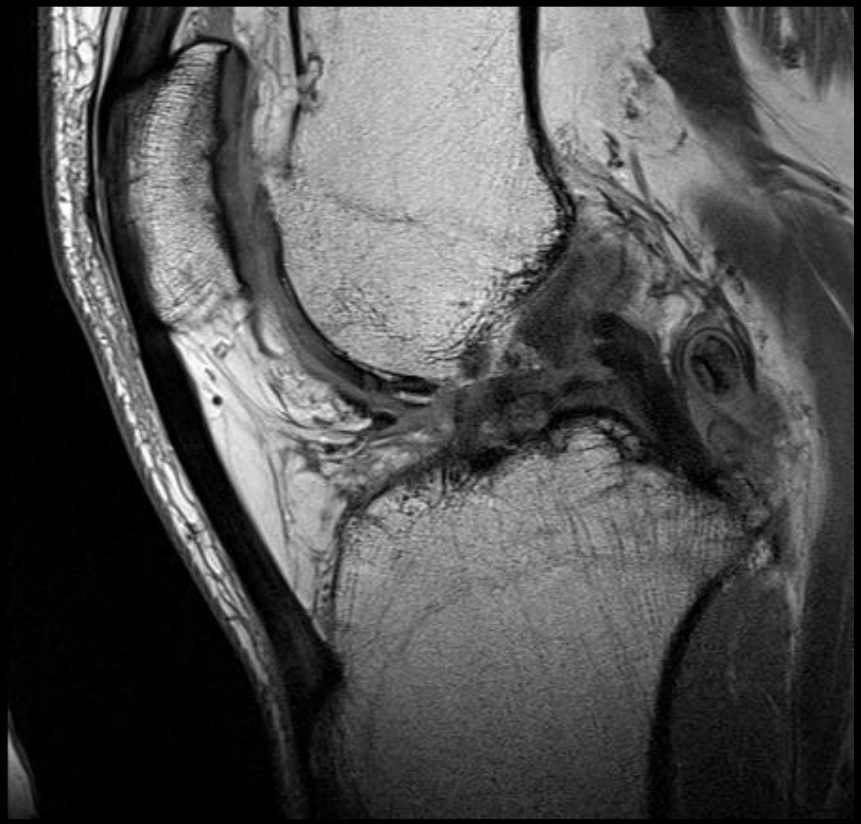
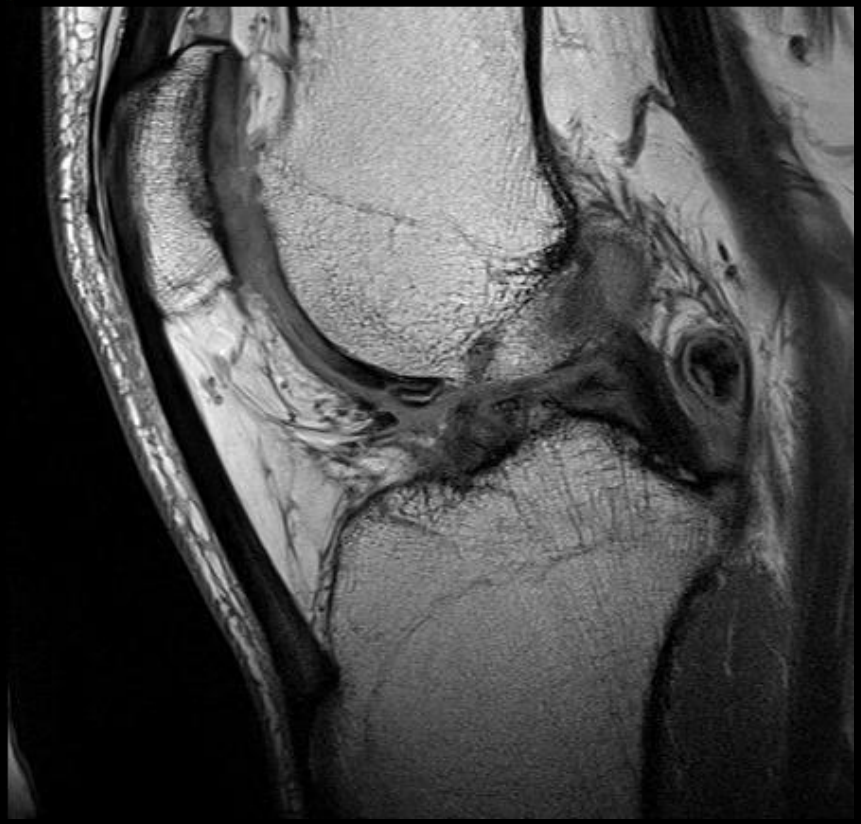
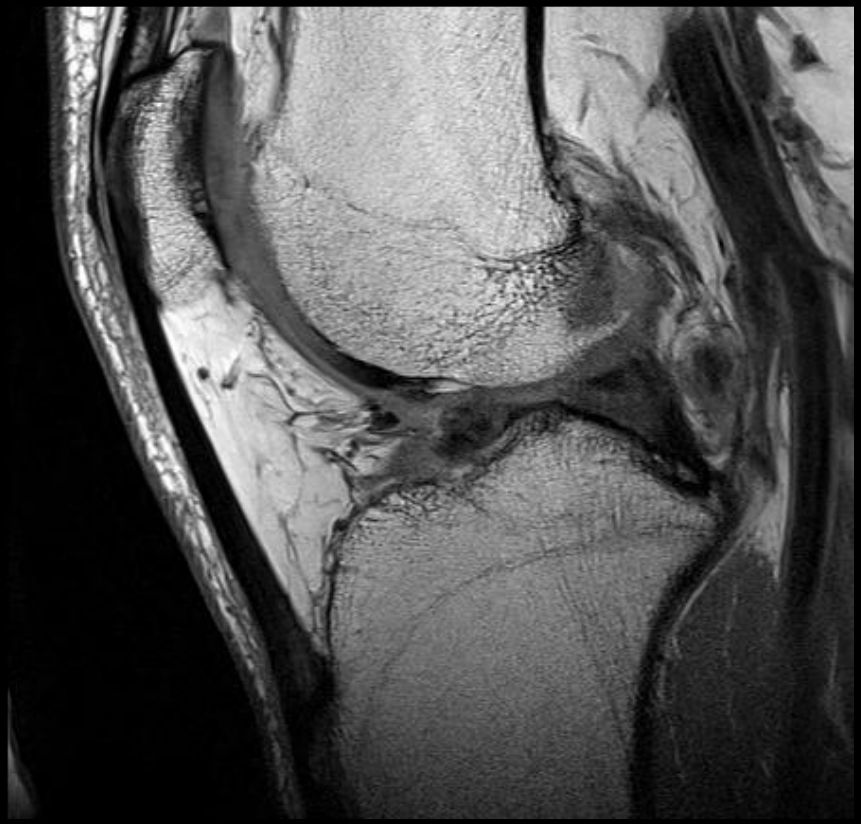
51M Pain in left knee 2 years

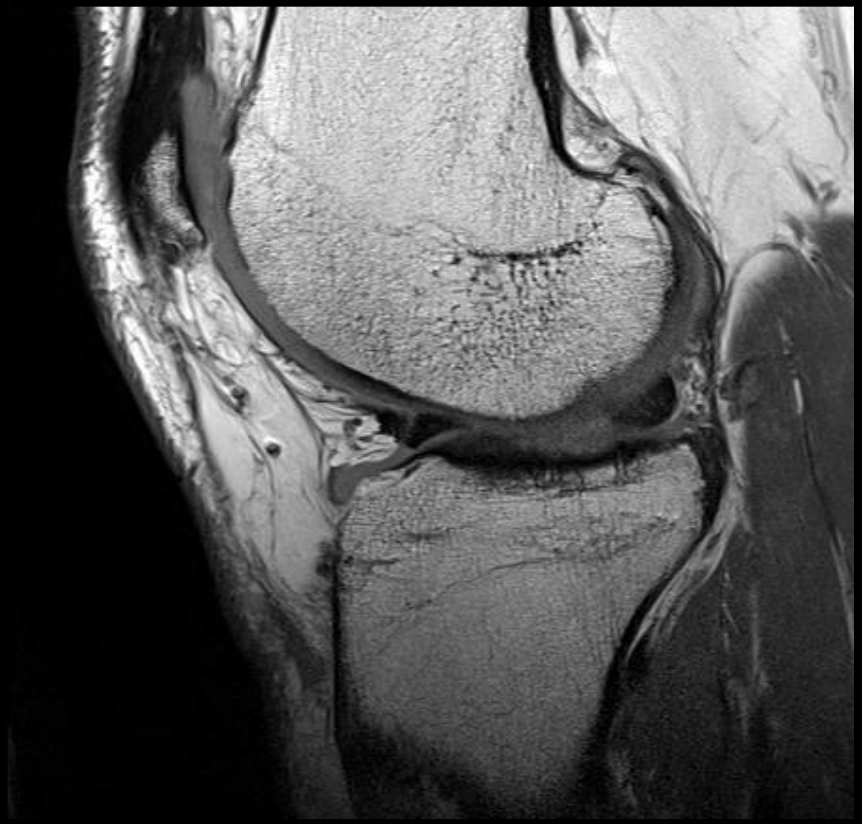
Clinical

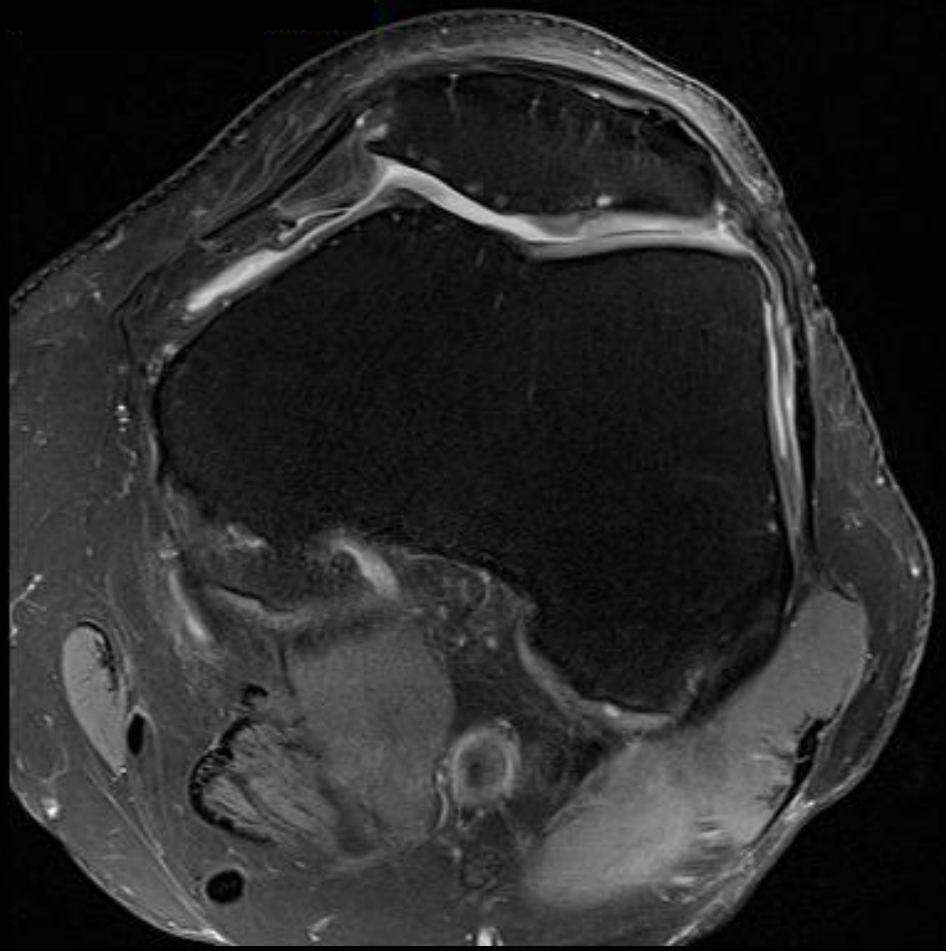
- Injury most recently in June 2014
- History of previous meniscectomy in 2005

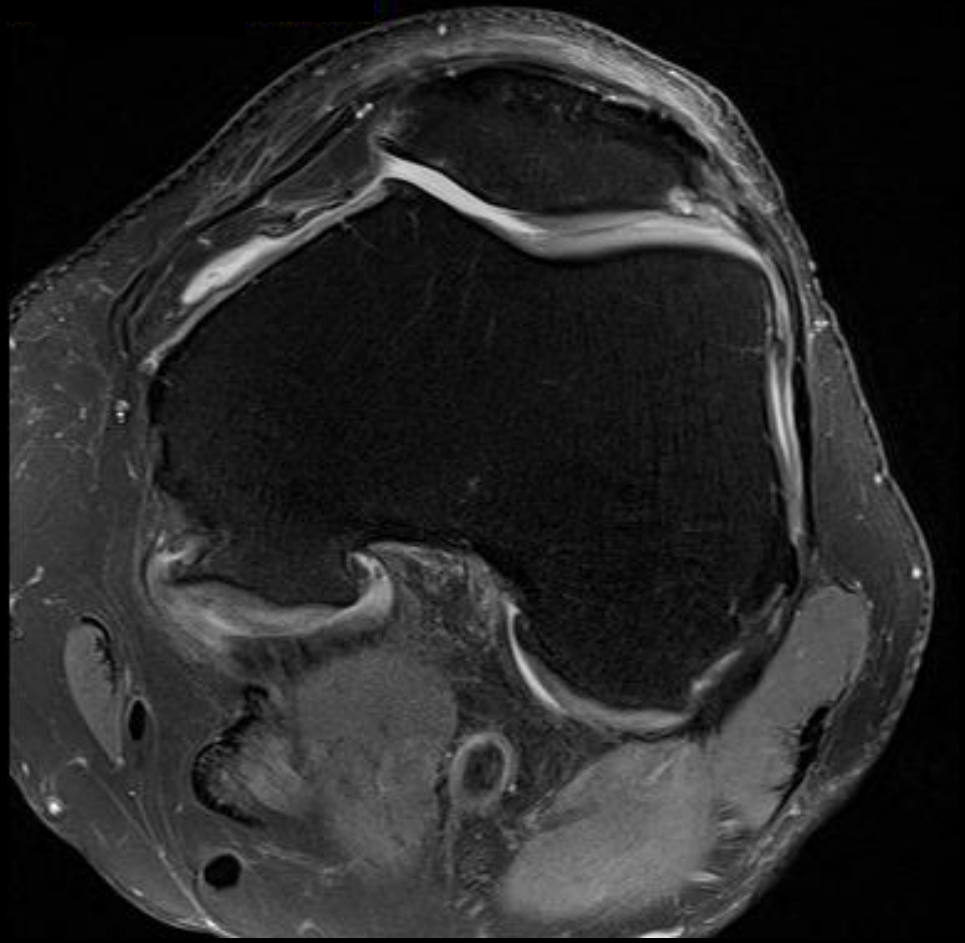


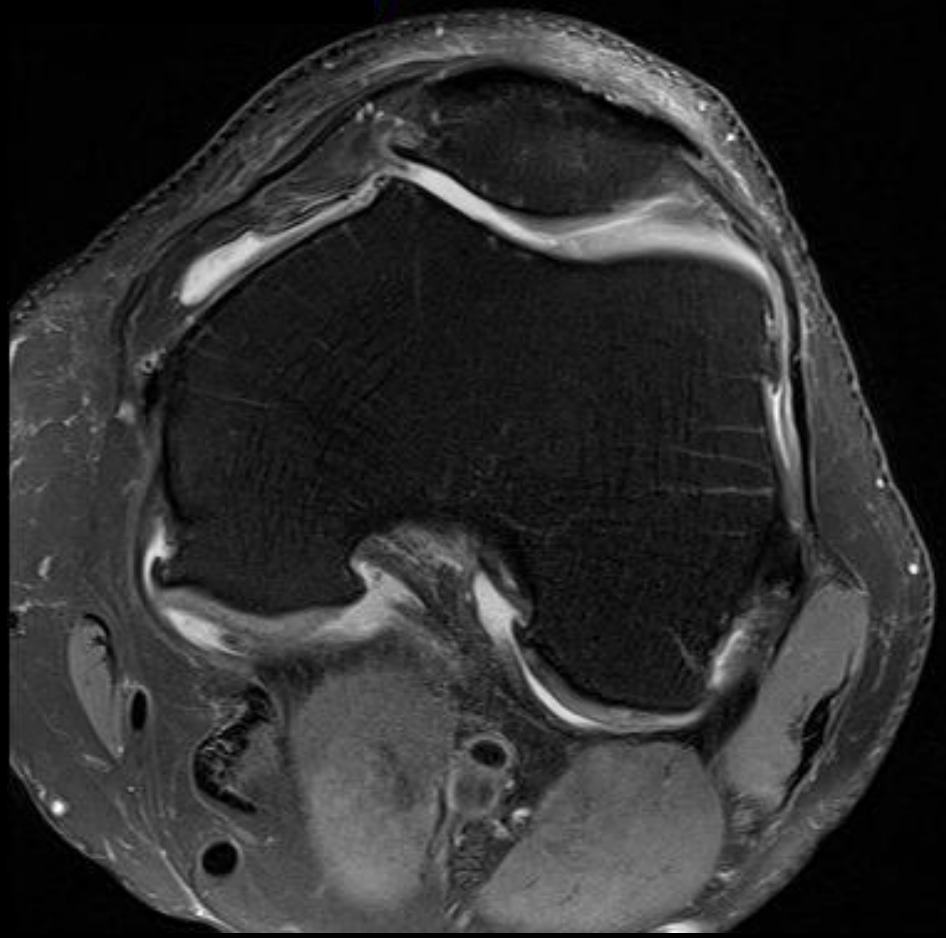


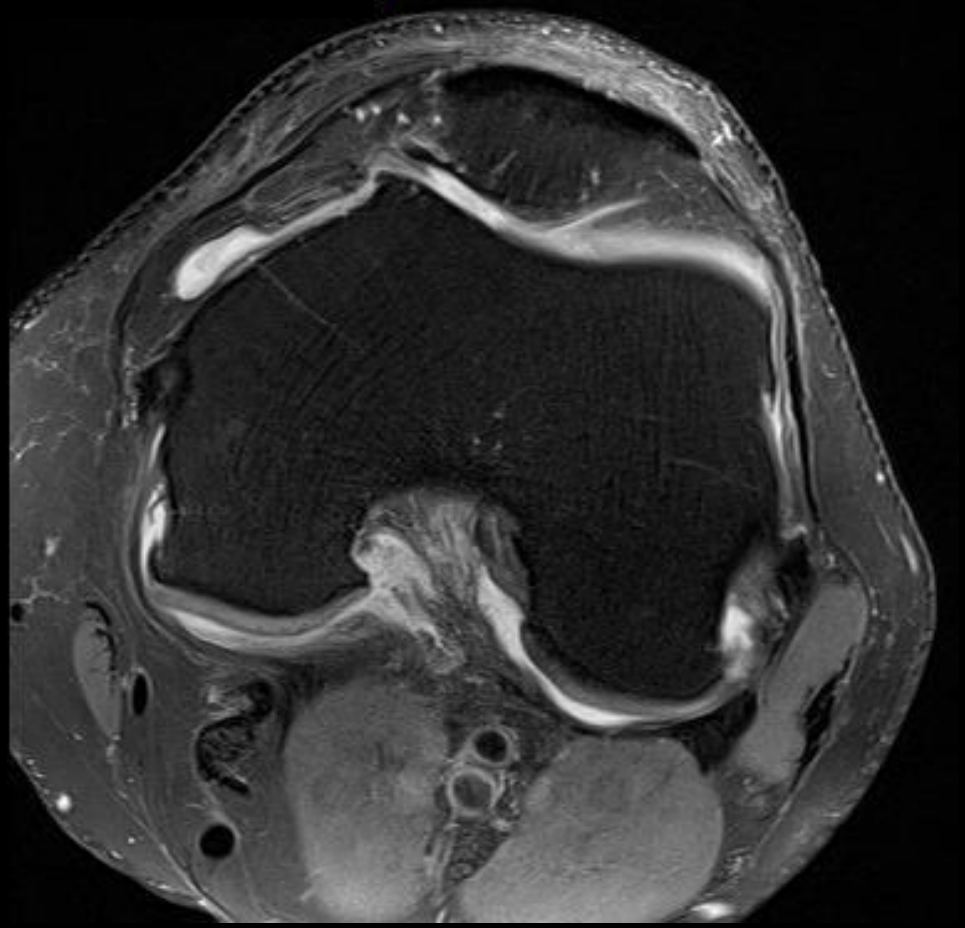


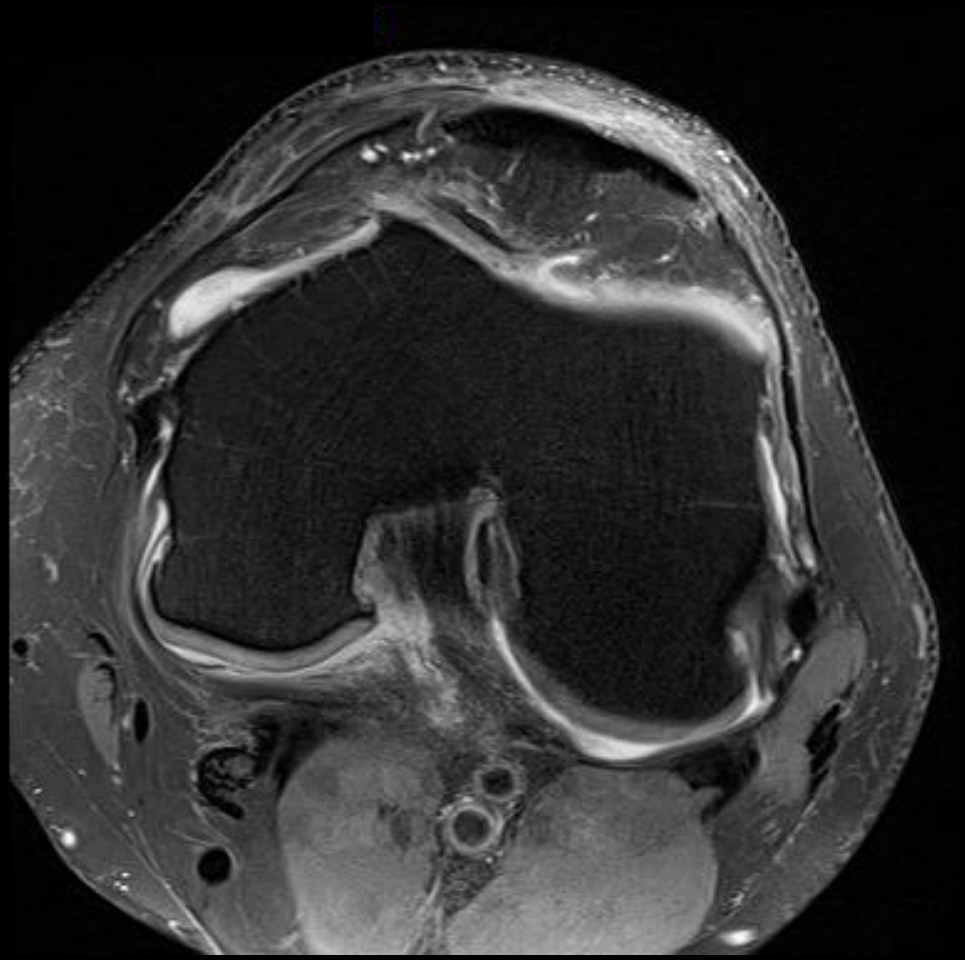


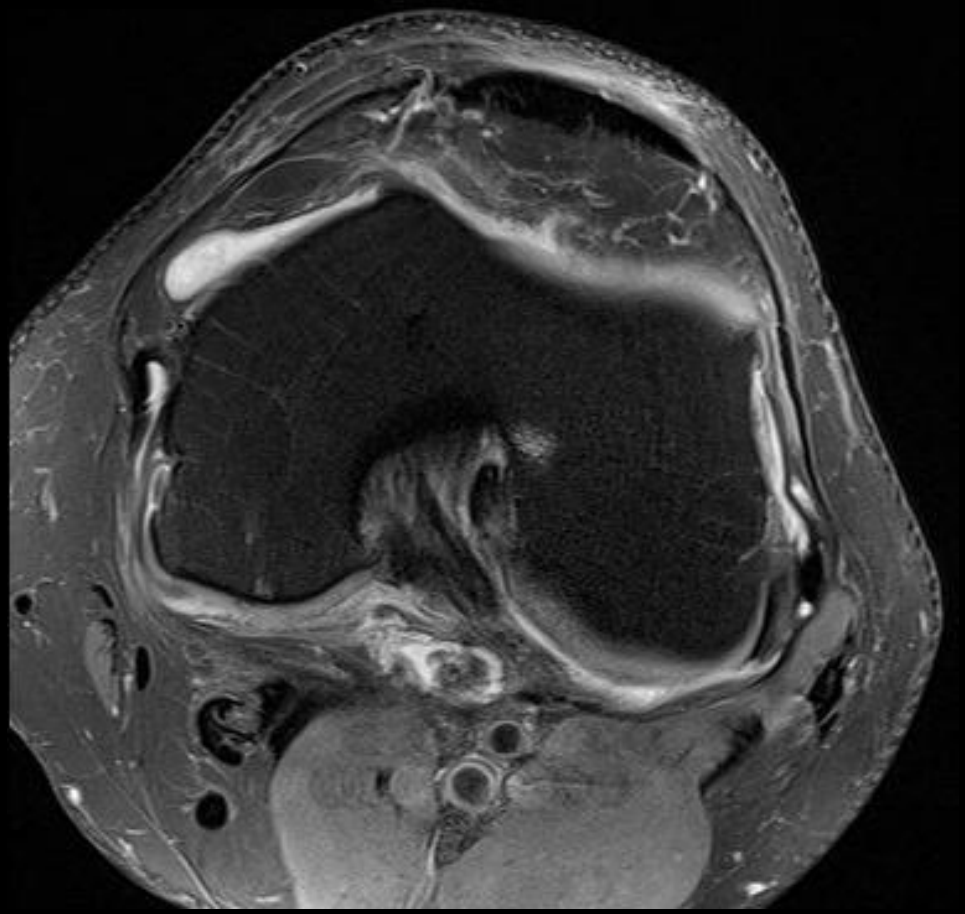


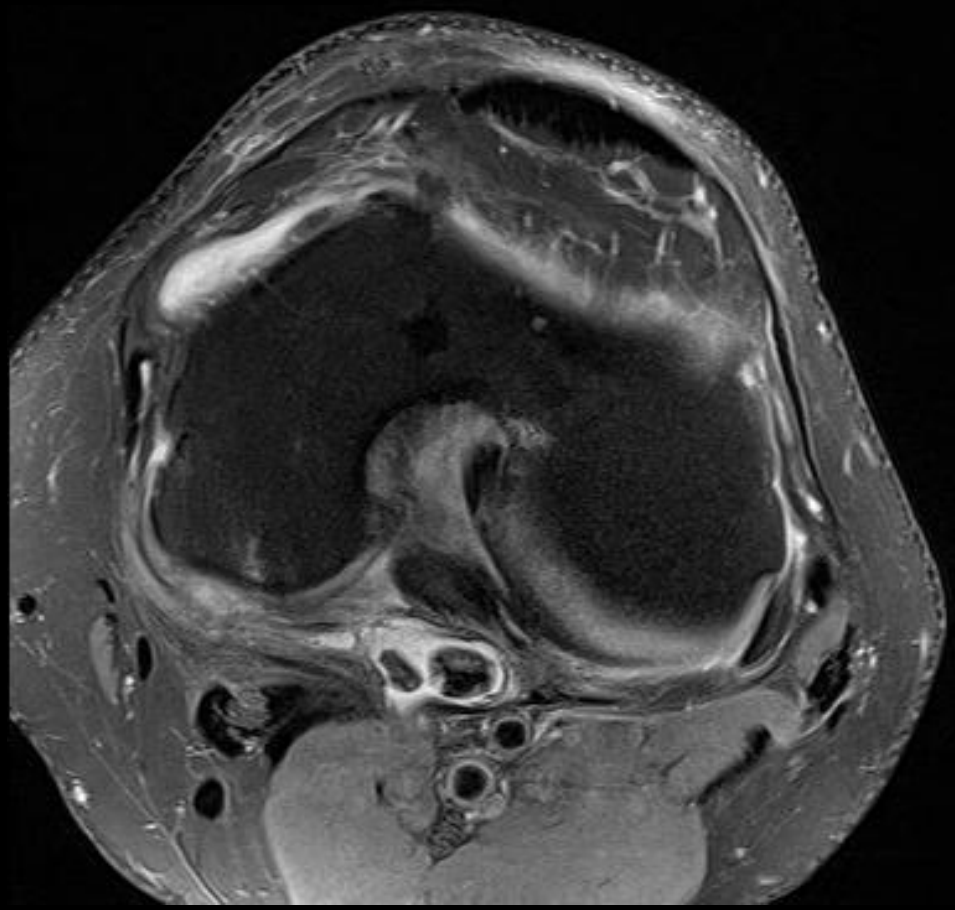


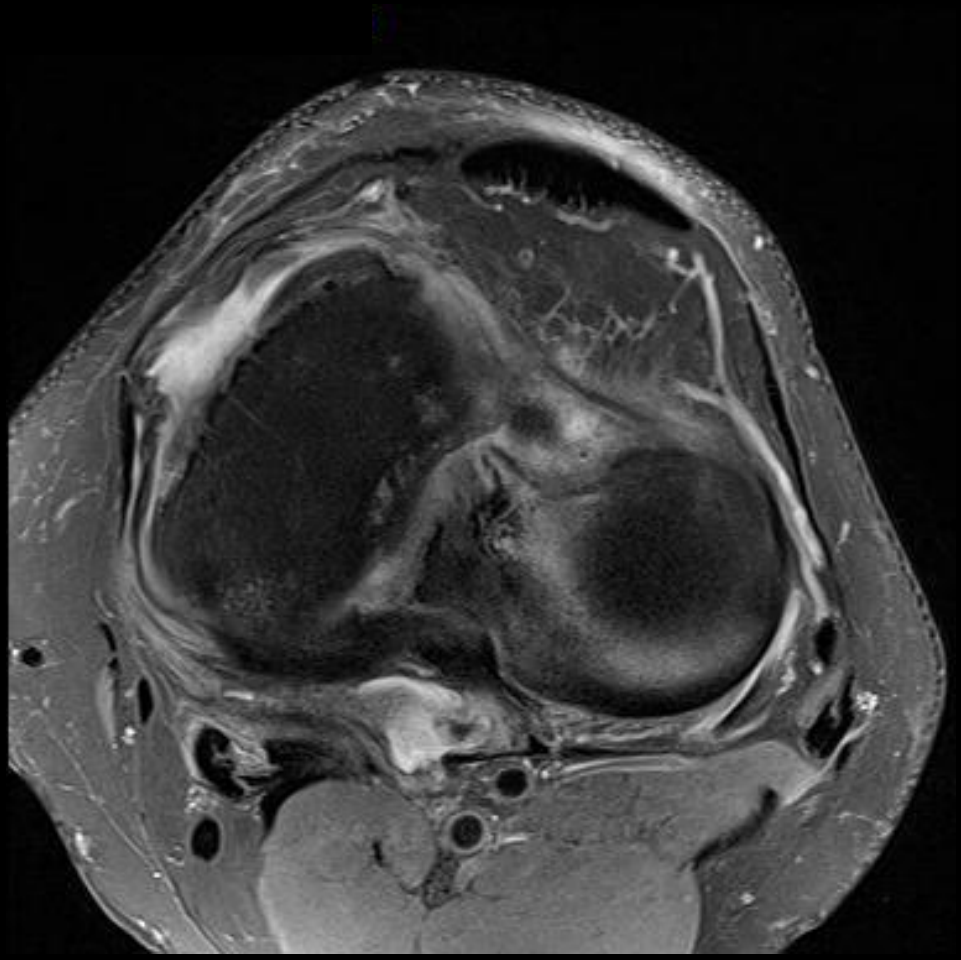


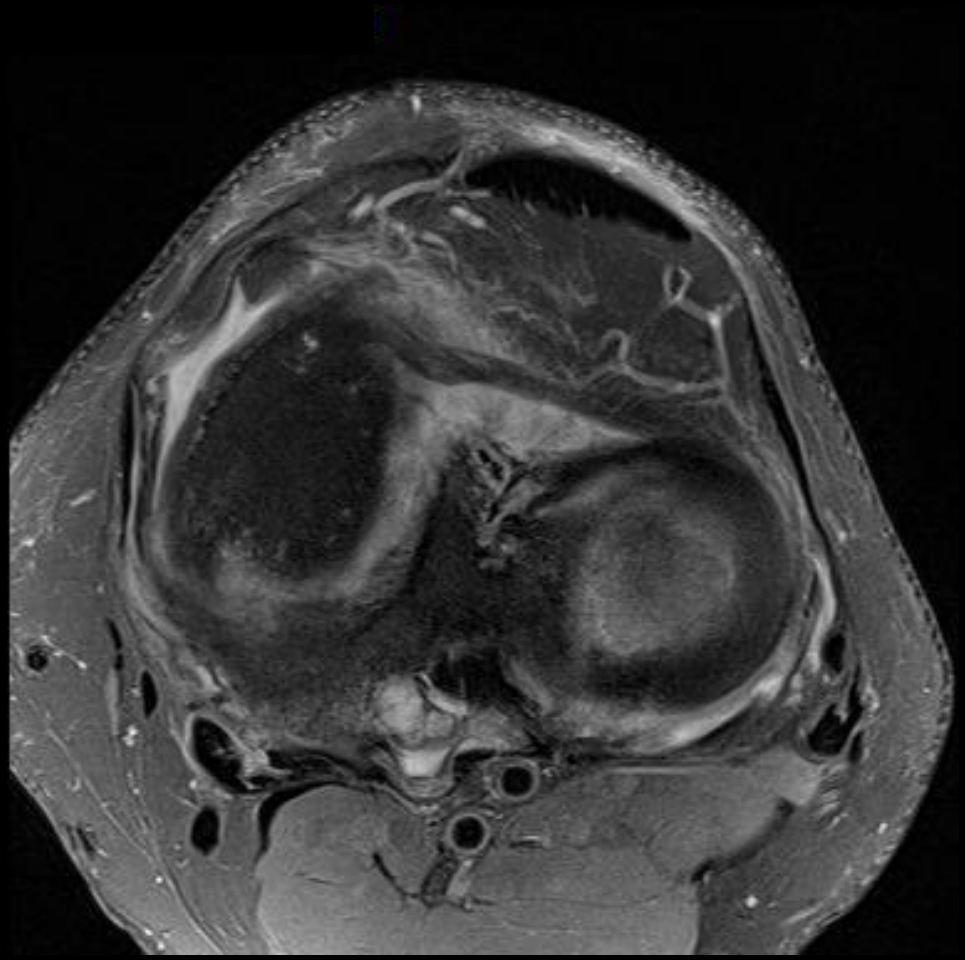


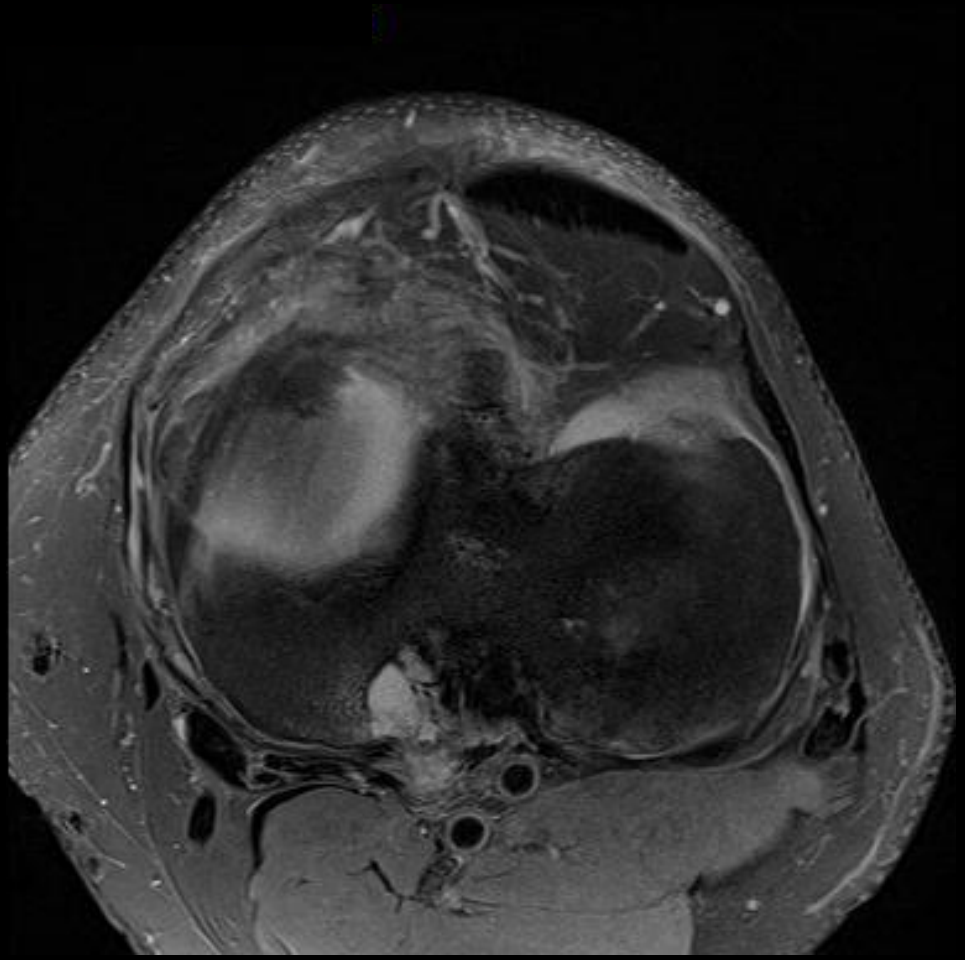


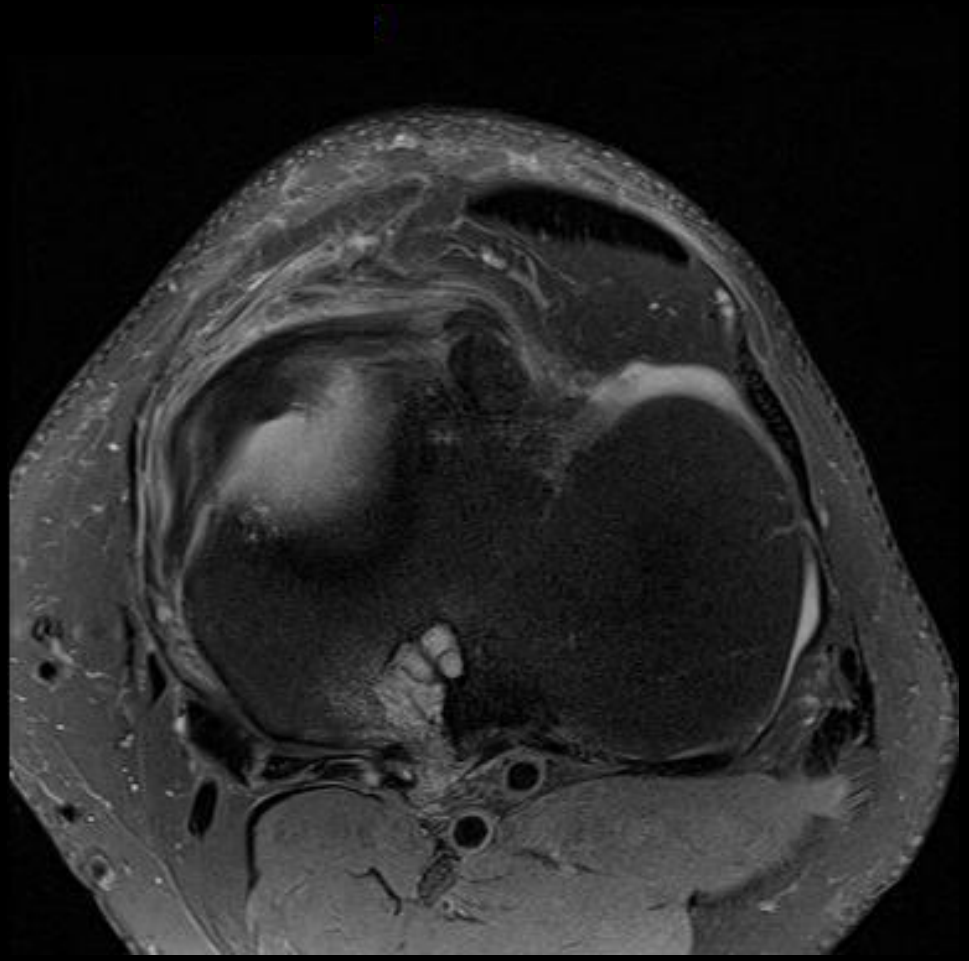


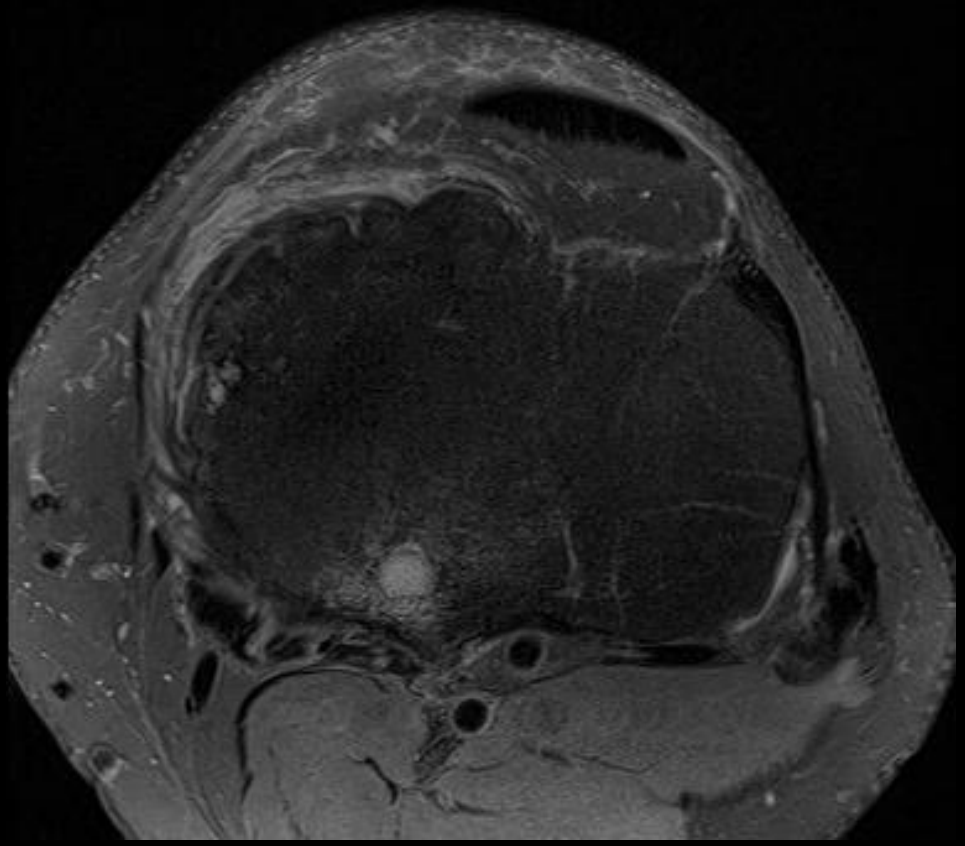


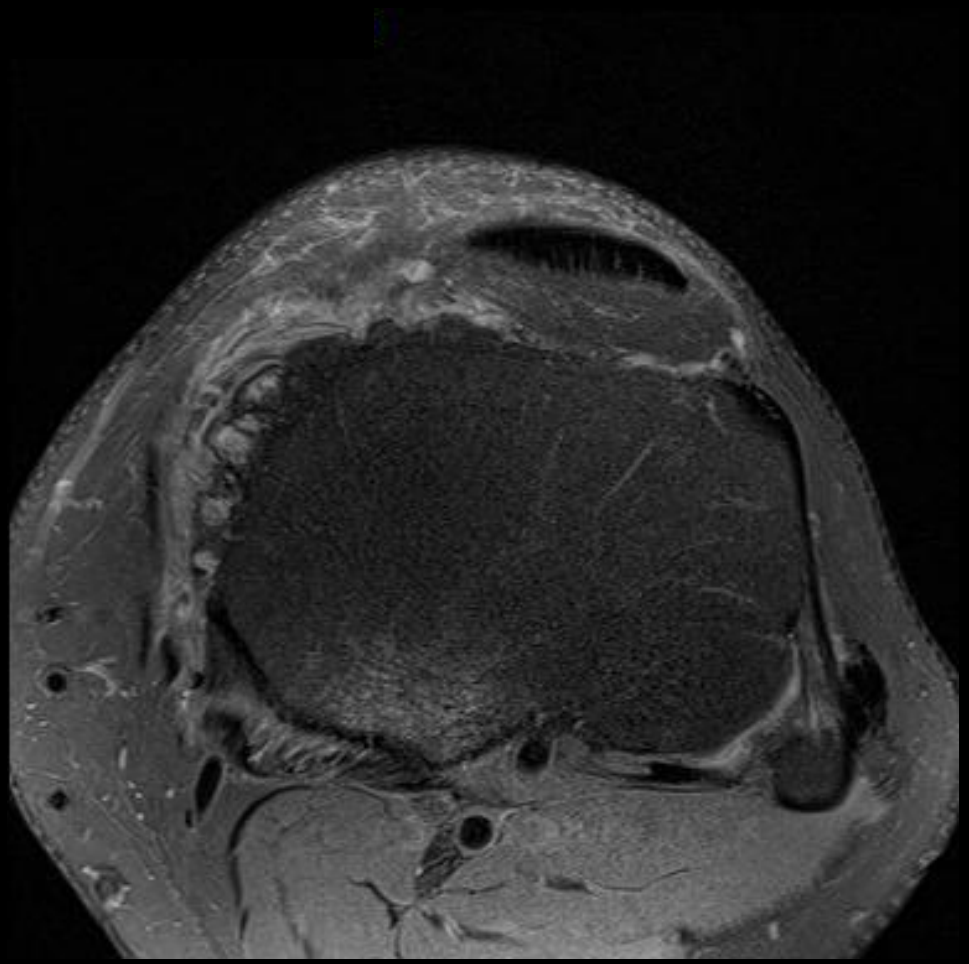


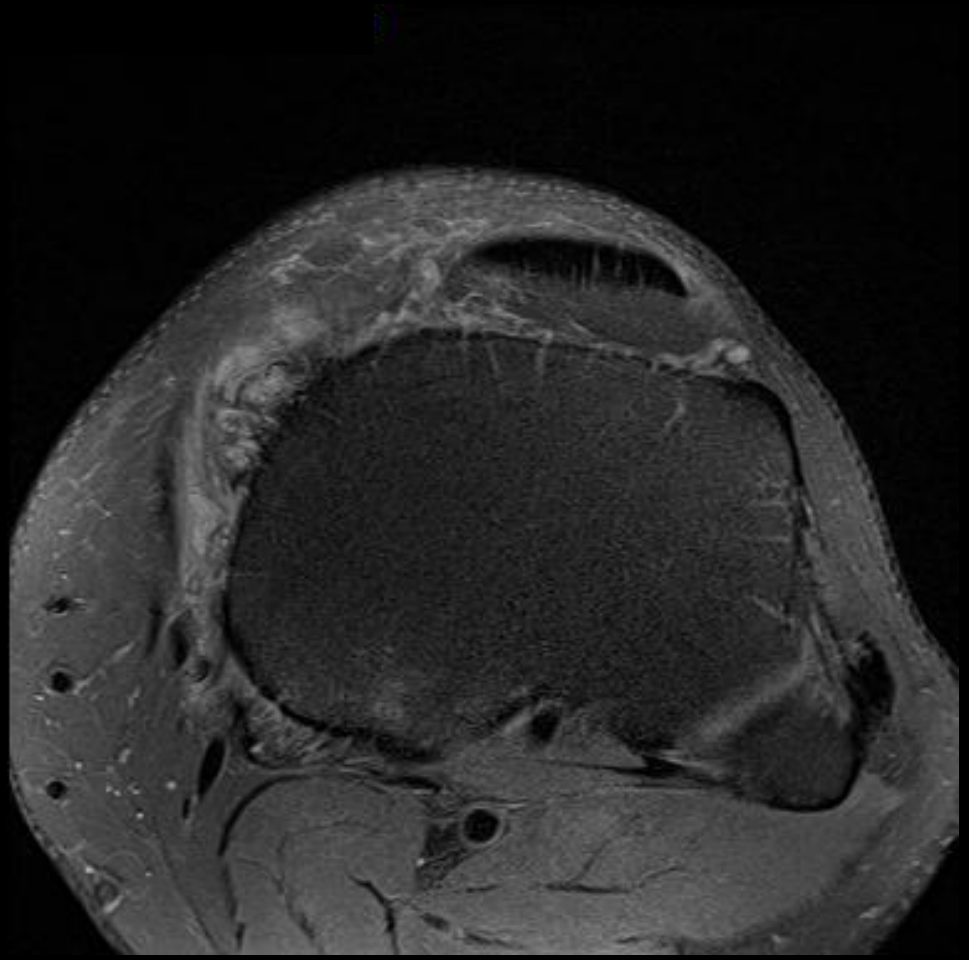


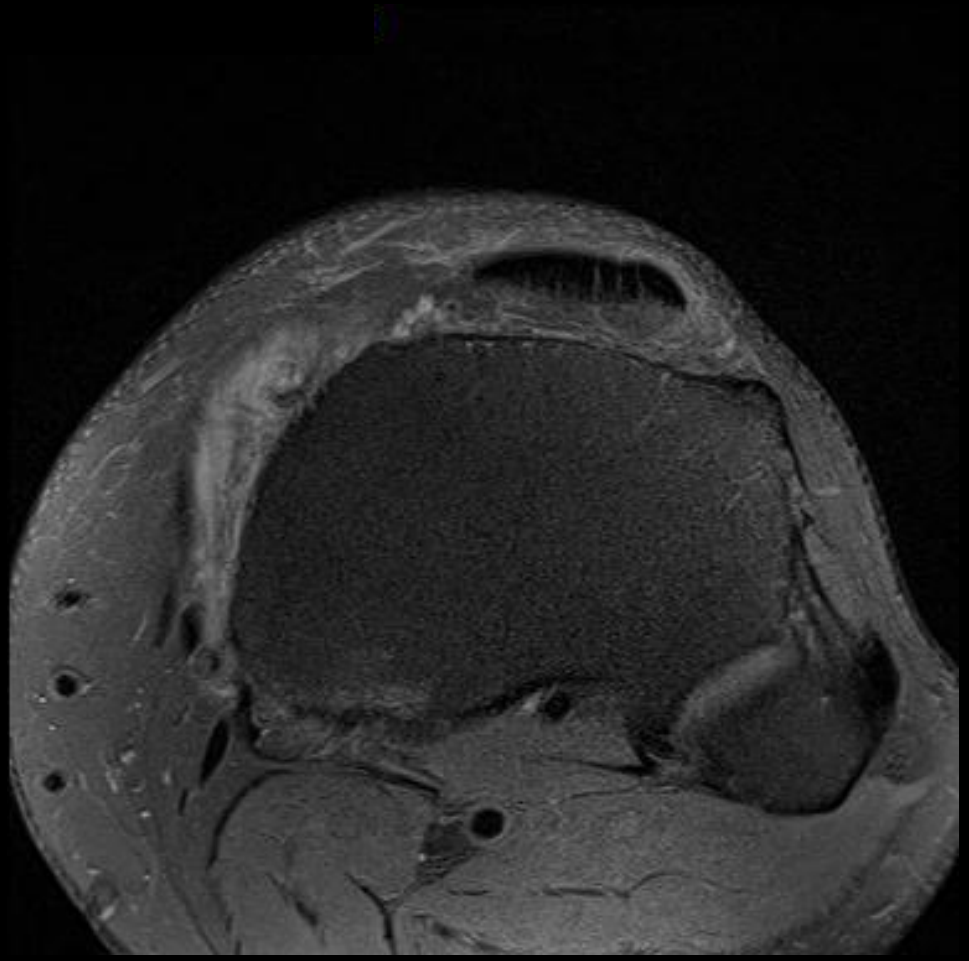


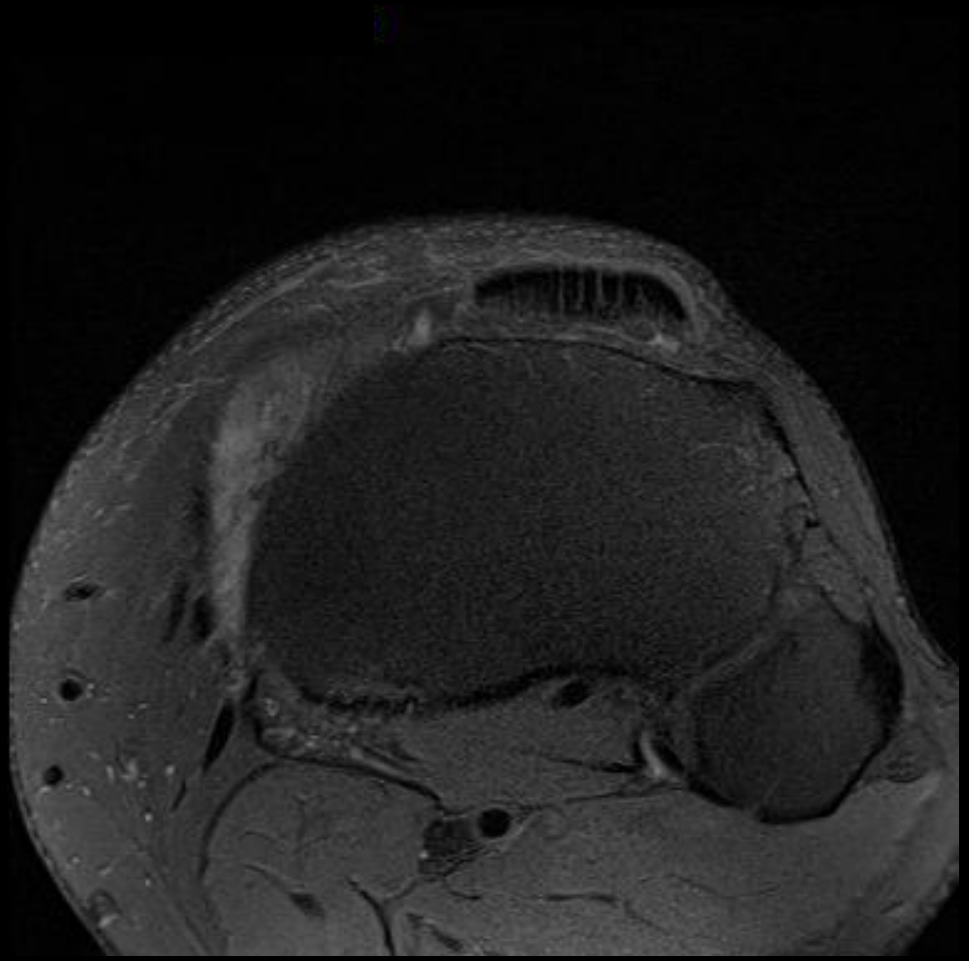


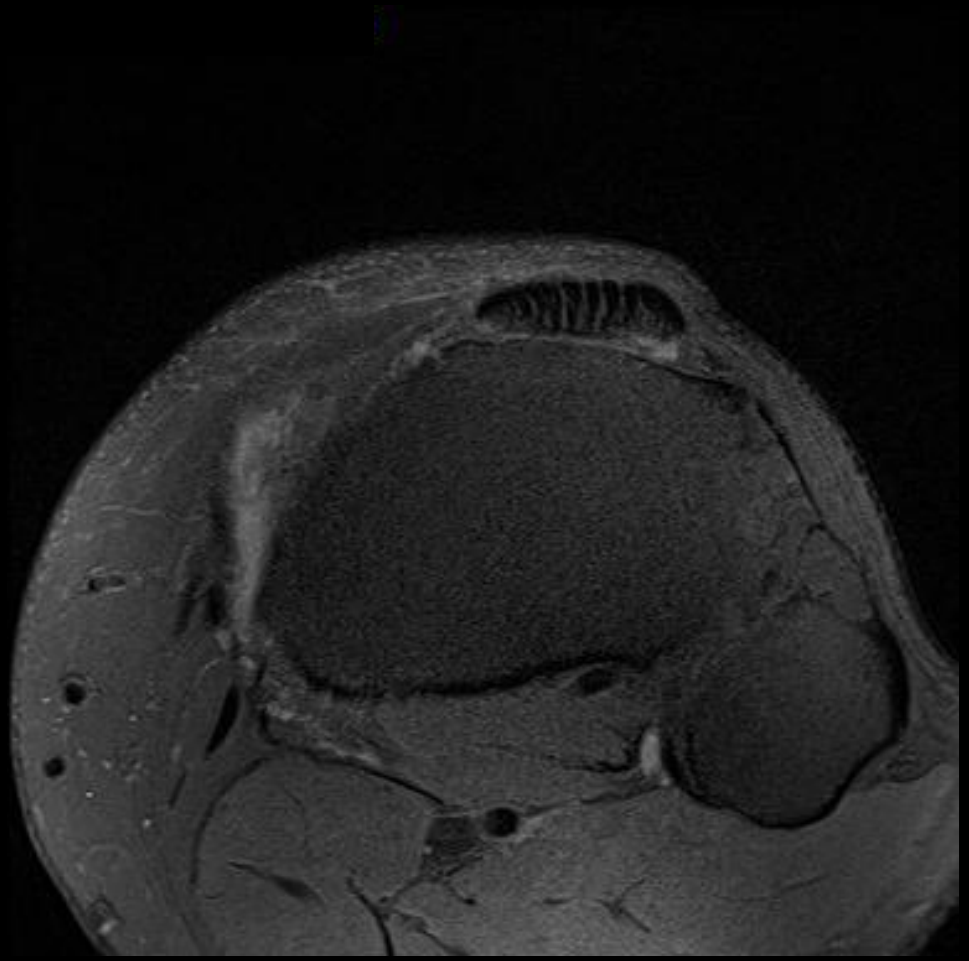


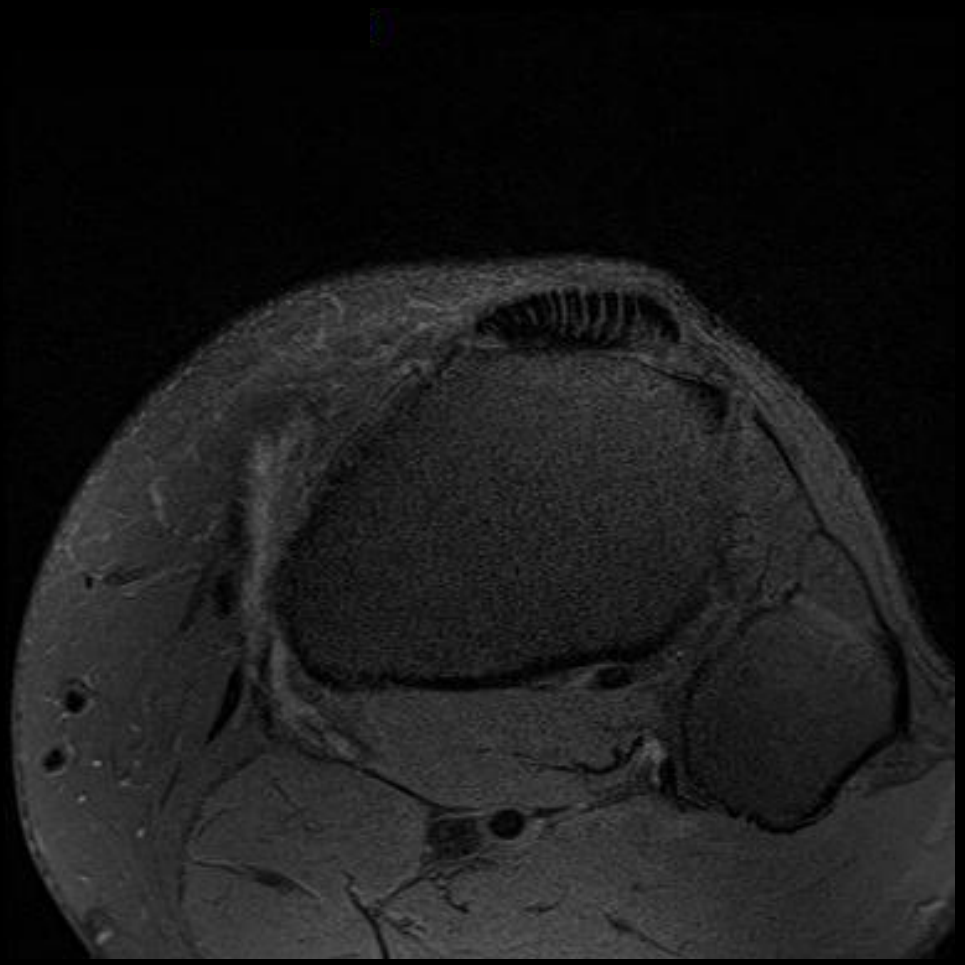


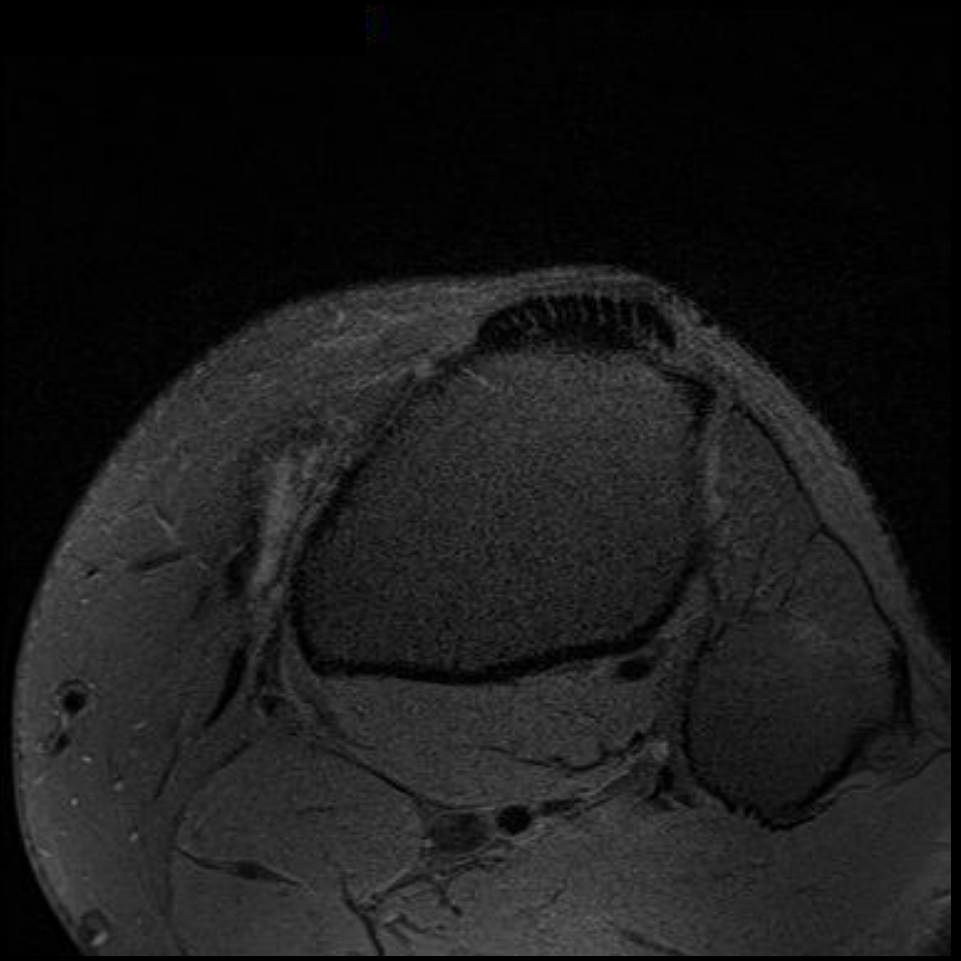


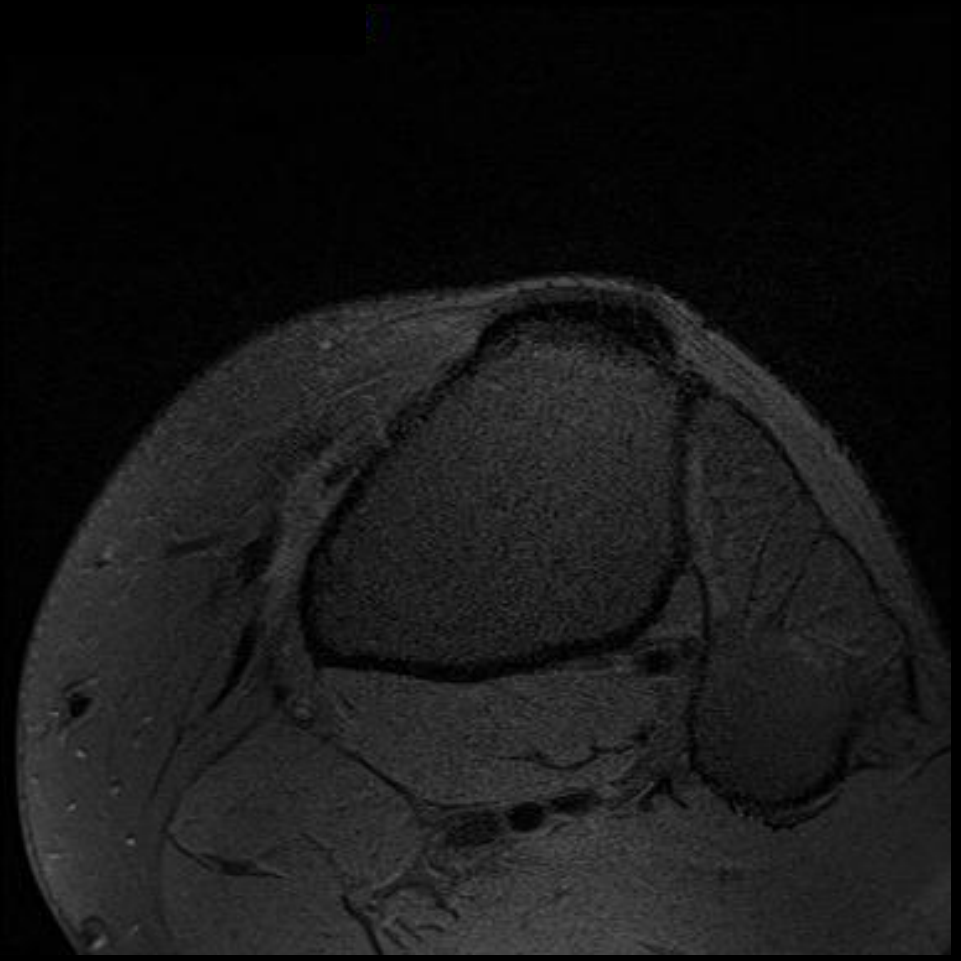










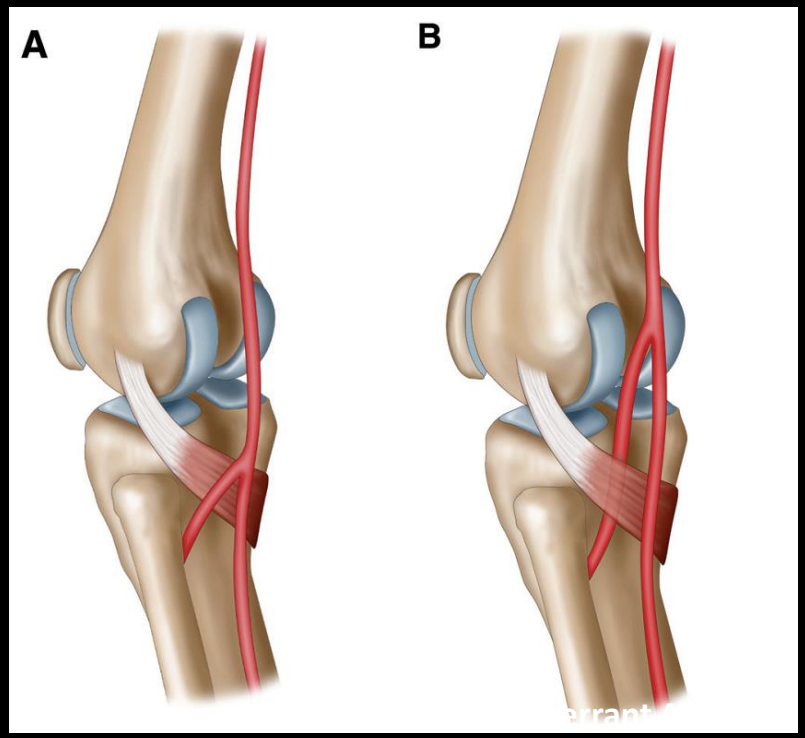


Impression

4. ***Anomalous popliteal artery branch*** extending anterior to the popliteus muscle adjacent to the posterior capsule and posterior tibial border which should be protected at surgery

Popliteal Artery

- Normal bifurcation: at inferior margin of popliteus muscle
- High division: above the middle of posterior surface of popliteus muscle
- **Aberrant course** ventral to popliteus muscle is important because the artery is fixed against posterior cortex of tibia by popliteus muscle



ATA = anterior tibial artery

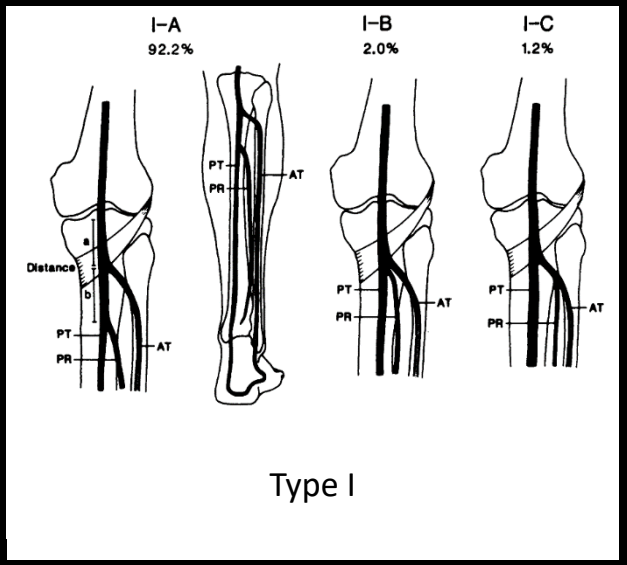
Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008

Surgical Significance of Popliteal Arterial Variants

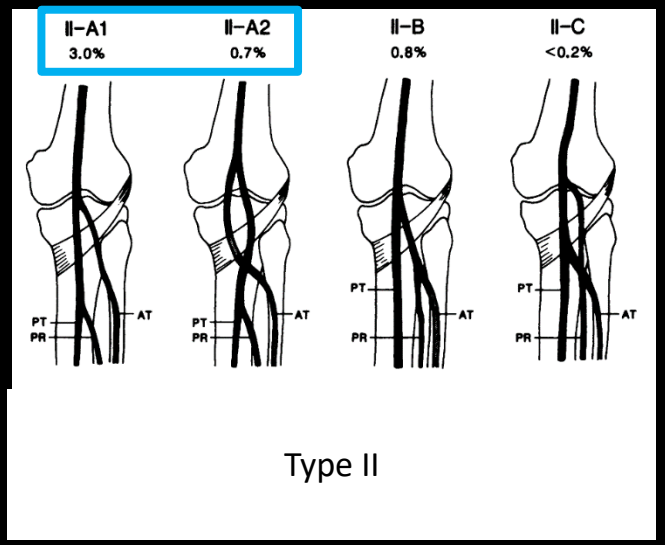
A Unified Angiographic Classification

DUCKSOO KIM, M.D.,* DAN E. ORRON, M.D.,* and JOHN J. SKILLMAN, M.D.†

Ann. Surg. • December 1989



Type I



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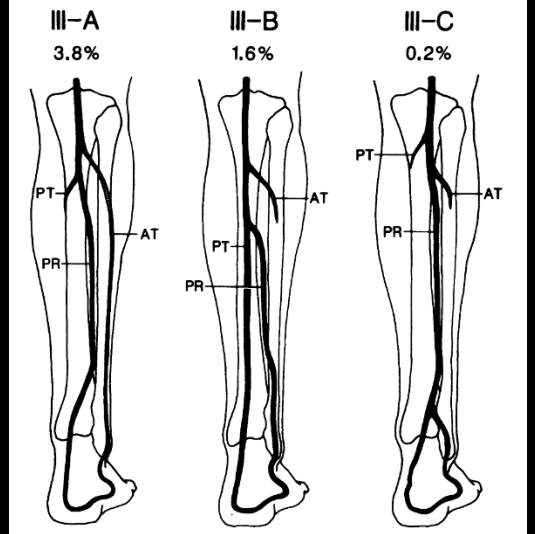


Type III

Vascular Diagnostics

Variations in Anatomy of the Popliteal Artery and Its Side Branches

Vascular and Endovascular Surgery
45(6) 536-540

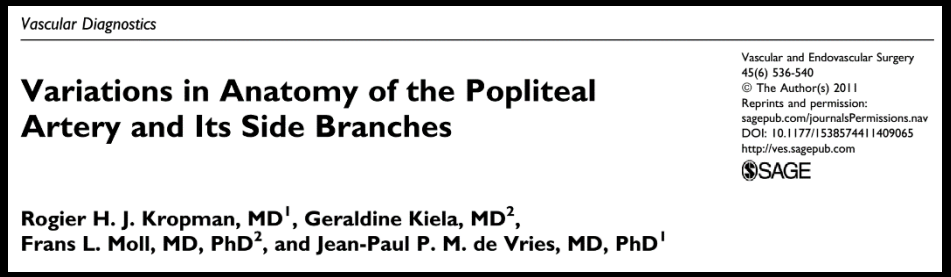
DOI: 10.1177/1538574411409065
http://ves.sagepub.com
SAGE

Rogier H. J. Kropman, MD[1], Geraldine Kiela, MD[2], Frans L. Moll, MD, PhD[2], and Jean-Paul P. M. de Vries, MD, PhD[1]

- Review literature : 4 studies of anatomic dissections and 11 radiologic series

Table 1. Incidence of appearance (%) of the subtypes of the popliteal artery division

Reference	Year	Extremities (n)	Method	IA (%)	IB (%)	IC (%)	IIA (%)	IIB (%)	IIC (%)	IIIA (%)	IIIB (%)	IIIC (%)
Ozgur et al[9]	2008	40	Dissection	90.0	0.0	2.5	5.0	2.5	0.0	0.0	0.0	0.0
Kil and Jung[15]	2008	1242	Angiography	89.2	1.5	0.1	1.2	0.4	0.0	5.1	1.7	0.8
Day and Orme[14]	2006	1037	Angiography	90.7	3.2	0.3	4.5	1.1	0.2	0.8	0.1	0.1
Szpinda[20]	2006	152	Angiography	87.5	2.6	2.0	2.0	5.9	–	–	–	–
Piral et al[10]	1996	40	Dissection	90.0	5.0	5.0	–	–	–	0.0	0.0	0.0
Voboril[21]	1990	253	Angiography	81.8	5.5	–	2.0	2.4	–	7.5	0.8	–
Prayer et al[19]	1990	414	Angiography	90.1	0.7	0.7	4.1	2.9	–	1.0	0.5	–
Davies et al[13]	1989	200	Angiography	88.0	6.0	–	2.0	1.5	–	2.5		–
Kim et al[6]	1989	605	Angiography	92.2	2.0	1.2	3.7	0.8	0.2	3.8	1.6	0.2
Mauro et al[16]	1988	343	Angiography	88.0	4.1	1.2	2.3	0.9	–	–	2.3	–
Bardsley and Staple[12]	1970	235	Angiography	92.8	0.4	–	4.2	1.7	–	0.9	–	–
Pirker[18]	1970	2000	Angiography	93.6	–	1.0	2.6	1.2	–	1.3	0.4	–
Keen[8]	1961	280	Dissection	90.7	4.3	0.4	4.0	1.1	–	2.5	5.0	–
Morris[17]	1960	246	Angiography	88.6	2.9	1.2	3.6	0.8	–	–	–	–
Trotter[11]	1940	584	Dissection	92.3	2.1	0.5	2.7	1.4	–	–	0.3	



Vascular Diagnostics

Variations in Anatomy of the Popliteal Artery and Its Side Branches

Rogier H. J. Kropman, MD[1], Geraldine Kiela, MD[2], Frans L. Moll, MD, PhD[2], and Jean-Paul P. M. de Vries, MD, PhD[1]

Vascular and Endovascular Surgery
45(6) 536-540

DOI: 10.1177/1538574411409065
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- The 3 most frequent variations :

1. High origin of ATA (type IIA; 2.9%)
2. Hypoplastic or aplastic PTA (type IIIA; 2.4%)
3. Trifurcation of ATA, peroneal artery, and PTA (type IB; 2.0%)

- The rarest reported variations : high division of peroneal artery (type IIC), hypoplastic/aplastic PTA and ATA (type IIIC)

PR = peroneal artery

Cardiovasc Intervent Radiol (2009) 32:233–240
DOI 10.1007/s00270-008-9460-z

CLINICAL INVESTIGATION

Anatomical Variations of the Popliteal Artery and its Tibial Branches: Analysis in 1242 Extremities

Sung-Won Kil · Gyoo-Sik Jung

- Retrospectively review 1242 arteriograms (621 patients)
- Variant branching in 134 extremities (10.8%) in 105 patients : 7 patterns
- High origin of AT (n = 15, 1.2%)
- Normal branching pattern of popliteal artery in one extremity → 13% probability of variant in the other side
- Variant branching in one extremity → 28% probability the opposite side will also contain a variation

The Aberrant Anterior Tibial Artery

Magnetic Resonance Appearance, Prevalence, and Surgical Implications

Rosemary J. Klecker,* MD, Carl S. Winalski,*† MD, Piran Aliabadi,‡ MD, and Tom Minas,§ MD, MS

AJSM PreView, published on January 11, 2008

Methods : Retrospective review of 1116 consecutive knee MRI

Results :

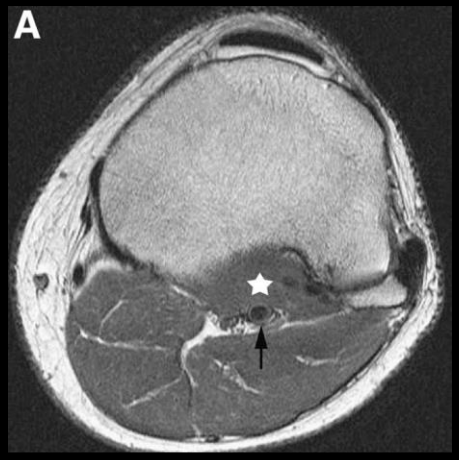
- Prevalence 2.1% (23 of 1116 extremities)
- Anterior tibial artery most easily identified on axial & sagittal
- 34 pts who had both knees imaged, the aberrant anterior tibial artery 3 pts (unilateral in 2 and bilateral in 1)

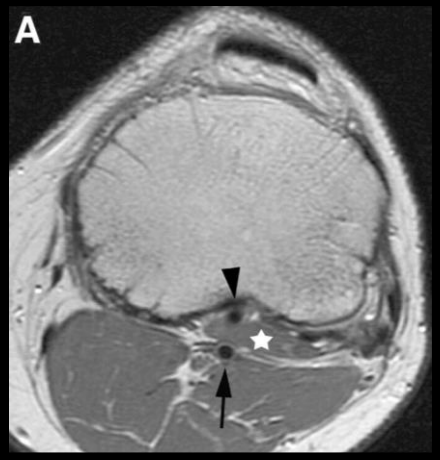
Aberrant Anterior Tibial Artery

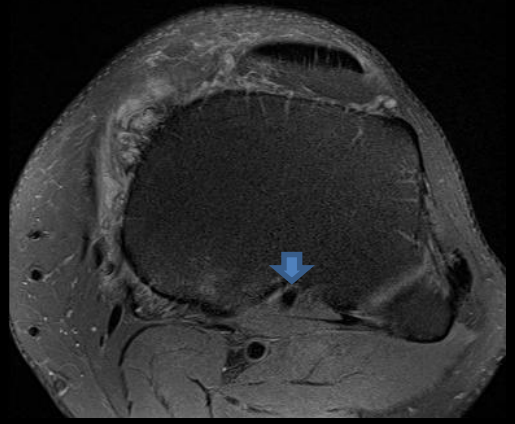
Clinical Relevance :

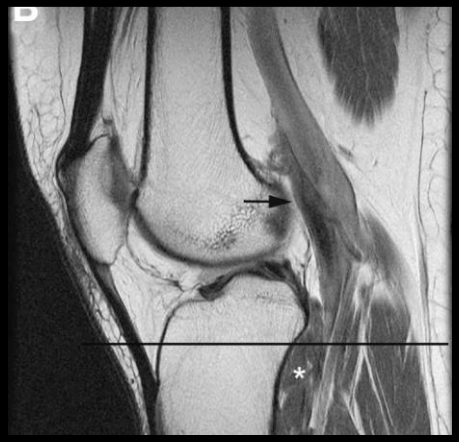
- Aberrant anterior tibial artery may be at greater risk of injury in procedures such as high tibial osteotomy, revision TKA, lateral meniscal repair, PCL reconstruction, and screw fixation for tibial tubercle osteotomy

Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008



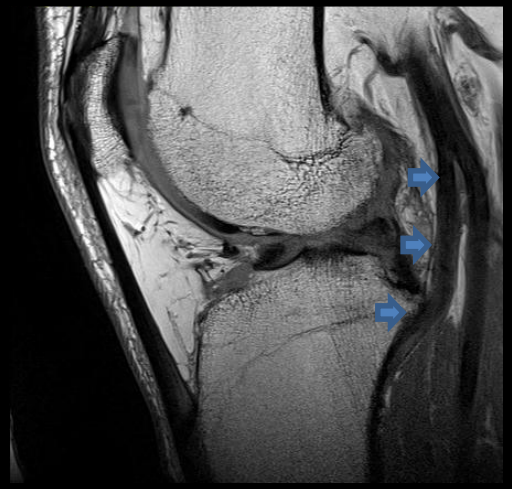






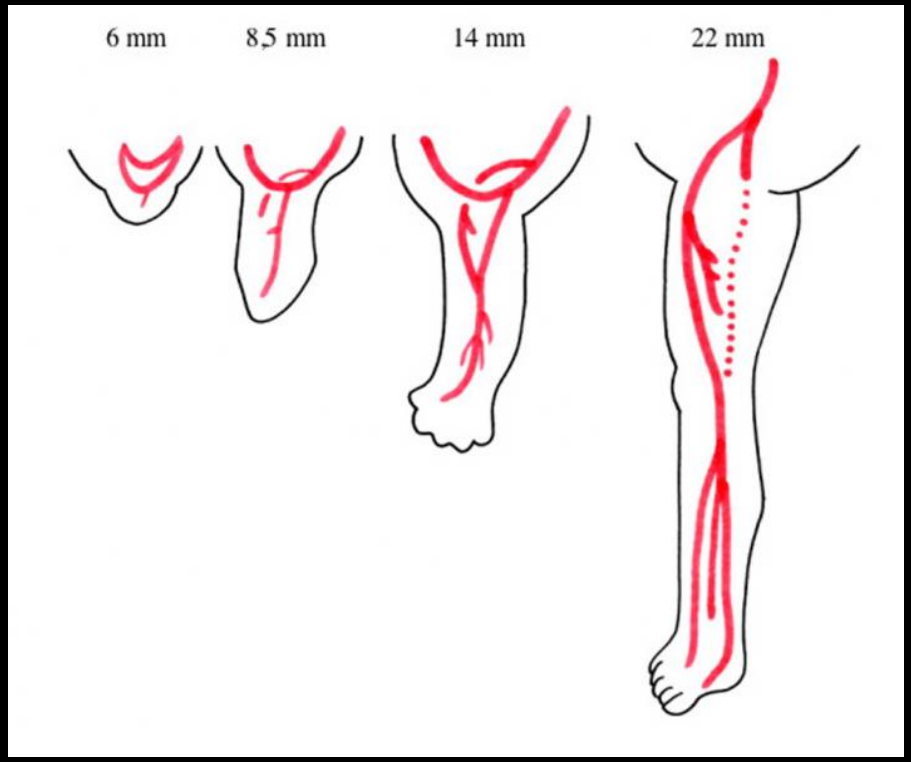
Normal ATA

Aberrant ATA



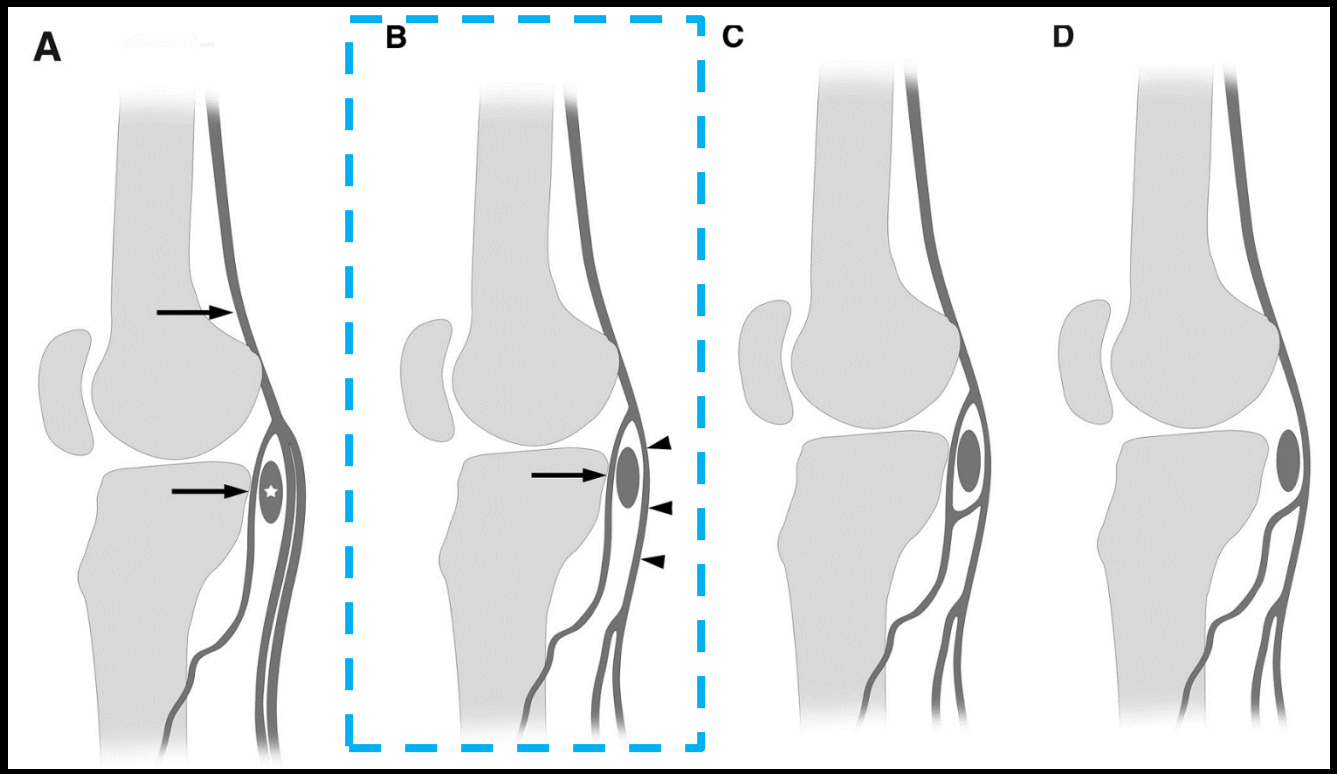
Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008

Embryological development



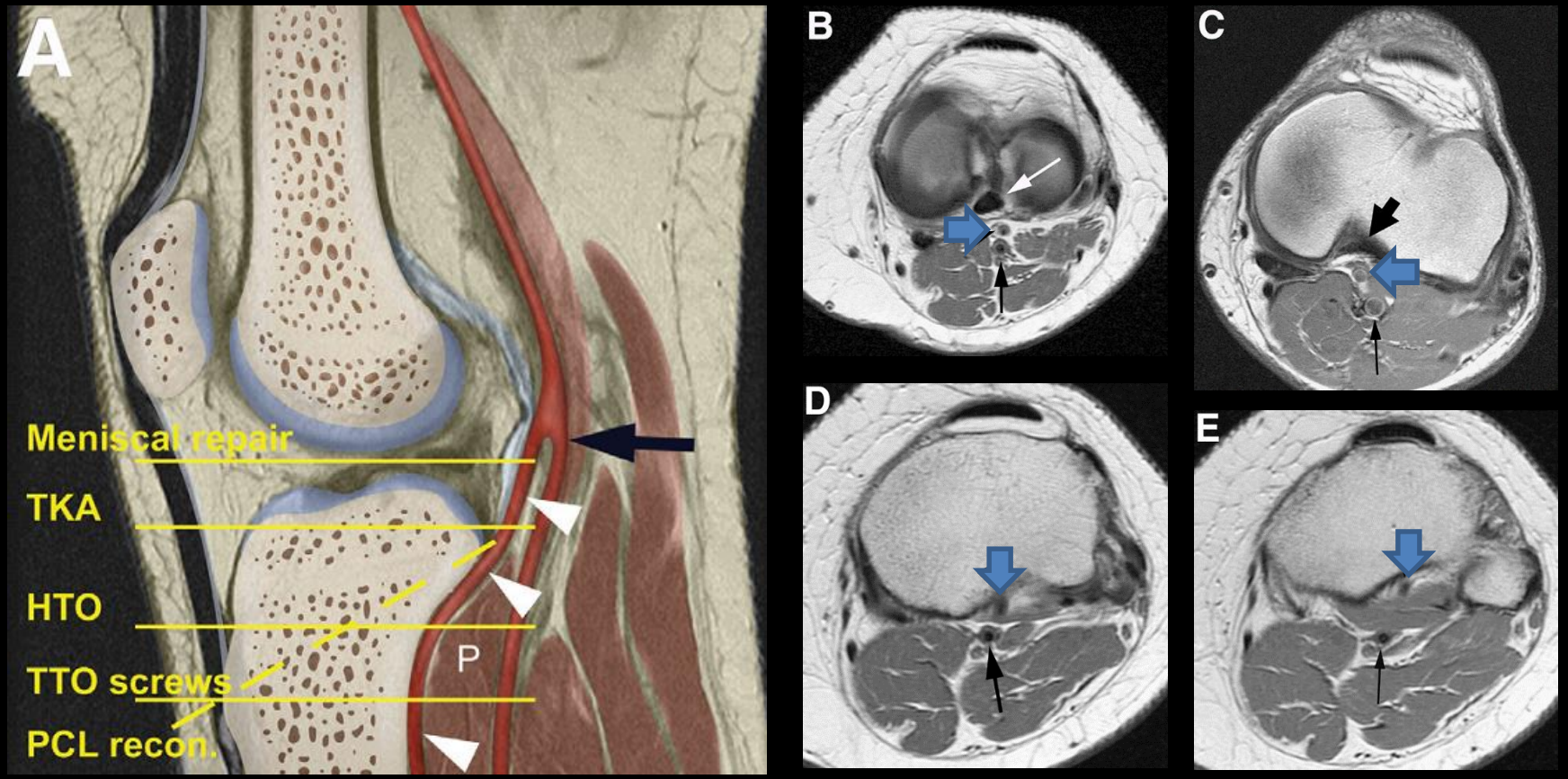
6 mm embryo: primitive sciatic artery on dorsal side of umbilical artery
8.5 mm embryo: external iliac artery upstream of primitive sciatic artery
14 mm embryo: sciatic primitive and femoral arteries junction
22 mm embryo: primitive sciatic artery involution

ATA : Embryological development



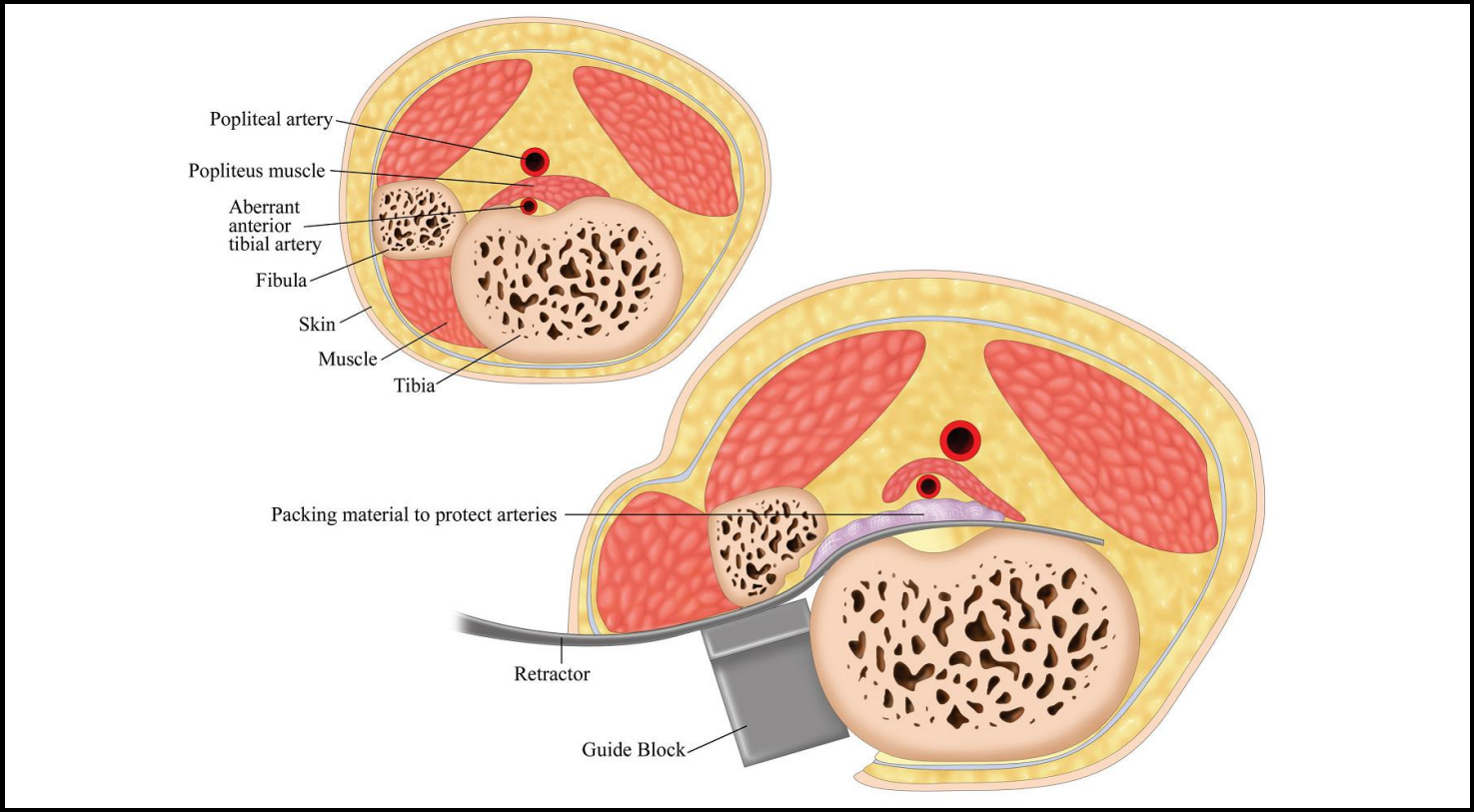
Developmental at this stage → aberrant anterior tibial artery

Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008



Relation between levels of surgical procedures and anatomy of aberrant ATA

Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008



Surgical technique to avoid injury to aberrant ATA during high tibial osteotomy

Klecker et al. The aberrant anterior tibial artery. Magnetic resonance appearance, prevalence, and surgical implications. Am J Sports Med 2008

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4. Kil SW, Jung GS. Anatomical variations of the popliteal artery and its tibial branches: analysis in 1242 extremities. Cardiovasc Intervent Radiol 2009;32(2):233-240.