Bloc Sciatique Poplité

Dr Gadrat F

Anatomie

- Creux poplité:
- Nerf sciatique commun
- Nerf tibial
- Nerf péronier latéral
- Artère poplitée
- Veine poplitée

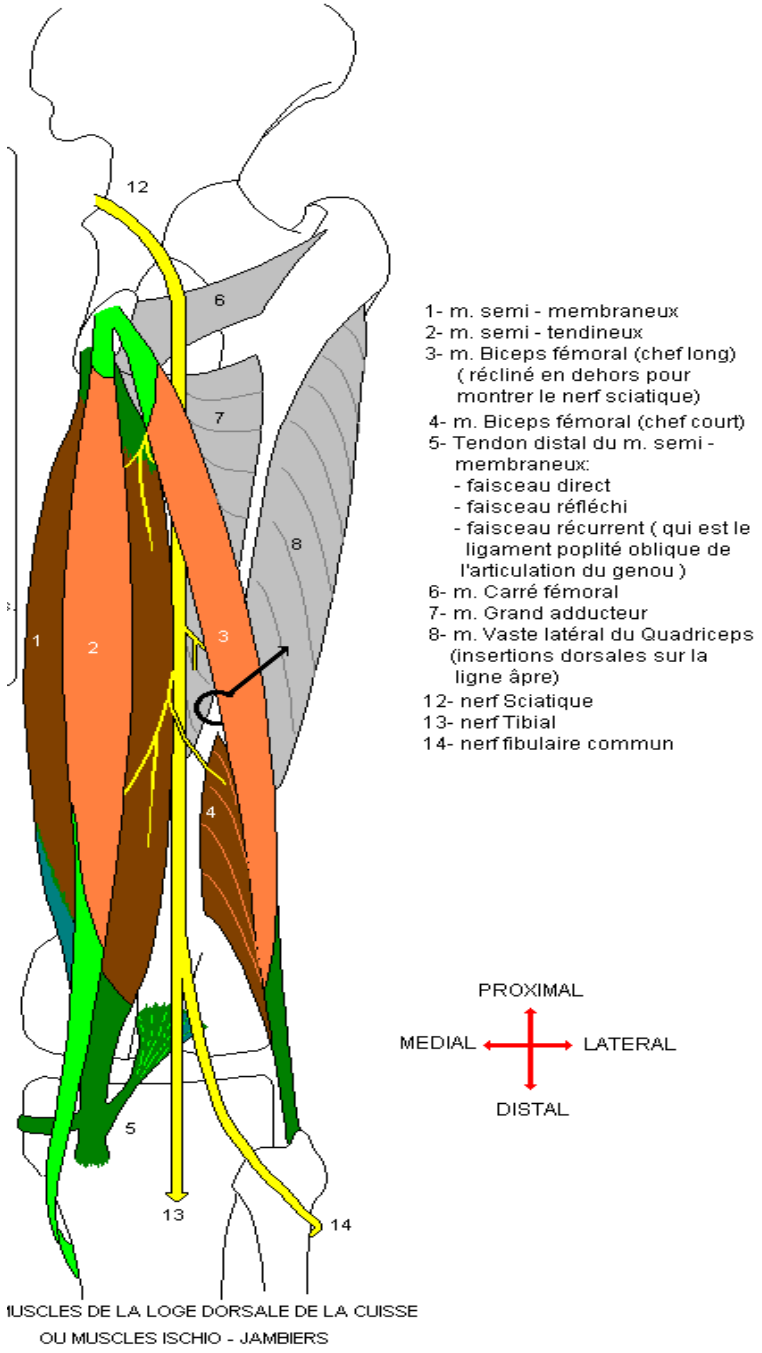
Anatomie

- Le nerf Sciatique

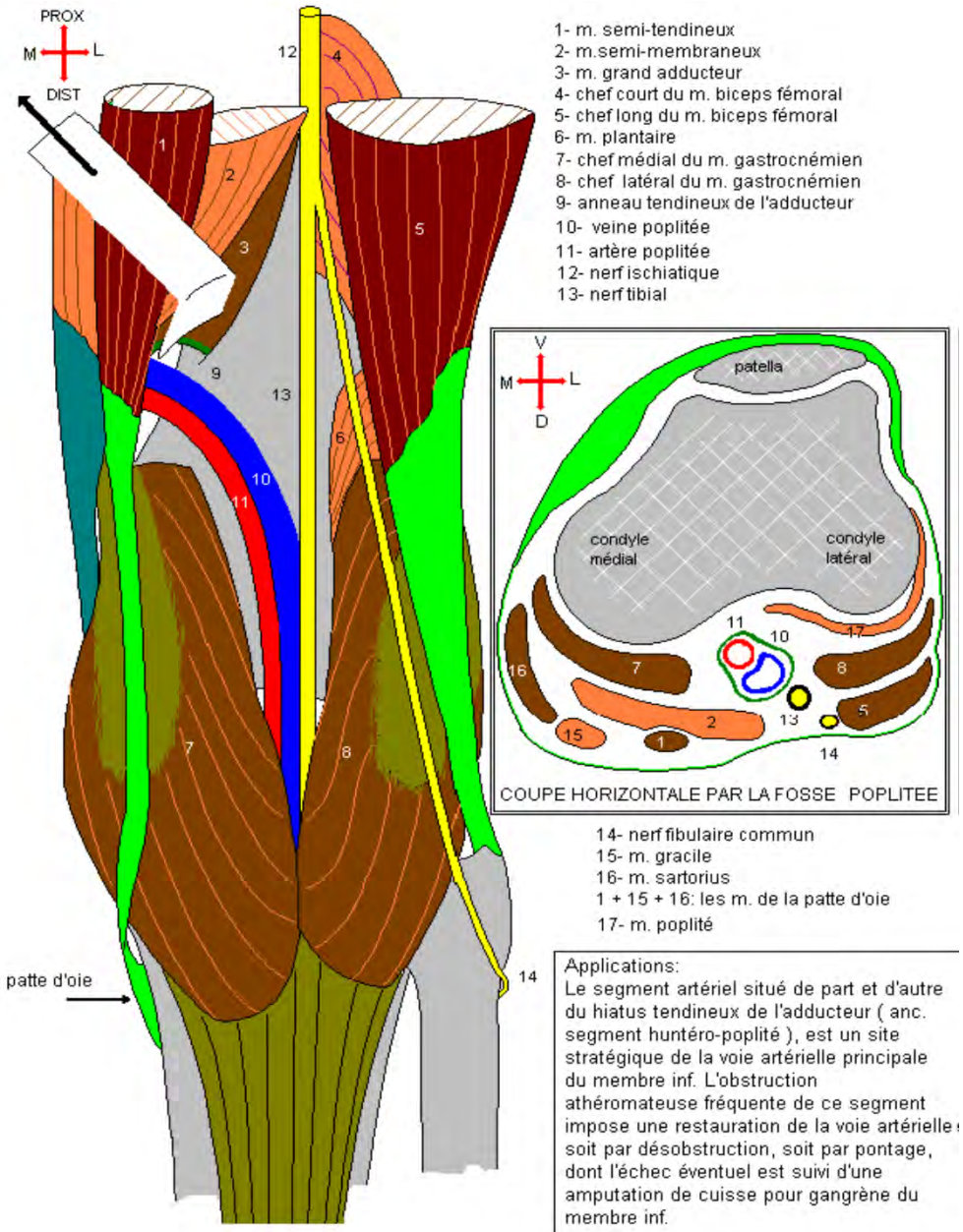
- Le plus gros nerf de l'organisme.
  - 1,5cm de large.
  - 0,5cm d'épaisseur.

- 2 branches terminales
  - Le nerf fibulaire commun.
  - le nerf tibial.

- Des collatérales:
  - Branches articulaires pour la hanche et pour le genou.
  - Branches musculaires pour le ST, le SM, le BF, le gr add.



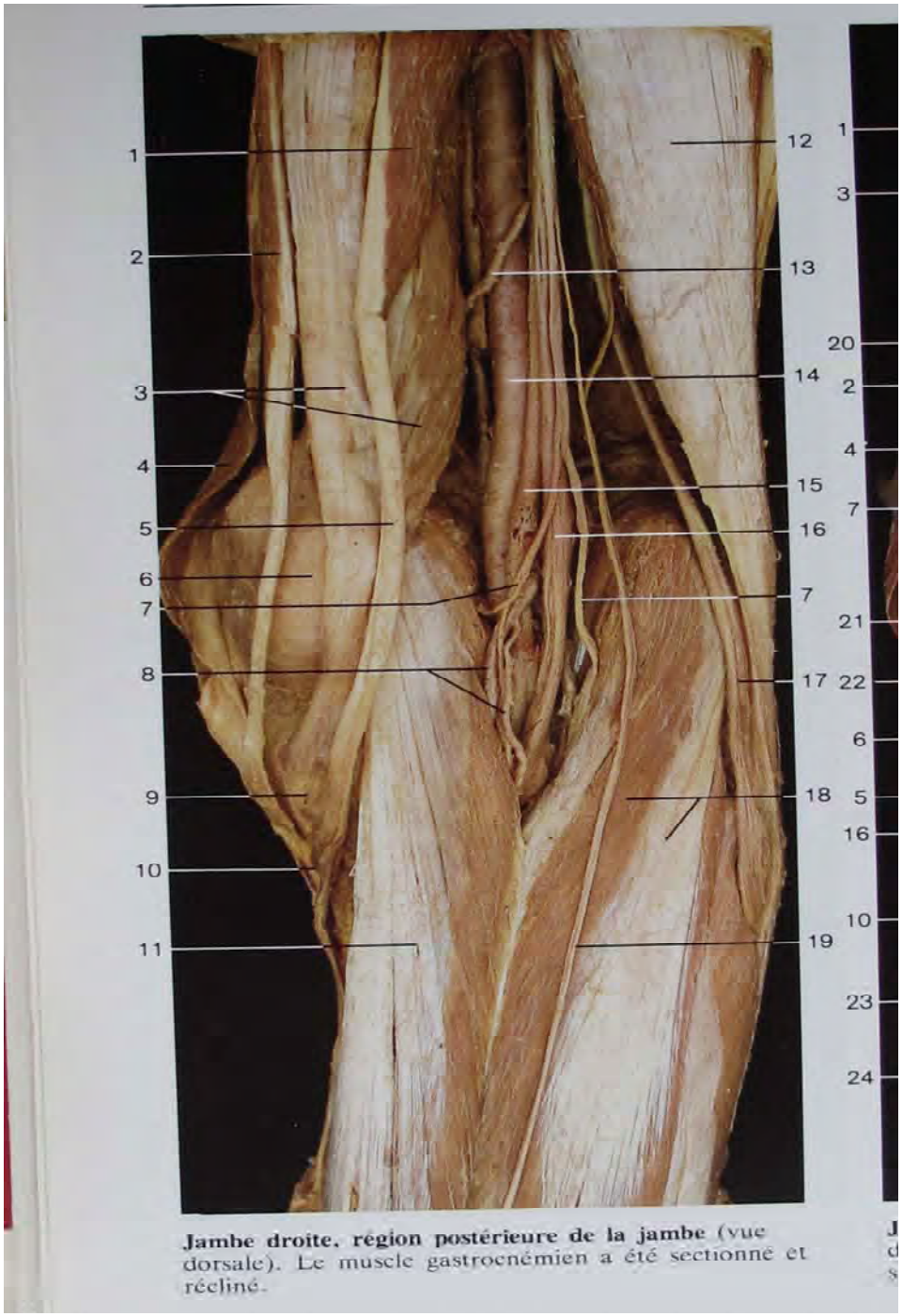
Anatomie



LA FOSSE POPLITEE

Anatomie

Anatomie



Jambe droite, région postérieure de la jambe (vue dorsale). Le muscle gastrocnémien a été sectionné et récliné.

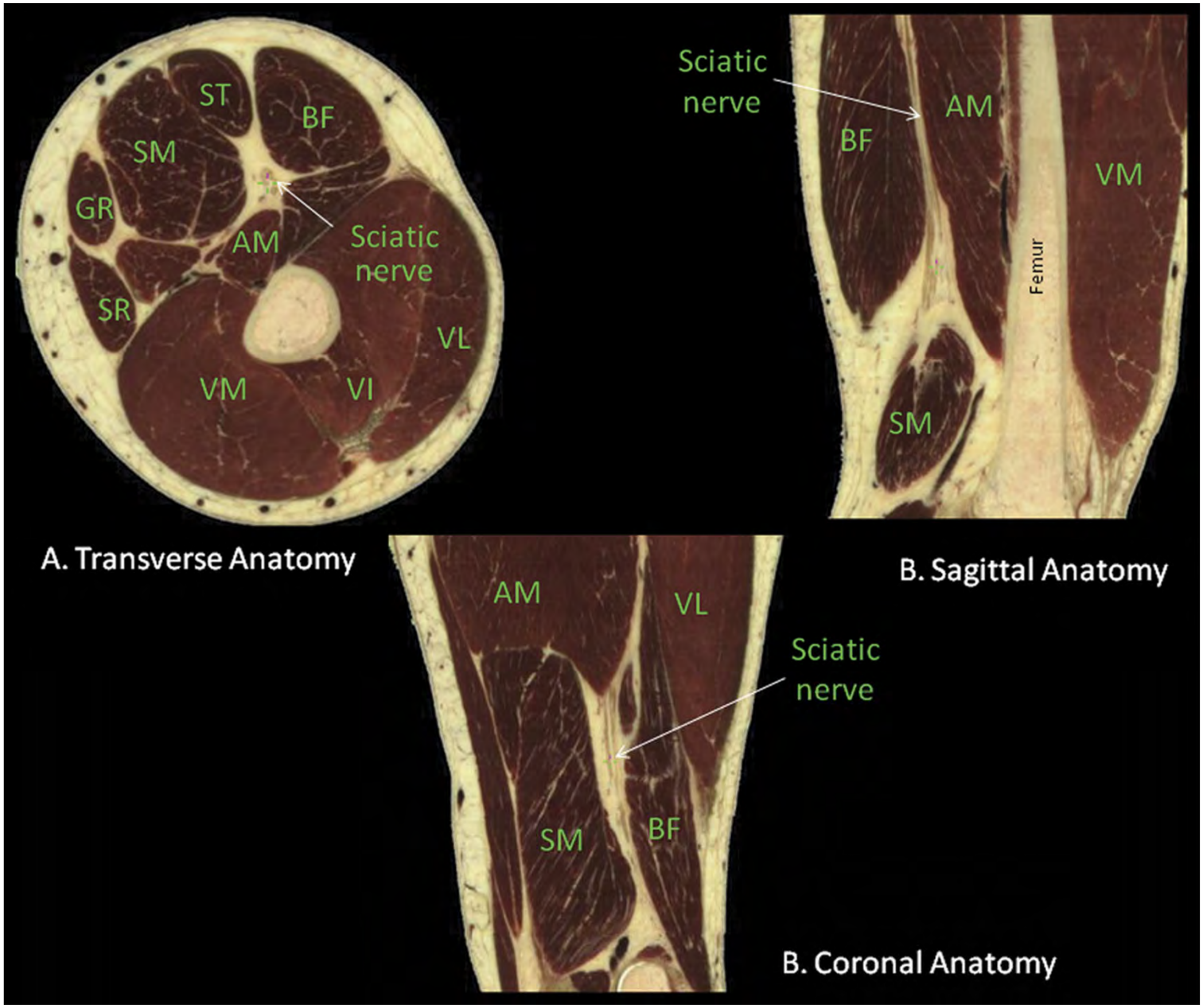
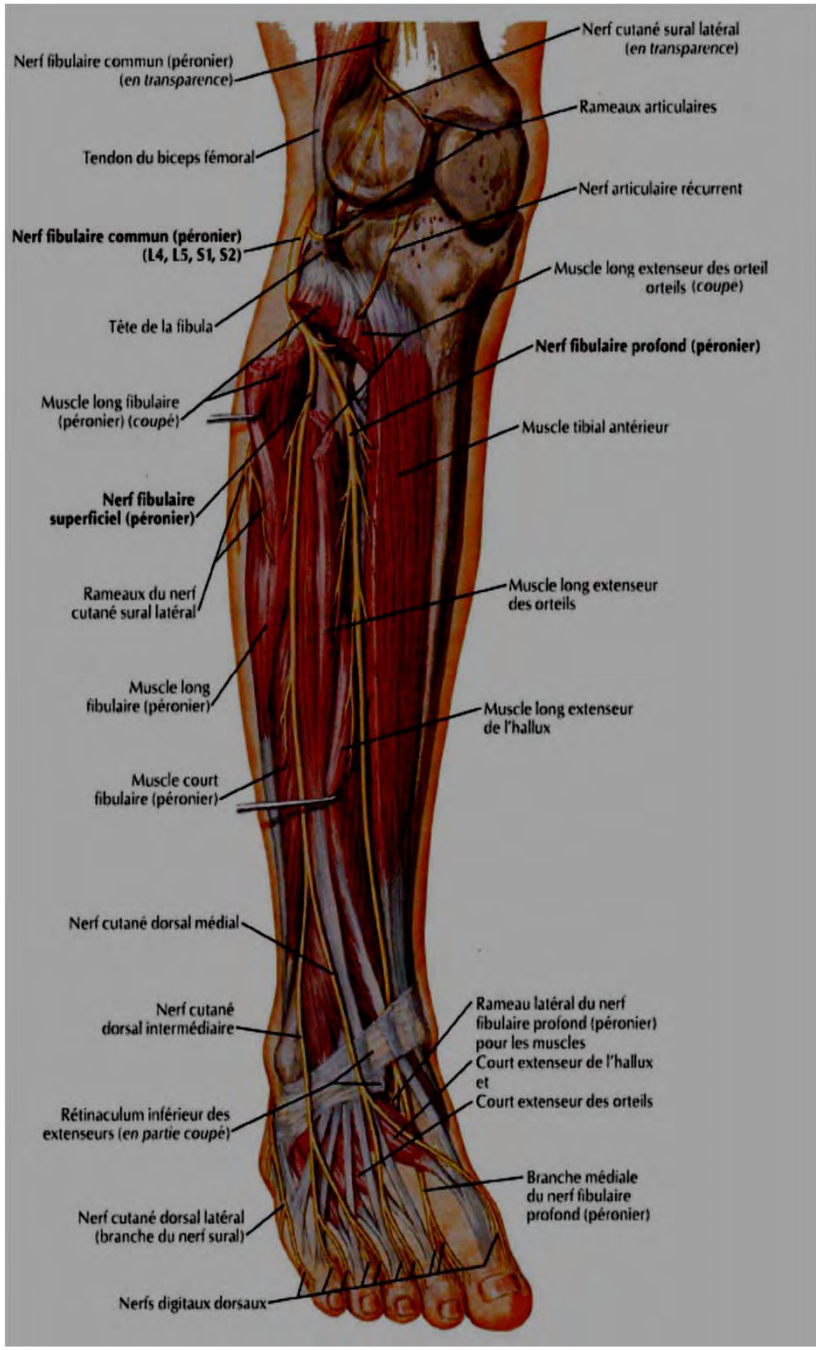


FIGURE 15. Anatomy of the sciatic nerve at or close to the apex of the popliteal fossa. AM indicates adductor magnus; BF, biceps femoris; GR, gracilis; SM, semimembranosus; SR, sartorius; ST, semitendinosus; VI, vastus intermedialis; VL, vastus lateralis; VM, vastus medialis.

Anatomie

Nerf fibulaire commun

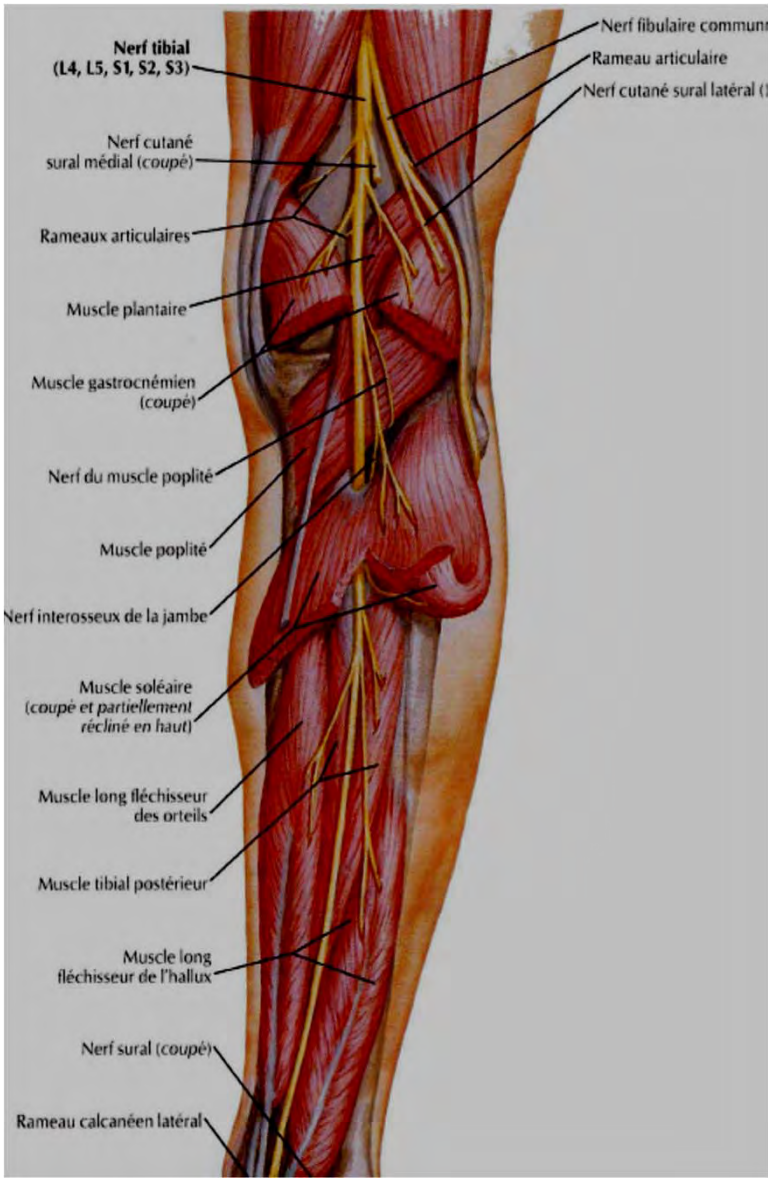
- Collatérales :
  - Genou
  - muscle de la loge antérieure
  - nerf cutanée sural latéral
- Terminales
  - Nerf fibulaire superficiel
  - Nerf fibulaire profond



Anatomie

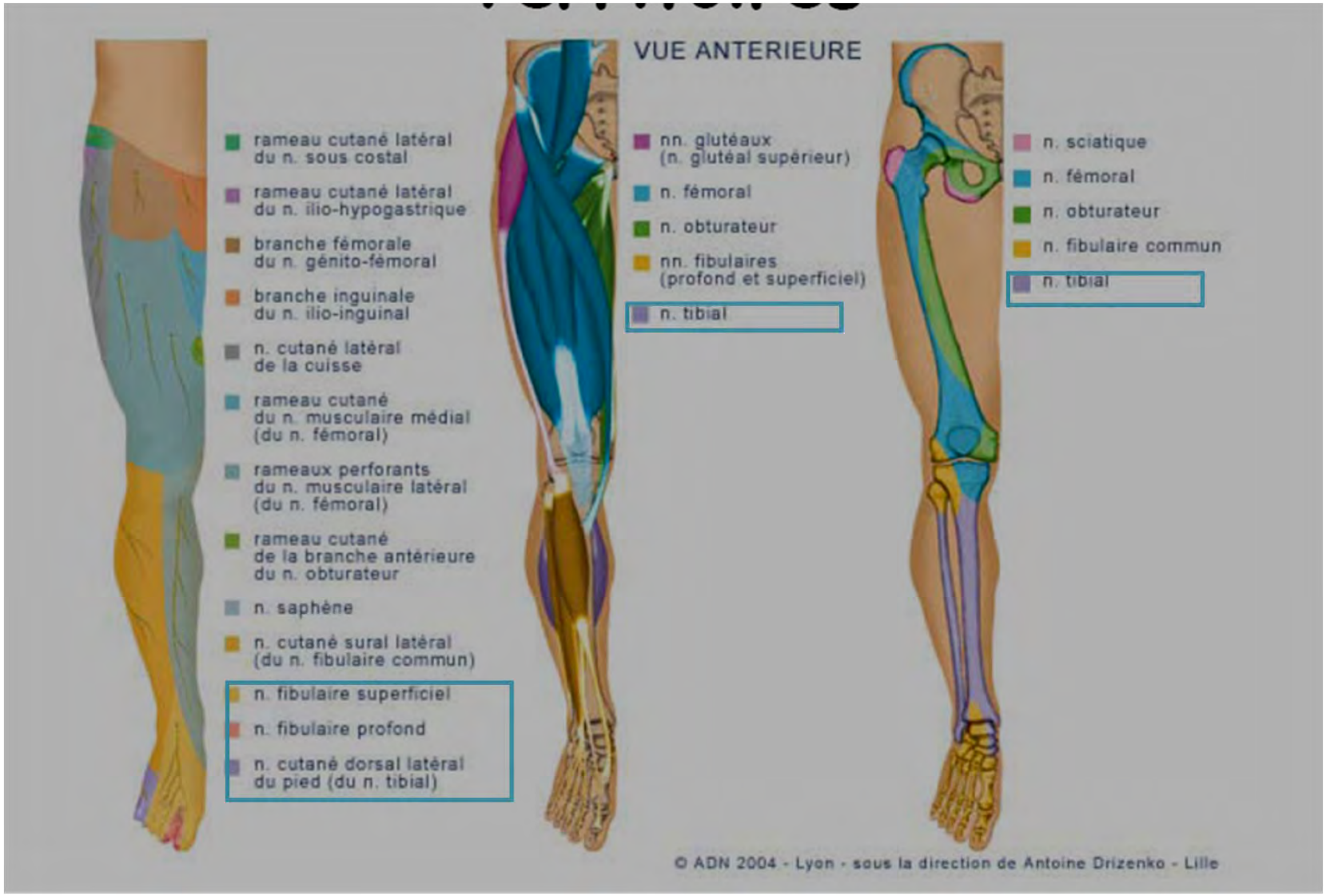
Le nerf tibial

- Collatérales:
  - Genou
  - muscles loge dorsale (gastrocnemien, solaire, poplitée, tibial post, lg flech des orteils, lg flech de l'hallux),
  - nerf cutanée sural médial
- Terminales :
  - nerf plantaire médial et latéral



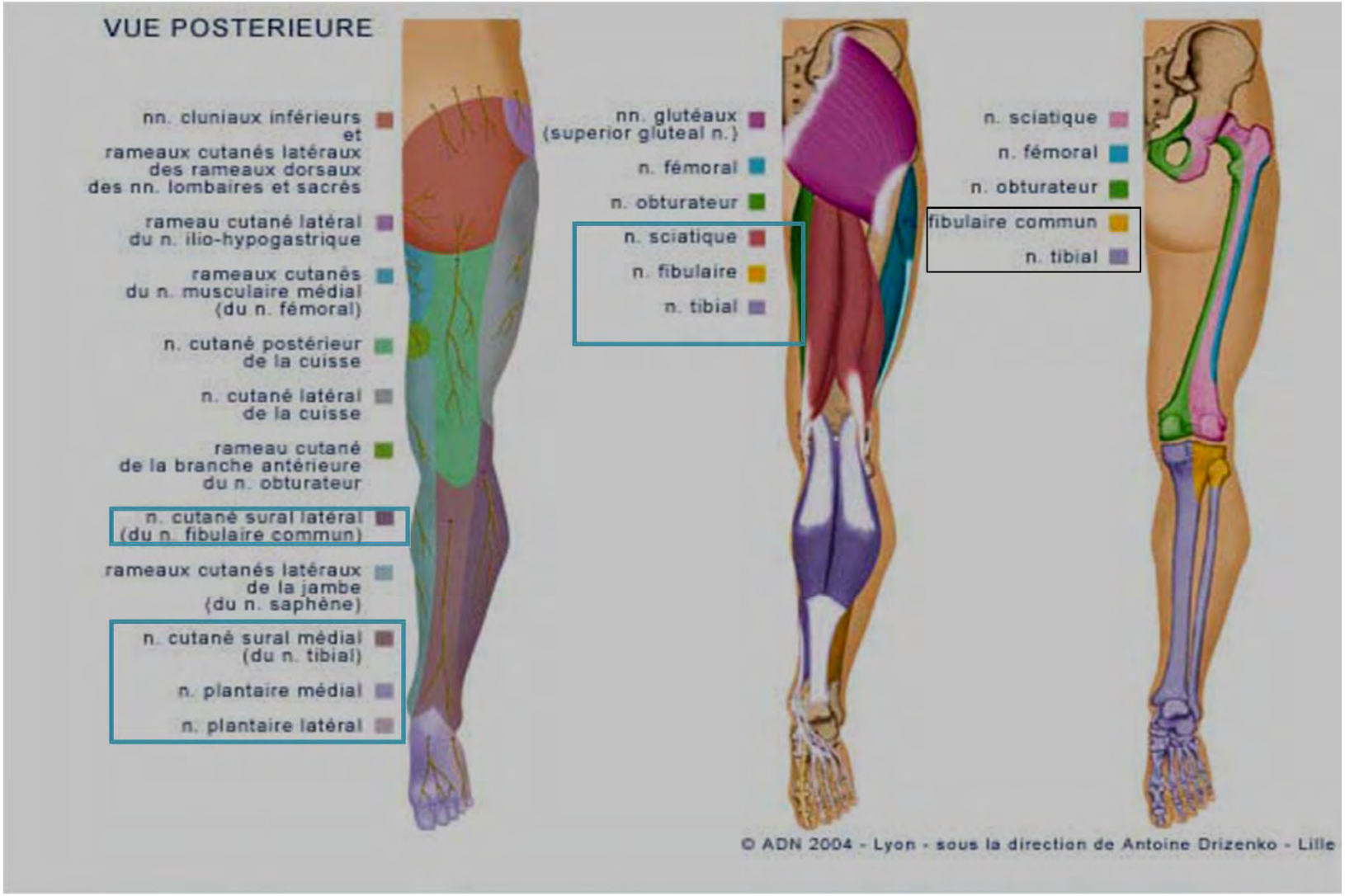
Anatomie

Territoire sensitif vue ant



Anatomie

Territoire sensitif vue post

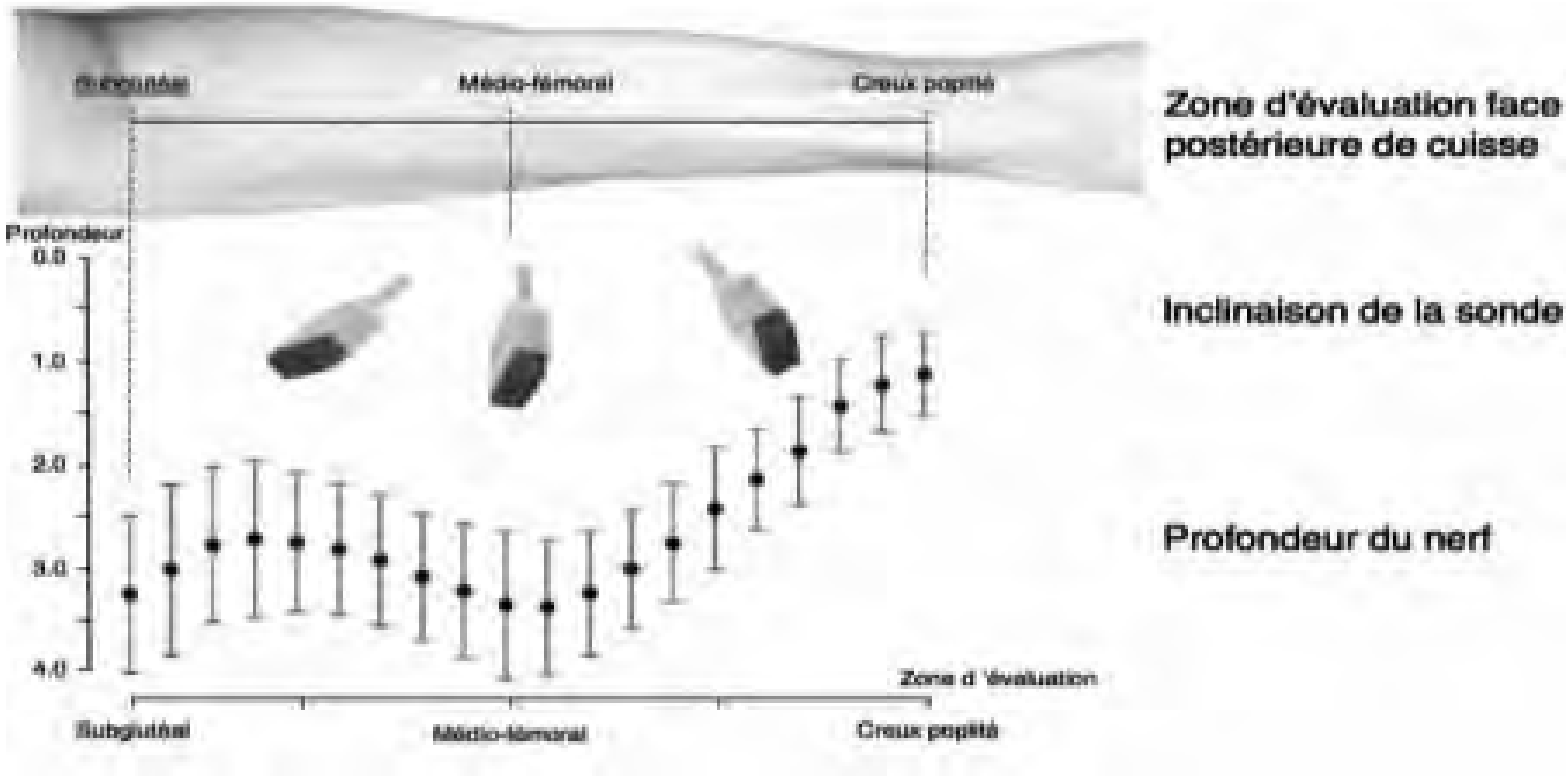


La Technique d’Anesthésie

- La sonde.
- La voie d’abord.
- Le site d’injection.
- Le volume d’A.L.
- Remplissage de l’espace.
- Niveau d’injection avant, après bifurcation.

La sonde d'échographie

Imagerie pratique en échographie
pour l'anesthésie locorégionale :
bloc sciatique
Sébastien Bloc, Luc Mercadal
MAPAR 2011

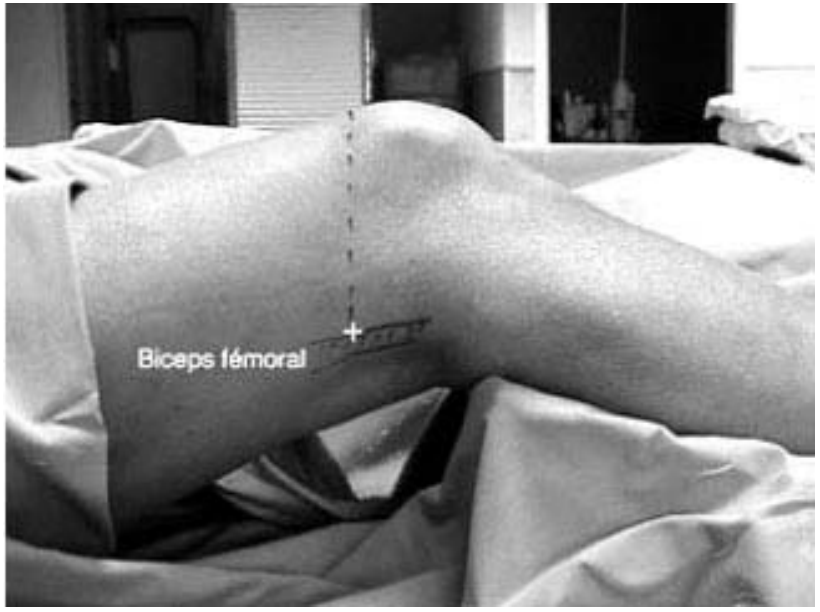


Importance de l'anisotropie !!!!!!

Il faut utiliser une sonde de 7,5 à 10 Mhz

La voie d'abord

- Deux voies principales:
  - Voie latérale



  - Voie postérieure

Anatomie

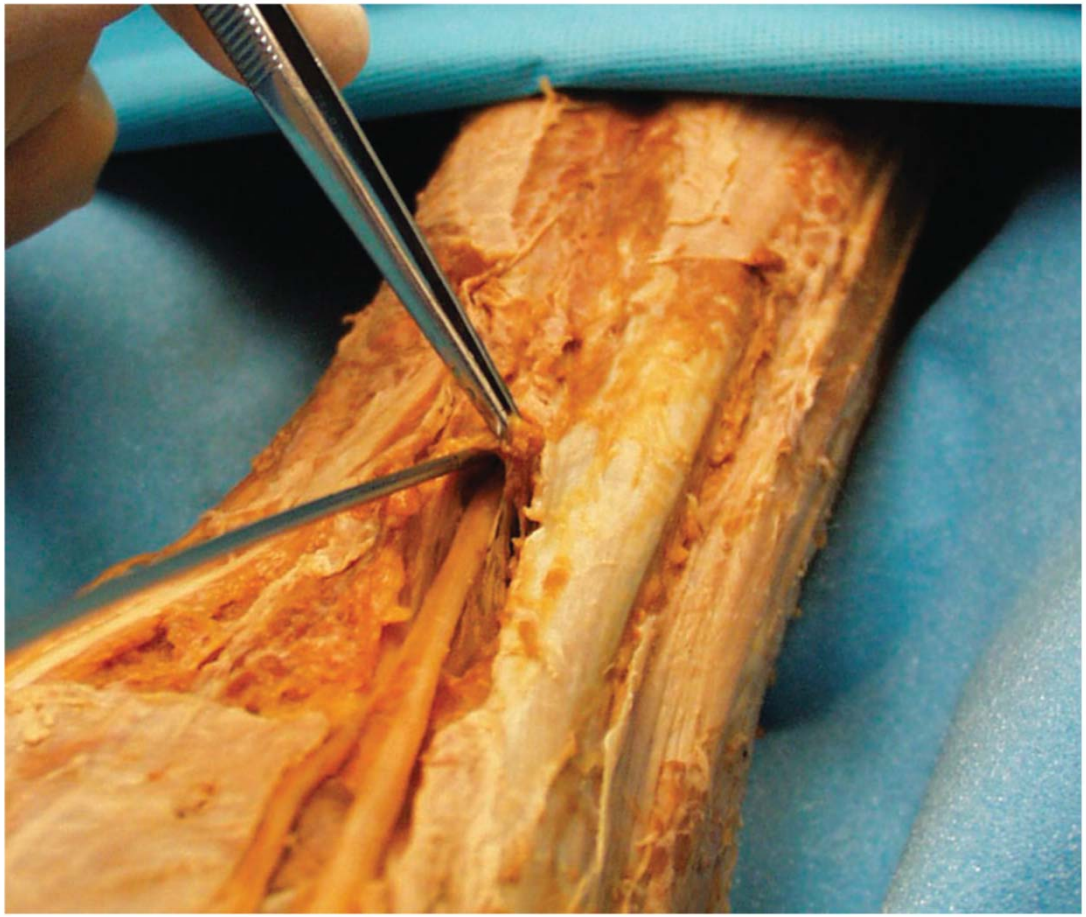


FIGURE 1. dissection démontrant l’existence d’une gaine de tissus conjonctif autour du nerf sciatique dans la fosse poplitée
Vloka et al2 study.

site de l'injection

Ultrasound-Guided Nerve Blocks: The Real Position of the Needle Should Be Defined

Olivier Choquet, MD, and Xavier Capdevila, MD, PhD

EDITORIAL

L'espace para neural

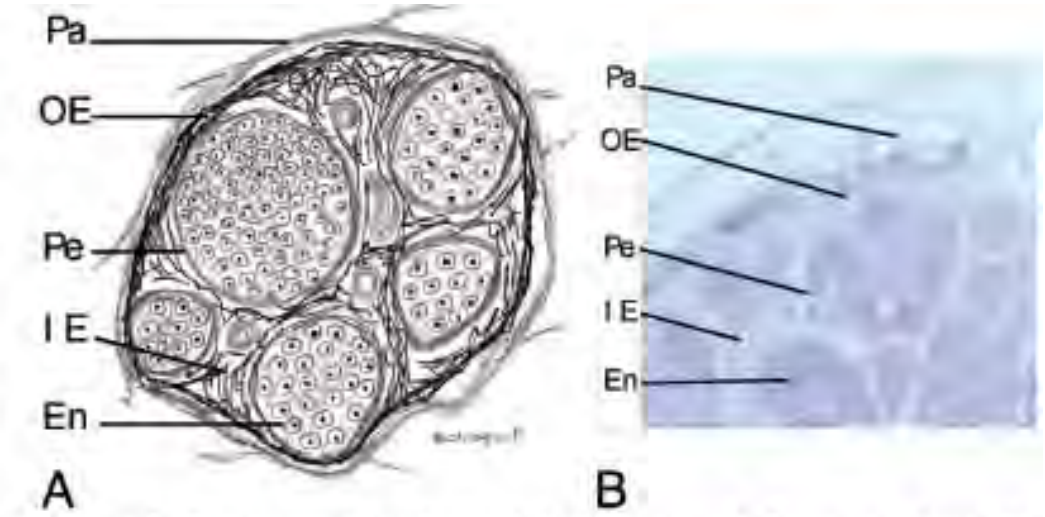


Figure 1. Cross-section of a peripheral nerve. A, Drawing of peripheral nerve showing a characteristically round bundle of nerve processes surrounded by connective tissue sheaths. B, Human sciatic nerve cross-section histologic view/×20. En = endoneurium; Pe = perineurium; IE = inner epineurium; OE = outer epineurium; Pa = paraneurium (or mesoneurium).

site de l'injection

(Reg Anesth Pain Med 2013;38: 447–451)

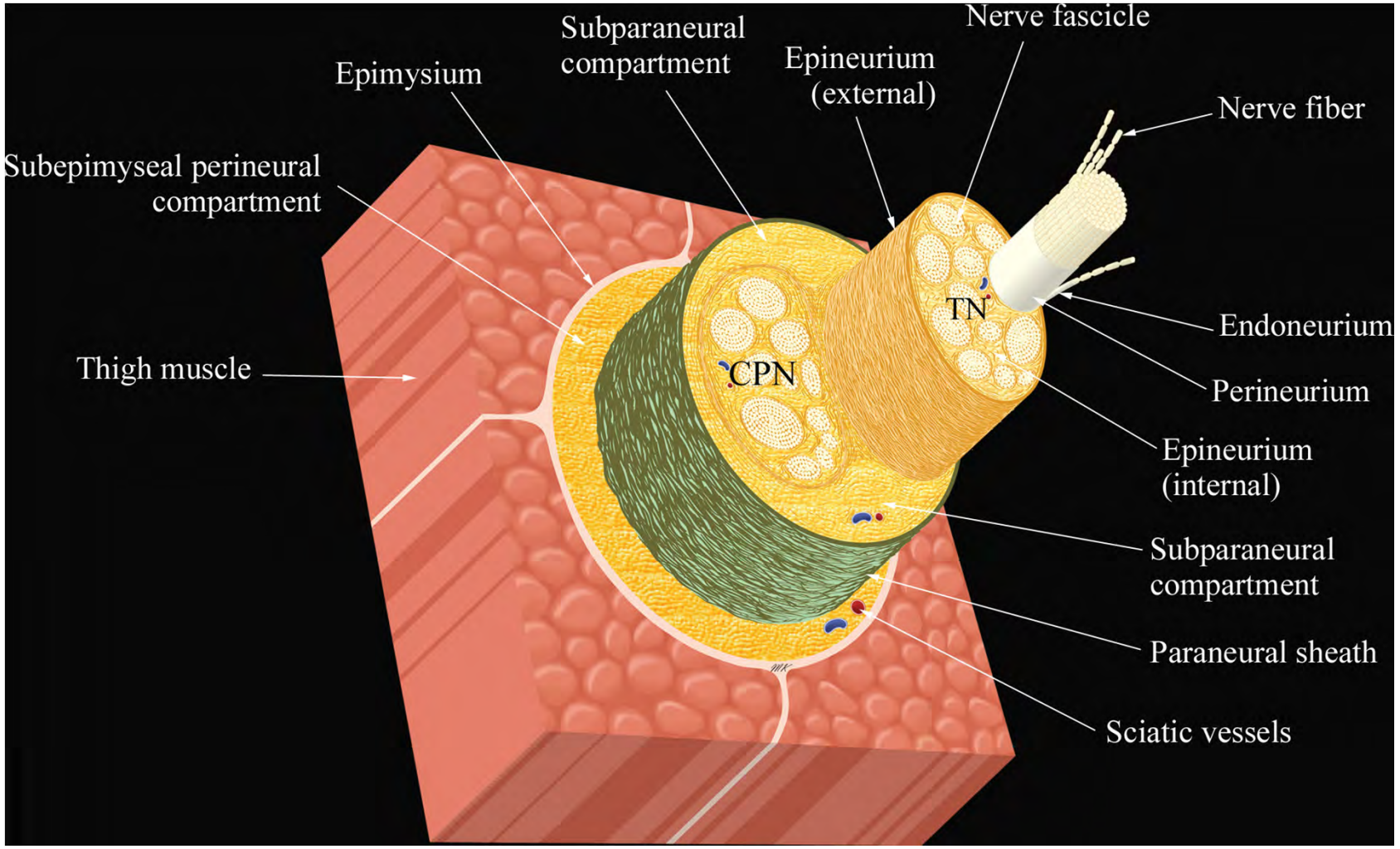


FIGURE 4. Schematic diagram illustrating the functional anatomy of the sciatic nerve, paraneural sheath, and the fascial compartments that surround the sciatic nerve, before its bifurcation into the common peroneal (CPN) and tibial (TN) nerves, at the popliteal fossa.

High-Definition Ultrasound Imaging Defines the Paraneural Sheath and the Fascial Compartments Surrounding the Sciatic Nerve at the Popliteal Fossa

Manoj Kumar Karmakar, MD,* Ali Nima Shariat, MD,† Pawinee Pangthipampai, MD,*
and Junping Chen, MD†

Regional Anesthesia and Pain Medicine • Volume 38, Number 5, September-October 2013

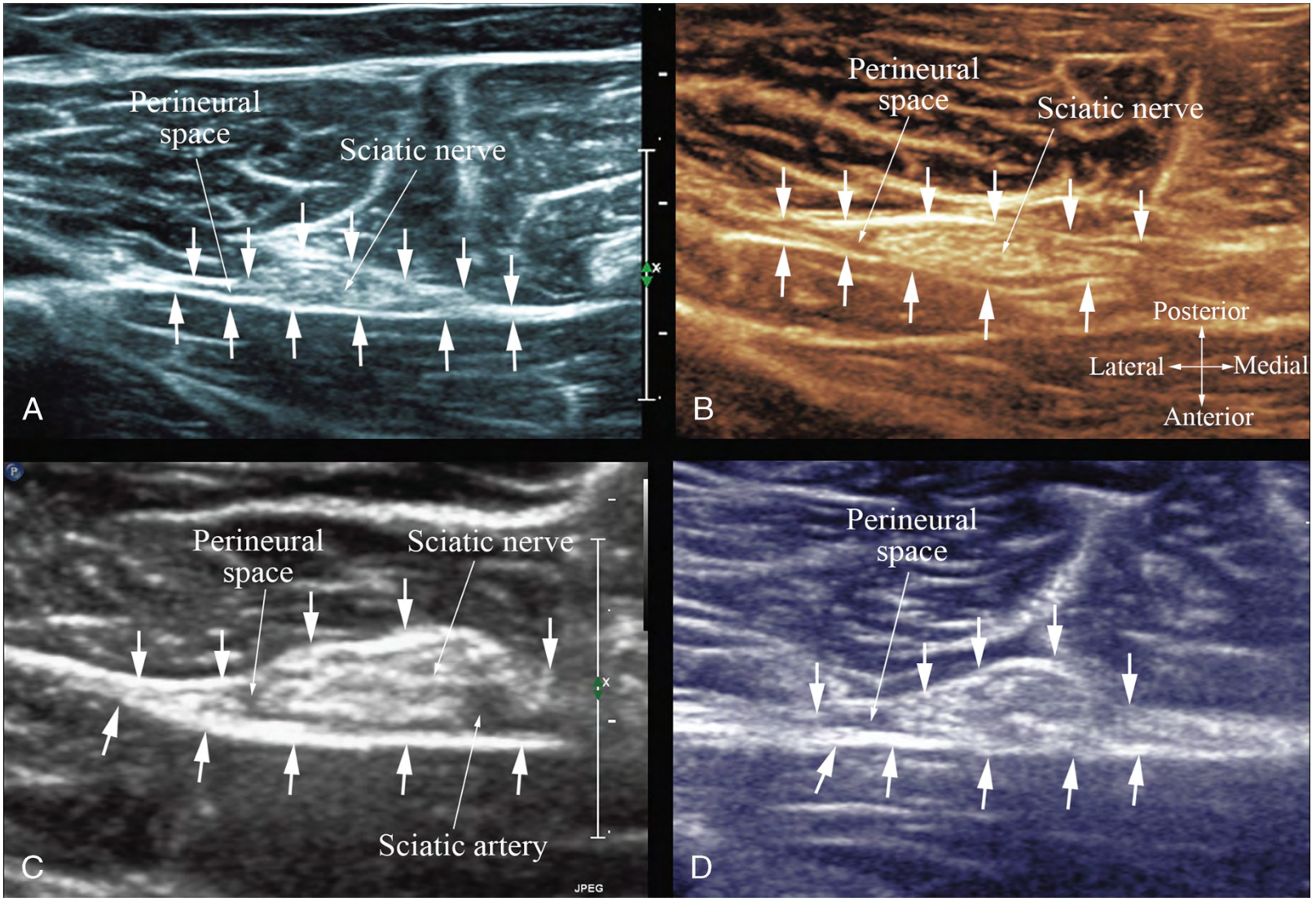
Background and Objectives: The connective tissue layers that surround the sciatic nerve at the popliteal fossa are poorly defined.We present high-definition ultrasound images of the sciatic nerve, which were acquired during ultrasound-guided popliteal sciatic nerve block (SNB), that clearly demonstrate these fascial layers.

Conclusions: We have demonstrated the paraneural sheath and the fascial compartments, that is, the "subepimyseal perineural compartment" and the "subparaneural compartment" that surround the sciatic nerve and act as conduits for local anesthetic spread during a popliteal SNB.

site de l'injection

High-Definition Ultrasound Imaging Defines the Paraneural Sheath and the Fascial Compartments Surrounding the Sciatic Nerve at the Popliteal Fossa

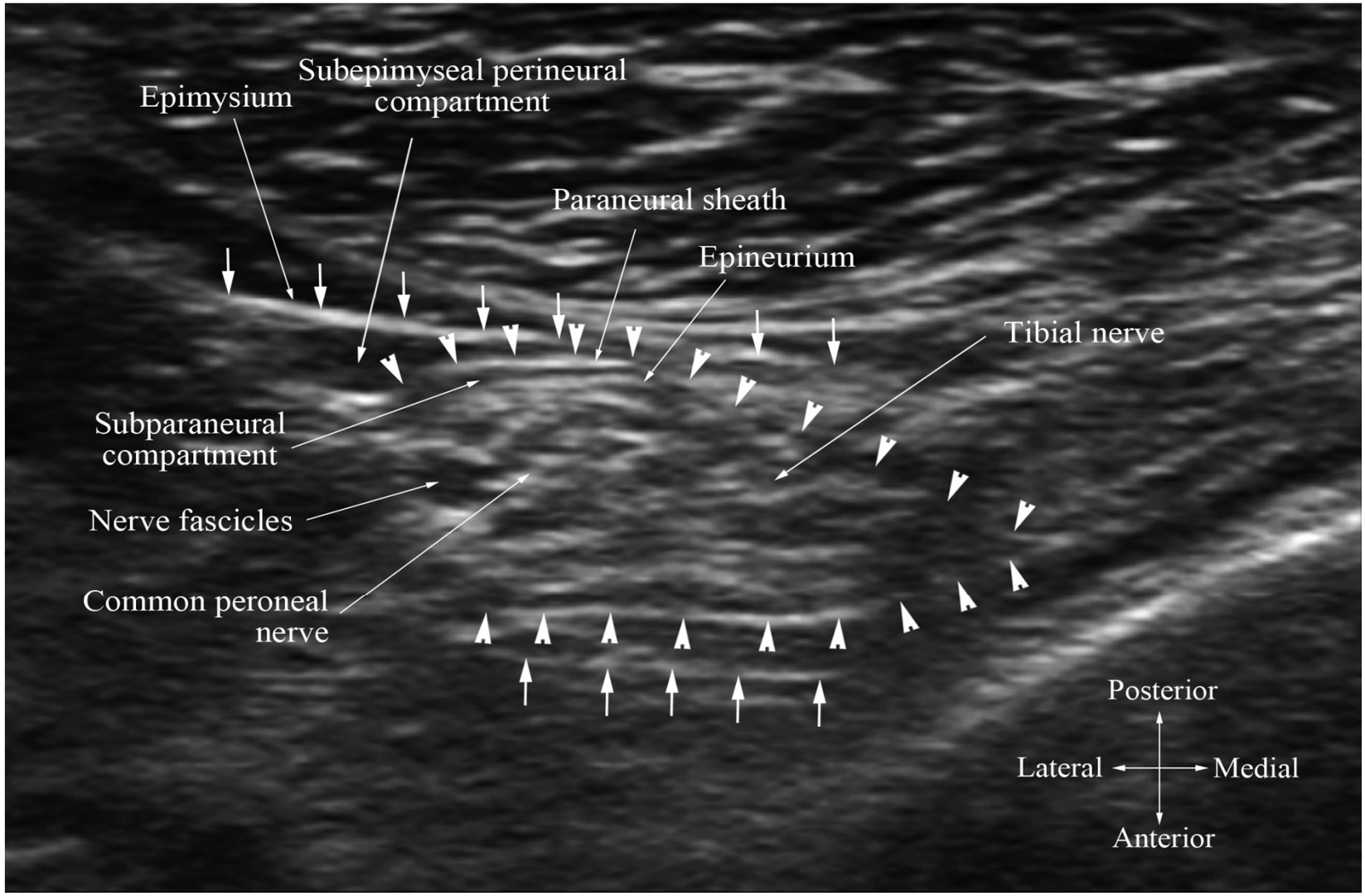
Regional Anesthesia and Pain Medicine • Volume 38, Number 5, September-October 2013



site de l'injection

High-Definition Ultrasound Imaging Defines the Paraneural Sheath and the Fascial Compartments Surrounding the Sciatic Nerve at the Popliteal Fossa

Regional Anesthesia and Pain Medicine • Volume 38, Number 5, September-October 2013



(Reg Anesth Pain Med 2013;38: 447–451)

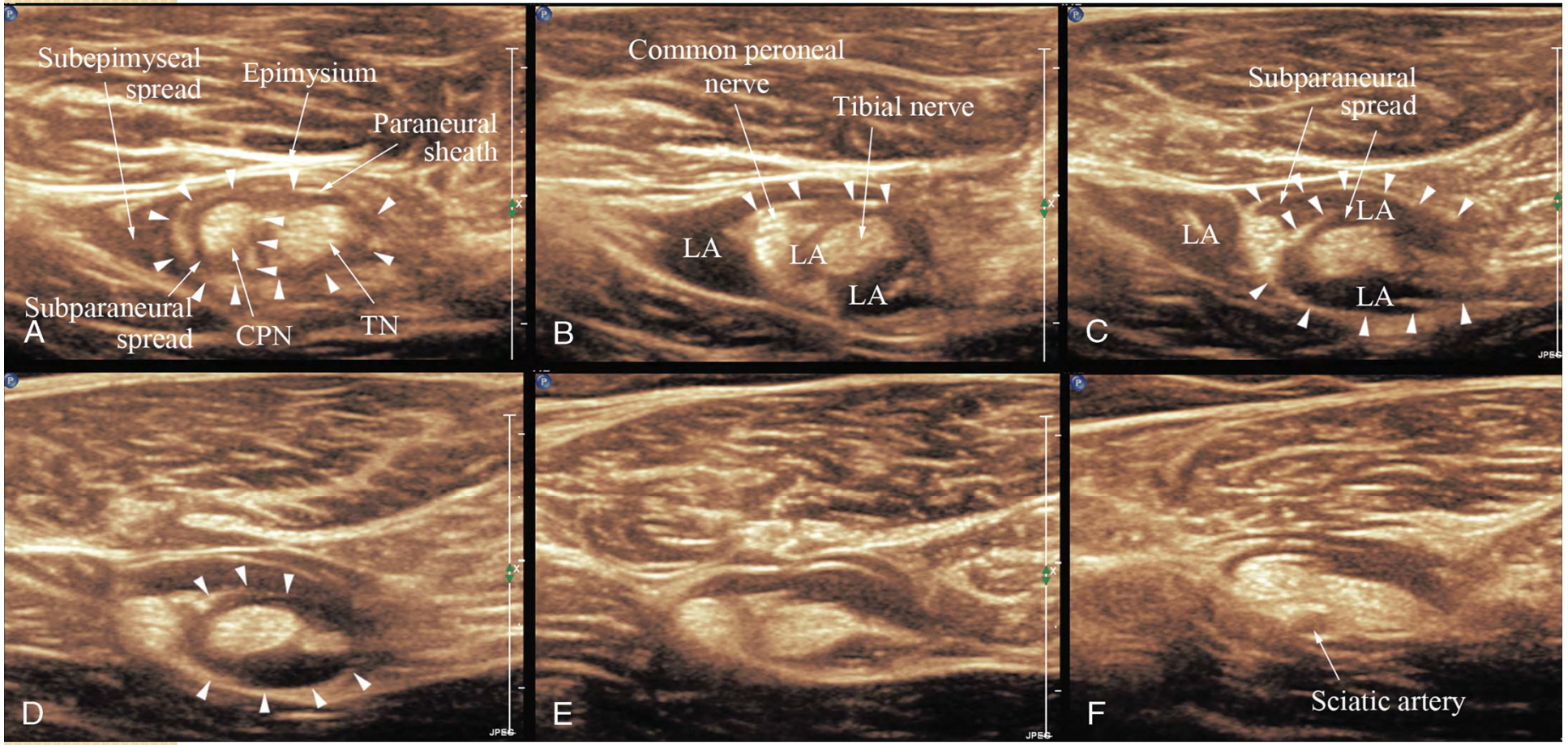
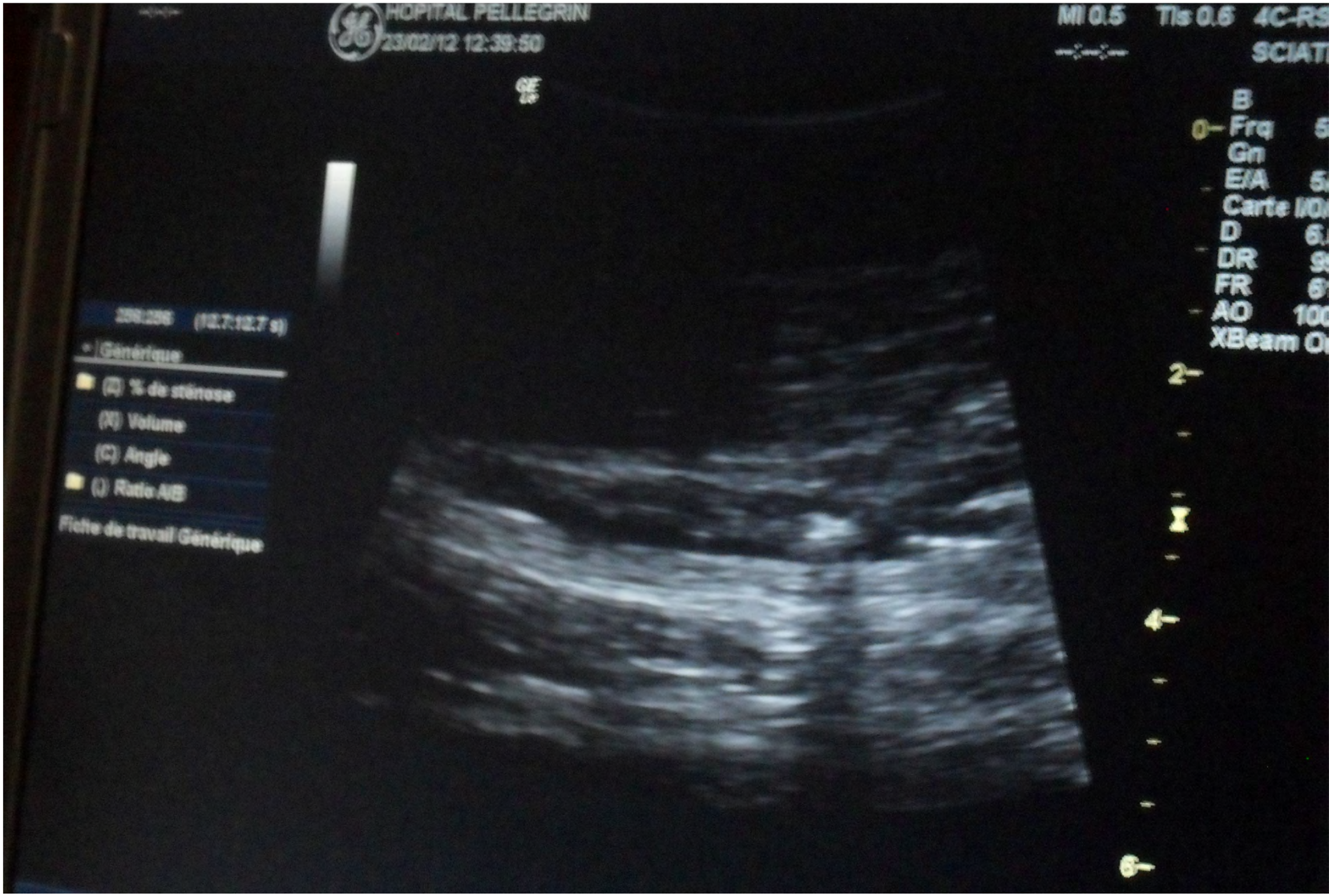


FIGURE 3. Sequence of transverse sonograms (distal to proximal) demonstrating the spread of the local anesthetic in both the subepimyseal and subparaneural compartments after a USG popliteal SNB above its bifurcation. The paraneural sheath (white arrow heads) is interposed between the epimysium of the surrounding muscles and the outer surface (epineurium) of the sciatic nerve and its divisions. Note the extensive distal spread of the local anesthetic (LA), deep to the paraneural sheath, to encompass both the common peroneal (CPN) and tibial (TN) nerves. The individual paraneural sheath and subparaneural compartment of the CPN and TN are clearly delineated in (C). Circumferential spread of the LA is also seen around the tibial nerve in (D).

site de l'injection

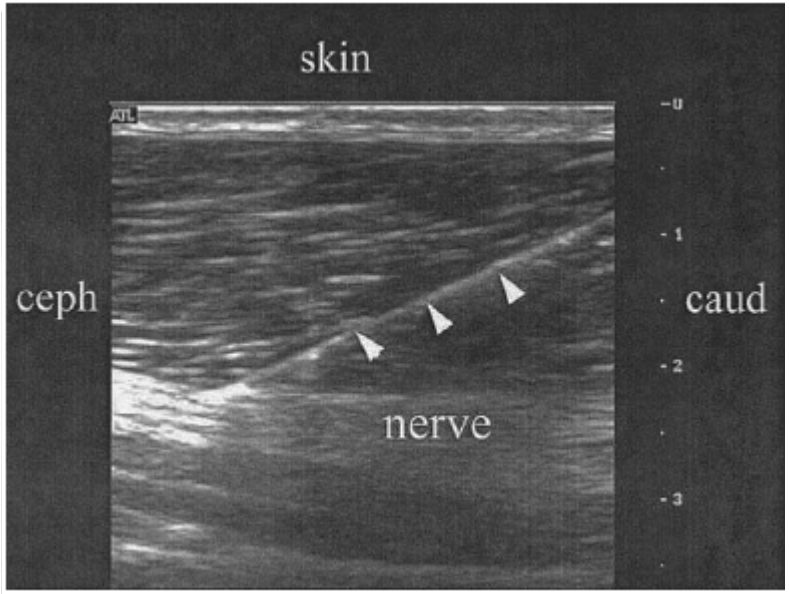


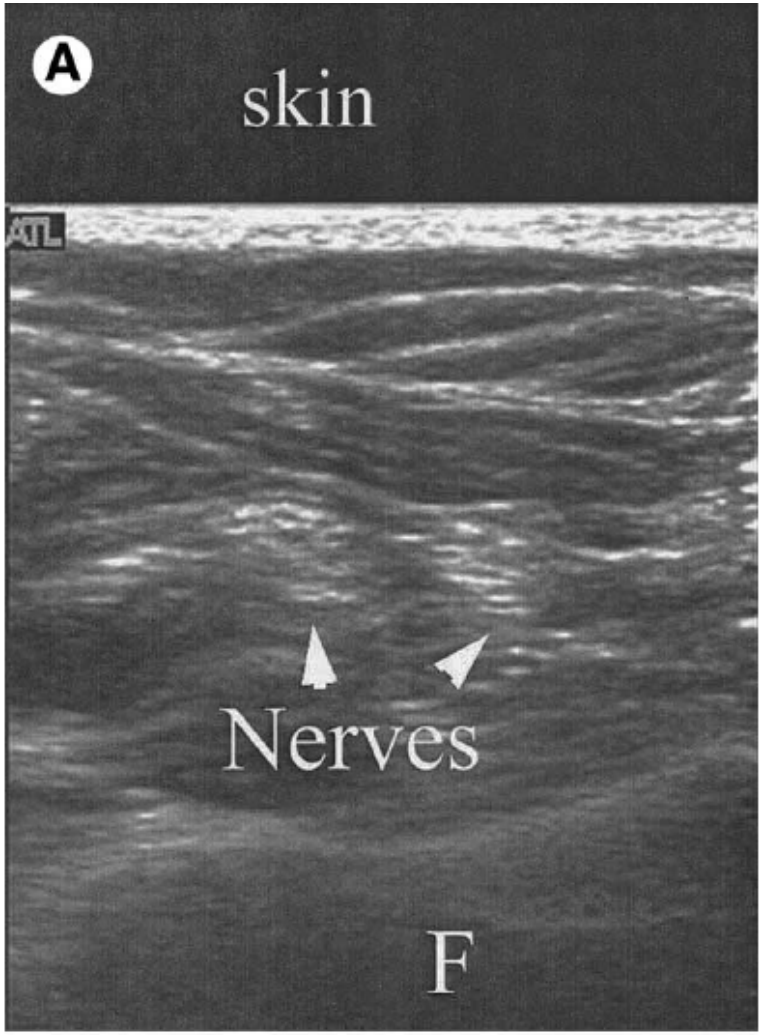
Repérage échographique

Ultrasound Imaging for Popliteal Sciatic Nerve Block

Regional Anesthesia and Pain Medicine, Vol 29, No 2 (March–April), 2004: pp 130–134

Avinash Sinha, M.B.Ch.B., F.R.C.A. and Vincent W. S. Chan, M.D., F.R.C.P.C.





volume utile

British Journal of Anaesthesia 104 (2): 239–44 (2010)
doi:10.1093/bja/aep368 Advance Access publication December 23, 2009

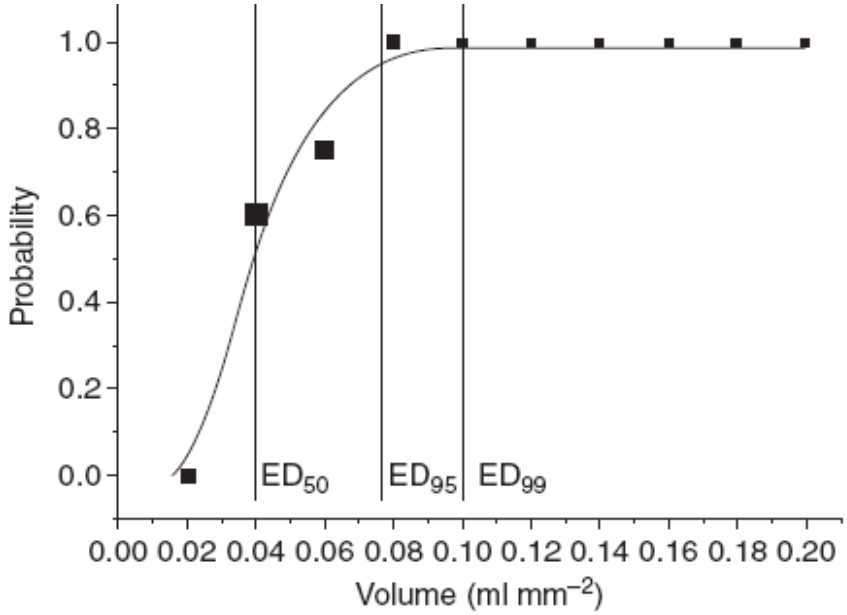
BJA

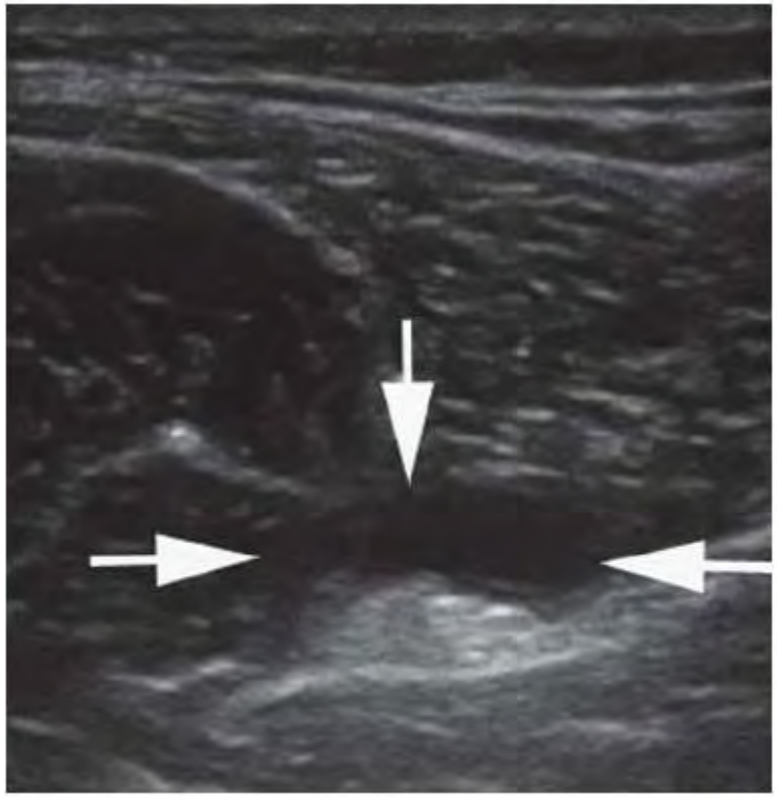
REGIONAL ANAESTHESIA

Minimal local anaesthetic volumes for sciatic nerve block: evaluation of ED_{99} in volunteers

D. Latzke[1], P. Marhofer[1]*, M. Zeitlinger[2], A. Machata[1], F. Neumann[3], E. Lackner[2] and S. C. Kettner[1]

- Mesure de l'aire du nerf sciatique en ht du creux poplitée moy 56 mm2
- Méthode up and down
- Départ à 0,2ml/mm2





- ED99 = 0,1 ml/mm2 soit 5 ml

volume utile

Minimum Effective Volume of Combined Lidocaine-Bupivacaine for Analgesic Subparaneural Popliteal Sciatic Nerve Block

Wallaya Techasuk, MD,* Francisca Bernucci, MD,† Tracy Cupido, DO, FRCPC,* Andrea P. González, MD,†

Regional Anesthesia and Pain Medicine • Volume 39, Number 2, March-April 2014

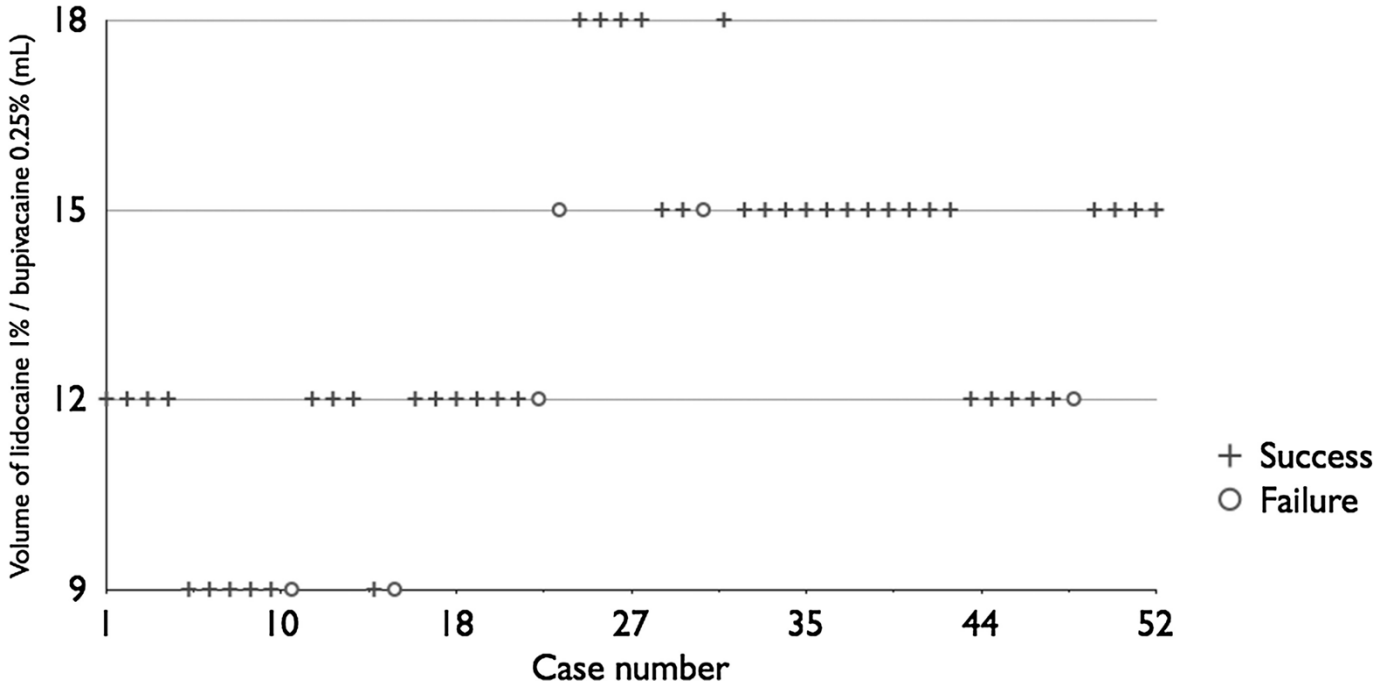


FIGURE 1. Up-and-down sequence for subparaneural popliteal sciatic nerve block.

In conclusion, for US-guided (analgesic) subparaneural popliteal sciatic nerve block, the MEV90 of combined lidocaine 1.0%–bupivacaine 0.25% with epinephrine 5 µg/**mL is 13.2 mL**

volume utile

Ultrasound-Guided Evaluation of the Local Anesthetic Spread Parameters Required for a Rapid Surgical Popliteal Sciatic Nerve Block

Didier Morau, MD, MSc, Frank Levy, MD,* Sophie Bringuier, PharmD, PhD,† Philippe Biboulet, MD,* Olivier Choquet, MD,* Michèle Kassim, MD,* Nathalie Bernard, MD, MSc,* and Xavier Capdevila, MD, PhD‡*

TABLE 2. Block Characteristics and Rate of Successful Blocks in Both Sciatic Nerve Components in Groups C and NC Patients at 5, 15, and 30 mins and on Arrival in PACU

	Group C (n = 47)	Group NC (n = 53)	*P*
Volume of LA, mean (SD), mL	32 (6)	32 (5)	0.56
Minimum current, mean (SD), mA	0.36 (0.1)	0.35 (0.07)	0.66
Sensory blockade at 5 mins, n (%)	11 (23)	8 (15)	0.29
Sensory blockade at 15 mins, n (%)	22 (47)	18 (34)	0.19
Sensory blockade at 30 mins, n (%)	34 (73)*	23 (43)	0.0035
Sensory blockade in PACU, n (%)	43 (91)	45 (85)	0.31
Motor blockade in PACU, n (%)	34 (73)*	27 (51)	0.028

*$P < 0.05$ between groups C and NC.

Group C indicates complete circumferential spread of LA; group NC, incomplete spread of local anesthetic; PACU, postanesthesia care unit.

TABLE 3. Rates of Complete Blocks in Patients With a 15% Increase in Cross-Sectional Short-Axis View of Sciatic Nerve and Those Without Sciatic Nerve Significant Surface Changes

Complete Nerve Block	No Change or <15% Increase in Sciatic Nerve Surface, n = 61	≥15% Increase in Sciatic Nerve Surface, n = 39	*P*
5 mins, %	22	25	0.7
15 mins, %	36	44	0.52
30 mins, %	51	66	0.16
PACU, %	83	95	0.15

PACU indicates postanesthesia care unit.

volume utile

A Dose-Ranging Study of 0.5% Bupivacaine or Ropivacaine on the Success and Duration of the Ultrasound-Guided,Nerve-Stimulator–Assisted Sciatic Nerve Block

A Double-Blind, Randomized Clinical Trial

Antoun Nader, MD,* Mark C. Kendall, MD,* Gildasio S. De Oliveira, Jr, MD, MSCI,*

Regional Anesthesia and Pain Medicine • Volume 38, Number 6, November December 2013

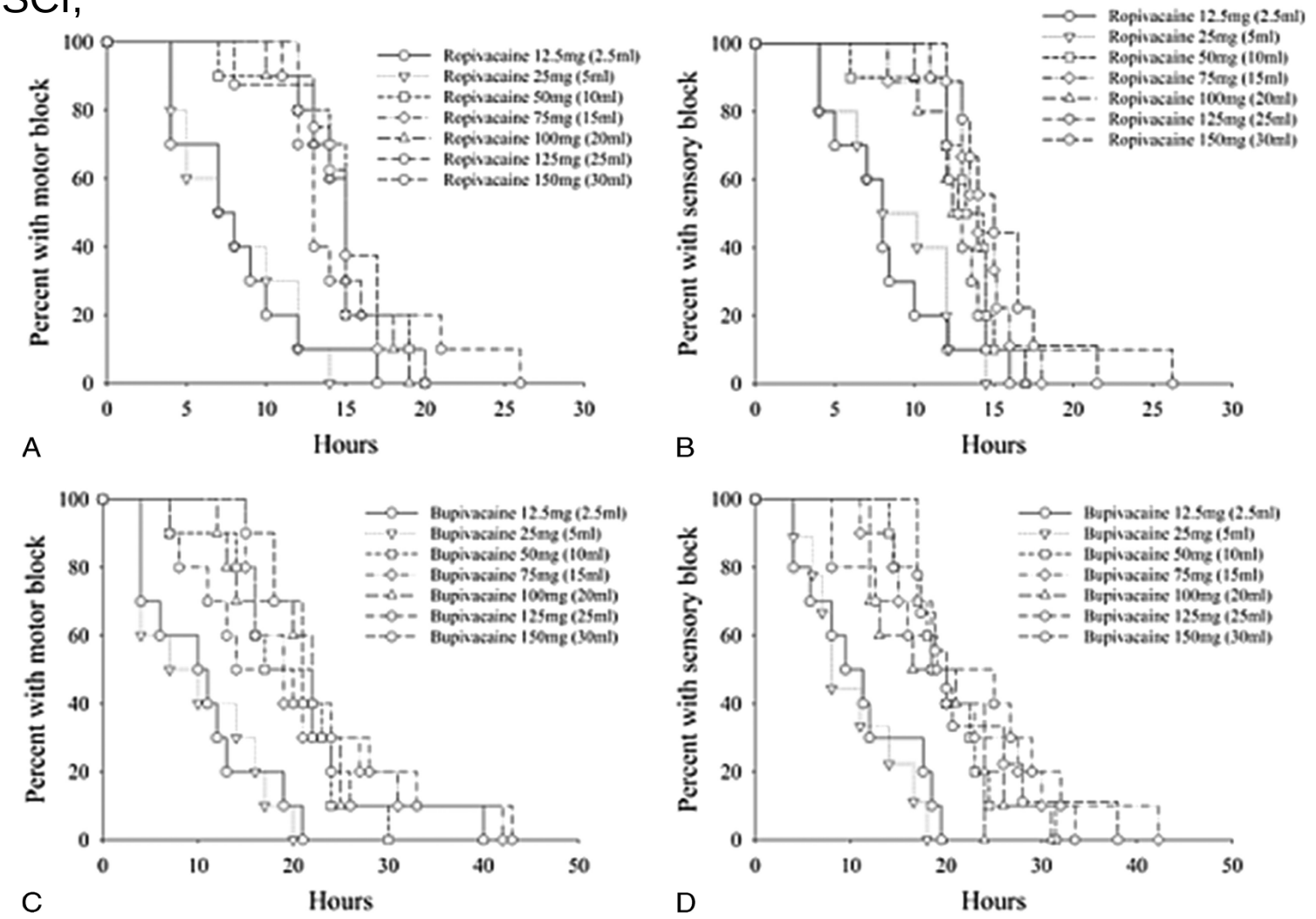
Our findings suggest that 10 mL of 0.5% bupivacaine or ropivacaine produces comparable onset and duration of sensory and motor blockade as volumes as large as 30 mL when injected below the CIEL. Bupivacaine in volumes of 10 mL or greater resulted in median sciatic nerve motor and sensory blockade of more than 24 hours, whereas ropivacaine produced median block durations of less than 24 hours. Our findings suggest a relative potency of 0.72 for ropivacaine compared with bupivacaine for sciatic nerve blockade. Knowledge of the relative potency may be useful for selection of these agents to achieve the desired duration of analgesia.

volume utile

A Dose-Ranging Study of 0.5% Bupivacaine or Ropivacaine on the Success and Duration of the Ultrasound-Guided,Nerve-Stimulator–Assisted Sciatic Nerve Block

A Double-Blind, Randomized Clinical Trial

Antoun Nader, MD,* Mark C. Kendall, MD,* Gildasio S. De Oliveira, Jr, MD, MSCI,*



Part 2

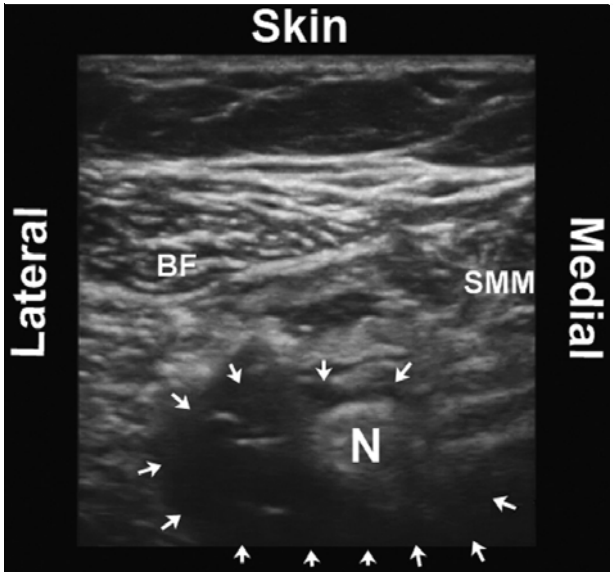
Remplissage de l'espace

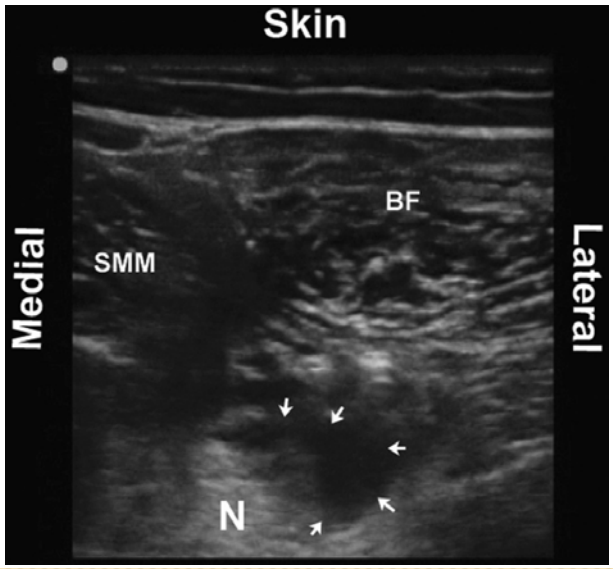
Is Circumferential Injection Advantageous for Ultrasound-Guided Popliteal Sciatic Nerve Block?

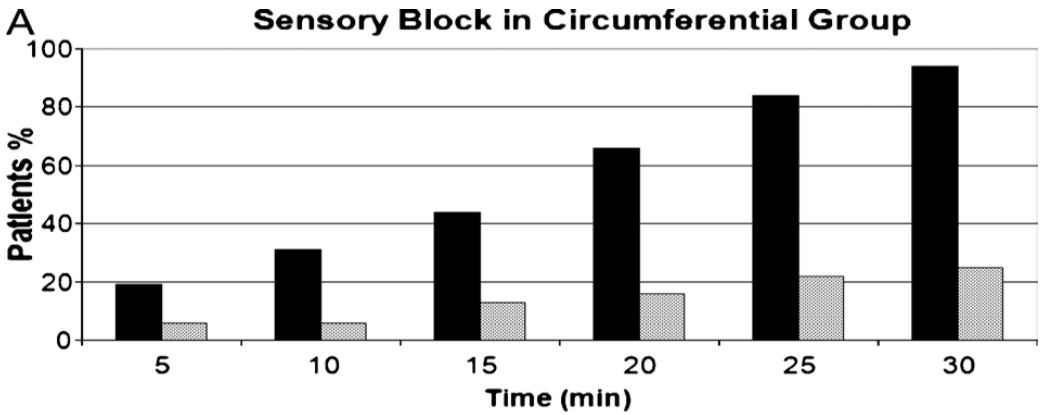
A Proof-of-Concept Study

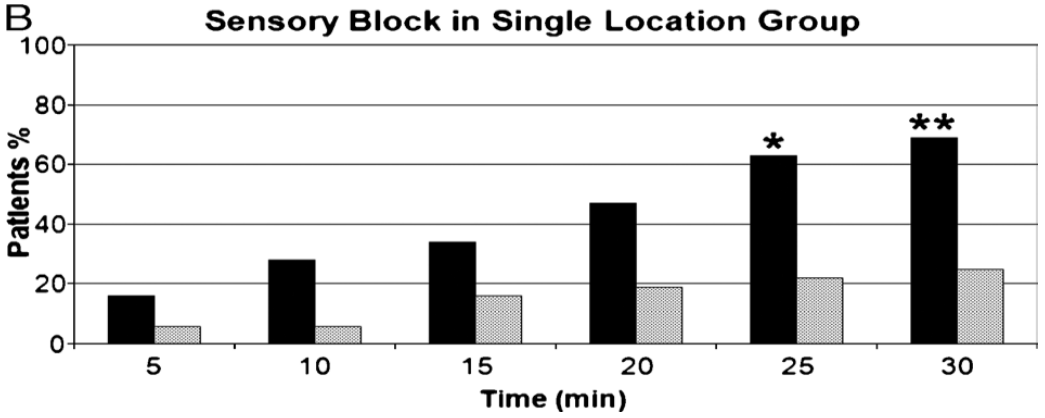
Richard Brull, MD, FRCPC, Alan J. R. Macfarlane, MBChB, MRCP, FRCA,†*
Simon J. Parrington, MBBS, FRCA, Arkadiy Koshkin, MD,* and Vincent W. S. Chan, MD, FRCPC**

Regional Anesthesia and Pain Medicine • Volume 36, Number 3, May-June 2011









Part 1

Remplissage de l'espace

Is Circumferential Injection Advantageous for Ultrasound-Guided Popliteal Sciatic Nerve Block?

A Proof-of-Concept Study

In summary,
US-guided circumferential injection of local anesthetic around the sciatic nerve at the popliteal fossa can improve the rate of sensory block compared with a single location injection technique.
Further study is recommended to determine if circumferential spread of local anesthetic can account for improvements in other block-related characteristics associated with US guidance compared with traditional nerve localization techniques for peripheral nerve blockade.

niveau division

Reg Anesth Pain Med. 2010 May-Jun;35(3):267-71.

Ultrasound-guided popliteal block distal to sciatic nerve bifurcation shortens onset time: a prospective randomized double-blind study.

Prasad A, Perlas A, Ramlogan R, Brull R, Chan V

- 2 groupes :
  - Proximal 5 cm au dessus de la bifurcation
  - Distal 3 cm en dessous
- 30 ml de mélange Bupi xylo

- **Diminution** de 30 % du temps nécessaire à l'obtention d'un bloc sensitif et moteur dans le groupe distal
- (21.4 [SD, 9.9] vs 31.4 [SD, 13.9] mins) (P = 0.005) et (21.5 [SD, 11.3] vs 32.4 [SD, 14.9] mins) (P = 0.006).

niveau division

Ultrasound-Guided Popliteal Sciatic Block with a Single Injection at the Sciatic Division Results in Faster Block Onset than the Classical Nerve Stimulator Technique

Xavier Sala-Blanch, MD,* Nicolás de Riva, MD,* Anna Carrera, MD,† Ana M. López, MD,* Alberto Prats, MD, PhD,† and Admir Hadzic, MD, PhD§‖

Anesth Analg 2012;114:1121–7

- 52 patients
- Bloc SP injection of 20 ml mepivacaine 1.5%
  - en NS au dessus de la division
  - échographie juste au niveau de la division
- Test du bloc sensitif et moteur toutes les 5 min
- diffusion de l'AL
- Injection intra neurale=
  - Augmentation >15% de la S du nerf
  - + gonflement du nerf et/ou diffusion proximale concentrique et/ou diffusion distale concentrique autour du tibial et du fibulaire commun.

niveau division

Ultrasound-Guided Popliteal Sciatic Block with a Single Injection at the Sciatic Division Results in Faster Block Onset than the Classical Nerve Stimulator Technique

Xavier Sala-Blanch, MD,* Nicolás de Riva, MD,* Anna Carrera, MD,† Ana M. López, MD,* Alberto Prats, MD, PhD,† and Admir Hadzic, MD, PhD§‖

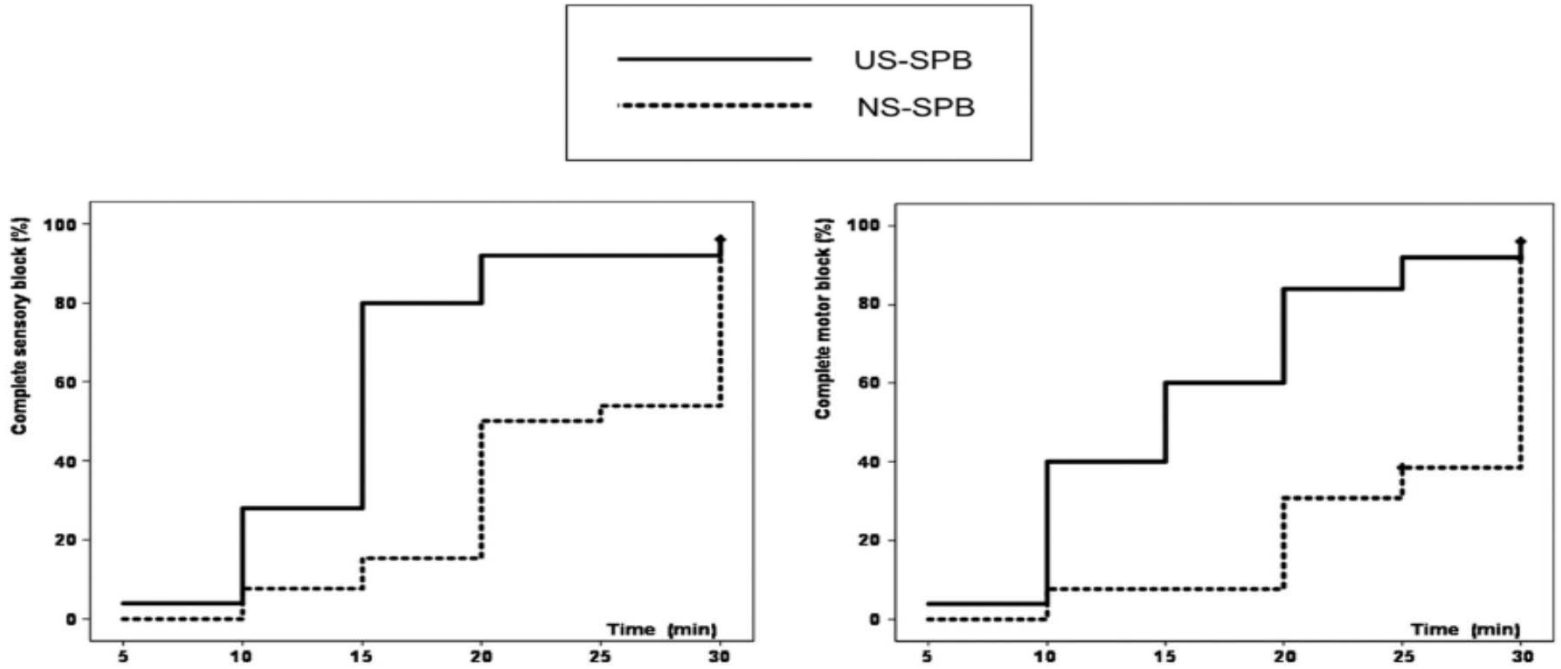


Figure 3. Kaplan-Meier curves of the complete sensory and motor block. US-SPB = ultrasound-guided popliteal sciatic block; NS-SPB = nerve stimulator–guided sciatic popliteal block.

US signs of intraepineural injection were present in 19 patients (73%) in the NS-SPB group and 25 patients (100%) in the US-SPB group

Part 2

niveau division

A Randomized Comparison Between Subepineural and Conventional Ultrasound-Guided Popliteal Sciatic Nerve Block

Tran, De Q. H. MD, FRCPC; Dugani, Shubada MBBS, FRCA; Pham, Kevin; Al-Shaafi, Aref MBBCh, MSc; Finlayson, Roderick J. MD, FRCPC

Methods: 50 patients.
popliteal sciatic nerve block.

- In the group that had separate postbifurcation injections around the tibial and peroneal nerves, the volume of local anesthetic (LA) (30 mL of lidocaine 1%-bupivacaine 0.25%-epinephrine 5 µg/mL) was divided equally between the tibial and peroneal nerves.
- In the SUB group, the 2 divisions were identified exactly at the neural bifurcation. In this location, both nerves can still be found inside a common epineural sheath. The entire volume of LA was injected between the 2 branches, inside the common sheath.

Conclusions: Compared with separate injections around the tibial and peroneal divisions**, a single subepineural injection at the neural bifurcation provides a higher success rate and requires shorter performance**, onset, and total anesthesia-related times. Further studies are required to validate the safety of the subepineural technique.

indications

Anesthésie et analgésie

- Tout indication concernant
  - la jambe au dessous de l'épine tibiale.
  - Le pied.
- Toujours associer un bloc saphène fonction du site de l'intervention.
  - Infiltration sus malléolaire.
  - Bloc écho guide du saphène au 1/3 sup de la jambe
  - Canal de hunter

indications

Choisir la meilleure technique

- Penser au patient:
  - son confort ,
  - son anxiété,
  - son résultat.
- Position latéral de sécurité
- La voie du sommet du creux poplité:
- Repérage simple, ponction moins douloureuse, à 3 cm de profondeur,
- Hors du plan
- Injection juste à la séparation.
- Décoller le nerf à sa périphérie et dans la longueur.
- Monté cathéter aisé, stable, éloigné du pli poplité.

indications

Choisir la meilleure technique

- 10 à 15 ml.
- Carbocaïne 2mg/ml en induction rapide et pour une marche précoce.
- Naropeine 5mg/ml pour traumatologie
- Naropeine 2mg/ml pour analgésie continue. (1,5 à 2,5ml/h)
- Naropeine 0,6mg/ml pour une réinjection analgésique post Carbocaïne.

contre-indications

- C’est le bloc le plus facile.

  Il n’a de contre indication que Vous
  et
  le mauvais choix non justifié.