



# Revisiting ACL Blood Supply and Its Implications for Treatment

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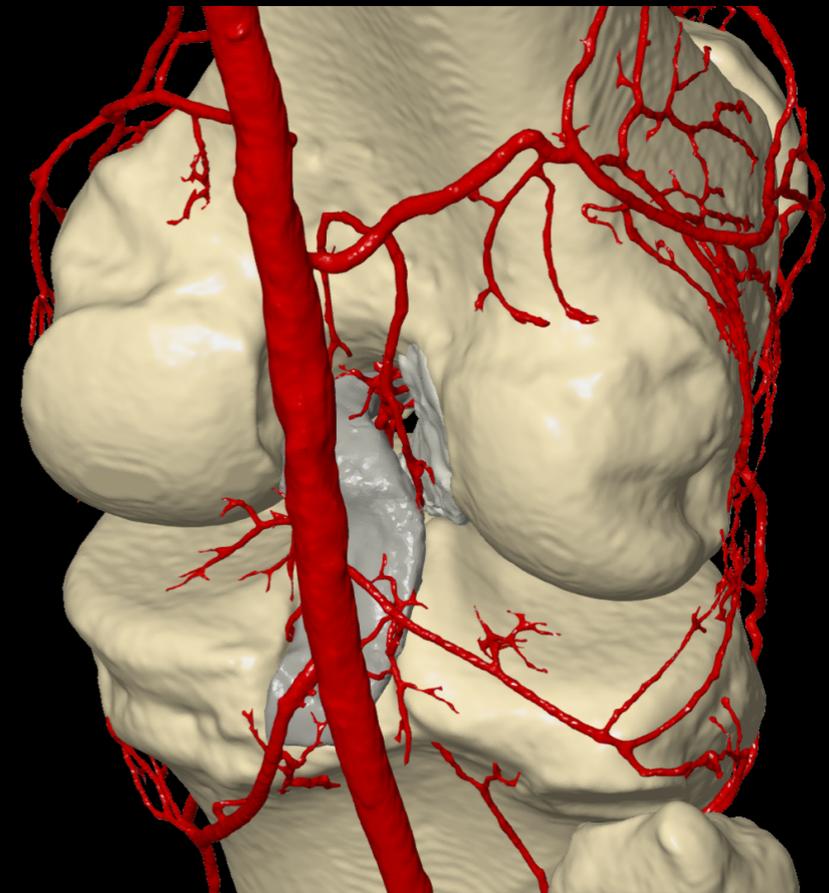
# Material and methods

- 60 fresh frozen cadaveric knees
  - 36 males
  - 24 females
- Detailed demographic data:
  - Age (21-87; mean 60,58)
  - BMI 15,7-43,2 (mean 25,98)
  - cause of death
- 18 arterial injection (gelatine-based contrast mixture to enhance vascular visualisation)
  - Post-injection, CT and MRI scans
  - analysed using 3D rendering software
- Cadaveric dissections

# Material and methods

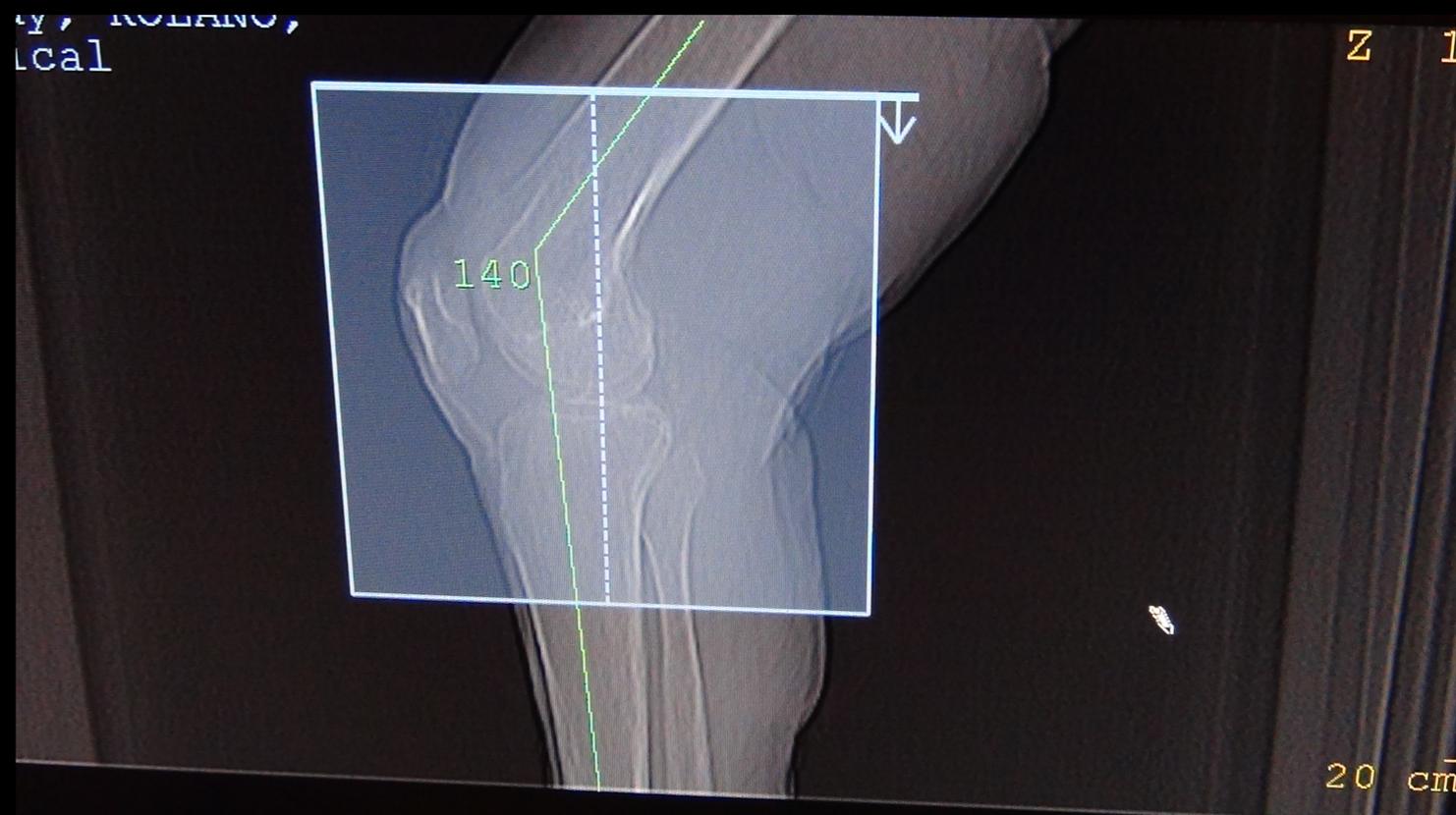
Each specimens (n=18):

- **Injection of the arteries** (gelatine-based contrast mixture to enhance vascular visualisation)
- MRI and CT scan
- **3D CT Reconstruction**



# CT scan

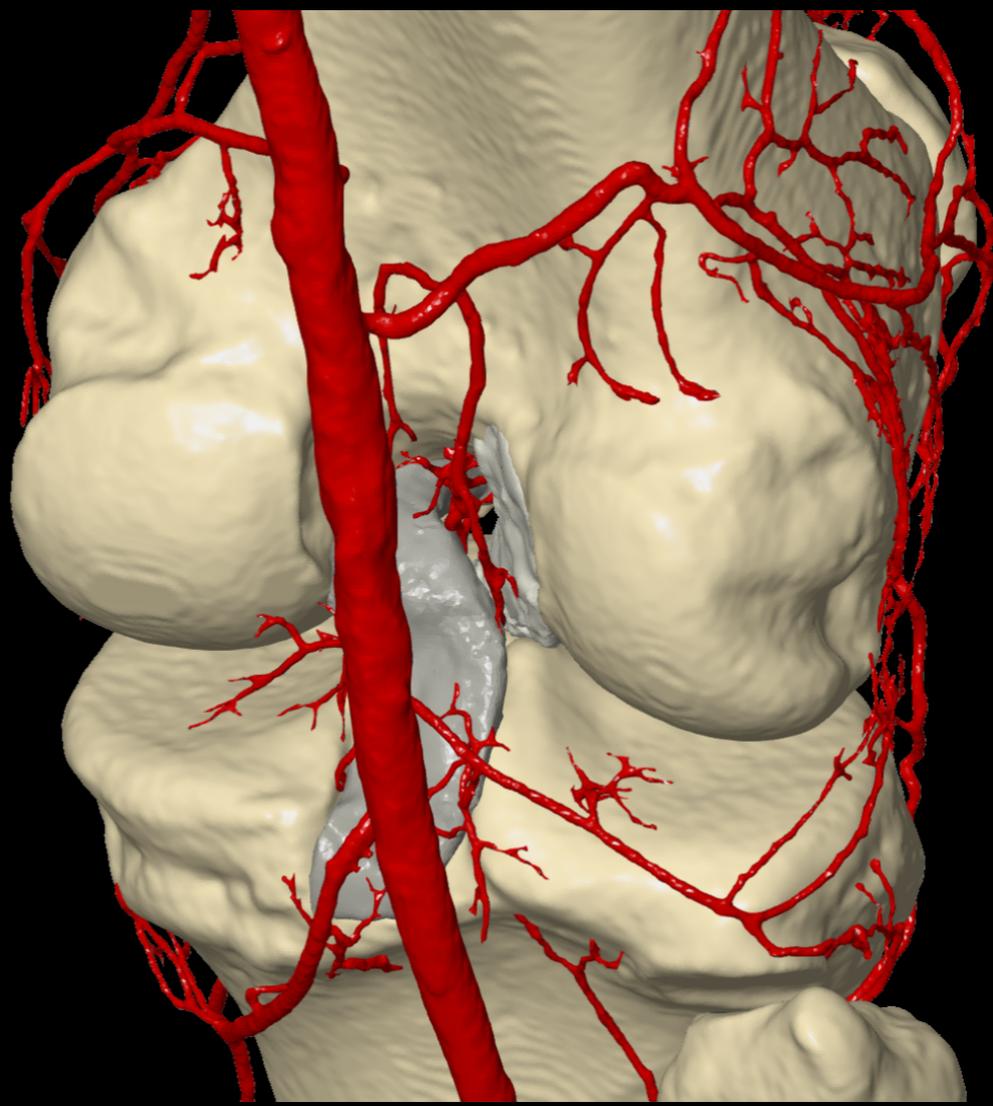
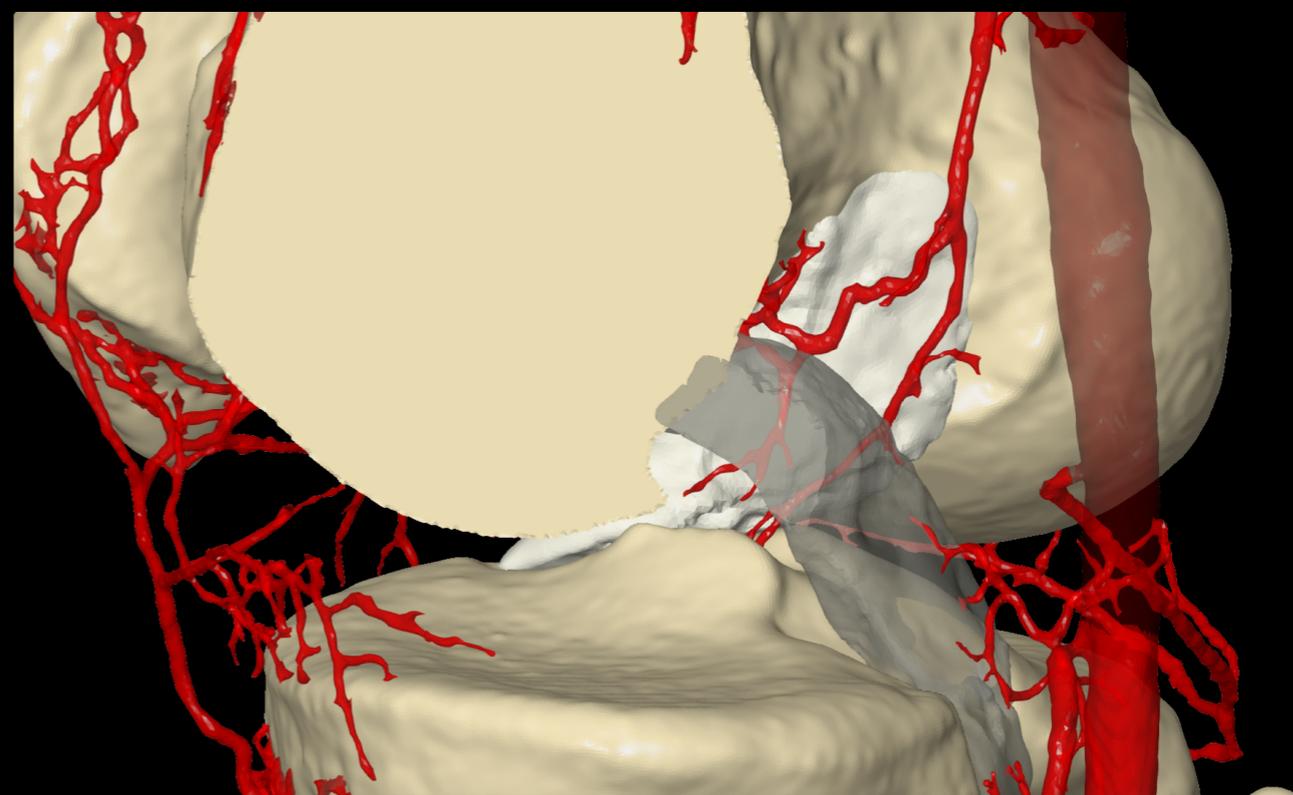
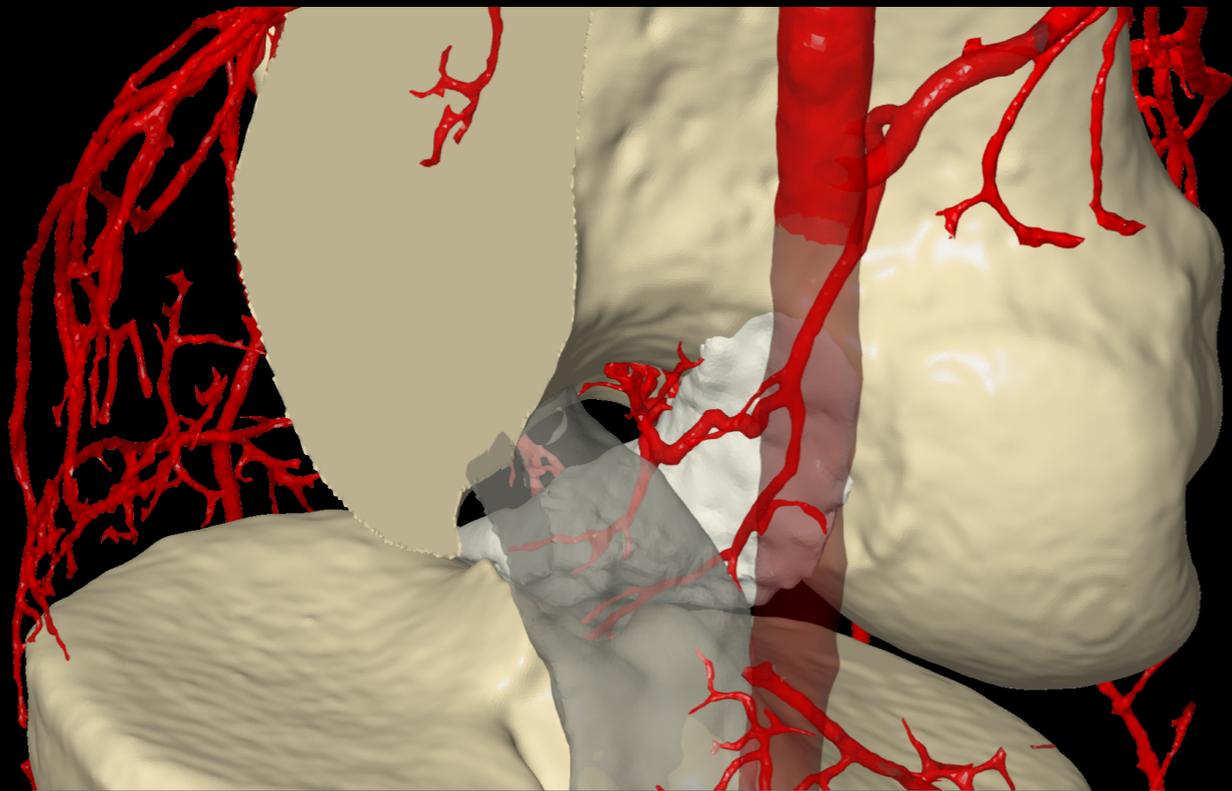
- CT in 8 different positions of the knee :
  - from full extension and 20°, 40°, 60°, 90°, 110°, 130° till 150° of flexion
- The knees were positioned on the side on soft horizontal pad and the angle was defined with goniometer.

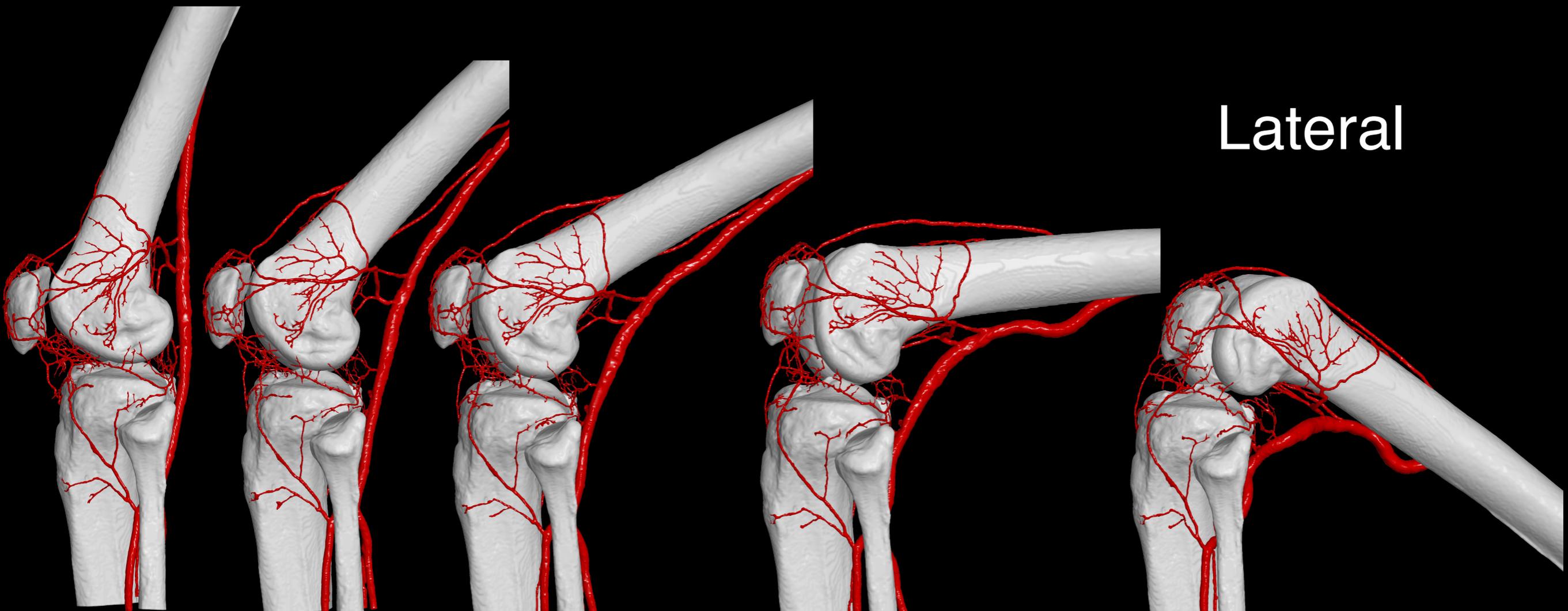
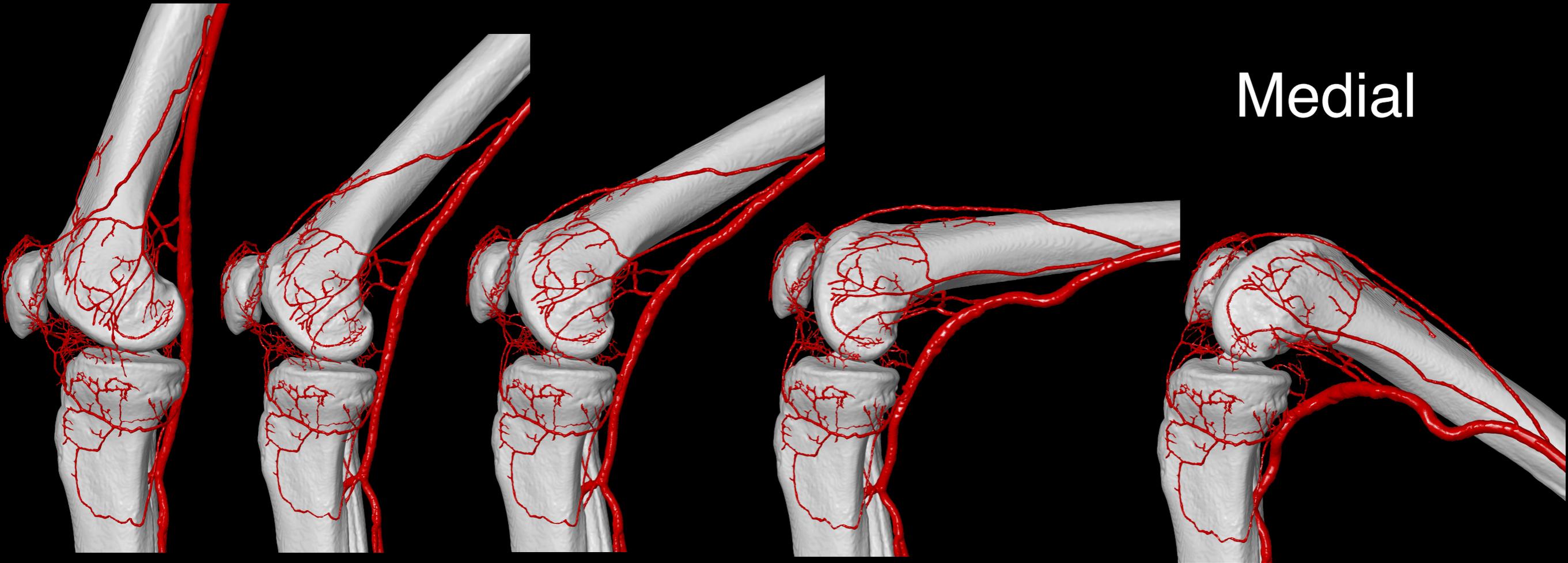


## CONDITIONS OF CT SCAN:

120 kV, 300 mAs, and a 0,67 mm slice thickness; pitch 0.66 (Brilliance CT 40-channel;)

The CT data – Volume rendering (VR) and Multi-Planar Reconstruction (MPR) - were processed with Philips Brilliance CT applications.

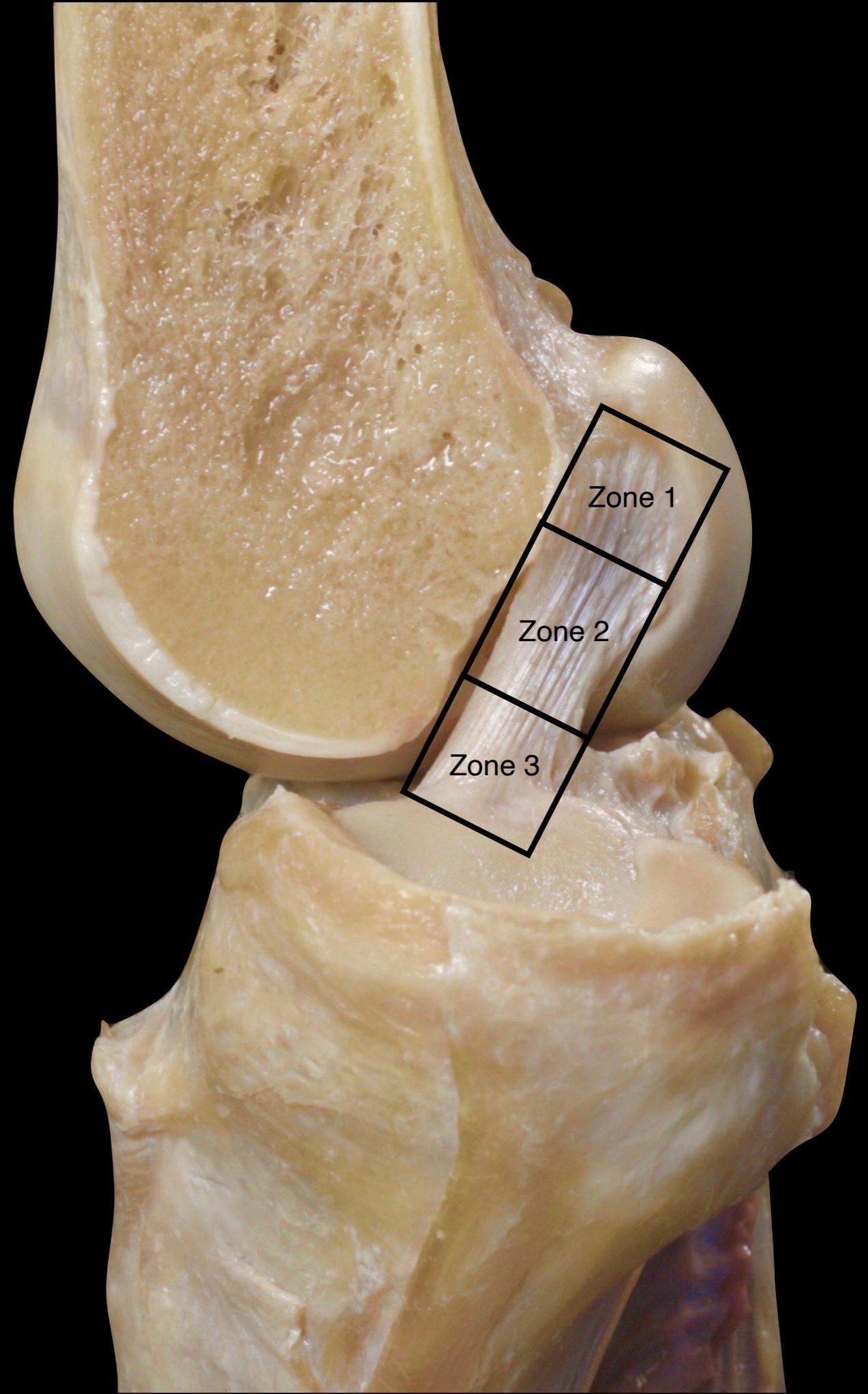




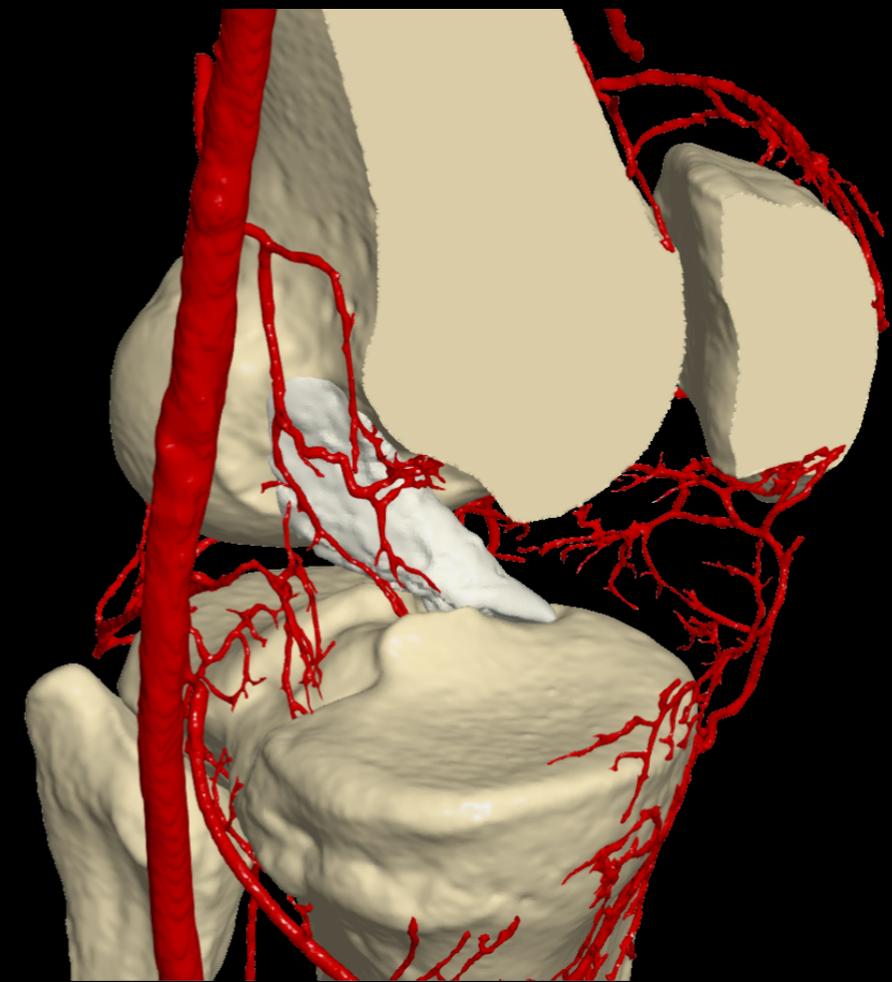
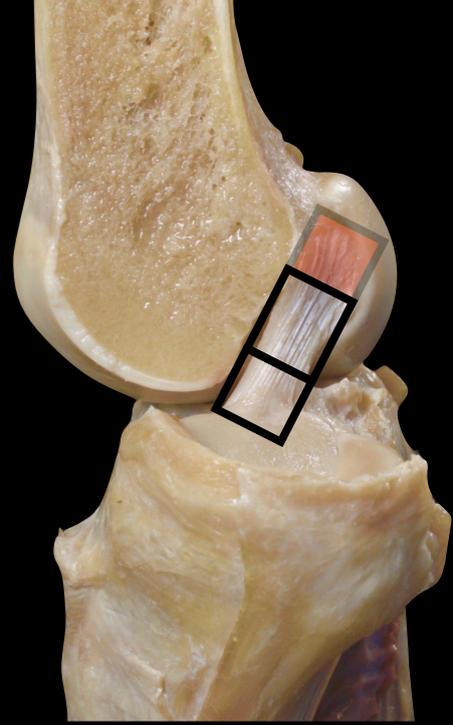
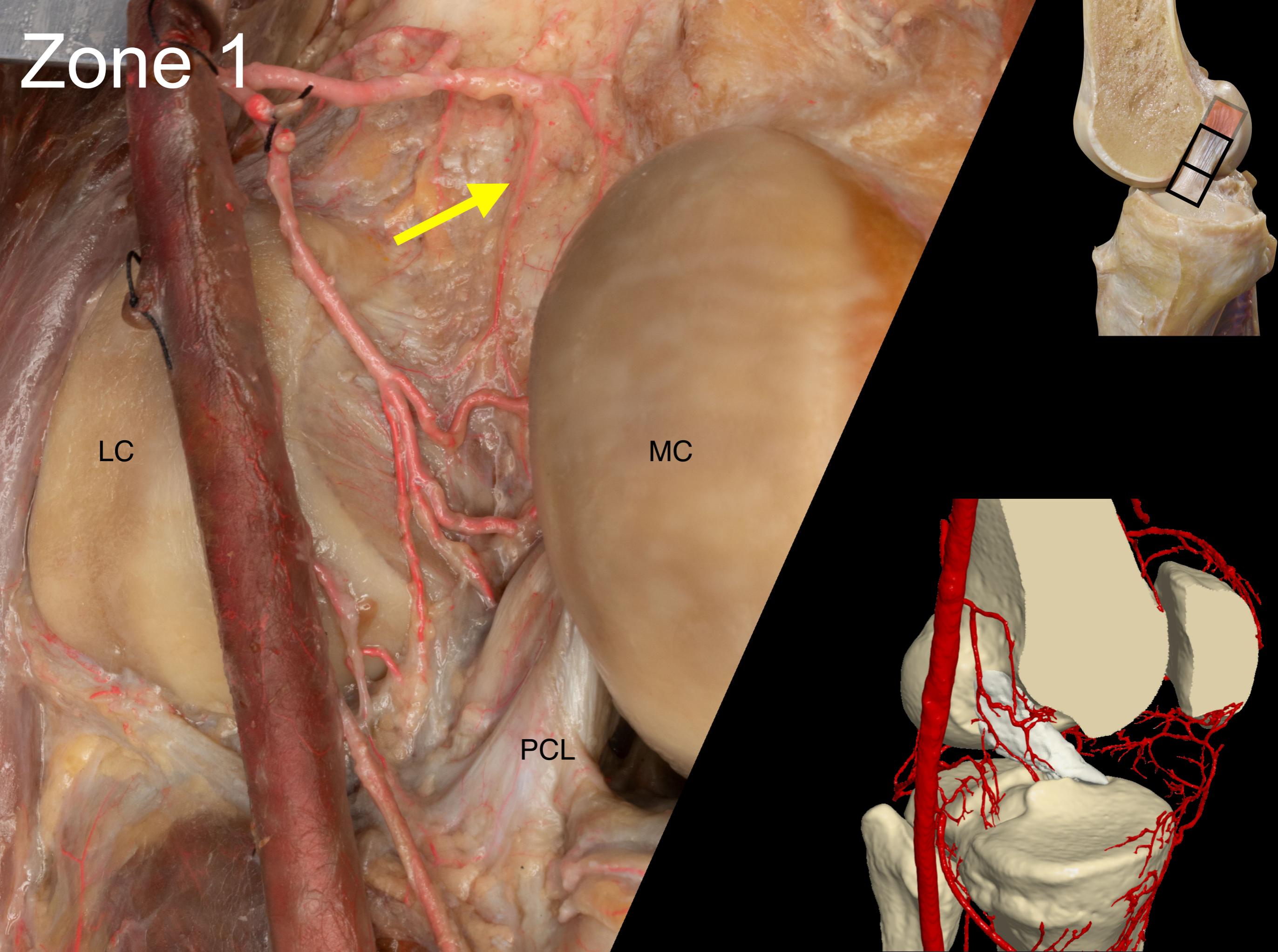
Zone 1 - femoral attachment

Zone 2 - midsubstance

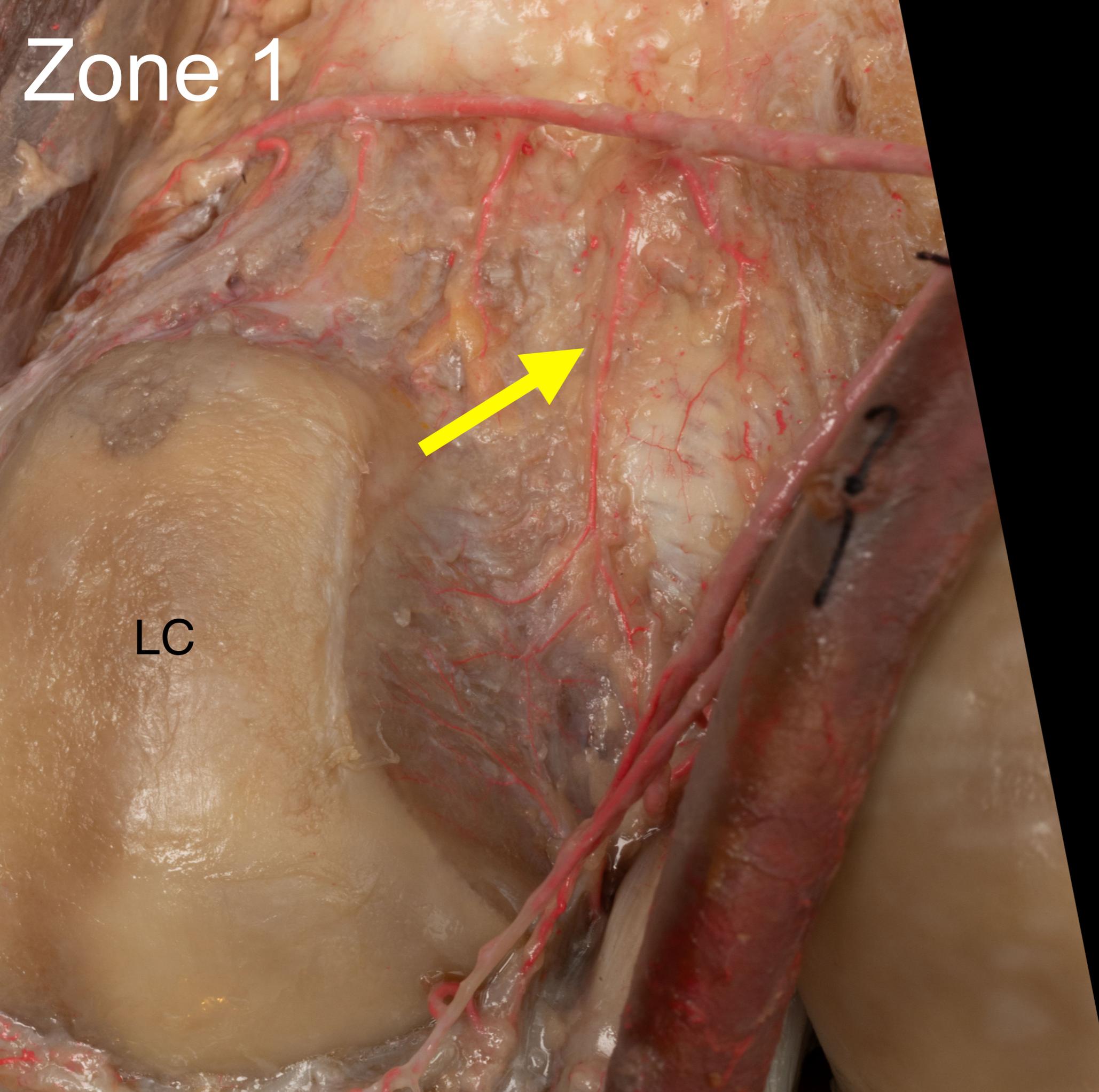
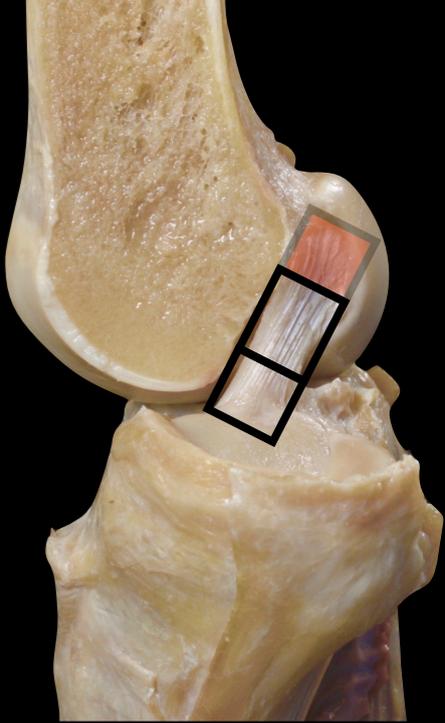
Zone 3 - tibial attachment



Zone 1

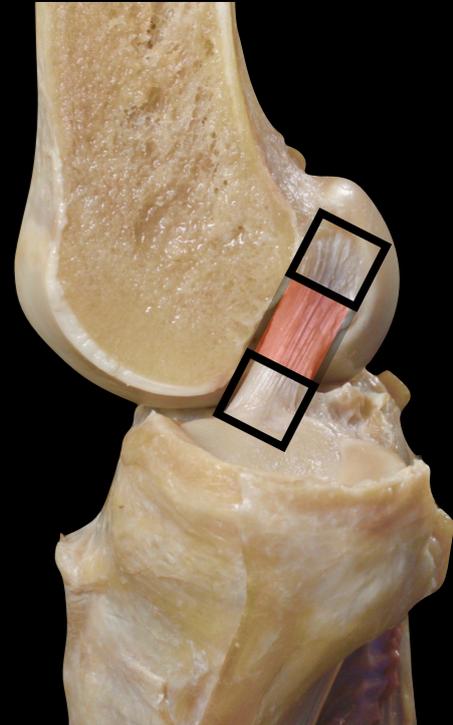


Zone 1



LC

# Zone 2

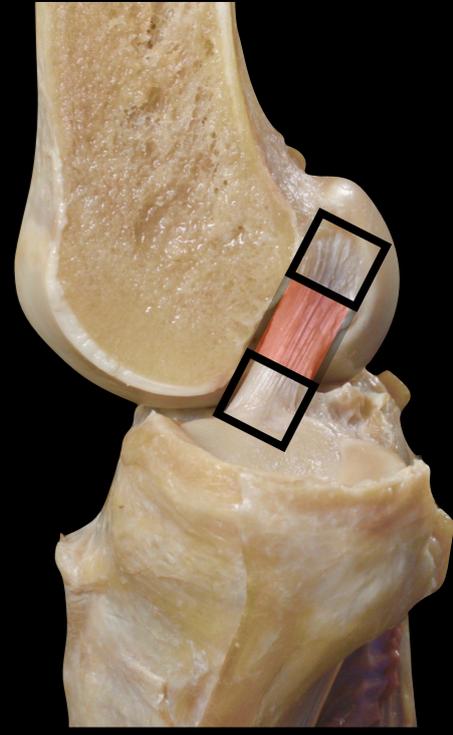


# Zone 2

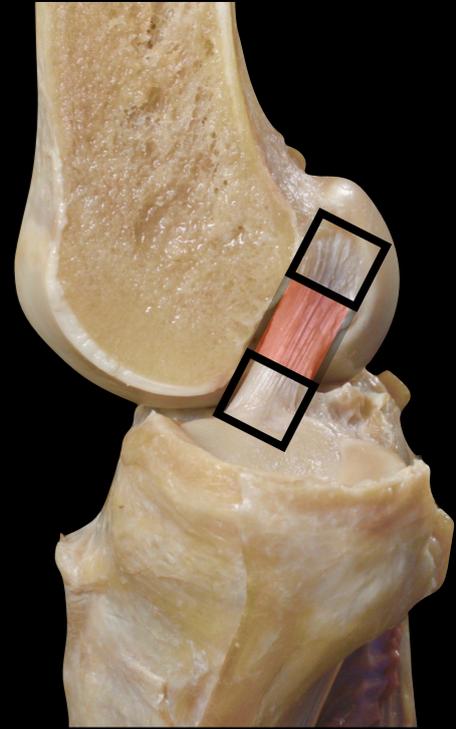
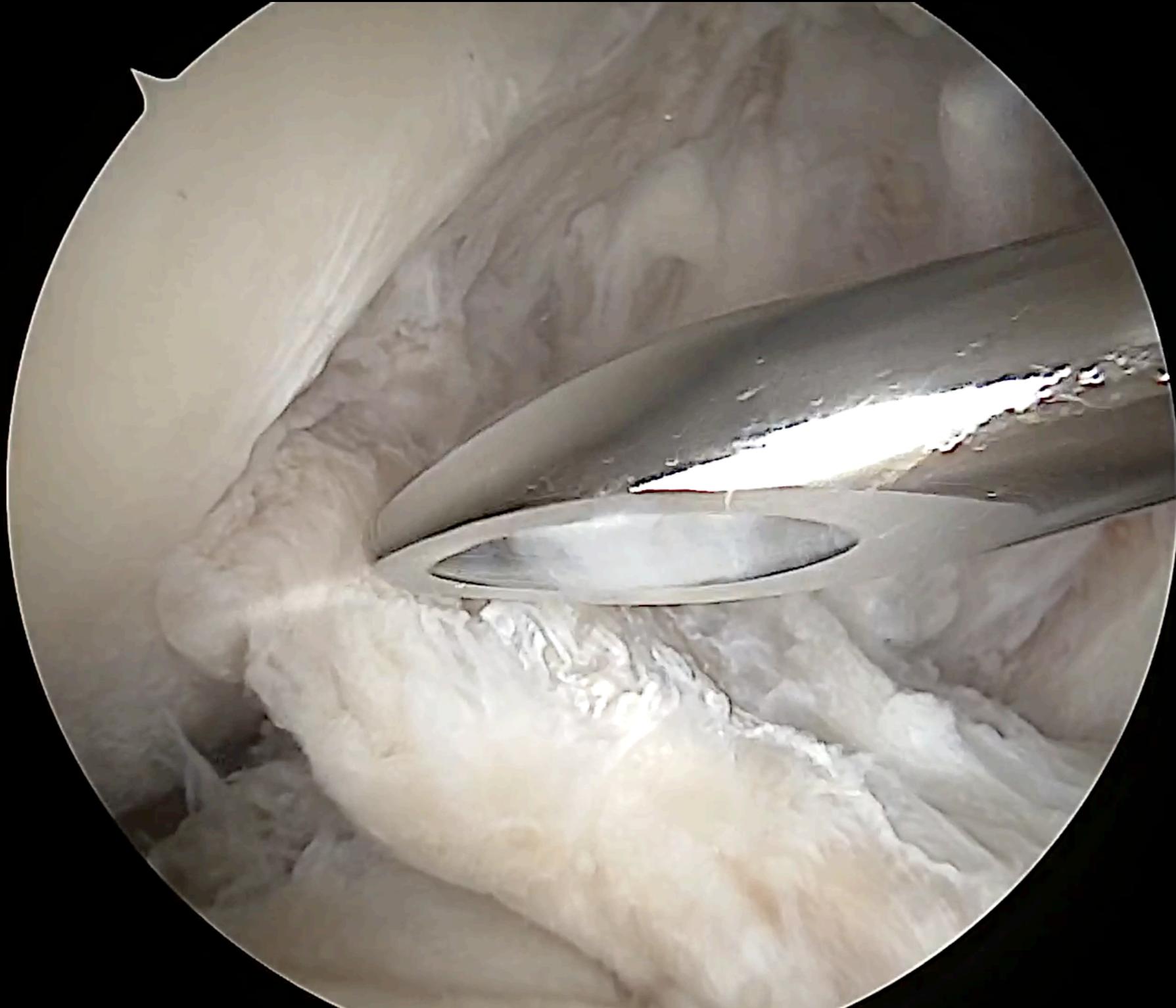
MC

LC

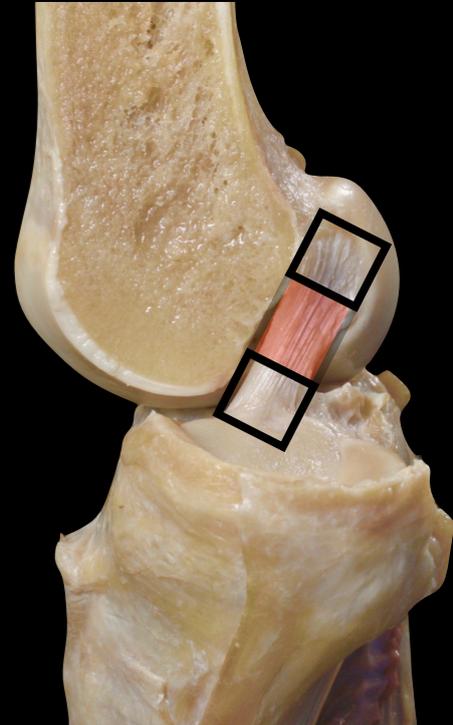
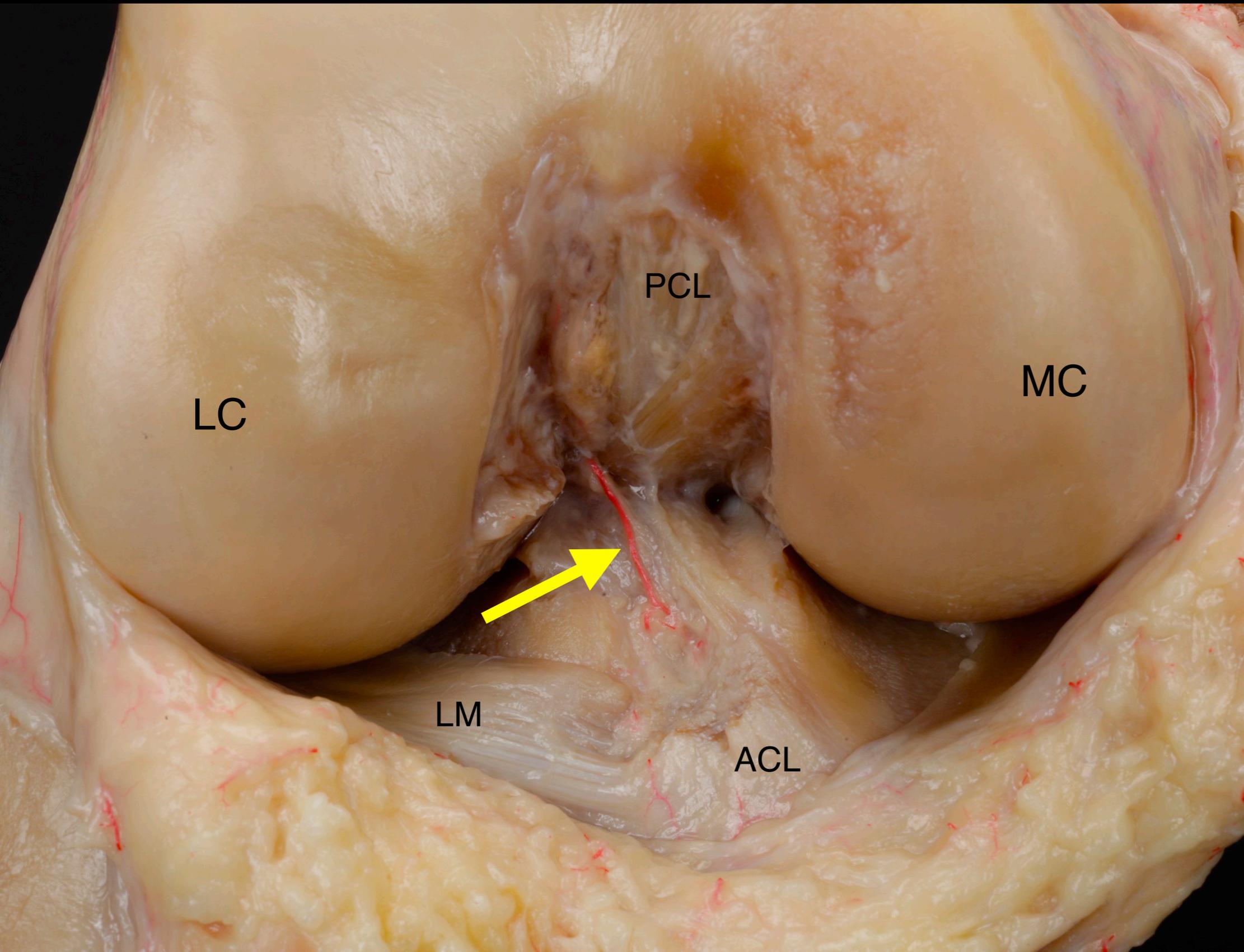
PCL



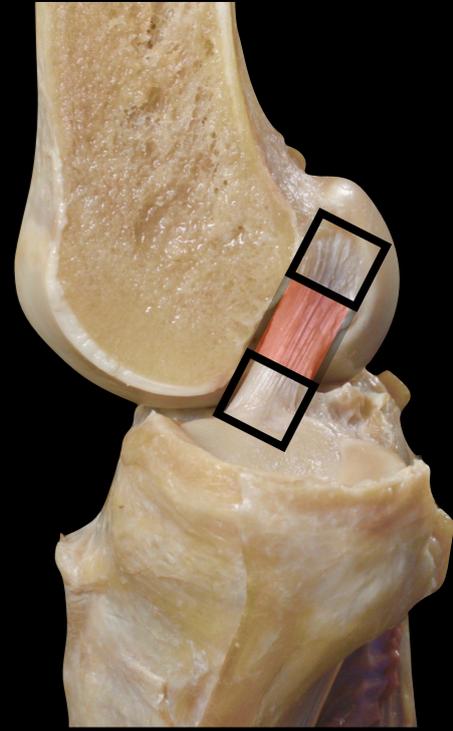
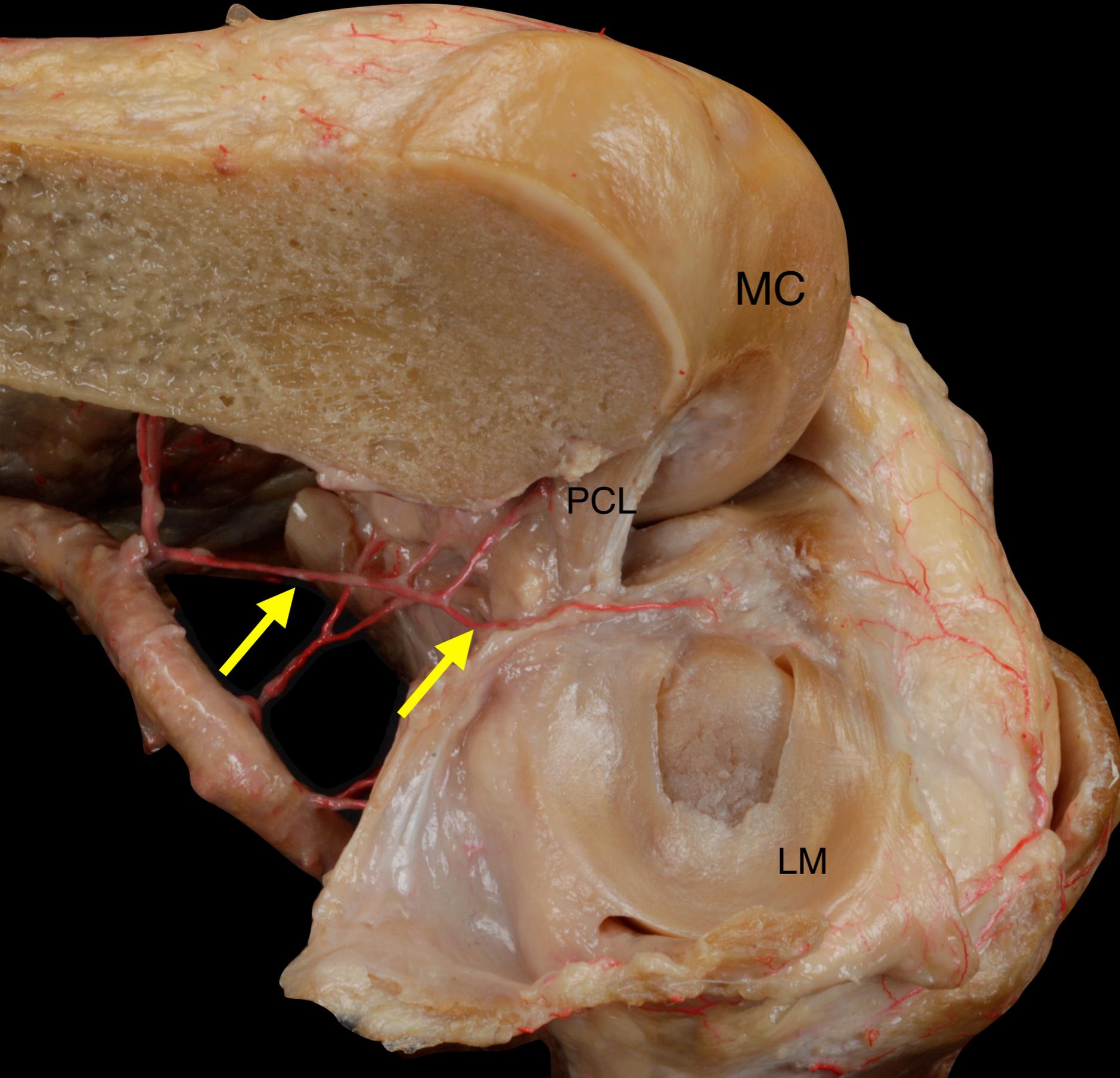
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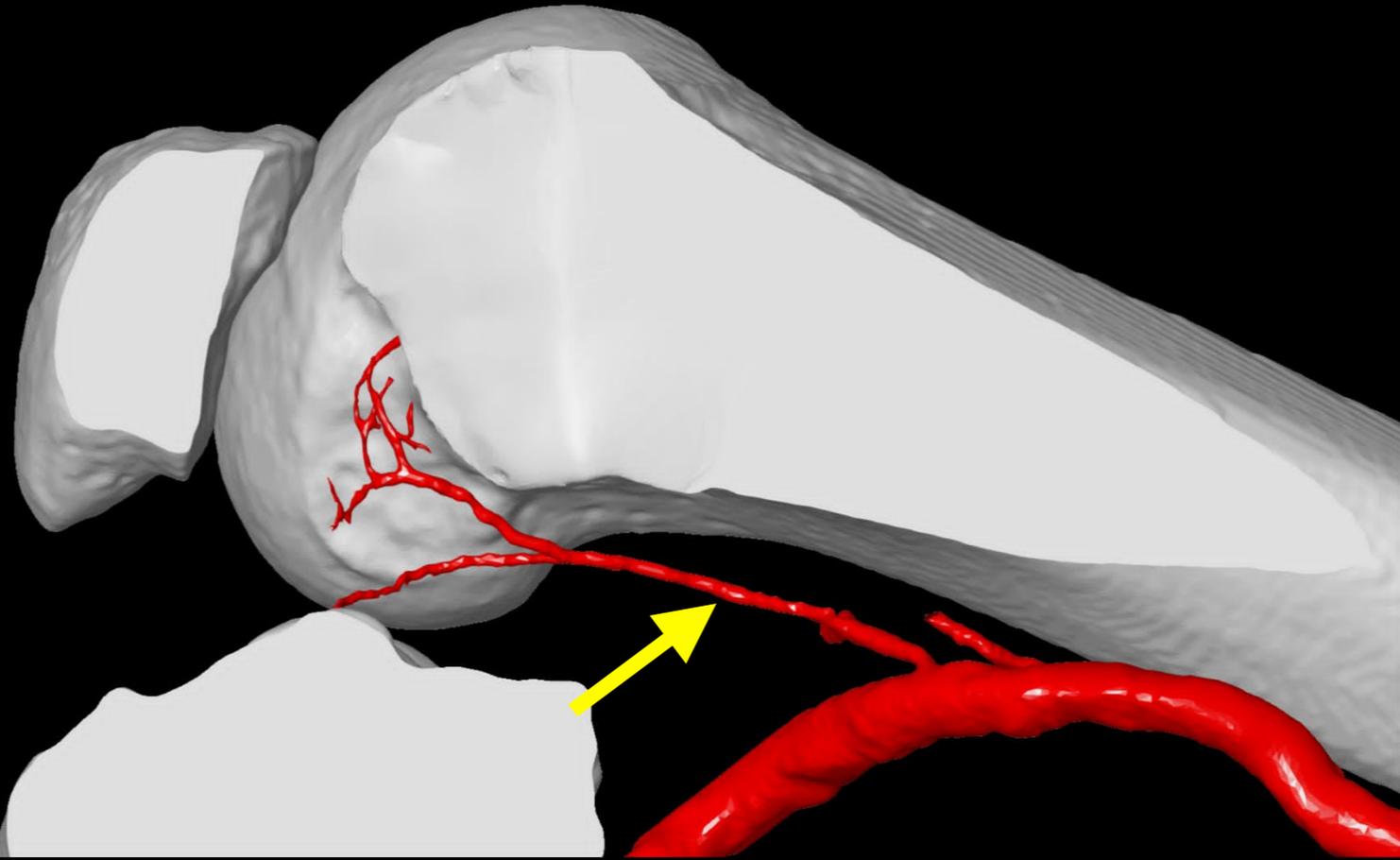
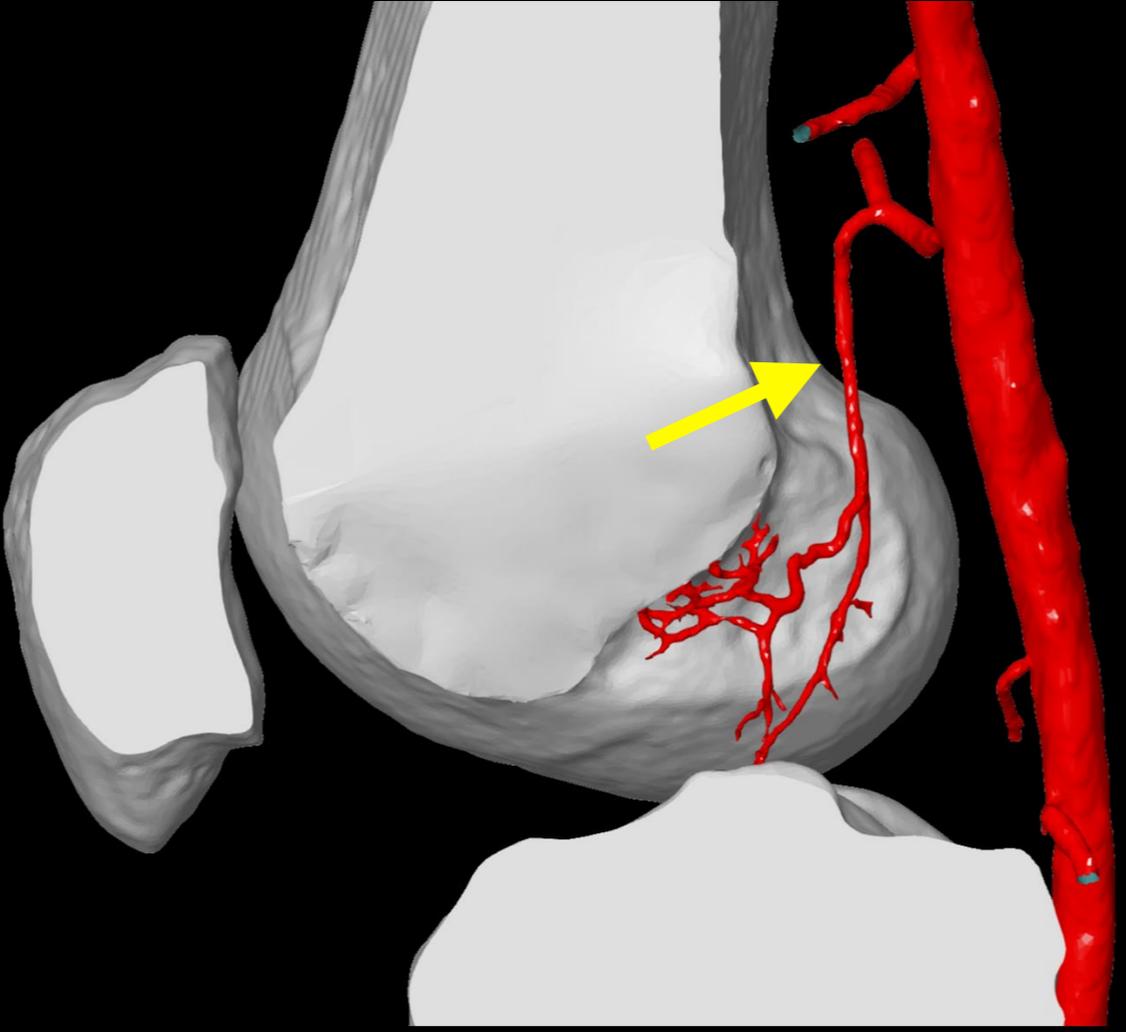
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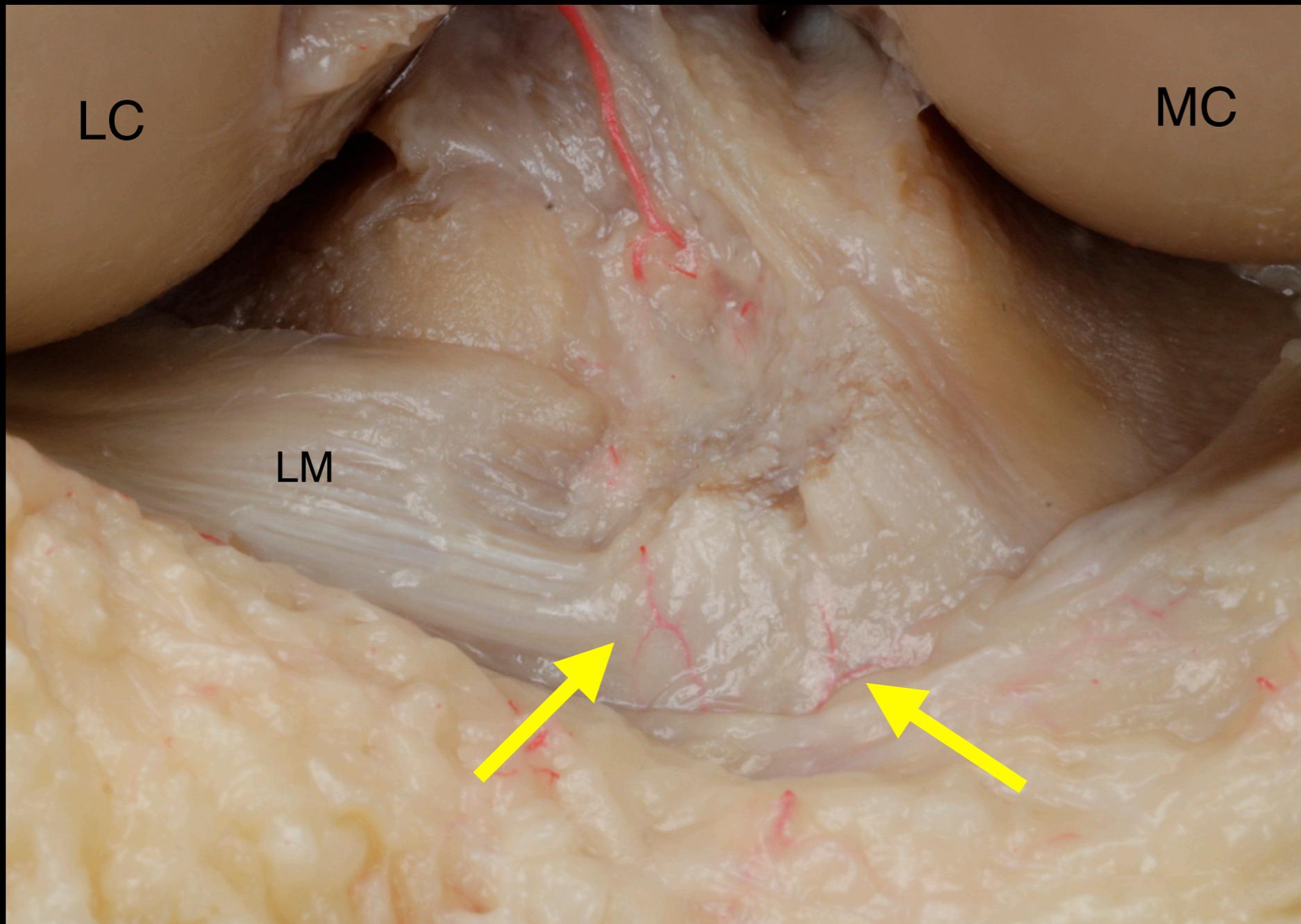
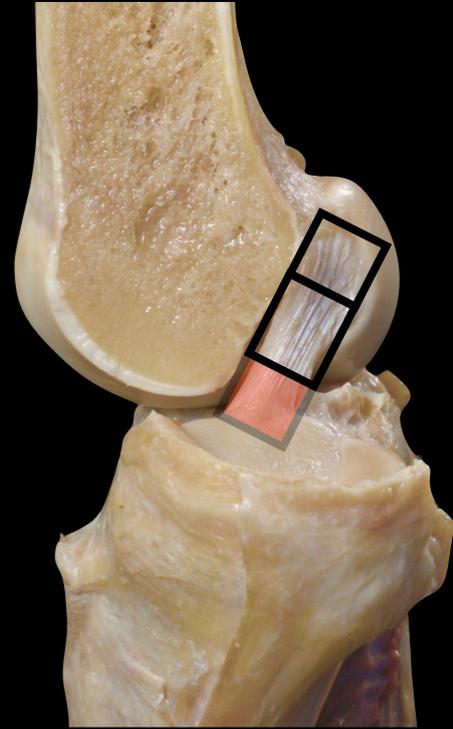
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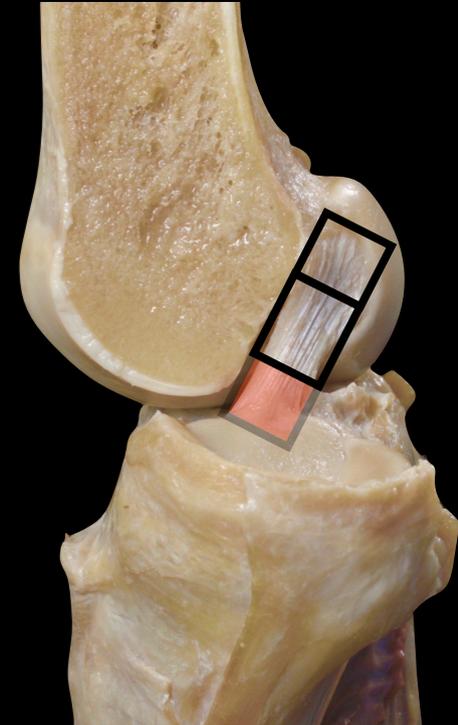
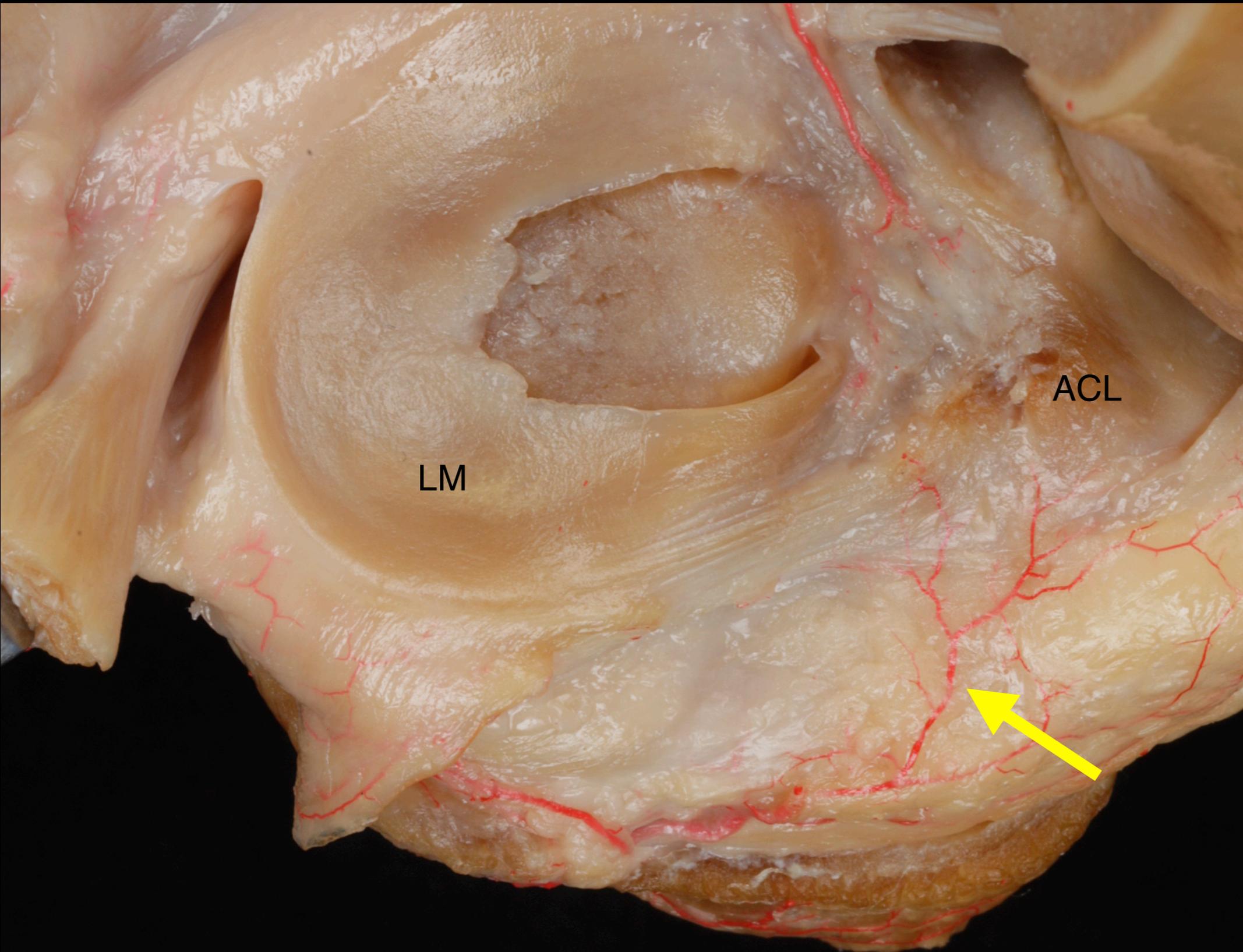
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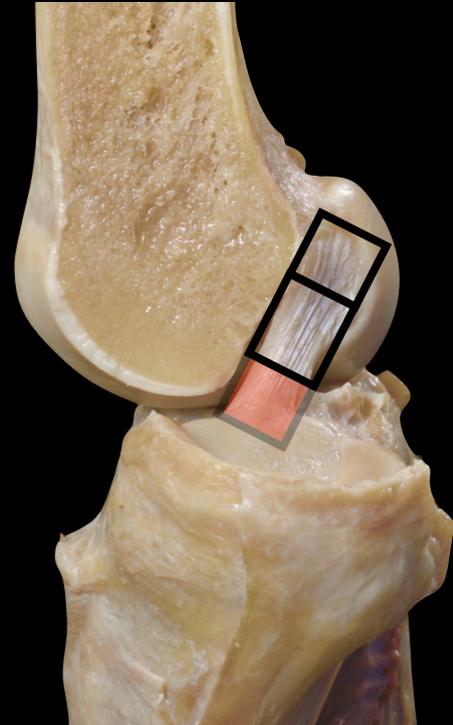
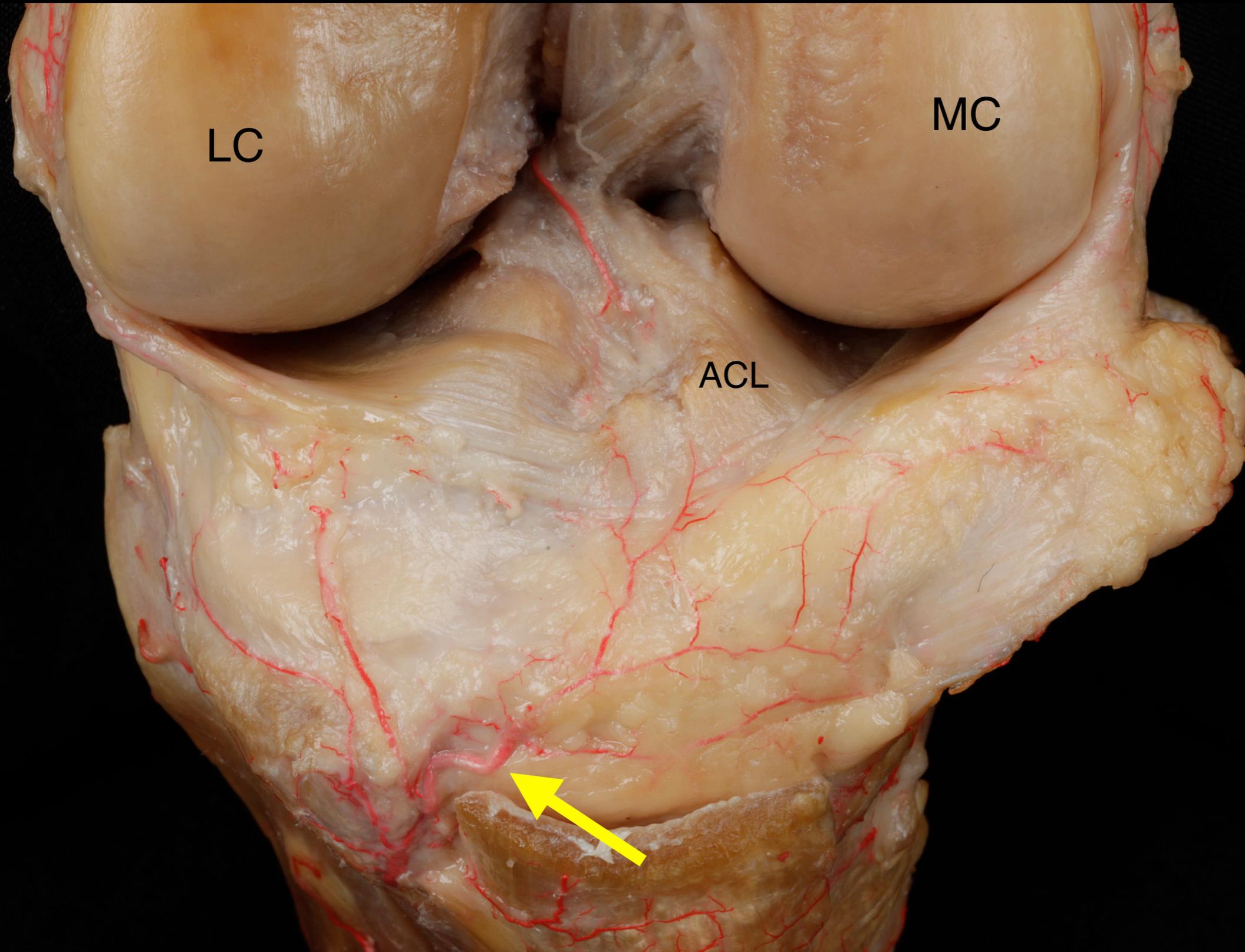
# Zone 3



# Zone 3



# Zone 3

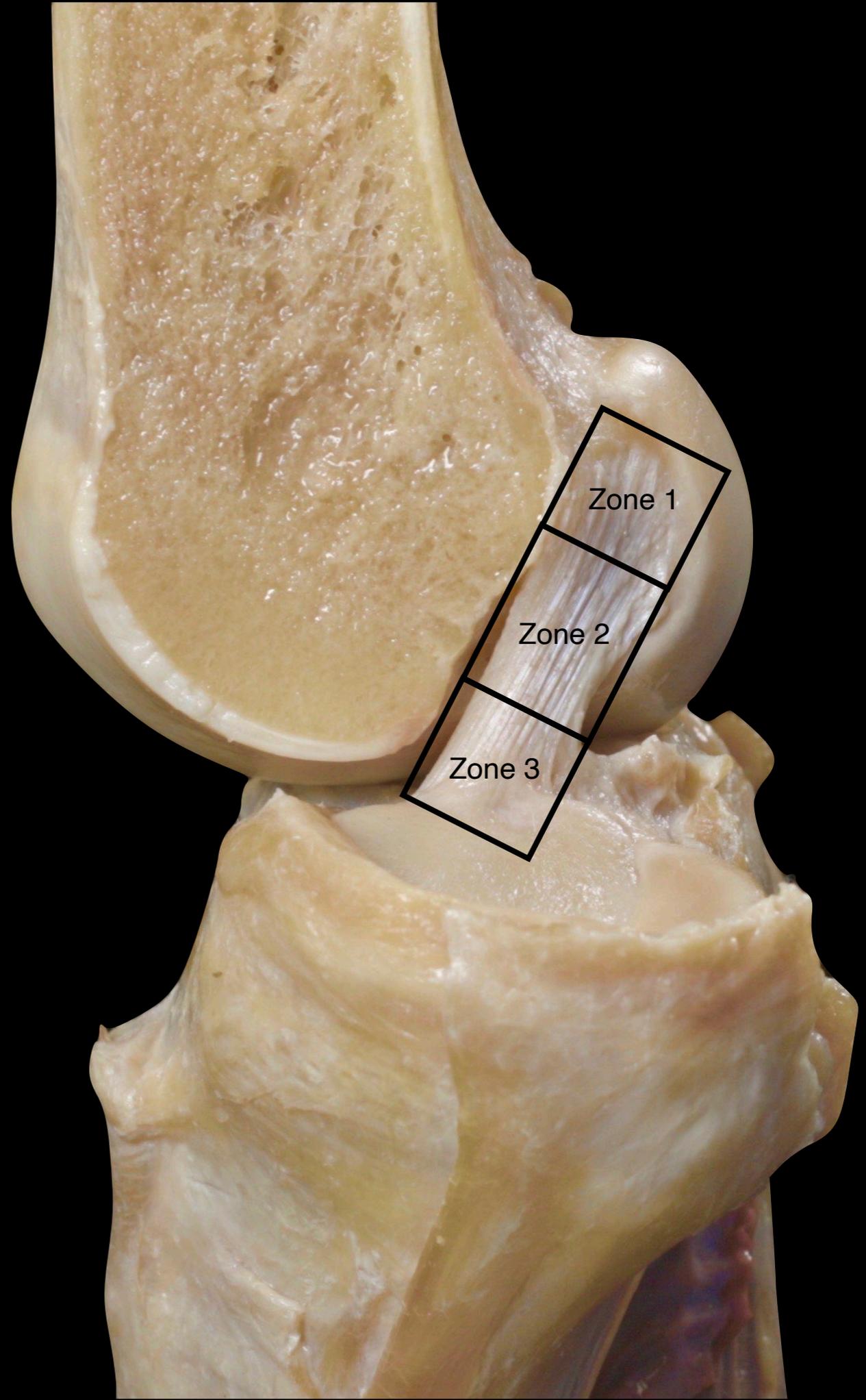


# Summary

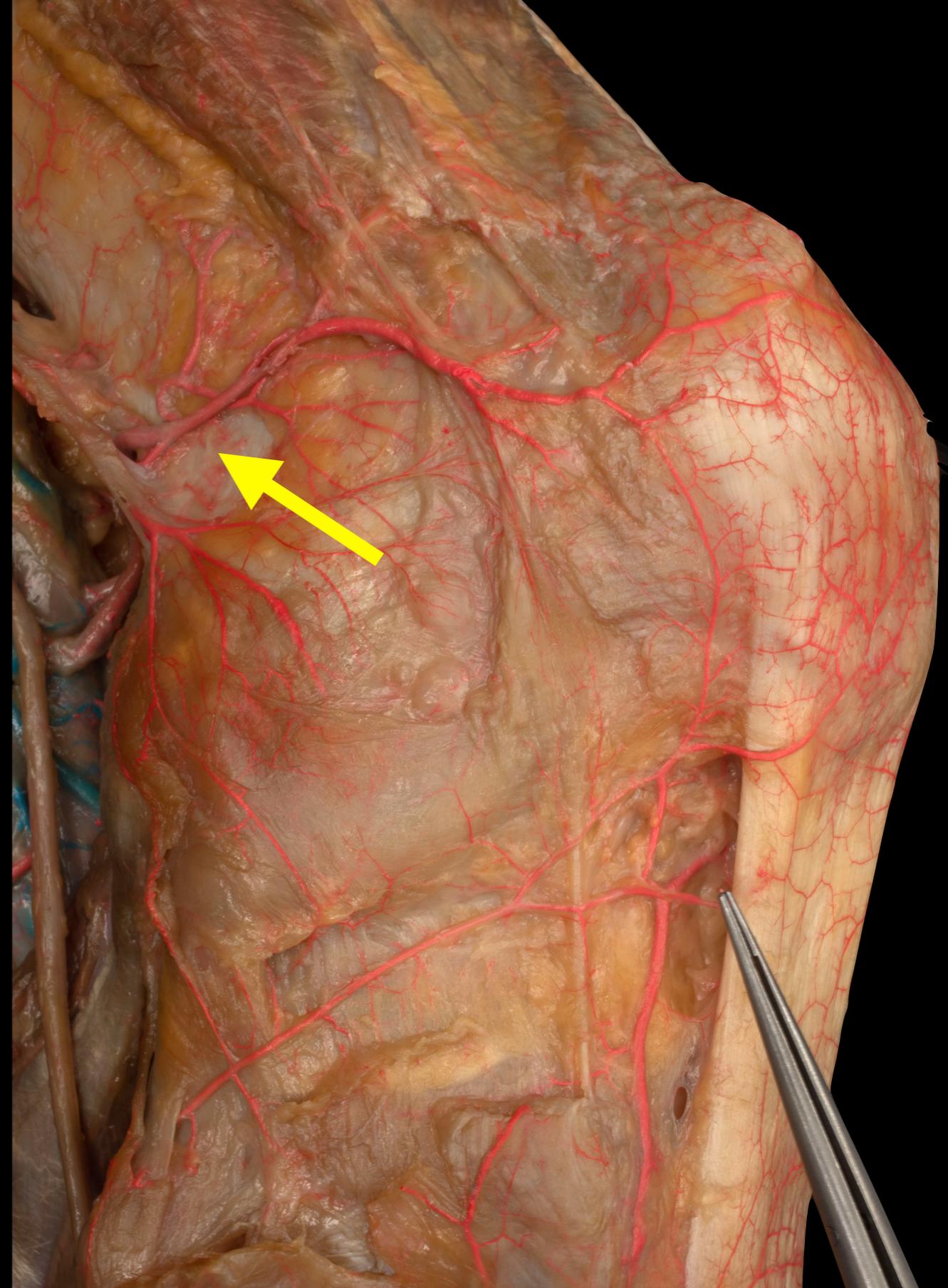
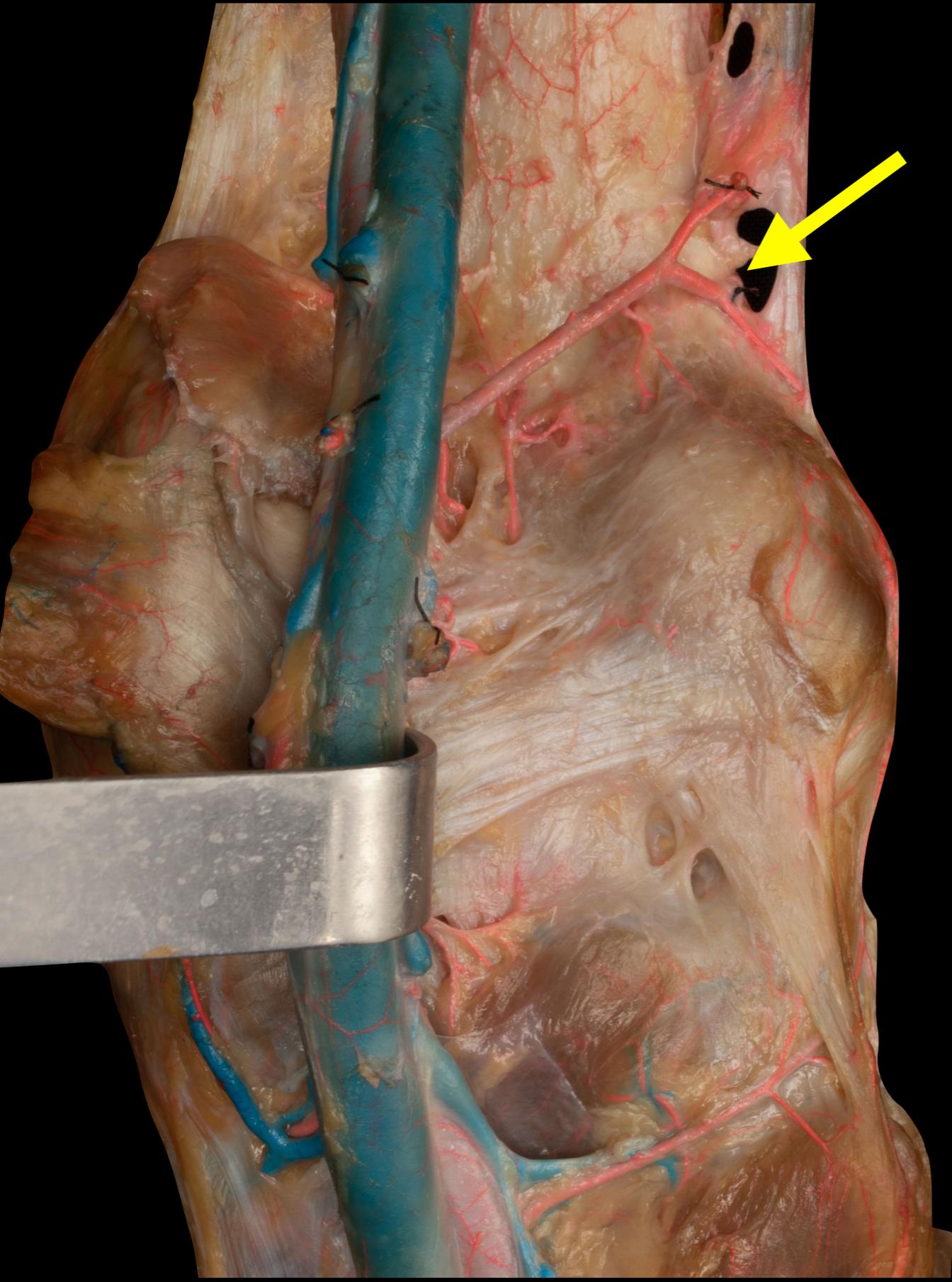
Zone 1 - femoral attachment  
*receives blood from the superior lateral genicular artery*

Zone 2 - midsubstance  
*is supplied by a branch of the medial genicular artery running between the ACL and PCL*

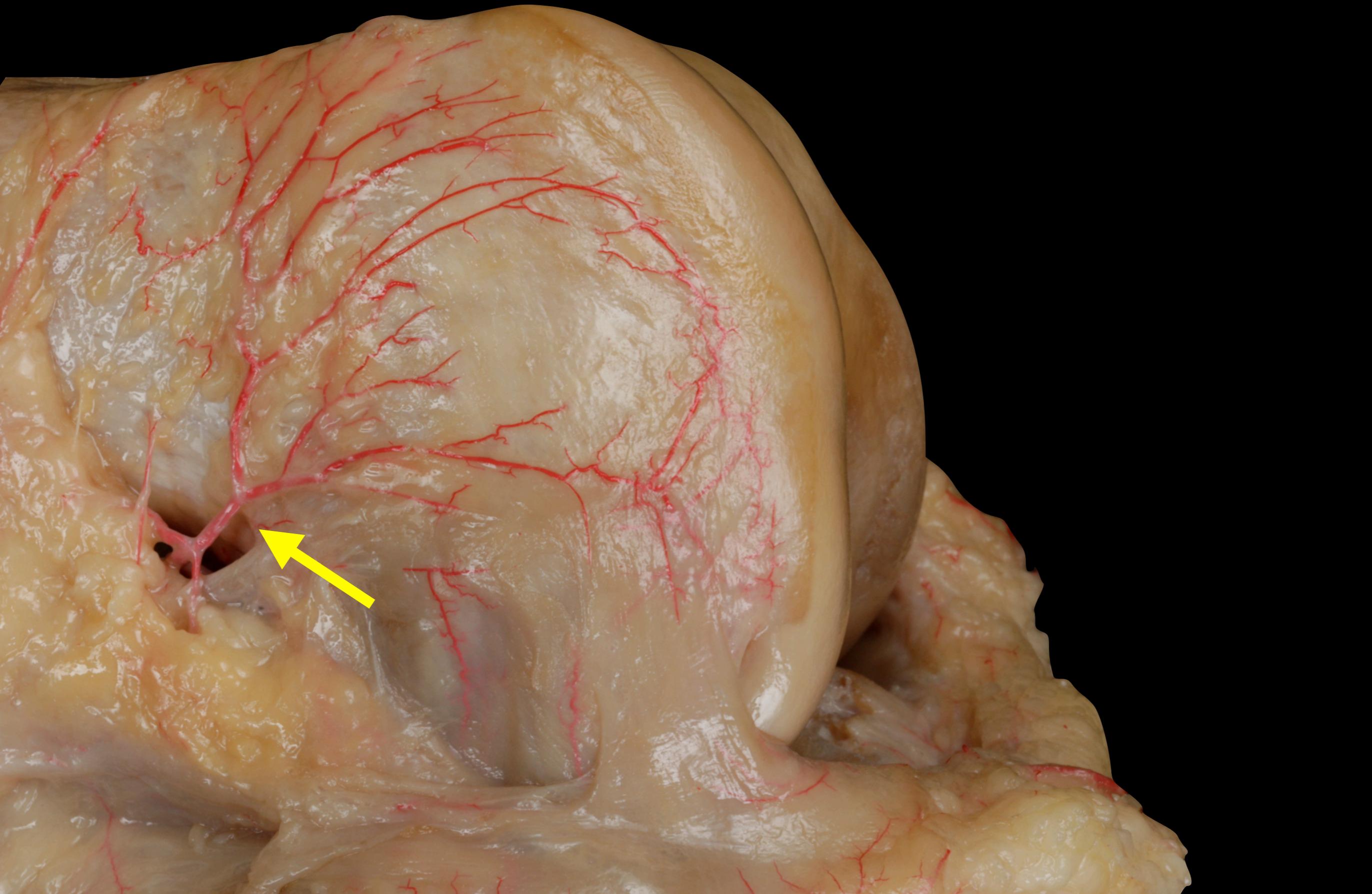
Zone 3 - tibial attachment  
*distal portion is primarily vascularised by vascular plexus created by the inferior lateral genicular artery, inferior medial genicular artery and anterior tibial recurrent artery*



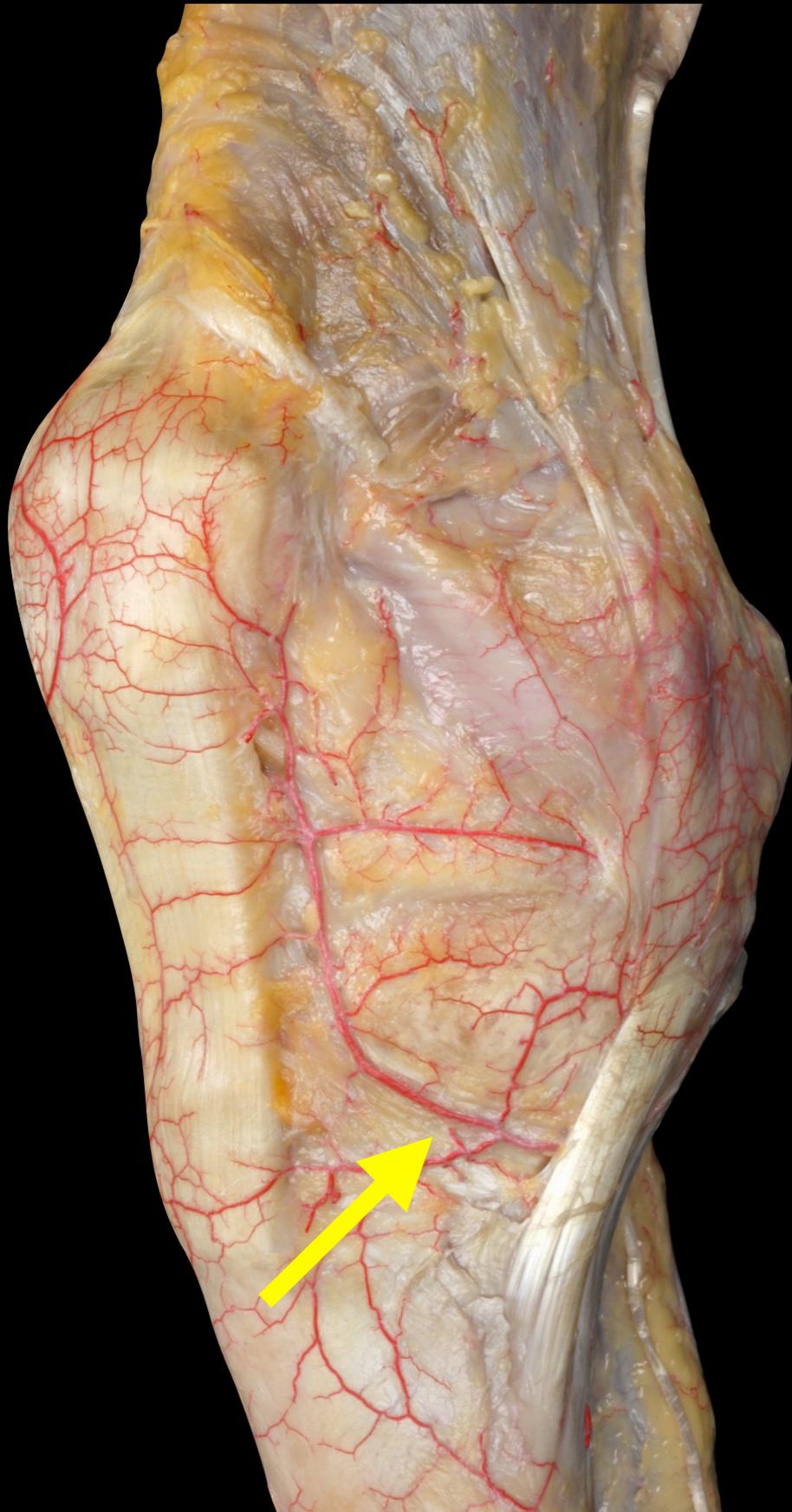
# Superior Lateral Genicular Artery



# Superior Lateral Genicular Artery



# Medial Inferior Genicular Artery



# Thank you



December 2022



December 2024