ACL preservation

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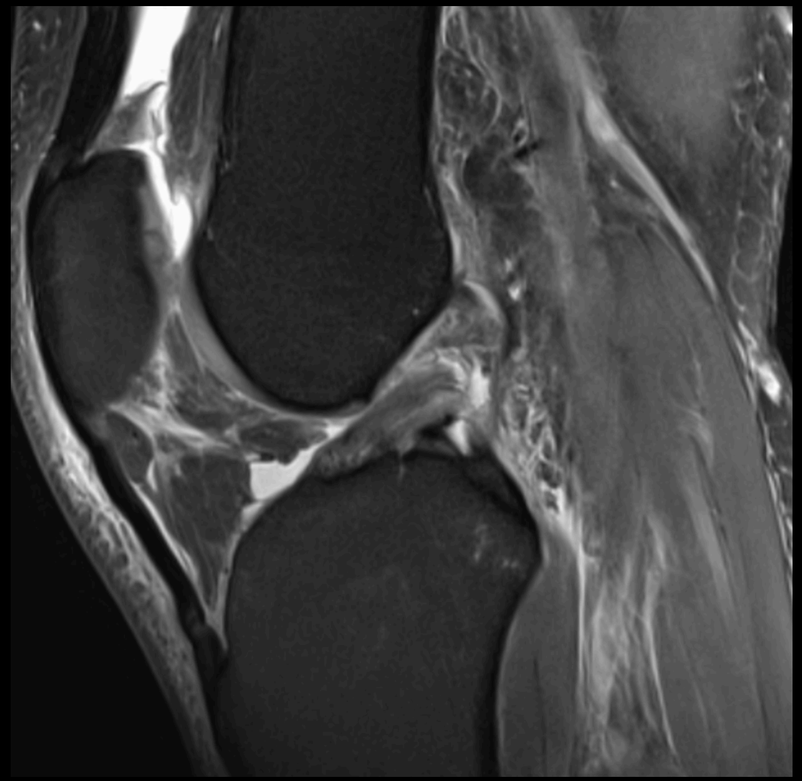
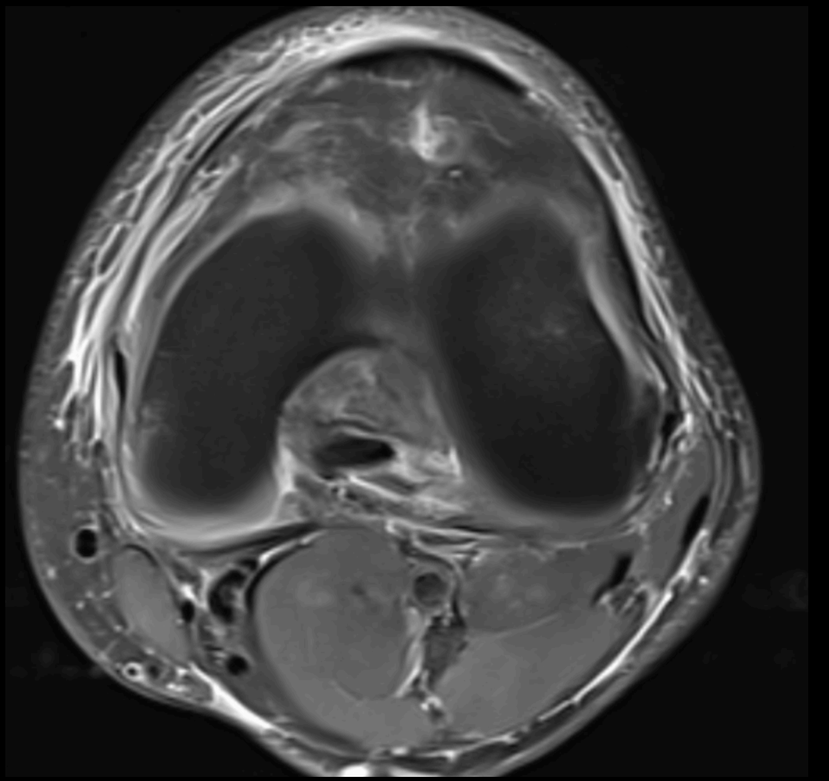
Preservation / Augmentation

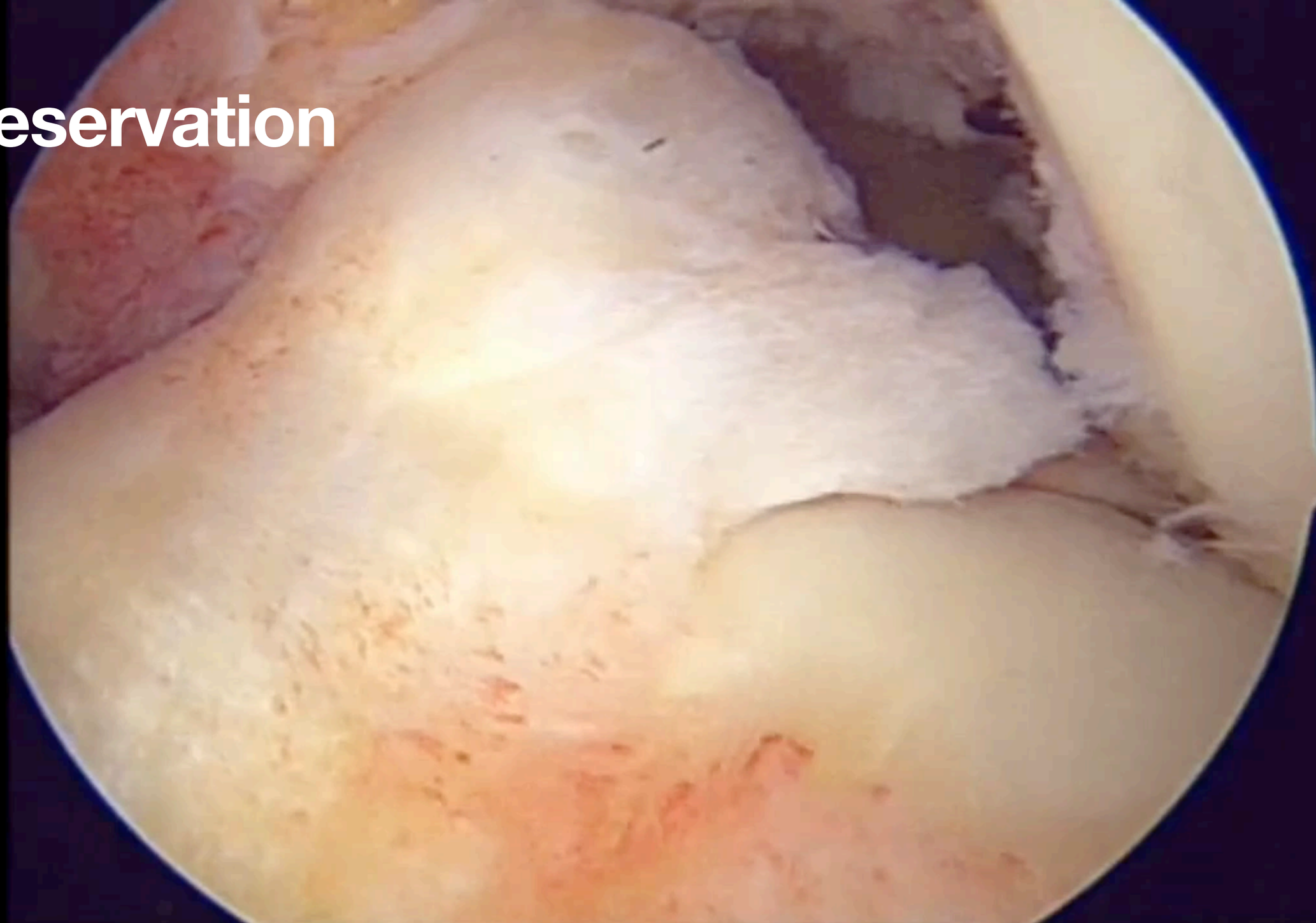
Case

- 32 yo male
- Recreational football player
- Knee injury 2 months ago
- FROM
- Lachman grade 2B, pivot shift 2





ACL preservation



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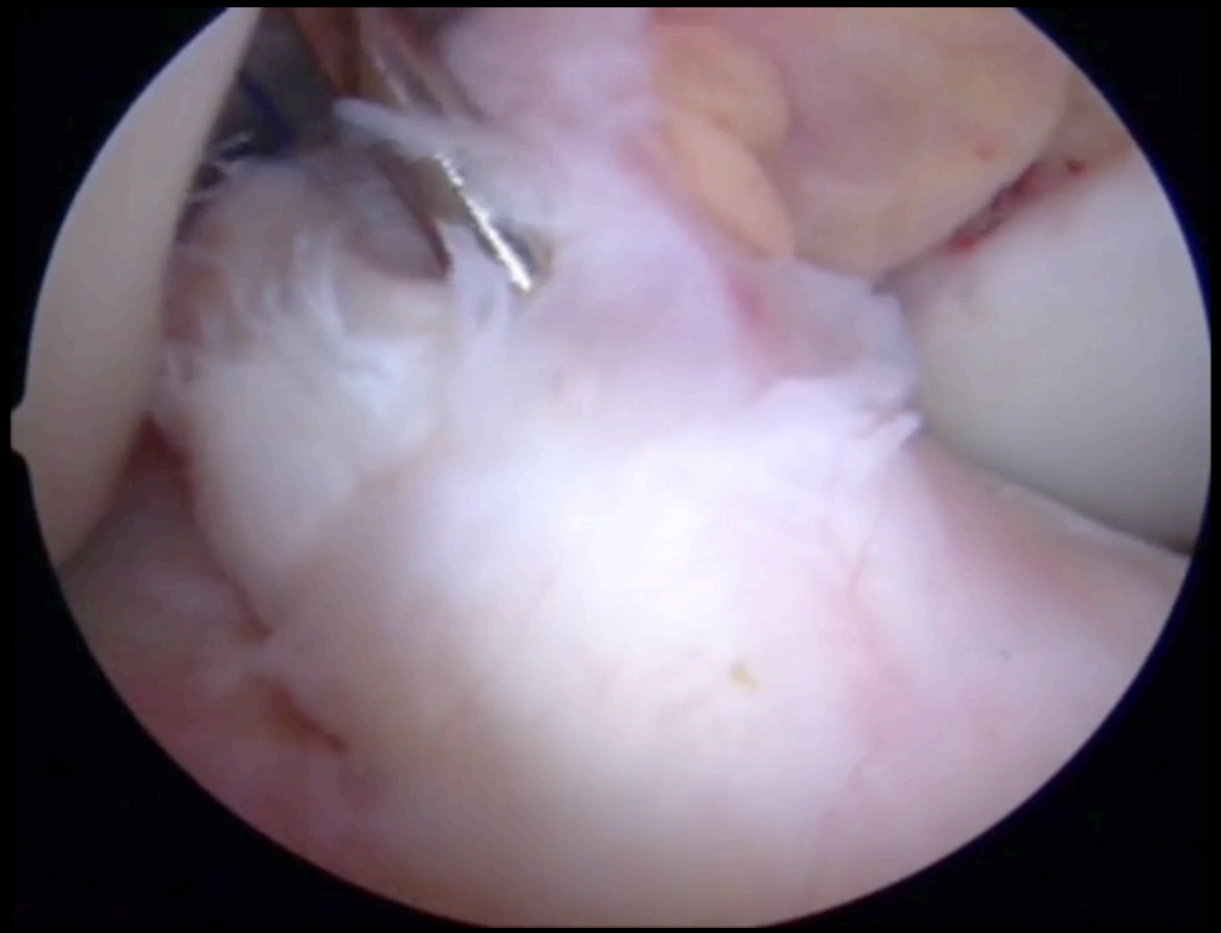

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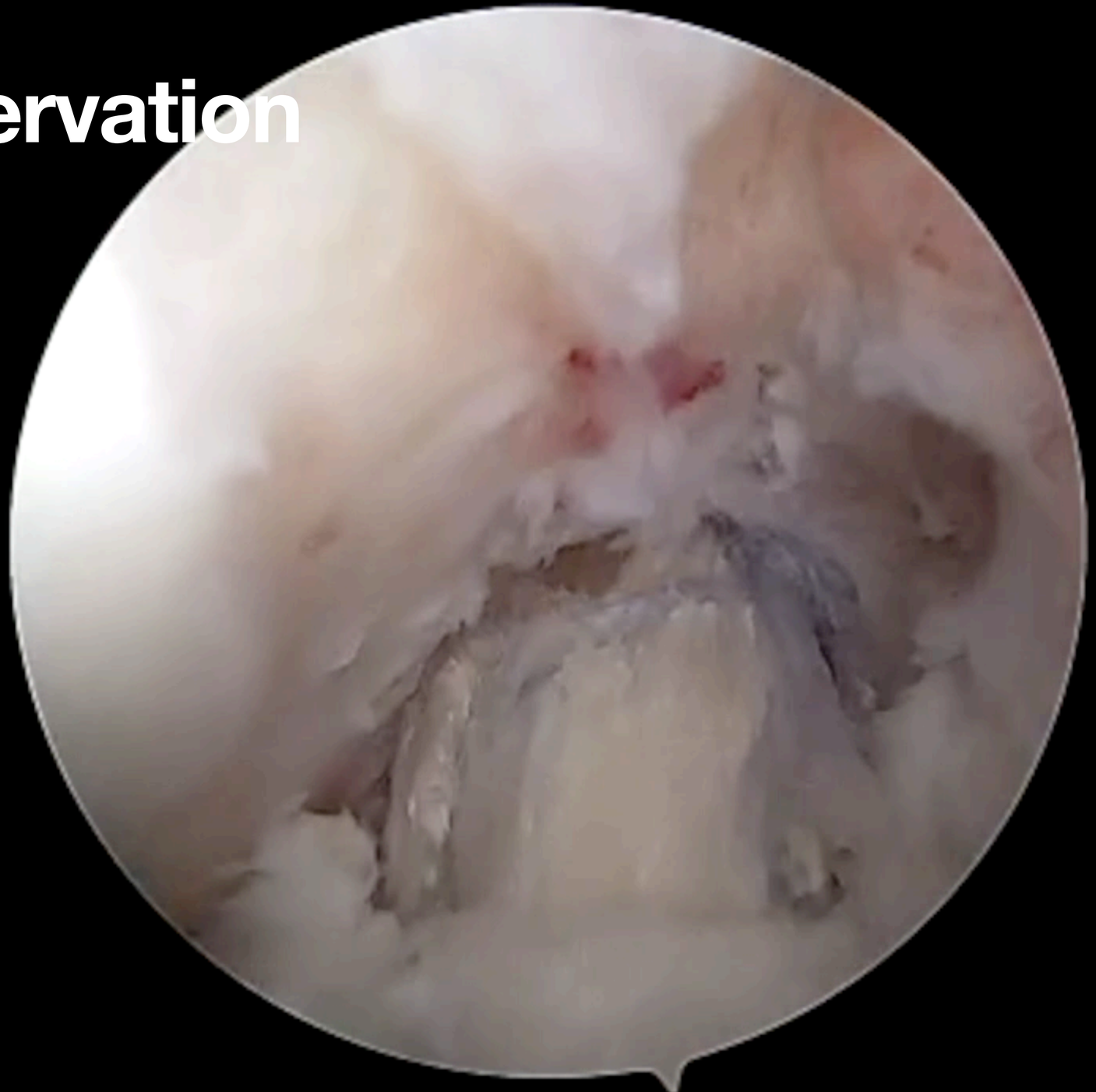
ACL preservation



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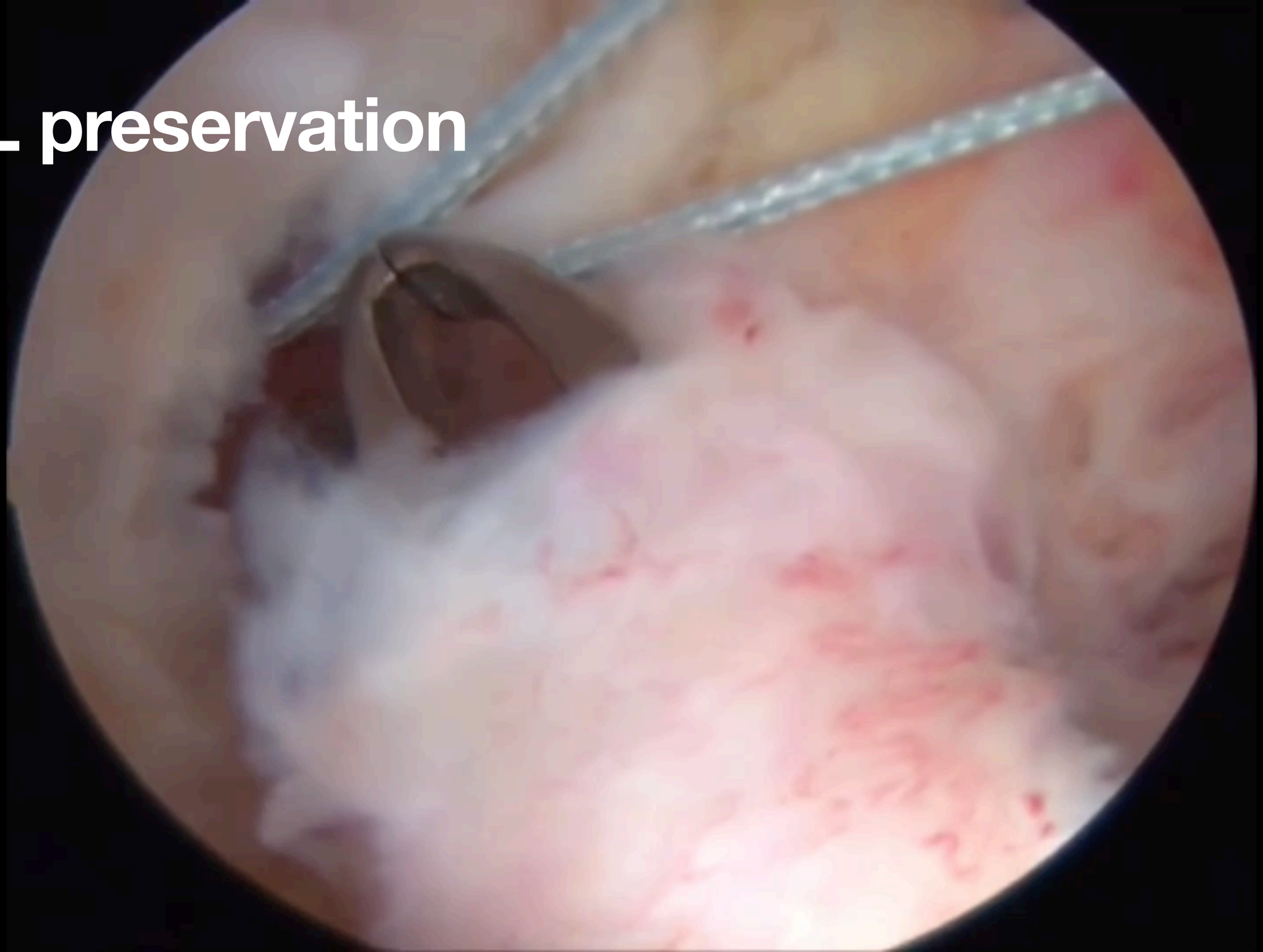

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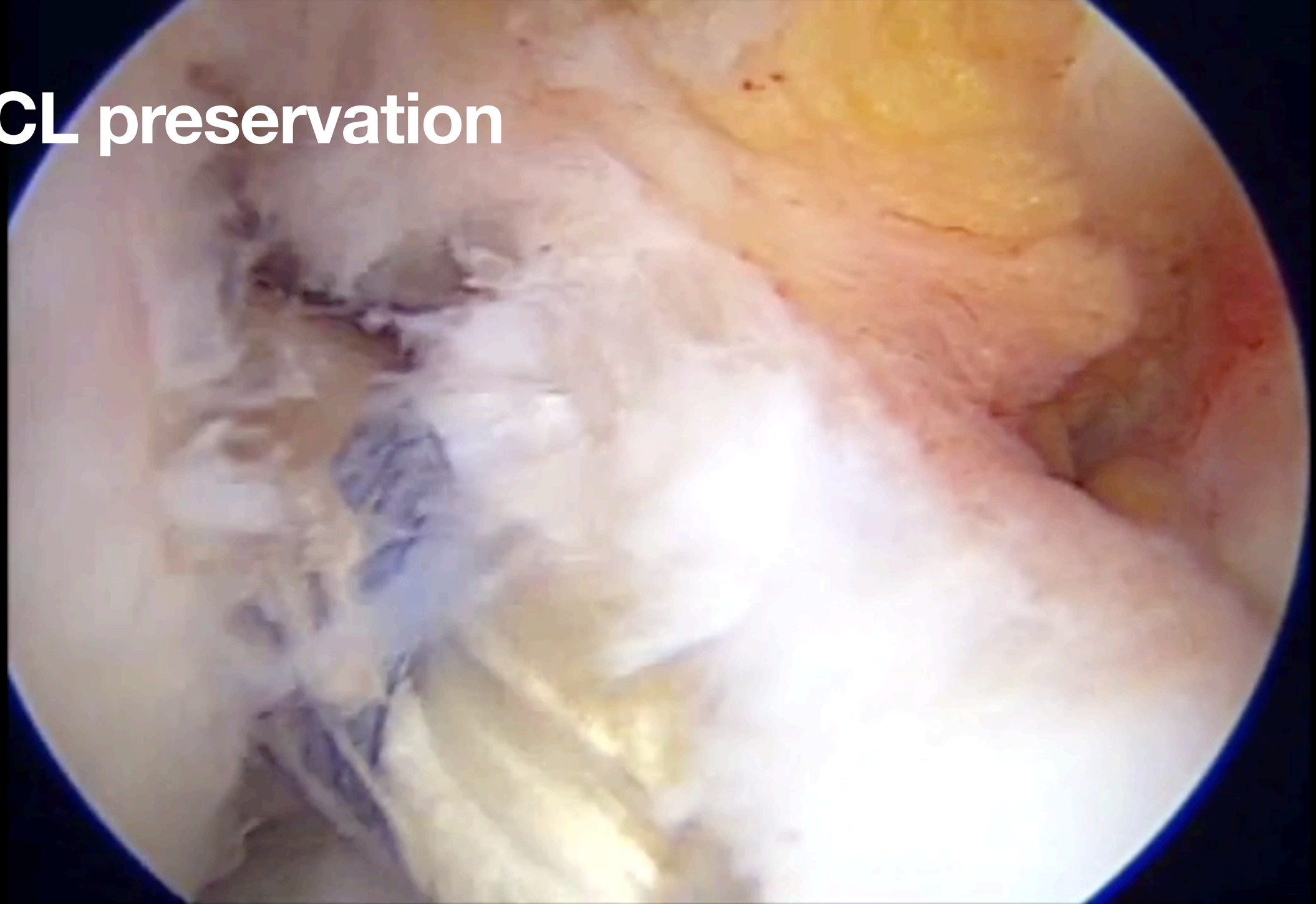
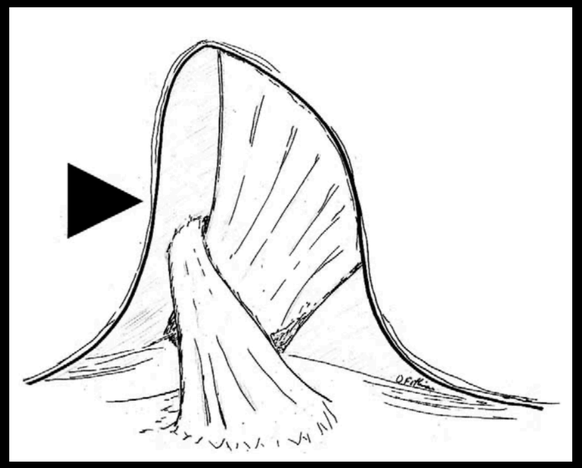


Crain classification (2005)



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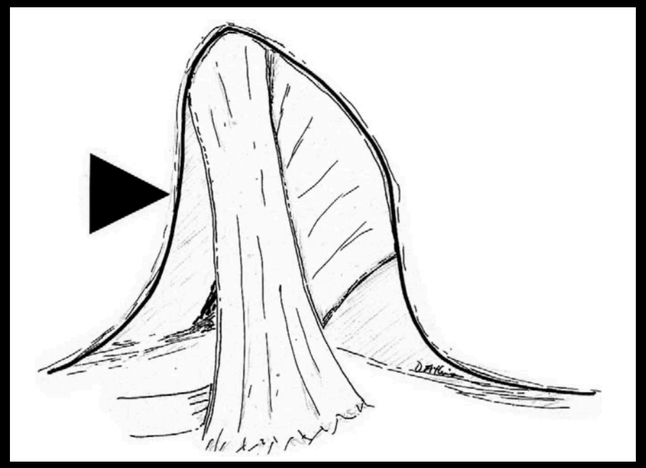

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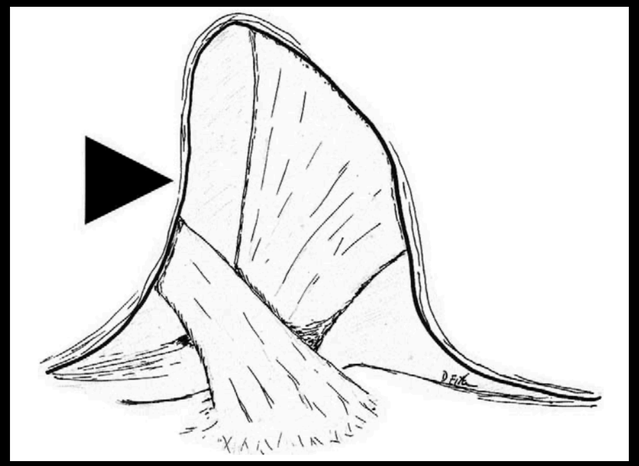

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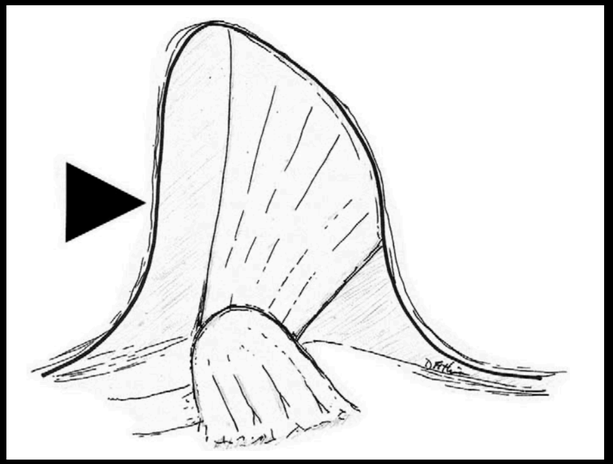
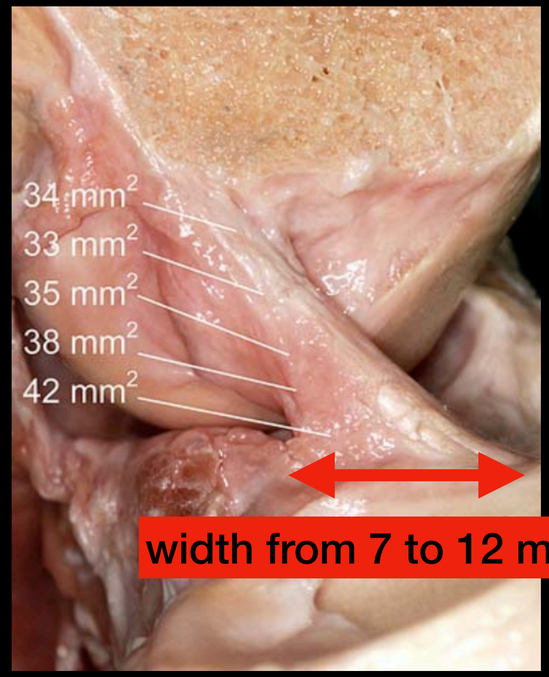


Type 4

Crain EH, Fithian DC, Paxton EW, Luetzow WF. Variation in anterior cruciate ligament scar pattern: does the scar pattern affect anterior laxity in anterior cruciate ligament-deficient knees? Arthroscopy. 2005 Jan;21(1):19-24

Why preserve the remaining ACL?



Duthon et al.

- Preserve the **ANATOMY**
- Maintenance of **vascular supply**
- Preservation of **proprioceptive receptors**
- Reference for **accurate tunnel placement**
- Protection in **early rehabilitation?**

Preservation: Evidence?

More cyclops or not?

- 389 patients
- “In our series, **6.7%** of the patients required arthroscopic removal of cyclops lesions. **Female gender, associated extra-articular reconstruction and sports practice were factors** related to this lesion.
- **Remnant preservation had no relationship with cyclops lesion formation**.”

Helito CP, Silva AGMD, Giglio PN, Pádua VBC, Pécora JR, Gobbi RG. Risk Factors for Symptomatic Cyclops Lesion Formation after Anterior Cruciate Ligament Reconstruction. Rev Bras Ortop (Sao Paulo). 2023

Preservation: Evidence?

Accuracy of the tunnel position

- 50 patients
- **Remnant preservation can be safely performed without compromising tunnel position**. Therefore, the potential benefits of this technique can be utilised, in clinical practice, without sacrificing the ability to optimize tibial tunnel positioning.

Kosy JD, Walmsley K, Gordon EA, Heddon SV, Anaspure R, Schranz PJ, Mandalia VI. Remnant preservation does not affect accuracy of tibial tunnel positioning in single-bundle ACL reconstruction. Knee Surg Sports Traumatol Arthrosc. 2021 Apr;29(4):1157-1163.

Preservation: Evidence?

Clinical outcomes

- Remnant-preserving ACLR promotes **similar graft synovial coverage and revascularization** to standard ACLR.
- **Equivalent or superior postoperative knee stability and clinical scores** were observed for remnant-preserving ACLR compared with standard ACLR.
- **No significant difference in the total complication rate** between the groups was evident.

Wang H, Liu Z, Li Y, Peng Y, Xu W, Hu N, Huang W. Is Remnant Preservation in Anterior Cruciate Ligament Reconstruction Superior to the Standard Technique? A Systematic Review and Meta-Analysis. Biomed Res Int. 2019

Preservation: Evidence?

Clinical outcomes

- Remnant preservation significantly had **better results** in terms of patient functional score (Lysholm, IKDC), knee stability (Pivot shift test, postoperative side-to-side anterior laxity)
- **Less tibial tunnel enlargement**
- In terms of **complications** (incidence of Cyclops lesions, range of motion, re-injury rate), **no significant differences**

Xie H, Fu Z, Zhong M, Deng Z, Wang C, Sun Y and Zhu W (2022) Effects of remnant preservation in anterior cruciate ligament reconstruction: A systematic review and meta- analysis. Front. Surg.

Preservation: Evidence?

Clinical outcomes

- Overview of Systematic Reviews (14):
- **Compared with Standard Technique, Remnant Preservation in Anterior Cruciate Ligament Reconstruction has more advantages in restoring joint function and stability and proprioception.**
- At present, the **quality of evidence is generally low** and the reliability of the conclusion is insufficient.

Zhang Y, Xiao X, Deng W, Wang J, Gao H, Han J. Is remnant preservation in anterior cruciate ligament reconstruction superior to the standard technique? An overview of systematic reviews. BMC Musculoskelet Disord. 2023 Nov 24;24(1)

Conclusion

- In our ongoing quest to replicate anatomy, the **ACL preservation** technique makes sense.
- **Early studies are promising**, but more evidence is needed in the future.

