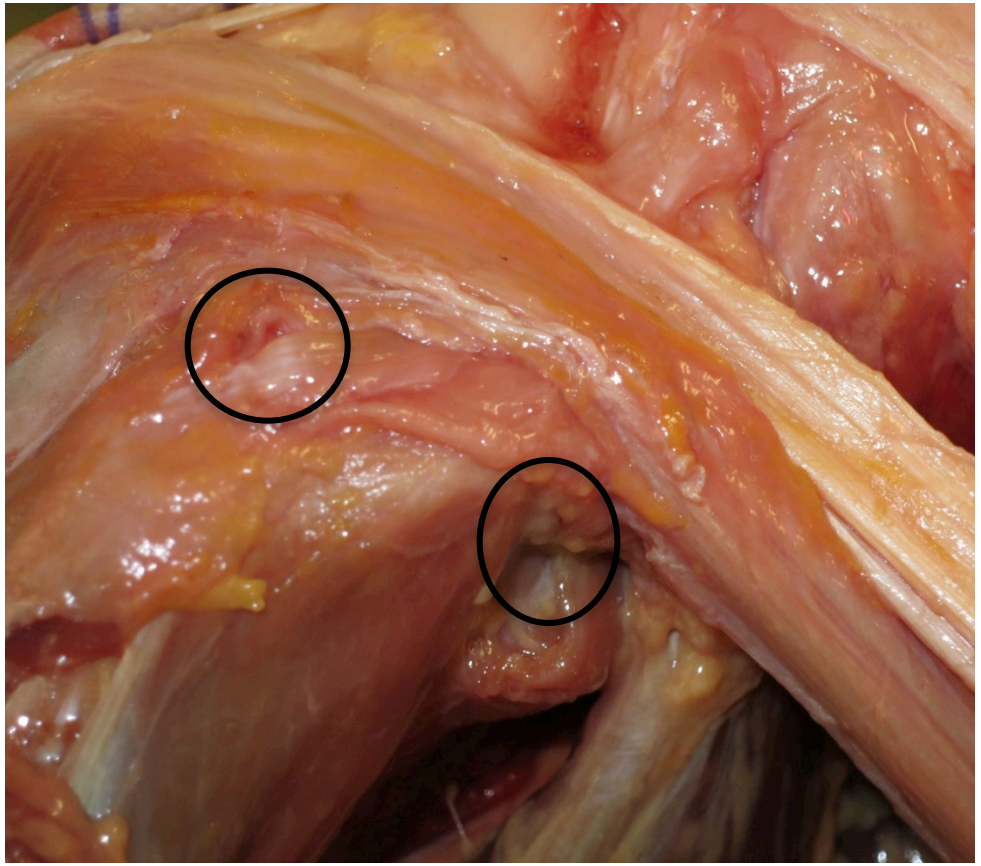
  Simonian, Sussmann *et al.* 1997

- Complexe role



Keys for reconstruction





Insertion sites

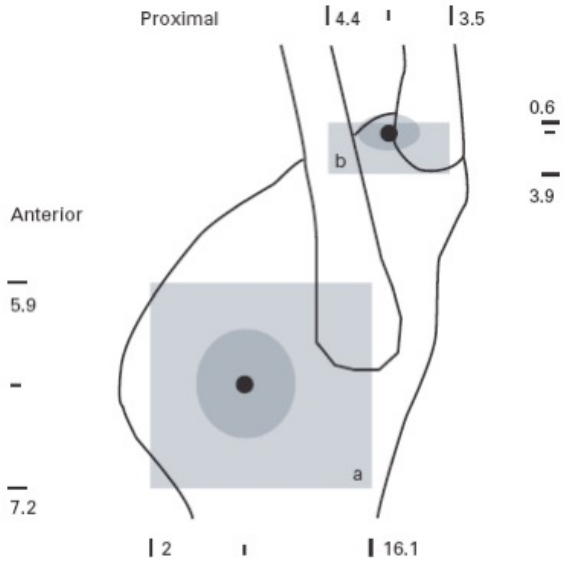


Fig. 5

Schematic overview of the insertions of the lateral collateral ligament (LCL) and popliteofibular ligament on the fibula, showing the range of the insertions (light grey) of the LCL (a) and popliteofibular ligament (b) twice the standard deviation (dark grey). All measurements are in mm.

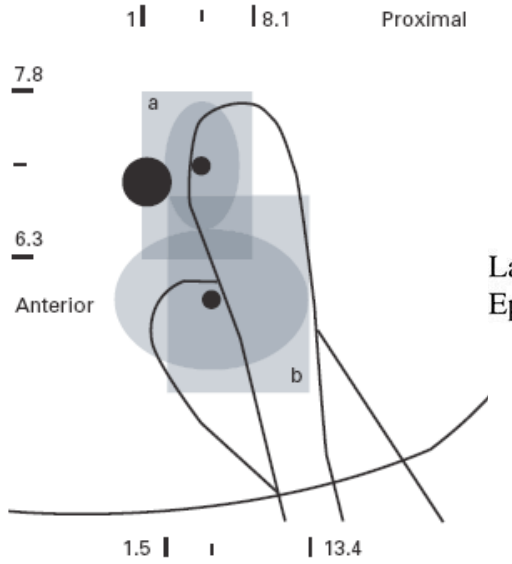
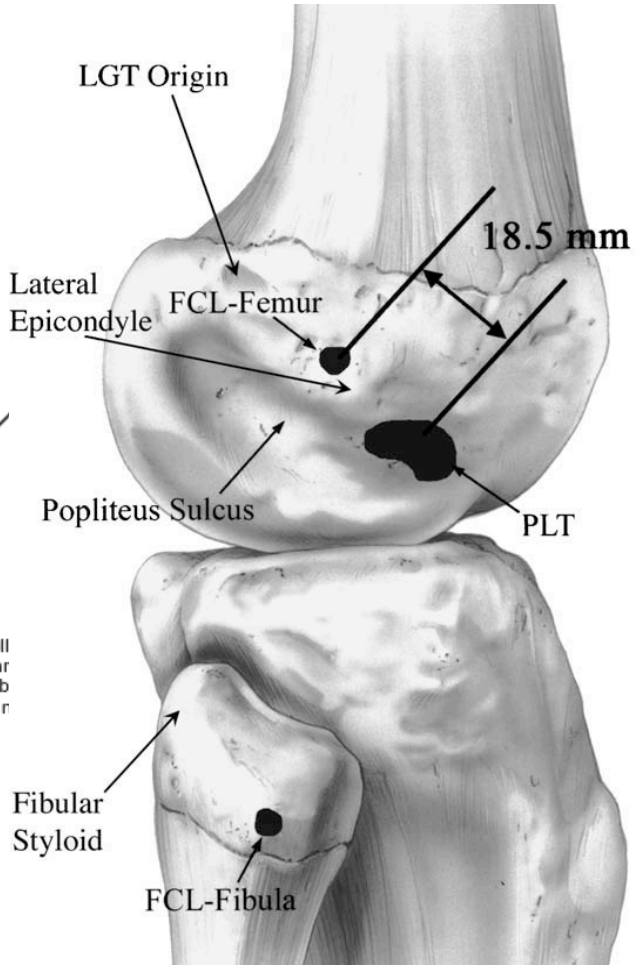


Fig. 4

Schematic overview of the insertions of the lateral coll (LCL) and popliteus tendon on the femur, showing the rar tions (light grey) of the LCL (a) and popliteus tendon (b standard deviation (dark grey). All measurements are in r

(Brinkman, Schwering *et al*. 2005)



Clinical Examination

- Very important
- Acute ≠ Chronic
- Static analysis in extension and in flexion
- Dynamic tests

Chronic lesion

- Gait analysis: varus & recurvatum

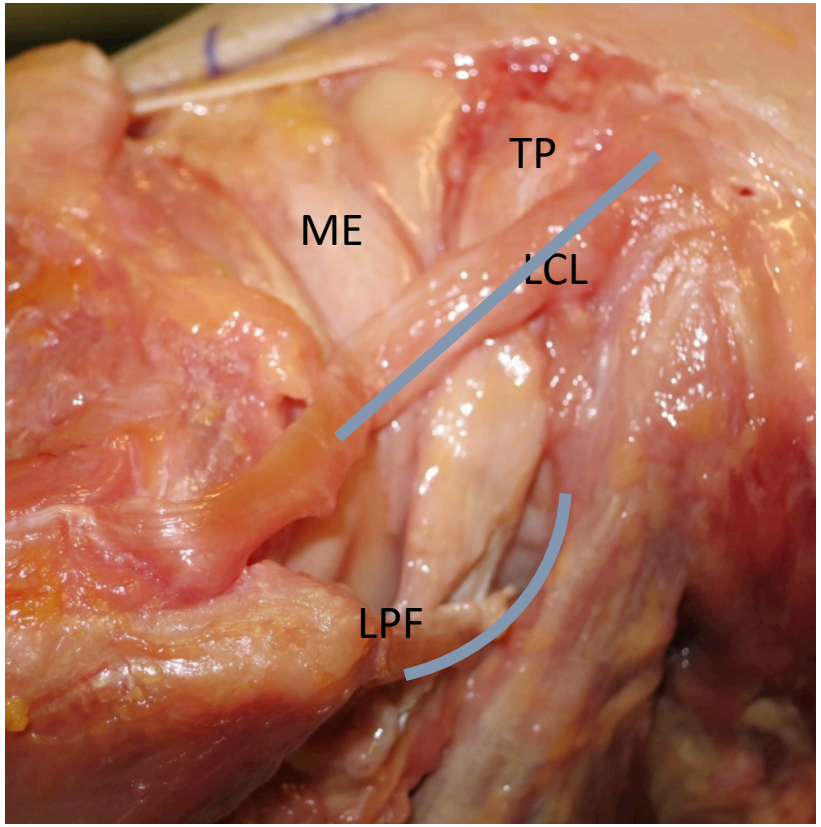
VARUS STRESS

- **Extension**
- **Flexion 30°**

- Grade A: 0-5 mm
- Grade B: 6-10 mm
- Grade C > 10 mm

(Nielsen, 1984 & 1986; Gollehan, 1987; Grood, 1988; Veltri, 1995)

STRESS IN VARUS



- Test + in flexion =

  LCL

- Test + in extension =

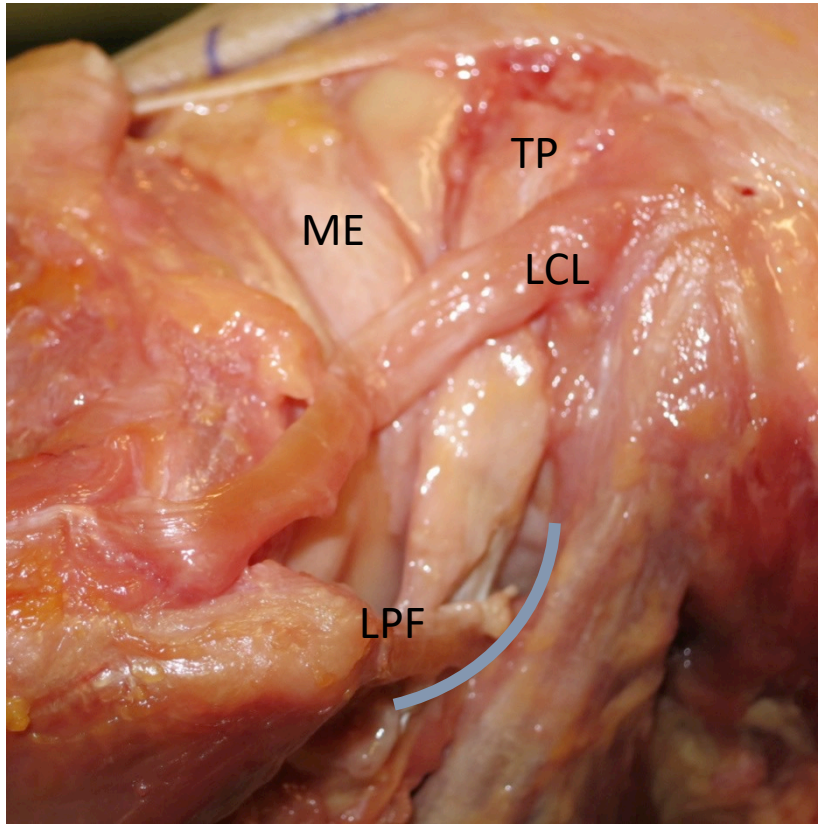
  LCL + Posterior capsule

RECURVATUM TEST HUGHSTON

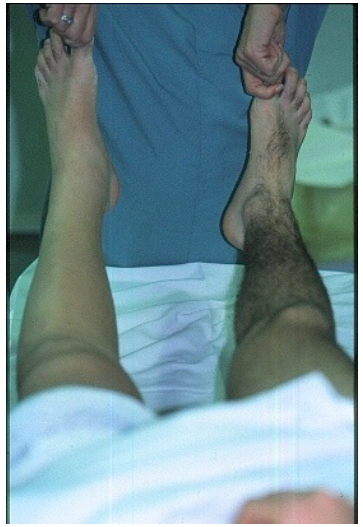
Positive:
Recurvatum +
External rotation

(Hughston, Clin Orthop 1980)

RECURVATUM TEST HUGHSON



- Test + = posterior capsule
- Test +++ : PPL + Cruciate ligament



DIAL TEST / External rotation test

Prone +++

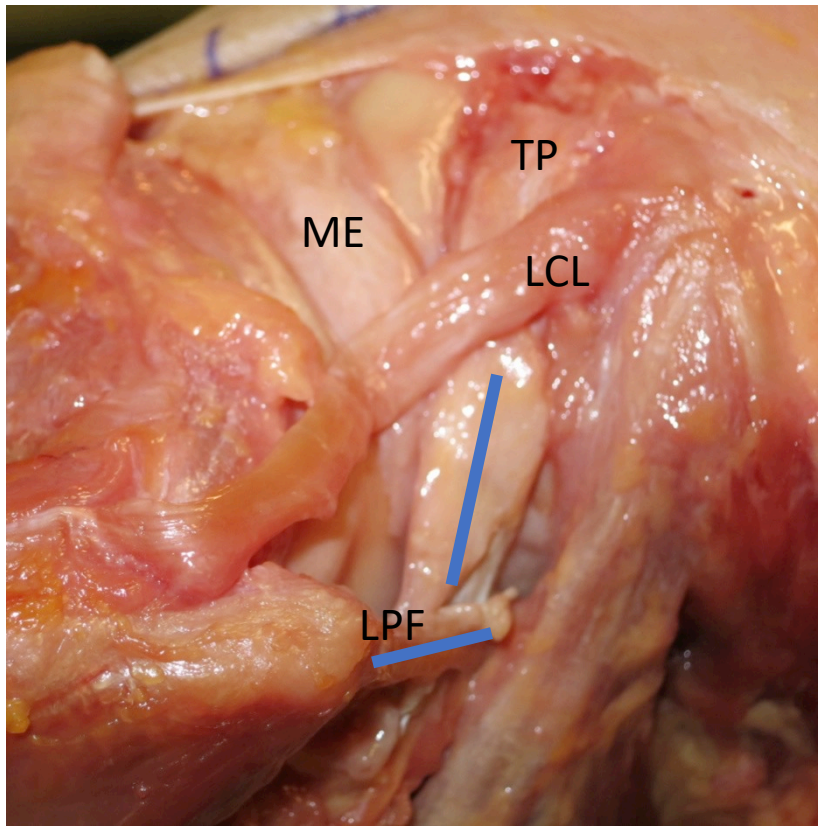
Posterior drawer reduction

Comparative 30° & 90°

Asymetry of 15°

(Larson 2001, Miller 1999, Veltri, AM J Sport Med 1996; Gollehan,1987;Groo,1988; Noyes,1993; Bleday,1998)

DIAL TEST / External rotation test



Test + at 30° flexion :

Popliteus Lateral Corner

Test + and rotation at 90° > 30° :

PLC and Posterior Cruciate lgt

(Larson 2001, Miller 1999, Veltri, AM J Sport Med 1996; Gollehan,1987;Groo,1988; Noyes,1993; Bleday,1998)

REVERSE PIVOT SHIFT

False positive: 35%

Poor Se/Sp

(Covey, JBJS 2001, Jacob)

In brief

3 important tests

Don’t forget common peroneal nerve palsy

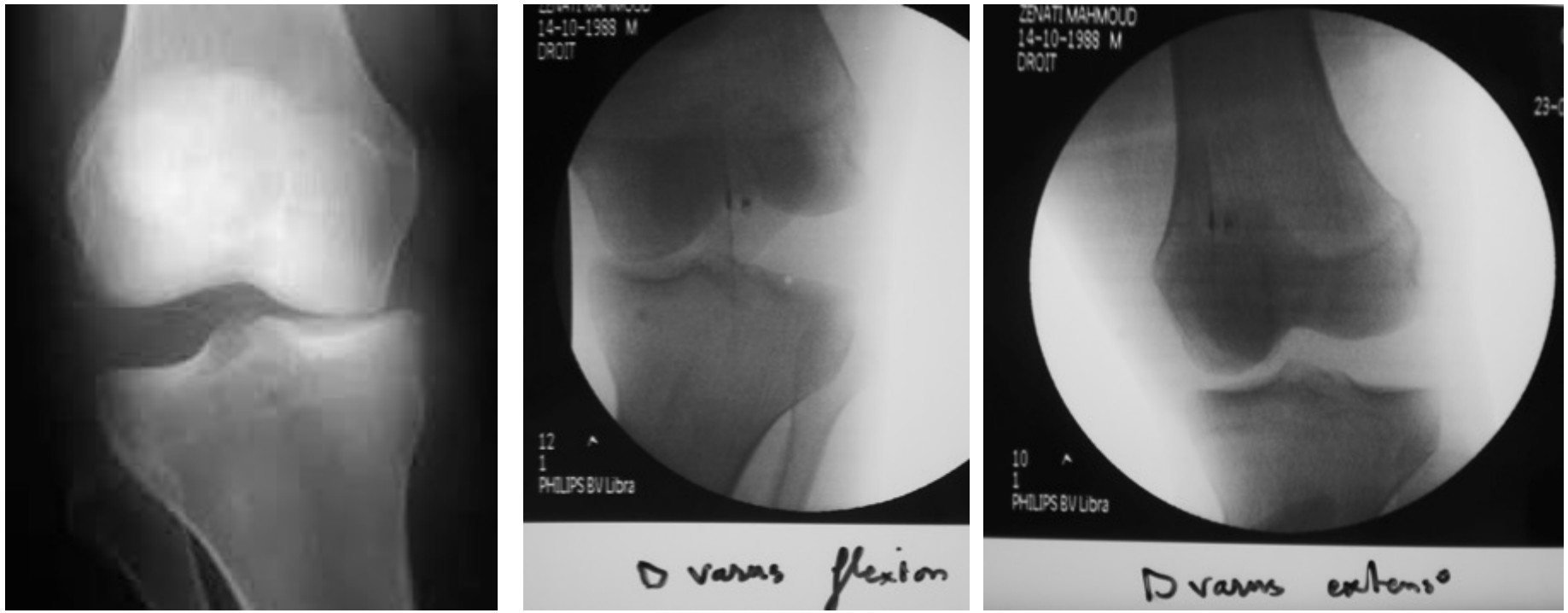
Varus test

Recurvatum test

Dial test

Standard X-Rays

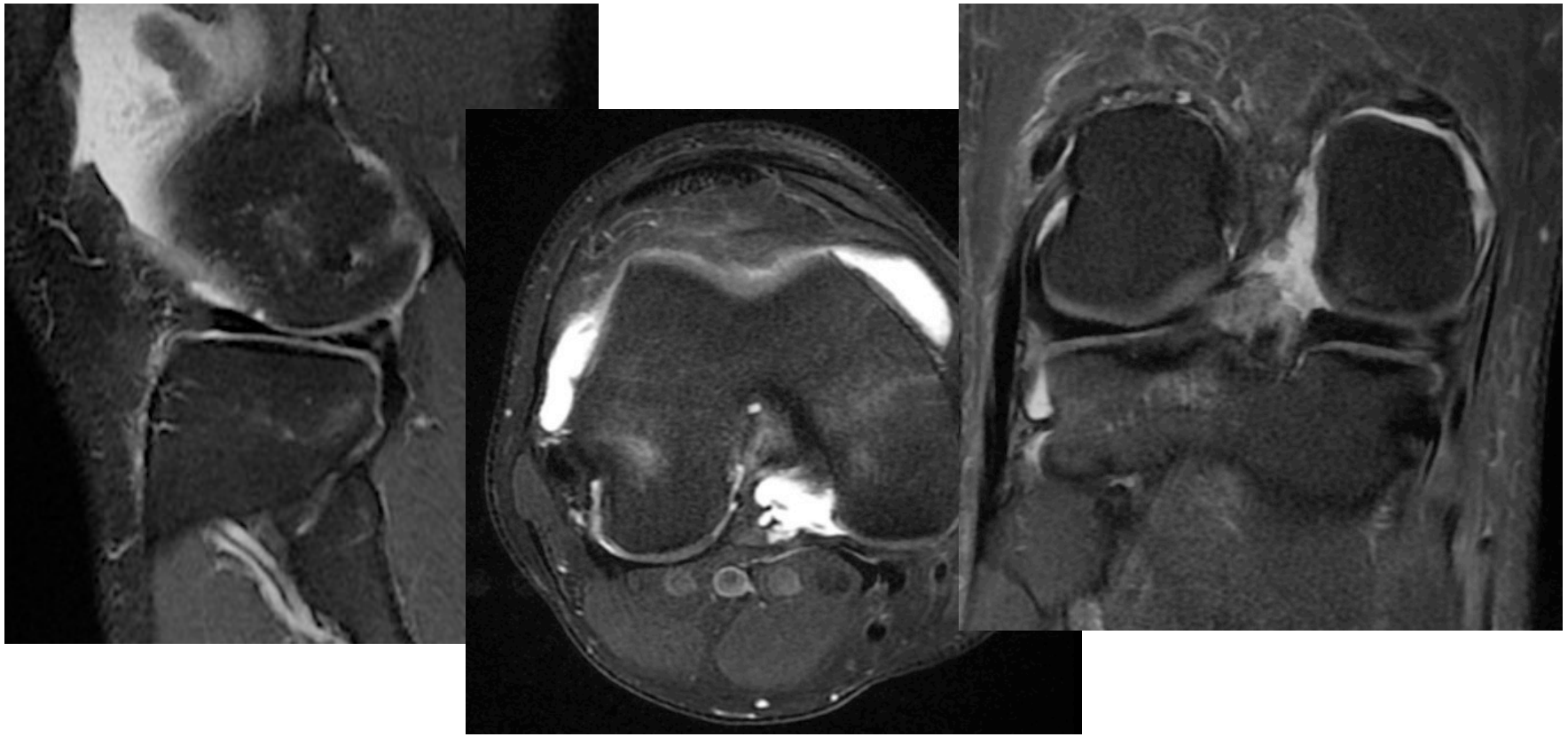
Preop or Perop Stress X-Rays



Stress X-Rays: Lateral opening
(Differentiel laxity: 2,7 to 4mm)

Laprade et al, JBJS 2008

MRI : 3 planes Analysis

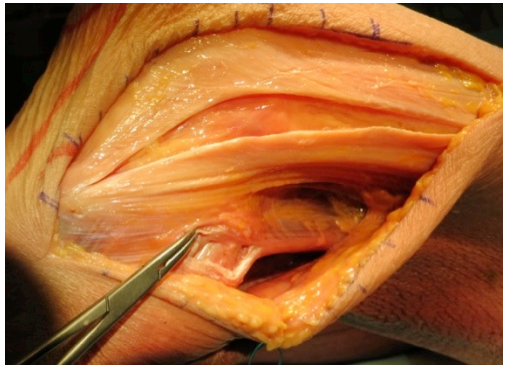
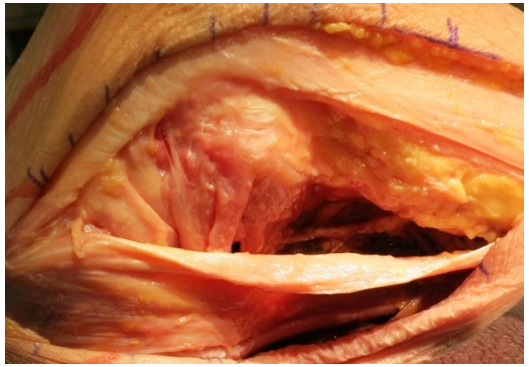


IRM: RHO FAT SAT Analyse dans les trois plans

Systematic analysis

Avt

Arr

Superficiel	Intermédiaire	Profond
Tractus ilio-tibial Biceps fémoral N. Fibulaire commun	Lgt Collatéral Latéral Gastronecmien latéral	Tendon poplité Lgt Fibulo-poplité Ménisque latéral
		

In case of Chronic

MRI

Axis

Full weight bearing
Bipodal
Monopal

In case of Multi-ligament Injury

Be aware of vascular lesion

« Anatomic » Reconstruction

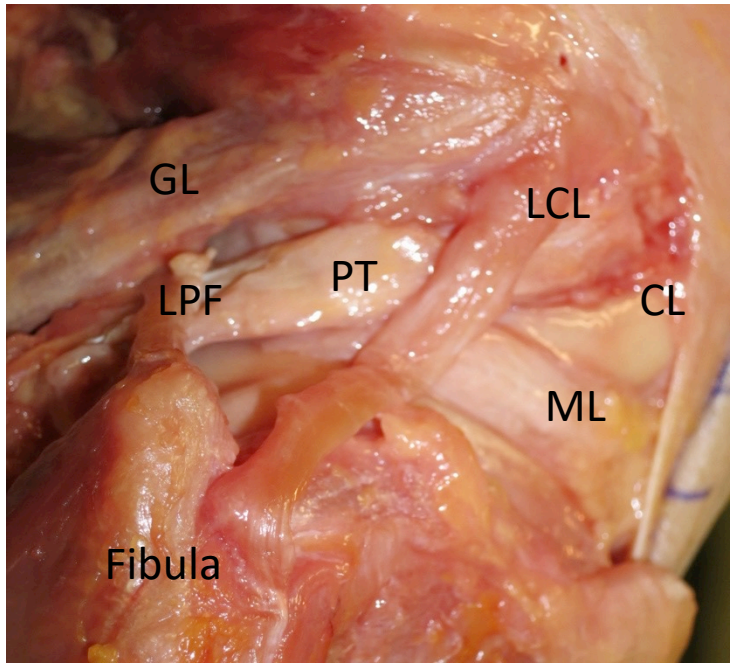
- **Importance of 3 structures:**

  Gollehon (JBJS 1987), Laprade (CORR 2002), Sonnery-Cottet (KSSTA 2013)

  - **Lateral Collatéral Lgt (LCL)**
  - **Popliteo-Fibular Lgt (PFL)**
  - Popliteus Tendon (PT)

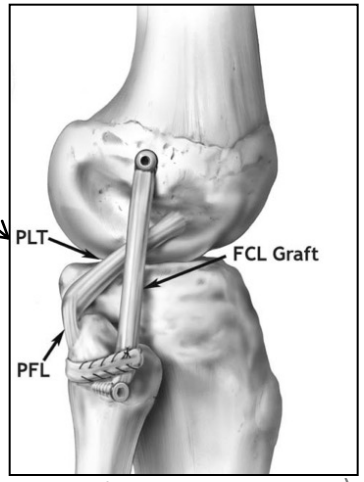
Static Stabilizer

Dynamic stabilizer?

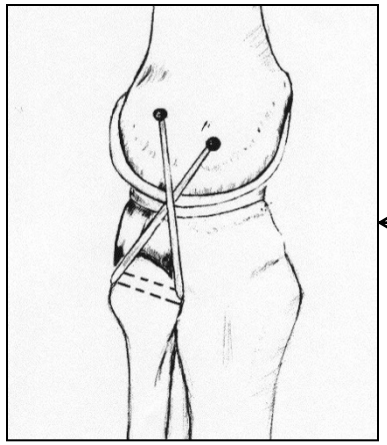


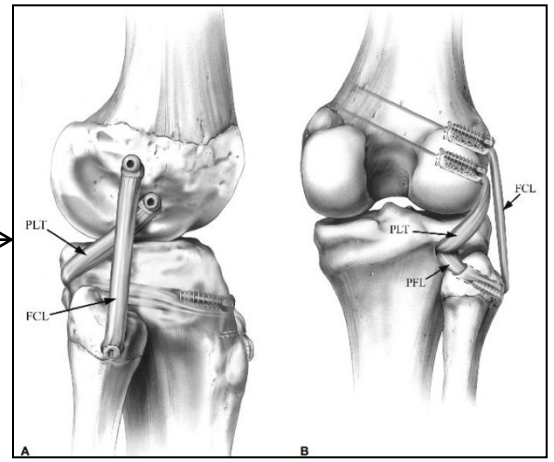
« Anatomic » Reconstruction

- **Lateral Collateral Ligament (LCL)**
- Popliteo-fibular Ligament (PFL)
- Popliteus Tendon (PT)
- **Multi-Ligament**

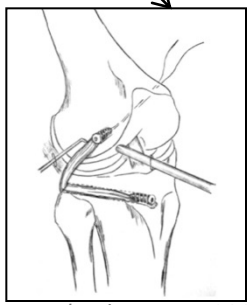


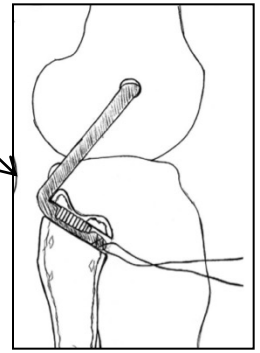
LaPrade (Am J Sport Med 2010)


Dickens (J Knee Surg 2011)



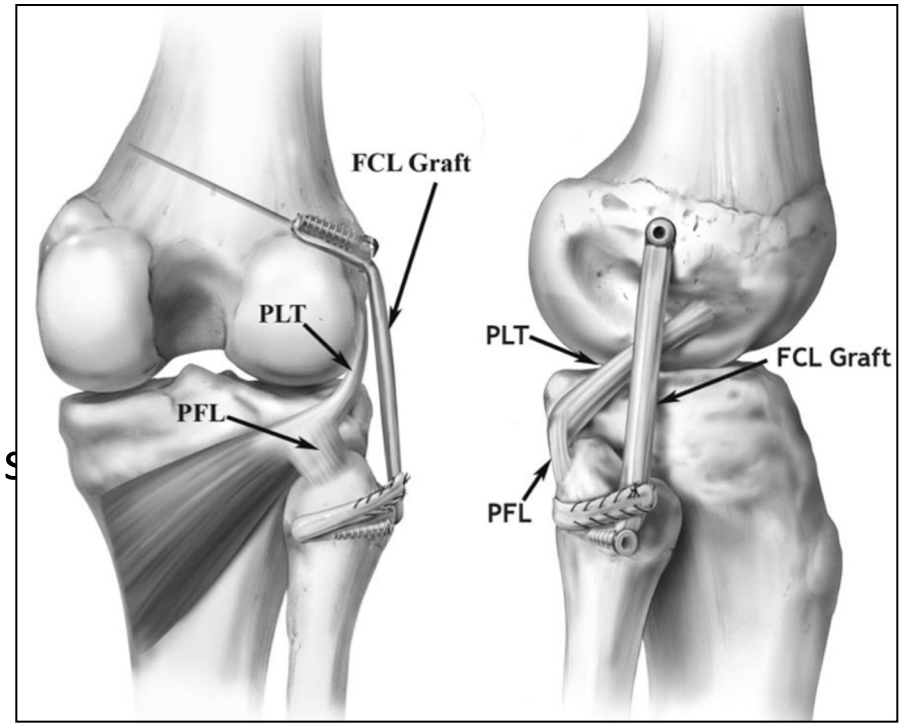
LaPrade (Am J Sport Med 2004)


Feng (Arthroscopy 2009)


McGuire
(Arthroscopy 2003)

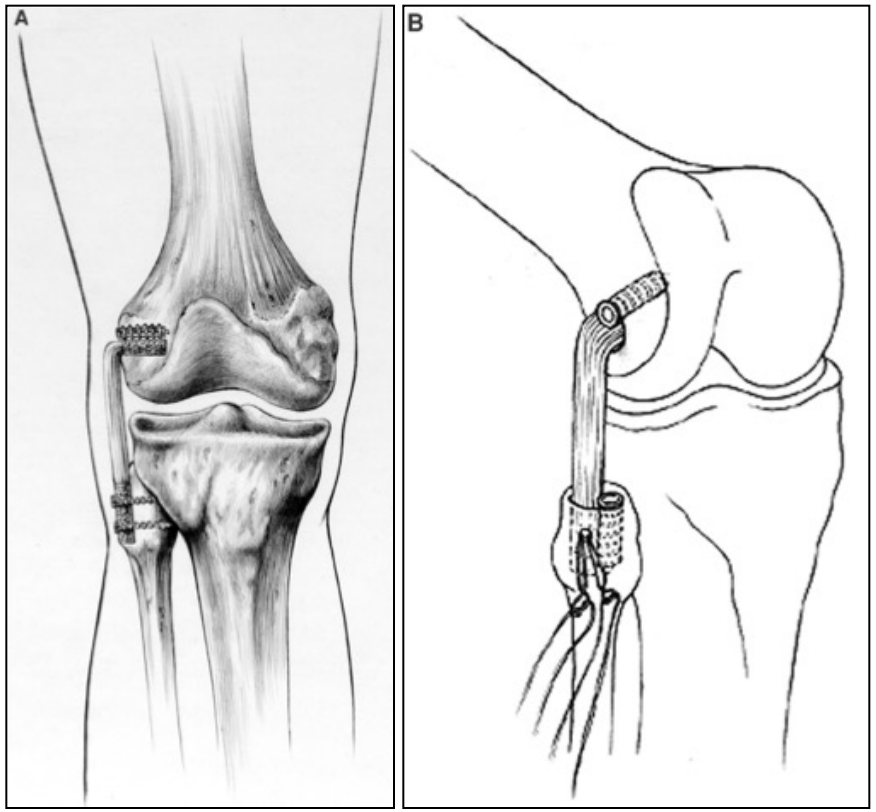
Lateral Collateral Ligament

- **LaPrade** (Am J Sport Med 2010)
  - Semi Tendinosus
  - Fixation : - flexion 20° , valgus



Lateral Collateral Ligament

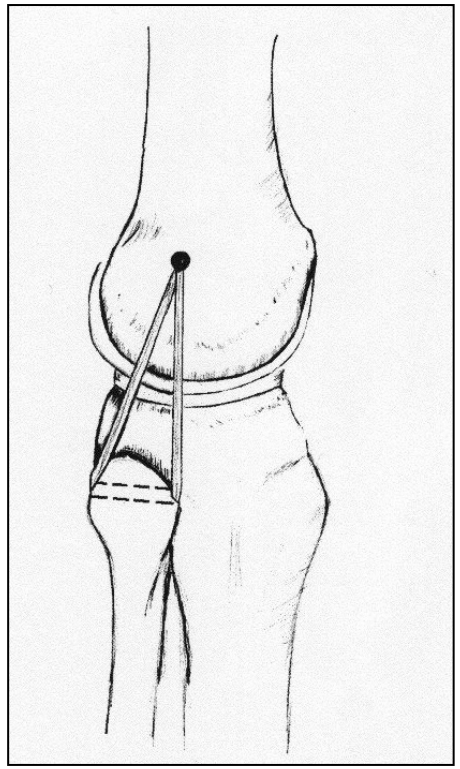
- **Noyes** (Am J Sports Med 2007)
  - Patellar Tendon
  - Fixation : - flexion 30°
    - Correction of varus



PFL + LCL

Larson Plasty

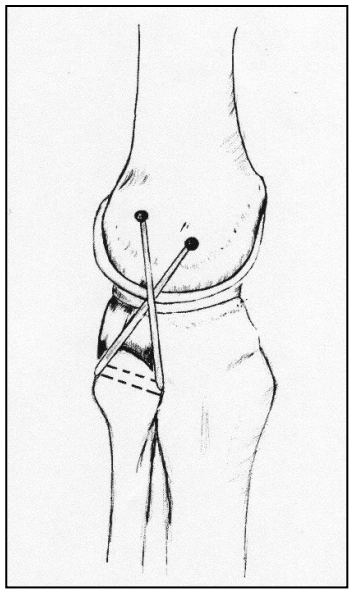
(Oper Tech Sports Med 2001)



Dickens (J Knee Surg 2011)

Dickens, Arciero Plasty

- ✓ Oblique fibular tunnel
- ✓ 2 bundles
- ✓ Anatomic Femoral insertion sites

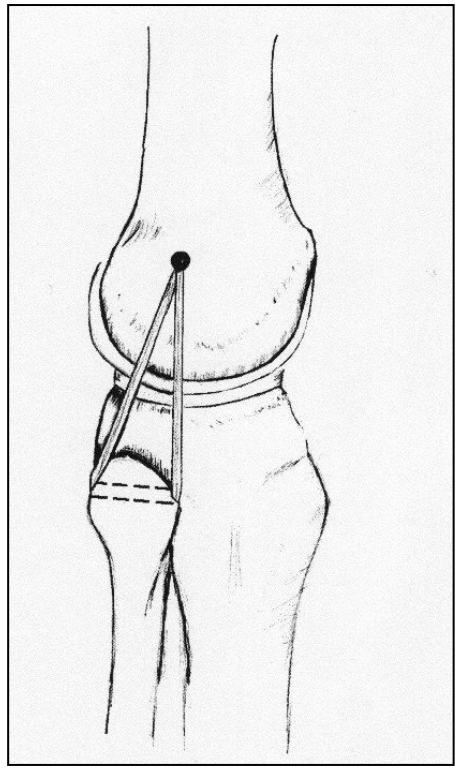


Arciero (Arthroscopy 2005)

PFL + LCL

Larson Plasty

(Oper Tech Sports Med 2001)



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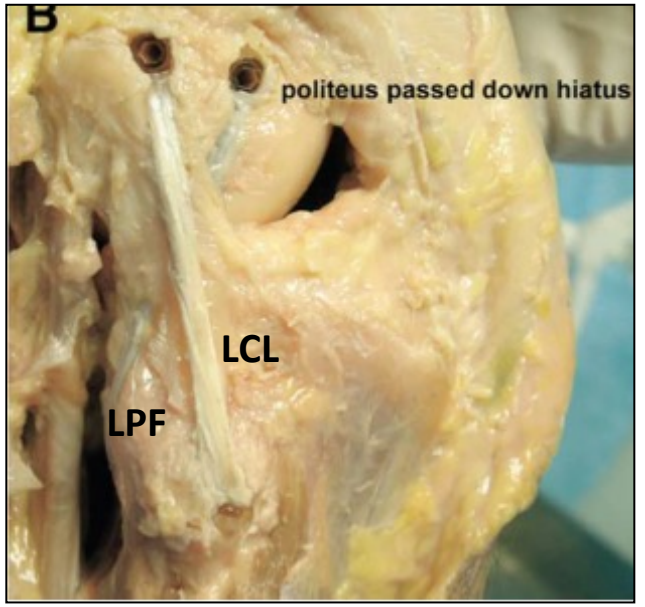


Arciero (Arthroscopy 2005)

PFL + LCL + PT

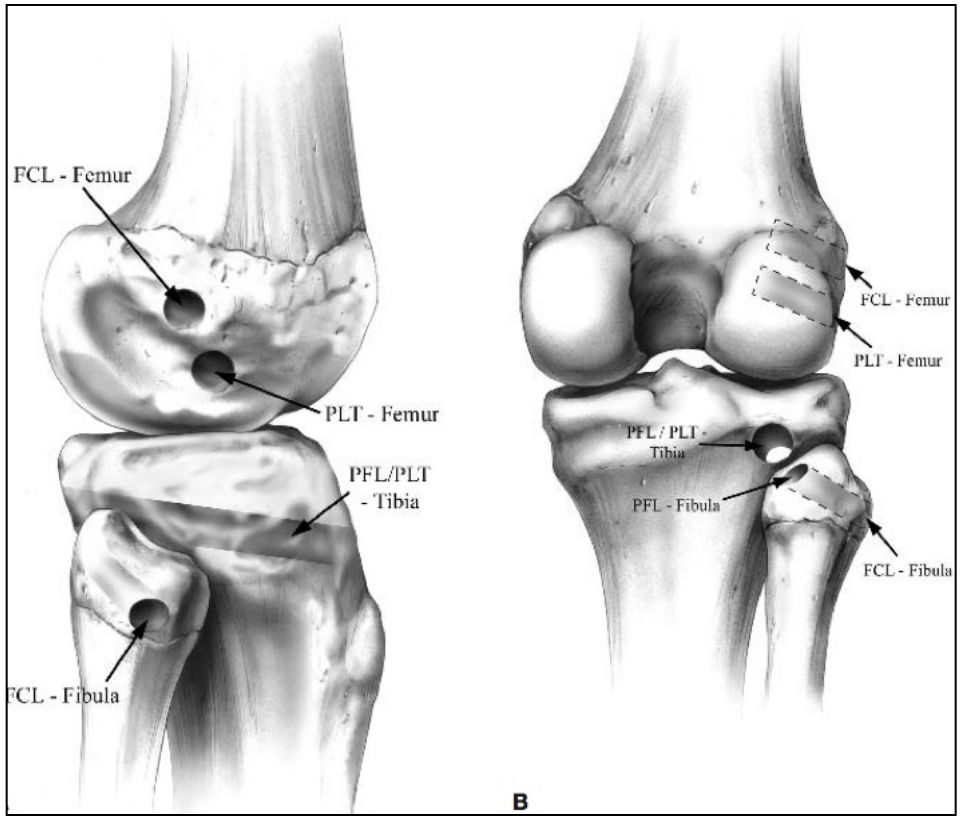
- LaPrade *(Am J Sports Med 2004)*

✓ 4 Tunnels :

- Tibia : 1
- Fibula : 1
- Femur : 2

✓ 2 Bundles :

- PT
- PFL + LCL



PFL + LCL + PT

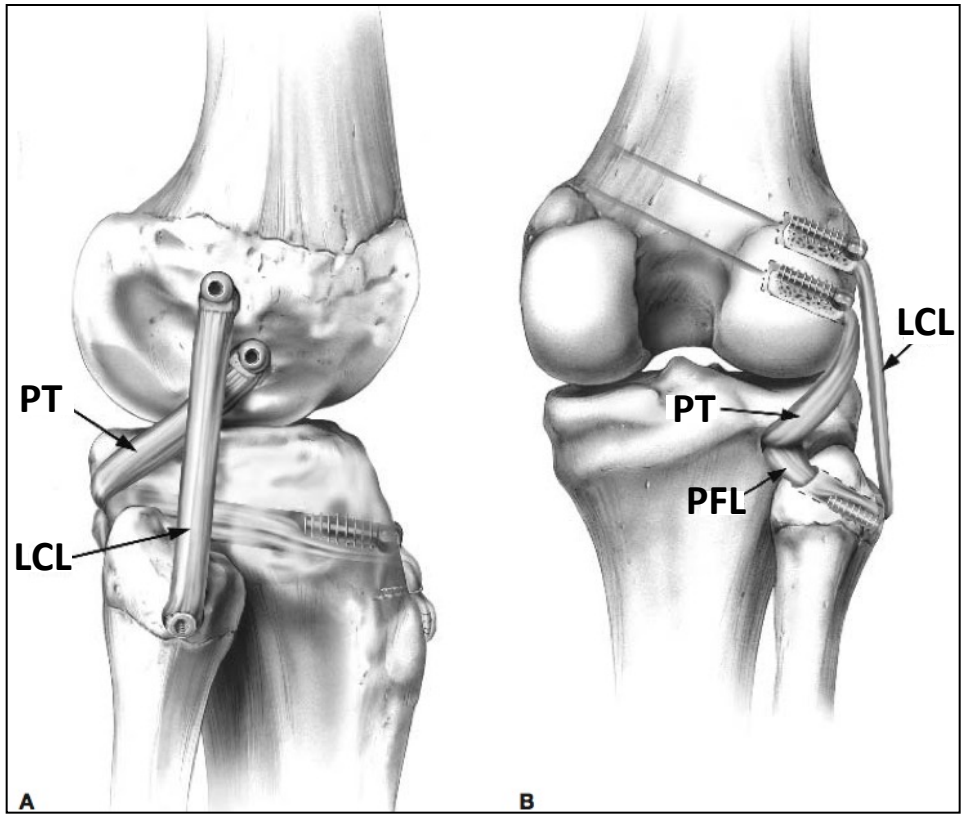
- LaPrade *(Am J Sports Med 2004)*

✓ 4 Tunnels :

- Tibia : 1
- Fibula : 1
- Femur : 2

✓ 2 Bundles :

- PT
- PFL + LCL



Orthopaedics & Traumatology: Surgery & Research 103 (2017) 1031–1034

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Technical note

Anatomical knee postero-lateral corner reconstruction: The "Versailles" technique

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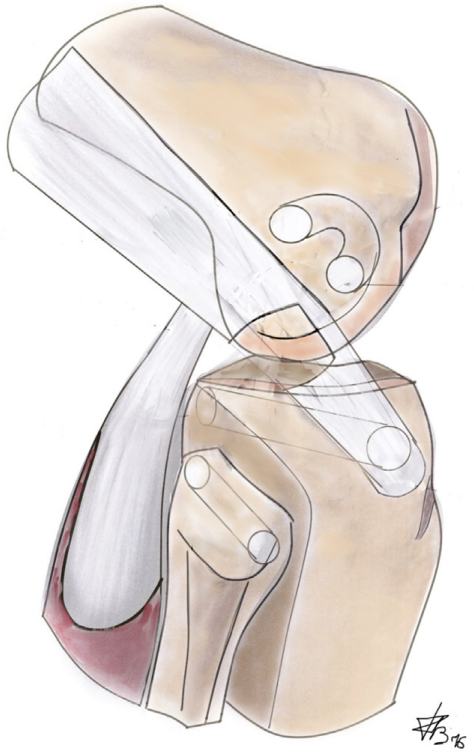


Fig. 1. Lateral view of the right knee showing the three tunnels before introduction of the graft.

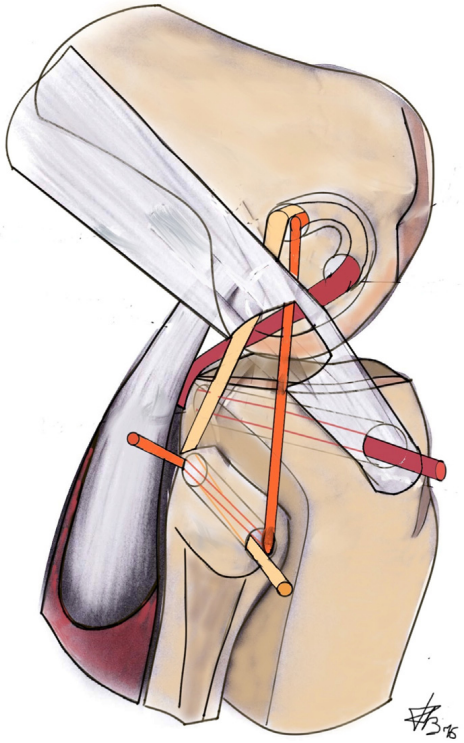


Fig. 6. Lateral view of the right knee: diagram showing passage of the graft through the three tunnels.

Surgical Details

- Approach :
  - Lateral, From the epicondyle to the Gerdy Tubercle
  - Common Peroneal Nerve neurolysis

- Fixation :
  - ACL + PLC : Postero Lateral Corner First
  - PCL + PLC : PCL First

- Postoperative recommandations :
  - ROM: 0 – 90° 6 weekss
  - No weight Bearing during 6 weeks
  - Hinged Brace during 3 months

Osteotomy

- Depending on lower limb axis in chronic Posterolateral injury
- Varus deformity ↗ constraints on postero-lateral plasty ➔ Failure

  Christel (KSSTA 2003), Savarese (J Orthop Trauma 2011)

- Need previous correction :
  - Varus deformity
  - Lateral decoaptation
  - Chronic Postero-Lateral Laxity > 3 months

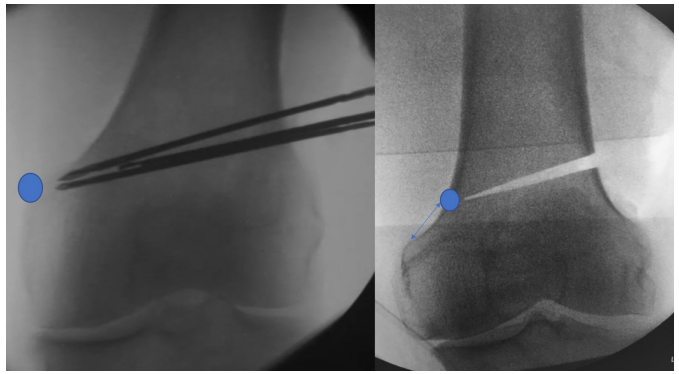
- Plasty: One stage or two stage

J Orthopaed Traumatol (2011) 12:1–17
DOI 10.1007/s10195-010-0120-0

REVIEW ARTICLE

Role of high tibial osteotomy in chronic injuries of posterior cruciate ligament and posterolateral corner

Eugenio Savarese · Salvatore Bisicchia · Rocco Romeo · Annunziato Amendola



Orthopaedics & Traumatology: Surgery & Research 107 (2021) 102989

Contents lists available at ScienceDirect

Orthopaedics & Traumatology: Surgery & Research

journal homepage: www.elsevier.com

Technical note

Lateral femoral closing wedge osteotomy in genu varum

Matthieu Ollivier[a,*], Maxime Fabre-Aubrespy[a], Grégoire Micicoi[b], Matthieu Ehlinger[c], Lukas Hanak[d], Kristian Kley[e]

RETROSPECTIVE STUDY

- Multicentric (9 centers)
- Retrospective Study
- Isolated PLC injury +/- ACL or PCL
- Exclusion criteria : Bi cruciate injury, non operative treatment

Material & Methods

102 Patients

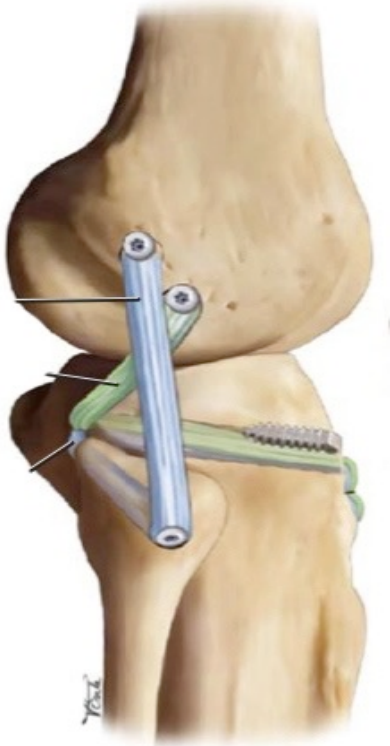
Mean Age : 29 ans (+/- 8,9)

Surgery between 1999 and 2012

Mean FU : 34,6 Months

Reconstruction vs Repair

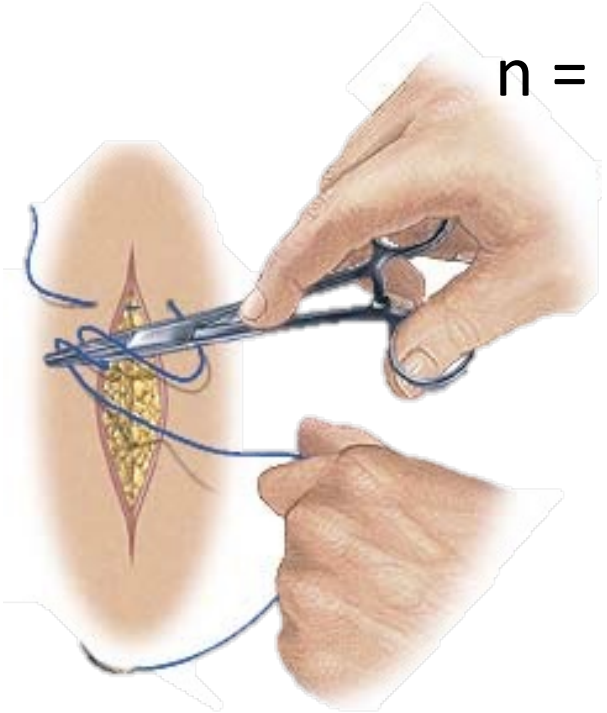
Reconstruction



n = 74

VS.

Repair



n = 23

Reconstruction vs Repair

Reconstruction **Repair**

IKDC Obj.

70% A-B **vs.** **52% A-B**

P=0,07 ns

Reconstruction vs Repair

Reconstruction **Repair**

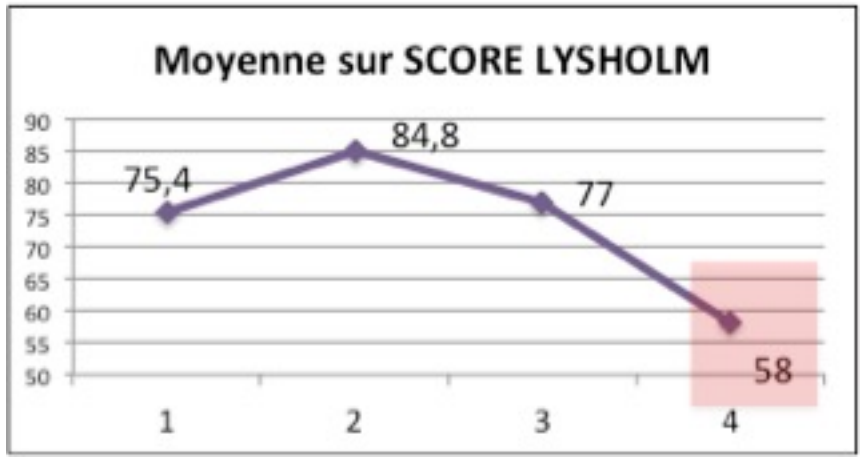
IKDC Subj.

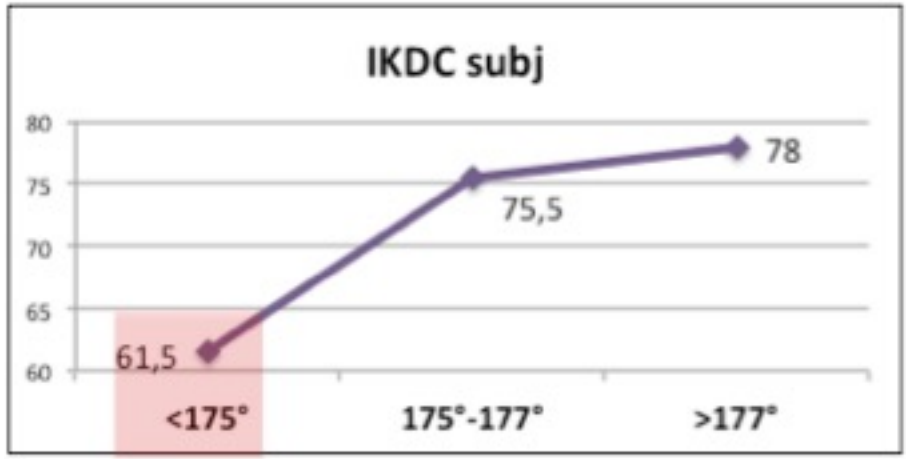
79,2 vs. **68**

p=0,021

Factors of Bad Pronostic

- Repair versus Reconstruction
- Delay Injury-Surgery (>21J) (p=0.02)
- Number of lesions (=4)
- Important Varus (HKA<175°)





Complications

- Associated lesion : Common Peroneal Nerve in 7%

- 5 stiffness
  - 3 arthrolysis
  - 1 MUA <45J
  - 2 MUA >45j (1 secondary arthrolysis)

- 1 **HAEMATOMA with CPN compression**

- 1 **INFECTION** à 1 mois

7%

Sport return

Pivot Sport

- Patient Information+++

Professional: 30% (58% if <21 days, 19% if >21 days)

Non Professional: 78%

Return to Play and Future ACL Injury Risk Following ACL Reconstruction In Soccer Athletes From the MOON Group

AJSM 2012

72%

Val d'Isère CENTRE DE CONGRÈS

Société Francophone d'Arthroscopie SFA

LYON KNEE SCHOOL of SURGERY

Thank You!

Ramsay Santé Clinique de la Sauvegarde

LYON ORTHO CLINIC