

MENISCAL TEARS: ANATOMOCLINIC CORRELATION

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History taking

- Pain localized to the joint-line
- Provocated by: Hyperflexion, directional change
- Mechanical symptoms such as “clicking” or “catching,”
- Recurrent effusions
- Complaint of “locking” with a mechanical block to extension



Physical examination

- Gait
- Aligement
- Mobility
- Laxity
- Meniscus

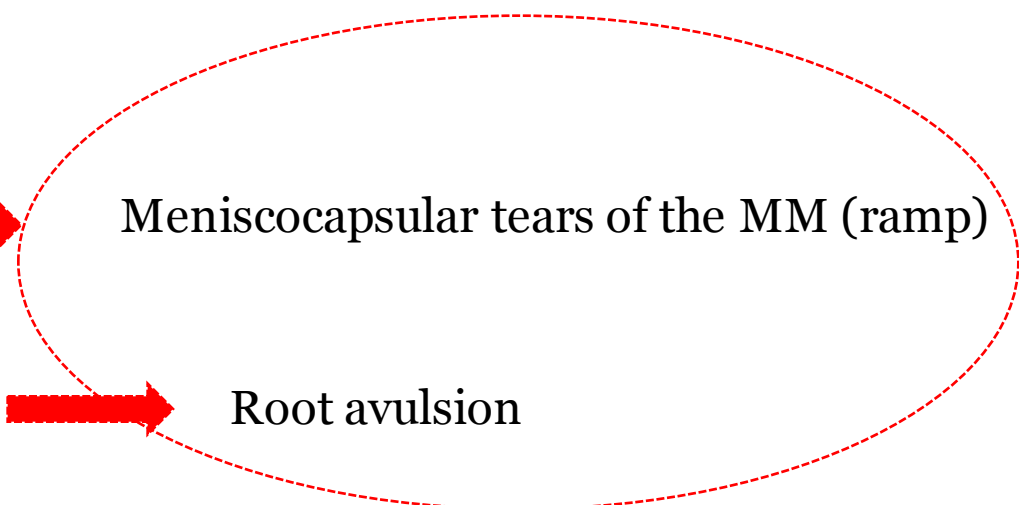
Joint line palpation
Meniscal tests



Meniscocapsular tears of the MM (ramp)



Root avulsion





Tests

Table 2.4 Physical examination tests for the detection of meniscus injury

Physical exam test	Technique	Significance	Reliability
Joint-line tenderness	Direct palpation over medial and lateral joint line	Tenderness can indicate a meniscus tear, collateral ligament injury, or DJD	Sensitivity: 55–85 % [21–23] Specificity: 29.4–67 % [21–23]
McMurray test	Range knee from full flexion to 90° of flexion first with full tibial IR and then with full tibial ER	Positive test produces “click” in association with torn meniscus and reproduces patient’s painful sensation	Sensitivity: 16–58 % [21–24] Specificity: 77–98 % [22–24]
Apley grind test	Strong ER force applied to knee flexed at 90° at rest, with distraction, and with compression	Joint-line pain with distraction is concerning for ligamentous injury. Joint-line pain with compression is concerning for meniscal pathology	Sensitivity: 13–16 % Specificity: 80–90 % [22, 23]
Bounce home test	Passive full knee extension from flexed position	Loss of terminal extension indicates mechanical block, such as a meniscus tear	
Finochietto test (jump sign)	Anterior proximal tibial translation with knee in 130°–140° flexion	Positive test produces “jump” of torn posterior horn of meniscus with anterior displacement	
Boehler test	Varus and valgus stress applied to knee in almost complete extension	Pain on side of compression is suggestive of meniscus injury	
Thessaly test	Patient internally and externally rotates his or her knee and body while keeping one foot planted with the knee flexed at 5° and then 20°	Joint-line pain with maneuver indicates possible meniscus tear	20° Thessaly test Sensitivity: 89–92 % [25] Specificity: 96–97 % [25]
Childress test	Patient “duck walks” by moving forward with maximal knee flexion	Joint-line pain with maneuver indicates possible meniscus tear	



Tests

A single clinical test is not sufficient to establish a correct diagnosis.

Diagnostic accuracy is improved if the results of more than one test are combined.

- Generally, all clinical tests tend to be less reliable in the presence of concomitant ligamentous injury (ACL).
- less accurate in degenerative tears than in young patients with acute injuries.

Table 1

Summary of Ranges for Sensitivity and Specificity of the Tests

Test	Sensitivity Range	Specificity Range
McMurray's	16-70%	59-98%
Joint Line Tenderness	55-95%	15-97%
Bounce Home (forced hyperextension)	36-47%	67-86%
Apley's	13-41%	80-93%
Thessaly	65-92%	80-97%
Ege's	64-67%	81-90%
KKU (compression rotation) (1 study)	86%	88%
Axial Loaded Pivot Shift	71%	83%
Composite Score	11-100%	77-99%

Anatomy and physical examination of the knee menisci: a narrative review of the orthopedic Literature M D. Chivers, J Can Chiropr Assoc 2009; 53(4)

Medial Menisco-Capsular tears

Posteromedial Meniscocapsular Lesions Increase Tibiofemoral Joint Laxity With Anterior Cruciate Ligament Deficiency, and Their Repair Reduces Laxity

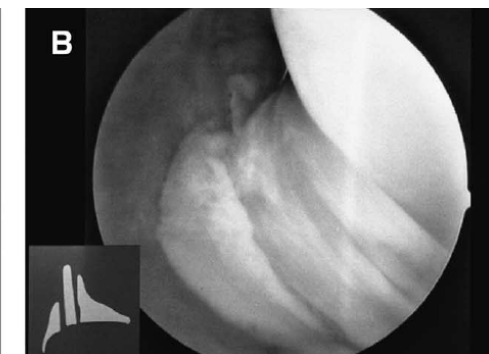
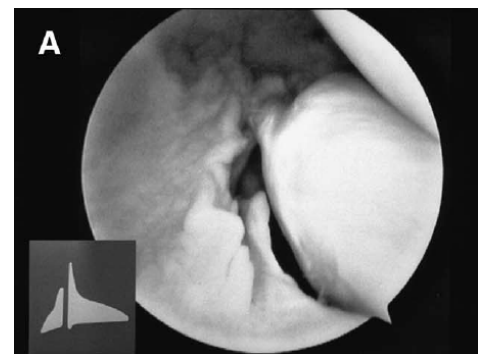
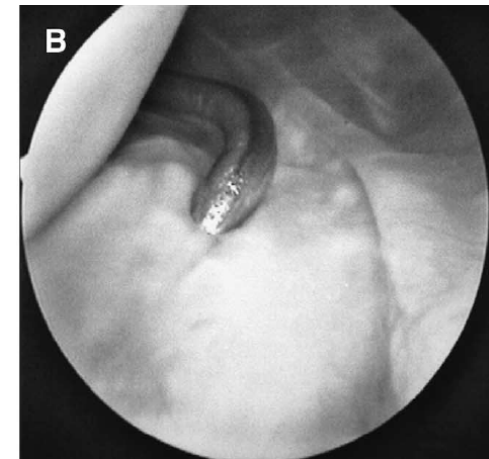
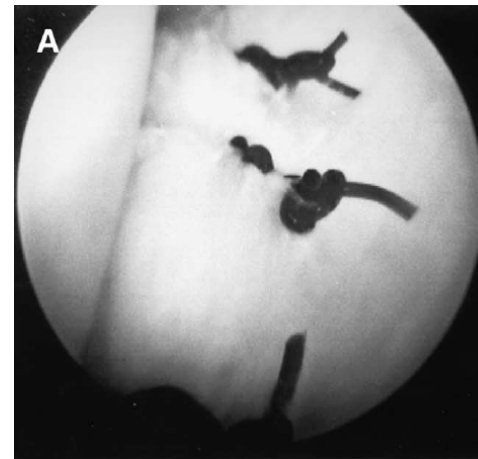
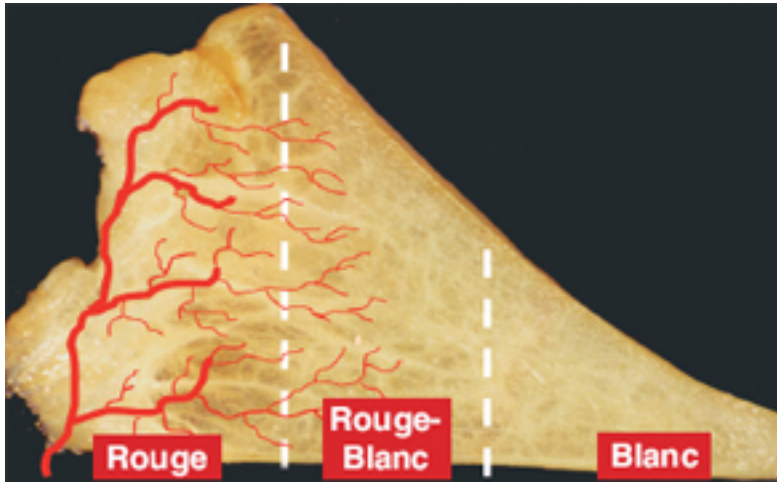
Joanna M. Stephen,* PhD, Camilla Halewood,* MEng, MBiolEng, Christoph Kittl,† MD, Steve R. Bollen,‡ FRCS Ed Orth, Andy Williams,§ FRCS (Orth), and Andrew A. Amis,*||¶ FREng, DSc(Eng)
Investigation performed at Imperial College London, London, United Kingdom

Experimental procedure

The role of the meniscotibial ligament in posteromedial rotational knee stability. Peltier A, Lording T, Maubisson L, Ballis R, Neyret P, Lustig S. *Knee Surg Sports Traumatol Arthrosc.* 2015 Oct;23(10):2967-73.



Capsulomeniscal tears



Technical Note

All-Inside Suture Technique Using Two Posteromedial Portals in a Medial Meniscus Posterior Horn Tear

Jin Hwan Ahn, M.D., Ph.D., Seung-Ho Kim, M.D., Jae Chul Yoo, M.D., and Joon Ho Wang, M.D.

LECTURES

Thirty years of arthroscopic meniscal suture: What's left to be done?

R. Seil*, N. VanGiffen, D. Pape

Locomotor System, Sports Medicine and Prevention Center, Luxembourg Hospital Center, Elch Clinic, 78, rue d'Elch, 1460 Luxembourg, Luxembourg



Medial Menisco-Capsular tears: Repair



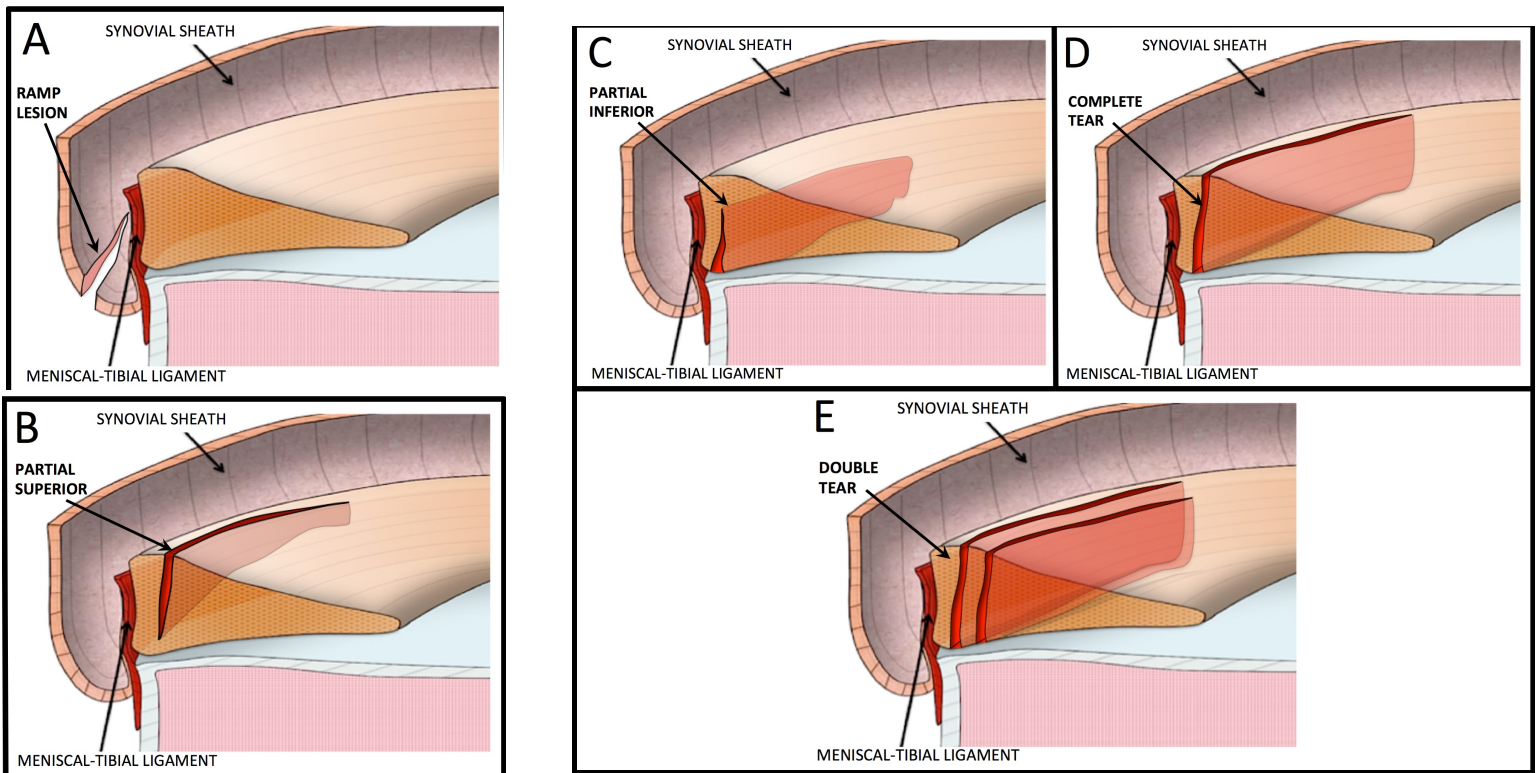
Hidden lesions of the Posterior Horn of the medial meniscus: A systematic arthroscopic exploration of the concealed portion of the knee Sonnery-Cottet B, Conteduca J, Thaunat M, Gunepin FX, Seil R. Am J Sport Med 2014

Posteromedial meniscal tears may be missed during anterior cruciate ligament reconstruction. Peltier A, Lording TD, Lustig S, Servien E, Maubisson L, Neyret P. Arthroscopy. 2015 Apr;31(4):691-8.



Capsulomeniscal tears

CLASSIFICATION PROPOSITION



Surgical technique of all inside suture repair of the medial meniscus through a single posteromedial portal. M Thaunat et al. Arthrosc tech, 2016 In press

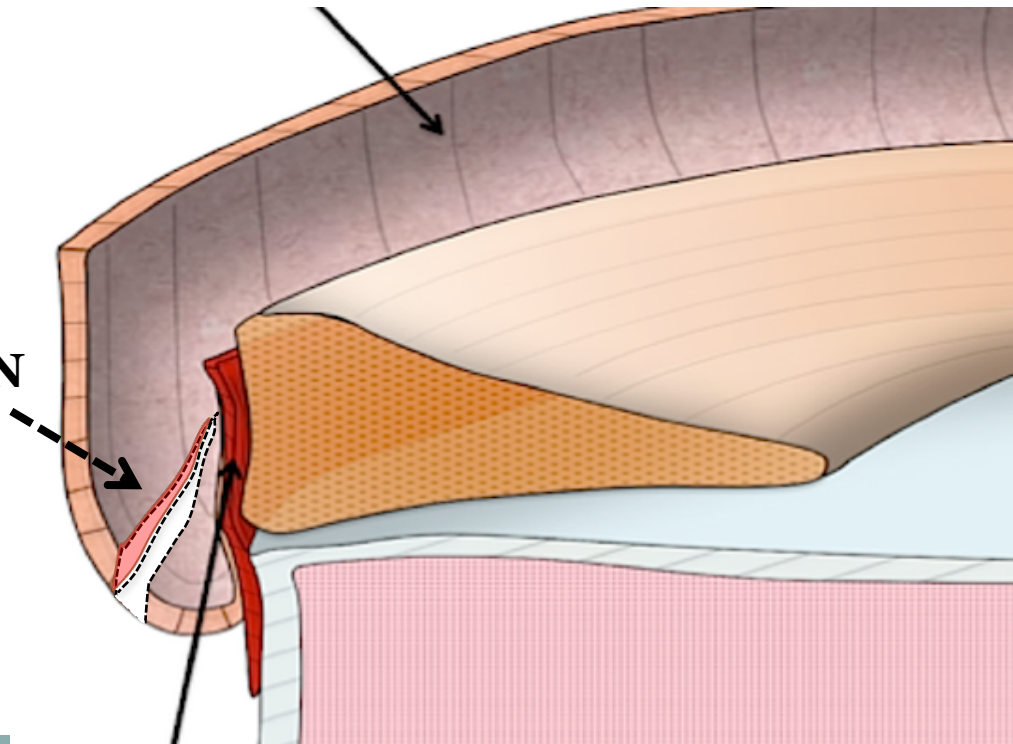


Medial Menisco-Capsular tears

- Arthroscopic Tear pattern: Type 1 Ramp lesion

Synovial sheat

**RAMP
LESION**



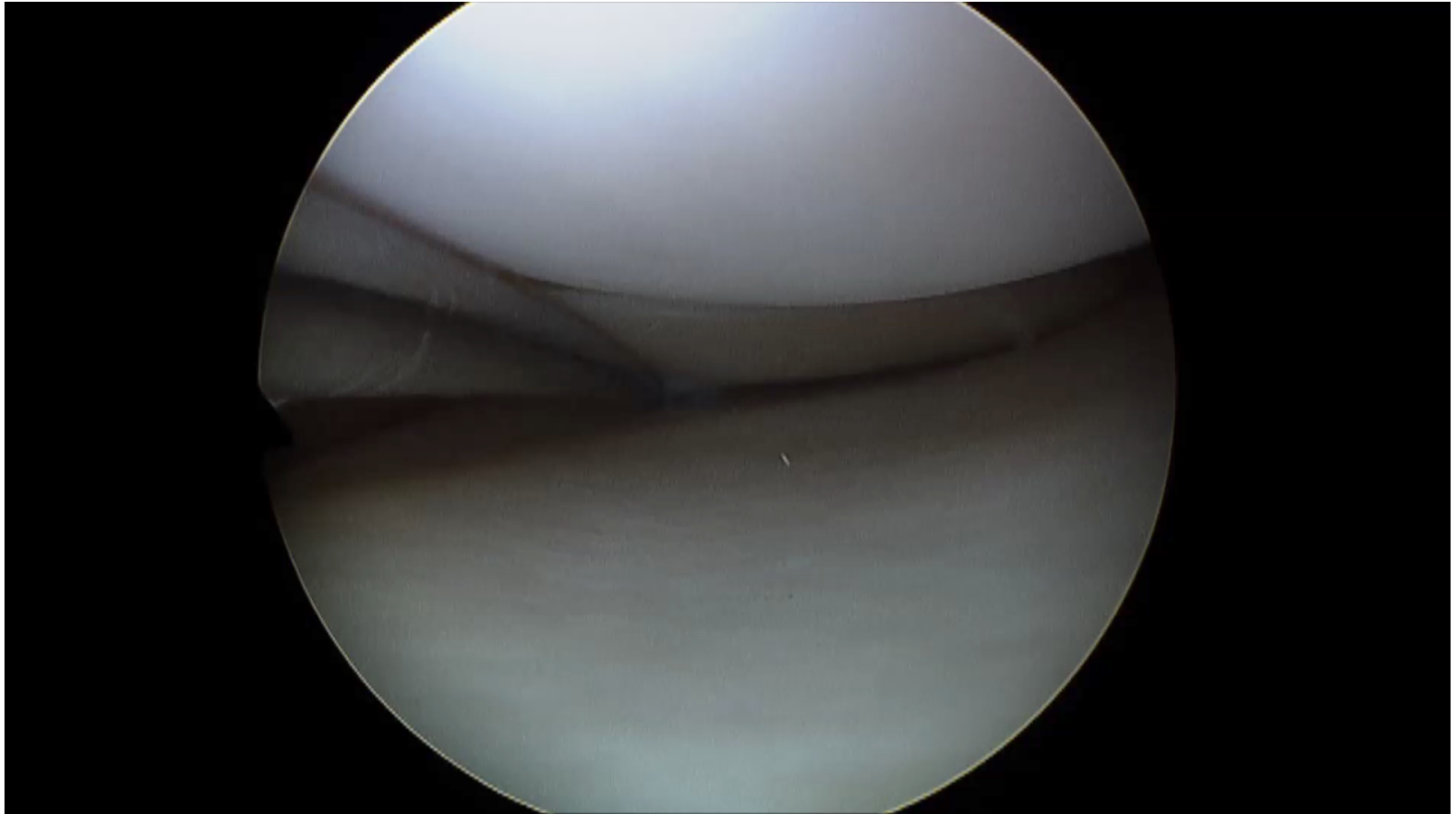
Open +/-

Mobility at
probing:

Low - -

Menisco-tibial ligament

Medial Menisco-Capsular tears





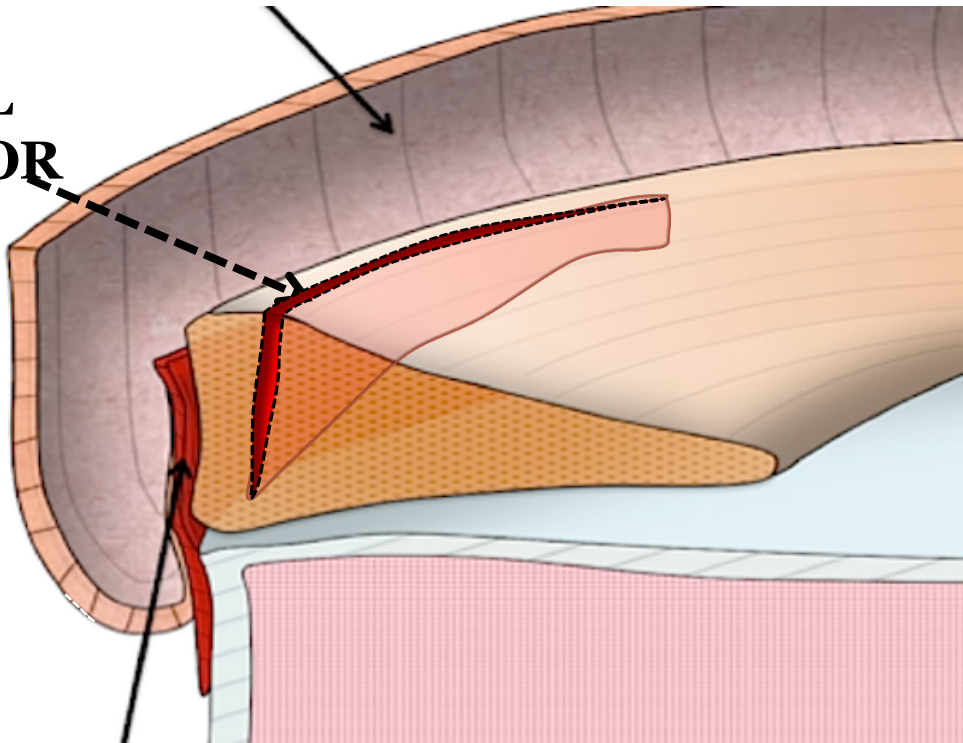
Medial Menisco-Capsular tears

Classification

- **Type 2 : Partial Superior**

Synovial sheat

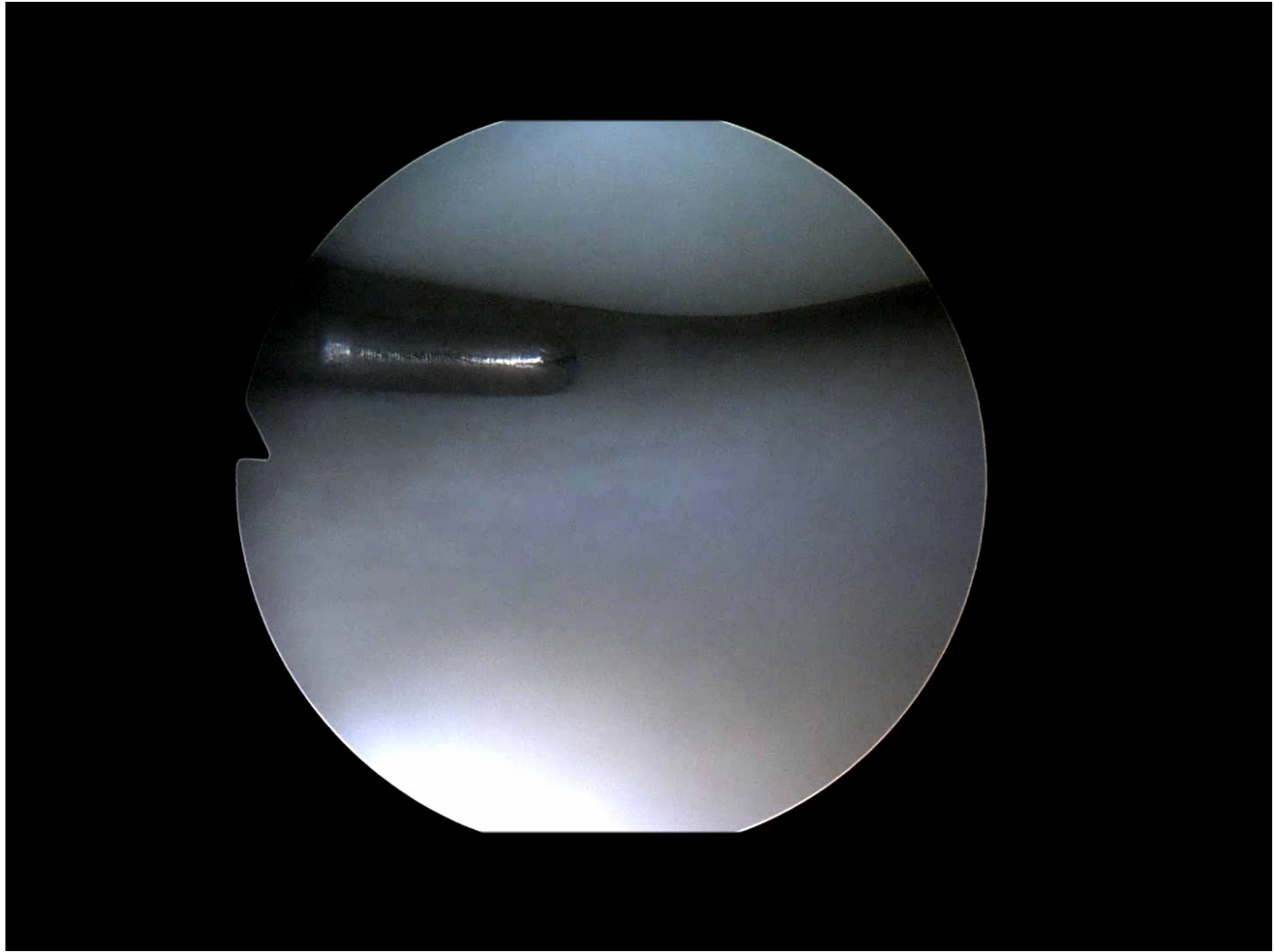
**PARTIAL
SUPERIOR**



Open +
Mobility
at
probing:
Low -

Menisco-tibial ligament

Medial Menisco-Capsular tears





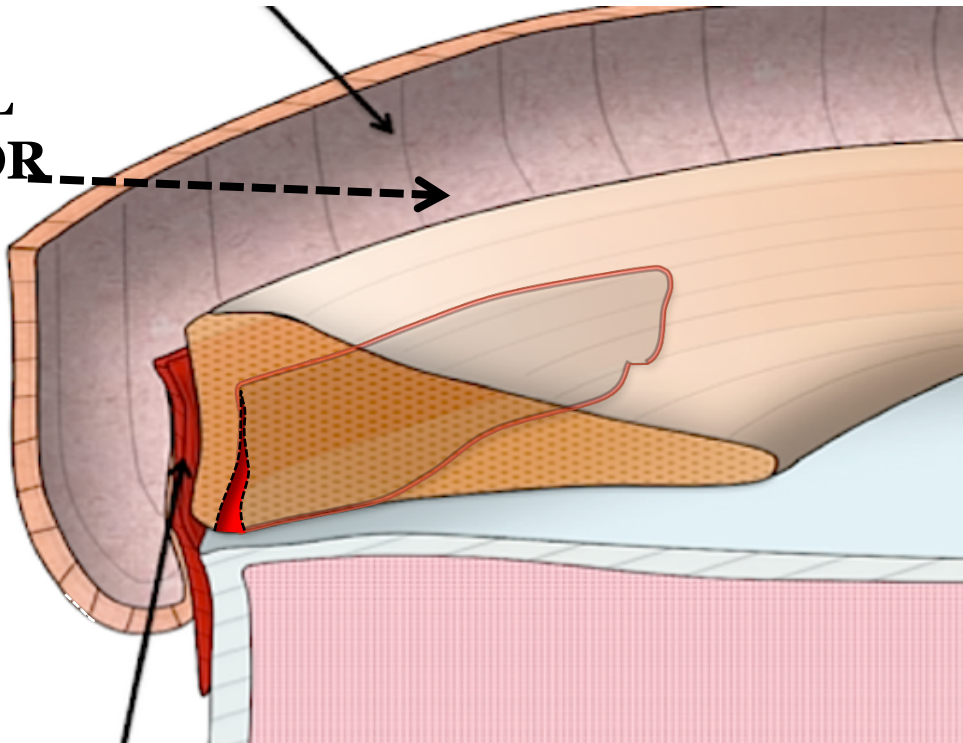
Medial Menisco-Capsular tears

Classification

- **Type 3 : Partial Inferior (Hidden)**

Synovial sheat

**PARTIAL
INFERIOR**

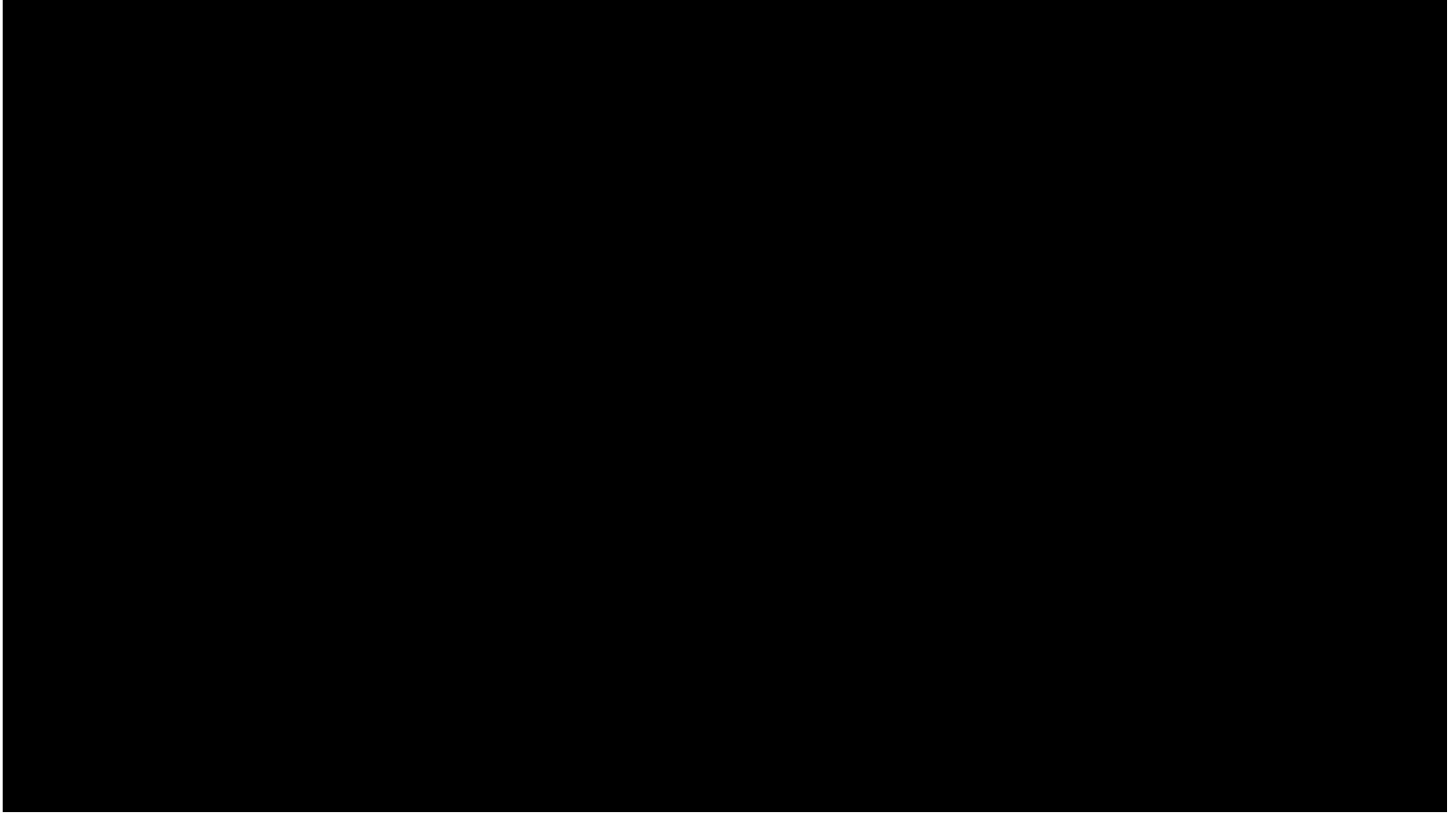


Open -

Mobility at
probing:
High +

Menisco-tibial ligament

Medial Menisco-Capsular tears





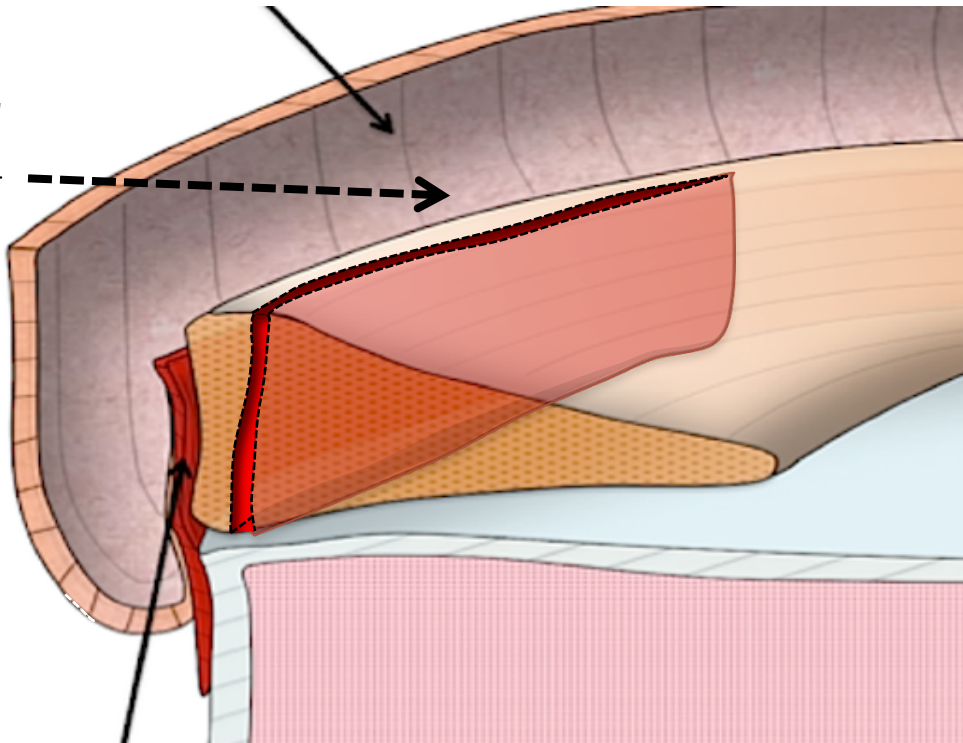
Medial Menisco-Capsular tears

Classification

Type 4 : Complete tear

Synovial sheat

**COMPLE
TE TEAR**



Open +

Mobility at
probing:

High +++

Menisco-tibial ligament

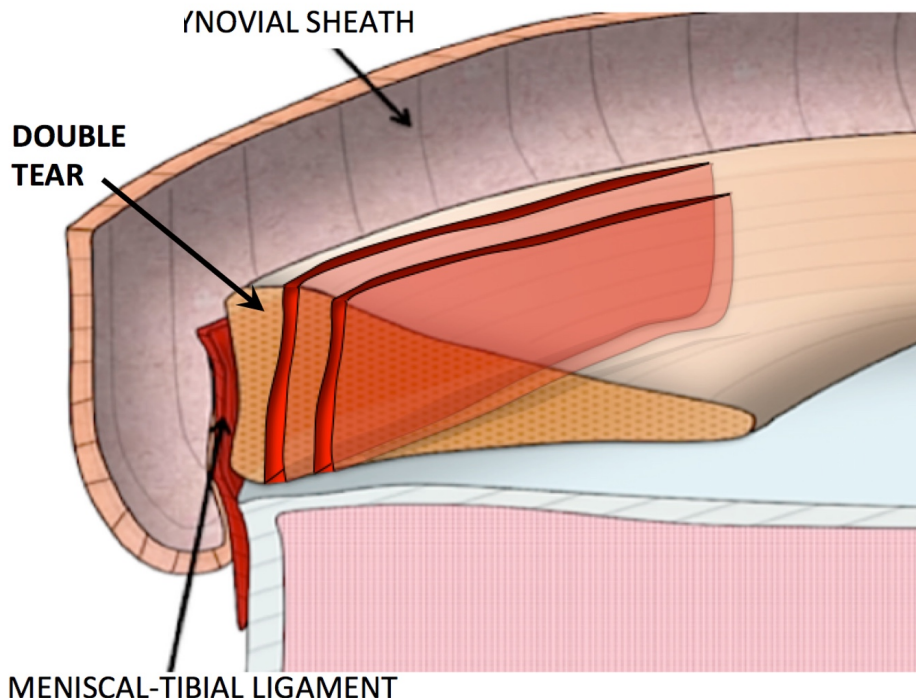


Medial Menisco-Capsular tears

Classification

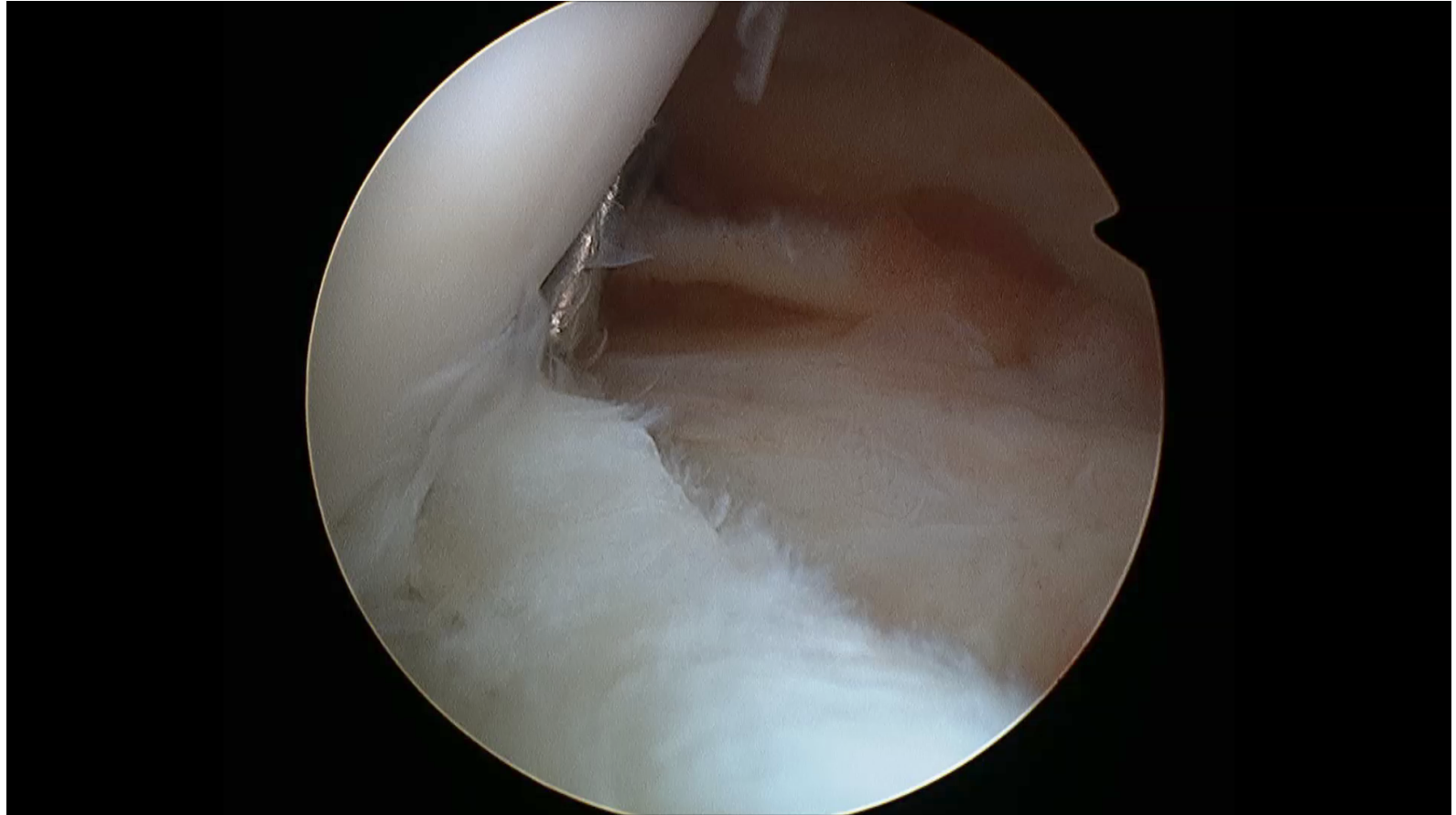
Type 5 : Double Complete tear

**COMPLETE
TEAR**



Open +
Mobility at
probing:
High +++

Medial Menisco-Capsular tears





Medial Menisco-Capsular tears

- Common lesion 10 to 20 % → Keep a watch
 - MRI → may be difficult to identify
 - Systematic arthroscopic exploration from anterior
 - Obtain posteromedial access when in doubt
- Especially in young patients, Gross laxity
- PARTIAL TEARS +++

Outcome of posterior suture of the medial meniscus through a posteromedial portal during ACL reconstruction

M Thaunat et al. Arthroscopy 2016 In Press



Test: root avulsion

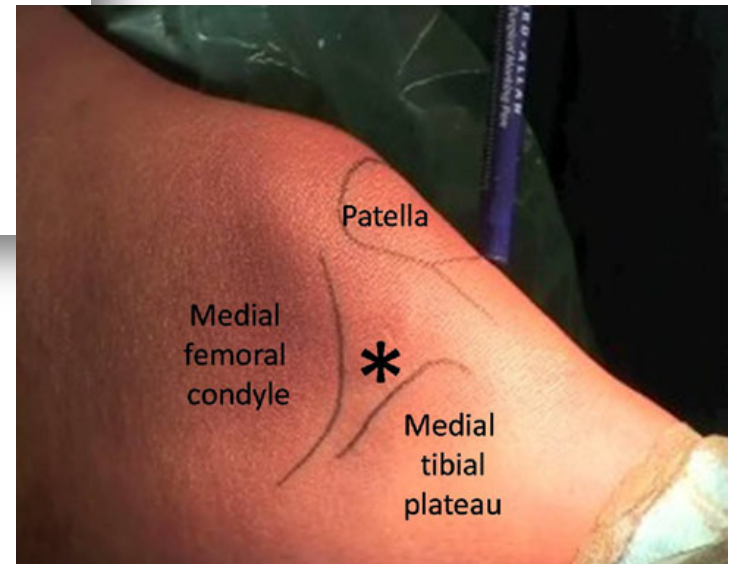
Knee Surg Sports Traumatol Arthrosc
DOI 10.1007/s00167-011-1550-9

KNEE

A clinical sign to detect root avulsions of the posterior horn of the medial meniscus

Romain Seil · Klaus Dück · Dietrich Pape

With a deficient posterior root, the clinical sign was positive, showing anteromedial extrusion under varus stress. After repair and at clinical follow-up, extrusion was normalized



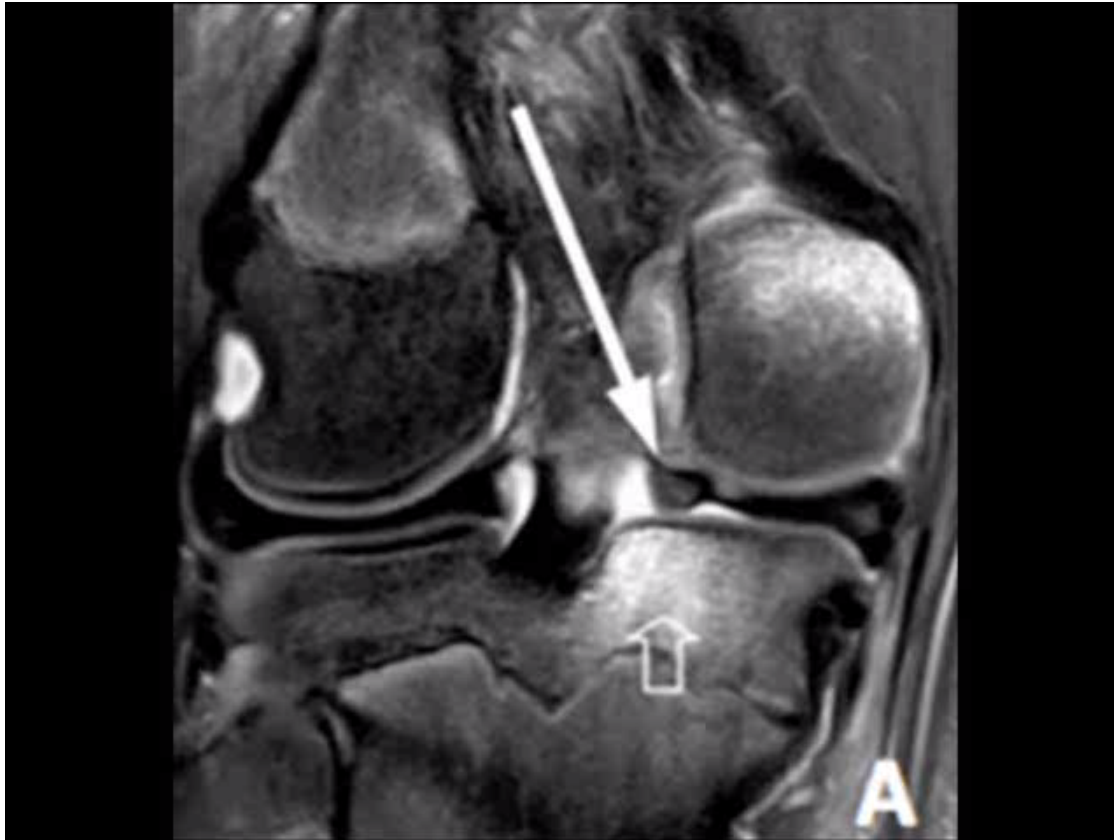


Test: root avulsion





Root tear



Sonnery-Cottet B, Thaunat M. et al. Root avulsion of the posterior horn of the medial meniscus in skeletally immature patients. Knee. 2014 Dec;21(6):1291-6



Conclusion

-A single clinical test is not sufficient to establish a correct diagnosis.

-Strong anatomoclinic correlation for two type of MM tears which can easily be missed on MRI and must be fixed

Meniscocapsular tears=ramp lesion (increased laxity)

Root avulsion (meniscal extrusion)



Thank you

