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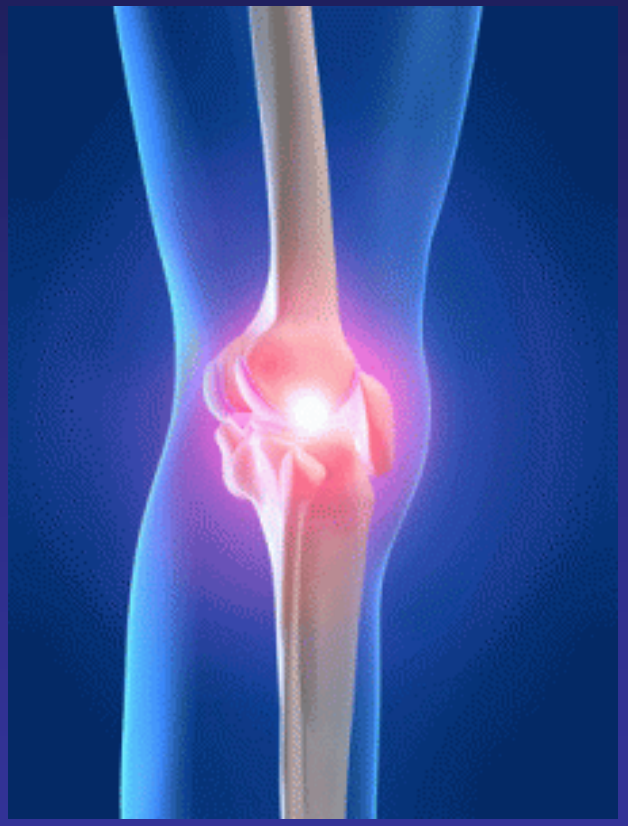
COMPLICANZE VASCOLARI DELLA CHIRURGIA PROTESICA DEL GINOCCHIO



TKA: intervento a più alto rischio di complicanze vascolari

Arteria poplitea:

- Trombosi/Dissezione
- Pseudoaneurisma
- Lacerazione/sezione completa
- FAV

Vena poplitea:

- lacerazione/sezione completa
- Trombosi

Incidenza complessiva

di complicanze arteriose

0.03% - 0.2%

FATTORI DI RISCHIO PER COMPLICANZE VASCOLARI

- Reintervento
- Arteriosclerosi del distretto femoro-popliteo
- Esiti di frattura del 1/3 distale del femore
- Terapia cortisonica cronica

Predictors of lower extremity arterial injury after total knee or total hip arthroplasty

Christopher J. Abularrage, MD,[a,b] Jonathan M. Weiswasser, MD,[a] Kent J. DeZee, MD,[a] Mark B. Slidell, MD, MPH,[a,b] William G. Henderson, PhD,[c] and Anton N. Sidawy, MD, MPH,[a,b]
Washington, DC; and Denver, Colo

	Overall	*Arterial injury (n)*	*Arterial injury (%)*
TKA	24,029	20	0.08
Redo-TKA	2077	4	0.19

(J Vasc Surg 2008;47:803-8.)

amputazione dopo complicanza arteriosa ~ 10%

maggior FR di amputazione: ritardo diagnostico

	Arterial injury	*Amputation*
POD #0 Intraop	7 (20.6%)	0 (0%)
POD #0 Postop	11 (32.4%)	0 (0%)
POD #1-5	8 (23.5%)	0 (0%)
POD #6-30	8 (23.5%)	2 (25%)
Total	34	2 (5.9%)

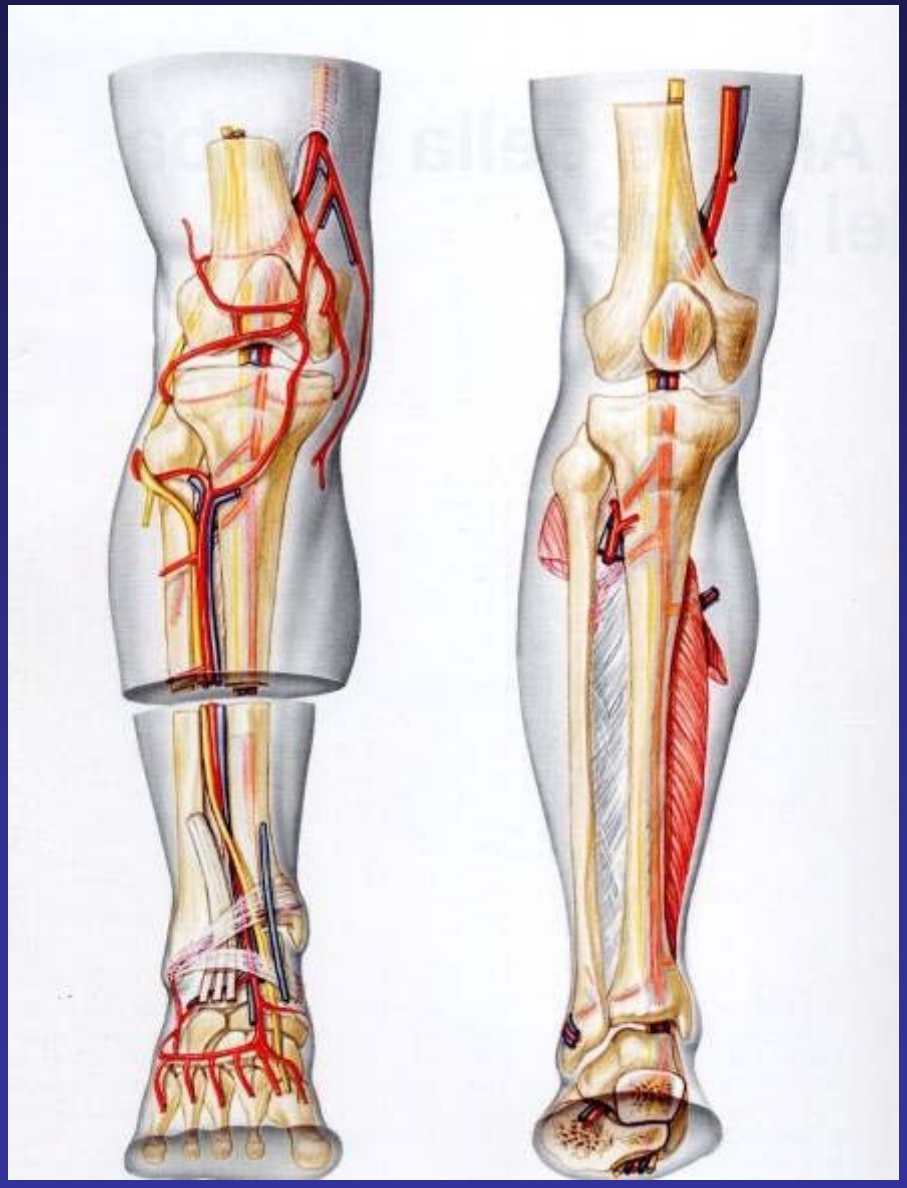
POD, Postoperative day.

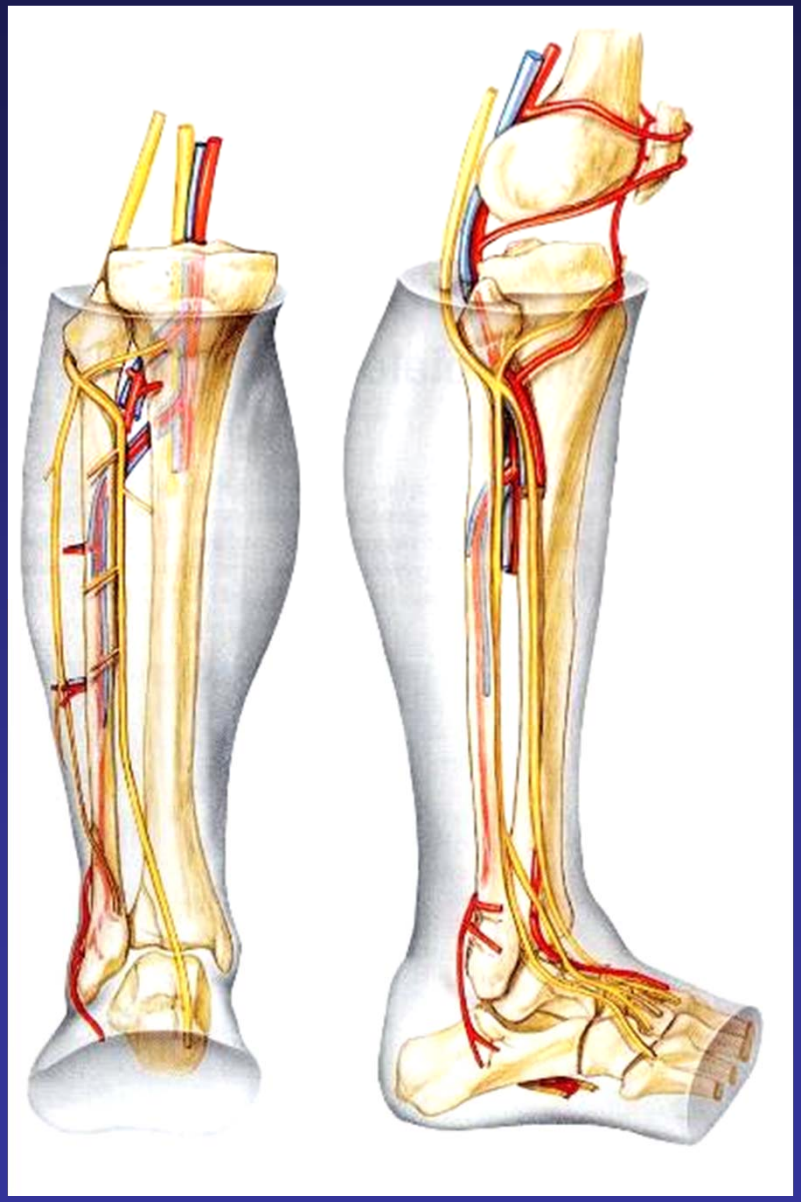
(J Vasc Surg 2008;47:803-8.)

MECCANISMI DI DANNO

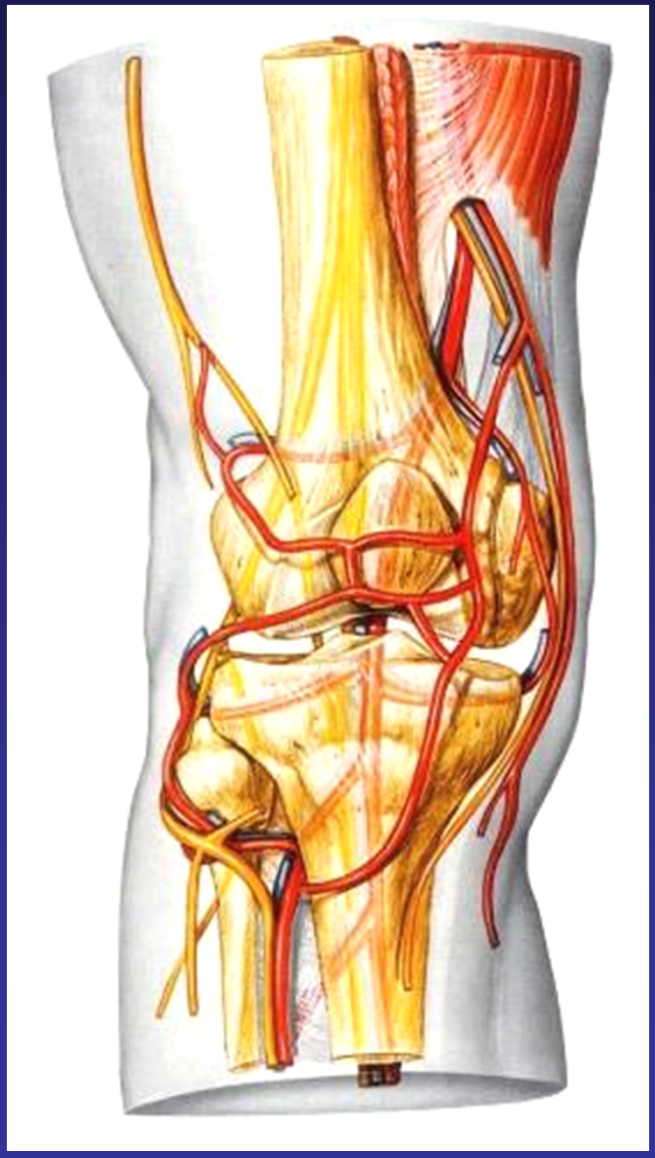
- Manipolazione intraoperatoria con dislocazione delle strutture del ginocchio
  - Torsione e stiramento arterioso
- Trauma diretto
  - Strumenti chirurgici
  - Viti
  - Cementi
- Tourniquet
- Lesioni da calore generato dalla reazione esotermica prodotta dalla polimerizzazione del cemento

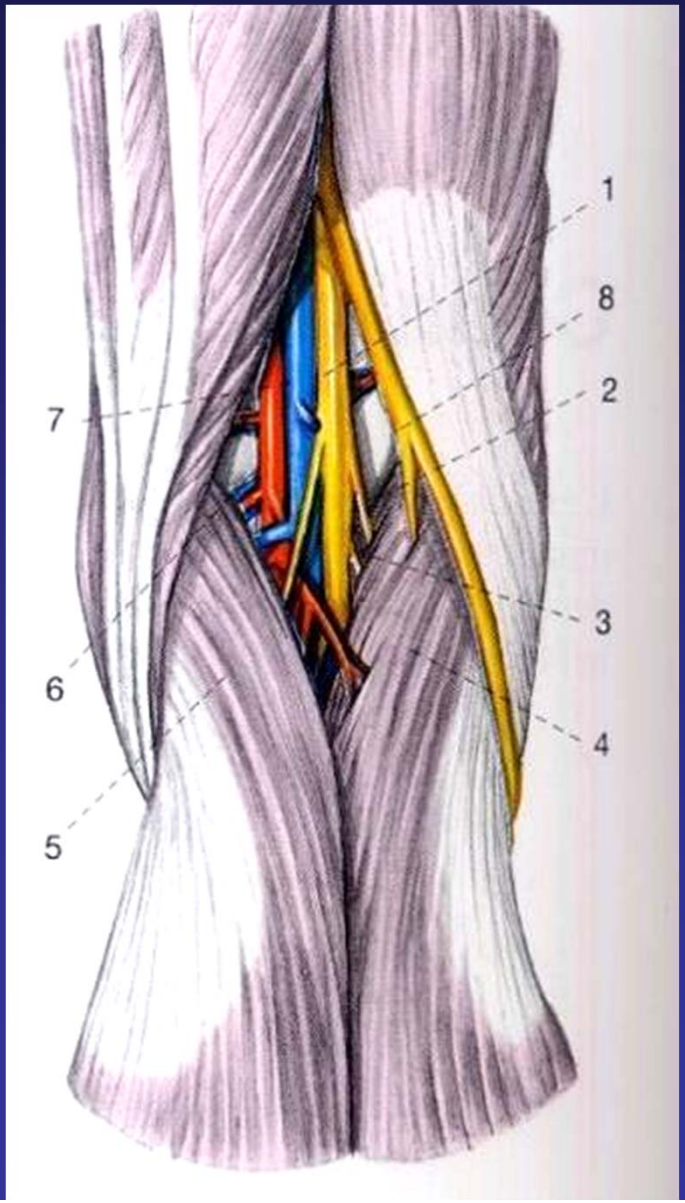
Anatomia

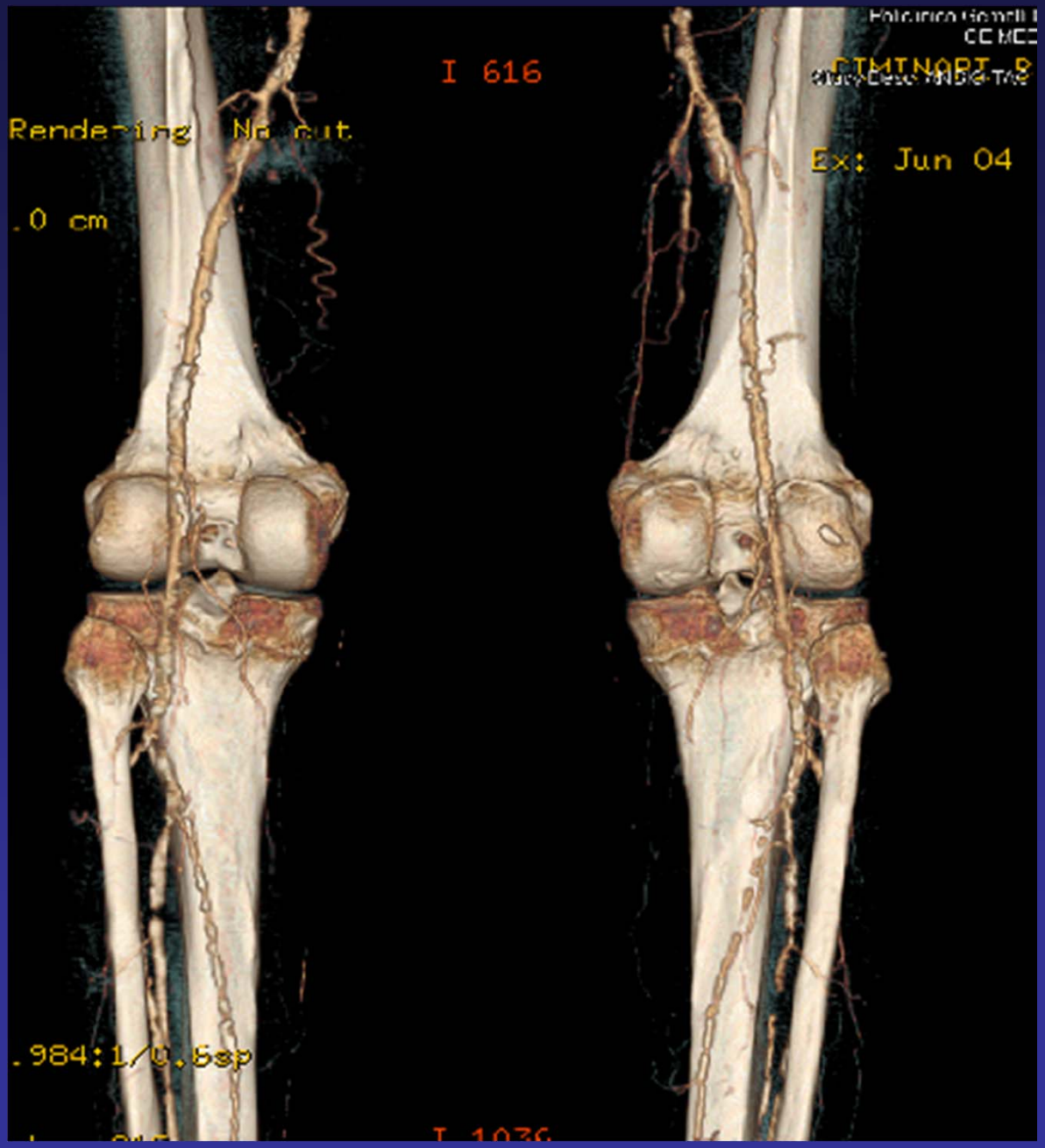




Anatomia



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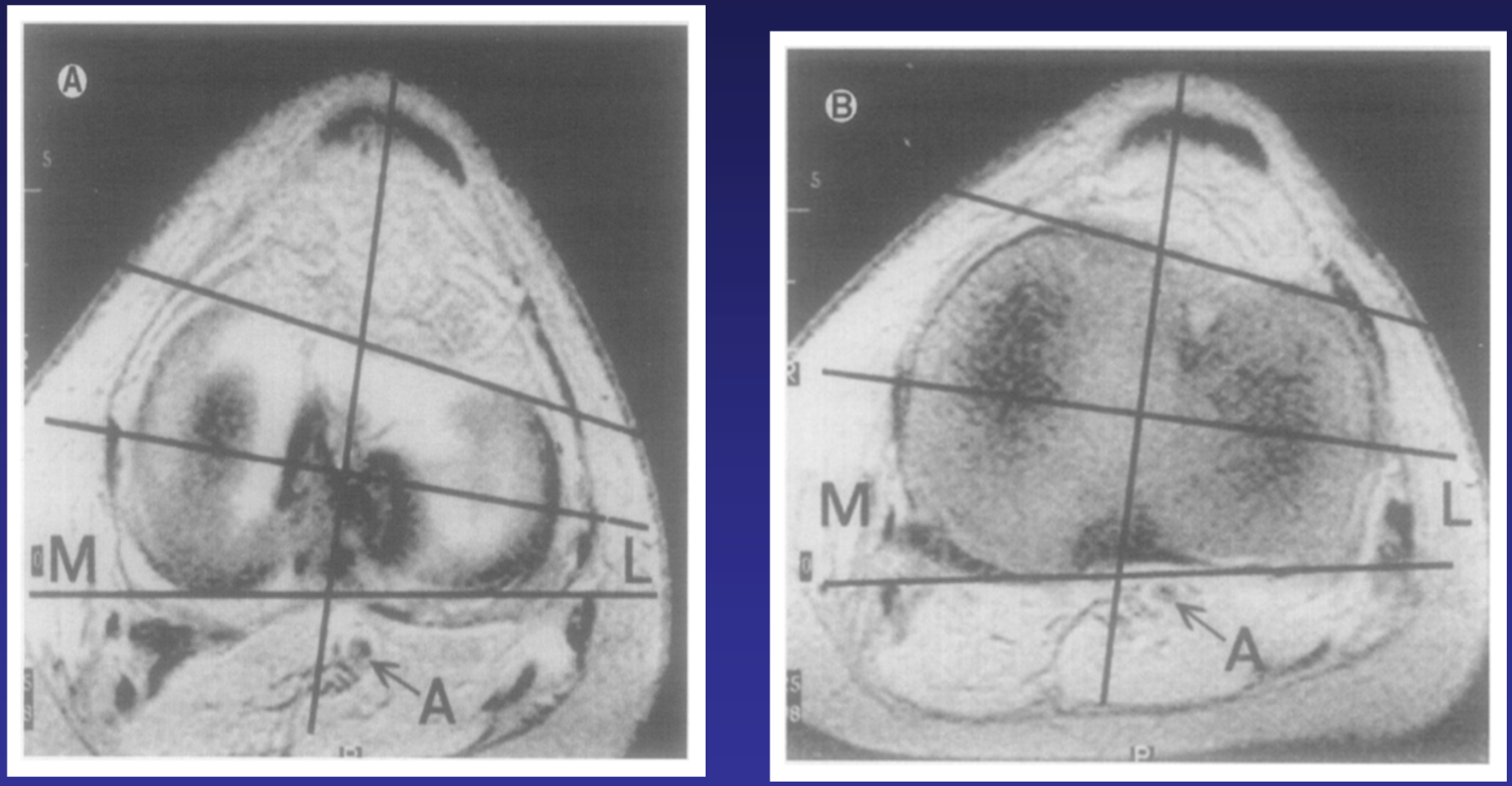
The Journal of Arthroplasty Vol. 14 No. 7 1999

Injury to the Popliteal Artery and Its Anatomic Location in Total Knee Arthroplasty

James T. Ninomiya, MD, MS* John C. Dean, MD, PE,-]- and
Victor M. Goldberg, **MD~-**



Transverse magnetic resonance imaging scans at joint line (A) and 10 mm below this (B). The medial (M)-lateral (L) anatomic axis was defined as the line that passes through the greatest medial-lateral dimension of the proximal tibia and is parallel to the bisector of the angle formed by lines drawn tangenl to the posterior and anterior surfaces of the tibial plateau. The perpendicular bisector of this anatomic axis was defined to be the midline of the proximal tibia for both levels. The location of the artery (A, arrow) is described as a ratio of its position along the length of the analomic axis as measured from the lateral side. In 95% of the cases, the artery was localed lateral to the midline at both levels.

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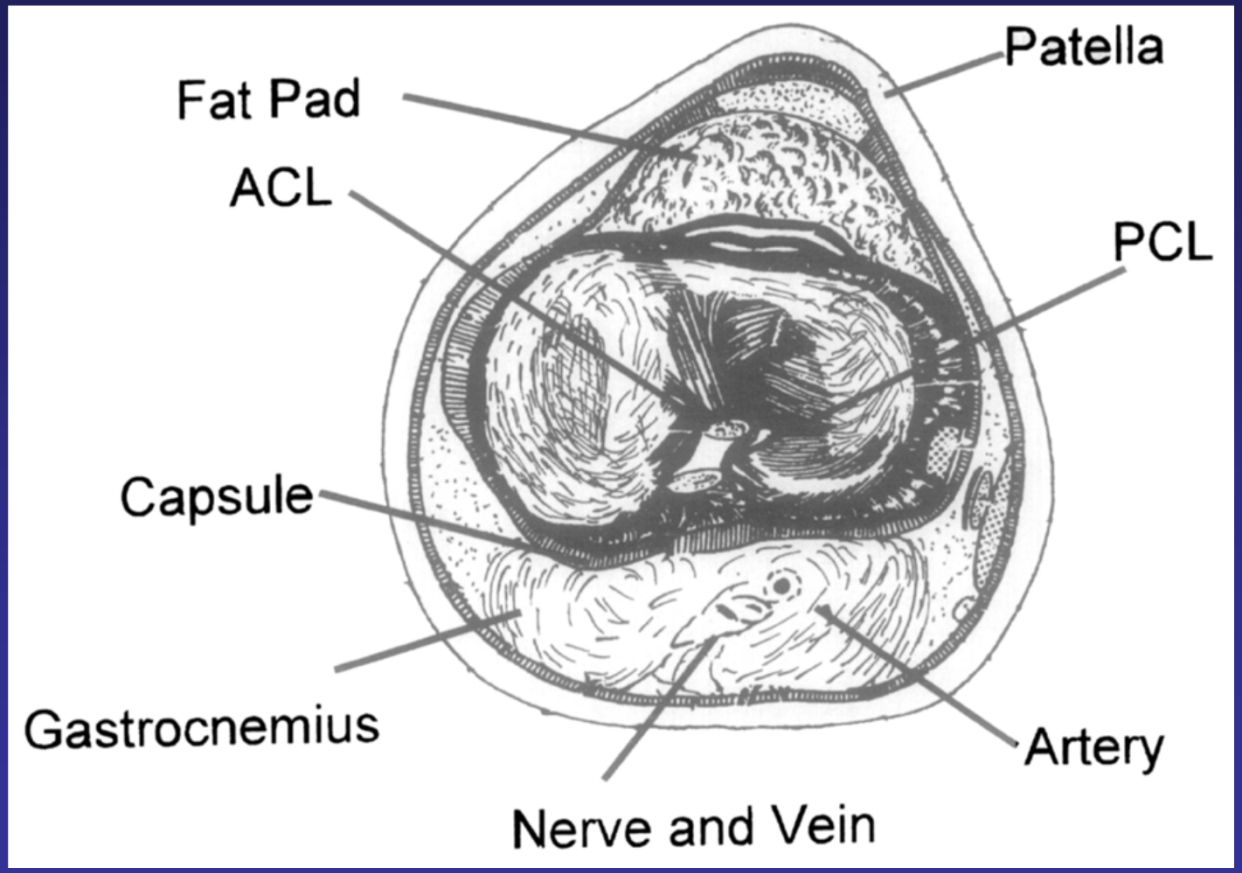
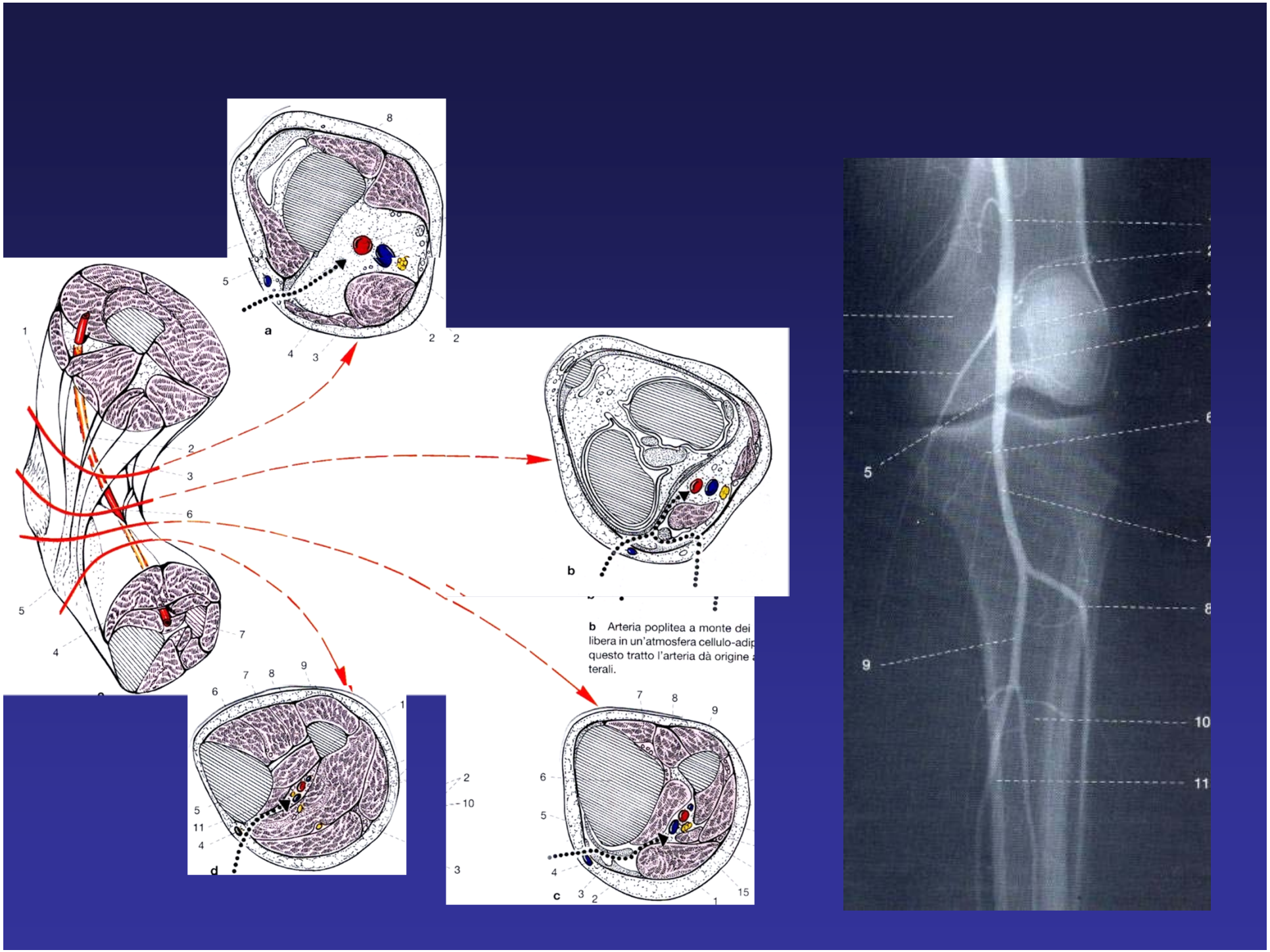


Schematic diagram of a transverse section of the knee at the level of the joint. The artery is lateral to the midline, lies less than 1 cm from the capsule with the leg in extension, and is the most anterior structure in the neurovascular bundle. (ACL, anterior cruciate ligament; PCL, posterior cruciate ligament.)


a
b
c
d
b Arteria poplitea a monte dei
libera in un'atmosfera cellulo-adip
questo tratto l'arteria dà origine
terali.
5
9
10
11

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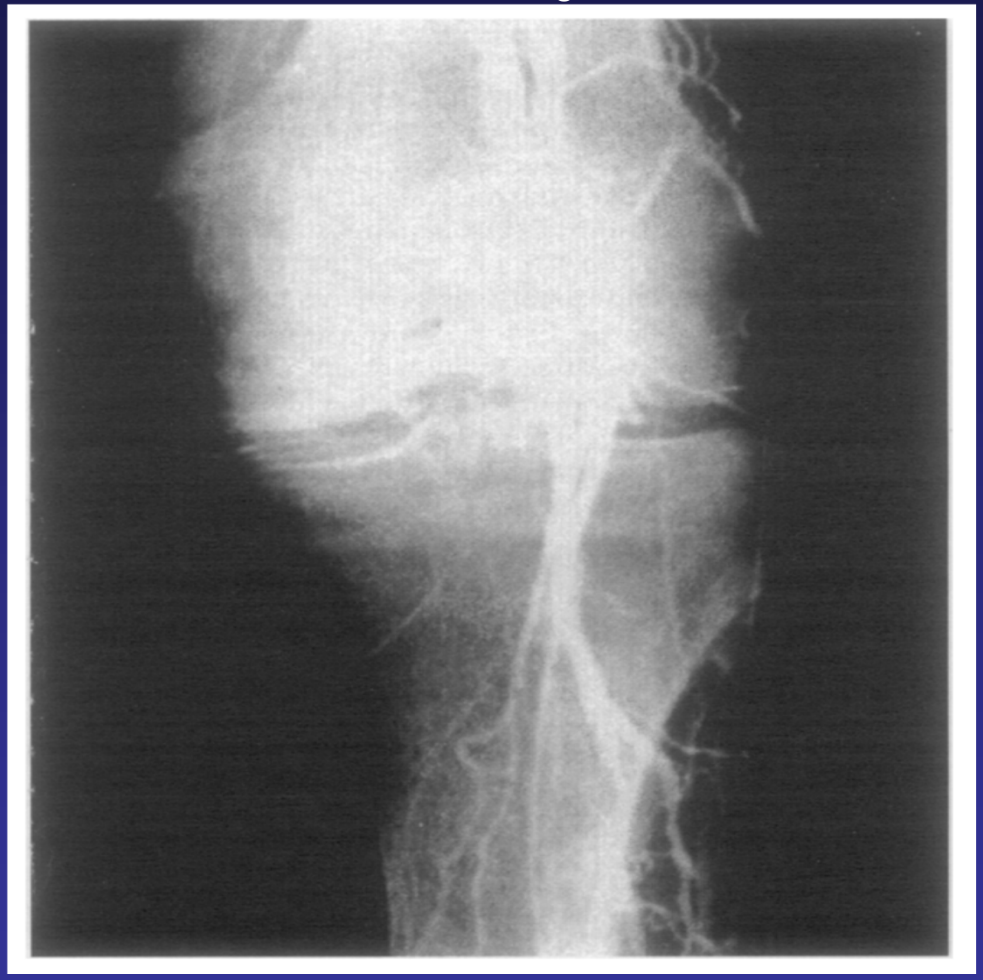

Anteroposterior artenogram demonstrating lateral position of the popliteal artery at the level of the tibial plateau as it descends obliquely from the adductor hiatus medially to the interosseous space laterally.

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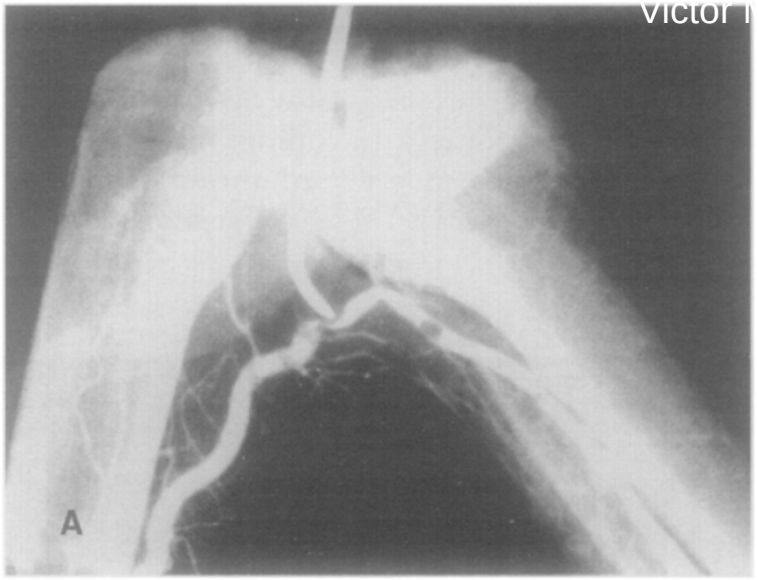

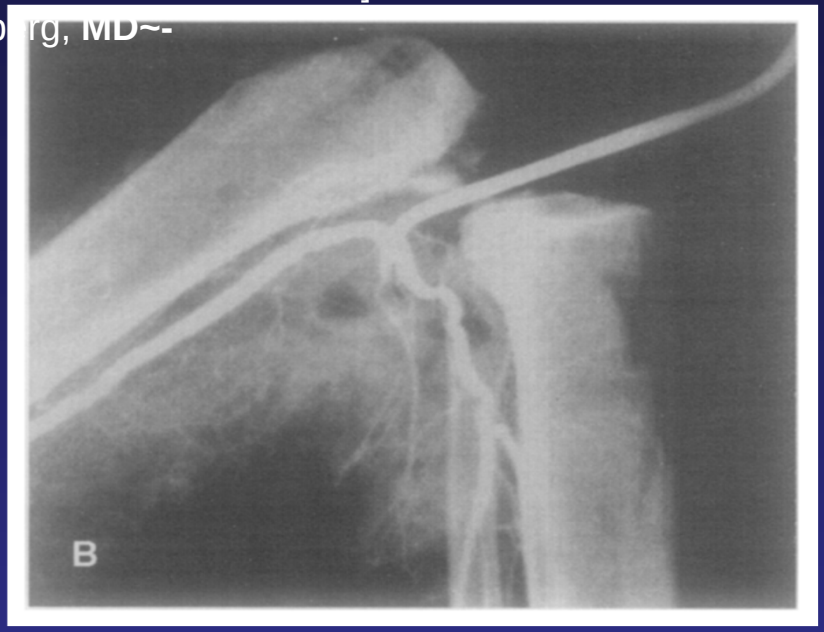

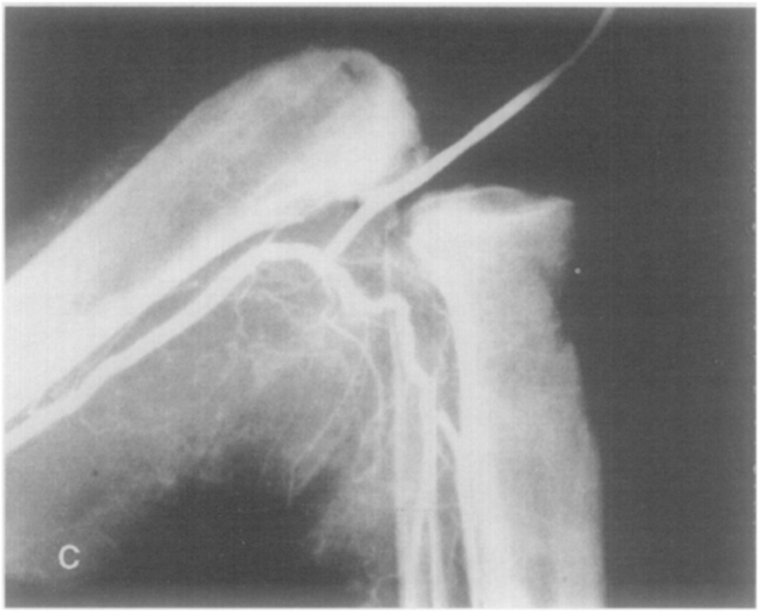

Lateral arteriograms during total knee arthroplasty after all femoral osteotomies when bent knee retractors were placed behind the tibial plateau to lever it forward. (A) Single-prong retractor placed lateral to the posterior cruciate ligament insertion resulting in direct displacement of the popliteal artery. The retractor was intentionally placed in a slightly deep position to demonstrate the proximity of the artery to the posterior joint line. (B) Single-prong retractor placed medial to the posterior cruciate ligament insertion, which never produced displacement of the artery. (C) Double-prong retractor placed over the intact posterior cruciate ligament resulting in minimal displacement of tile artery as its posterior excursion is limited.

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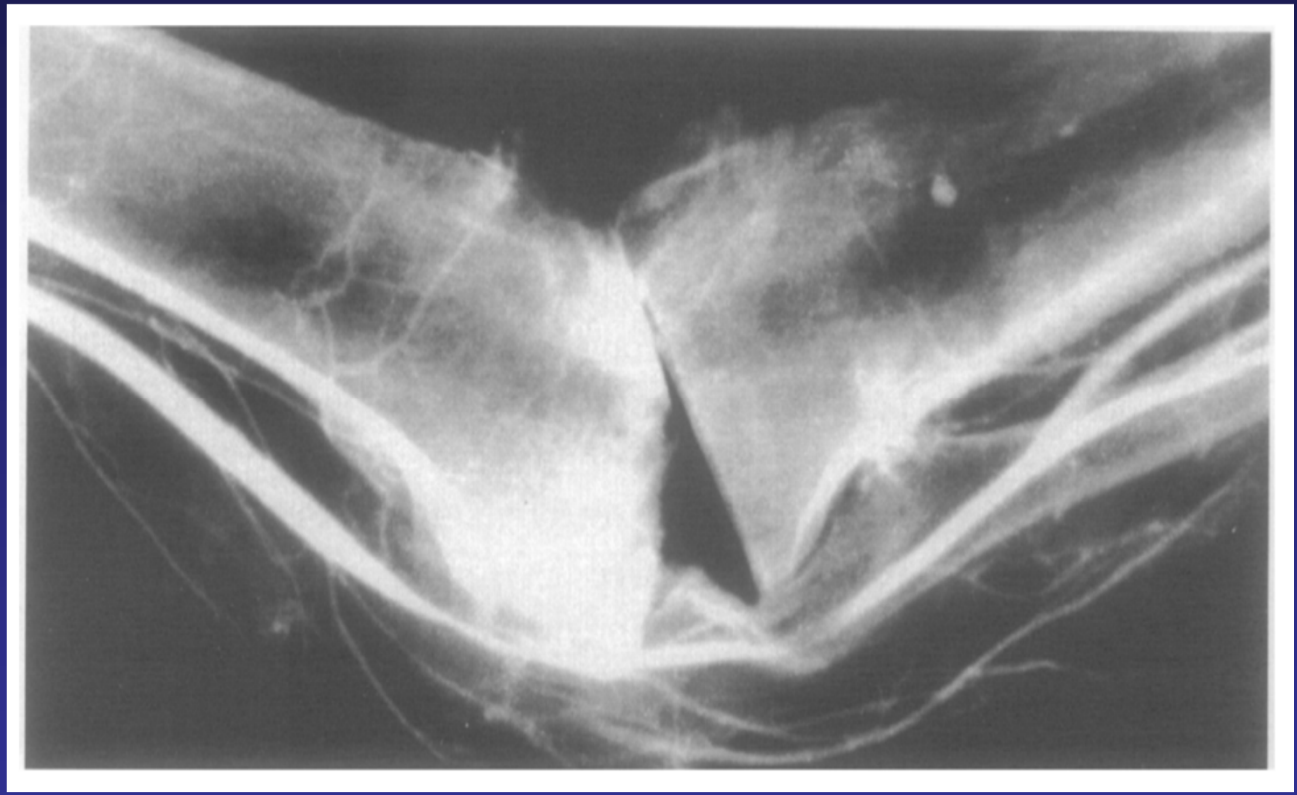

Lateral arteriogram after all total knee arthroplasty osteotomies but before component implantation with the knee hyperextended resulting in severe tenting of the artery over the sharp posterior edge of the tibial plateau.

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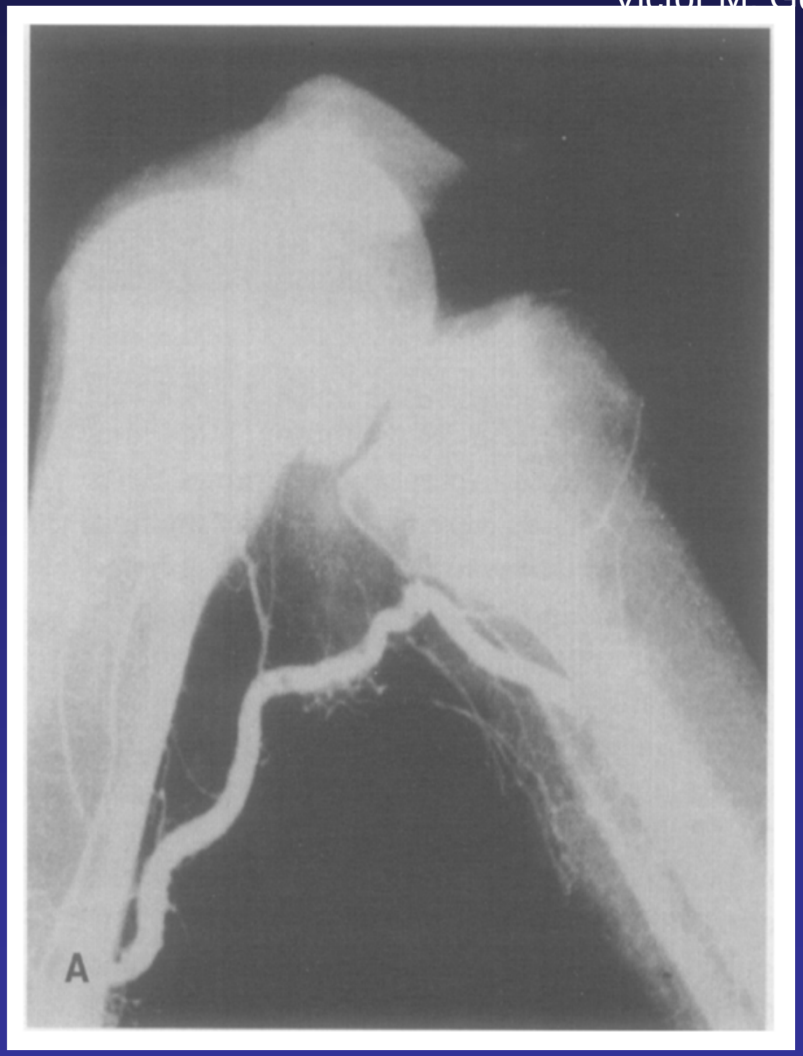
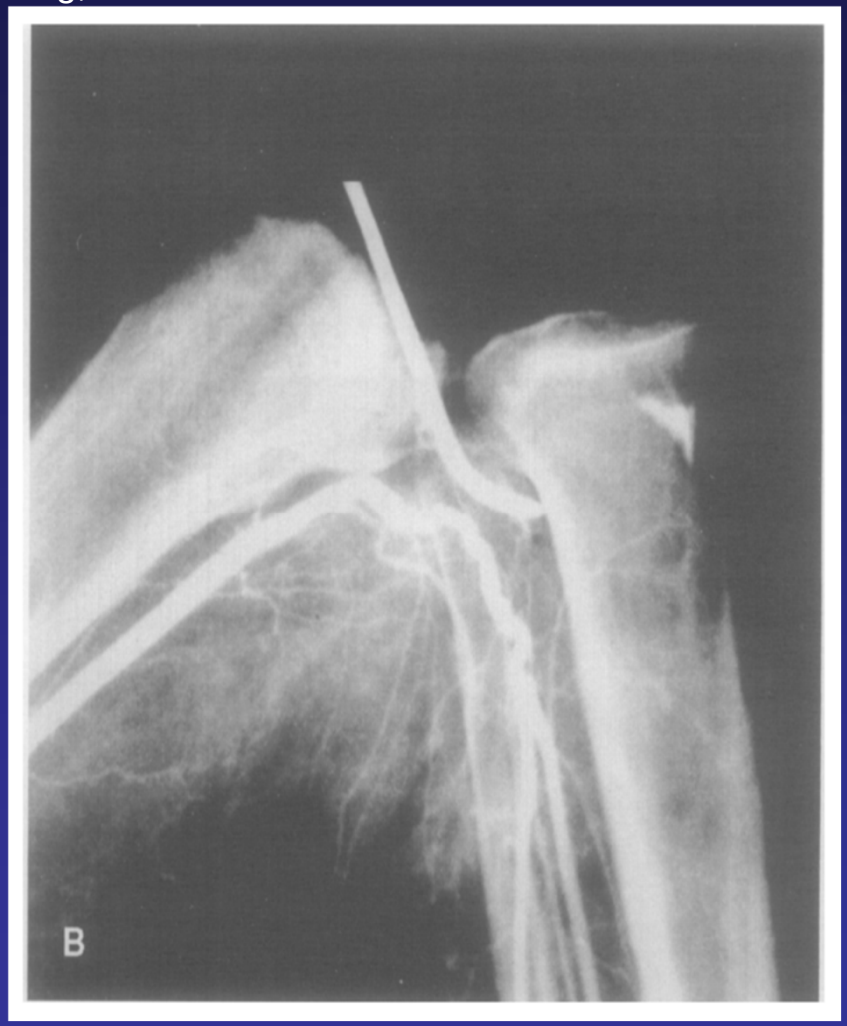


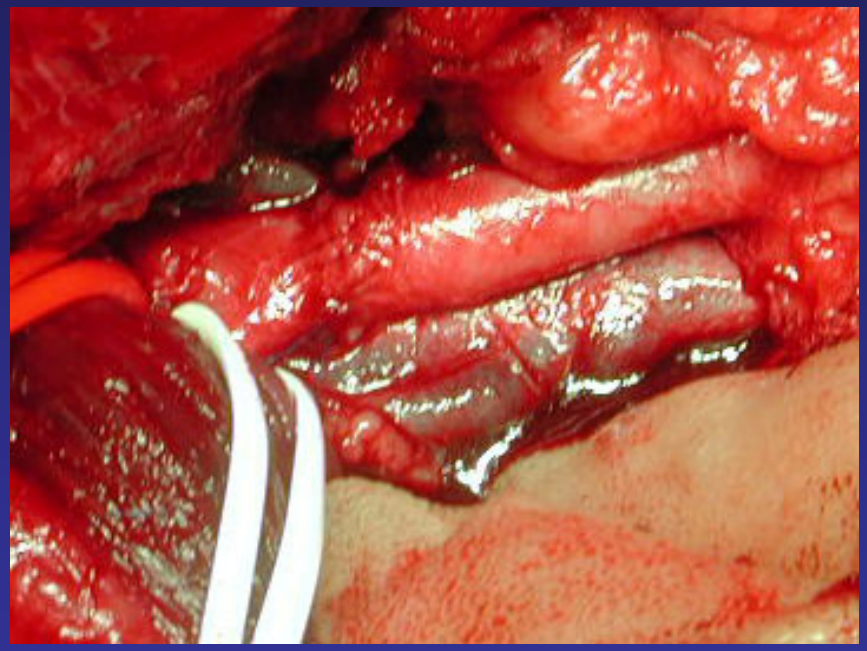


Lateral arteriograms of hyperflexed knee. (A) Before total knee arthroplasty demonstrating flexural deformity of the popliteal artery. (B) The tibia has been levered forward with the bent knee retractor further deforming the artery.

Interventi riparativi vascolari

Lesioni ostruttive

- Tromboendoarteriectomia
- Innesto o bypass
  - popliteo-popliteo
  - femoro-popliteo



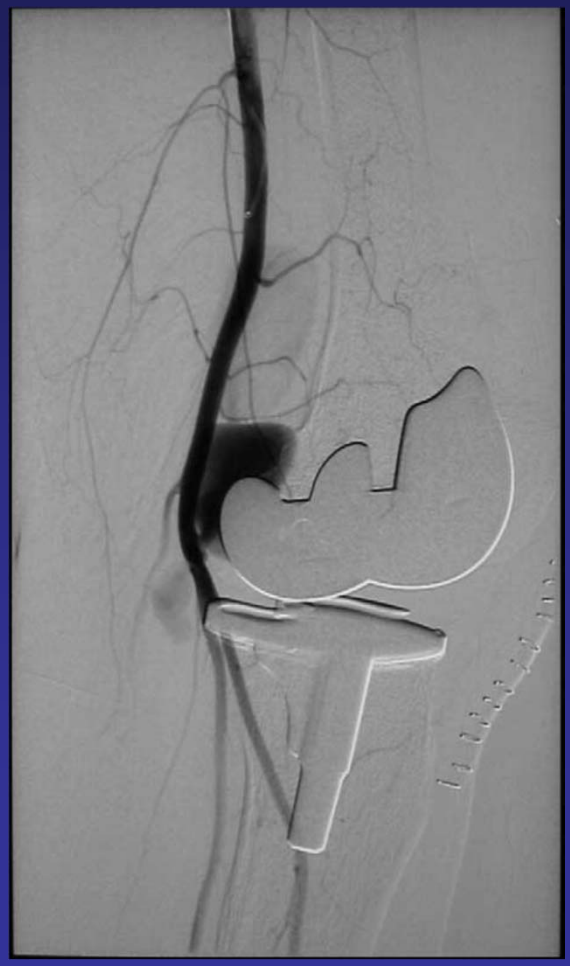
Materiale utilizzato:

- vena grande safena
- Protesi (PTFE)

Interventi riparativi vascolari

Pseudoaneurismi

- Sutura arteriosa
- Innesto o bypass
- Stent graft
- Iniezione di Trombina



Valutazione vascolare preoperatoria

- Clinica

  anamnesi

  esame obiettivo: polsi periferici, trofismo

- Strumentale
  - I.W. (indice caviglia braccio)
  - ECD arti inferiori
  - AngioTC
  - AngioRMN

Chirurgia del ginocchio in paziente arteriopatico

- Valutazione stadio clinico Leriche-Fontaine (I, IIa, IIb, III, IV)
- Presenza di pregresso bypass vascolare o di un intervento endovascolare
- Tipo di antiaggregazione/anticoagulazione

STUDIO RETROSPETTIVO DATI MAYO CLINIC

- 19.808 interventi di artroprotesi totale di ginocchio (TKA) eseguiti fra il 1970 e il 1997

- 9 pazienti sottoposti a TKA dopo confezionamento di bypass periferico

STUDIO RETROSPETTIVO DATI MAYO CLINIC

- 2 pazienti presentarono trombosi arteriosa acuta
  - 1 amputazione

- Assenza di correlazione statistica fra
- protesi utilizzata
- tourniquet
- intervallo di tempo fra bypass e TKA
- terapia anticoagulante e

- occlusione arteriosa

Valutazione vascolare postoperatoria

Clinica
- Polsi periferici
- Cute
- Logge muscolari

Strumentale
- I.W. (indice caviglia braccio)
- ECD arti inferiori

- Attenta sorveglianza delle condizioni circolatorie dell'arto
- Possibile insorgenza di ischemia anche a 24-48h p.-o.!!!

Valutazione vascolare postoperatoria

- Un basso livello di sospetto può ritardare la diagnosi e rendersi responsabile della comparsa di quadri clinici gravi, fino alla ischemia irreversibile con perdita dell'arto

- Anestesia peridurale !!!

amputazione dopo complicanza arteriosa ~ 10%

maggior FR di amputazione: ritardo diagnostico

	Arterial injury	*Amputation*
POD #0 Intraop	7 (20.6%)	0 (0%)
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POD #1-5	8 (23.5%)	0 (0%)
POD #6-30	8 (23.5%)	2 (25%)
Total	34	2 (5.9%)

POD, Postoperative day.

(J Vasc Surg 2008;47:803-8.)

COMPLICANZE VENOSE
TVP e artroprotesi

- Rischio elevatissimo di eventi trombo-embolici
- senza profilassi
  - TVP 60-80%
  - E.P. clinica 4-10%
  - E.P. fatale 1-5%

Il ricorso sistematico alla profilassi farmacologica e fisica ha drasticamente ridotto il rischio di TEP

Katharine He Xing e coll.
Thromb. Res. 2008;123:24-34

TVP e artroprotesi

- EBPM →TVP 25-30%
- anticoagulanti orali e dell'eparina non frazionata a dosi fisse 40-45% TVP
- fondaparinux
  - sanguinamenti maggiori (2,1% contro 0,2% P=0,006)
- dabigatran
  - orale
  - non inferiore a enoxaparina

TVP e artroprotesi

- EBPM enoxaparina

  + mezzi fisici
- 4-6 settimane

- il grado di mobilizzazione
- Le recenti linee guida ACCP del 2008 suggeriscono una profilassi prolungata come dopo l’intervento sull’anca.