# Station 1 (Francis Salinas, MD)
# Popliteal Plexus Block and IPACK Block

- **Objectives**
- Understand the difference between anterior and posterior innervation of the knee as it pertains to major knee surgery.
- Learn the anatomical basis for the US-guided motor-sparing nerve block approaches to provide sensory analgesia to the posterior knee after major knee surgery.
- Acquire the technical knowledge to identify the sonographically pertinent anatomical structures to perform PPB and IPACK block
- Discuss evidence-based data and the practical real-world applications of which block to utilize in your clinical practice.

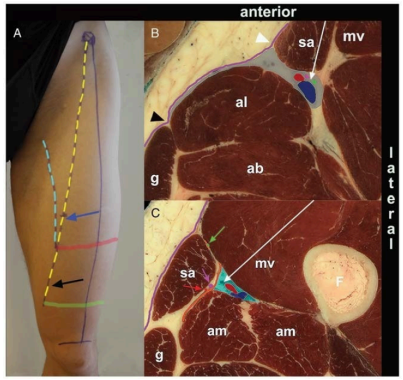
1

The Spread of Ultrasound-Guided Injectate From the Adductor Canal to the Genicular Branch of the Posterior Obturator Nerve and the Popliteal Plexus

*A Cadaveric Study*

Reg Anesth Pain Med 2017

*Charlotte Runge, MD,* Bernhard Moriggl, MD, PhD,† Jens Børglum, MD, PhD,‡ and Thomas Fichtner Bendtsen, MD, PhD§*



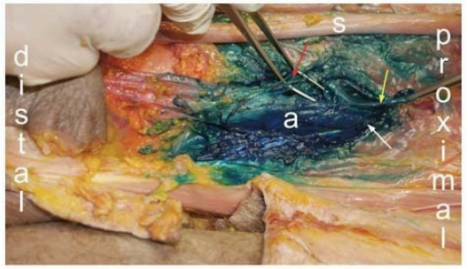




**FIGURE 2.** Spread of methylene blue from the AC through the adductor hiatus into the popliteal fossa. Sciatic nerve (S), popliteal vessels (a), popliteal plexus (red arrow), genicular ramus of the posterior obturator nerve (yellow arrow), adductor hiatus (white arrow).

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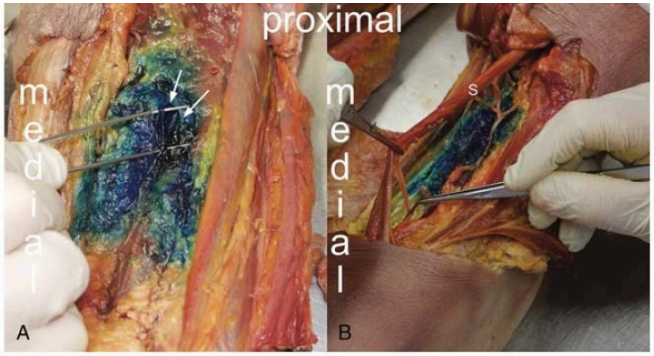


**FIGURE 3.** Coloring of nerve branches inside the popliteal fossa. A, Coloring of the genicular branch of the posterior obturator nerve (lifted by the forceps). B, The sciatic nerve (s) is not colored inside the popliteal fossa.

3

Spread of dye injectate in the distal femoral triangle versus the distal adductor canal: a cadaveric study

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Reg Anesth Pain Med 2019

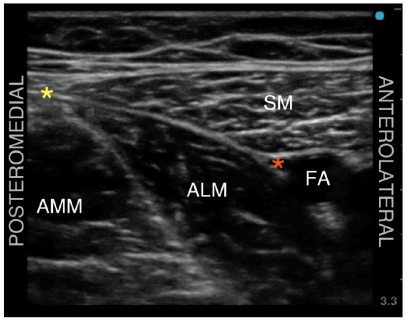


Figure 1 Ultrasound image demonstrating the femoral triangle apex. This point was confirmed to lie distal to the femoral triangle injection point. Red asterisk: endpoint target for needle tip; yellow asterisk: alignment of medial borders of sartorius and adductor longus muscles. ALM, adductor longus muscle; AMM, adductor magnus muscle; FA, femoral artery; SM, sartorius muscle.

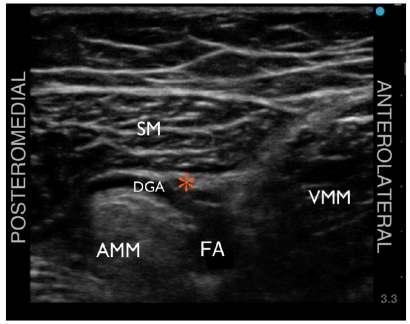


Figure 2 Ultrasound image demonstrating the distal adductor canal. The point at which the femoral artery descended toward the adductor hiatus was taken as the distal adductor canal margin. Red asterisk: corresponding endpoint target for needle tip (this was inserted just proximal to this image). AMM, adductor magnus muscle; DGA, descending genicular artery; FA, femoral artery; SM, sartorius muscle; VMM, vastus medialis muscle.

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## The analgesic effect of a popliteal plexus blockade after total knee arthroplasty: A feasibility study

Acta Anaesthesiol Scand 2018

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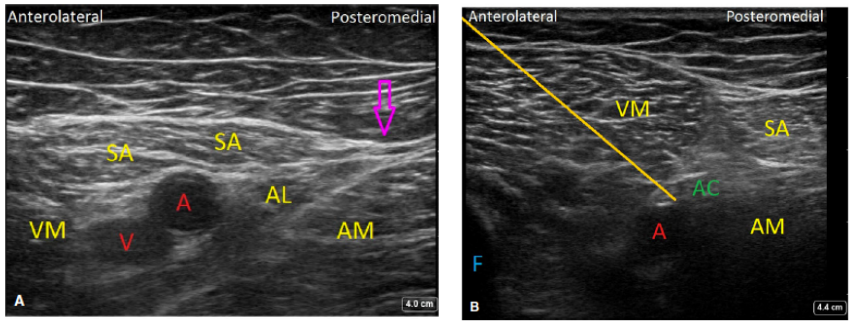


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## How I Do It: Infiltration Between Popliteal Artery and Capsule of Knee (iPACK)

ASRA Newsletter 2019

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**Figure 3:** *Scanning sequence of popliteal fossa for iPACK with corresponding sonograms. Red circle = popliteal artery. (Image courtesy of the author.)*

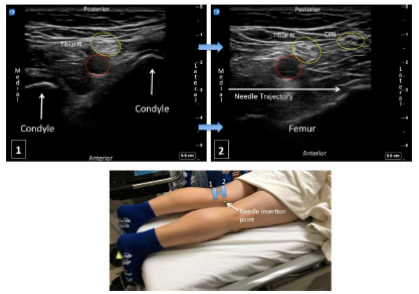
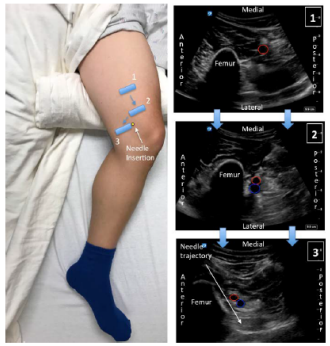



**Figure 4:** *Scanning sequence for iPACK using the posteromedial acoustic window with corresponding sonograms. Red circle = popliteal artery; blue circle = popliteal vein.*

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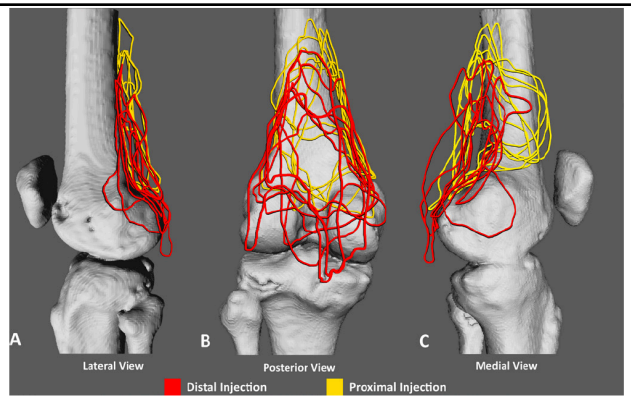


**Figure 4** Dye distribution map of the proximal and distal infiltration of the interspace between the popliteal artery and capsule of the knee (iPACK) injection. (A) Lateral spread. (B) Posterior spread. (C) Medial spread.

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## Evaluation of the iPACK block injectate spread: a cadaveric study

Reg Anesth Pain Med 2019

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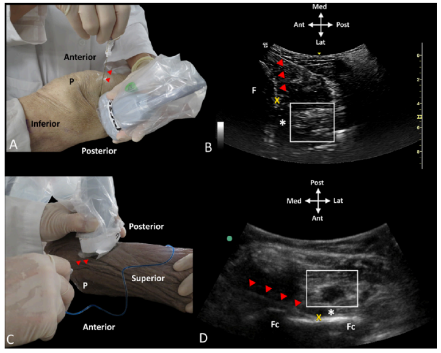


**Figure 1** Methodology. Ultrasound-guided proximal and distal infiltration of the interspace between the popliteal artery and capsule of the knee (iPACK) injection techniques. (A) Proximal injection technique. The probe is placed over the anteromedial thigh with needle advancement in the anteromedial to posterolateral direction, approximately 1 fingerbreadth superior to the base of patella. (B) Sonogram showing in-plane proximal needle advancement adjacent to the femoral shaft. (C) Distal injection technique. The probe is placed over the popliteal region with needle advancement, from medial to lateral, at the level of the superior border of the femoral condyles. (D) Sonogram showing in-plane distal needle advancement to reach the intercondylar fossa. Arrowheads (red) indicate echogenic needle; asterisk (white), interspace between popliteal artery and capsule of knee; box (white), location of neurovascular bundle/popliteal fat. F, femoral shaft; Fc, femoral condyles; P, patella; X (yellow), site of needle tip location before injection.

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