

# Posterior Arthroscopic Portals

*in PCL reconstruction*

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*Knee surgeons*

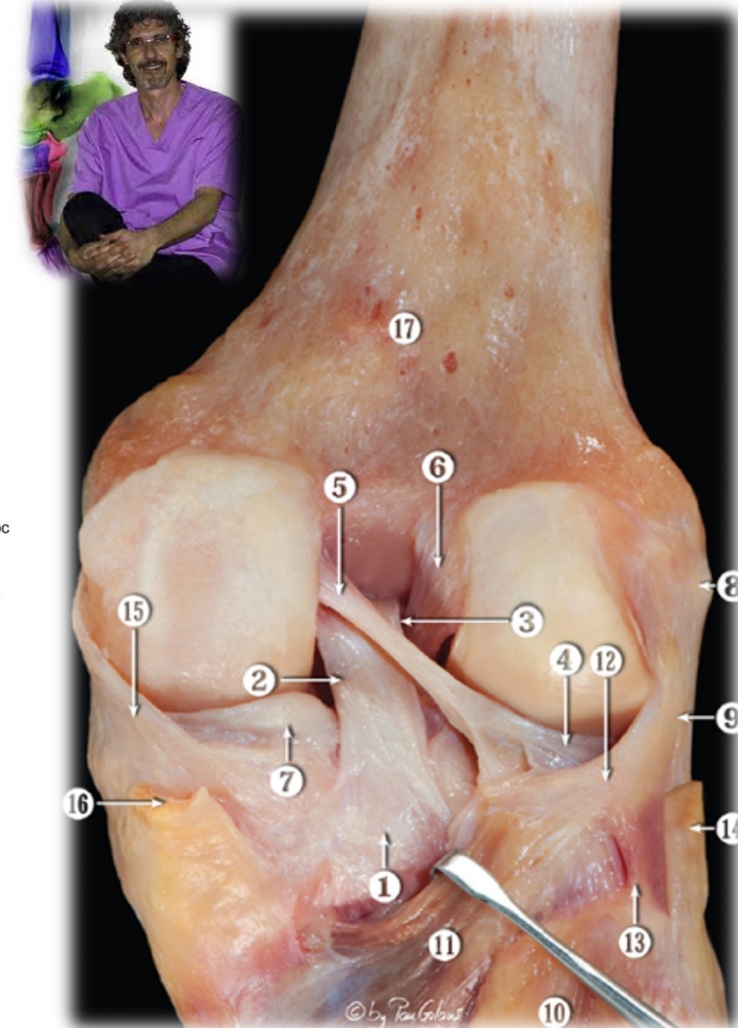
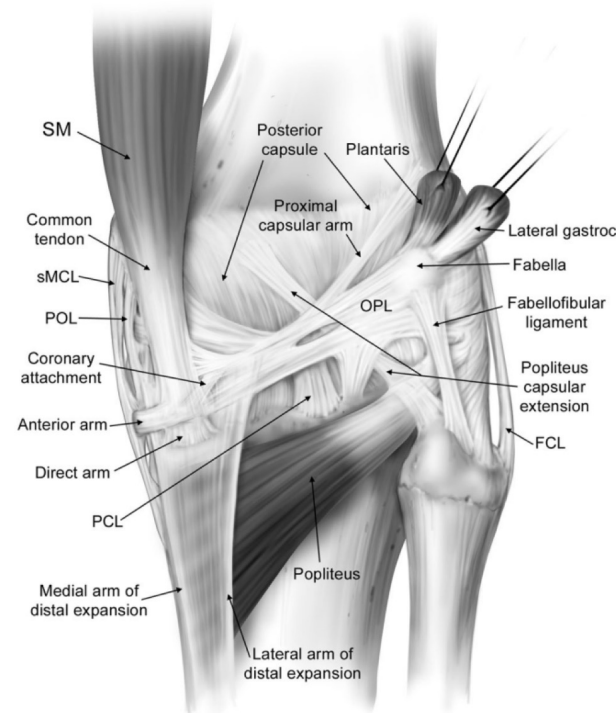
Clinique du Sport de Bordeaux-Mérignac



**Val d'Isère Advanced Course Knee Course**  
*January 2025*

Posterior arthroscopic approach of the knee doesn't look « natural »

- Postero Medial
- Postero lateral
- Central
  - LCP
  - **neuro-vascular axis +++**



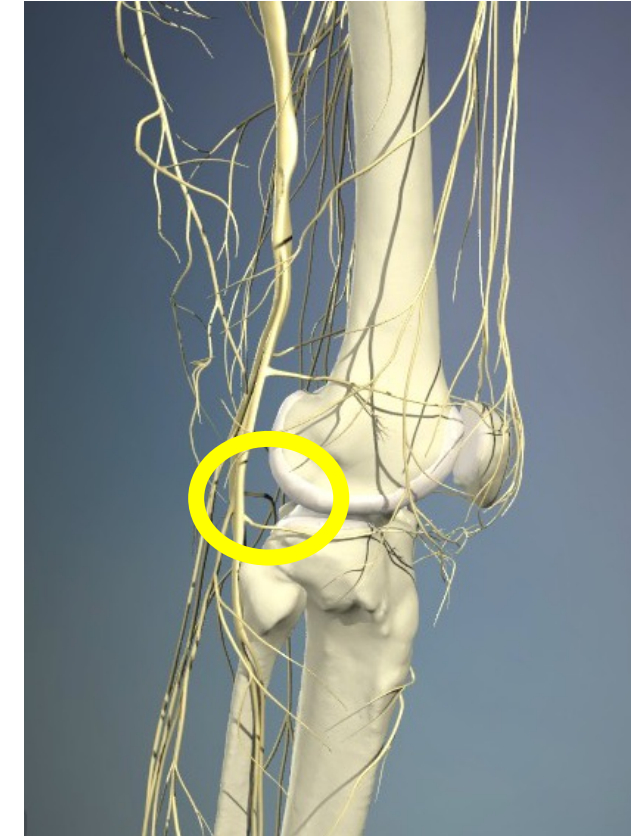
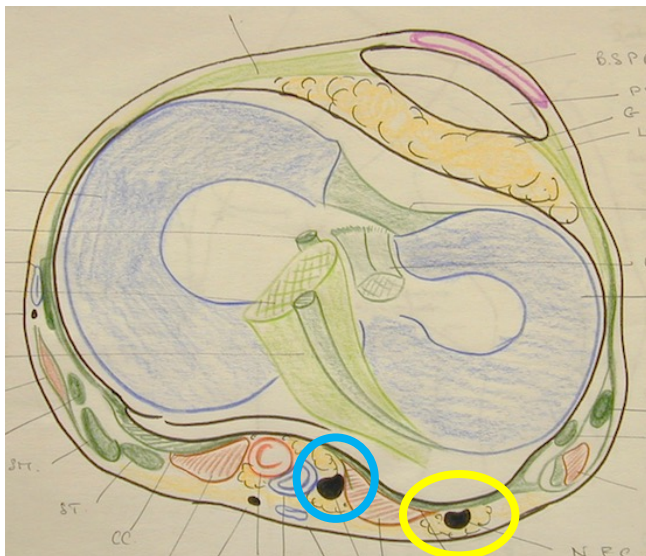
Courtesy of Pau Golanó



# Avoid nerves damages

Understanding of the anatomy about the knee is critical to avoid iatrogenic neurovascular Injury:

- Lateral repair
  - peroneal nerve
- Posterior root of the lateral meniscus, PCL reconstruction
  - tibial nerve



*F. W Gwathmey, R Golish, D R. Diduch Clin: Complications in Brief. Meniscus Repair. Orthop Relat Res (2012) 470:2059–2066*

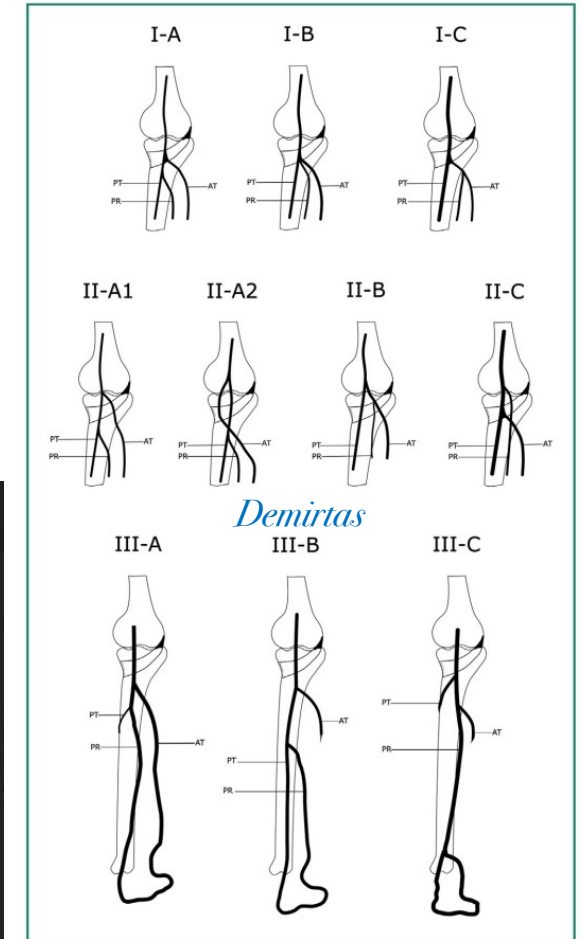
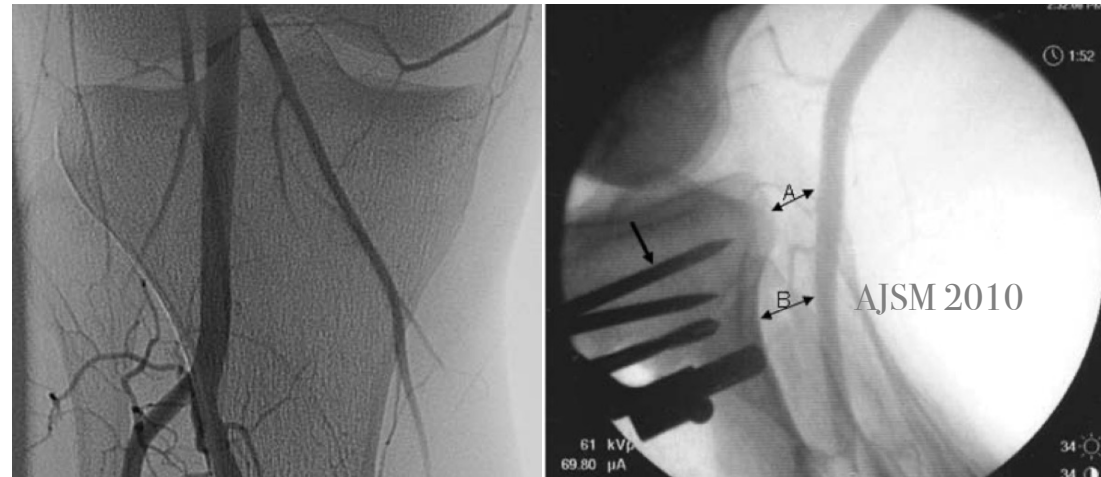
# Avoid popliteal artery violation

Average distance from popliteal artery – posterior tibial cortex 5 mm distal to the JL =  $7.7 \pm 3.8$  mm vs.  $1.6 \pm 1.3$  mm  
MAXIMIZED knee flexed @  $90^\circ$  (Kim & Harner)

Popliteal artery branches are not shown but anterior

Fluoroscopy +++

Kim & Harner



**Figure 1.** Diagrams show classification of popliteal artery branching variations. AT: anterior tibial artery; PT: posterior tibial artery; PR: peroneal artery.

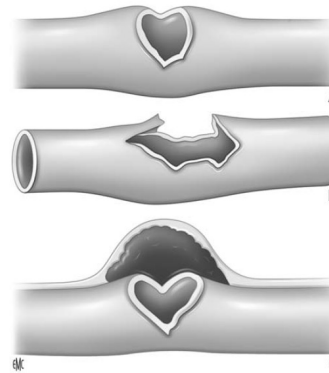
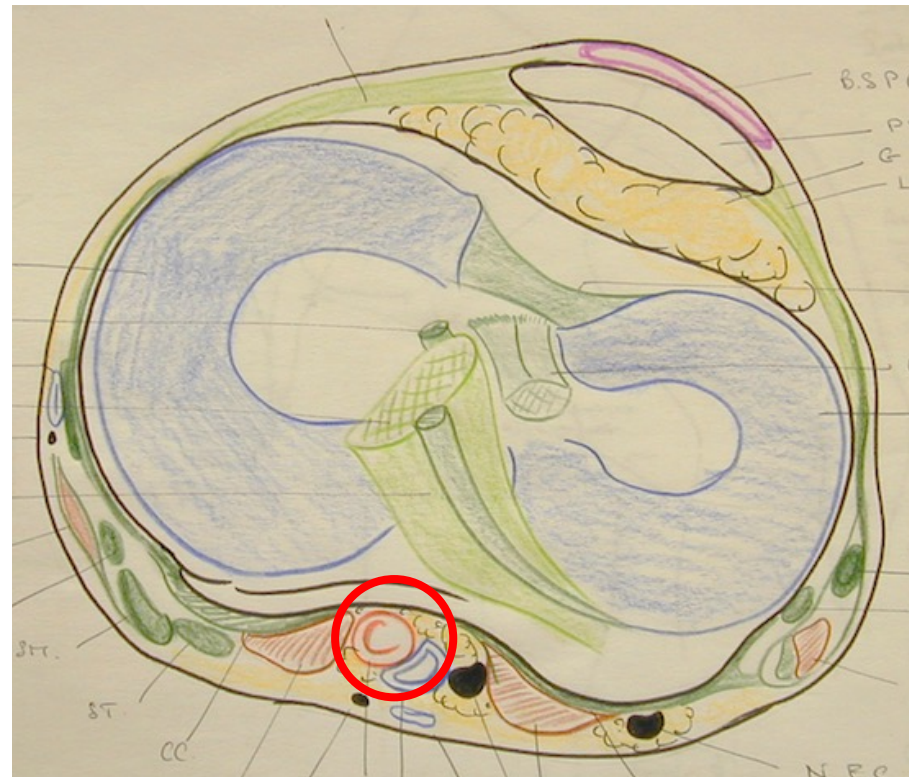
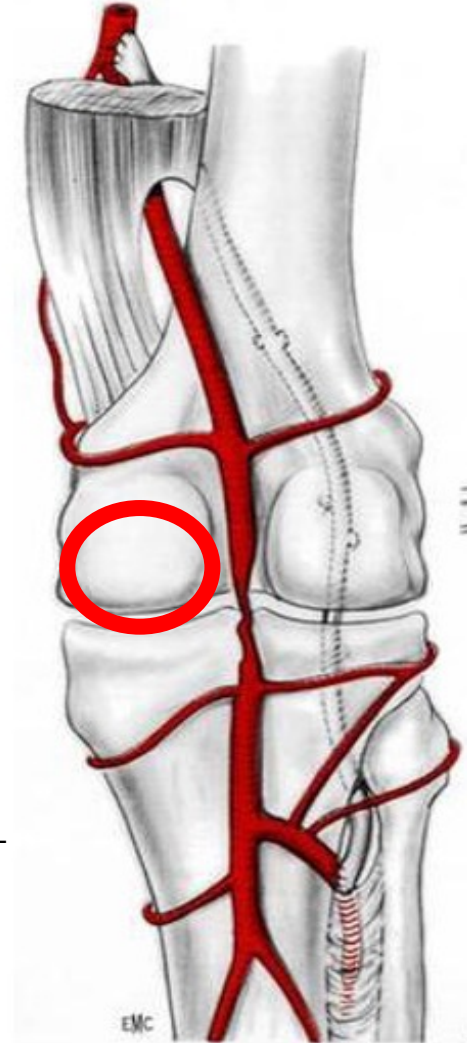


# Potential vascular risks

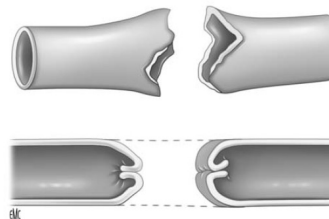
understanding of the anatomy about the knee is critical to avoid iatrogenic neurovascular injury:

Posterior root of the lateral meniscus, PCL reconstruction

- popliteal vessels



**Figure 1.**  
A. Plaie artérielle latérale nette.  
B. Plaie latérale irrégulière à bords contus.  
C. Plaie latérale associée à un faux anévrisme.



**Figure 2.** Rupture artérielle complète à bords contus et rupture artérielle « sèche » par rétraction des berges.

**Complications vasculaires en orthopédie  
et traumatologie**

A. Bahni, E. Kieffer

THE DIFFERENT TYPES OF  
VASCULAR LESIONS FOR POPLITEAL  
ARTERY...

DELEE J.C. — Complications of arthroscopy  
and arthroscopic surgery : results of a  
national survey. Arthroscopy , 1985, 1 , 214-220

BUT...



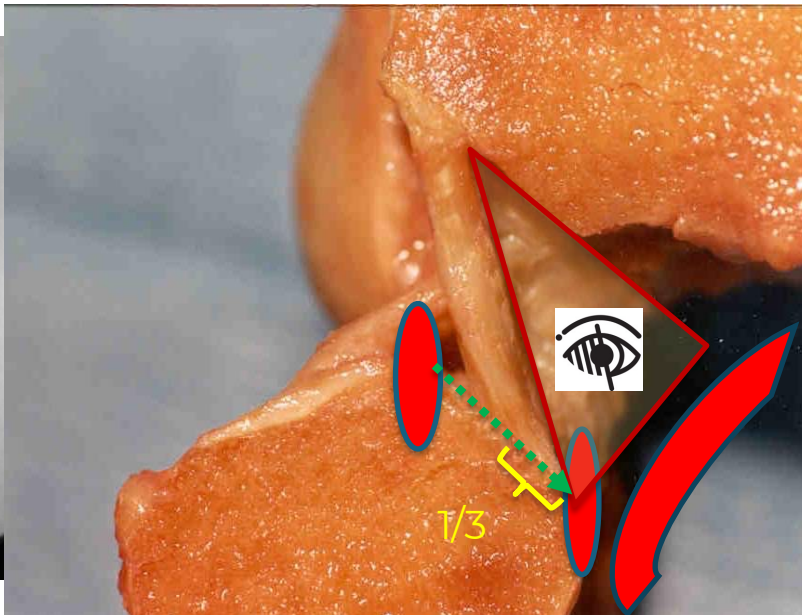
# PCL reconstruction : anterior portals

## « Blind » PCL tibial tunnel drilling

Try to keep the remnants  
**BUT** the aim is to detach / remove tibial insertion of PCL



Laprade 2015



accessory PM portal



# PCL reconstruction : anterior portals

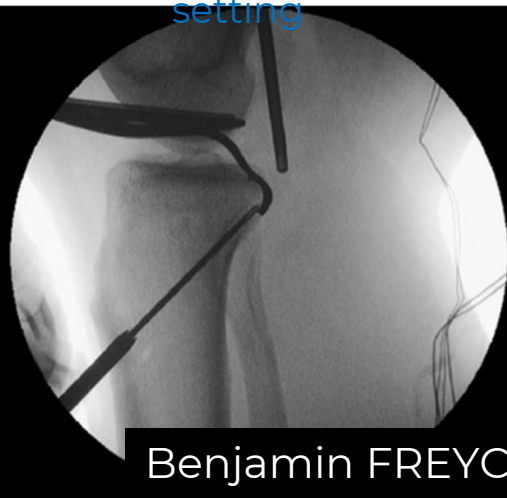
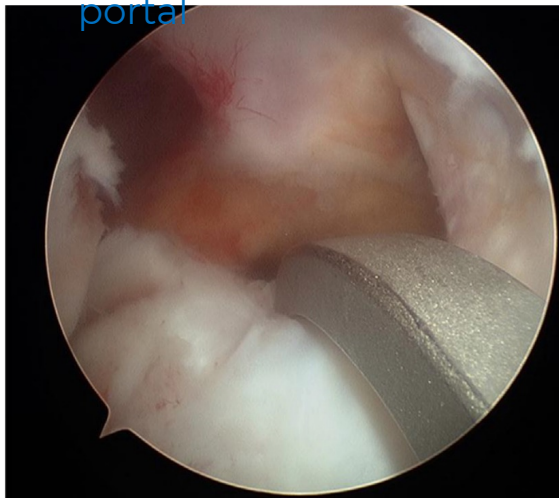
## « Blind » PCL tibial tunnel drilling



Accessory PM  
portal



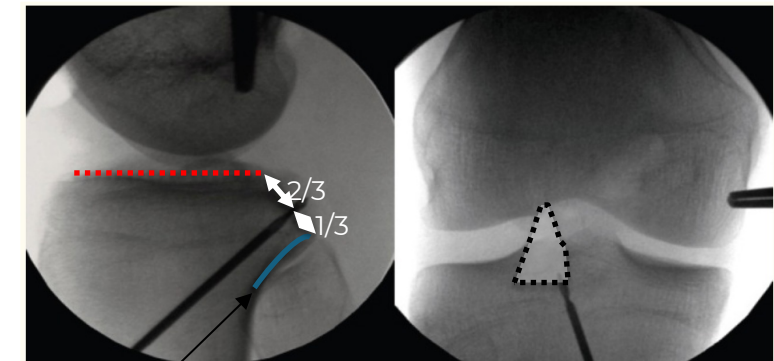
Fluoroscopy  
setting



Benjamin FREYCHET

**Fig. 1.** Intraoperative views of PCL guide placement during all-inside PCLR. Intra-articular view (*left*). Peroperative X-ray view (*right*).

- Dedicated pin aimer / tibial guide
- Tissue damage on the PCL remnant : tibial insertion
- Systematic fluoroscopy use
- No direct visualisation of Tibial PCL insertion
- **Medial-lateral placement ?**



Pin end = parallele to the posterior cortical wall  
Pin end = 2 mm above joint line



# Posterior approaches / portals PCL tibia drilling under direct visualization

Option 2 : the « *gangnam* » style

Anterior AM + AL standard portals  
+ postérieur PM & PL portals + trans-septal access

Keep as much fibers as you can !

ANATOMICAL ARTHROSCOPIC LANDMARKS

+/- systematic fluroscopy

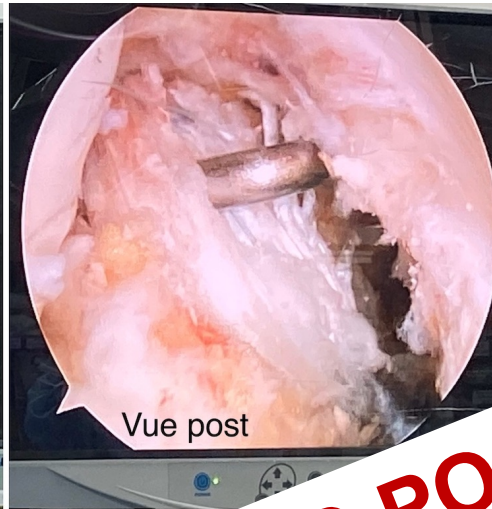


1. Ahn JH, Chung YS, Oh I (2003) Arthroscopic posterior cruciate ligament reconstruction using the posterior trans-septal portal. Arthroscopy 19:101–107
2. Ahn JH, Ha CW (2000) Posterior trans-septal portal for arthroscopic surgery of the knee joint. Arthroscopy 16:774–779
3. Ahn JH, Lee SH, Jung HJ, Koo KH, Kim SH (2010) The relationship of neural structures to arthroscopic posterior portals according to knee positioning. Knee Surg Sports Traumatol Arthrosc doi:[10.1007/s00167-010-1326-7](https://doi.org/10.1007/s00167-010-1326-7)



# PCL reconstruction preserving the remnant

## The corean experience – 2019 + 2024



C. Kajetanek, N. Graveleau, Pr Yoon, T. Gicquel



**YOU NEED POSTERIOR APPROACH**



Pr Dae-Hee Lee





# Approach & arthroscopic identifications

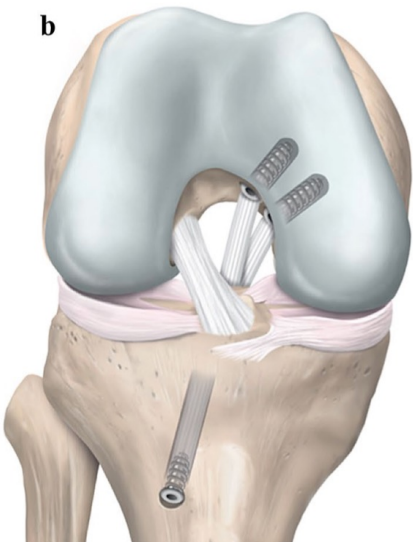
PCL femoral insertion :

- anterior
- large
- MF ligaments

Tibial PCL insertion :

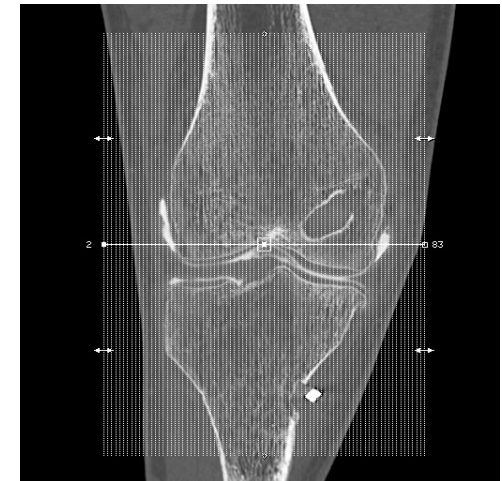
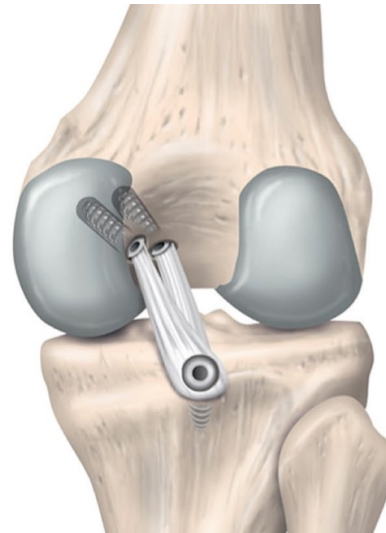
- posterior
- deep and low

b



*Winkler & Musahl*

KSSTA 2021



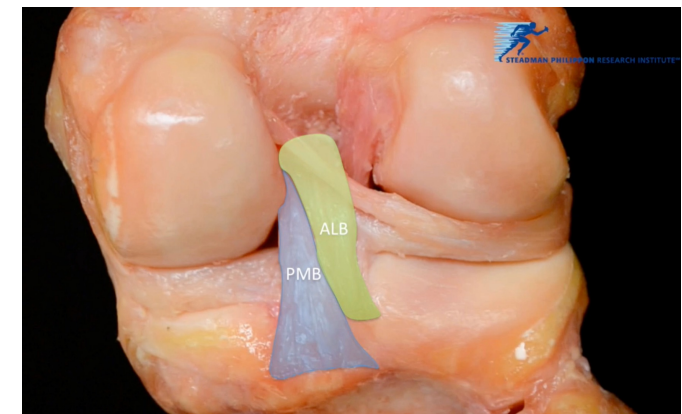
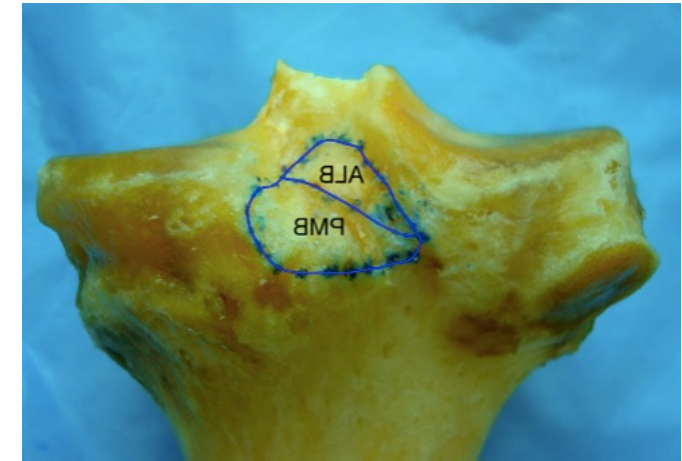
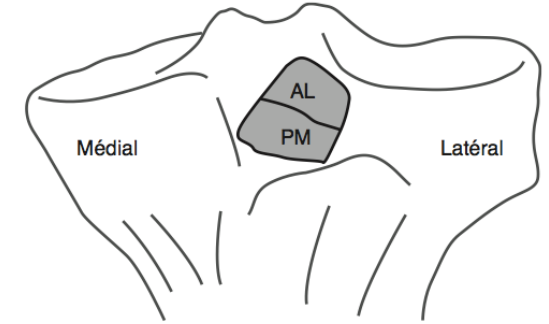
# Access to posterior TIBIAL insertion

Access to the anatomic insertion of PCL:

- 1,5 cm below the JL
- 7-10 mm posterior fibers of ACL

Try to convince you : it is possible !

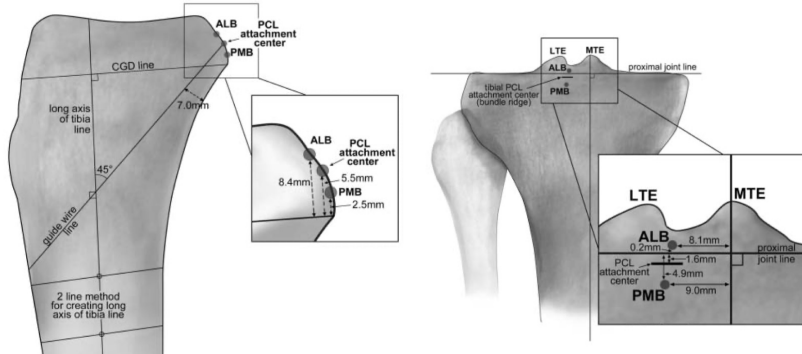
PM & PL NECESSARY to ANATOMIC tibial tunnel  
PCL positioning



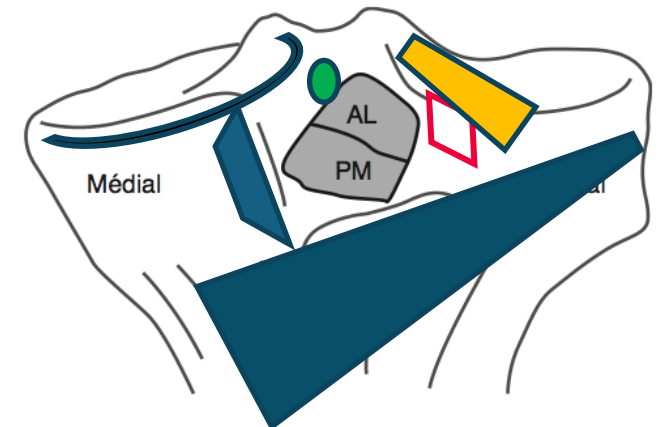
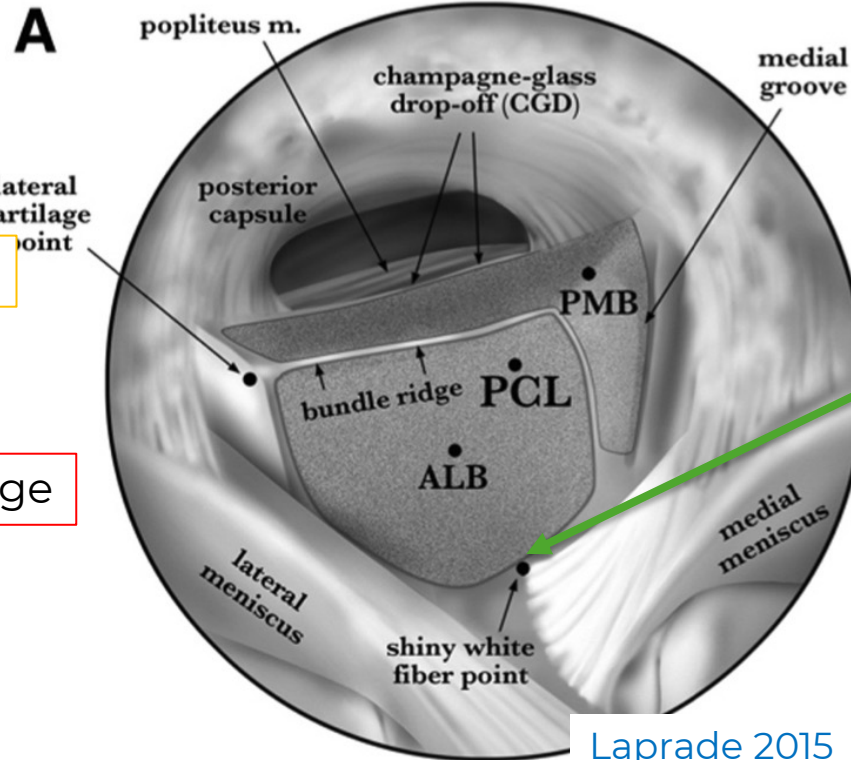
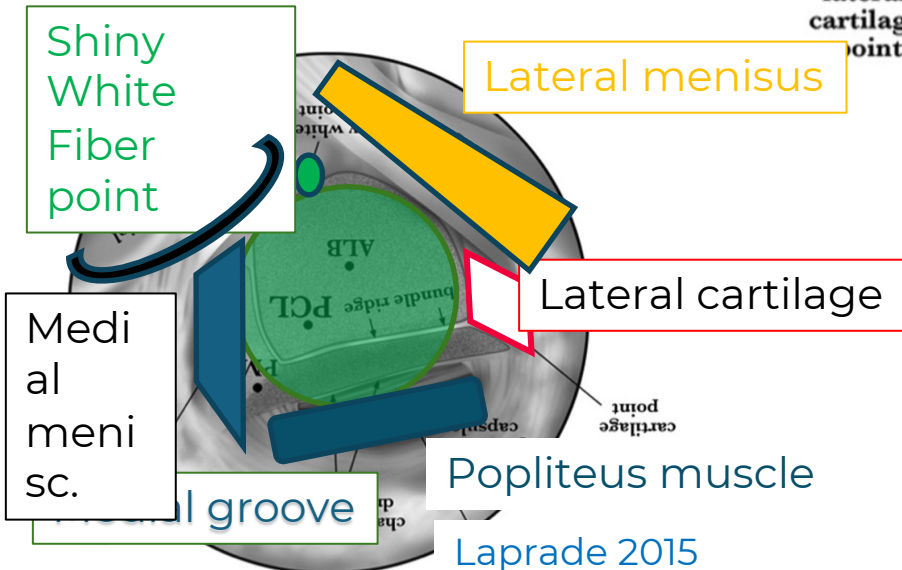
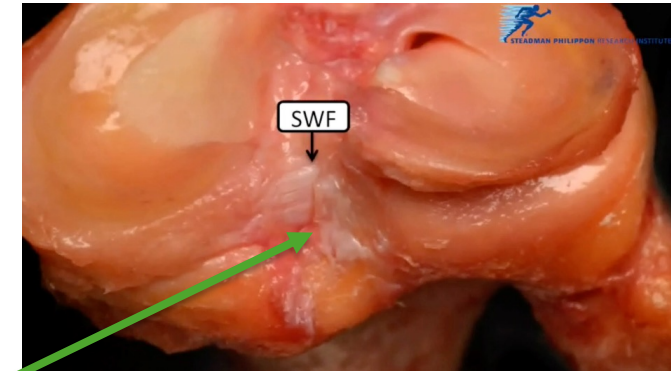


# PCL tibial insertion

Anderson 2012



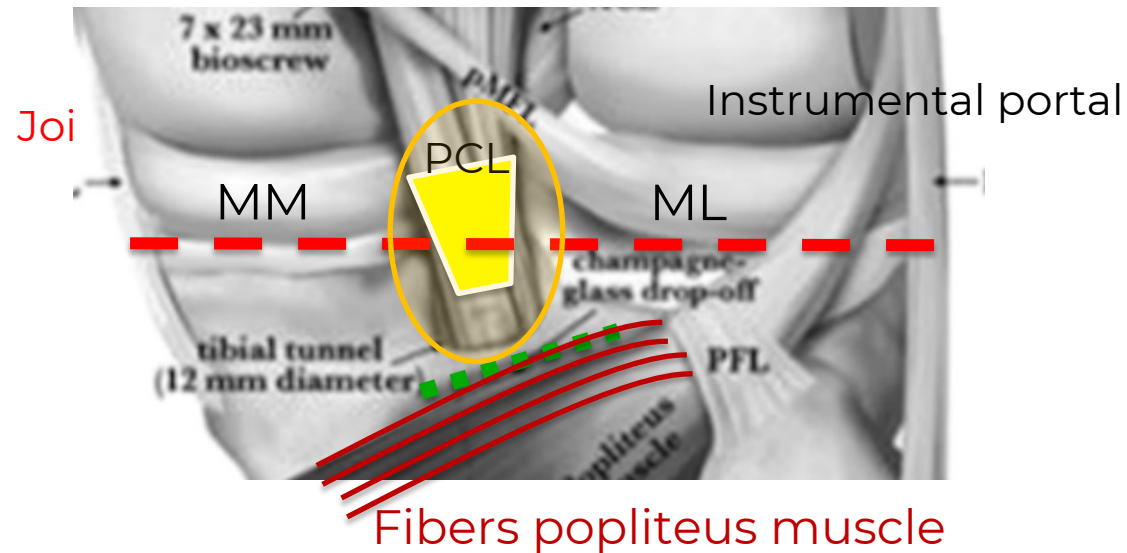
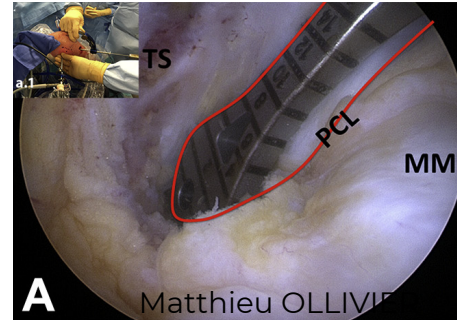
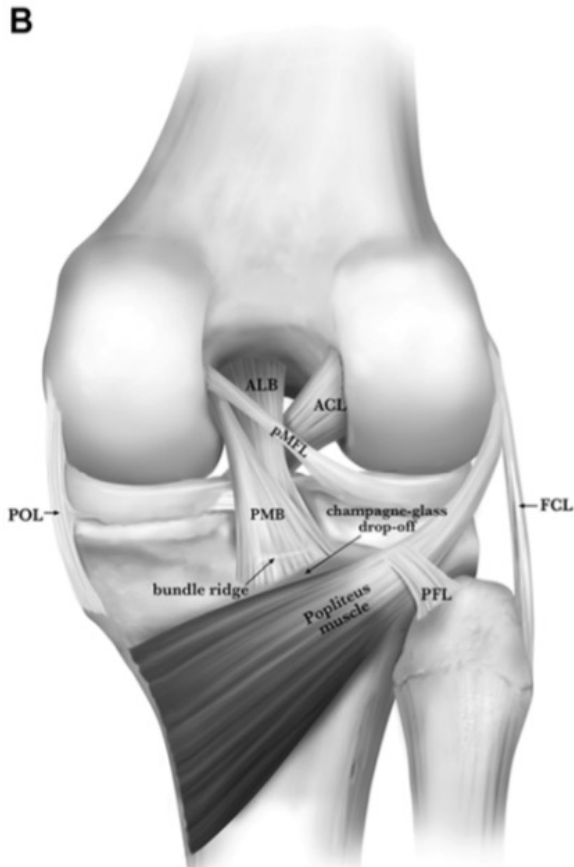
Shiny White Fiber point



Laprade 2015

Laprade 2015

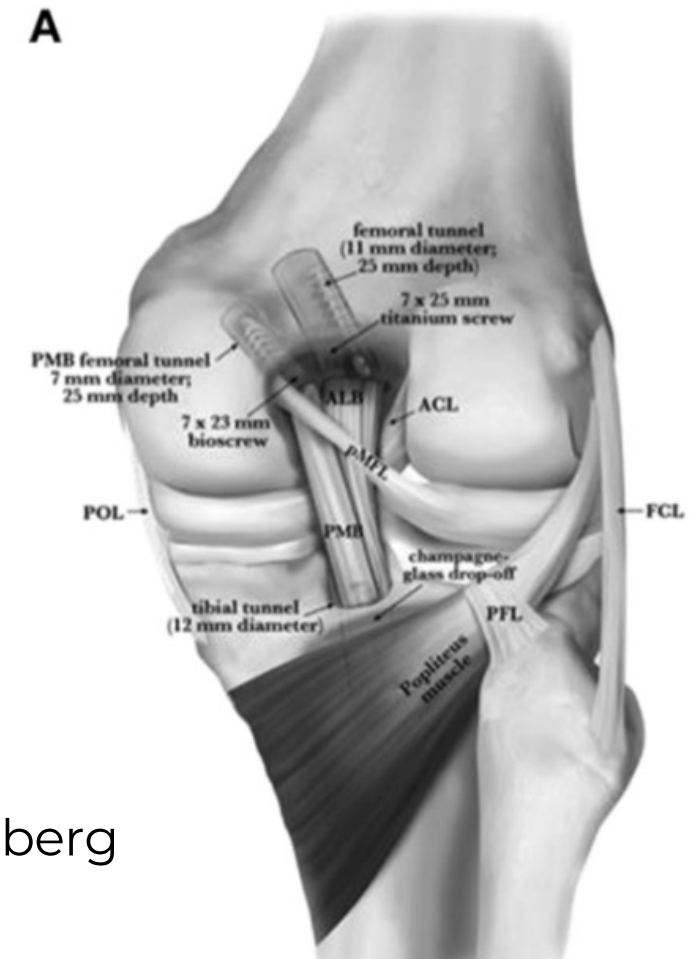
# Tibial tunnel positionning Under direct arthroscopic vizualisation



Sup<sup>R</sup> : Joint-line & cartilage & MF-Lig Wrisberg

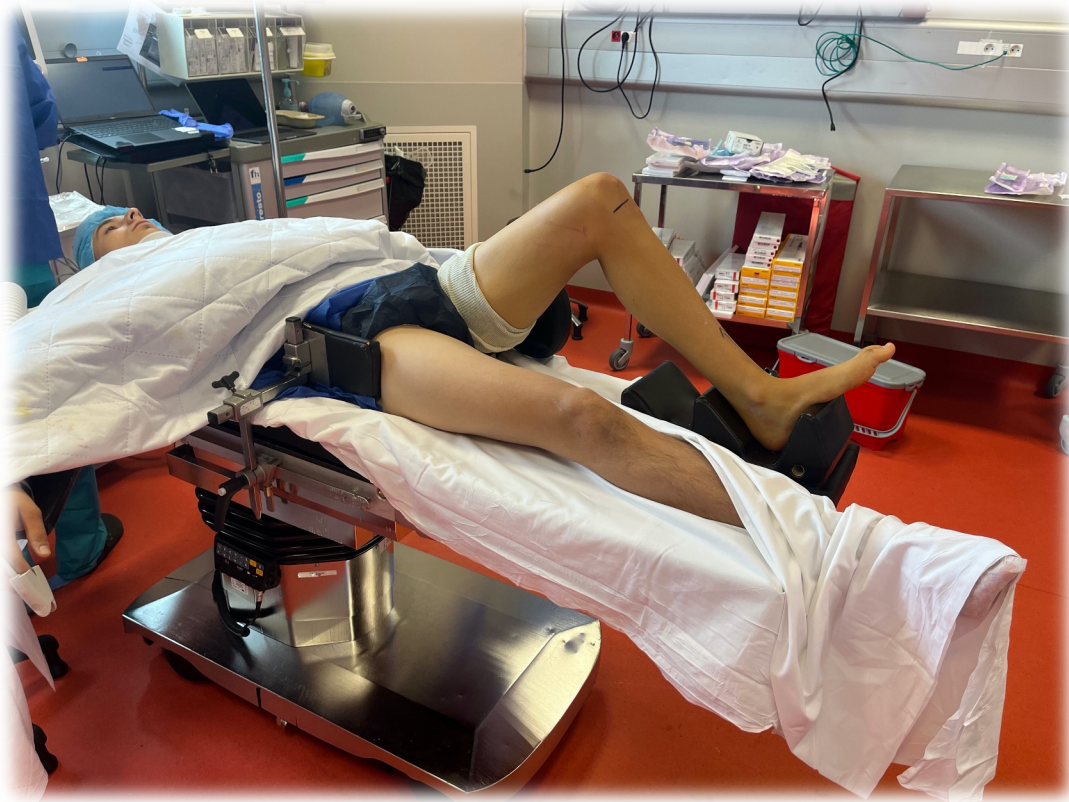
Inf<sup>R</sup> : Capsule and Popl.muscle fibers

Med-Lat : retrospinal fossea of the tibia





Anesthésia : GA if possible



## Settings

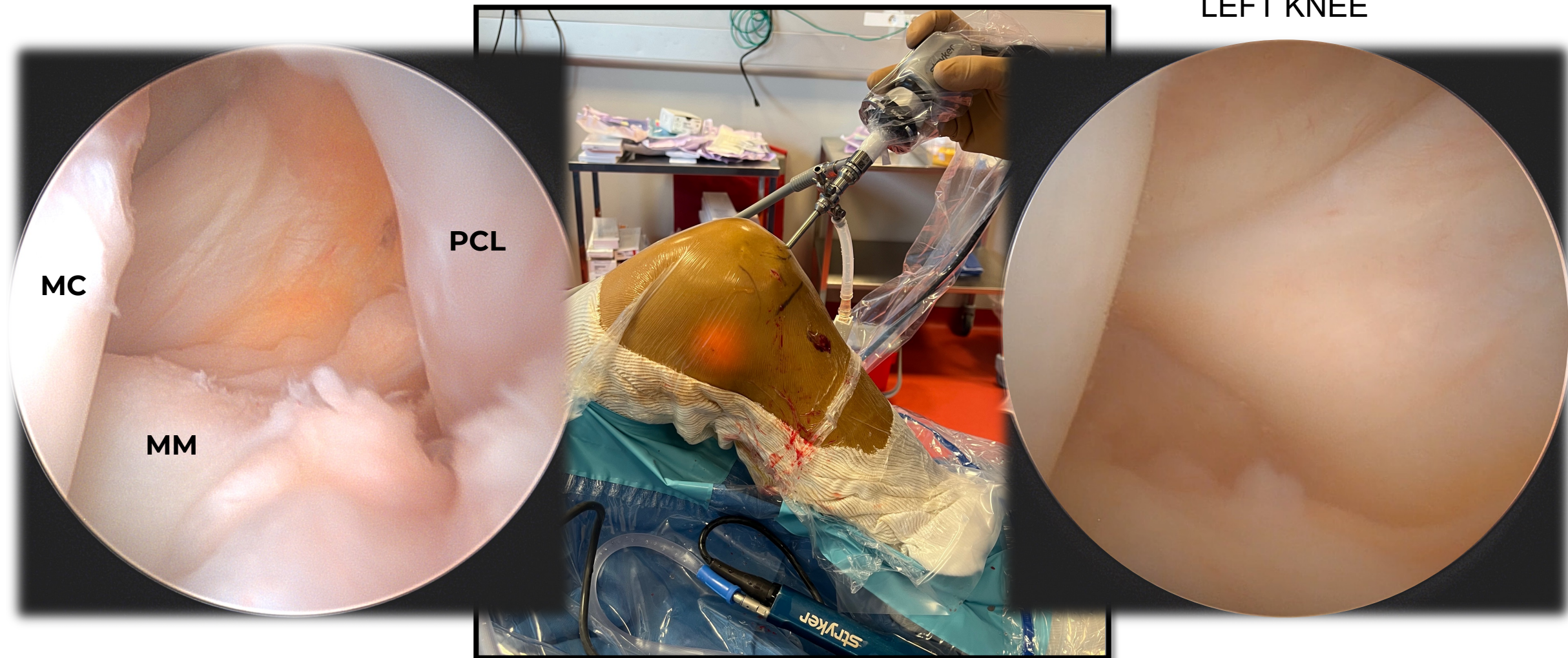
- supine position
- proximal tourniquet
- regular but free thigh



## Postero-medial portal first

Classical PM portal

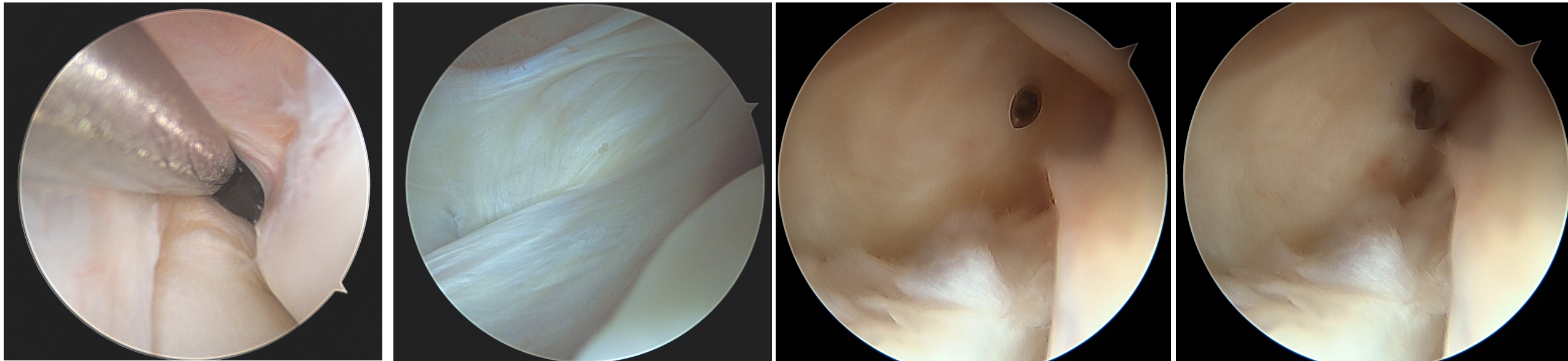
LEFT KNEE



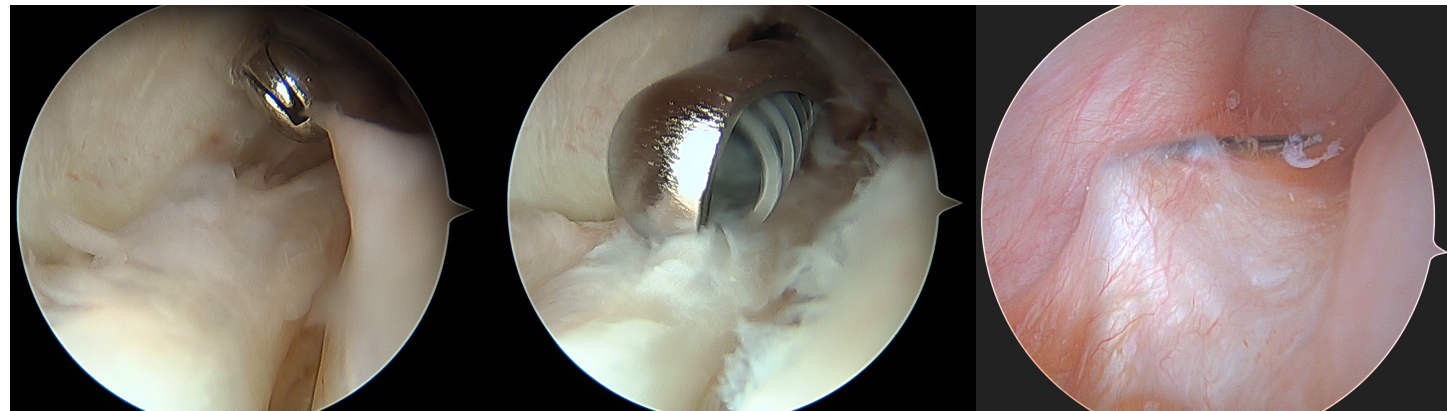


## Postero-medial portal first

### RIGHT KNEE

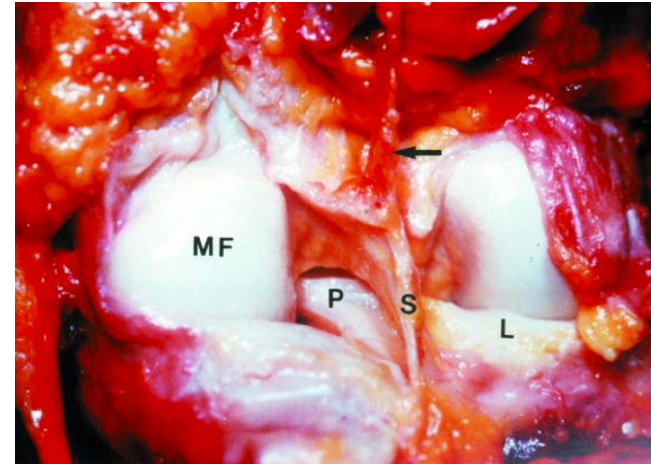
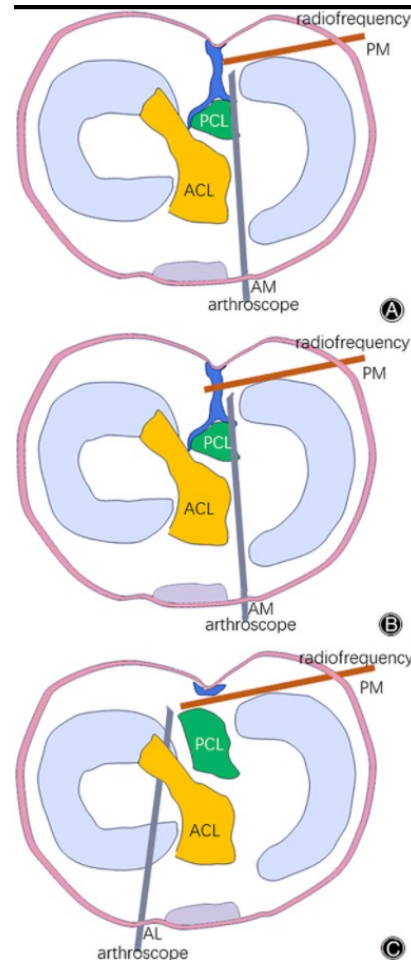


Knee flexed at 90°  
Push the scope under PCL  
Along axial facette of medial condyle  
First needle spoting  
« Ramp repair » approach





# Posterior SEPTUM : trans-septal approach «The « garden » door



2000

Technical Note

Posterior Trans-Septal Portal for Arthroscopic Surgery  
of the Knee Joint

Jin-Hwan Ahn, M.D., and Chul Won Ha, M.D.

2003

Technical Note

Posterior “Back and Forth” Approach in Arthroscopic Surgery  
on the Posterior Knee Compartments

Stéphane Louisia, M.D., Olivier Charrois, M.D., and Philippe Beaufils, M.D.

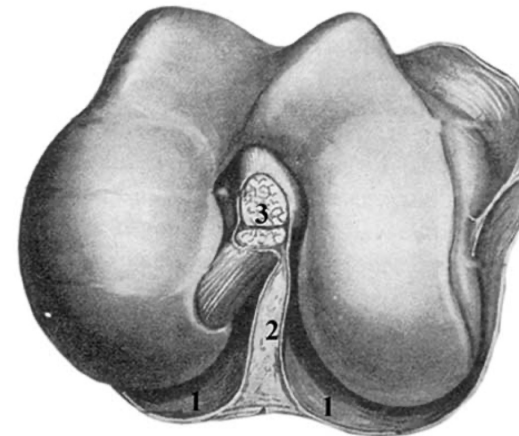
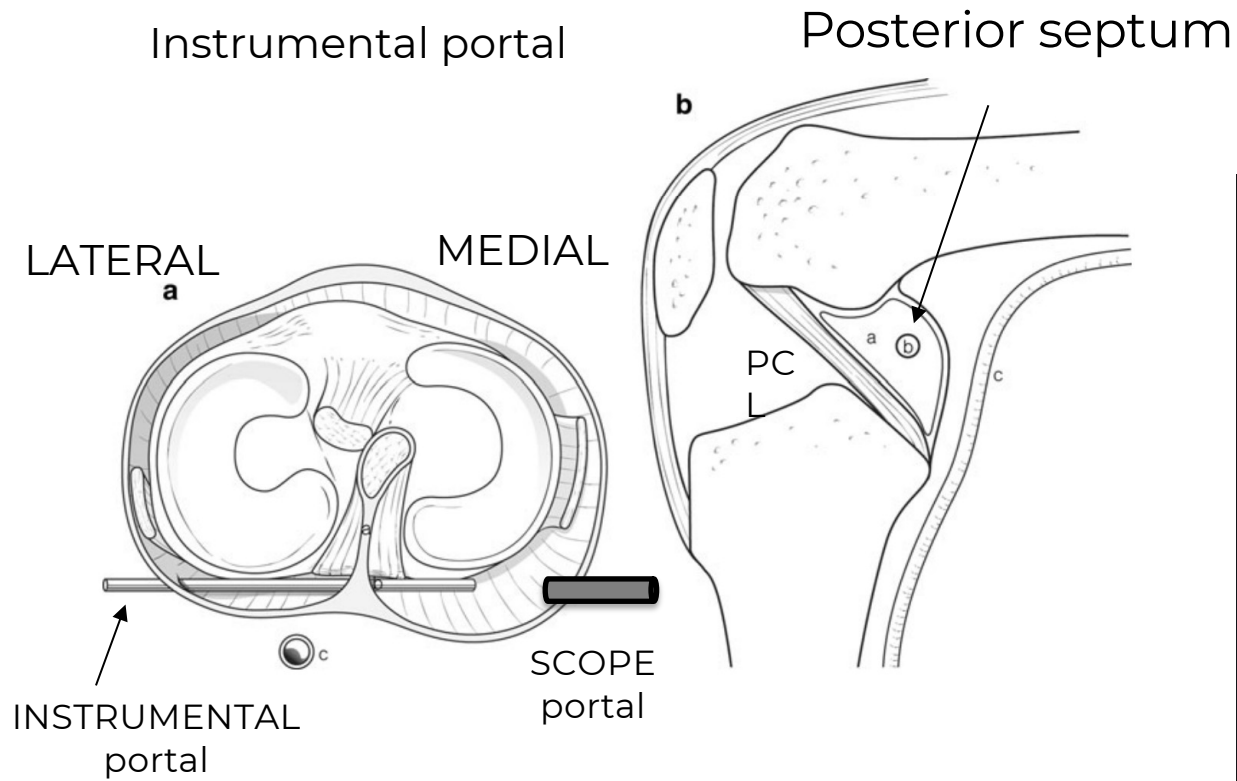


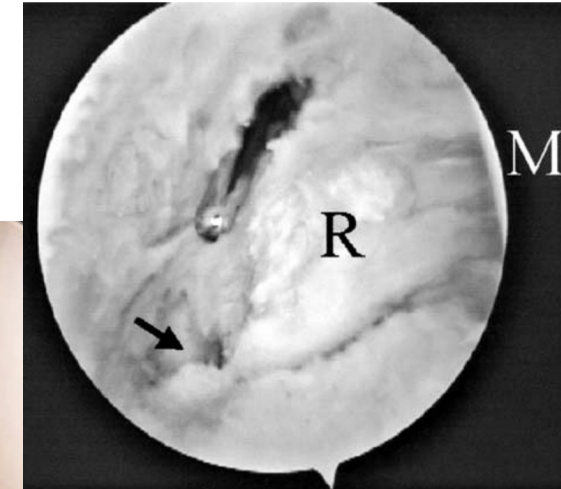
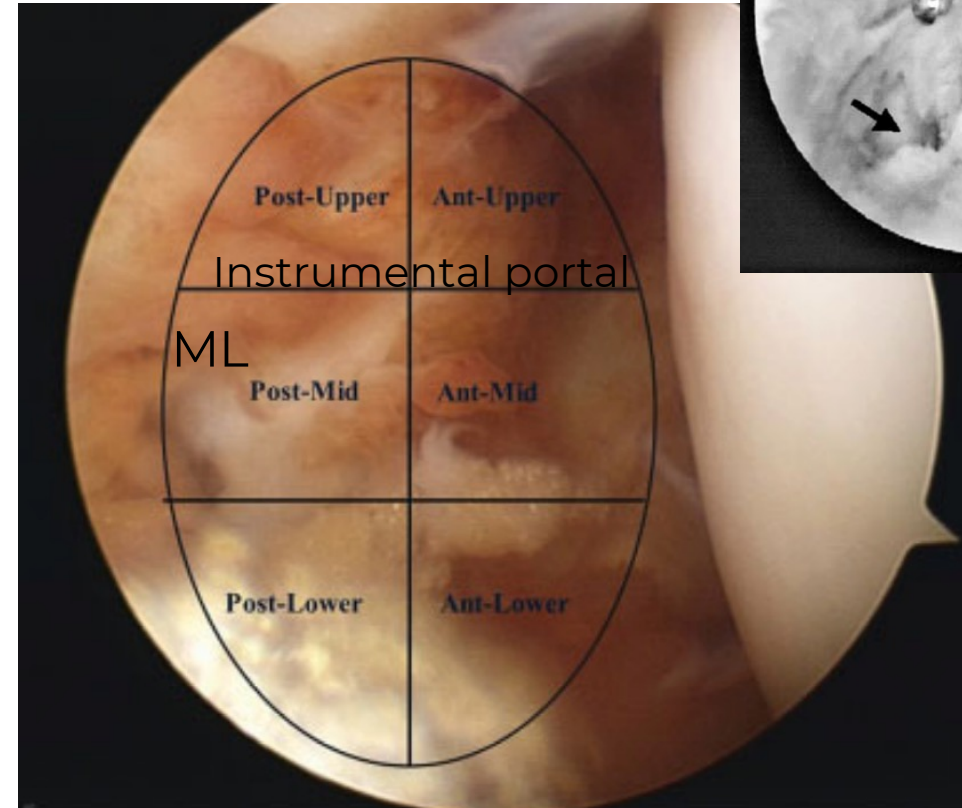
FIGURE 1. Diagram of the posterior capsule (1) over the femoral condyles and of the reflection of the synovial fold (2) enclosing the cruciate ligaments (3) (from Rouvière).



# Arthroscopic PCL-reconstruction using the posterior transtibial portal



*Ahn – 2003*



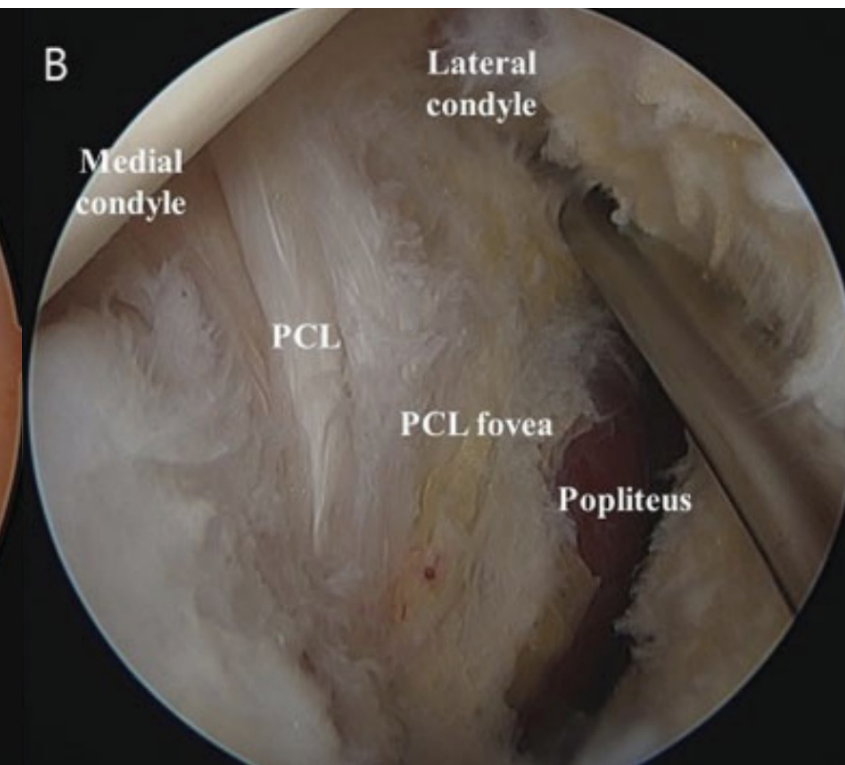
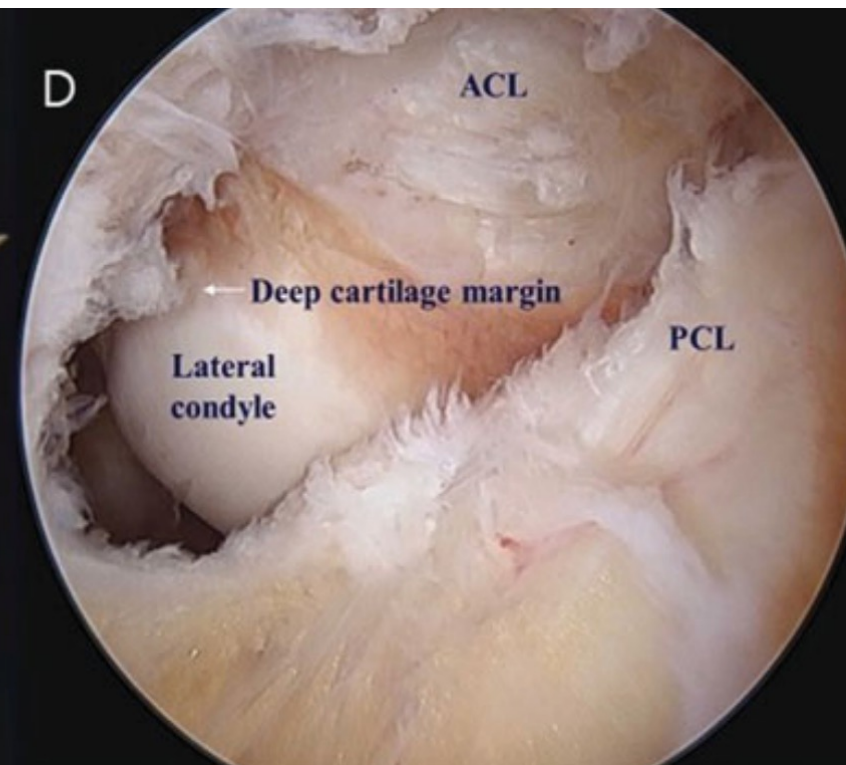
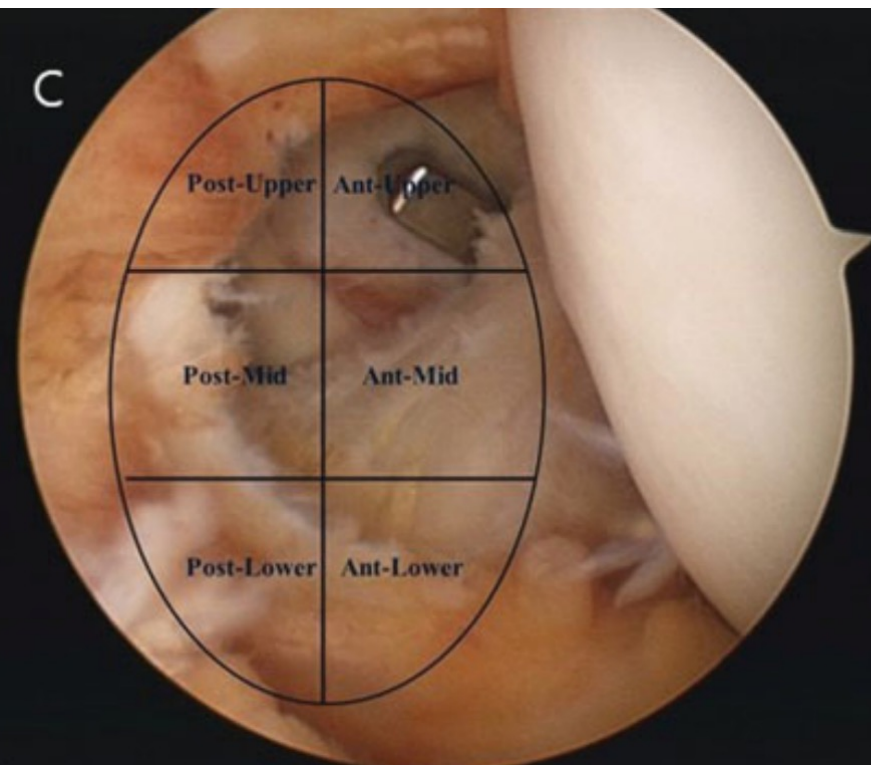
# Different Strategies in Making Transseptal Portal for the Different Purposes

Yong Seuk Lee, MD, PhD<sup>1</sup> Tae Woo Kim, MD, PhD<sup>1</sup> Eui Soo Lee, MD<sup>1</sup> Kyoung Hwan Lee, MD<sup>1</sup>  
Seung Hoon Lee, MD<sup>2</sup>



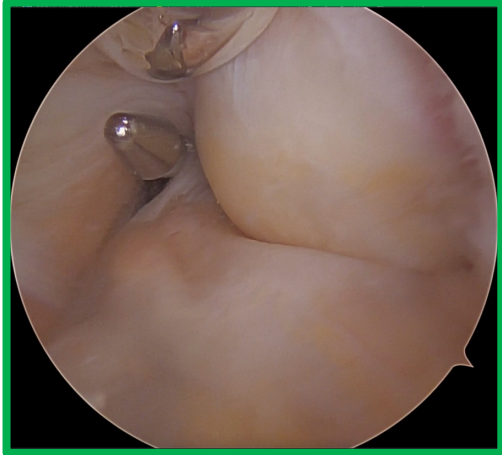
**Yong Seuk Lee, M.D., Ph.D.**

Secretary & Treasurer, Korean Knee Society  
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E-mail [koreankneesociety@naver.com](mailto:koreankneesociety@naver.com)

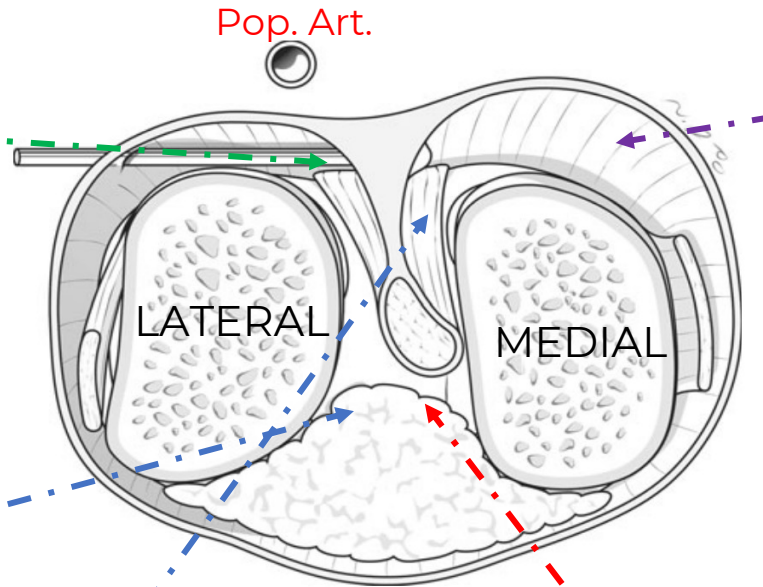




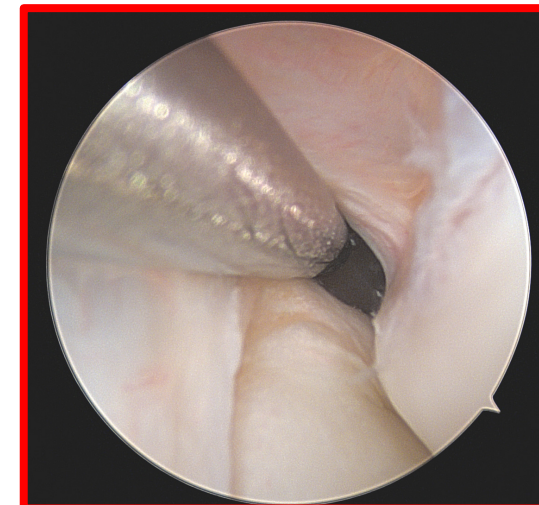
# TURN around your PCL / knee with yours scope



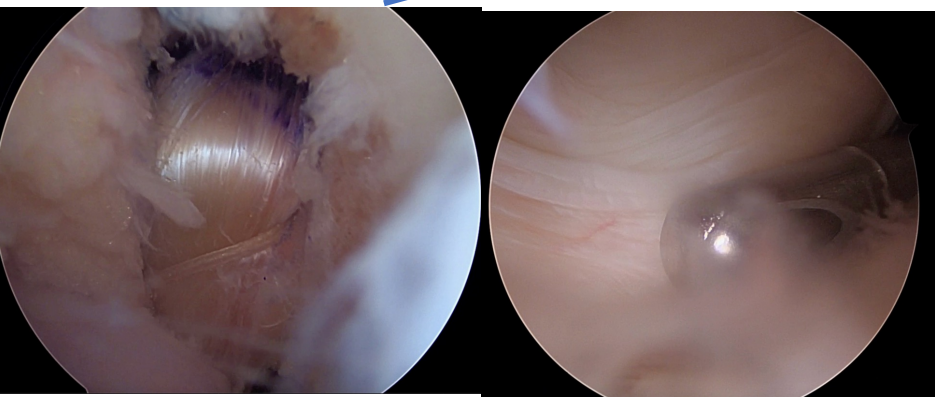
PL  
Portal  
Scope  
View



PM  
Portal  
Scope  
View



AM  
Portal  
Scope  
view



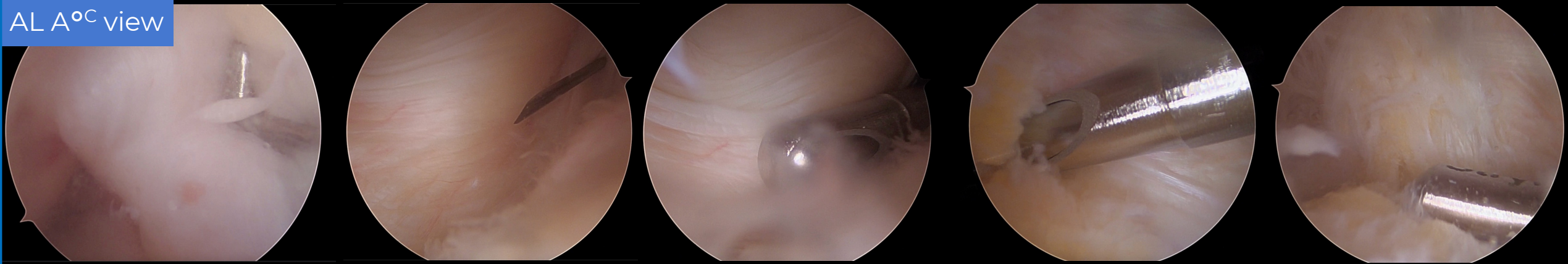
AL portal  
Transnotch view

Right knee  
Chronic GRADE III  
PCL deficiency  
PCL remnant

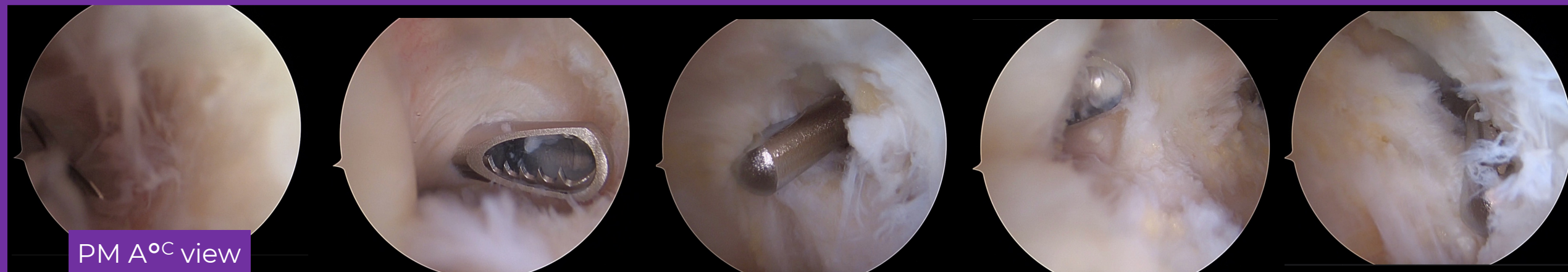




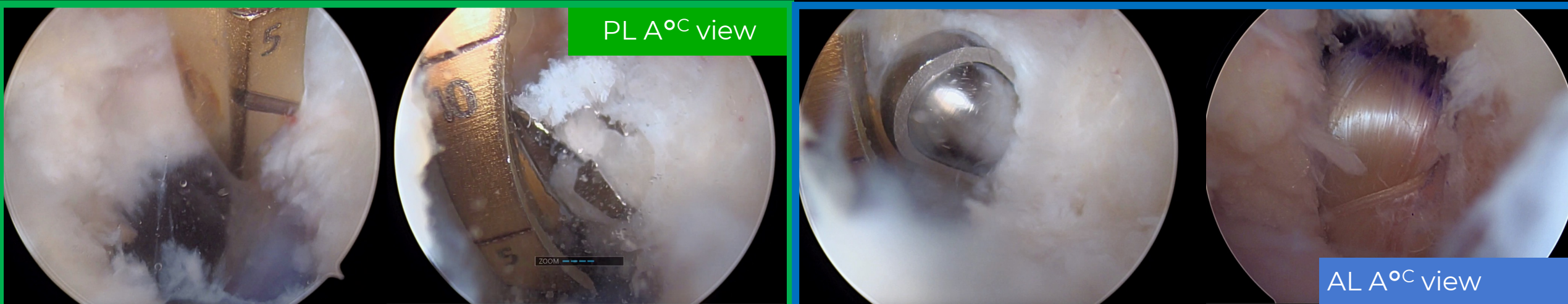
AL A<sup>o</sup>C view



PM A<sup>o</sup>C view



PL A<sup>o</sup>C view

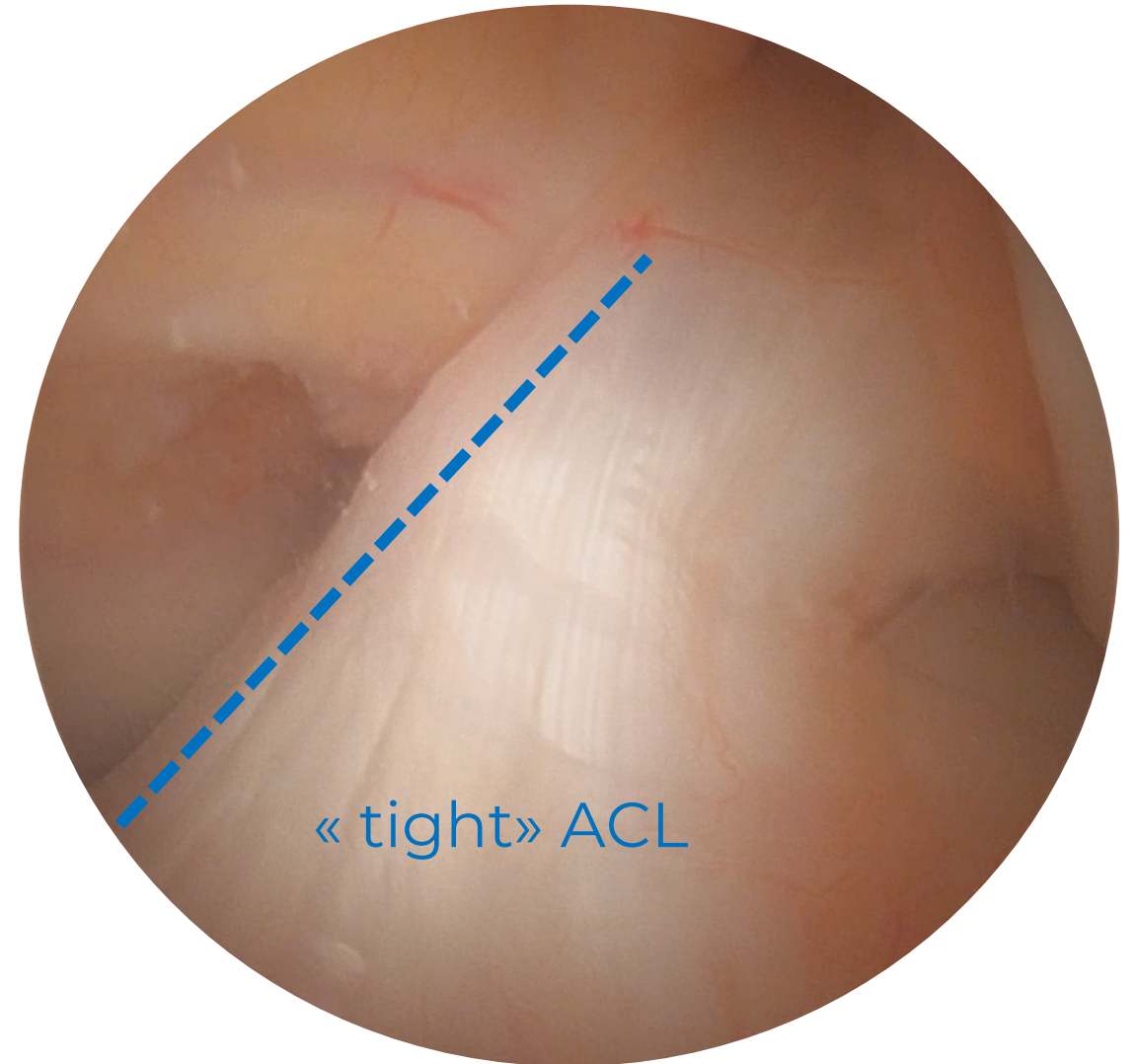
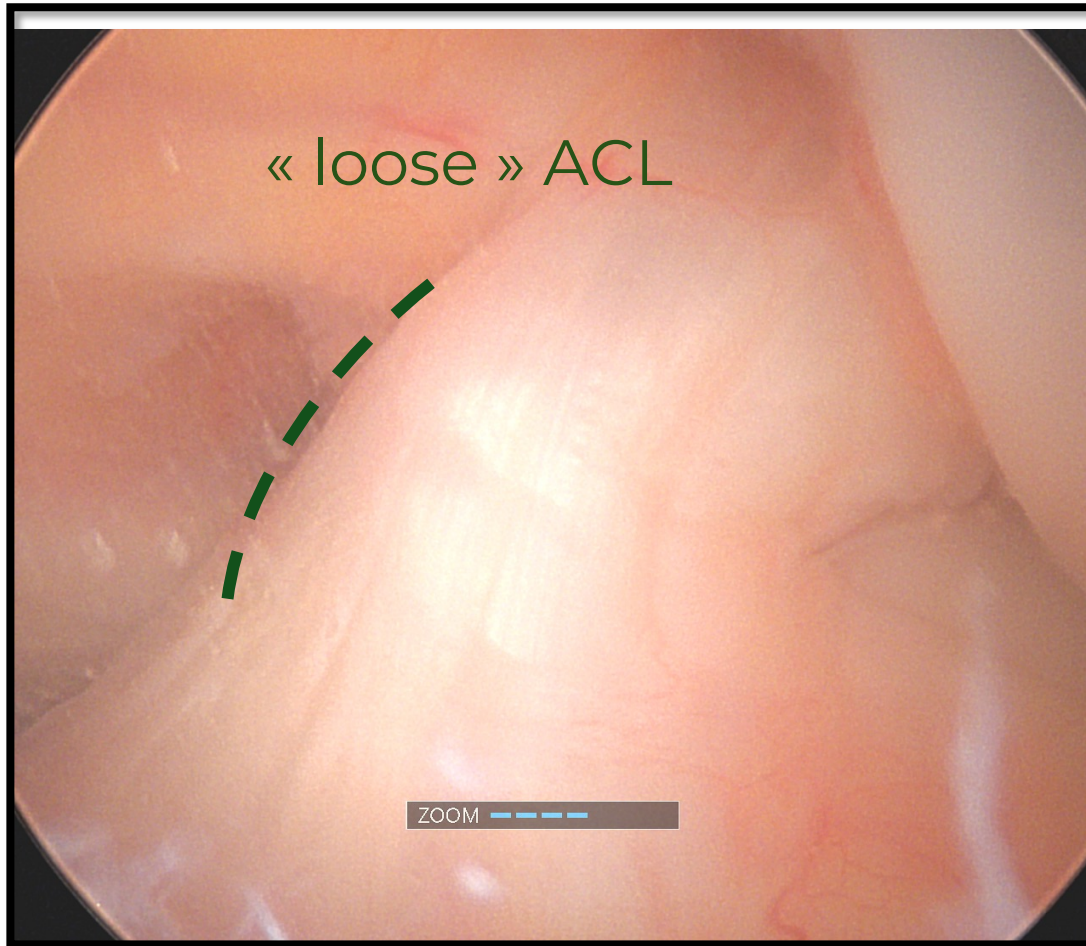


AL A<sup>o</sup>C view



# TIPS & TRICKS

## Create anteriorSPACE with posterior draw reduction and opposite

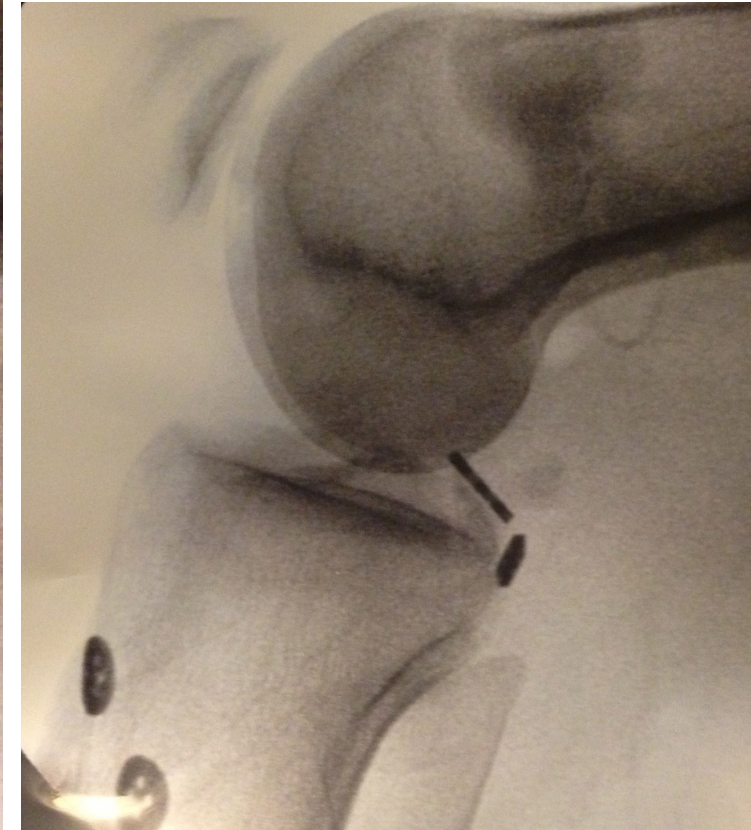
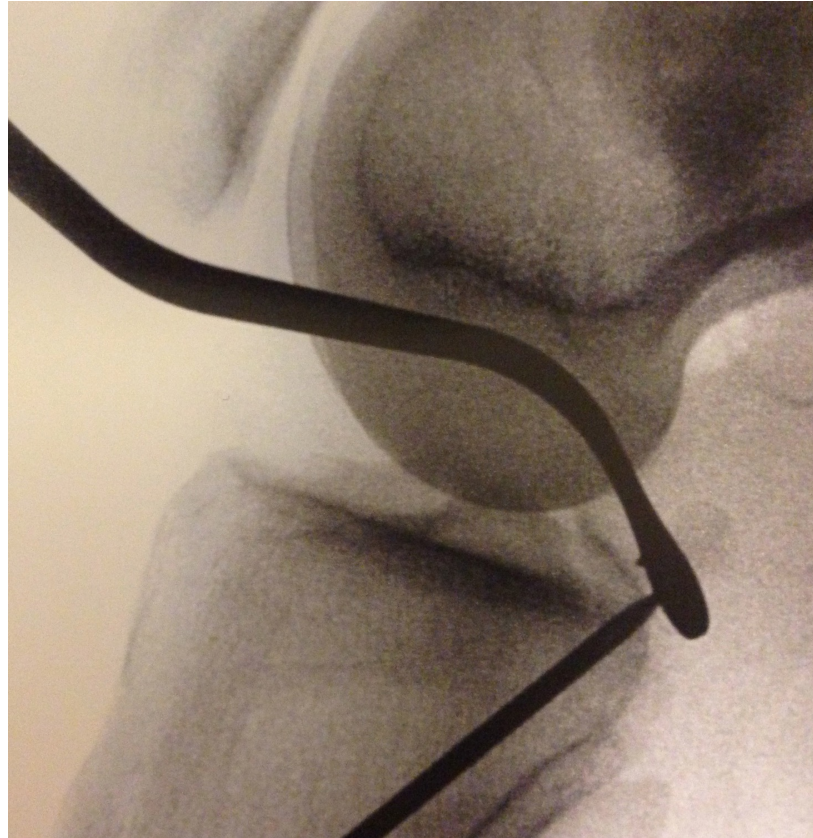




## Exemple POSTERIOR tibial spine fracture

Reduction  
Wire  
Tunnel –button

Posterior knee  
arthroscopic  
approach



PCL bony avulsion arthroscopic fixation

# CONCLUSIONS

## Arthroscopic posterior approaches of the knee

### ANTERIOR first trough the Notch

- Classical AL & AM
- ACL isualisation ,LMF
- PCL femoral tunnel

### INTER-condylar Notch

- PCL graft
- Scope hyghway to posterior
- Free space = PCL rupture

### POSTERIOR approach

- PM portal then PL
- Trans-septal portal
- Tibial insertion PCL
- Drilling tibial tunnel

« ÇA SE VOIT COMME LE NEZ  
AU MILIEU DE LA FIGURE ! »

