



Surgical Approach And Graft Usage For Popliteal Artery Injury From Posterior Knee Dislocation




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Disclosures



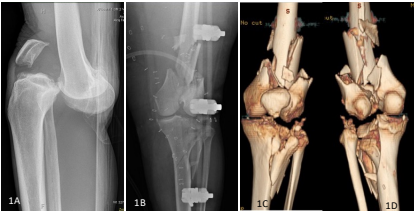
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Isolated Knee Injuries Are Common



A popliteal artery injury requires an early diagnosis.

Traditional Approach to the Popliteal Artery

- The medial approach has been the standard approach.
- Obese or muscular limbs may require a deep and difficult exposure.
- When a bypass is anticipated, a long saphenous vein is needed.
- Often the knee ligaments are separated with a medial exposure.

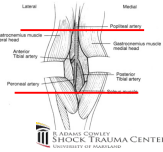

CURRENT OPINION

The posterior approach to the midpopliteal vessels is the preferred approach for an isolated knee injury

Charles J. Fox, MD, FACS and Ernest E. Moore, MD, Aurora, Colorado


J Trauma Acute Care Surg Volume 89, Number 4 July 2020

- The posterior approach is an excellent exposure.
- Allows for direct assessment of the vein and nerves.
- The short saphenous vein can be harvested directly.
- Ideal for the middle segment, recognized in advance on CTA.

Why Is This Approach Infrequent?

- Some surgeons may not have adequate comfort with exposure or a prone-positioned trauma patient.
- Iatrogenic injury to the adjacent tibial and peroneal nerves can occur.
- The far proximal and distal limits are not easily reached.
- May need to interrupt the procedure between vein harvest.



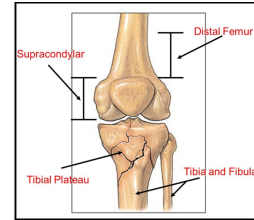
Potential Advantages

- Short interposition conduits have exceptional durability.
- A faster operation reduces ischemic time.
- A smaller incision eliminates potential wound complications.
- Many have used this approach for cystic adventitial and entrapment.



Preoperative Assessment

- Pulse exam
- ABI
- Neurologic exam
- Inspection of radiographs
- Heparin
- CTA



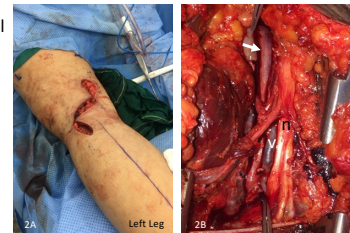
Operative Preparation

- General Anesthesia
- Fluoroscopic table
- Well padded prone, tourniquet on thigh, foot prepped to bend knee
- External fixator
- S-shaped incision superomedial to inferolateral



Anatomy

- Identify and protect the sural nerve.
- Open the deep fascia.
- Trace SSV into the popliteal fossa.
- The artery is medial, vein in the middle and nerves are lateral.

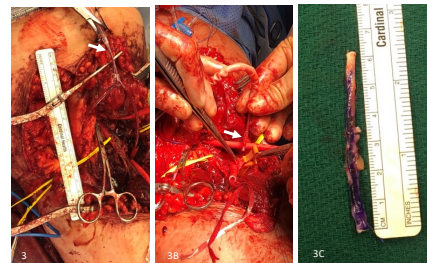


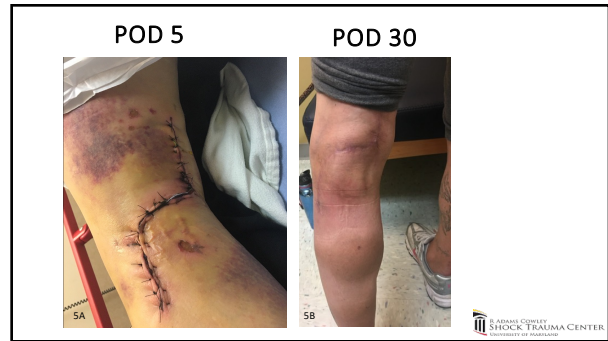
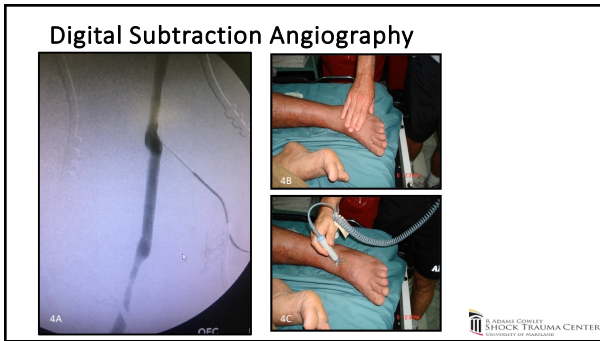
Conduct of the Operation

- The vein and artery are separated, and nerves are inspected.
- All thrombotic and intimal debris is removed.
- Fogarty (2,3) catheters are used to restore flow.
- Decisions for Heparin and shunting are made.
- Reconstruction is performed with an interposition graft.
- Topical smooth muscle relaxants and thrombolytics are considered.



Shunts and Conduits





Aneurysm Treatment Can Provide Insight

From the Society for Vascular Surgery

Comparison of posterior and medial approaches for popliteal artery aneurysms

Heath B. Broussard, MD, Michael C. Green, MD, Karim M. El-Dars, MD, Steven M. Semelitsch, MD, Eugenio Barberio, MD, Luca Tassinari, MD, Sergio Ramal, MD, and Piergiorgio G. Serradori, MD, Milan, India

"Both approaches achieved satisfactory results. The differences were small and not statistically significant".

J Vasc Surg 2015;62:1512-20.

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Short vs. Long ePTFE

From the Western Vascular Society

The posterior approach for repair of popliteal artery aneurysms

Bryce D. Booth, MD, and Wesley S. Moore, MD Los Angeles, Calif. *J Vasc Surg* 2006;43:940-5.

Short grafts have superior patency.

Short grafts take less time, have fewer wound complications

2-year primary patency rate of 92.2% is comparable to SVG

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The Posterior Approach in the Treatment of Popliteal Artery Aneurysm: Feasibility and Analysis of Outcome

Pramodh Eswara¹, Arshad Hameed², Carlo Bergami¹, Abbas A. Elmer¹, Ricardo Gonzalez¹, and Christoph Ebner¹, Bonn and Leipzig, 349

Ann Vasc Surg Vol. 24, No. 7, October 2010

META-ANALYSIS

Richard P. Cambria, MD, SECTION EDITOR

Meta-analysis of posterior versus medial approach for popliteal artery aneurysm repair

Alison Phair, MSc¹, Shahin Hajibonani, MSc², Shahab Hajibonani, MSc², Damian Auliffe, FRCS¹, Siva Sankaran, FRCS¹, and George A. Antoniou, MD, FRCS, FRCS¹, Manchester, Glasgow and Birmingham, United Kingdom

J Vasc Surg 2016;64:1141-50.

16% (6 yr) Zaraca (8 yr) posterior improved primary patency

1427 ms long term primary, secondary and risk of limb loss all favored the posterior approach.

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Conclusion

- Durable approach for the mid popliteal injury.
- Operator expertise and willingness are the barriers to this technique.
- Surgeons should be trained in the posterior approach.
- Modern imaging can provide excellent information

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