

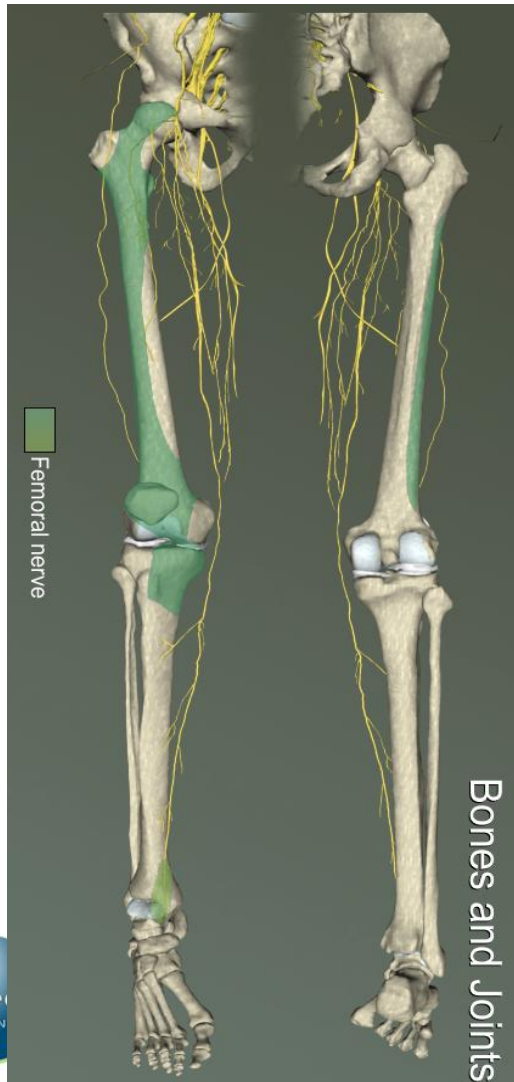
Démonstration membre inférieur

Luc Mercadal - Quincy
Alain Delbos - Toulouse

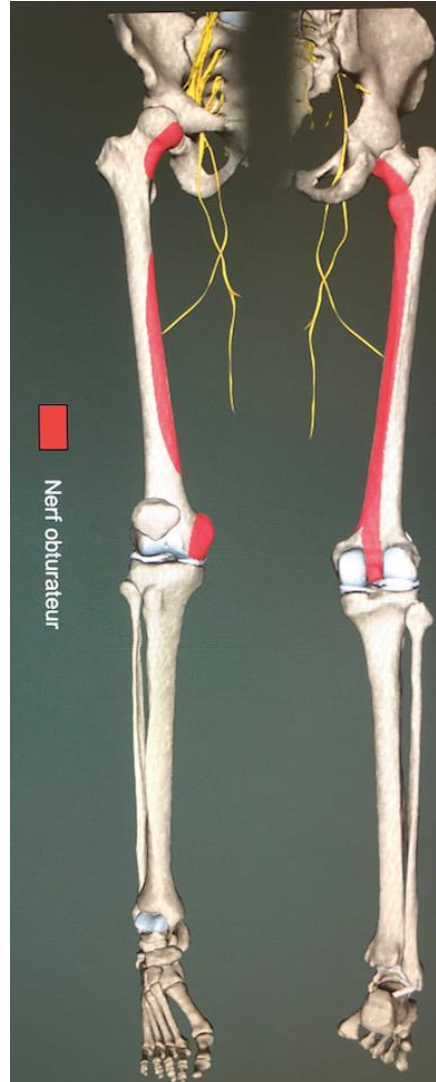


LOWER LIMB INNERVATION

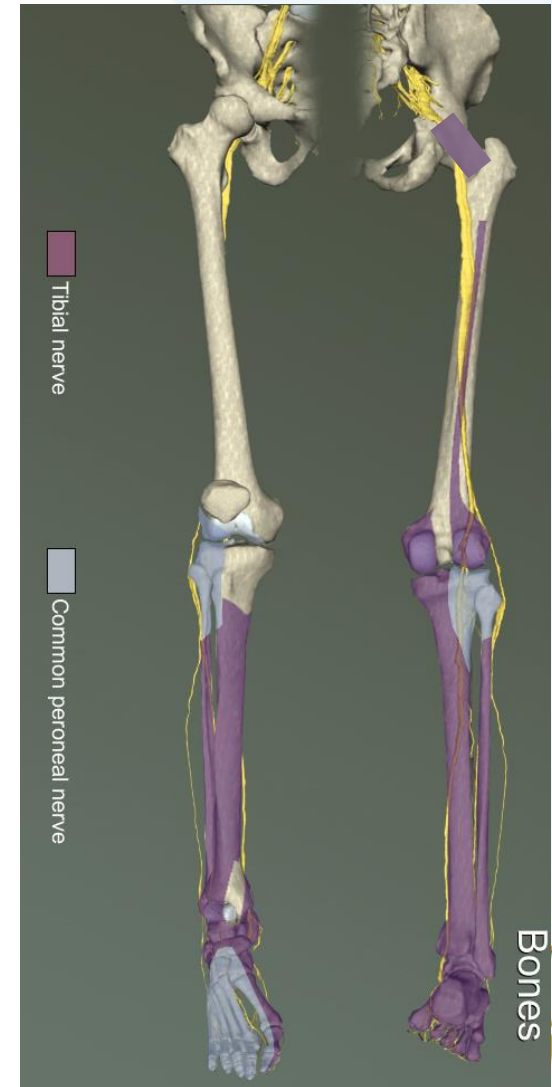
Femoral Nerve



Obturator Nerve



Sciatic Nerve



LUMBAR PLEXUS (L1-L5)

6 main nerves:

FEMORAL - SAPHENOUS

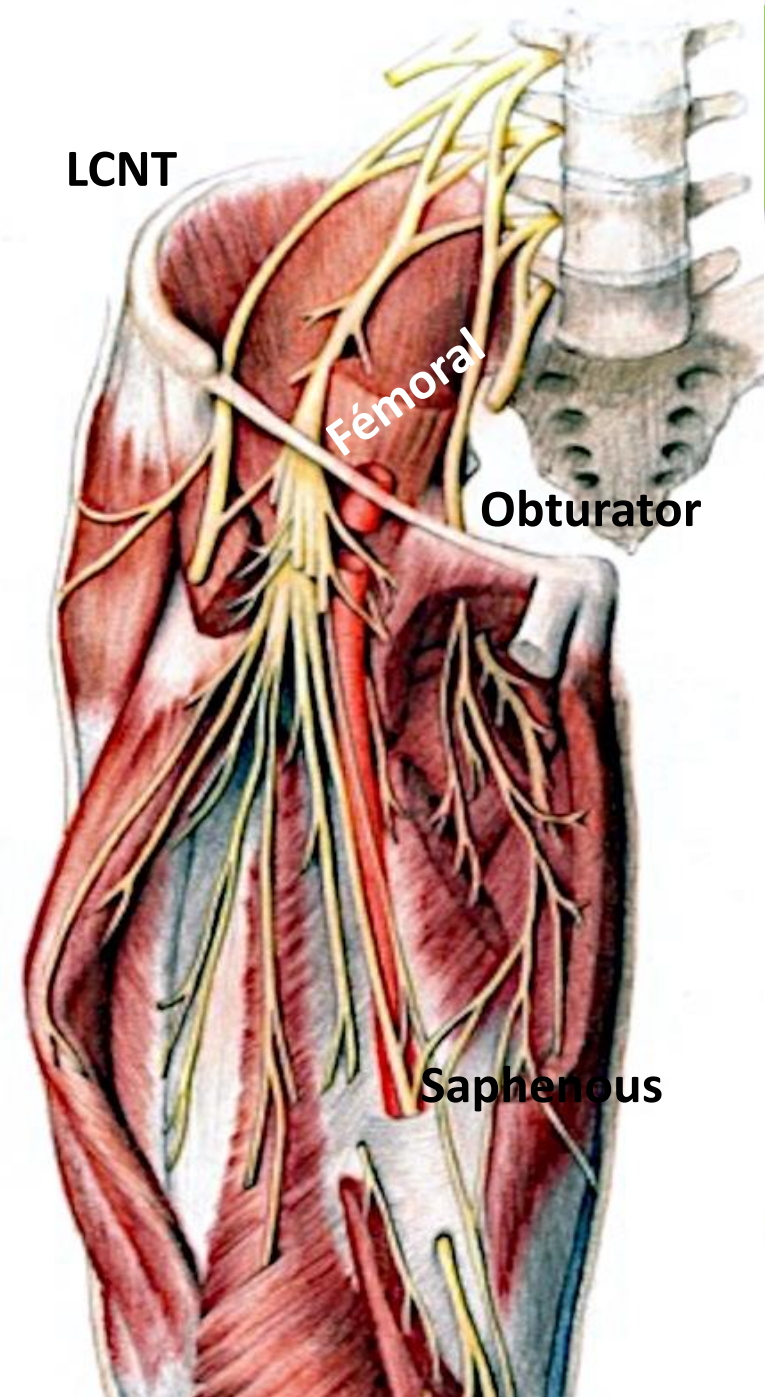
OBTURATOR

LATERAL CUTANEOUS N. OF THE THIGH

Iliohypogastric

Ilioinguinal

Génitofemoral

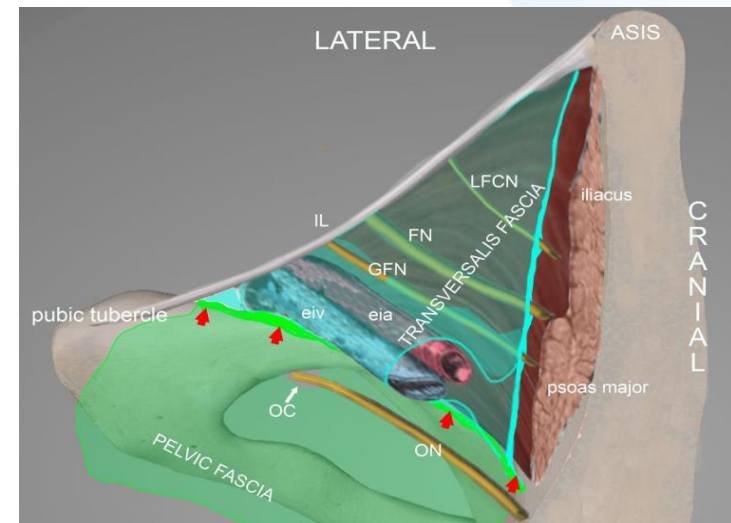


THE CONCEPT OF LUMBAR PLEXUS BLOCK (LPB) DATES BACK NEARLY 50 YEARS !!!

Winnie et al. 1973
3-in-1 technique



Fascia iliaca compartment
block. 1989

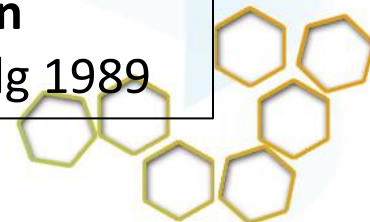


The “3-in-1 block.”

Winnie AP . Anesth Analg 1973

**Comparison of the fascia iliaca
compartment block with the
3-in-1 block in children**

B. Dalens, Anesth Analg 1989



A Longitudinal Supra-Inguinal Fascia Iliaca Compartment Block Reduces Morphine Consumption After Total Hip Arthroplasty

Matthias Desmet, MD,* Kris Vermeylen, MD,† Imré Van Herreweghe, MD,‡ Laurence Carlier, MD,‡
Filiep Soetens, MD,† Stijn Lambrecht, PharmD, PhD,§ Kathleen Croes, PharmD, PhD,§
Hans Pottel, PhD,|| and Marc Van de Velde, MD, PhD‡

RAPM 2017

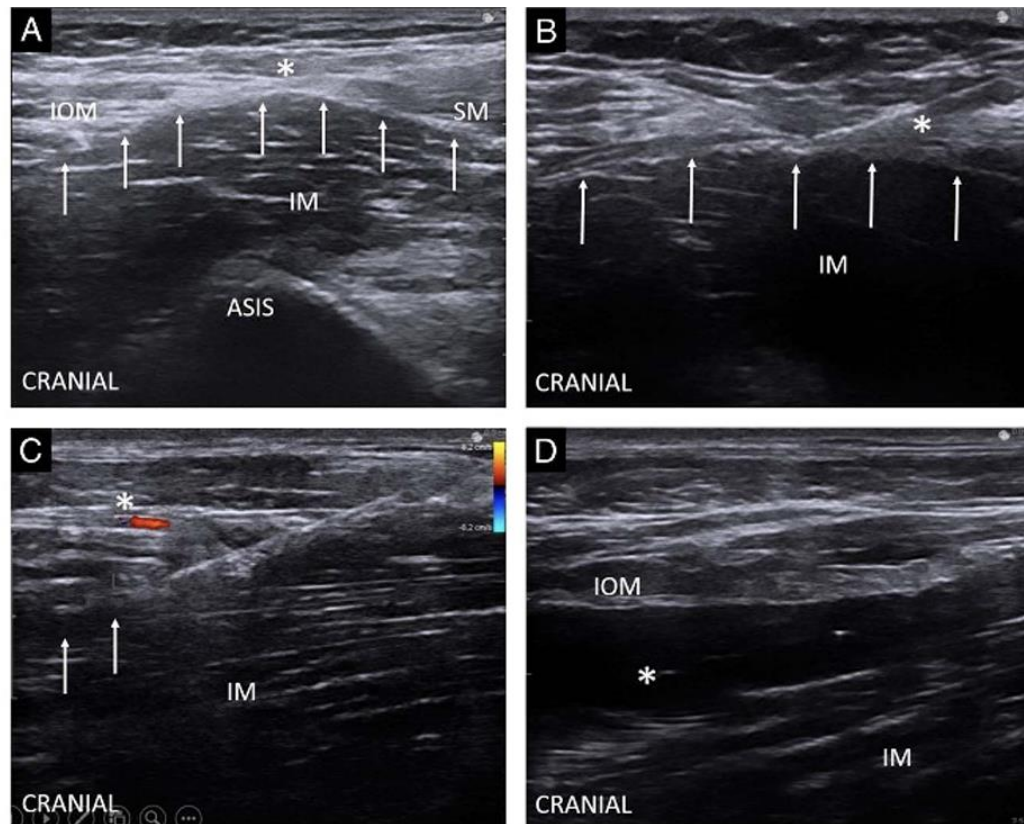
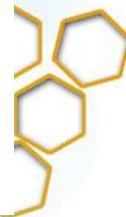
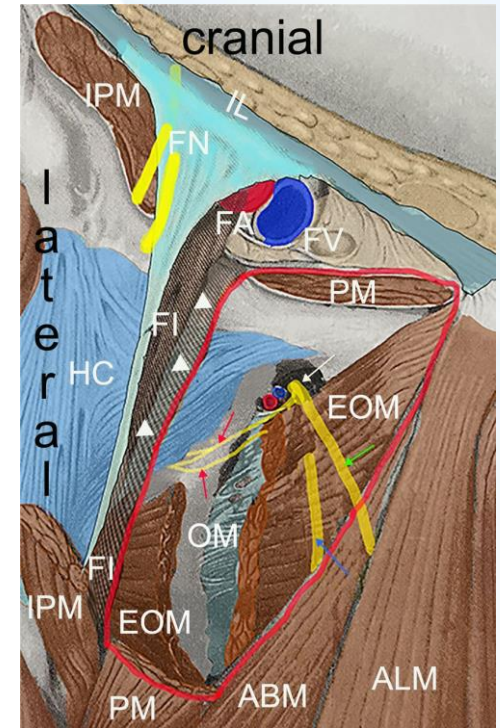
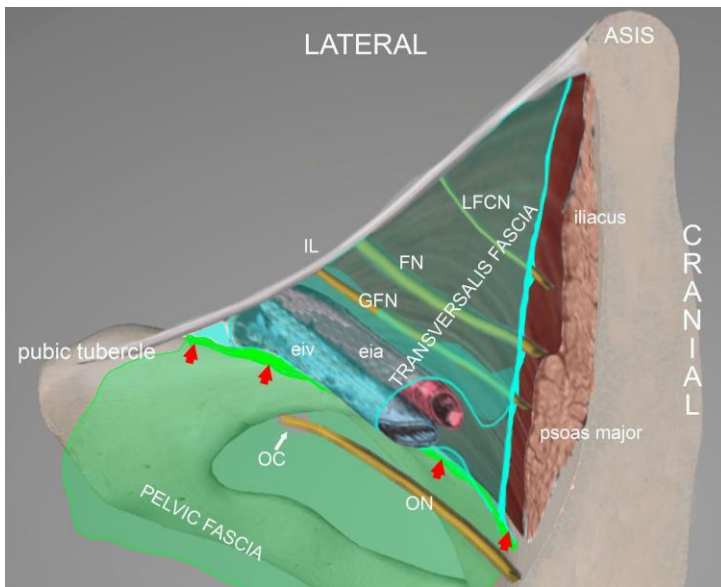


FIGURE 1. Ultrasound images of a longitudinal supra-inguinal FICB. A, Ultrasound image with identification of relevant structures for FICB. White arrows: fascia iliaca; *bow-tie sign. B, In-plane needle introduction with proximal end of the needle under the fascia iliaca. White arrows: fascia iliaca; *needle. C, Start of injection of LA under the fascia iliaca; note the superficial position of the deep circumflex artery to the fascia iliaca. White arrows: LA spreading under the fascia iliaca; *deep circumflex artery. D, Ultrasound image after injection of 40 mL of LA with adequate cranial spread of LA; *LA. ASIS, anterior superior iliac spine; IM, iliac muscle; IOM, internal oblique muscle; SM, sartorius muscle.



ANATOMICAL CONSIDERATIONS FOR OBTURATOR NERVE BLOCK WITH FASCIA ILIACA COMPARTMENT BLOCK (FIC)

Thomas Fichtner Bendtsen et al. Reg Anesth Pain Med 2021



Topographical anatomy indicates that an FIC block is unlikely to block the ON



Overall recommendations for peri-operative pain management in patients undergoing total hip arthroplasty

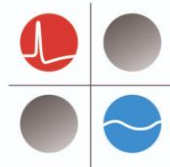
Anaesthesia 2021

Pre-operative and intra-operative interventions

- › Pre-operative exercise and education (Grade A)
- › General or spinal anaesthesia (Grade A)
- › Paracetamol (Grade A)
- › Non-steroidal anti-inflammatory drugs or cyclo-oxygenase-2-selective inhibitors (Grade A)
- › Dexamethasone 8–10 mg IV (Grade A)
- › Single shot fascia iliaca block or local infiltration analgesia (Grade D)
- › If the patient has received spinal anaesthesia for the surgery, intrathecal morphine 0.1 mg could be considered (Grade D)

prospect

procedure specific postoperative pain management



Postoperative interventions

- › Paracetamol (Grade A)
- › Non-steroidal anti-inflammatory drugs or cyclo-oxygenase-2-selective inhibitors (Grade A)
- › Opioid for rescue (Grade D)

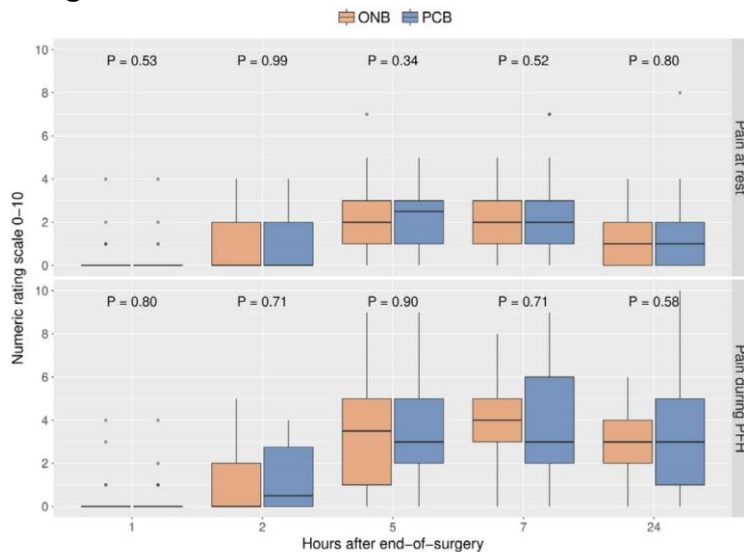


Obturator nerve block in THA

An Obturator Nerve Block does not Alleviate Postoperative Pain after Total Hip Arthroplasty: a Randomized Clinical Trial RAPM 2019

Niels Dalsgaard Nielsen,^{1,2,3} Charlotte Runge,¹ Louise Clemmesen,¹ Jens Børglum,⁴ Lone Ramer Mikkelsen,^{1,2} Jens Rolighed Larsen,^{1,2} Thomas Dahl Nielsen,³ Kjeld Søballe,^{2,5} Thomas Fichtner Bendtsen^{2,3}

Reg Anesth Pain Med 2019



Original research

Obturator nerve block does not provide analgesic benefits in total hip arthroplasty under multimodal analgesic regimen: a randomized controlled trial

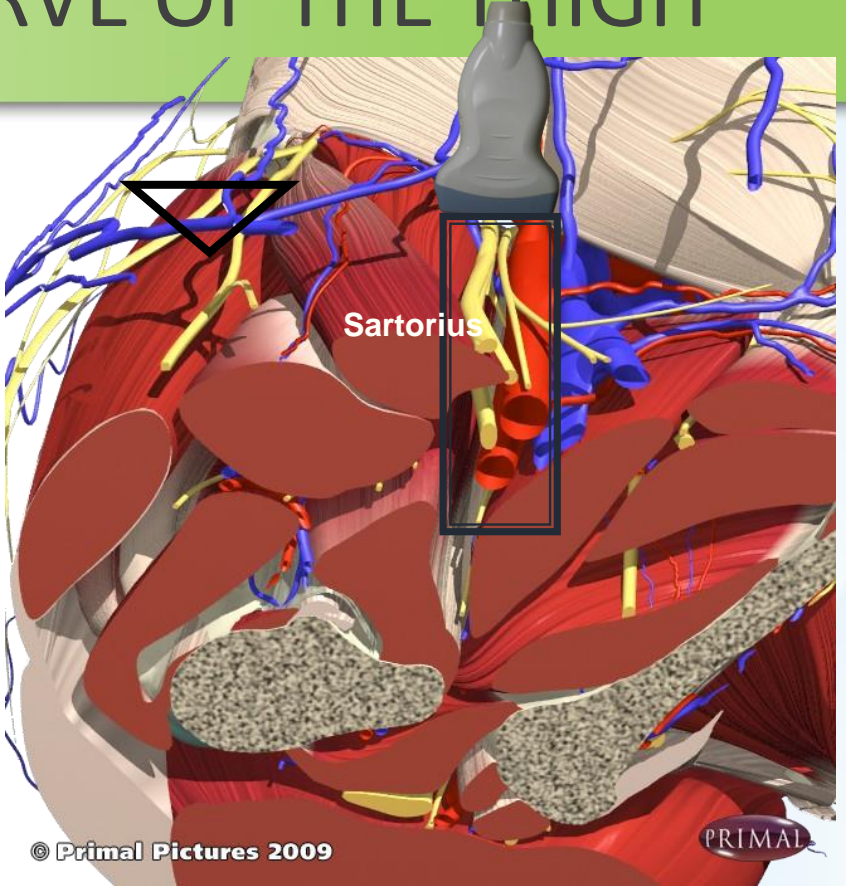
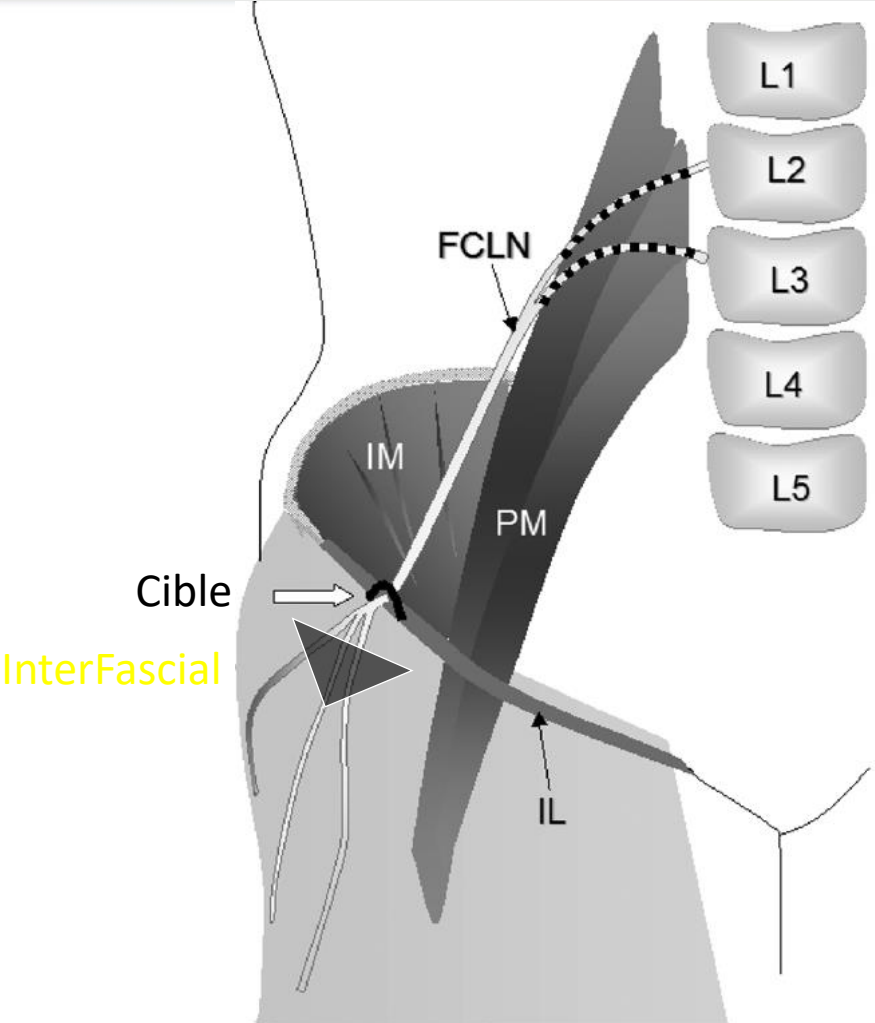
Philippe Marty,¹ Clement Chassery,¹ Olivier Rontes,¹ Corine Vuillaume,¹ Bertrand Basset,¹ Mehdi Merouani,¹ Constance Marquis,¹ Anne Delussy,¹ Marie-Claude Delbos,¹ Fabrice Ferre,^{1,2} Benoit Bataille,³ Girish Joshi,⁴ Alain Delbos¹

Reg Anesth Pain Med 2021

Table 3 Pain scores in the two groups

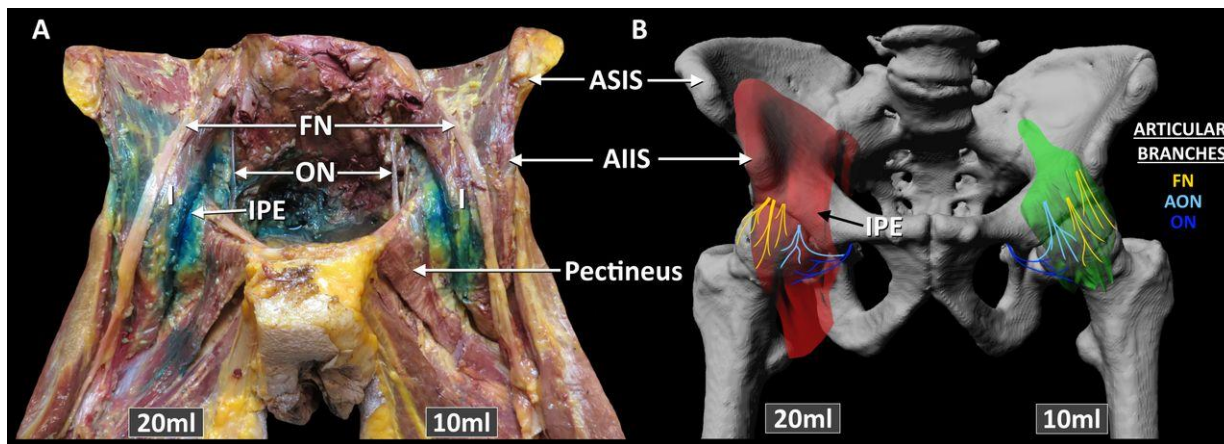
| | Obturator NB group (n=30) | Placebo group (n=30) | P value*† |
|----------------------------------|---------------------------|----------------------|-----------|
| Median VRS at PACU arrival (IQR) | 3 (0, 5) | 0 (0, 4) | 0.1 |
| Median VRS max in PACU (IQR) | 5 (4, 7) | 4.5 (1, 6) | 0.06 |
| Median VRS at H0 (IQR) | 0 (0, 0) | 0 (0, 2) | 0.03 |
| Median VRS at H6 (IQR) | 0 (0, 0) | 0 (0, 1) | 0.31 |
| Median VRS at H12 (IQR) | 0 (0, 0) | 0 (0, 0) | 0.86 |
| Median VRS at H18 (IQR) | 0 (0, 0) | 0 (0, 1) | 0.43 |
| Median VRS at H24 (IQR) | 0 (0, 2) | 0 (0, 3) | 0.93 |

LATERAL CUTANEOUS NERVE OF THE THIGH



PENG BLOCK (PERICAPSULAR NERVE GROUP)

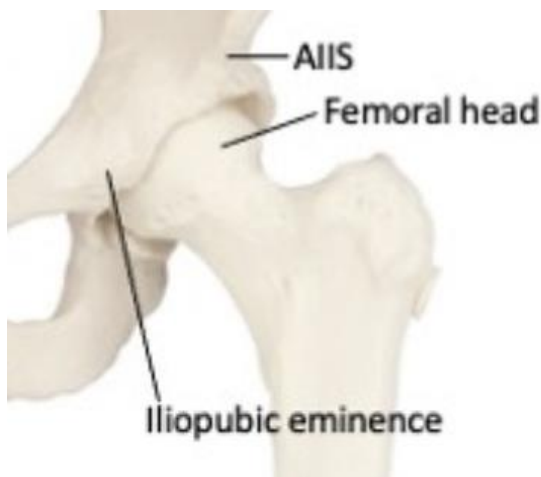
Cadaveric dissection (A) and 3D model (B) of injectate spread following pericapsular nerve group block.



John Tran et al. Reg Anesth Pain Med 2019;44:257

Randomized comparison between pericapsular nerve group (PENG) block and suprainguinal fascia iliaca block for total hip arthroplasty

J. Aliste . Reg Anesth Pain Med 2021



Analgesia : PENG = Ilio-fascial

Walking : PENG >> Iliofascial

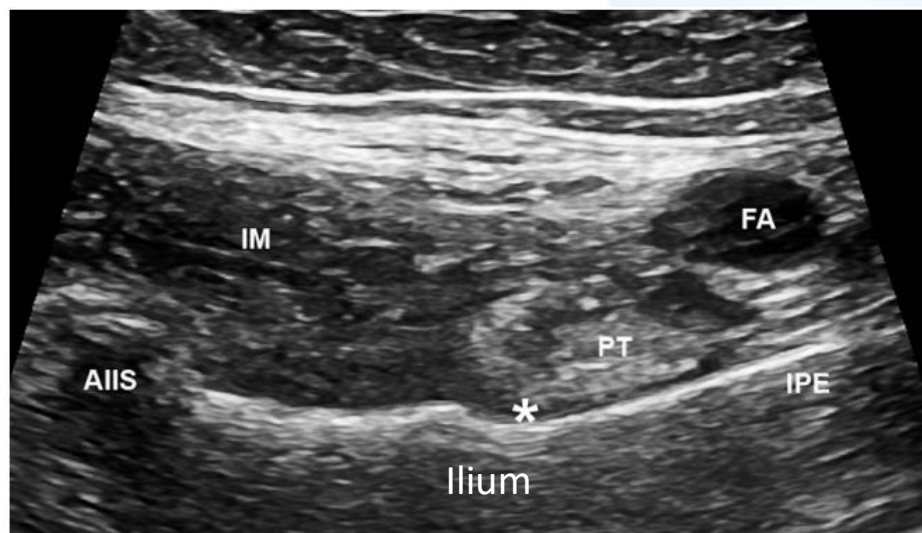


Figure 2 Sonoanatomy of PENG block. AIIS, anterior inferior iliac spine; Asterisk (white), target for local anesthetic injection; FA, femoral artery; IM, iliac muscle; IPE, iliopubic eminence; PT, psoas muscle tendon.

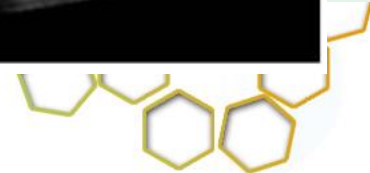
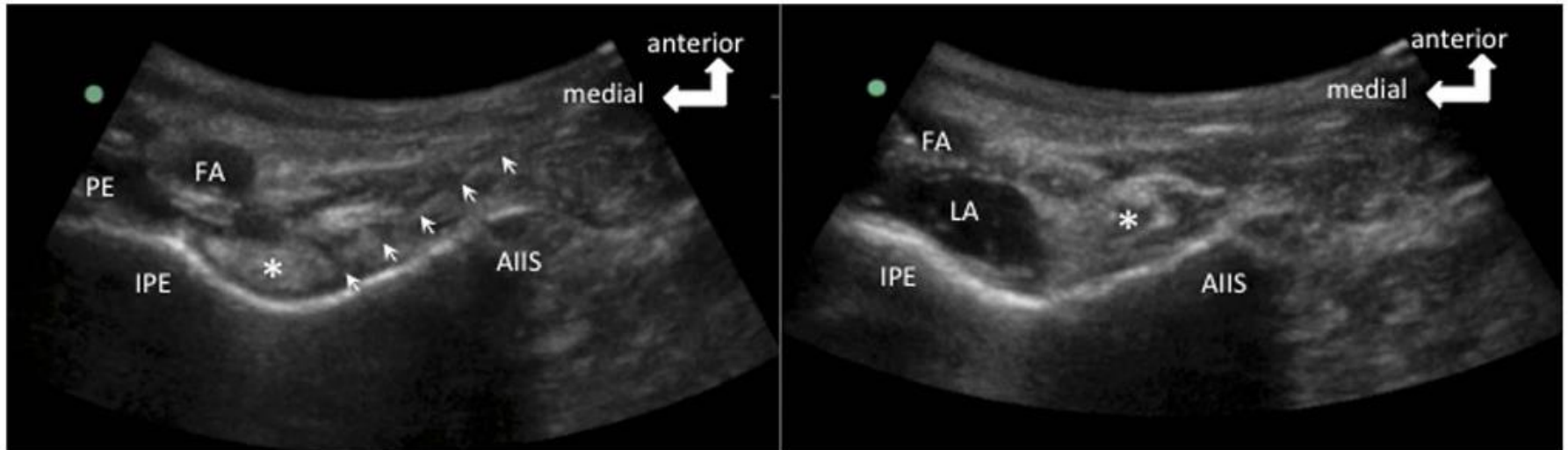


PENG Block (PERicapsular Nerve Group)

RAPM Nov 2018

Pericapsular Nerve Group (PENG) Block for Hip Fracture

Laura Girón-Arango, MD,† Philip W.H. Peng, MBBS, FRCPC, Founder (Pain Med),*†
Ki Jinn Chin, MBBS, MMed, FANZCA, FAMS, FRCPC,*†
Richard Brull, MD, FRCPC,* and Anahi Perlas, MD, FRCPC*†*



PTG : PROSPECT (not yet published) :

Overall recommendations for pain management in patients undergoing primary TKA

➤ *Pre-operative and Intra-operative*

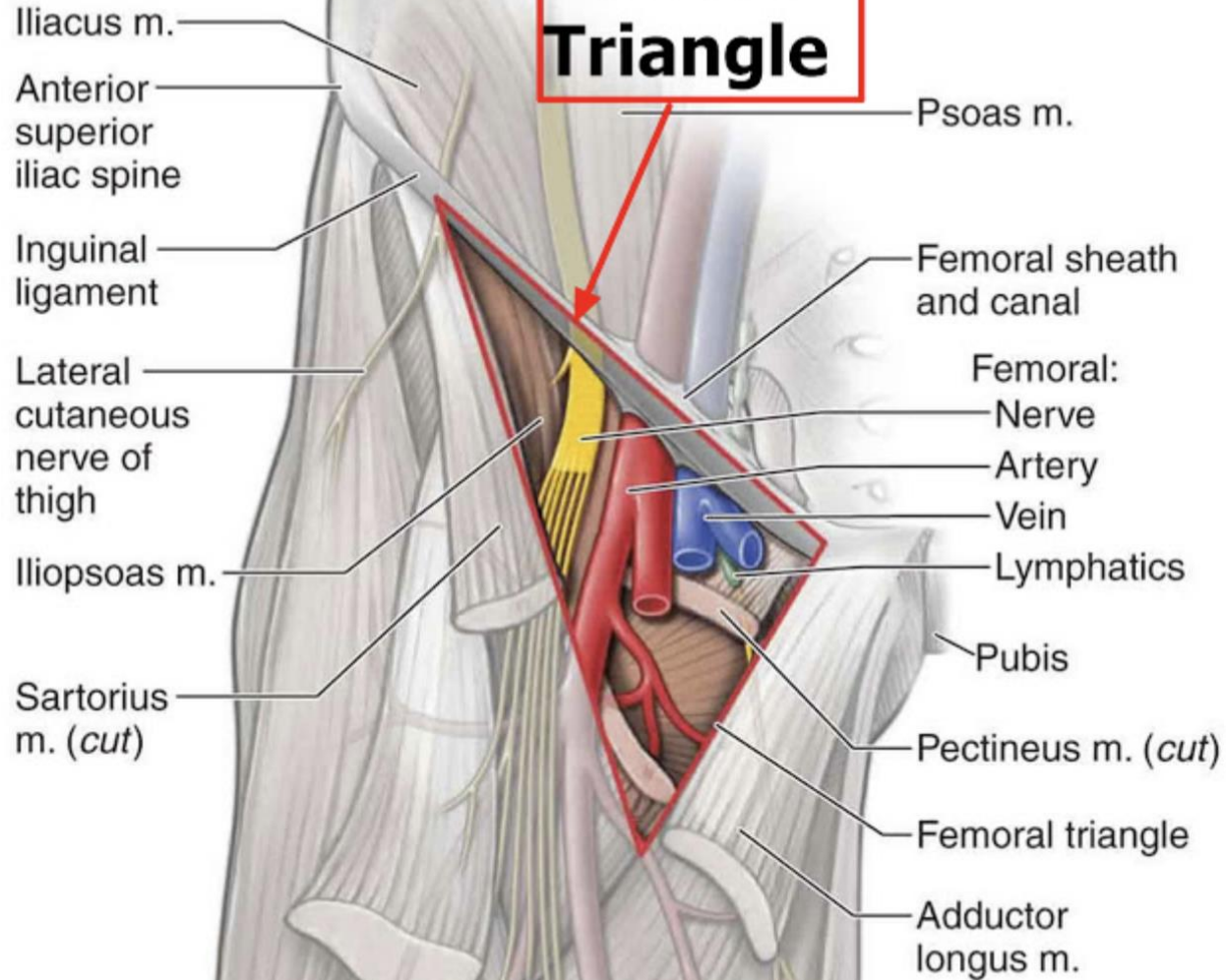
- Acetaminophen and non-steroidal anti-inflammatory or cyclo-oxygenase (COX)-2 specific inhibitors
- Dexamethasone (≥ 10 mg, IV)
- Single shot adductor canal block (ACB) and/or peri-articular local infiltration analgesia (LIA).
Combination of these two techniques is preferred
- Intra-thecal morphine (100 mcg) ... in the rare situation where both ACB and LIA are not possible

➤ *Post-operative*

- Acetaminophen and non-steroidal anti-inflammatory or cyclo-oxygenase (COX)-2 specific inhibitors
- Opioids ... as rescue analgesics in the post-operative period.



Femoral Triangle



The adductor canal

Skin

Sartorius m.

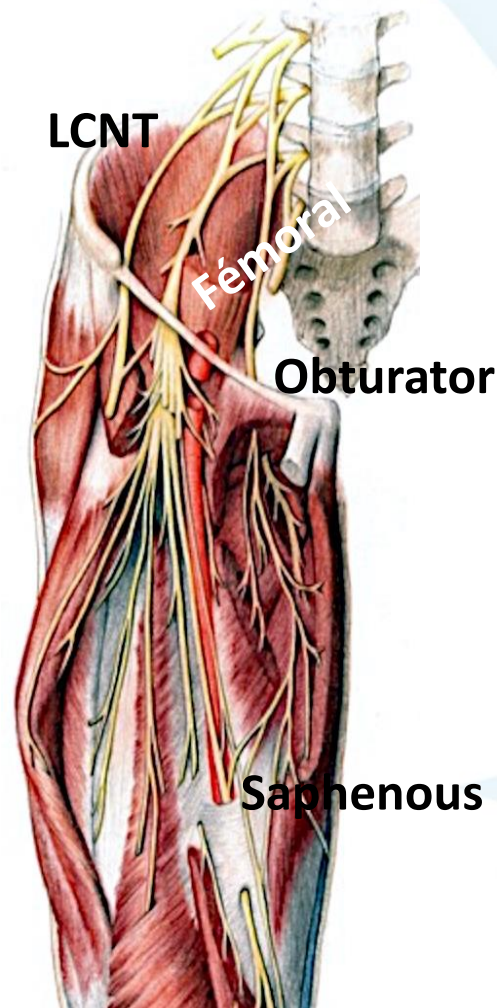
Superficial femoral artery

VM n. & S n. close artery

Vaste medialis m. lateral

Adductor longus m. medial

Depth



ADDUCTOR CANAL / FEMORAL TRIANGLE BLOCK

Rungé C. Reg Anesth Pain Med 2016

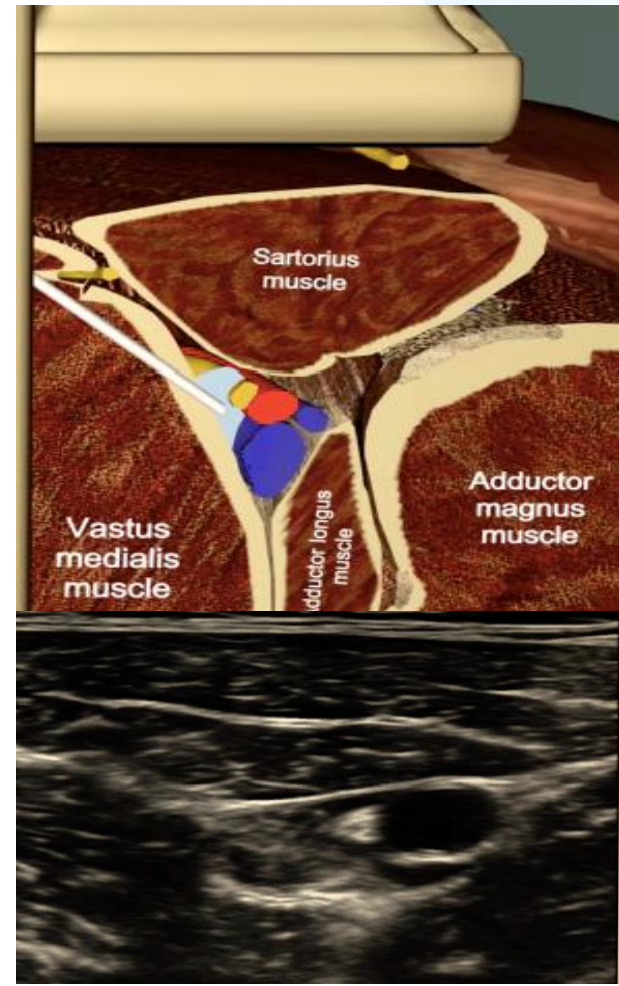
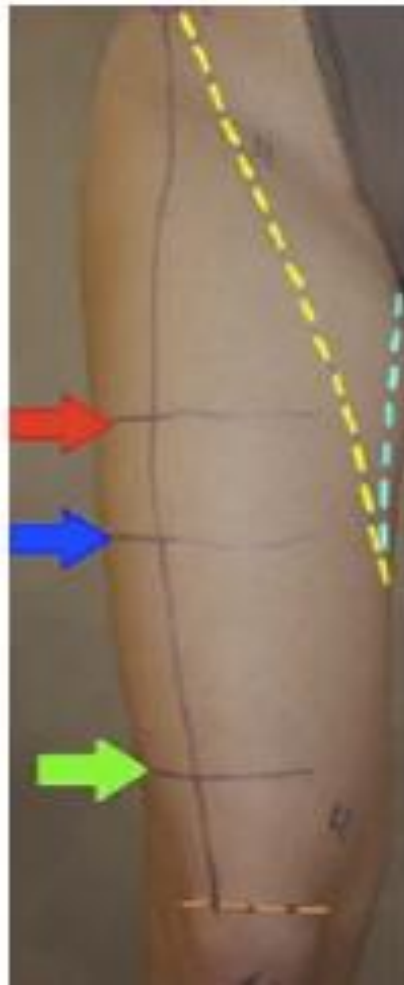
ASIS

Midpoint
of the thigh

Proximal End AC

Distal End AC

Base of patella

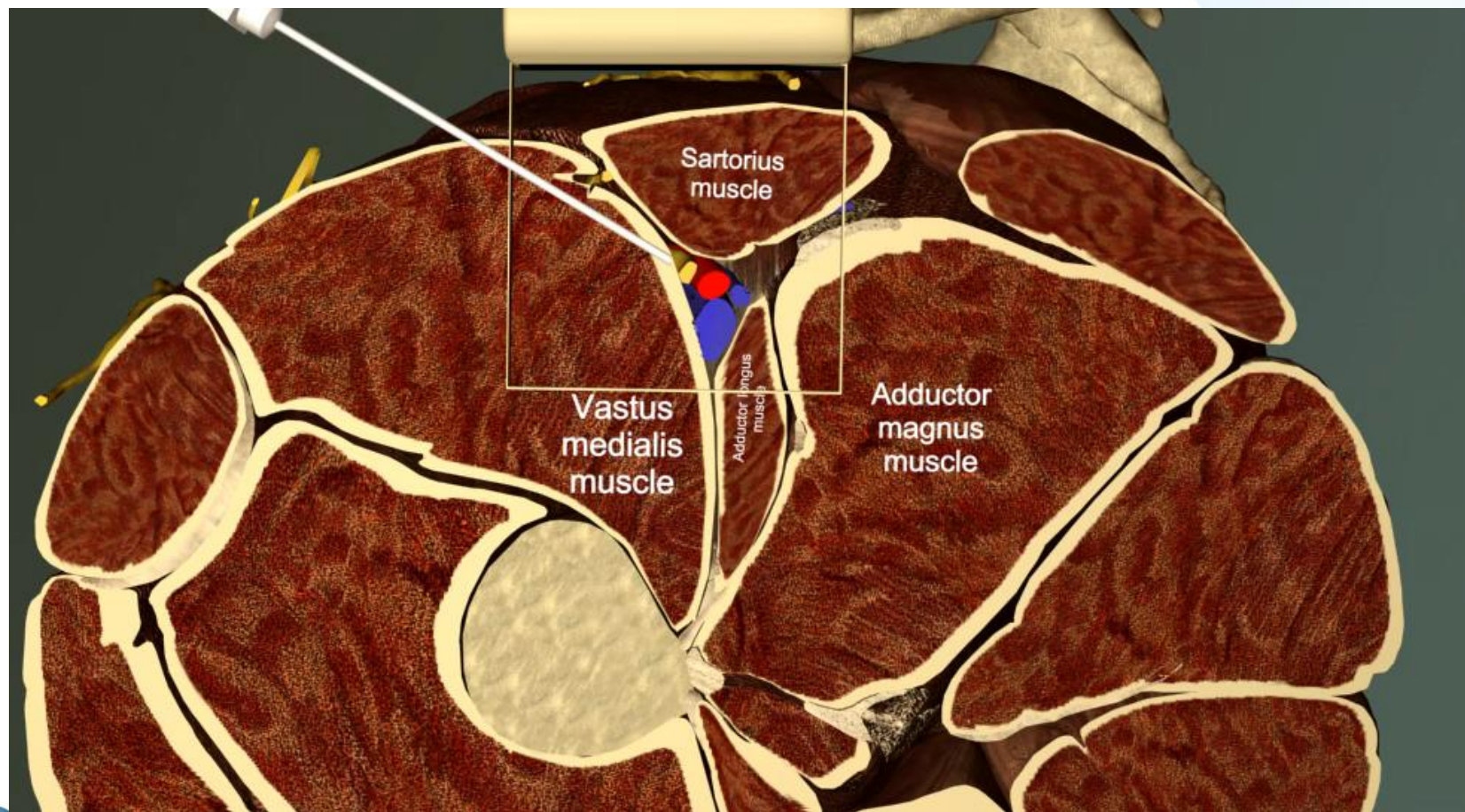




20 ml

An injection specifically delivered into the AC will likely not anesthetize the vastus medialis nerve

ADDUCTOR CANAL BLOCK



IPACK FOR KNEE SURGERY

Novel Regional Techniques for Total Knee Arthroplasty Promote Reduced Hospital Length of Stay: An Analysis of 106 Patients

Salman Thobhani, MD,¹ Lauren Scalerio, MD,¹ Clint E. Elliott, MD,^{1,2} Bobby D. Nossaman, MD,^{1,2} Leslie C. Thomas, MD,¹ Dane Yuratich, MD,¹ Kim Bland, MD,¹ Kristie Osteen, MD,^{1,2} Matthew E. Patterson, MD^{1,2}

The Ochsner Journal

2017

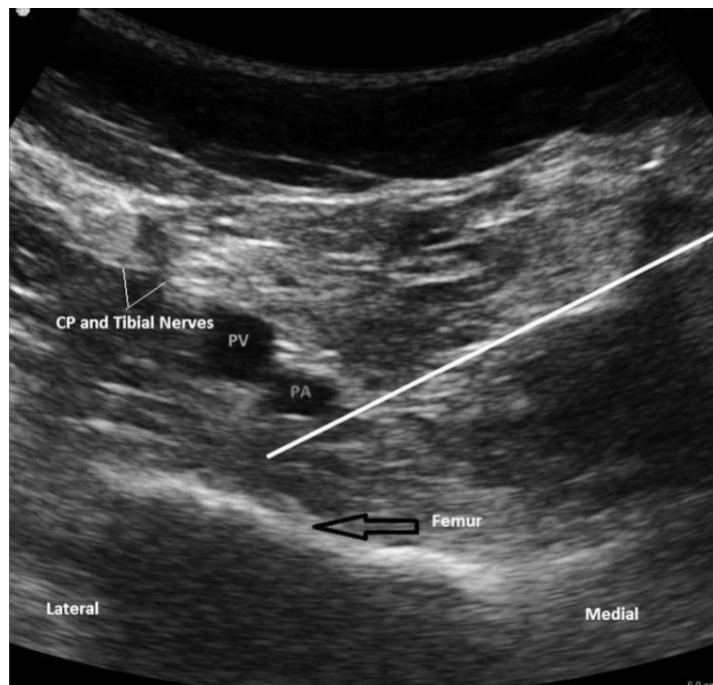


Table 3. Opioid Consumption Following Primary Unilateral Total Knee Arthroplasty (n=106)

| Postoperative Time Point | FNC n=61 | FNC + IPACK n=23 | ACB + IPACK n=22 | P Value |
|--------------------------|--------------|---------------------|---------------------|---------|
| PACU discharge | 30 (15-45) | 15 (15-27) | 30 (15-40) | 0.0077 |
| 8 hours | 38 (23-52) | 19 (15-30) | 41 (30-79) | 0.0001 |
| 16 hours | 45 (33-92) | 30 (15-50) | 59 (43-90) | 0.0004 |
| 24 hours | 66 (41-105) | 45 (30-68) | 82 (66-118) | 0.0002 |
| 32 hours | 87 (59-123) | 57 (45-83) | 109 (68-152) | 0.0018 |
| 40 hours | 119 (79-145) | 75 (45-124) | 134 (81-172) | 0.0133 |
| 48 hours | 146 (98-164) | 93 (72-124) | 150 (107-186) | 0.0101 |

ACB, adductor canal block; FNC, femoral nerve catheter block; IPACK, infiltration between the popliteal artery and capsule of the knee block; PACU, postanesthesia care unit.

Note: Opioid consumption is expressed in median oral morphine equivalents in mg (25%-75% interquartile range).

L'infiltration du FUTUR !!!!!



Combined proximal or distal nerve blocks for postoperative analgesia after total knee arthroplasty

Blocs proximaux

Blocs distaux

1 Analgésie équivalente?

2 Reprise précoce marche?

Table 2. Pain management

| | All patients (n=90) | ITO group (n=45) | QNB group (n=45) | p-value ^{a,b} |
|----------------------------|---------------------|------------------|------------------|------------------------|
| Cumulative OME consumption | | | | |
| Cumulative OME H0-H24, mg | 15 [0-36] | 30 [13-59] | 15 [0-18] | p<0.001 |
| Cumulative OME H24-H48, mg | 15 [0-30] | 15 [0-30] | 15 [15-38] | 0.06 |

Table 4. Post-operative mobility

| | | | | |
|------------------------------|--|----------|---------|--------|
| Ability to walk | | | | |
| Day 0 (operating day), n (%) | | 25 (58) | 1 (2) | <0.001 |
| Day 1, n (%) | | 43 (96) | 41 (91) | 0.66 |
| Day 2, n (%) | | 43 (100) | 42 (98) | 1.00 |

Marty P - BJA 2022

