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# Combined ACL and MCL: how I do?

## EPIDEMIOLOGY

knee injuries involving the medial side are common

= 20 to 38% in cases of ACL injury, and 42 to 53% in case of MLKI

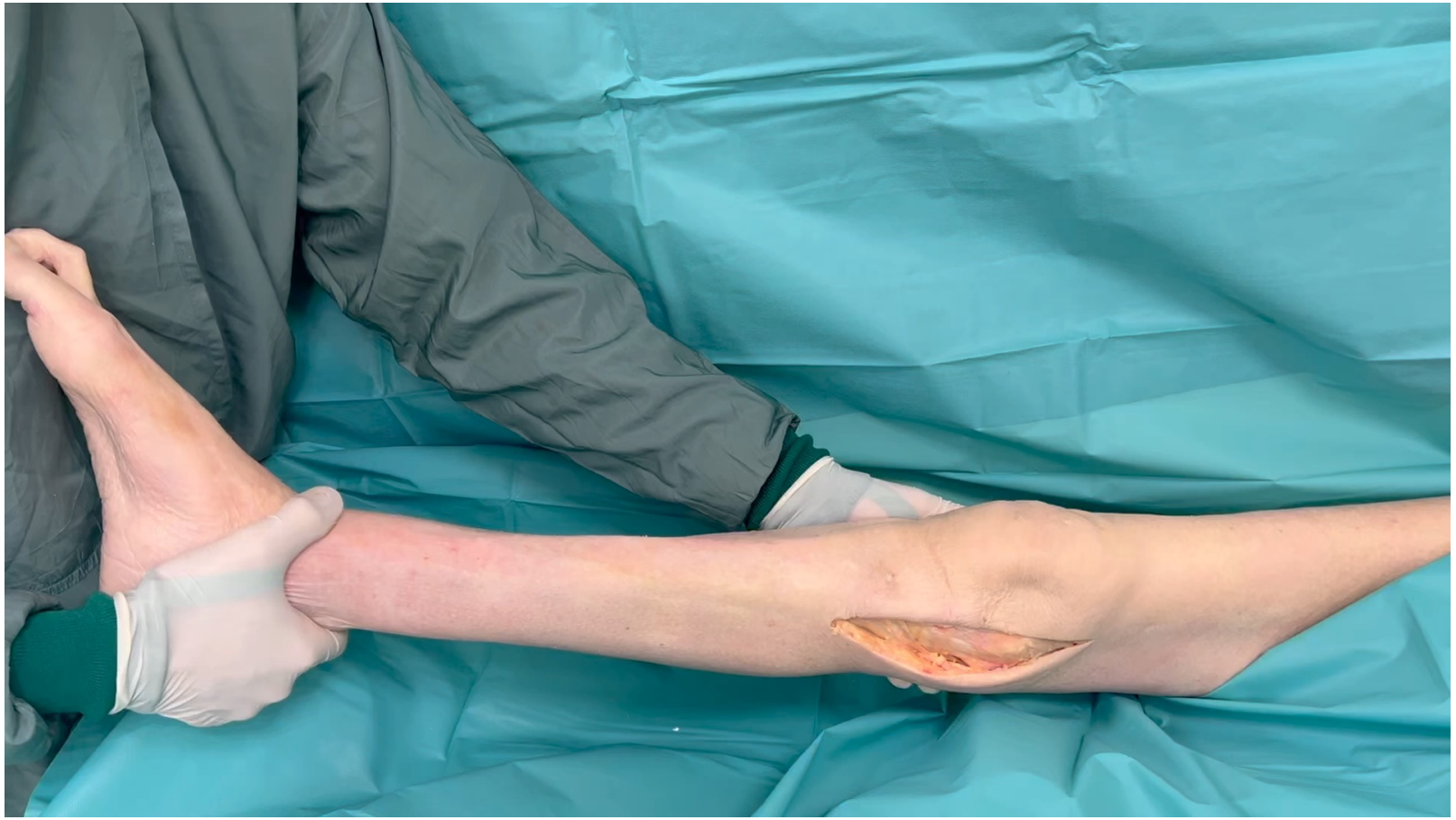
# Valgus, Rotation & Translation control

- **Valgus** = at 30°: sMCL +++ & dMCL
  at 0°: POL
- **Rotation** = dMCL
- **Translation** = all structures (dMCL +++)

# INTACT knee

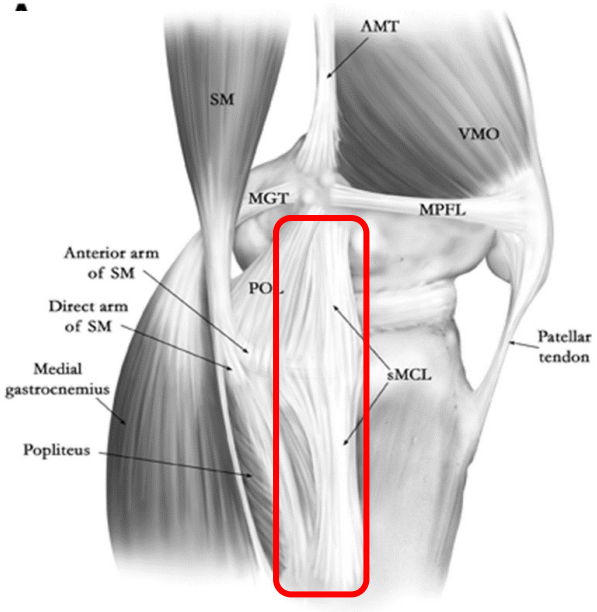
**No laxity in extension**

**Physiologic laxity at 30°**



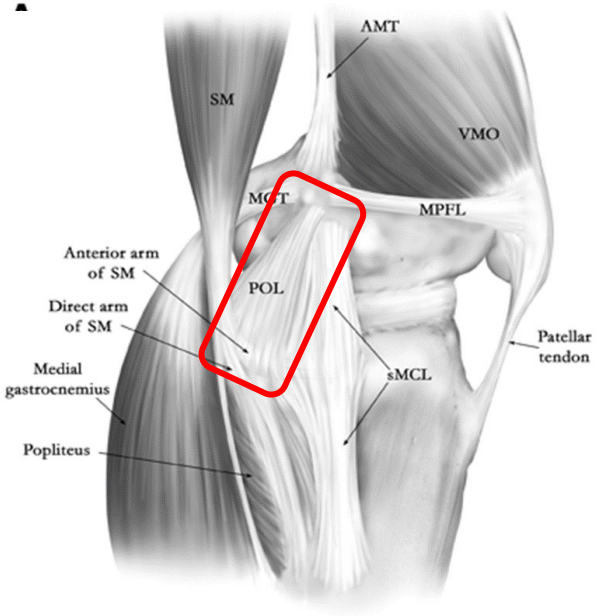
# Valgus control at 30°

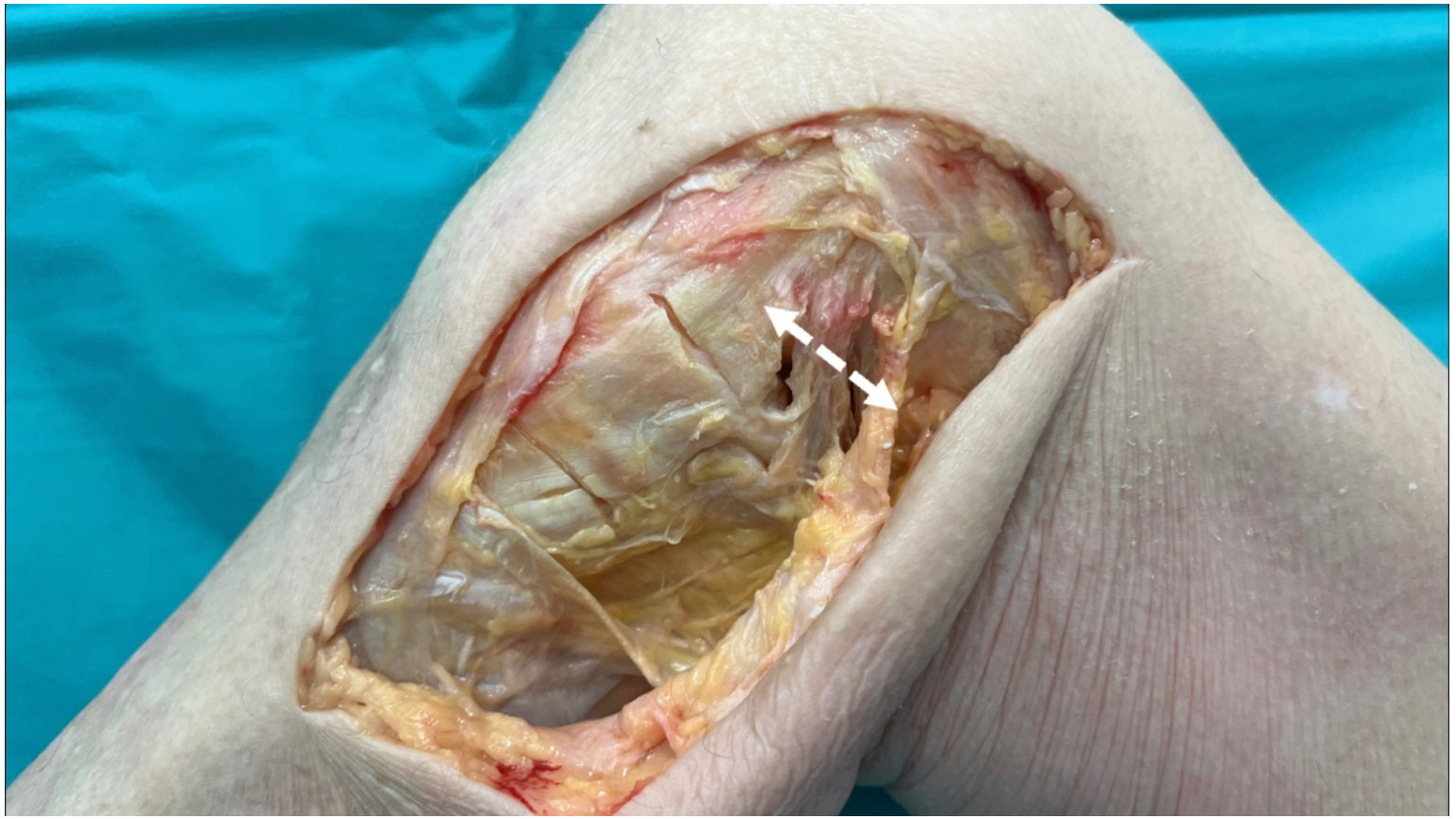
## sLCM +++++& dLCM




# Valgus control at 0°

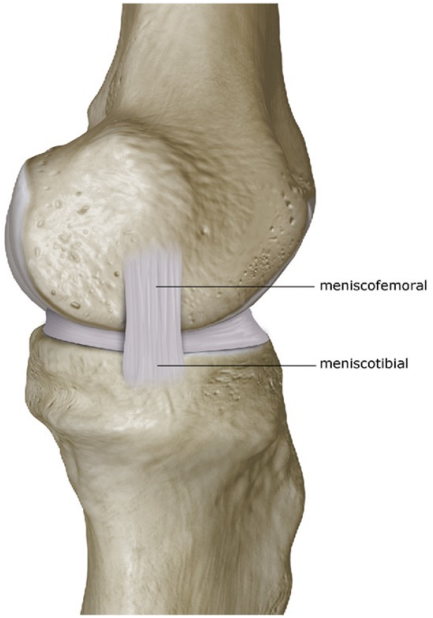
## POL

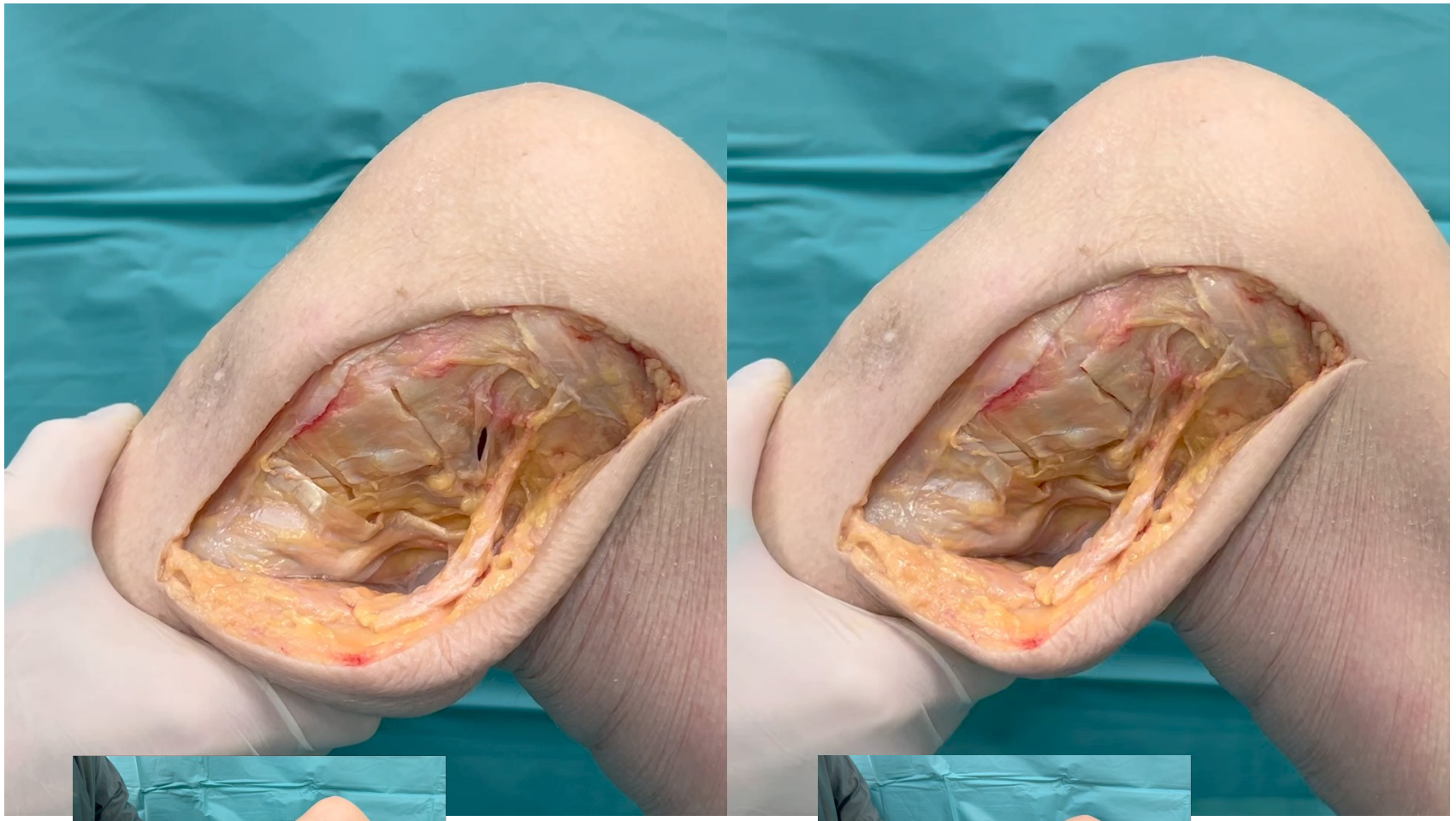


# Contrôle AMRI & Translation

## dLCM

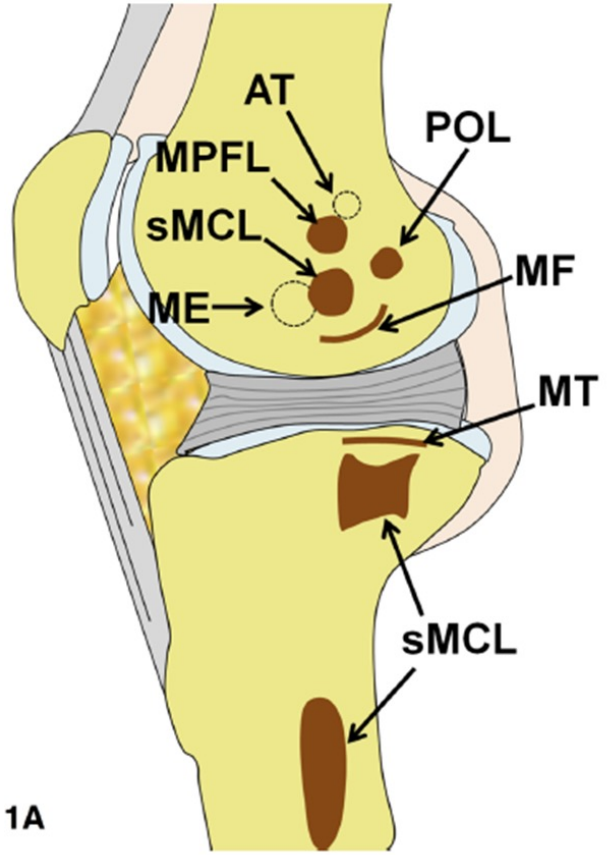


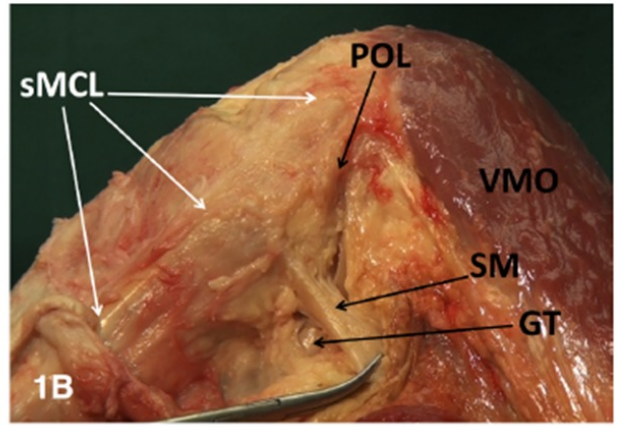



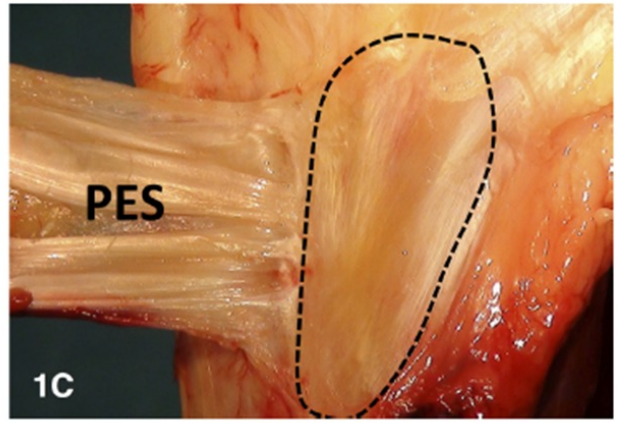
# RESPECT THE ANATOMY

Repair ( re-insertion)

Reconstruction (grafts)

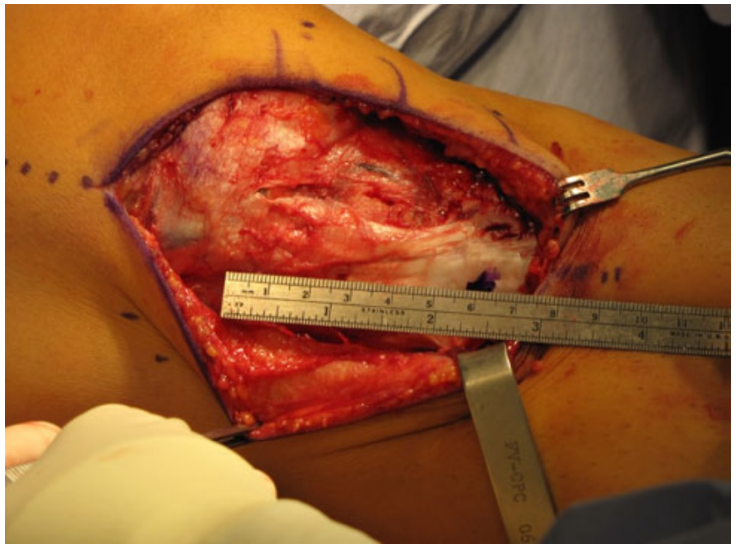


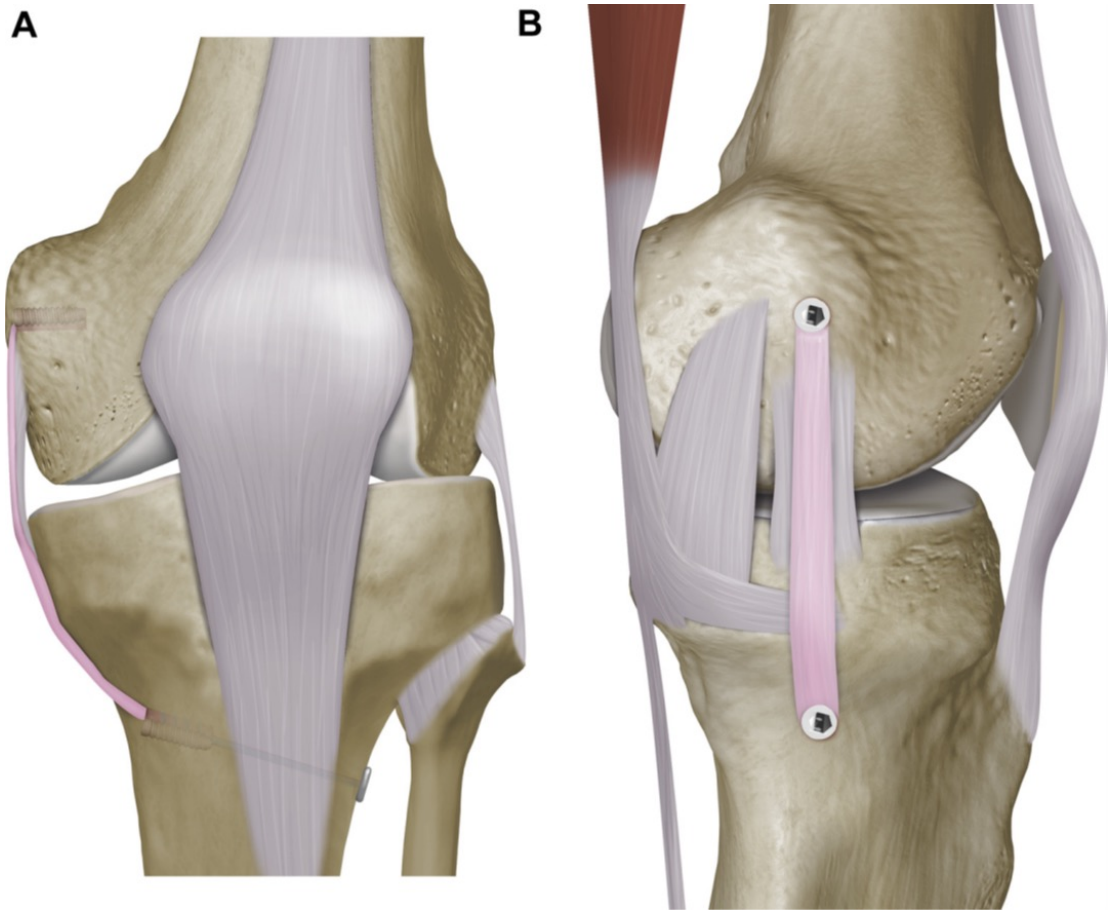



## sMCL

Tibial tunnel: 6cm bellow the joint line





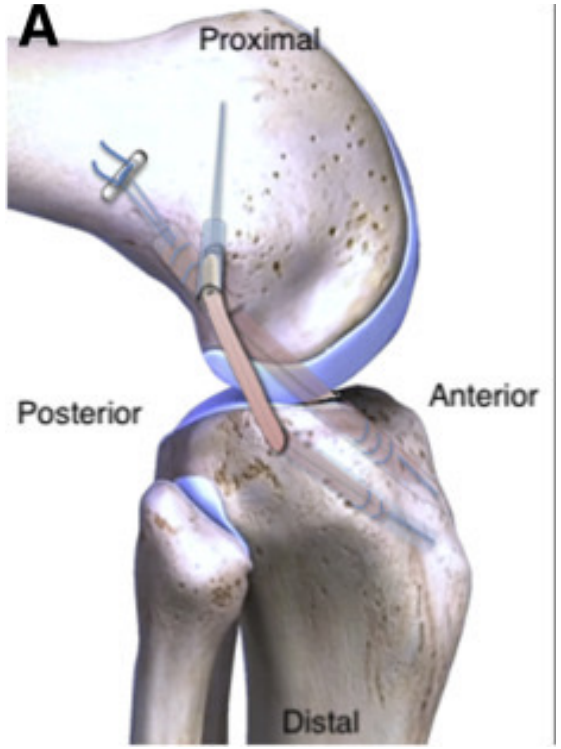
# dMCL

## Femoral tunnel

6 mm distal
5 mm posterior
// medial epicondyle

## Tibial tunnel:

8 mm bellow the joint line



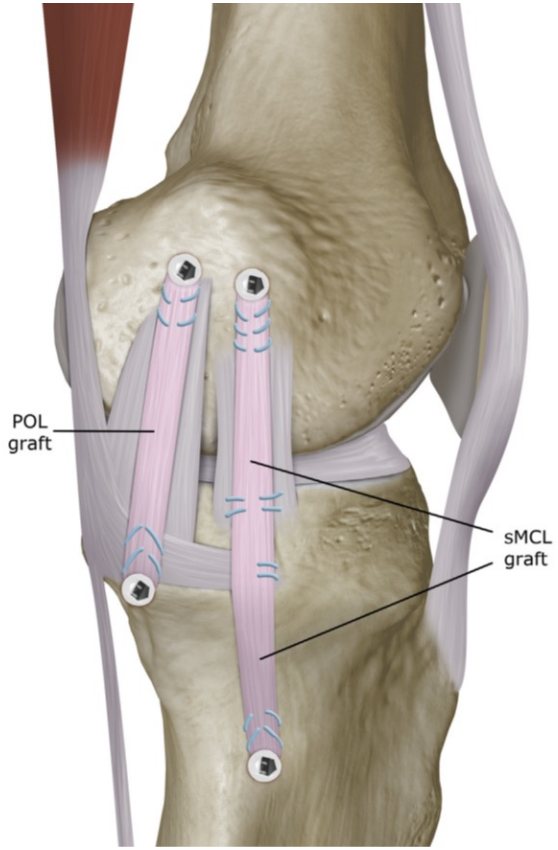


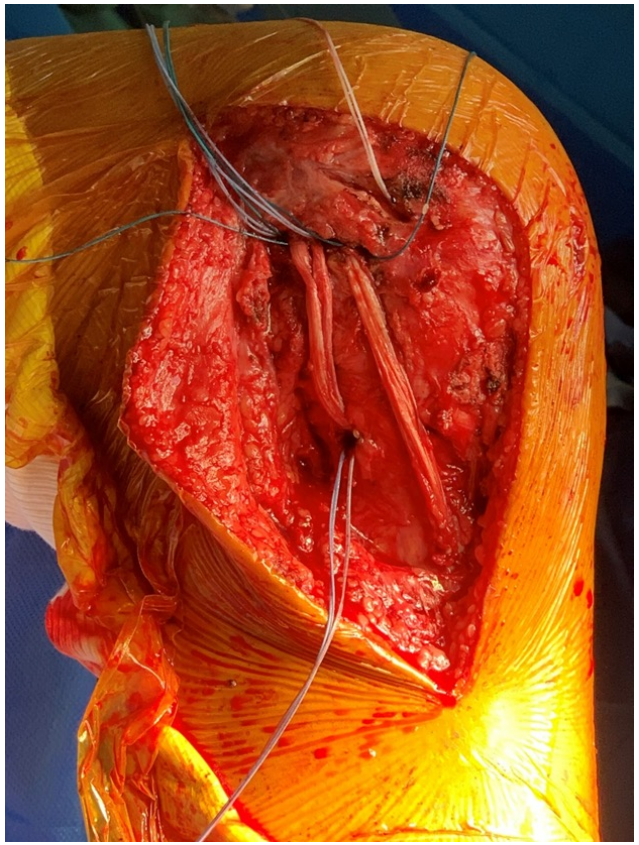
The Mirror Anterolateral Ligament: A Simple Technique to Reconstruct the Deep Medial Collateral Ligament Using the Gracilis Associated With a Four-Strand Semitendinosus for Anterior Cruciate Ligament Reconstruction

Jérémy Daxhelet, M.D., Nicolas Bouguennec, M.D., and Nicolas Graveleau, M.D.

# MCL+ POL

**Anatomic** +++
2 bundles
2 femoral tunnels



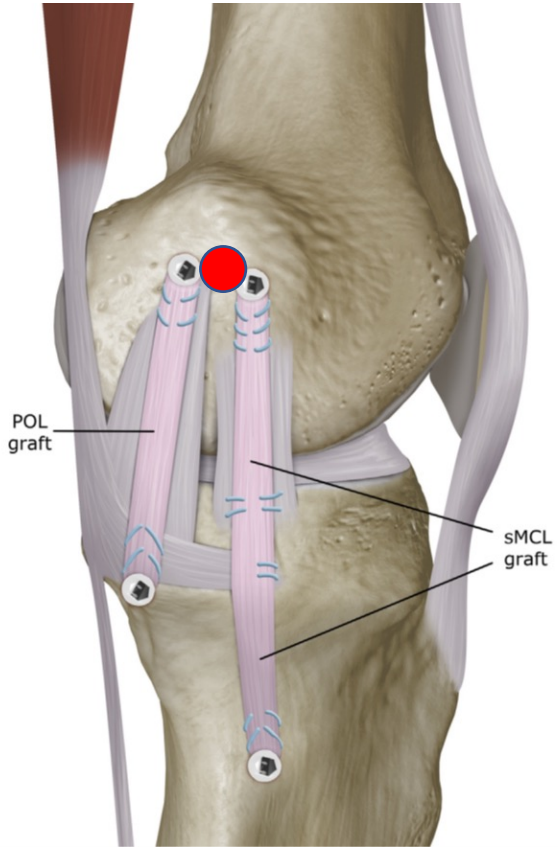



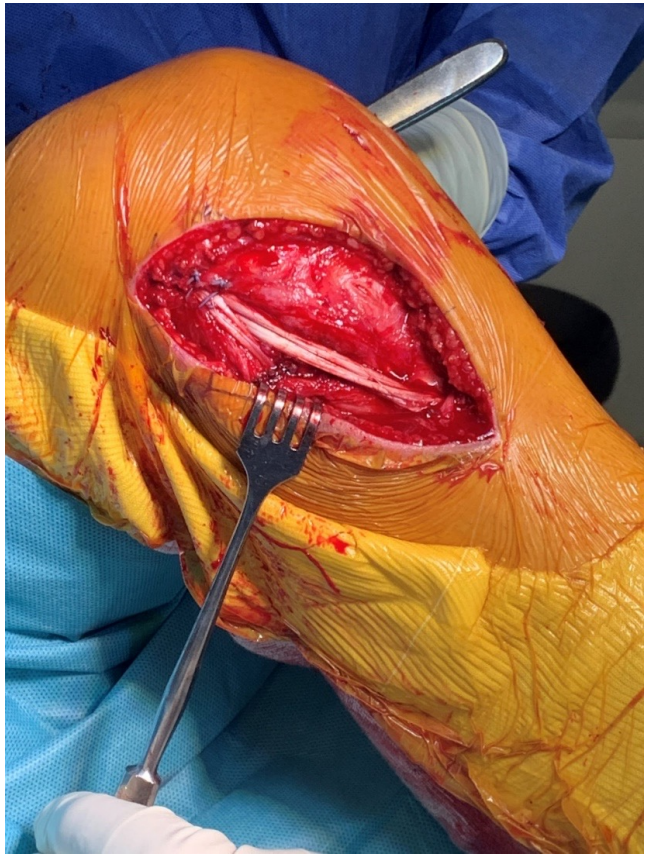
# MCL+ POL

## Non Anatomic

2 bundles
1 femoral tunnel

if:
- small patient
- associated PCL



# MCL+ POL

## SEQUENCES

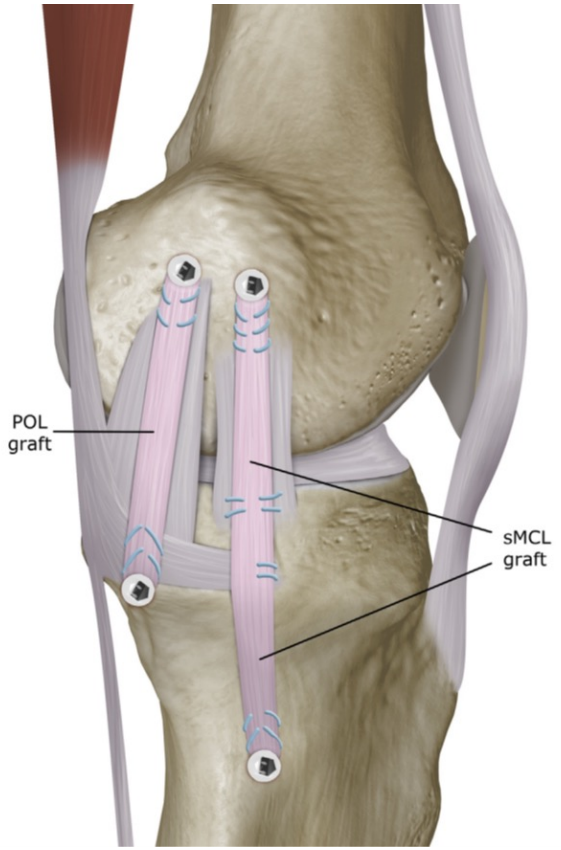
1-put K wires at insertions of MCL & POL

2- test anisometry with a suture

3- MCL has to be tight at 20-30° of flexion

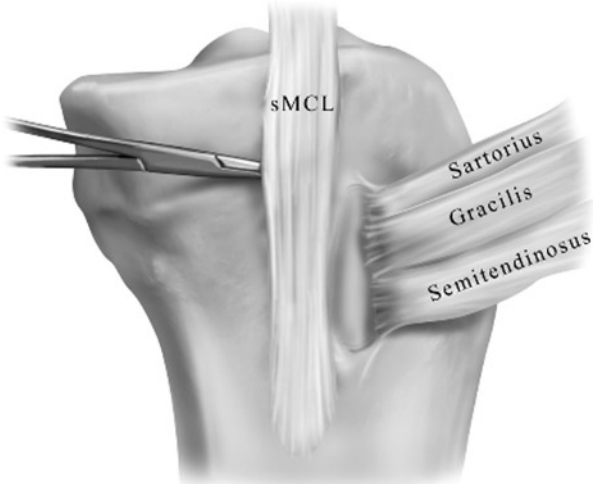
4- POL has to be tight in extension
& be relaxed in full flexion

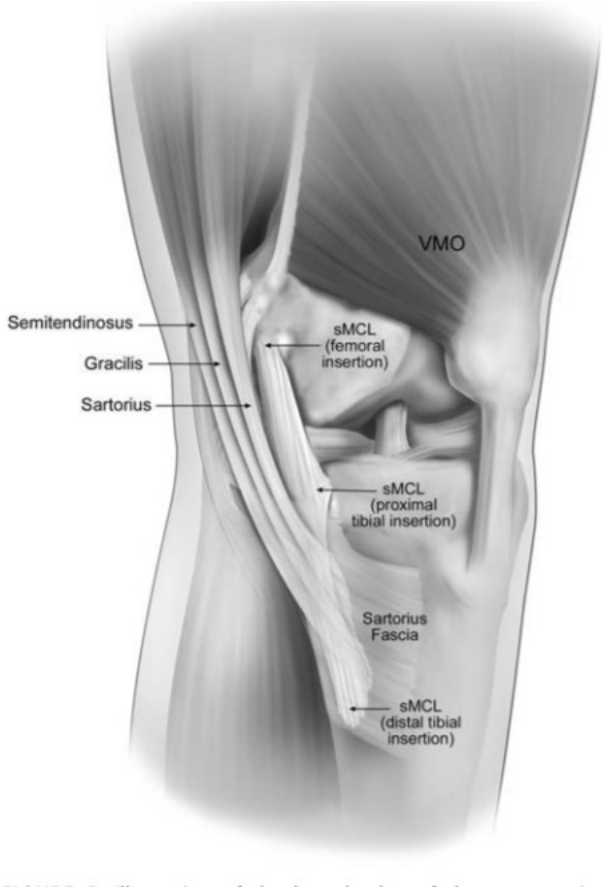
5- Full flexion has to checked



## GRAFT CHOICE

*Can we use the medial hamstrings (HS) as grafts in this setting ?*



# Contribution of the Medial Hamstrings to Valgus Stability of the Knee

Pierre-Henri Vermorel,*† MD, Rodolphe Testa,† PhD, Antonio Klasan,‡§ MD, PhD, EMBA, Sven E. Putnis,‖ MD, Rémi Philippot,† MD, PhD, Bertrand Sonnery-Cottet,¶ MD, PhD, and Thomas Neri,†# MD, PhD
*Investigation performed at the Department of Orthopaedic Surgery, University Hospital Centre of Saint-Étienne, Saint-Étienne, France*

Stabilizing effect of HS in valgus
- ST > Gra
- is gretter in the early range of knee flexion
- Small <1° if only MCL
- Greater >1.5° if MCL +POL

**CONCLUSION**

Medial HS tendon = **secondary stabilizers** of the knee in valgus, and this is even **more important when the medial side is severely affected** (MCL +POL/PMC damage)

**IN PRACTICE**

**MLKI with MCL+POL**

**OR**

**Choose another graft**

EFFECTIVE MCL+POL reconstruction or repair
**Then Use single HS**

## ACUTE SETTING

ACL tear
+ medial laxity

Valgus laxity only at 30° (grade2)

= ACL+MCL

Hinge brace 45 days

No more Valgus laxity
=ACL

ACL reconstruction

still Valgus laxity
=ACL+MCL

ACL reconstruction
+sMCL repair/reconstruction
Or dMCL reconstruction

Valgus laxity at 0° & 30° (grade 3)

= ACL+MCL+POL

no healing of medial structures

ACL reconstruction
+repair MCL & POL if possible (otherwise reconstruction)

## CHRONIC SETTING

ACL tear
+ medial laxity

Valgus laxity only at 30° (grade 2)

= ACL+MCL

ACL reconstruction
+sMCL reconstruction
Or dMCL reconstruction

Valgus laxity at 0° & 30° (grade 3)

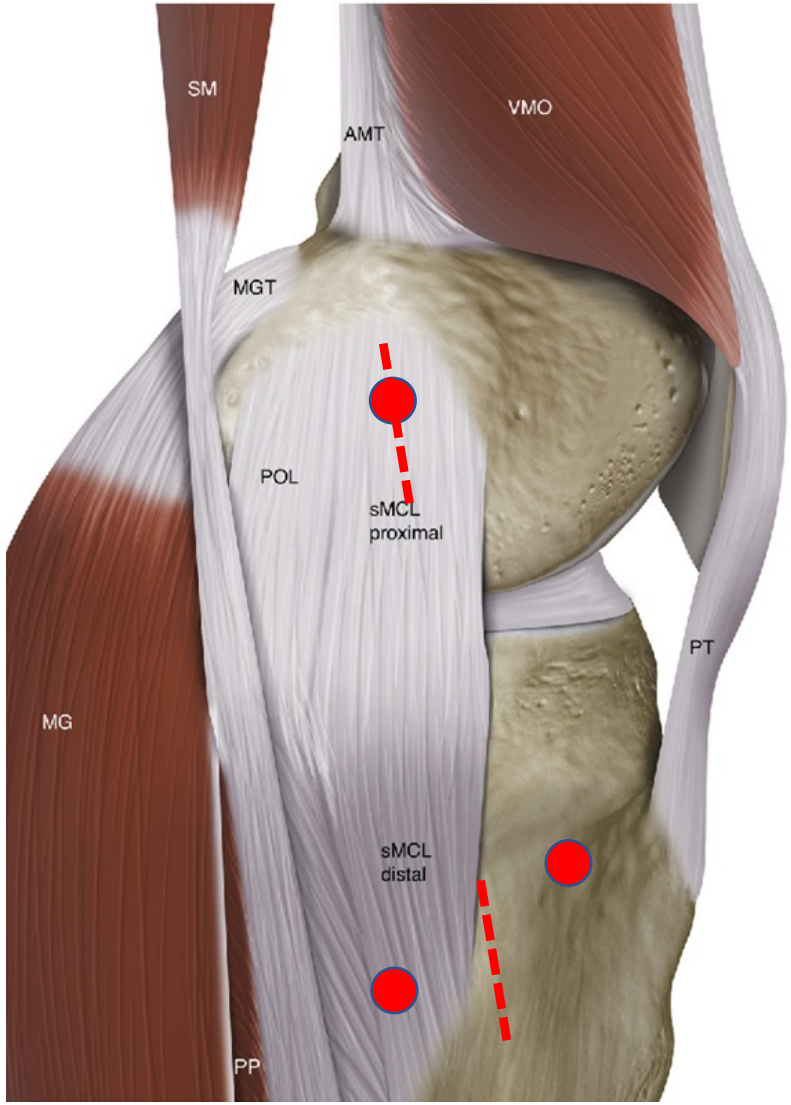
= ACL+MCL+POL

ACL reconstruction
+ MCL reconstruction
+ POL reconstruction

## IN PRACTICE: ACL+ MCL

Percutaneous
1 tibial incisions
- ACL+sMCL

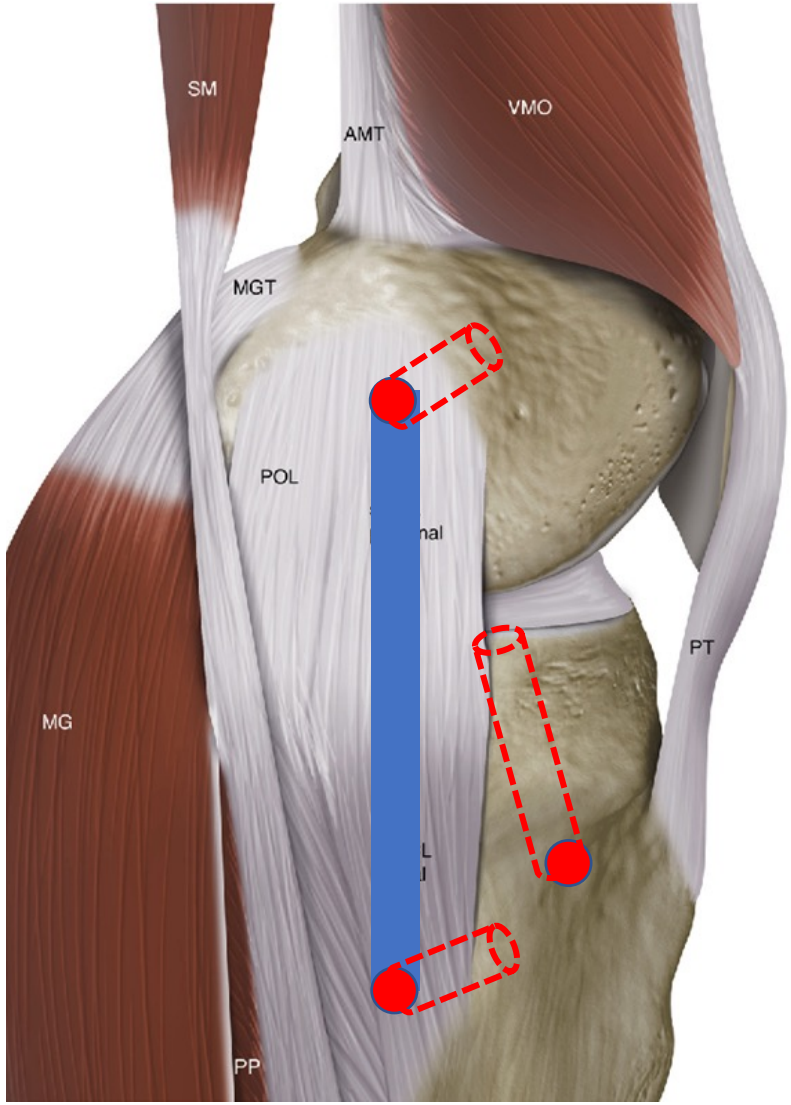
1 femoral incision
sMCL



## IN PRACTICE: ACL+ MCL

**ACL**:
- quad tendon or DT4

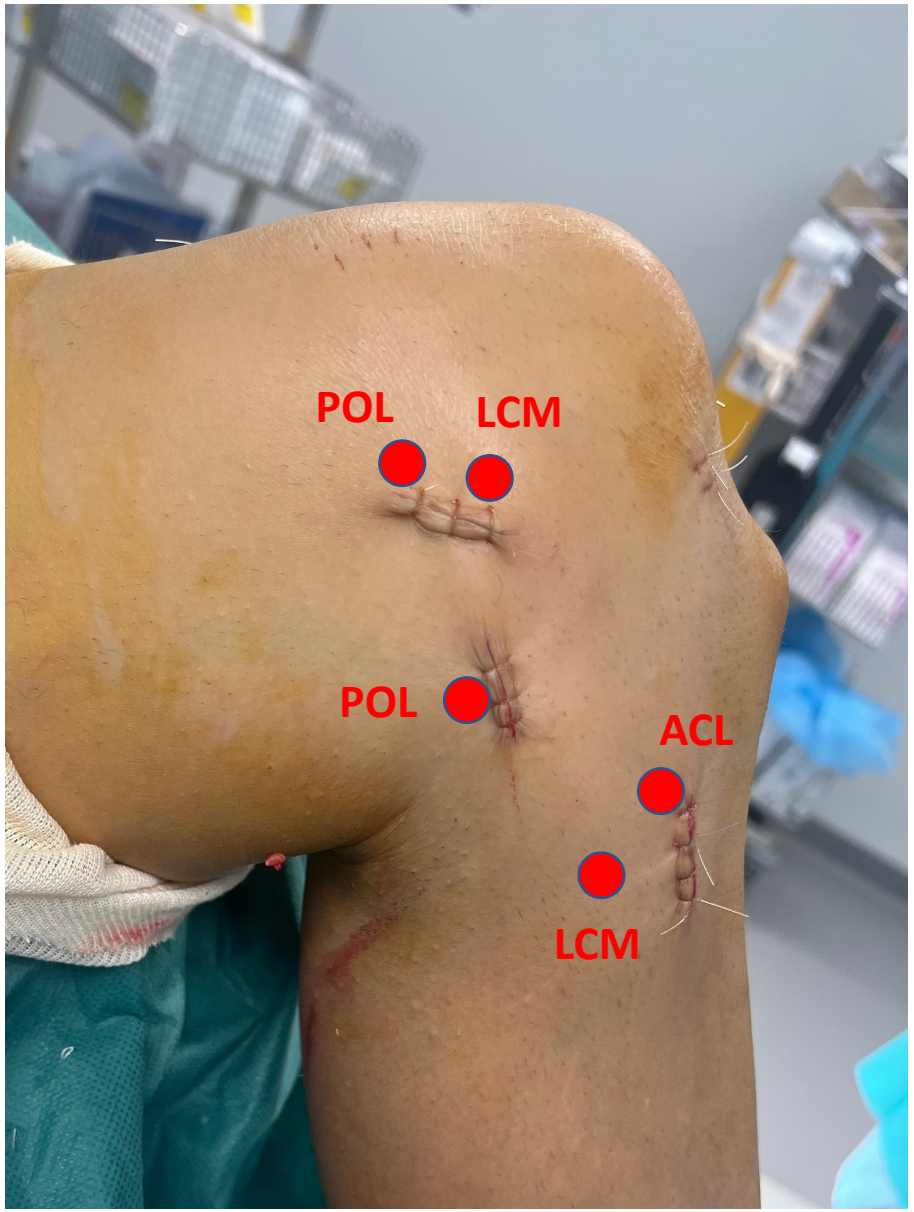
**MCL**
- sMCL
- Allograft (anterior tibialis++)
- Fixation at 30°
- 2 tunnels+ 2 screws



## IN PRACTICE: ACL+ MCL+ POL

**Percutaneous**
**2 tibial incisions**
- ACL+sMCL (2 tunnels)
- POL (1 tunnel)

**1femoral incision**
**2 femoral tunnels**
- sMCL
- POL

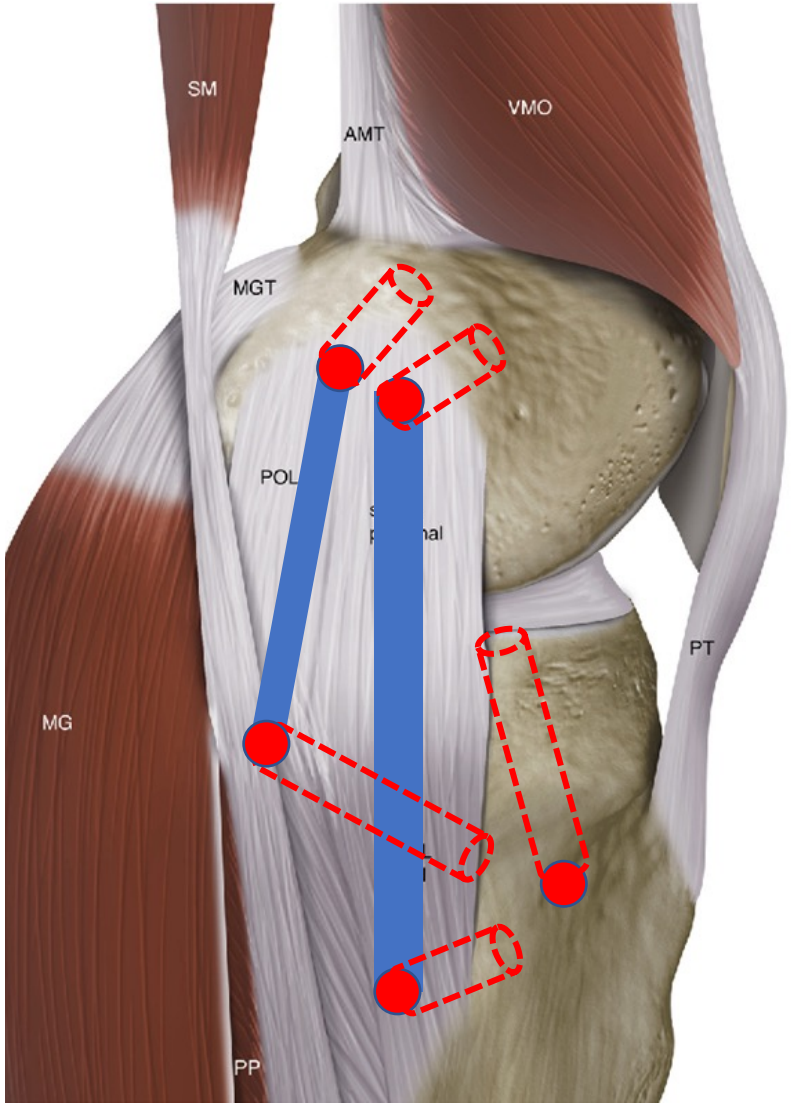


## IN PRACTICE: ACL+ MCL+POL

**ACL**:
- quad tendon or DT4

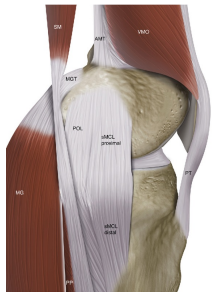
**MCL**
- sMCL
- Allograft (anterior tibialis++)
- Fixation at 30°
- 2 tunnels+ 2 screws

**POL**
- Allograft
- Fixation at 0°
- 2 tunnels + 2 screws



# CONCLUSION

## ANATOMY

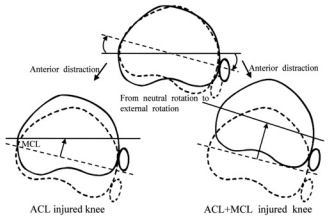


**sMCL**

**dMCL**

**POL**

## BIOMECA



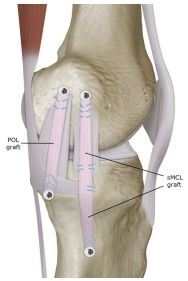

-**Valgus**: sMCL &d MCL: 30°

POL: 0°

-**Rotation (AMRI)**

**&Translation**: dMCL

## SURGERY




**sMCL:** tibia 6cm bellow joitn line
tight at 30° flexion

**dMCL:** reverse ALL (miror)

**POL:** post med epicondyle
SM tendon
tight 0° flexion

# CONCLUSION

**ACUTE ≠ CHRONIC setting**

- **Acute**= isolated MCL can **heal**, **repair** is possible
- **Chronic**= no healing, **reconstruction**

**MCL & POL**

- Laxity only at **30°** (grade 2) : **MCL**
- Laxity at **0** and **30°**: **MCL +POL** (grade 3) -> go straight to surgery

**GRAFTS**:

**ACL**: only **one HS** or **other grafts**

**MCL/POL**: **allograft**


*Thank you for your attention*