

ALR et chirurgie du Sein

Le choix des armes

Régis Fuzier

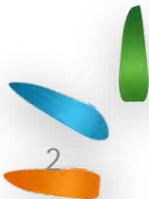
fuzier.r@gmail.com



Déclarations de liens d'intérêts

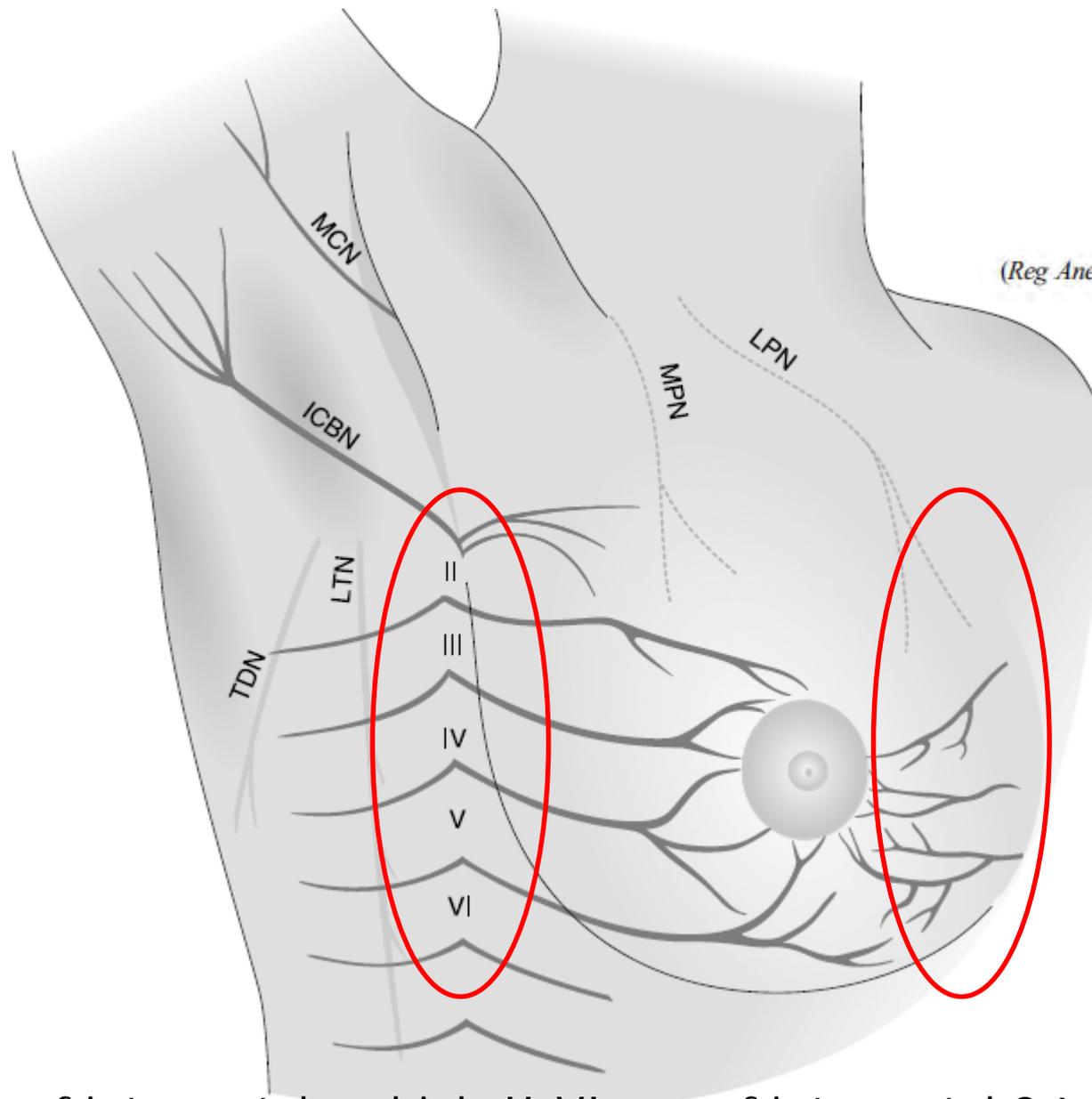
www.i-alr.com

Elivie
GE Healthcare
SHAM
SonoSite-Fujifilm
Vifor Pharma



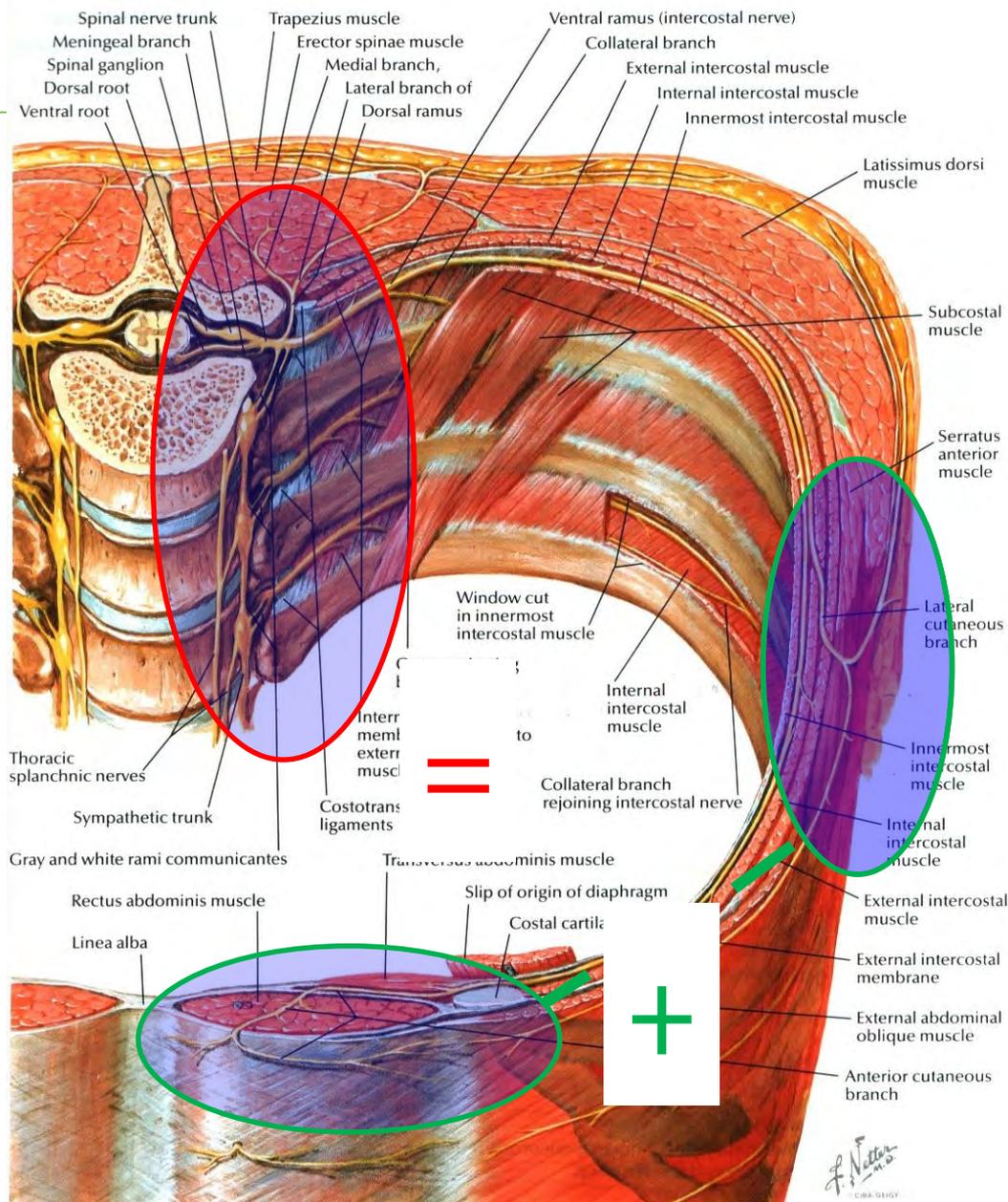


(Reg Anesth Pain Med 2014;39: 272–278)



ICBN = nerf intercostobrachial; II-VI = nerf intercostal 2 à 6; LPN =
branche latérale nerf pectoral; MPN = branche médiale nerf
pectoral; LTN = nerf long thoracique; MCN = nerf cutané médial
du bras; TDN = nerf thoracoacromial

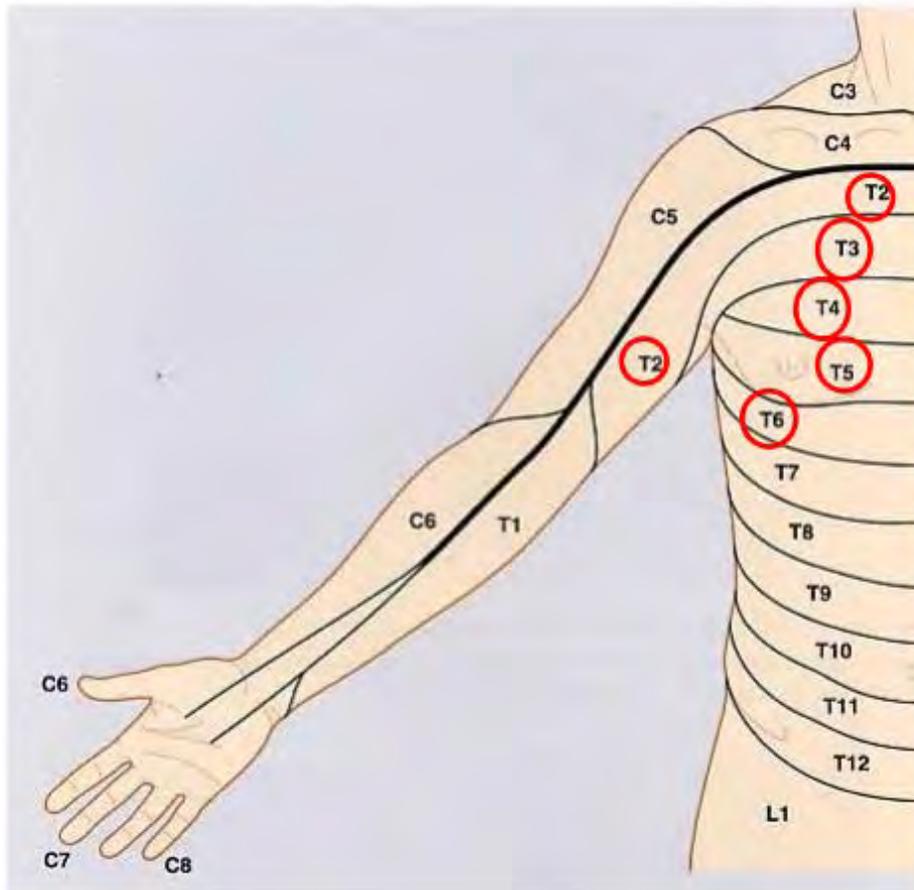




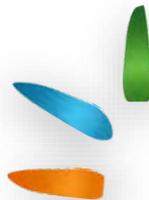
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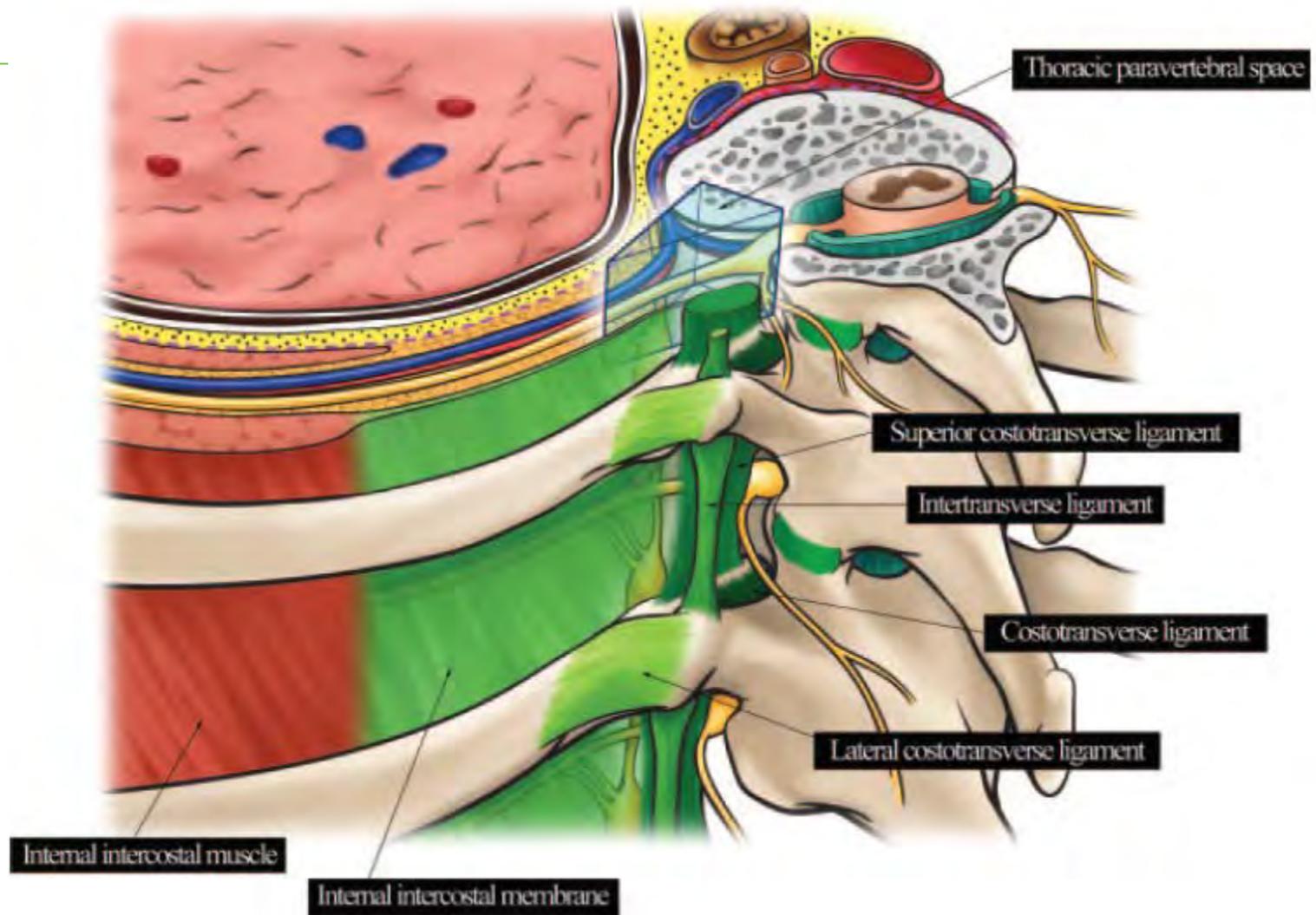


Le bloc paravertébral



T2 à T6
Ponction T2 si curage axillaire



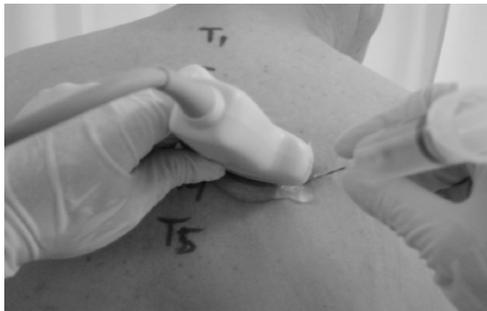


Karmakar et al. *Anesth Analg* 2012; 115: 1246-50

Techniques de ponction



○ Transverse In-Plane Transverse Out-Of-Plane

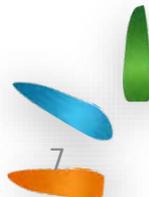


- Shibata Y, et al. *Anesth Analg* 2007; 105: 550-1.
- Cowie B, et al. *Anesth Analg* 2010; 110: 1735-9.
- Renes SH, et al. *Reg Anesth Pain Med* 2010; 35: 212-6.
- Ben-Ari A, et al. *Anesth Analg* 2009; 109: 1691-4.



- Marhofer P, et al. *Br J Anaesth* 2010; 105: 526-32.

(*Reg Anesth Pain Med* 2010;35: 212–216)



Techniques de ponction

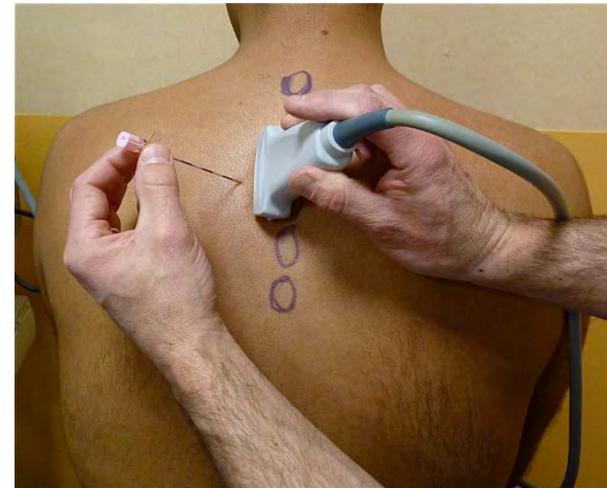


○ Sagittal In-Plane

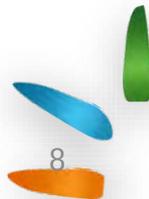


- O. Riain SC, et al. *Anesth Analg* 2010; 110: 248-51.
- Luyet C, et al. *Br J Anaesth* 2009; 102: 534-9.
- Abdallah FW, et al. *Reg Anesth Pain Med* 2014; 39: 240-2.

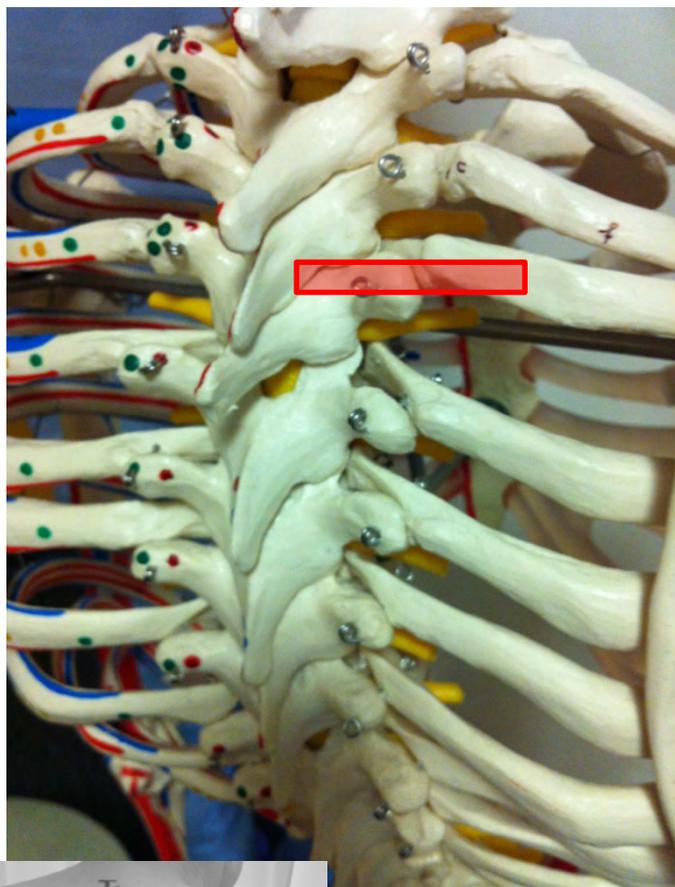
○ Sagittal Out-Of-Plane



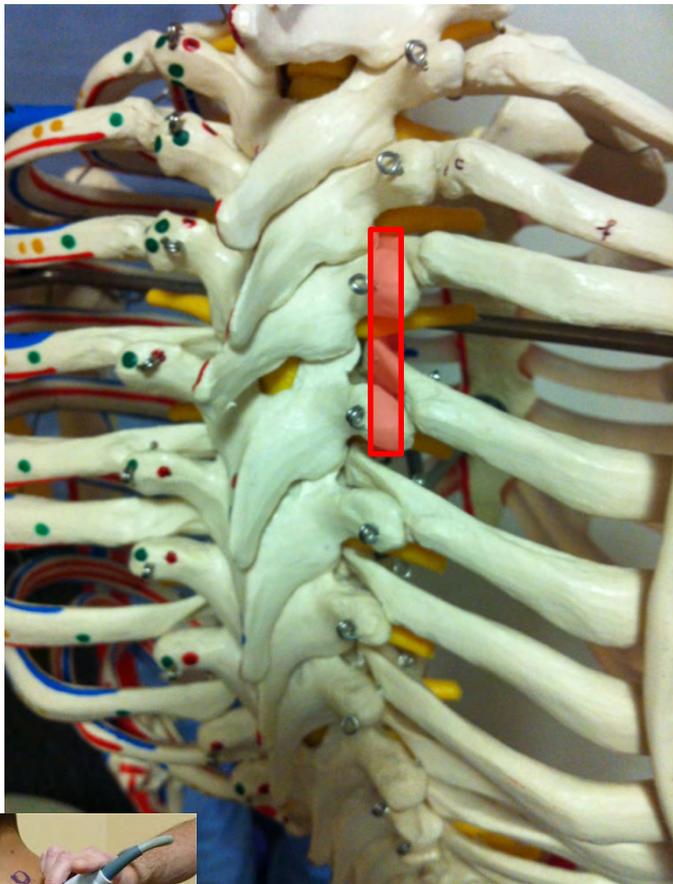
- Hara K, et al. *Anaesthesia* 2009; 64: 223-5.



En pratique : abord transverse



En pratique : abord sagittal



Comparison of Paravertebral Block by Anatomic Landmark Technique to Ultrasound-Guided Paravertebral Block for Breast Surgery Anesthesia

A Randomized Controlled Trial

(*Reg Anesth Pain Med* 2018;43: 385–390)



Rupali Patnaik, MD,* Anjolie Chhabra, MD,* Rajeshwari Subramaniam, MD,* Mahesh K. Arora, MD,* Devalina Goswami, MD,* Anurag Srivastava, MS,† Vuthaluru Seenu, MS,† and Anita Dhar, MS†

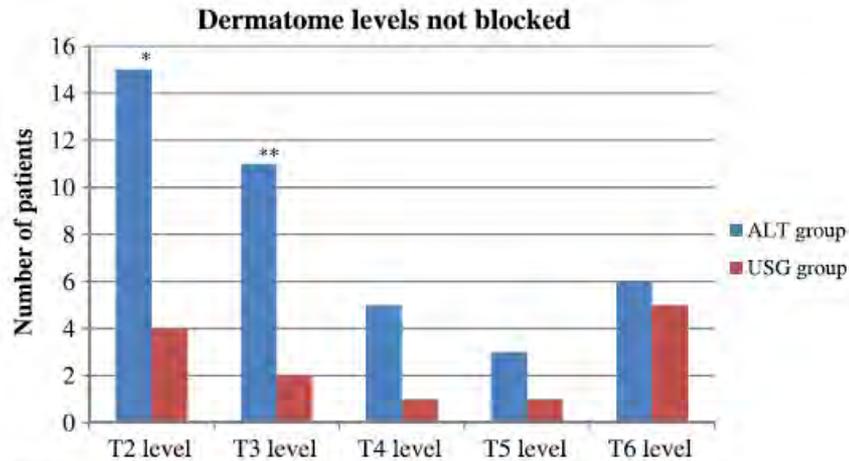


FIGURE 2. Number of patients with specific dermatomes not blocked. * $P = 0.003$, ** $P = 0.006$.

TABLE 4. Complications and Technical Difficulties With Either Technique

	ALT Group n = 36	USG Group n = 36	P
Complications			
Bilateral block	4	1	
Horner syndrome	1	2	
Pleural puncture	1	2	
Blood in needle or catheter	2	0	
Total complication, n (%)	8 (22.22)	5 (13.89)	0.54
Technical difficulties			
Difficult identifying spinous process	1	0	
Two attempts for catheter insertion	7	2	
Poor echogenicity	0	7	
Total difficulties	8	9	1.00

TABLE 2. Success Rate of Paravertebral Block and Number of Segments Blocked

Variable	ALT Group (n = 36)	USG Group (n = 36)	95% CI	P
Successful block, unadjusted for age, %	72.2	94.4	22.2 (5.8–38.7)	0.024*
Successful block, adjusted for age, %	74.3	92.4	18.1 (0.15–36.0)	
Segments blocked, median (range), n	4 (2–5)	5 (1–5)		0.0018*

* $P < 0.05$, statistically significant.

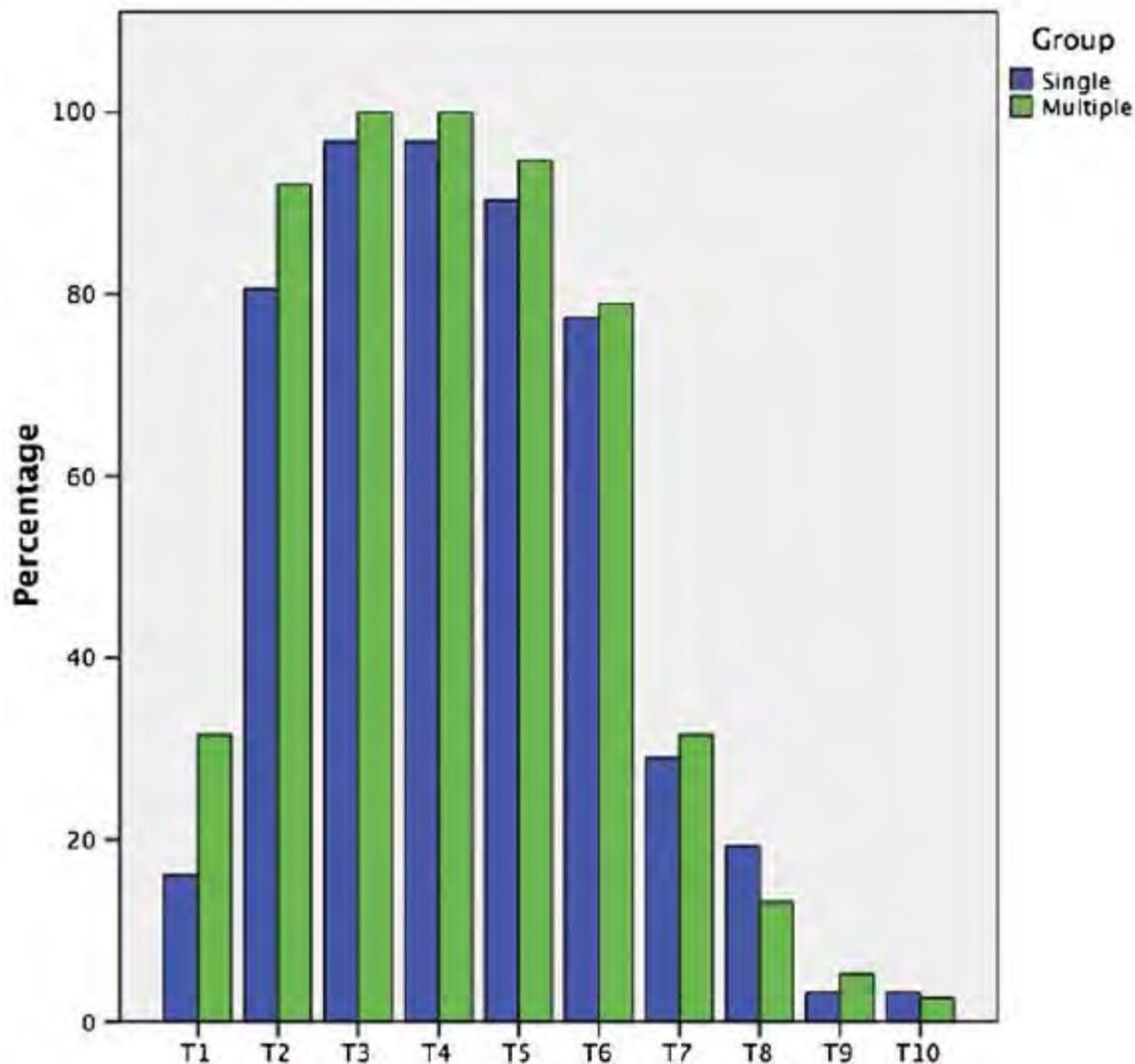
Single-Injection Versus Multiple-Injection Technique of Ultrasound-Guided Paravertebral Blocks

A Randomized Controlled Study Comparing Dermatomal Spread

(Reg Anesth Pain Med 2017;42: 575–581)

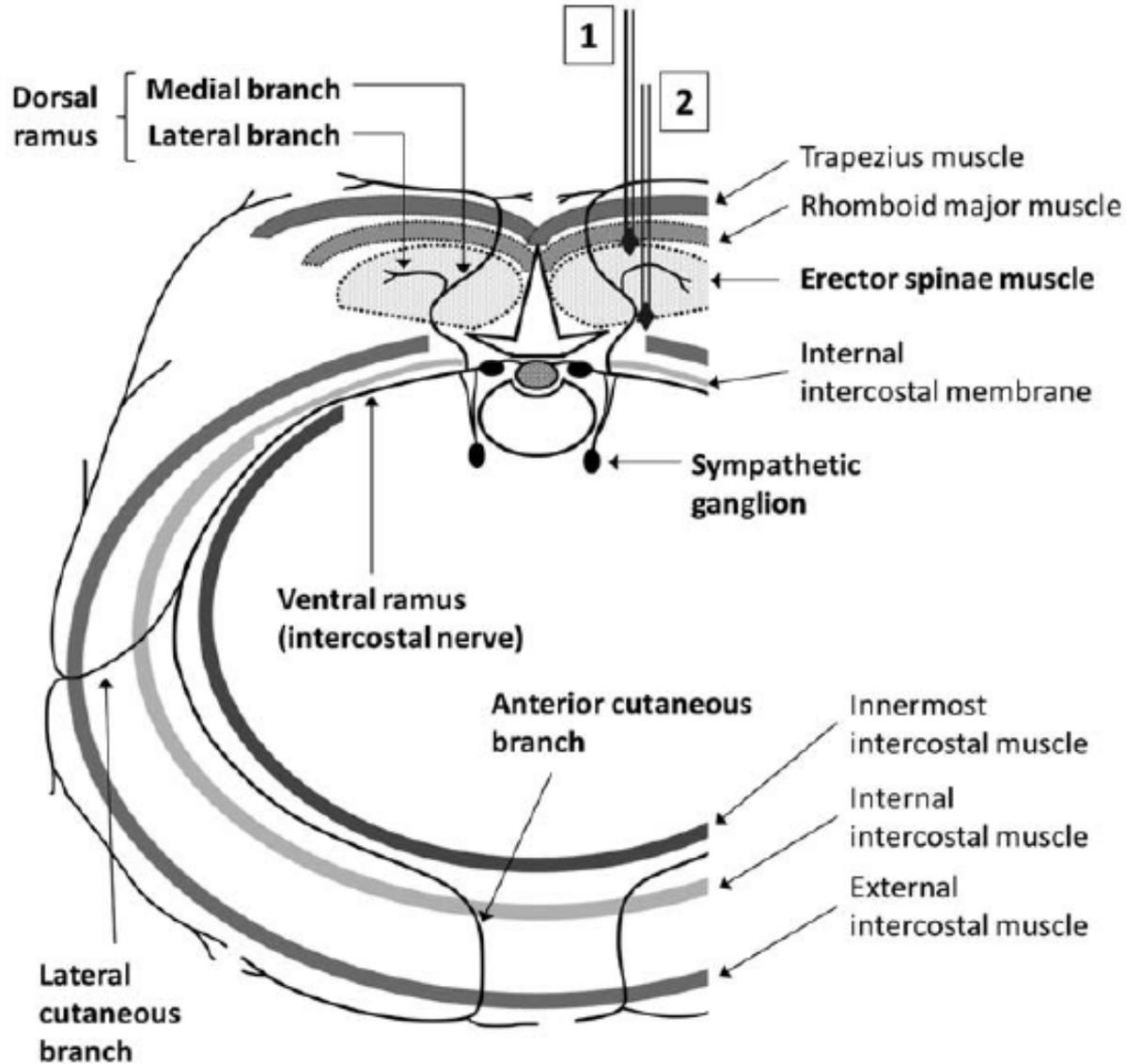


Vishal Uppal, FRCA,* Rakesh V. Sondekoppam, MD,† Parvinder Sodhi, FRCPC,*
David Johnston, FRCA,‡ and Sugantha Ganapathiw, FRCPC§



The patients in the single-injection group received a single-injection PVB at the T3–T4 level with 25 mL of 0.5% ropivacaine and 4 subcutaneous sham injections. Patients in the multiple-injection group received 5 injections of the PVB from T1 to T5 level using 5 mL of 0.5% ropivacaine at each level.

Bloc des Muscles Erecteurs du Rachis



Forero et al.
RAPM
2016; 41:
621-7

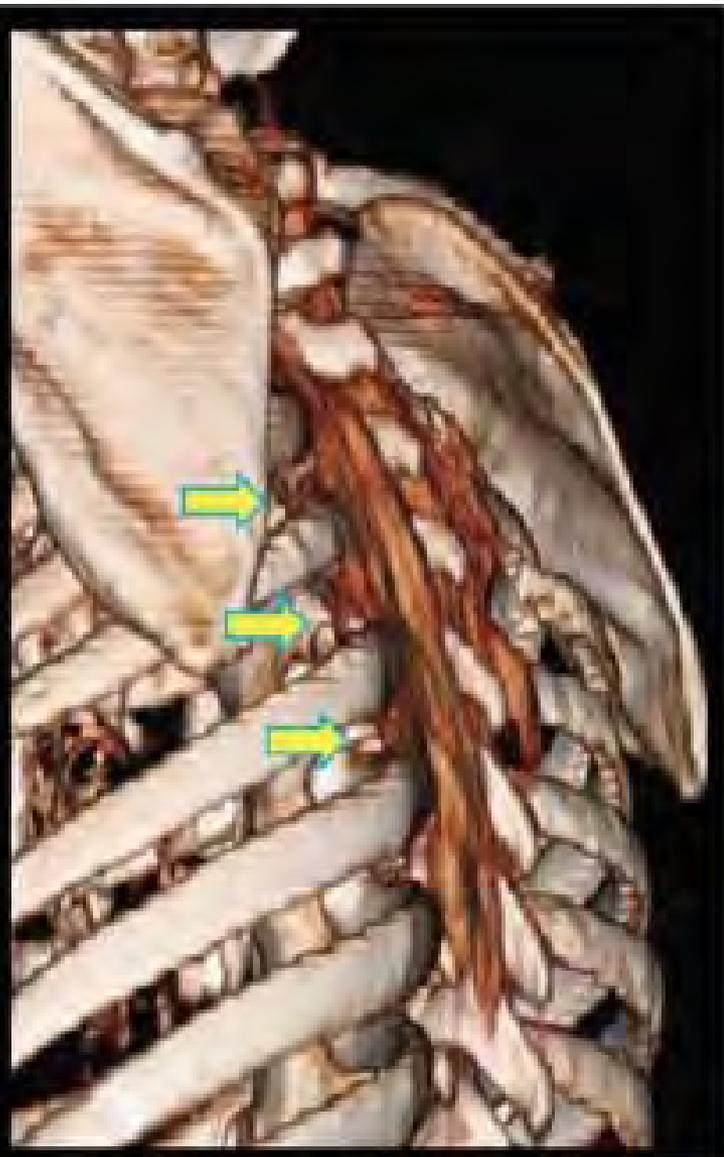
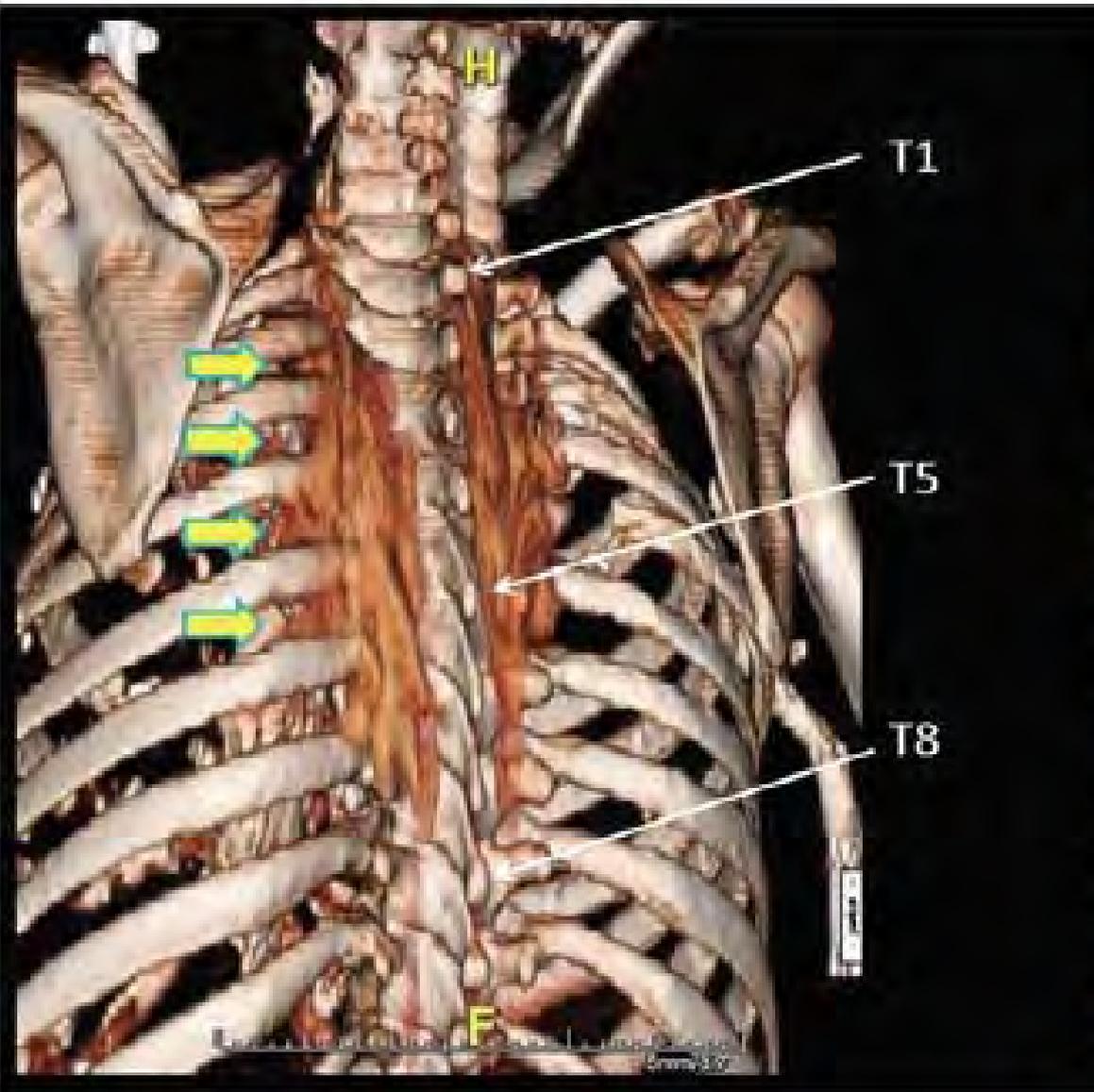


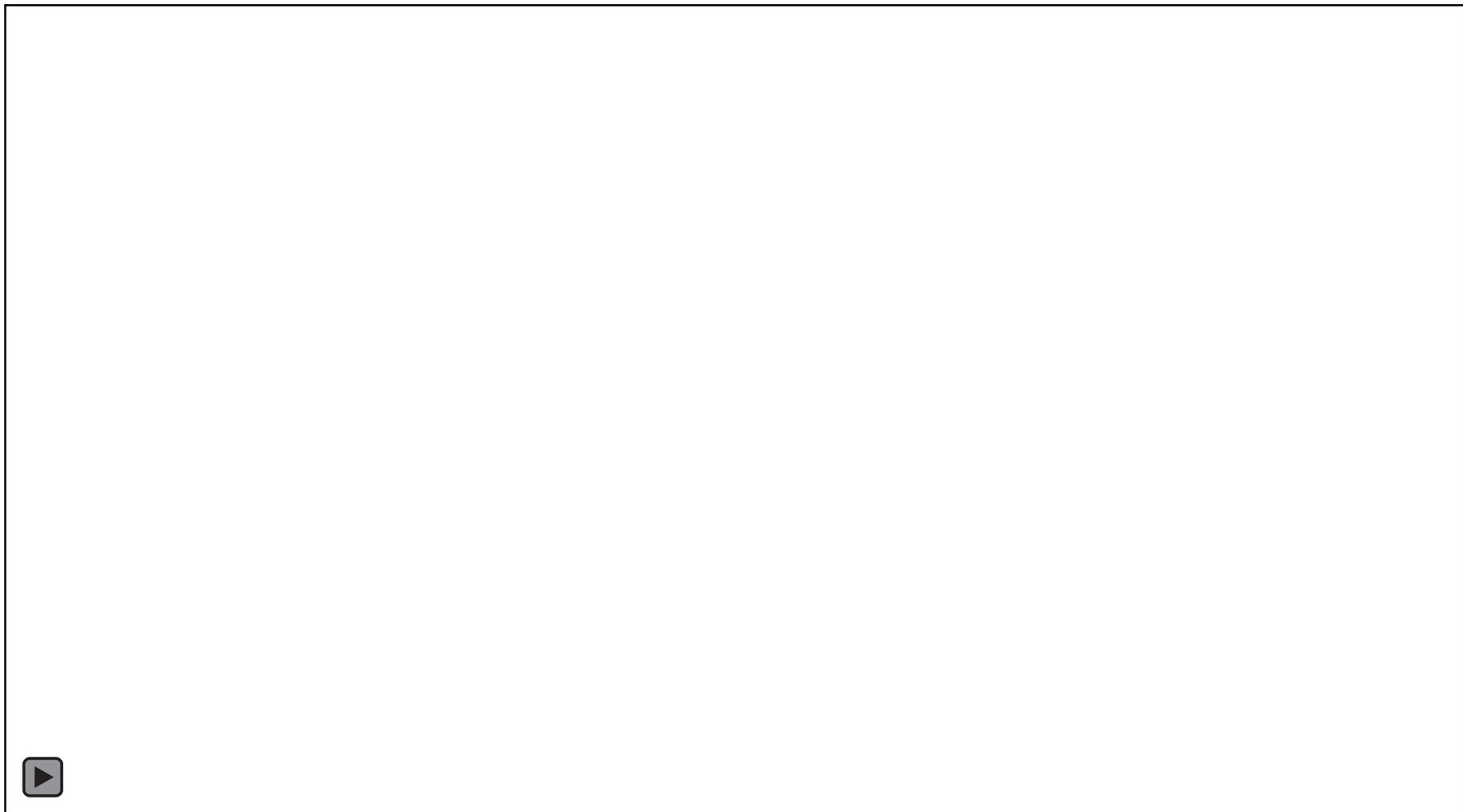


- Différentes applications:
 - **Cancer du sein et reconstruction mammaire**
 - Thoracotomie, douleur chronique post-thoracotomie
 - Métastases / Traumatismes costaux
 - Douleur neuropathique zona
 - Douleur chronique épaule
 - Chirurgie herniaire ombilicale
 - Chirurgie pédiatrique

- Injection unique
- Cathéter pour injection continue







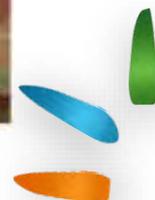
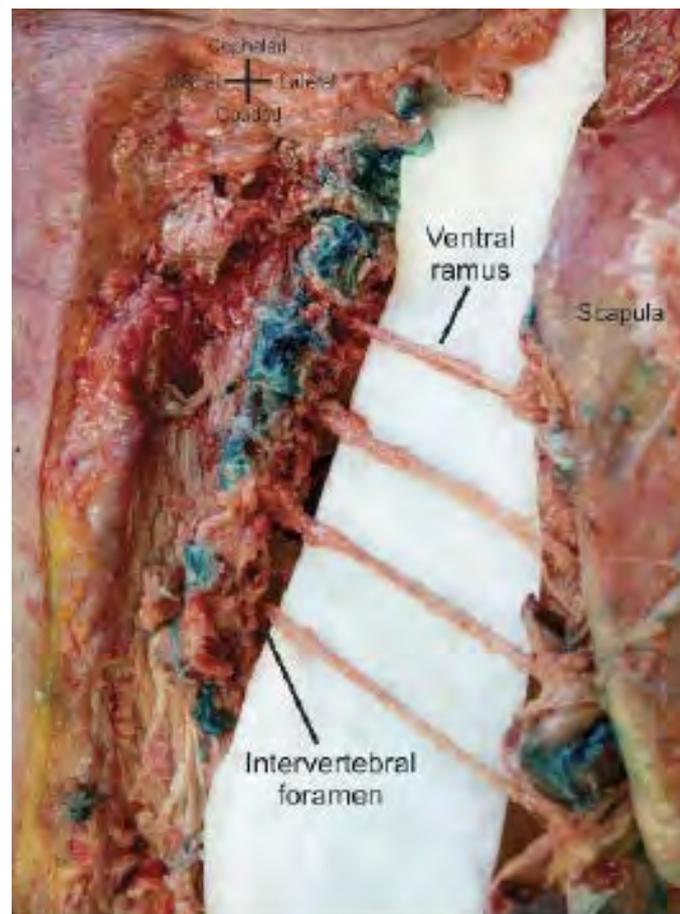
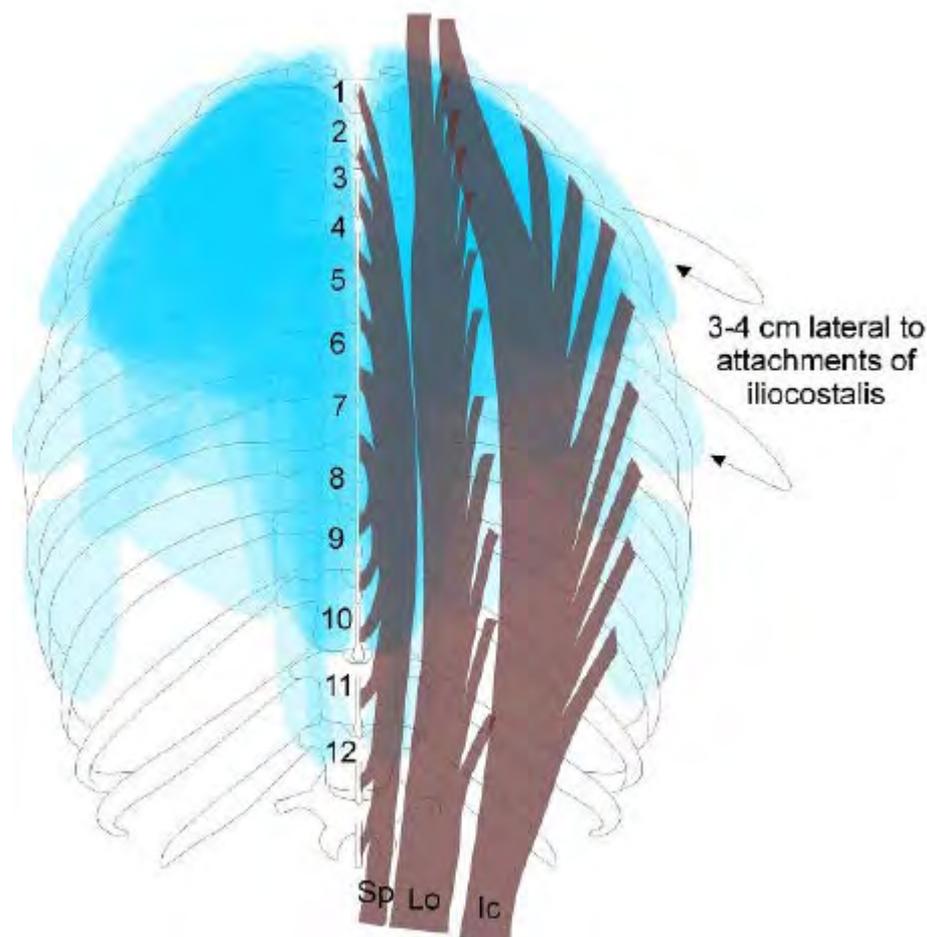
A Cadaveric Study Investigating the Mechanism of Action of Erector Spinae Blockade

Jason Ivanusic, PhD,* Yasutaka Konishi, MD,†‡ and Michael J. Barrington, PhD, MBBS, FANZCA†§

(Reg Anesth Pain Med 2018;43: 567–571)

20ml AT

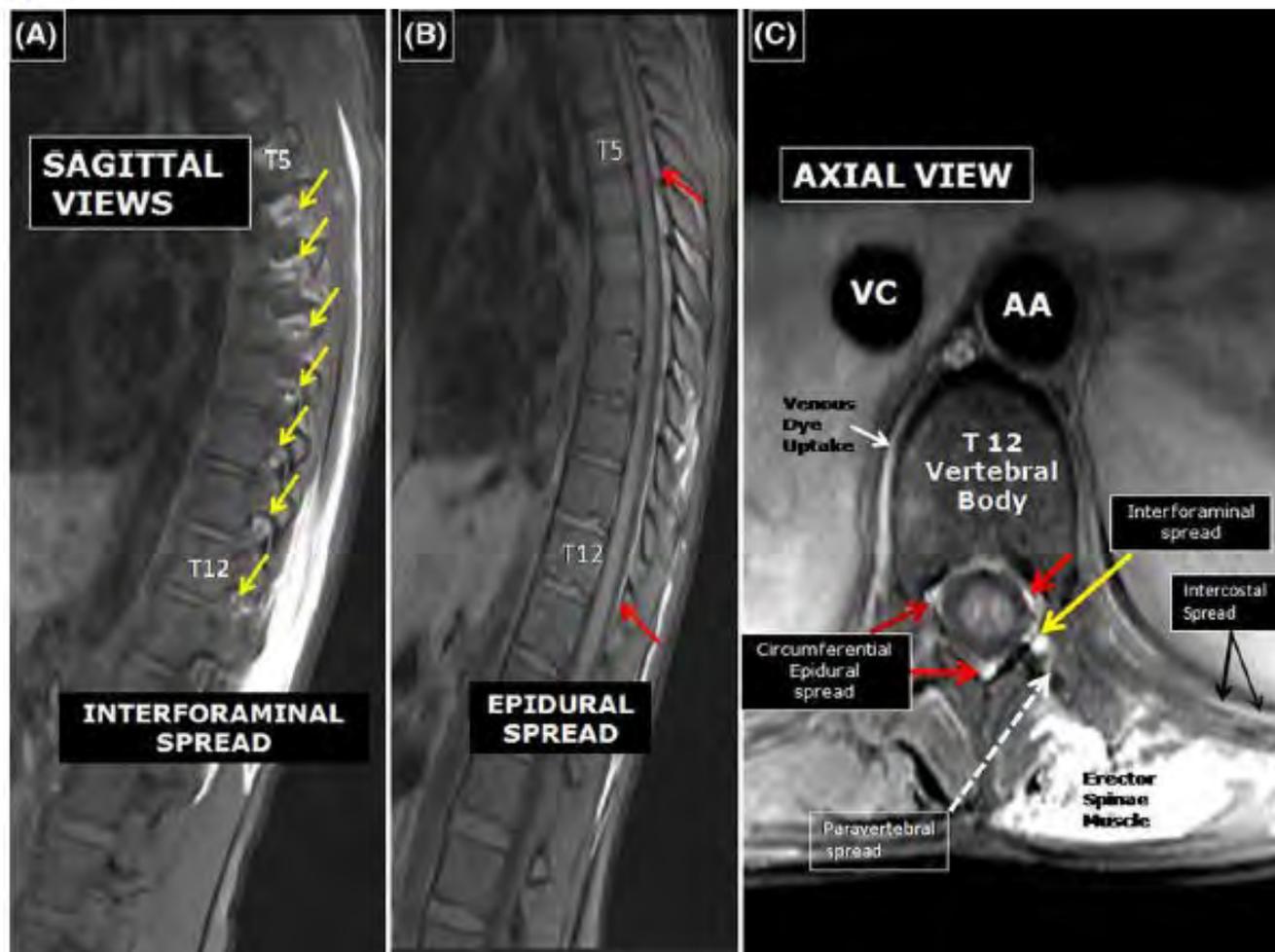
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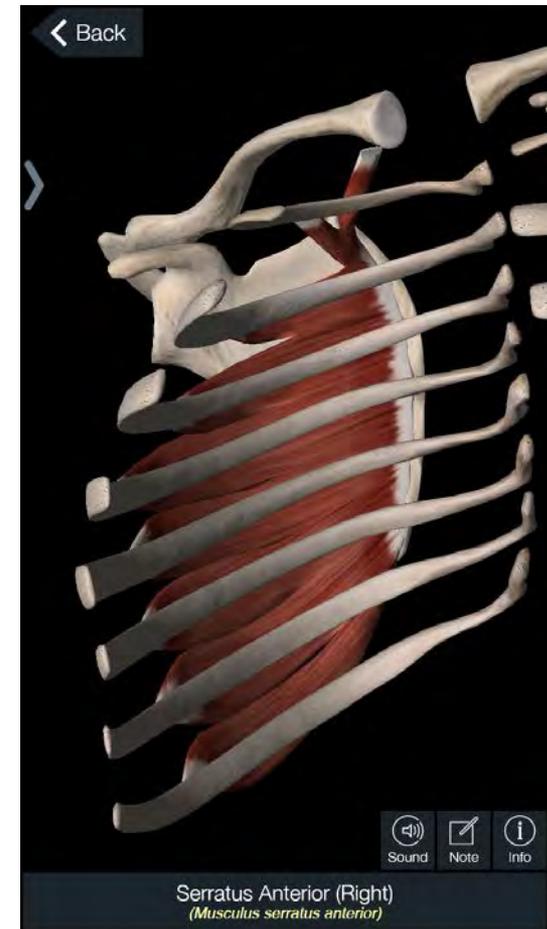
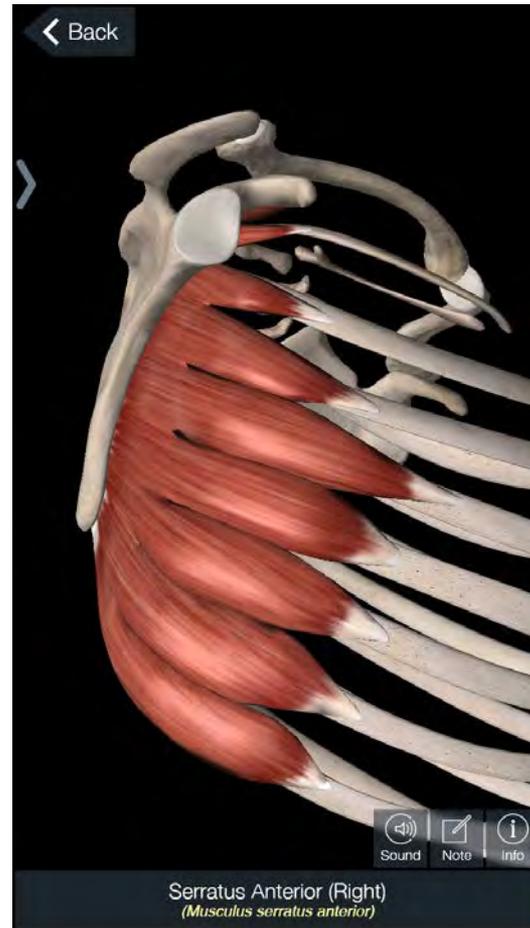
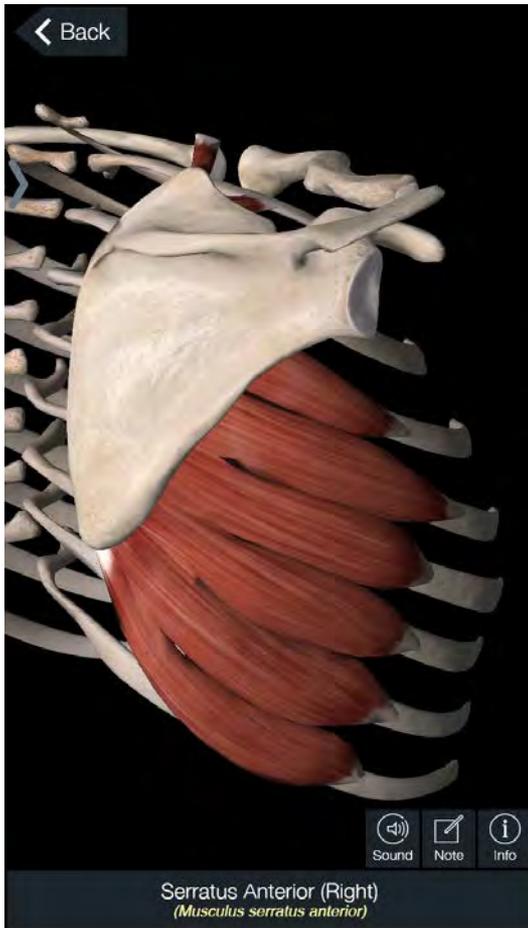


Mechanism of the erector spinae plane block: insights from a magnetic resonance imaging study

Ana Schwartzmann, MD · Philip Peng, MD, MBBS, FRCPC · Mariano Antunez Maciel, MD · Mauricio Forero, MD, FIPP



Muscle Dentelé Antérieur (Serratus)

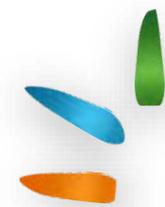
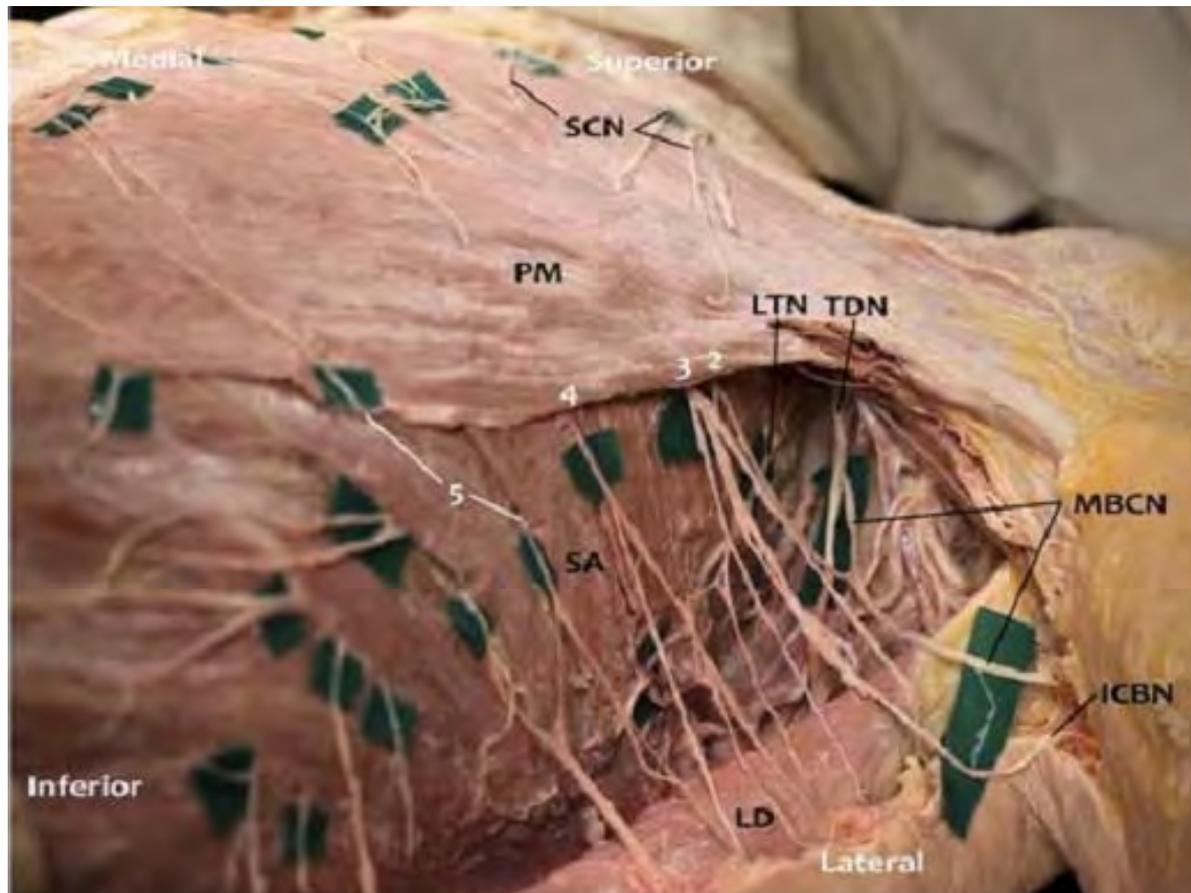


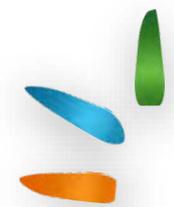
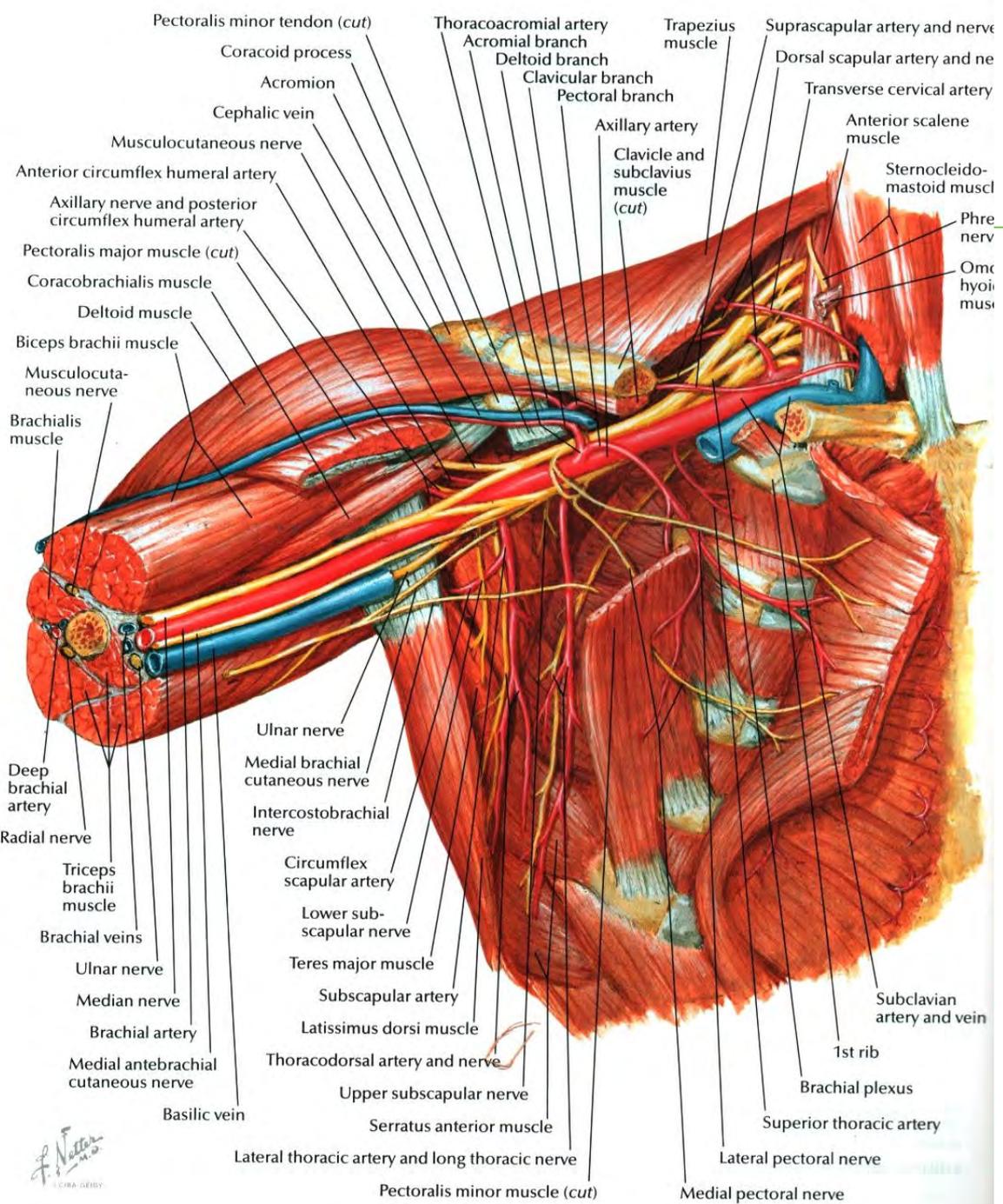
Perioperative Breast Analgesia

A Qualitative Review of Anatomy and Regional Techniques

Glenn E. Woodworth, MD,* Ryan M.J. Ivie, MD,* Sylvia M. Nelson, PhD,*
Cameron M. Walker, PhD,* and Robert B. Maniker, MD†

(Reg Anesth Pain Med 2017;42: 609–631)



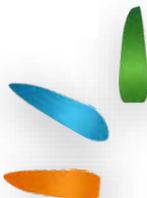
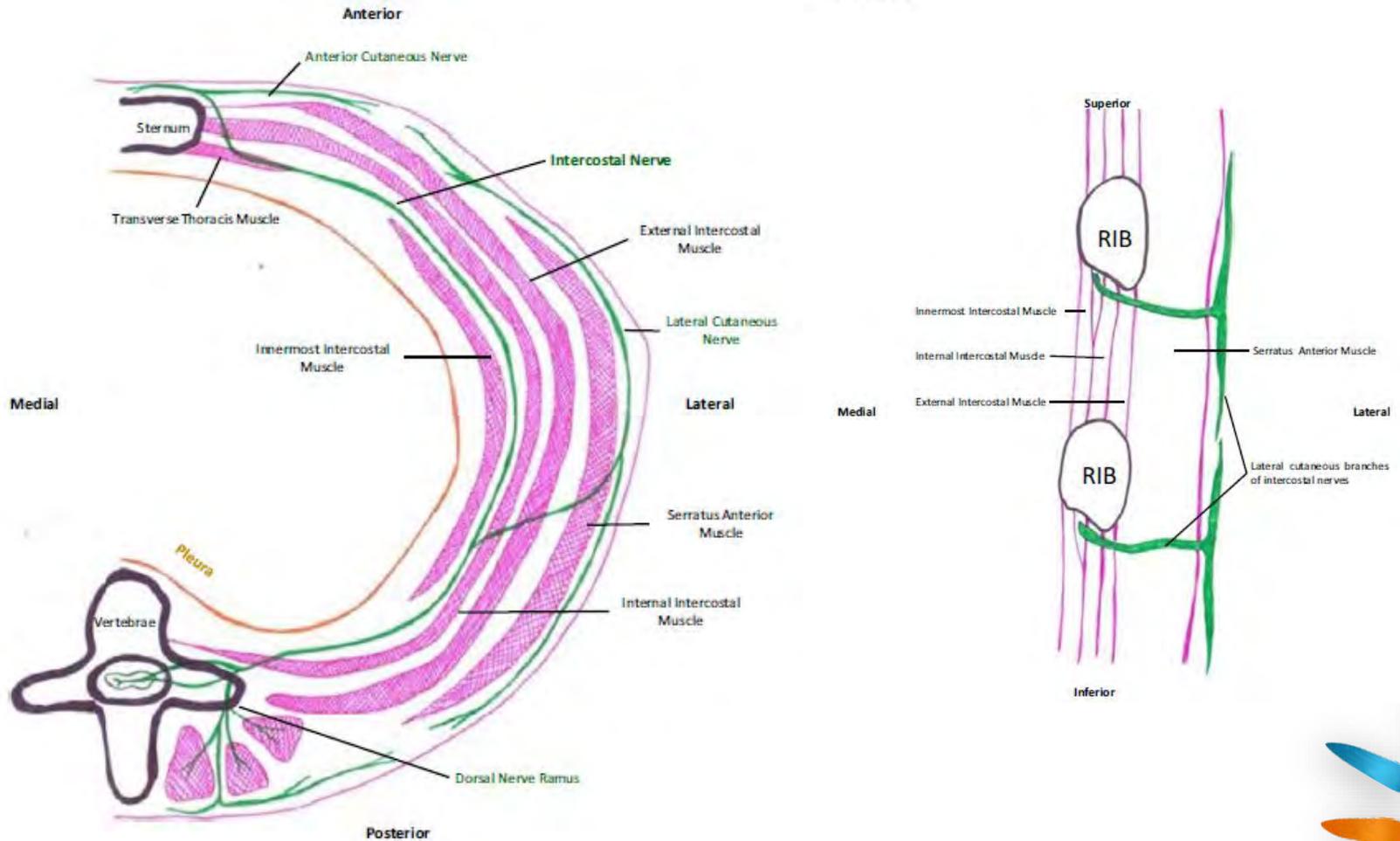


Original Article



An anatomical evaluation of the serratus anterior plane block

J. Mayes,¹ E. Davison,¹ P. Panahi,¹ D. Patten,² F. Eljelani,³ J. Womack⁴ and M. Varma⁴



3D
7

Thickness: 1.45 mm

3D / SE

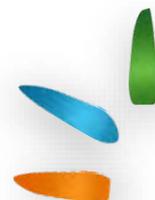
TR 2517.75 msec

TE 129.0 msec

FA 160.0

1. Interpectoral
2. Serratus ant superf
3. Serratus ant profond
4. Serratus lat superf
5. Serratus lat profond
6. Paravertébral
7. Infiltration parasternale

6



Pectoral I Block Does Not Improve Postoperative Analgesia After Breast Cancer Surgery

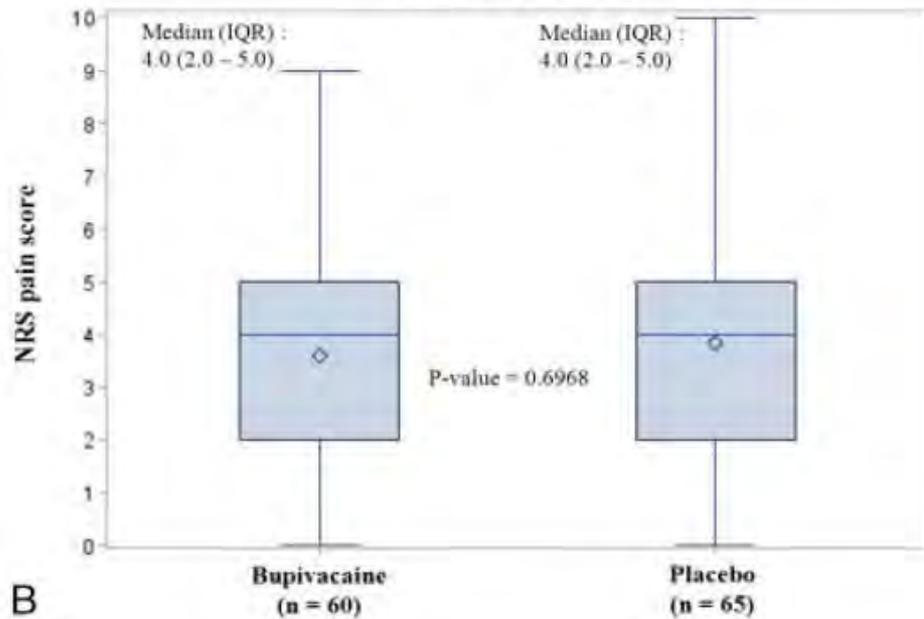
A Randomized, Double-Blind, Dual-Centered Controlled Trial



Jérôme Cros, MD, MSc,* Patrick Sengès, MD,* Suzan Kaprelian, MD, FRCPC,† Julie Desroches, PhD,‡
Caroline Gagnon, MD, FRCPC,‡ Anaïs Labrunie, MSc,§ Benoît Marin, MD, PhD,§ Sabrina Crépin, PharmD,||
Nathalie Nathan, MD, PhD,* and Pierre Beaulieu, MD, PhD, FRCA†

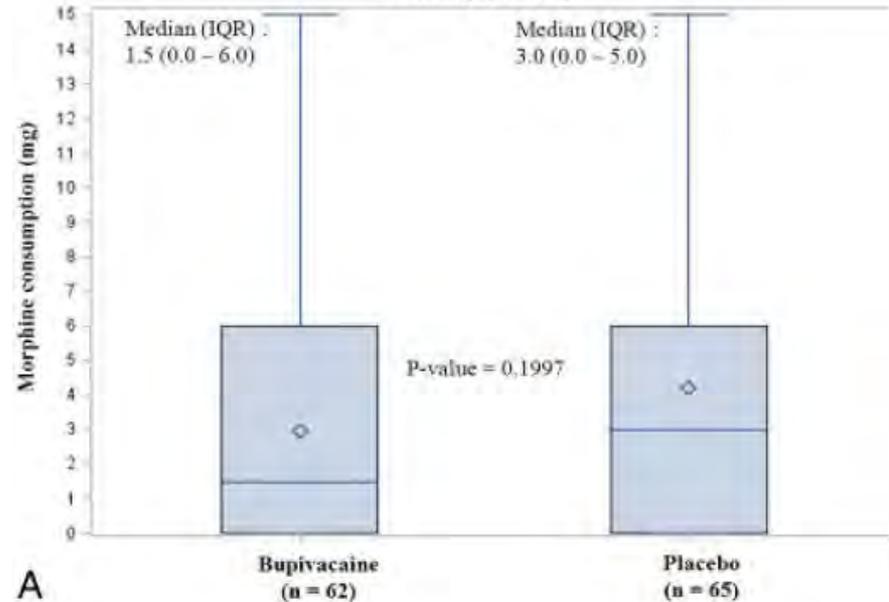
(Reg Anesth Pain Med 2018;43: 596–604)

Globally (N = 125)



B

Globally (N = 127)



A



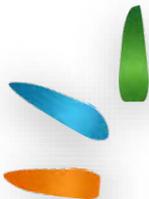
Serratus superficial

Ultrasound description of Pecs II (modified Pecs I): A novel approach to breast surgery

R. Blanco^{a,*}, M. Fajardo^b, T. Parras Maldonado^c

Blanco R, Fajardo M, Parras Maldonado T. Ultrasound description of Pecs II (modified Pecs I): a novel approach to breast surgery. *Revista Espanola de Anestesiologia Reanimacion* 2012; **59**: 470–5.

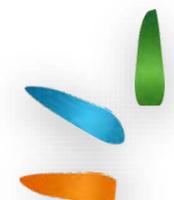
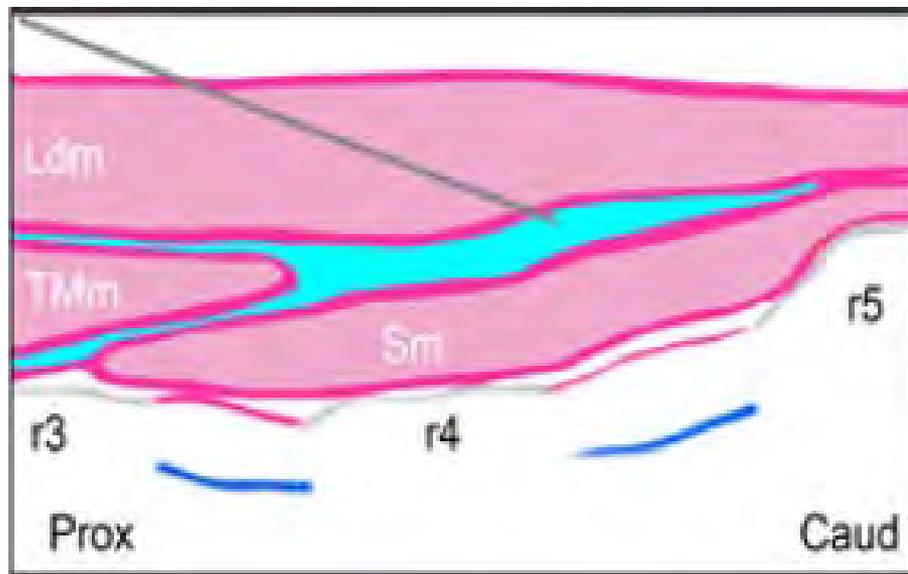
To perform the Pecs II block or “modified Pecs’s block” we use two needle approaches instead of one. The first puncture is a Pecs I block with 10 ml of local anesthetic injected between the pectoralis muscles, and the second puncture gives 20 ml of local anesthetic between the Pmm and the serratus muscle.



Original Article

Serratus plane block: a novel ultrasound-guided thoracic wall nerve block

R. Blanco,¹ T. Parras,² J. G. McDonnell³ and A. Prats-Galino⁴



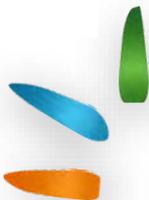
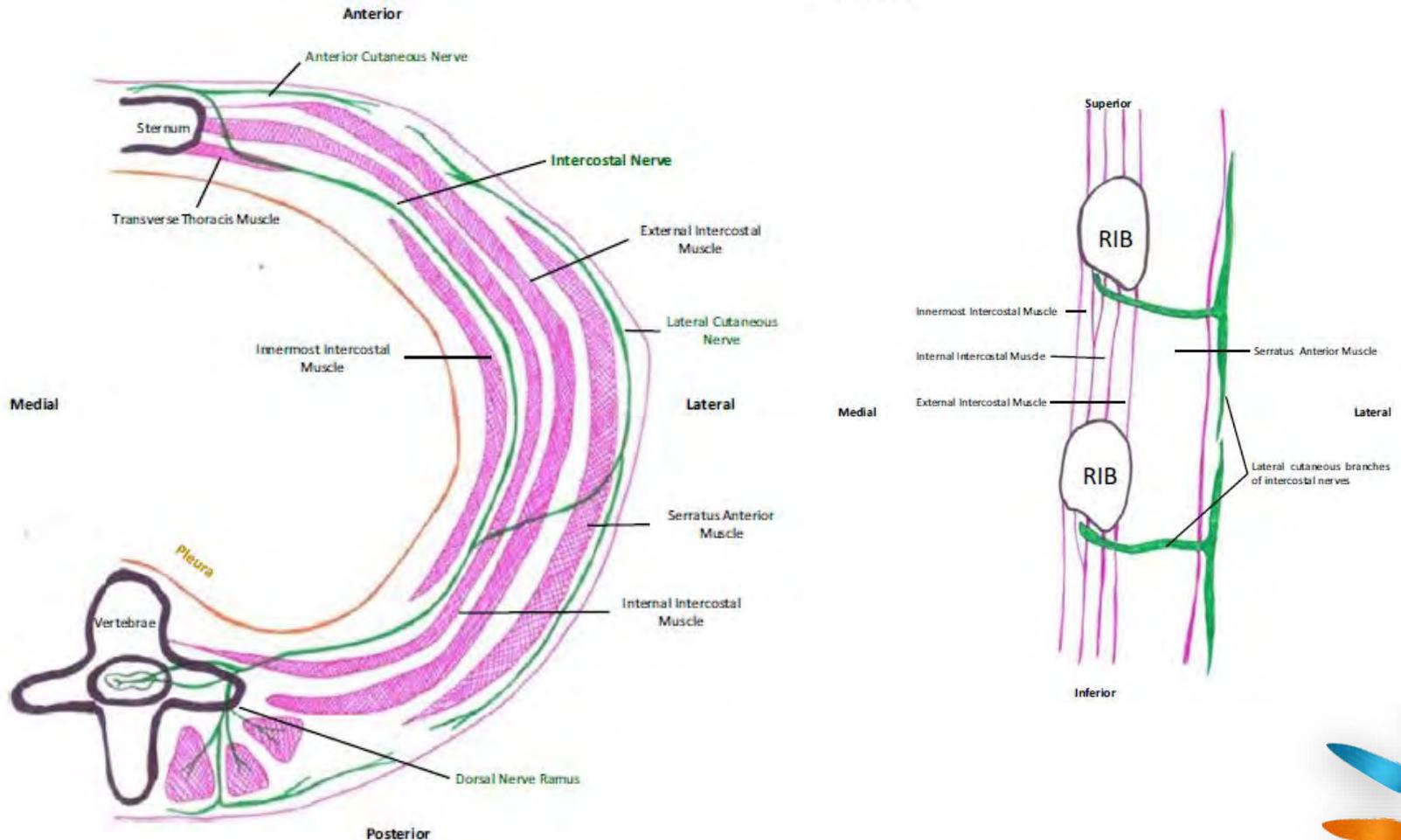
Serratus profund

Original Article



An anatomical evaluation of the serratus anterior plane block

J. Mayes,¹ E. Davison,¹ P. Panahi,¹ D. Patten,² F. Eljelani,³ J. Womack⁴ and M. Varma⁴



Redefining PECS Blocks for Postmastectomy Analgesia

Mario Fajardo Pérez, MD
Osmany Duany, MD
Patrcia Alfaro de la Torre, MD
Universidad del Tajo Hospital
Amazona Central S/N
Aranjuez, Madrid, Spain

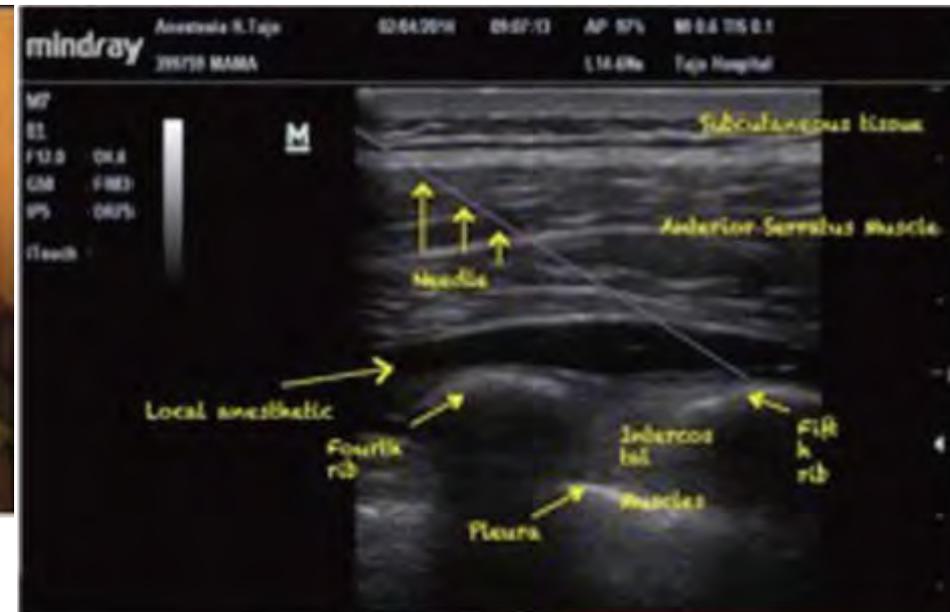


Thoracic Paravertebral Block and Its Effects on Chronic Pain and Health-Related Quality of Life After Modified Radical Mastectomy

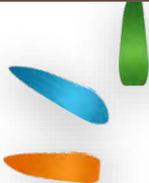
Patricia Alfaro-de la Torre, MD
Department of Anesthesiology
Hospital del Tajo
Aranjuez, Madrid, Spain

Mario Fajardo-Pérez, MD
Department of Anesthesiology
Hospital de Móstoles
Madrid, Spain

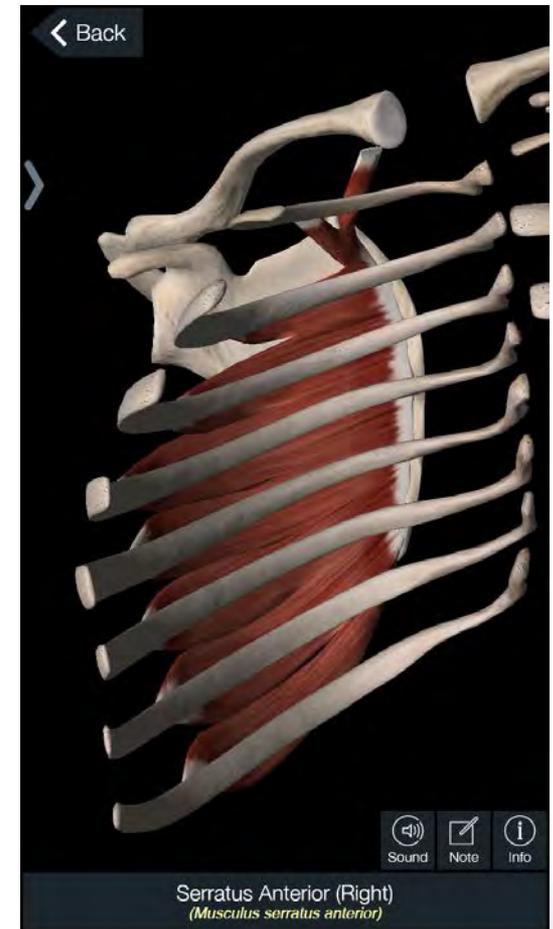
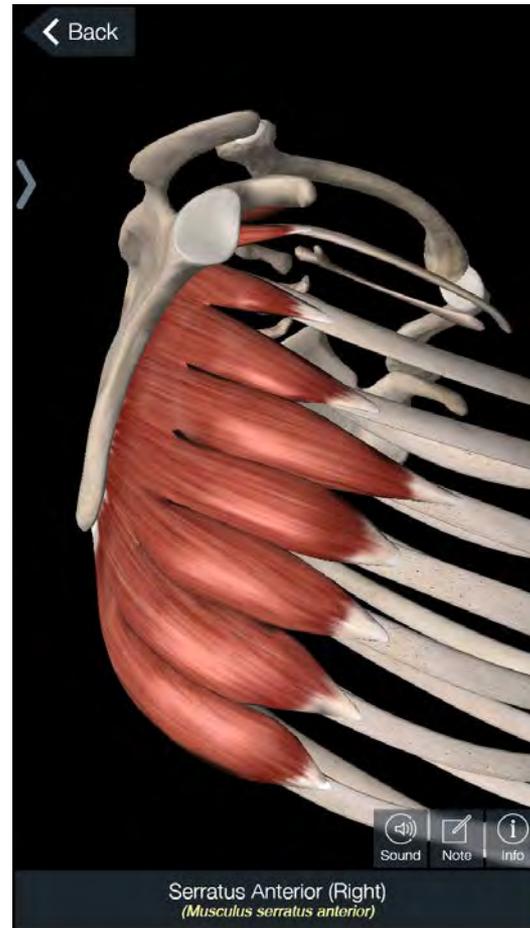
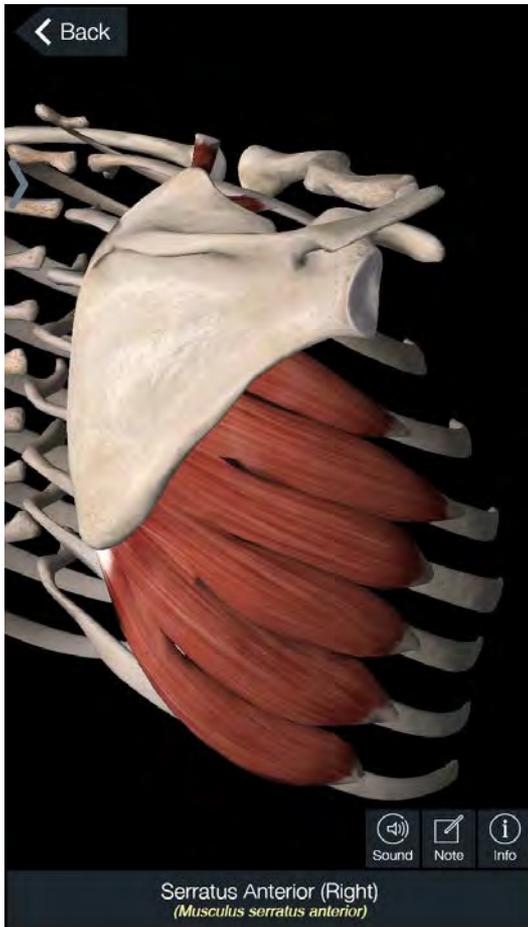
Regional Anesthesia and Pain Medicine • Volume 40, Number 2, March-April 2015 177-78



○ Pas de bloc du nerf long thoracique !

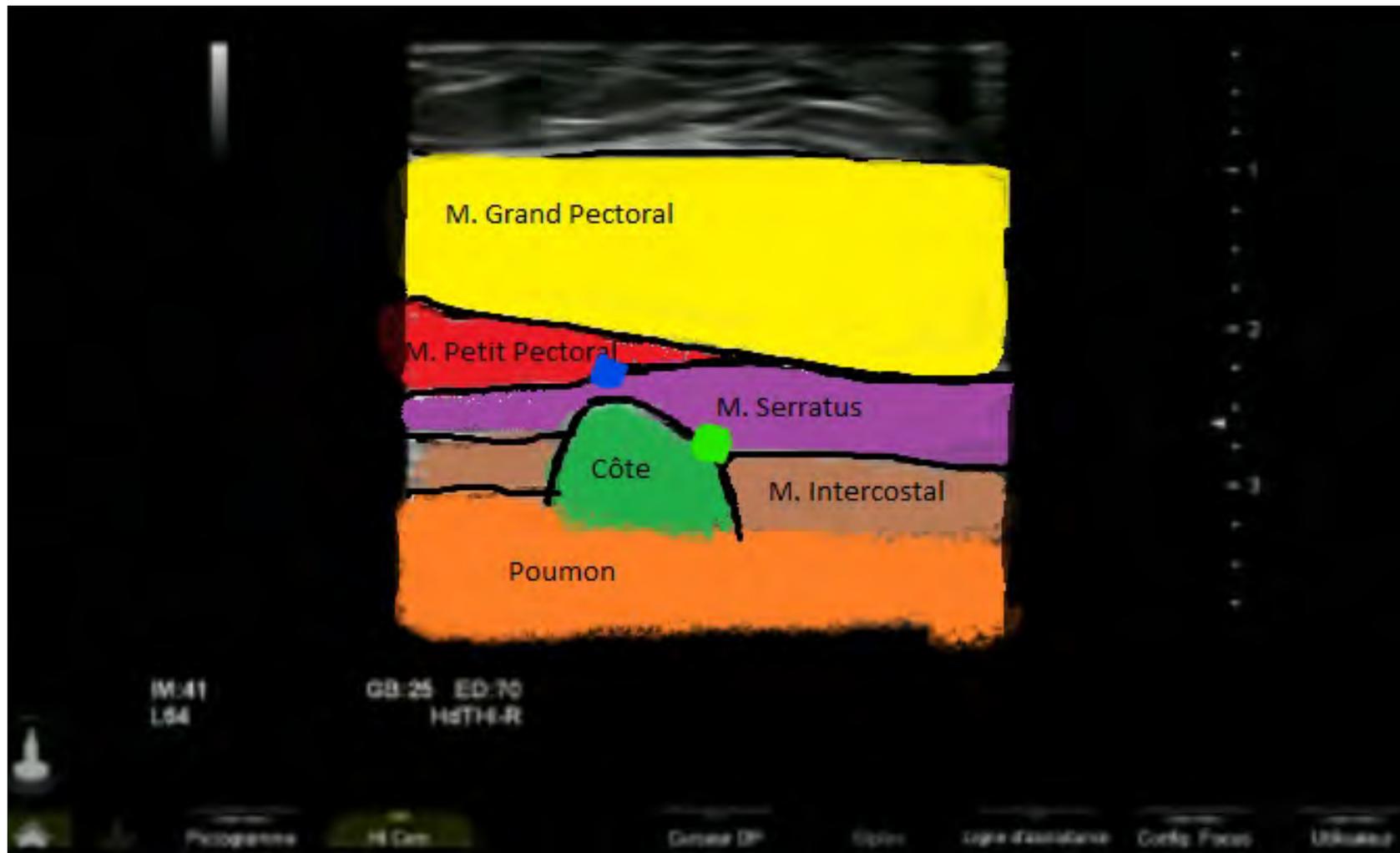


Muscle Dentelé Antérieur (Serratus)



En pratique

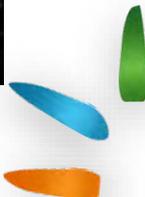
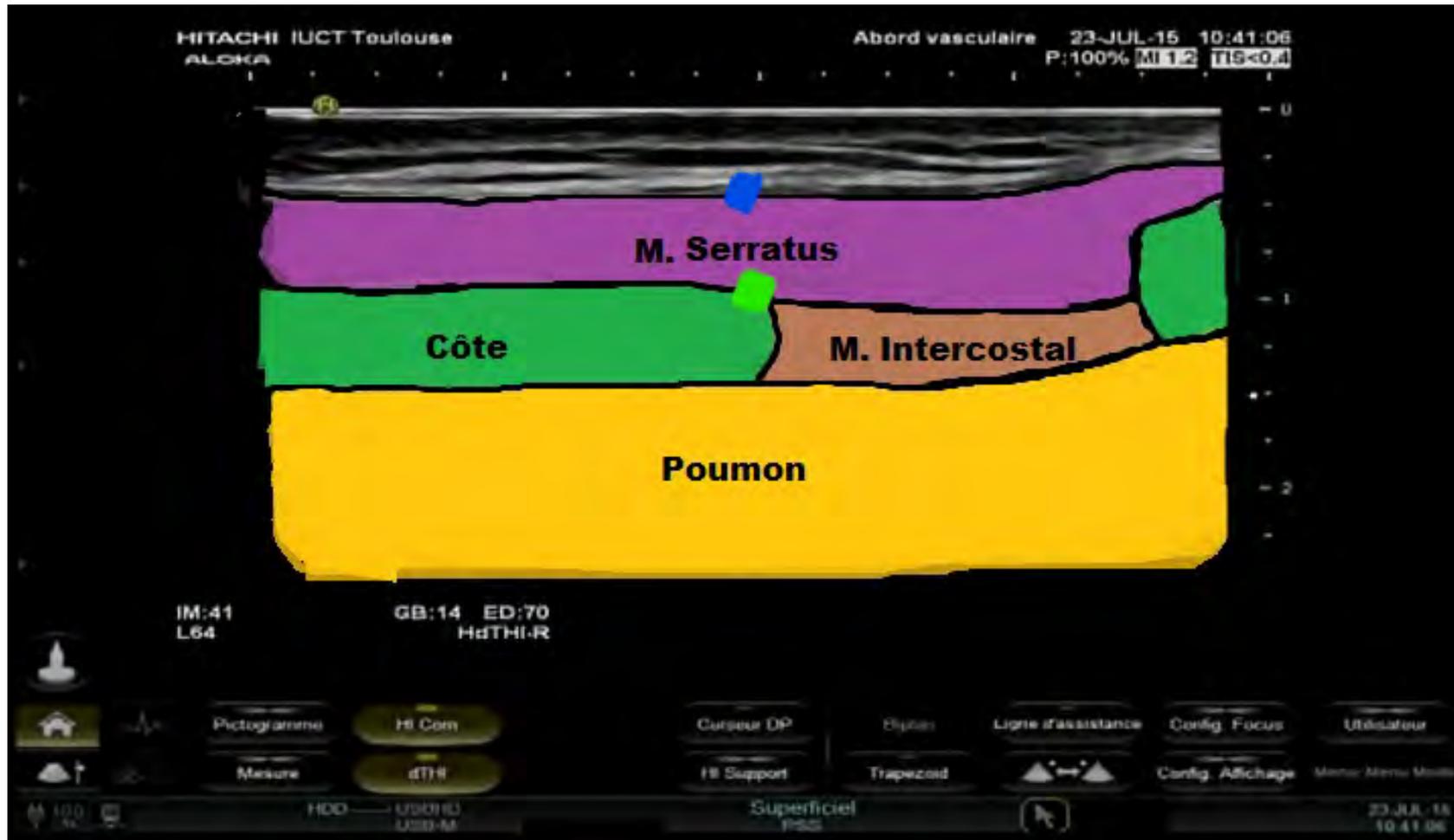
USB voie antérieure



USB voie ant



USB voie latérale



USB voie latérale



Interfascial block at the serratus muscle plane versus conventional analgesia in breast surgery: a randomized controlled trial

Reg Anesth Pain Med 2019;**44**:52–58.

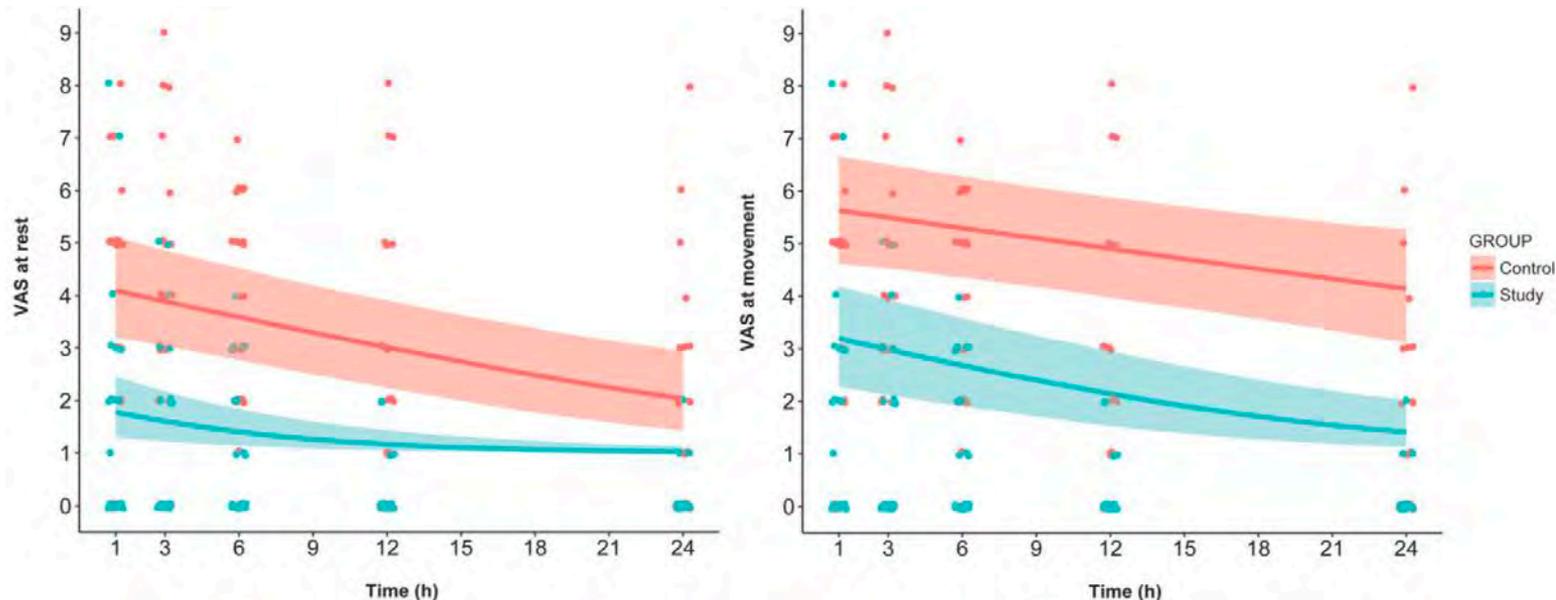
Guido Mazzinari,^{1,2} Lucas Rovira,³ Alma Casasepere,¹ Juan Ortega,¹ Luis Cort,¹ José-Miguel Esparza-Miñana,^{1,2,4} Moncef Belaouchi¹

Table 2 Intraoperative and postoperative opioid requirements by group

	Control	Study	P values
Total opioid 24 hours' dose (mg)	30 (26 to 35)	18.5 (17 to 24)	<0.001
Intraoperative fentanyl (µg)	225 (174 to 300)	155 (100 to 247)	0.038
Postoperative morphine (mg)	6 (3 to 7)	2 (2 to 4)	<0.001

Values are median (95% CI).

30ml USB lat 1 inj
Vs.
Pas de bloc



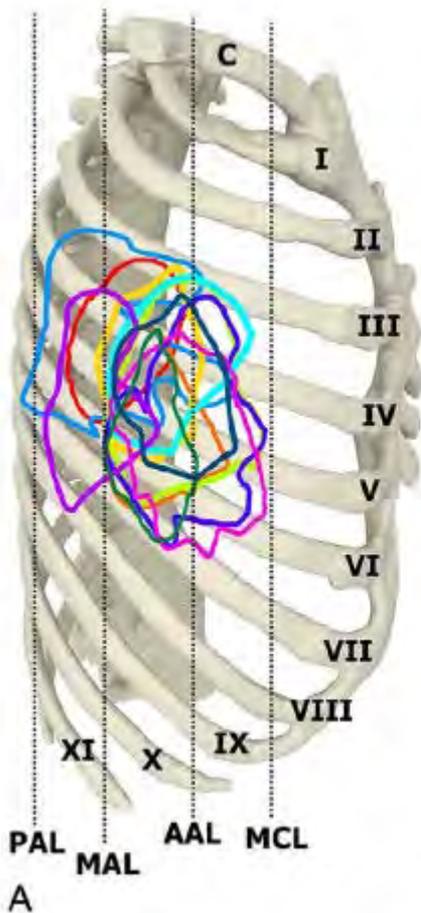
Serratus Plane Block

A Cadaveric Study to Evaluate Optimal Injectate Spread

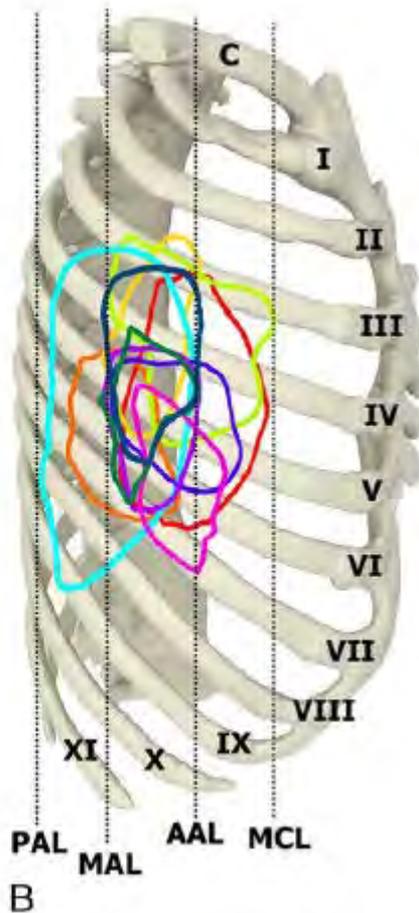
Abhijit Biswas, MBBS, MSc, FCARCSI, EDRA,* Valera Castanov, BSc, † Zhi Li, MSc, BSc, †
Anahi Perlas, MD, FRCPC, ‡ Richelle Kruisselbrink, MD, FRCPC, ‡
Anne Agur, PhD, MSc, BSc, OT, † and Vincent Chan, MD, FRCPC, FRCA ‡



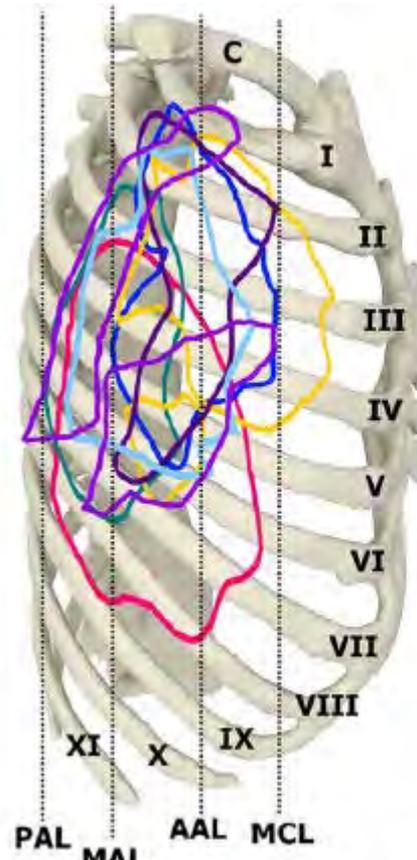
(Reg Anesth Pain Med 2018;43: 854–858)



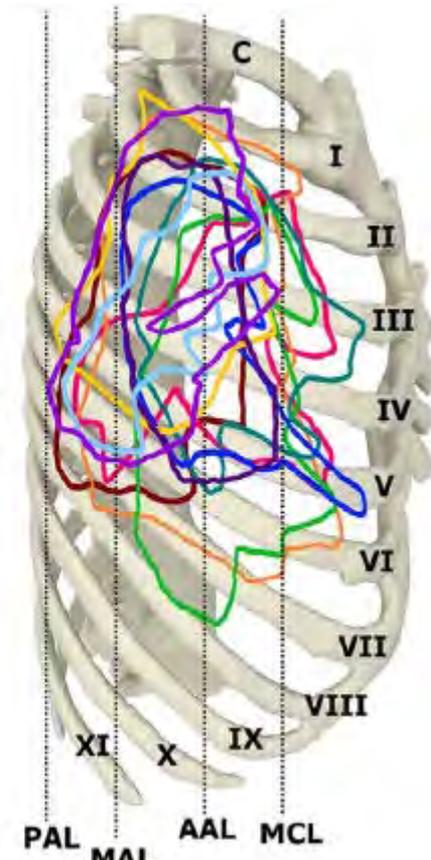
1 inject° T5 superficiele



1 inject° T5 profonde



2 inject° T3-T5 superficiele



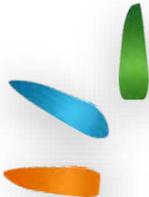
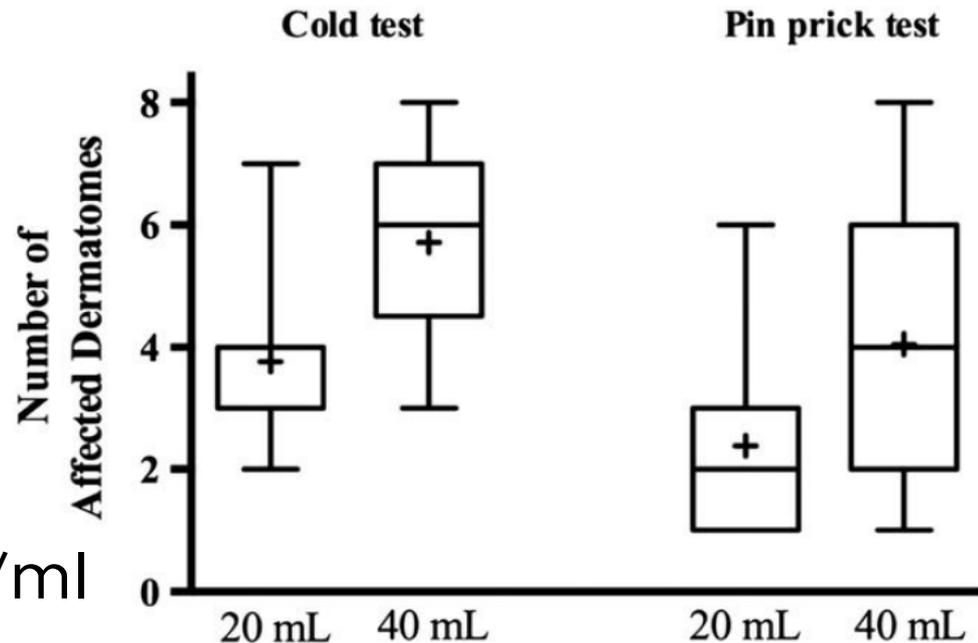
2 inject° T3-T5 profonde

Injection Volume and Anesthetic Effect in Serratus Plane Block

Tatsuya Kunigo, MD,* Takeshi Murouchi, MD, PhD,†
Shuji Yamamoto, MD, PhD,‡ and Michiaki Yamakage, MD, PhD§

(Reg Anesth Pain Med 2017;42: 737–740)

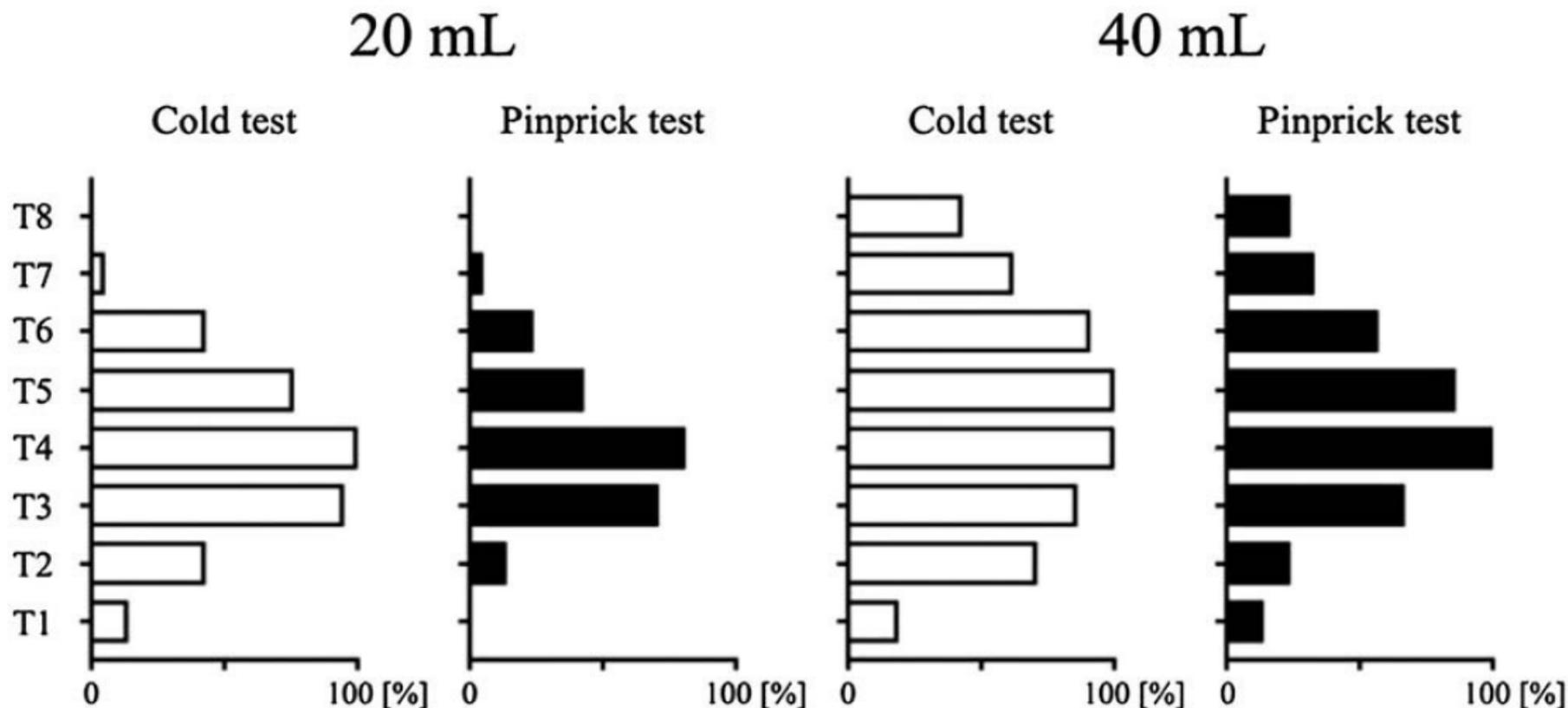
- 42 patientes, Xie sein
- SPB niveau 4^{ème} côte
- 1 seule injection
- 20 ou 40ml Ropi 3,75mg/ml
- Ponction sous échographie



Injection Volume and Anesthetic Effect in Serratus Plane Block

Tatsuya Kunigo, MD,* Takeshi Murouchi, MD, PhD,†
Shuji Yamamoto, MD, PhD,‡ and Michiaki Yamakage, MD, PhD§

(Reg Anesth Pain Med 2017;42: 737–740)

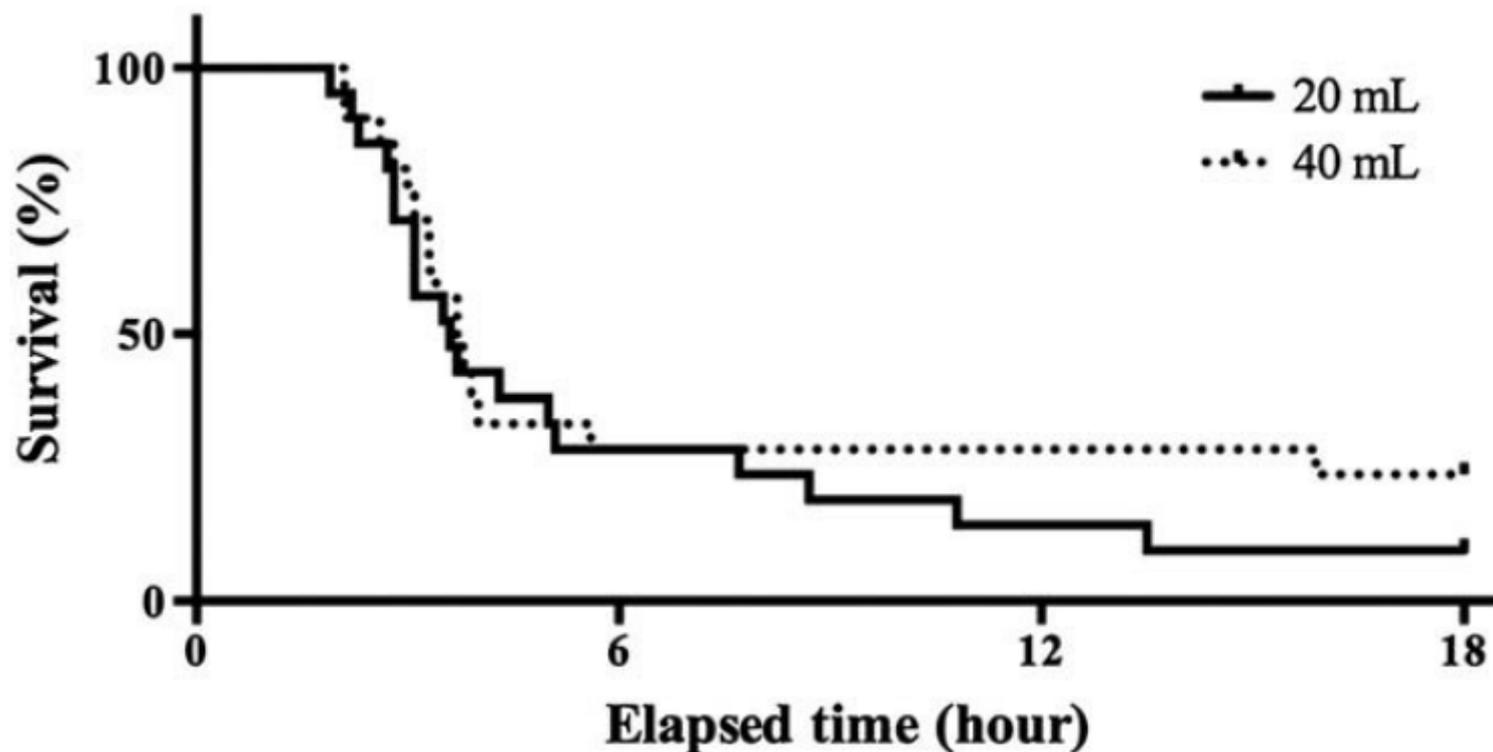


Injection Volume and Anesthetic Effect in Serratus Plane Block

Tatsuya Kunigo, MD,* Takeshi Murouchi, MD, PhD,†
Shuji Yamamoto, MD, PhD,‡ and Michiaki Yamakage, MD, PhD§

(Reg Anesth Pain Med 2017;42: 737–740)

• Mais...



Too Deep or Not Too Deep?

A Propensity-Matched Comparison of the Analgesic Effects of a Superficial Versus Deep Serratus Fascial Plane Block for Ambulatory Breast Cancer Surgery

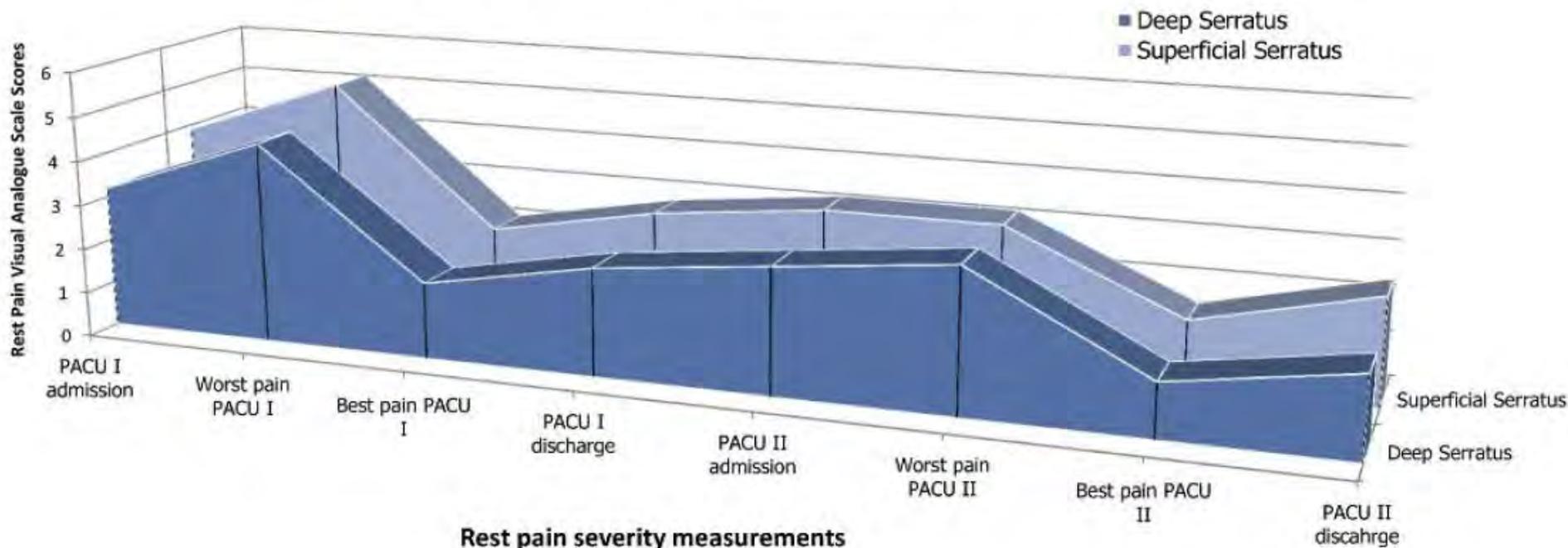


Faraj W. Abdallah, MD, *†‡ Tulin Cil, MD, MEd, FRCSC, §|| David MacLean, MD, * Caveh Madjdpour, MD, **
Jaime Escallon, MD, FRCSC, §|| John Semple, MD, FRCSC, §|| and Richard Brull, MD, FRCPC ††

(Reg Anesth Pain Med 2018;43: 480–487)



Area Under the Curve for Rest Pain Scores



ANESTHESIOLOGY

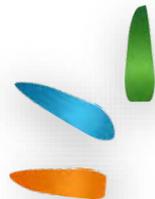
Pectoralis-II Myofascial Block and Analgesia in Breast Cancer Surgery

A Systematic Review and Meta-analysis

Nasir Hussain, M.Sc., M.D., Richard Brull, M.D., F.R.C.P.C.,
Colin J. L. McCartney, M.B.Ch.B., Ph.D., F.R.C.A., F.R.C.P.C.,
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ANESTHESIOLOGY 2019; 131:630–48

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)
Ahmed 2018	+	?	?	-	+	?
Bashandy 2015	+	?	?	-	+	?
El-Sheikh 2016	?	?	?	+	?	?
Hassn 2015	+	+	+	+	+	?
Kanitkar 2016	?	?	?	?	?	?
Kim 2018	+	+	?	-	+	+
Kulhari 2017	+	+	+	+	+	?
Kumar 2018	+	+	?	-	+	?
Neethu 2018	+	+	?	-	+	+
Scimia 2016	?	?	?	+	?	?
Syal 2017	+	+	+	+	+	?
Versyck 2017	+	+	+	+	-	+
Wahba 2014	+	+	?	+	+	?
Wang 2018	+	?	-	-	+	+

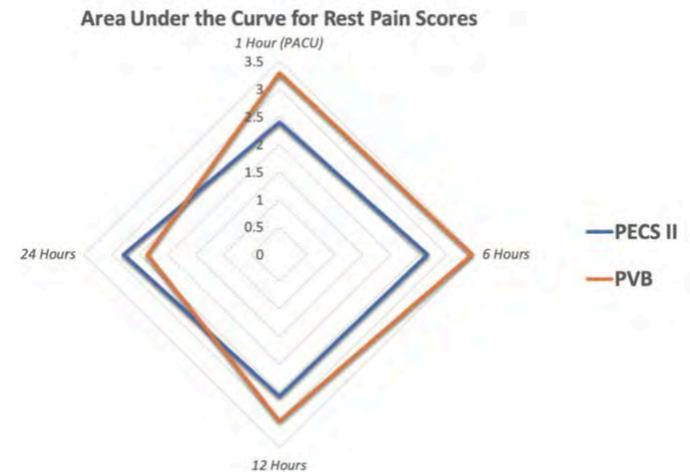
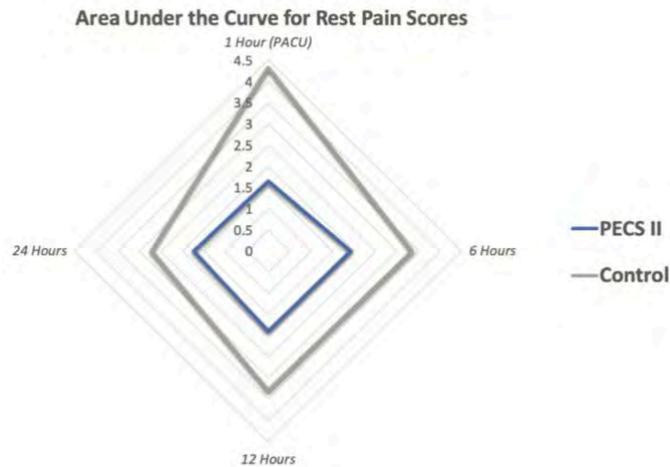


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Conclusions: We found that Pectoralis-II reduces pain intensity and morphine consumption during the first 24 h postoperatively when compared with systemic analgesia alone; and it also offers analgesic benefits noninferior to those of paravertebral block after breast cancer surgery. Evidence supports incorporating Pectoralis-II into multimodal analgesia and also using it as a paravertebral block alternative in this population.

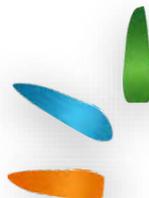


Tableau synthèse



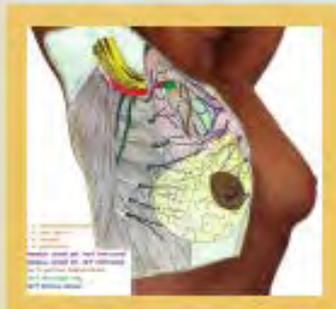
	Bloc de référence	Alternative
Mastectomie	Paravertébral (T4) Bloc MER (?)	Interpectoral + serratus Latéral + TTM*
Mastectomie + curage	Paravertébral (T2) Bloc MER (?)	Interpectoral + serratus Latéral + TTM*
Prothèse mammaire	Interpectoral	-
Tumorectomie +/- GS ou curage	Serratus Antérieur	Serratus Latéral



LES TECHNIQUES D'ALR POUR LA CHIRURGIE DU SEIN

R. Fuzier¹, M. Benkhadra¹, R. Azza¹, A. Daboussi¹, S. Leclerc¹, S. Pierre²

¹Institut Claudius Regaud, IUCT-Oncopole, Toulouse
²Centre Hospitalier Louis Pasteur, Dole



Bloc interpectoral



Diffusion interpectorale



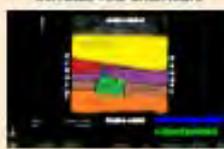
Effet tunnel paravertébral



Bloc serratus voie antérieure abord profond



Serratus voie antérieure



Bloc serratus voie latérale abord profond



Serratus voie latérale



Bloc paravertébral



Bloc paravertébral



	Bloc de référence	Alternative
Mastectomie	Paravertébral (T4)	Interpectoral + serratus latéral + TTM*
Mastectomie + curage	Paravertébral (T2)	Interpectoral + serratus latéral + TTM*
Prothèse mammaire	Interpectoral	-
Tumorectomie +/- OS ou curage	Interpectoral + serratus antérieur	Interpectoral + serratus latéral

* Bloc serratus latéral ou TTM = T1-T2 ou T3-T4

