



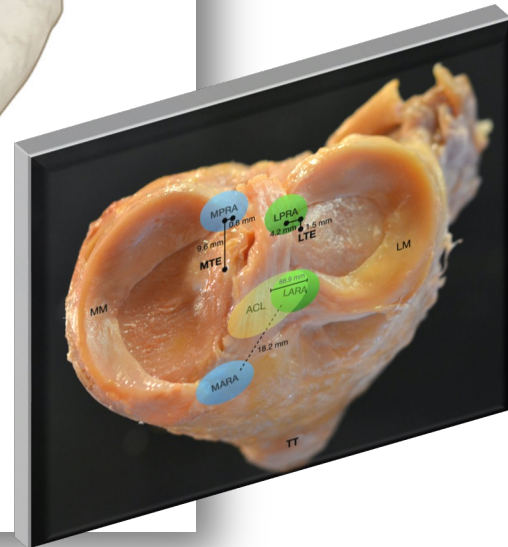
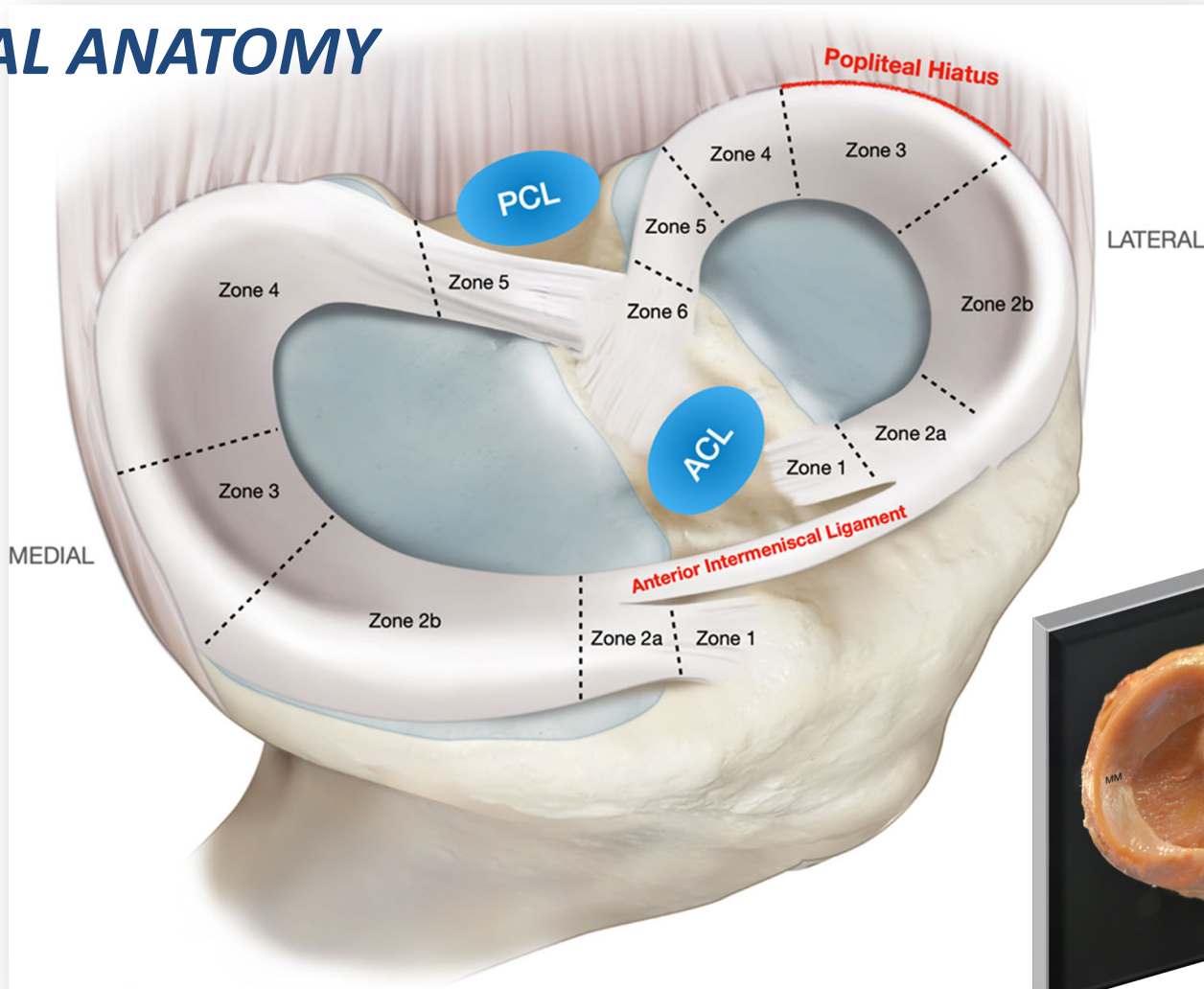
**Professional athlete:
don't repair sometimes?**

Prof. F. Benazzo

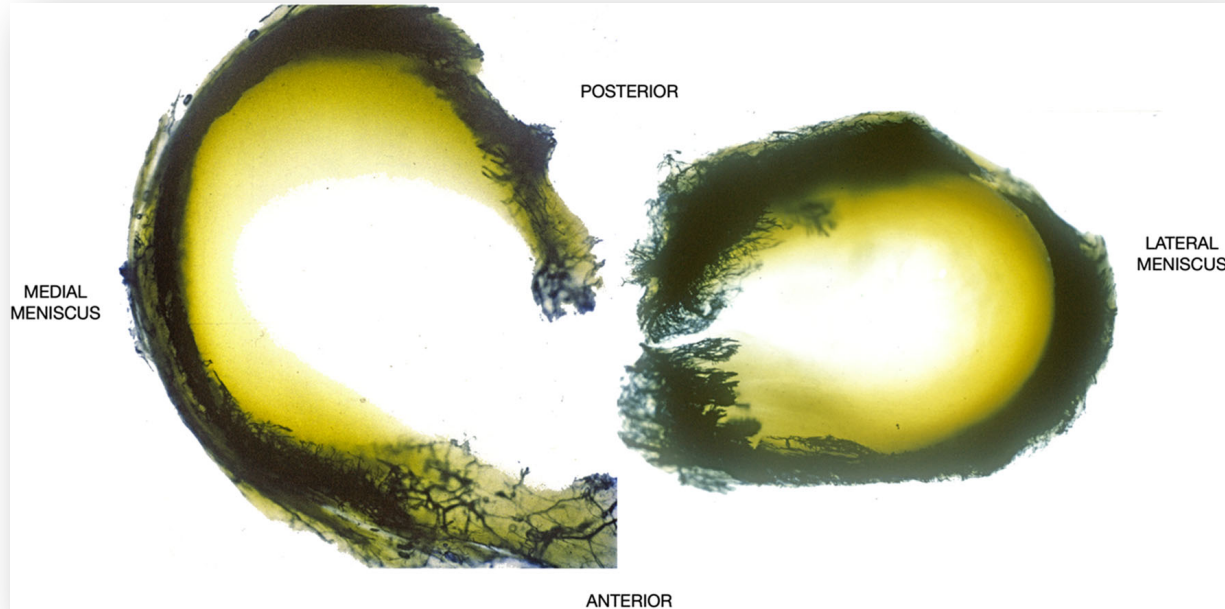
KEY POINTS

- Meniscal tears & Professional Athletes
- Medial & lateral tears +/- ACL tears
- Fast recovery, same level of participation
- Career
- What happens at the end of the career?

MENISCAL ANATOMY



MENISCAL VASCULAR ANATOMY



The blood supply begins to decrease from as early as the second year of life. By the second decade of life, the peripheral 10 to 30% of the medial meniscus and the peripheral 10–25% of the lateral meniscus are perfused (1/3), decreasing to the peripheral quarter by age 50

MENISCAL + ACL TEARS

- Meniscal injuries have been reported to occur in between 41 and 82% of ACL injuries with increased incidence noted with participation in contact sports
- Both medial and lateral meniscal pathology is frequently found in elite athletes with ACL tears

Bellabarba C, Bush-Joseph C, Bach B (1997)

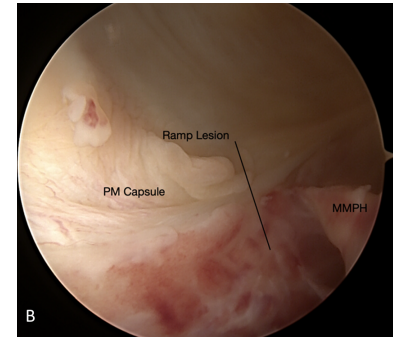
Patterns of meniscal injury in the anterior cruciate-deficient knee:
a review of the literature. *Am J Orthop* 26:18–23

Praz C, Vieira TD, Saithna A, Rosentiel N, Kandhari V, Nogueira H, Sonnery-Cottet B (2019)

Risk factors for lateral meniscus posterior root tears in the anterior cruciate ligament-injured knee: an epidemiological analysis of 3956 patients from the SANTI Study Group. *Am J Sports Med* 47:598–605

MENISCAL + ACL TEARS

- Meniscal repair is more likely to be successful when combined with an ACL reconstruction than when performed in isolation
- Medial menisco-capsular separations (ramp lesions) and lateral meniscus posterior root tears are specific pattern in 30% of ACL tears
- Repair of a meniscus tear in the setting of an ACL injury should be the first choice knowing the importance of the menisci as secondary stabilisers for the ACL thereby providing support for the ACL graft and restoring stability



Minami T, Muneta T, Sekiya I, Watanabe T, Mochizuki T, Horie M, Katagiri H, Otabe K, Ohara T, Katakura M, Koga H (2018) Lateral meniscus posterior root tear contributes to anterolateral rotational instability and meniscus extrusion in anterior cruciate ligament-injured patients. *Knee Surg Sport Traumatol Arthrosc* 26:1174–1181

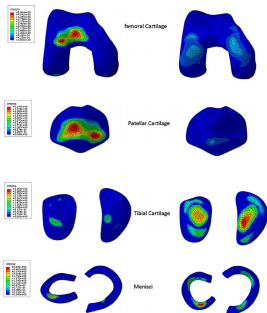
Mouton C, Magosch A, Pape D, Hoffmann A, Nührenbörger C, Seil R (2020) Ramp lesions of the medial meniscus are associated with a higher grade of dynamic rotatory laxity in ACL-injured patients in comparison to patients with an isolated injury. *Knee Surg Sport Traumatol Arthrosc* 28:1023–1028

LATERAL VS MEDIAL MENISCUS

In athletes, lateral meniscectomies, compared to medial, have been shown to have increased post-operative effusions and missed game time, lower return to play rates, and are more career shortening even than ACL injuries –

Why?

- 200–300% increase contact stresses after lateral meniscectomy
- 100% increase contact stresses after medial meniscectomy



Nawabi DH, Cro S, Hamid IP, Williams A (2014) Return to play after lateral meniscectomy compared with medial meniscectomy in elite professional soccer players. *Am J Sports Med* 42:2193–2198

Aune KT, Andrews JR, Dugas JR, Cain EL (2014) Return to play after partial lateral meniscectomy in national football league athletes. *Am J Sports Med* 42:1865–1872

Brophy RH, Lyman S, Chehab EL, Barnes RP, Rodeo SA, Warren RF (2009) Predictive value of prior injury on career in professional American football is affected by player position. *Am J Sports Med* 37:768–775

LATERAL VS MEDIAL MENISCUS

- 42 elite athletes, 45 meniscal repairs (in-out)
- 83% had ACL reconstruction at the same time
- Mean age 23.2 years (range, 15-38 years).
- 67% medial meniscus, and 33% were of the lateral meniscus
- 3 patients had both medial and lateral menisci repaired simultaneously.
- Mean follow-up was 8.5 years

Results:

- **81%** of patients returned to their main sport and most to a similar level at a mean time of 10.4 months after repair (+ACL)
- 11 definite failures, 10 medial and 1 lateral meniscus, that required excision;
- Age and size and location of the tears were not associated with a higher failure rate
- ***Medial meniscal repairs were significantly more likely to fail than lateral meniscal repairs, with a failure rate of 36.4% and 5.6%, respectively (P < .05).***

Meniscal Repair in the Elite Athlete

Results of 45 Repairs With a Minimum 5-Year Follow-up

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MEDIAL MENISCUS TEARS

- Most medial meniscectomies are tolerated well, at least in the short and medium term, by elite athletes
- Average return to play of 5 weeks in a cohort of professional soccer players undergoing medial meniscectomy, with low rates of effusion in the following year
- Positive short-term outcome but development of medial osteoarthritis, although this usually develops after sports career



Lysholm J, Gillquist J (1983) Arthroscopic meniscectomy in athletes. *Am J Sports Med* 11:436–438

Nawabi DH, Cro S, Hamid IP, Williams A (2014) Return to play after lateral meniscectomy compared with medial meniscectomy in elite professional soccer players. *Am J Sports Med* 42:2193–2198

Stein T, Mehling AP, Welsch F, Von Eisenhart-Rothe R, Jäger A (2010) Long-term outcome after arthroscopic meniscal repair versus arthroscopic partial meniscectomy for traumatic meniscal tears. *Am J Sports Med* 38:1542–1548

Medial Meniscus: longitudinal tears

- Isolated longitudinal tears in elite athletes, including bucket handle tears, of the medial meniscus present the most difficult treatment decisions for clinicians involved in managing athletes
- partial medial meniscectomy leads to predictable and reliable high return to play (RTP) rates
- professional footballers, it was shown to lead to 100% return to play at an average of 5 weeks post-operatively, with no re-operations in 48 cases
- medial meniscal repair: higher rate of re-operation and failure in the short term as compared to lateral meniscal repair

Medial Meniscus: longitudinal tears

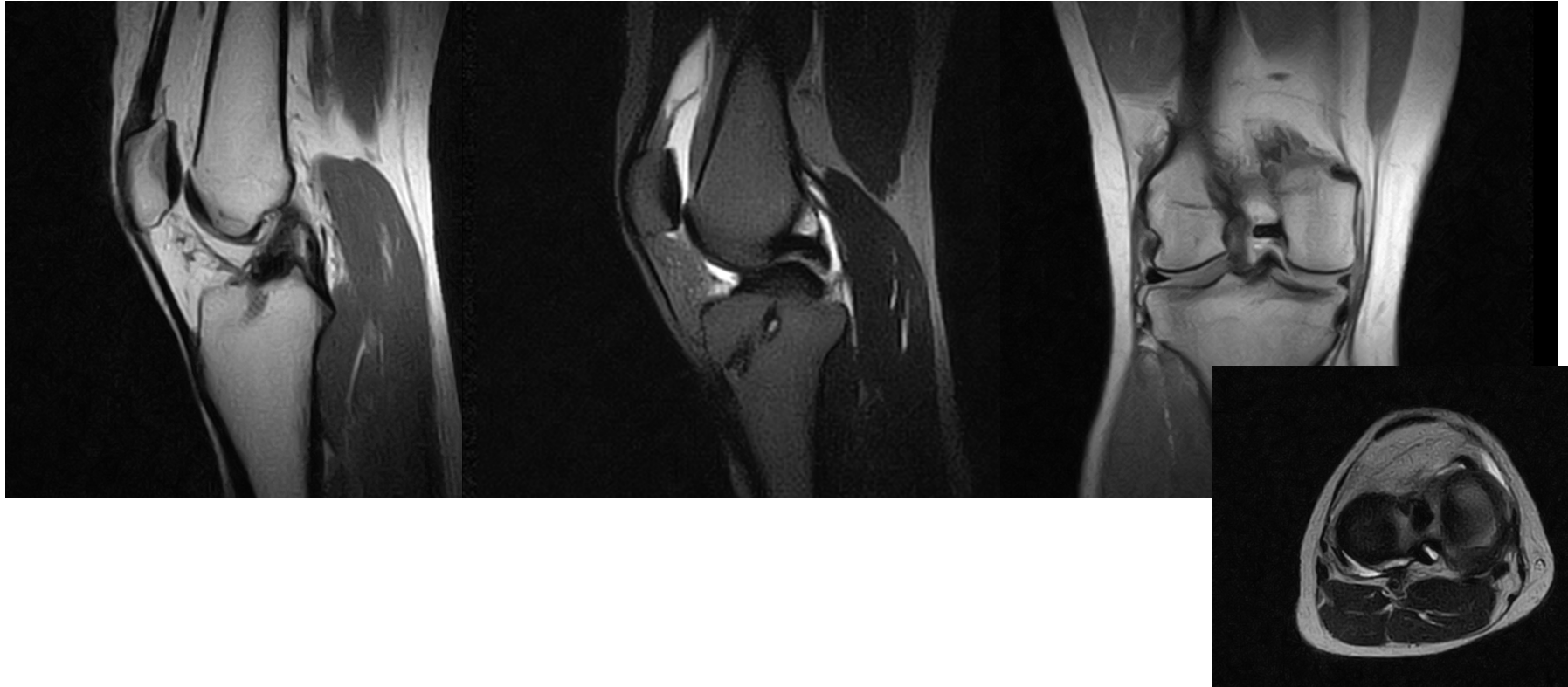
- In great contrast with athletes who have undergone lateral meniscectomy, it is very rare for a player to retire prematurely due to the arthritic consequences of medial meniscectomy
- Repair and meniscectomy is how far the tear is from the periphery:
 - Repairs of tears more than 4 mm from the periphery have shown higher rates of failure
 - Repairs less than 2 mm from the periphery have shown increased healing potential

The decision to perform a meniscectomy versus repair must be made in combination with the athlete and staff (recovery, career, future)

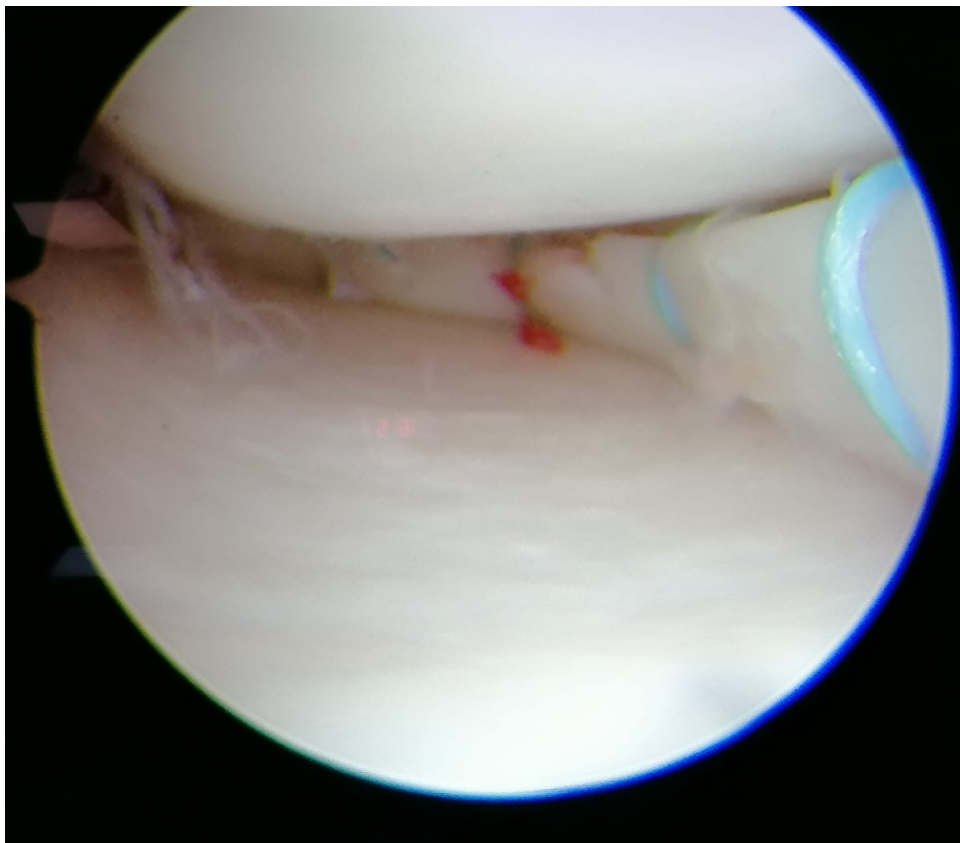
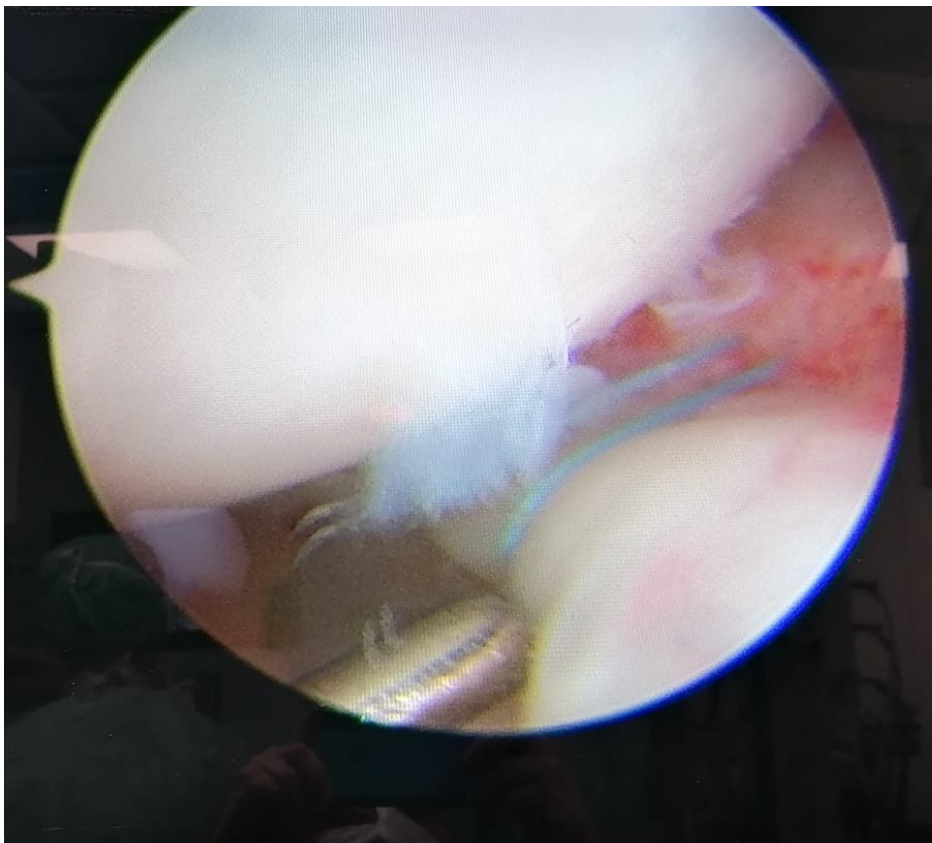
V.M., F. 24 y, professional football player

ACL reconstruction 1 y before

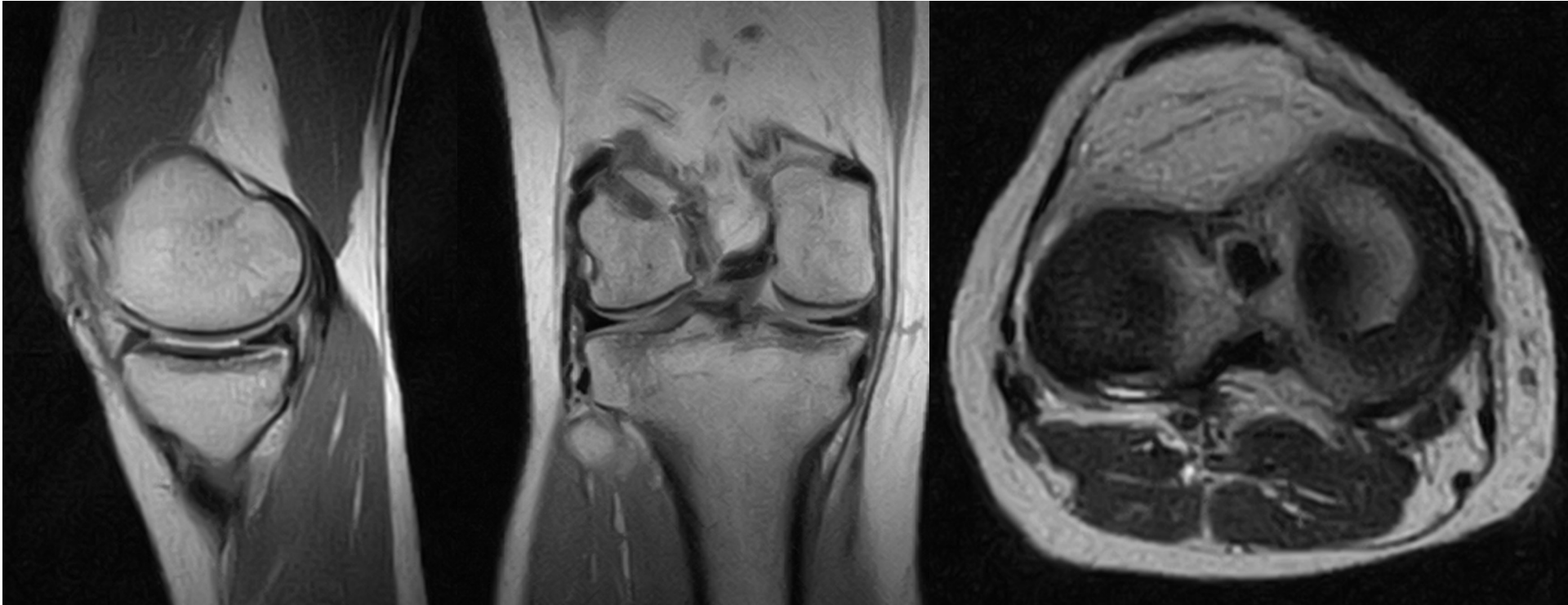
Medial bucket handle tears (less than 2 mm from periphery)



Intraoperative view



3 m follow up

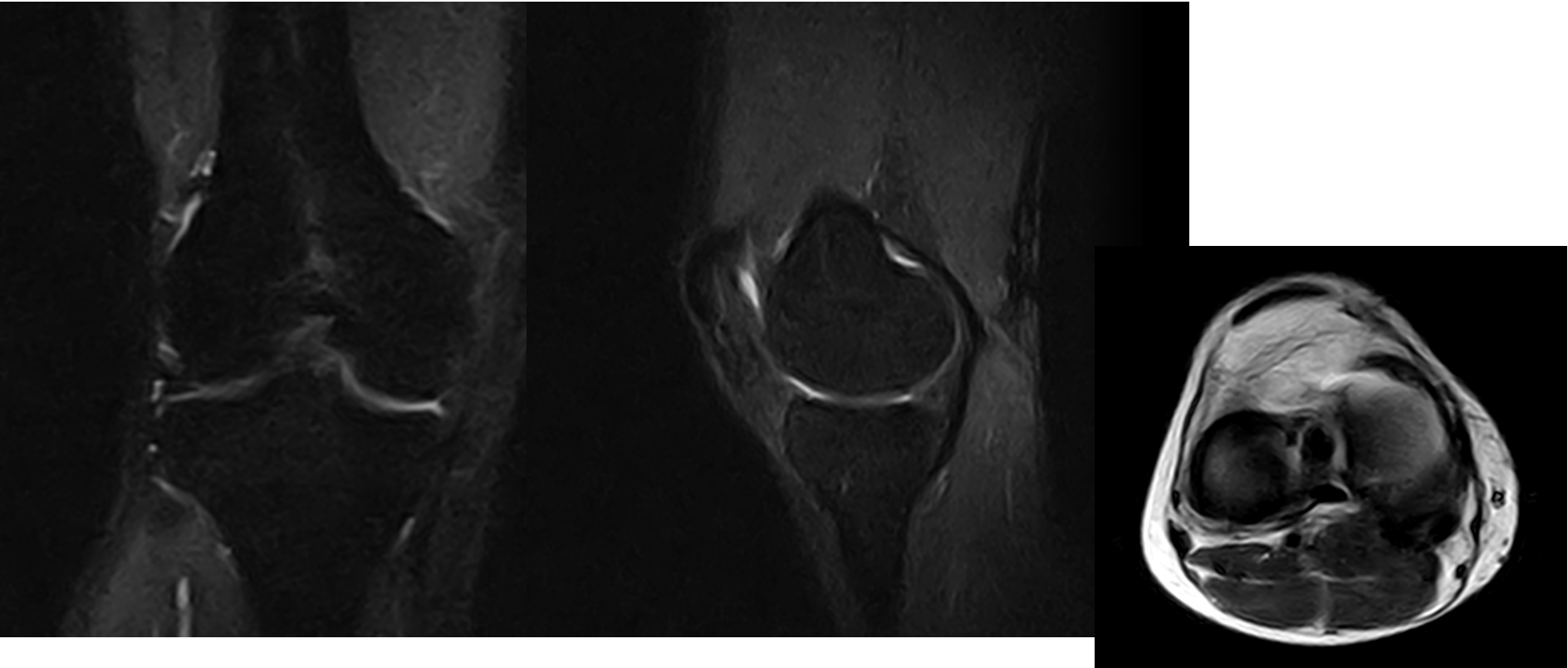


Return to play after 4 months

6 m follow up



After 18 m new medial meniscus tear: meniscectomy
MRI after surgery



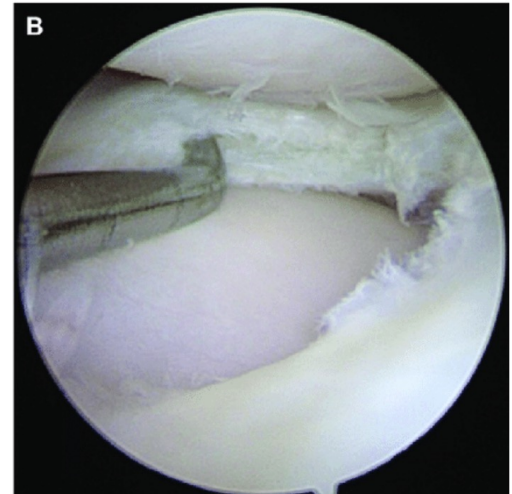
Medial Meniscus: degenerative tears

- posterior third to half of the medial meniscus
- poor healing potential
- incidental findings on an MRI
- injection of hyaluronic acid (HA) and/or platelet-rich plasma (PRP) are considered as well if there is an effusion present during the training

Indication: NO SURGERY

Surgery is only considered after failure of non-operative measures

- Resection of as little tissue as possible:
- Horizontal tear (the most common pattern noted in athletes): only the inferior leaf must be resected



Medial Meniscus: posterior root tears

- Are uncommon but, untreated, can be devastating injuries in athletes
- Medial meniscus posterior root repair restores the competence of the medial meniscus by addressing meniscal extrusion and should be attempted in all cases, even in the presence of established chondral damage



Lateral Meniscus: Longitudinal tears

- Are always repaired, even if involving degenerative tissue
- A variant of the longitudinal tear is a peripheral separation of the meniscus from its attachments to the capsule in the region of the popliteus tendon hiatus that give a 'hypermobile lateral meniscus' with intermittent true locking

Indication: REPAIR

***Lateral Meniscus:* Radial tears**

- this is most commonly seen in soccer players and are most commonly associated with an ACL rupture
- a devastating de-functioning of the lateral meniscus, akin to total/sub-total lateral meniscectomy

Indication: REPAIR

REHAB program: restrict indication according to weight bearing and flexion

Lateral Meniscus: Anterior horn

- fissuring of the anterior horn of the lateral meniscus occurs so frequently that it should be viewed as 'normal' in the running athlete and only rarely needs surgical intervention
- anterior root which can irritate the fat pad in extension

Indication: NO SURGERY usually

- injection with steroid on fat pad
- surgery only if residual pain (remove and/or stabilize)

***Lateral Meniscus:* Horizontal (cleavage tears)/lateral meniscal cysts**

- most common degenerative tears seen in elite athletes, often asymptomatic
- If symptoms are present, they frequently relate to an associated cyst irritating the iliotibial band rather than the tear itself

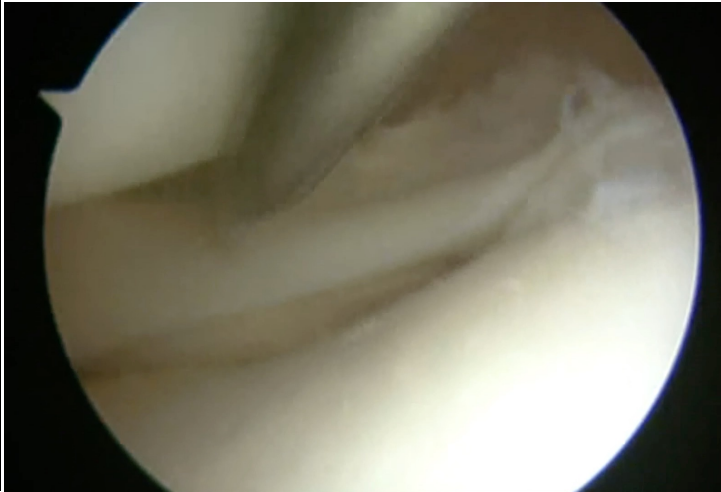
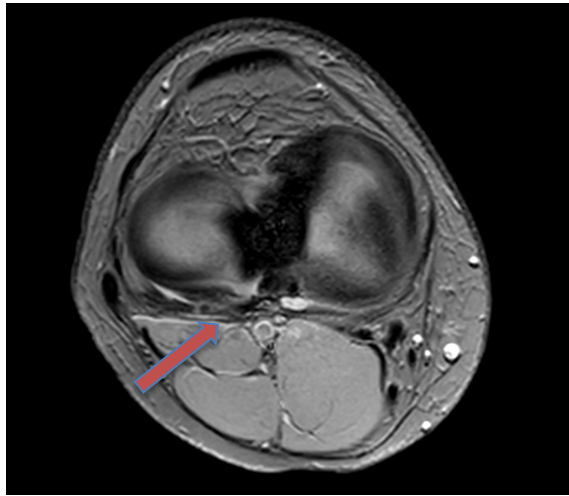
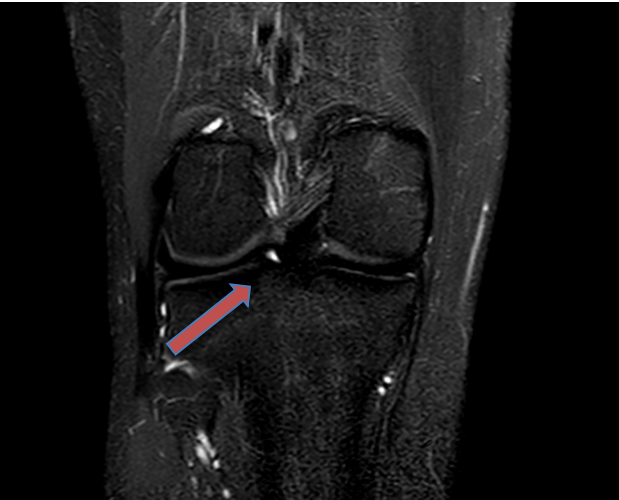
Indication: NO SURGERY usually

- injection the cyst with steroid or PRP and needling
- If pain persistent surgery: debridement, repair or inferior leaf should be removed

***Lateral Meniscus:* Posterior root tear**

- Always occur with ACL ruptures and are more common in injuries sustained playing contact sports

Indication: REPAIR at the same time when undertaking ACL reconstruction



«Not all meniscus tears require intervention: the majority of meniscal tears seen on athletes' MRI scans are innocent, and knees with such tears can only be made worse with surgery»

Knee Surgery, Sports Traumatology, Arthroscopy (2022) 30:1511–1519
<https://doi.org/10.1007/s00167-021-06694-6>

KNEE



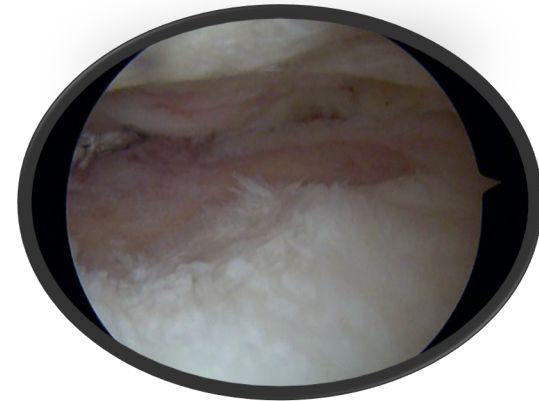
Evidence-based rationale for treatment of meniscal lesions in athletes

Kyle A. Borque¹ · Mary Jones²  · Moises Cohen³ · Darren Johnson⁴ · Andy Williams²

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CONCLUSIONS

- Repair all the meniscal tear if ACL reconstruction is associated
- Lateral meniscal tear must be repaired
- Recovery times are time/lesion specific
- Career is more important than the future of the knee



M, 26 y