Плоскостные блоки груди

Яковенко М.П.
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Review > Reg Anesth Pain Med. 2018 May;43(4):341-346. doi: 10.1097/AAP.0000000000000750.

Interfascial Plane Blocks: Back to Basics

Hesham Elsharkawy, Amit Pawa, Edward R Mariano

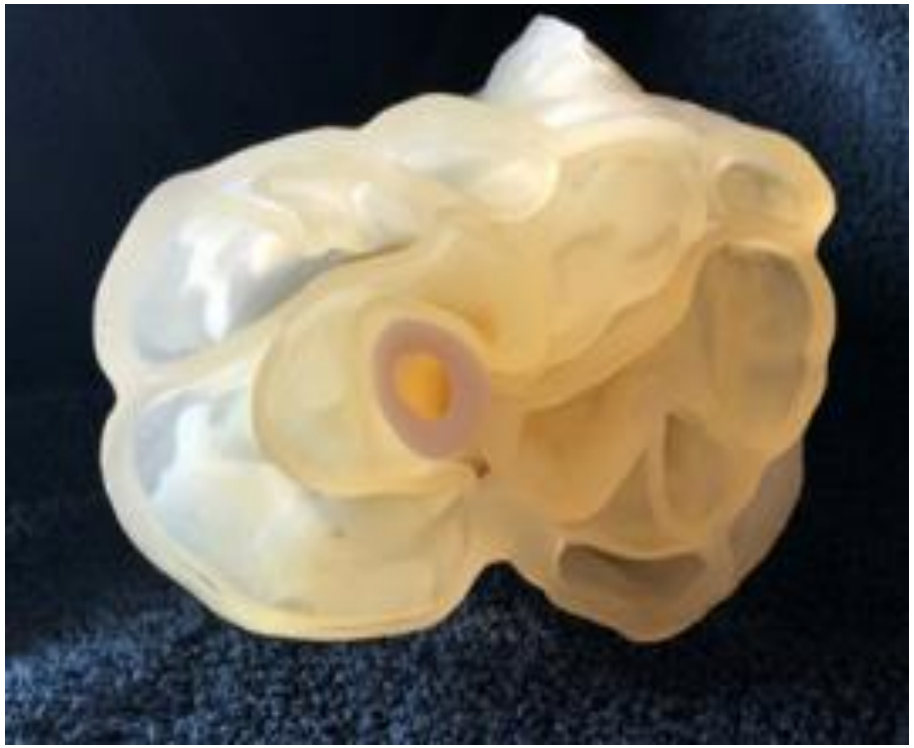
PMID: 29561295 DOI: 10.1097/AAP.0000000000000750

«If we can see it, we can now block it»

«Если мы можем это увидеть, теперь мы можем это блокировать»

Что такое фасция?

- *Фасция* – это оболочка, листок или любое другое скопление соединительной ткани под кожей, которое образует соединения, футляры разделяющие мышцы и другие внутренние органы между собой.
- *Фасциальная система* состоит из гибкого трехмерно сформированного листка, состоящего из коллагена, рыхлой и плотной соединительной ткани, проникающей во все структуры организма.



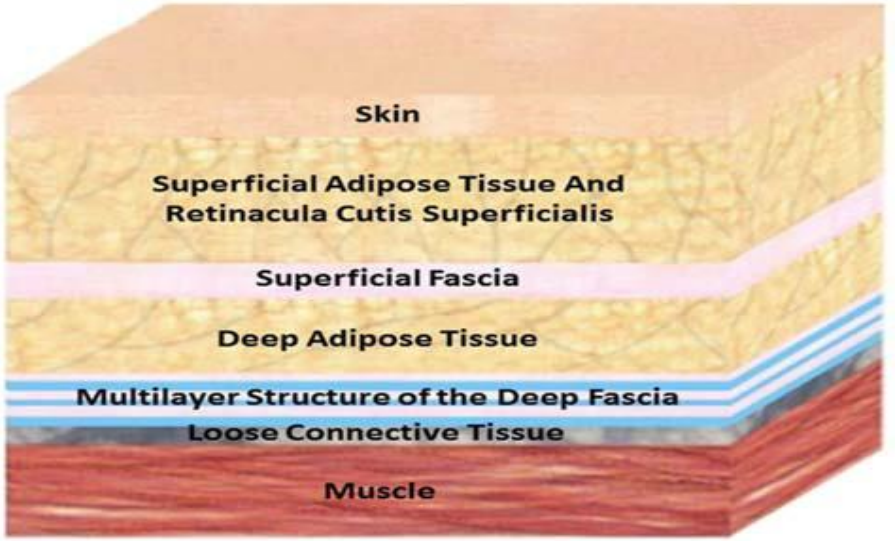
3d printed model of the fascia profunda (deep fascia) of right thigh highlighting continuity with the femur. Image: Sharkey, J. 2018.
Can Medical Education be Enhanced by the World's First 3d Printed Fascia Models and Plastinated Specimens of Fascia Superficialis and Profundus? (2019) John *Sharkey Biomedical Journal of Scientific & Technical Research Volume 15, 4, pp 1-4*

Adstrum, S., Hedley, G., Schleip, R., Stecco, C., & Yucesoy, C. A. (2017). Defining the fascial system. Journal of Bodywork and Movement Therapies, 21(1), 173–177. doi:10.1016/j.jbmt.2016.11.003
Elsharkawy, H., Pawa, A., & Mariano, E. R. (2018). Interfascial Plane Blocks. Regional Anesthesia and Pain Medicine, 43(4), 341–346. doi:10.1097/aap.0000000000000750

Виды фасции

Три фундаментальных соединительных слоя фасции:

- 1) поверхностная фация
- ***2) глубокая фасция***
- *(формирует оболочки нервов, сосудов, органов,*
- *фасциальные оболочки мышц (epimysium, perimysium, endomysium)*
- 3) висцеральная/париетальная фасция



Глубокая фасция состоит из множества слоев и представляет непосредственный интерес при выполнении межфасциальных плоскостных блоков.

Elsharkawy, H., Pawa, A., & Mariano, E. R. (2018). Interfascial Plane Blocks. Regional Anesthesia and Pain Medicine, 43(4), 341–346. doi:10.1097/aap.0000000000000750

Klingler, W., Velders, M., Hoppe, K., Pedro, M., & Schleip, R. (2014). Clinical Relevance of Fascial Tissue and Dysfunctions. Current Pain and Headache Reports, 18(8). doi:10.1007/s11916-014-0439-y

Gatt A, Agarwal S, Zito PM. Anatomy, Fascia Layers. [Updated 2023 Jul 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK526038/

Практическое значение анатомии фасциальной системы

- Местный анестетик в межфасциальном пространстве создает декомпрессию и распространяется по пути «наименьшего сопротивления».
- Сокращение мышц увеличивает площадь распространения местного анестетика.
- Фасции содержат собственные сократительные элементы.
- Фасция действует как энергетический абсорбер.
- Фасция содержит сенсорные элементы нервной системы (А и С волокна).
- Фасция содержит два вида механорецепторов (тела Ruffini и Vater-Pacini).

Lelean P. The migratory fascia hypothesis. J BodywMov Ther. 2009;13: 304–310.
Stecco C, Gagey O, Belloni A, et al. Anatomy of the deep fascia of the upper limb. Second part: study of innervation. Morphologie. 2007;91:38–43.
Condino, S., Turini, G., Parrini, S., Stecco, A., Busoni, F., Ferrari, V., Gesi, M. (2015). A semiautomatic method for in vivo three-dimensional quantitative analysis of fascial layers mobility based on 3D ultrasound scans. International Journal of Computer Assisted Radiology and Surgery, 10(11), 1721–1735. doi:10.1007/s11548-015-1167-4

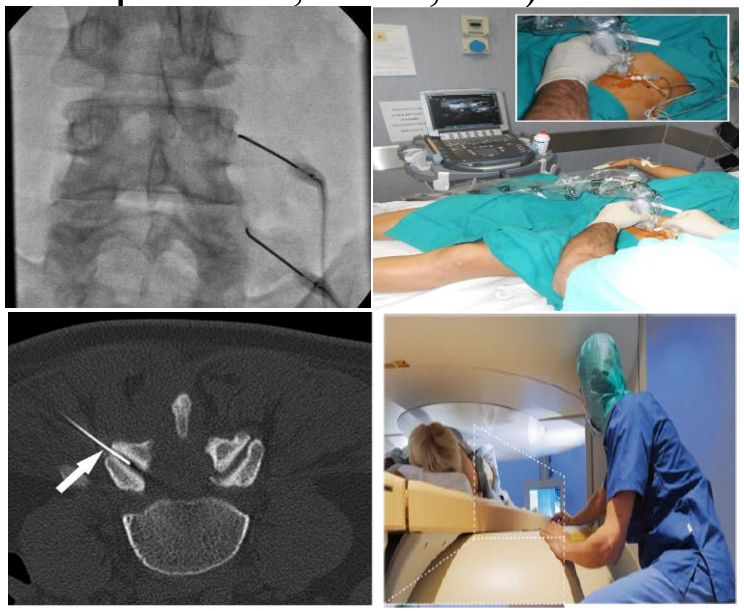
Это позволит лучше понять…

- Является ли отрицательное давление в грудной клетке (спонтанное дыхание/ИВЛ) значимым для распространения местного анестетика?
- Могут ли биомеханические особенности фасции объяснить закономерности распространения местного анестетика?
- Как влияет на межфасциальную блокаду глубина анестезии?
- Влияет ли на распространение местного анестетика миорелаксация?
- Важно ли позиционирование пациента (вертикально, горизонтально)?

Elsharkawy, H., Pawa, A., & Mariano, E. R. (2018). Interfascial Plane Blocks. Regional Anesthesia and Pain Medicine, 43(4), 341–346. doi:10.1097/aap.0000000000000750

Что нужно для выполнения безопасной и эффективной блокады?

Навигация (УЗИ, рентген, МРТ, КТ)



Расходный материал (иглы, катетеры, помпы, насосы)

Нейростимулятор

Датчик давления при введении местного анестетика

Minerva Anestesiologica 2024 January-February;90(1-2):87-97

DOI: **10.23736/S0375-9393.23.17866-7**

language: English

Factors to consider for fascial plane blocks' success in acute and chronic pain management

Pierfrancesco FUSCO [1], Giuseppe PASCARELLA [2], Carla STECCO [3], Rafael BLANCO [4], Mauricio FORERO [5], Amit PAWA [6], Serkan TULGAR [7], Alessandro STRUMIA [2], Luigi M. REMORE [2], Alessandro DE CASSAI [8], Laura B. COLANTONIO [9], Romualdo DEL BUONO [10], Fabrizio FATTORINI [11], Giuseppe SEPOLVERE [12], Mario TEDESCO [13], Gian M. PETRONI [14] ✉, Walter CIASCHI [15], Massimiliano CRASSITI [2], Fabio COSTA [2]

ФАКТОРЫ ЗАВИСИМЫЕ ОТ:

- Оператора
- Пациента
- Препарата

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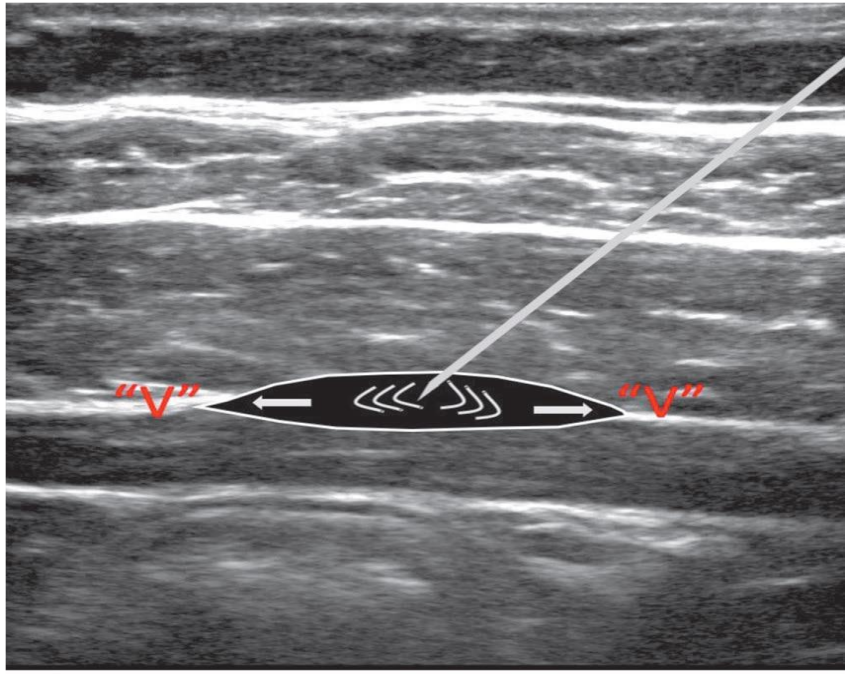
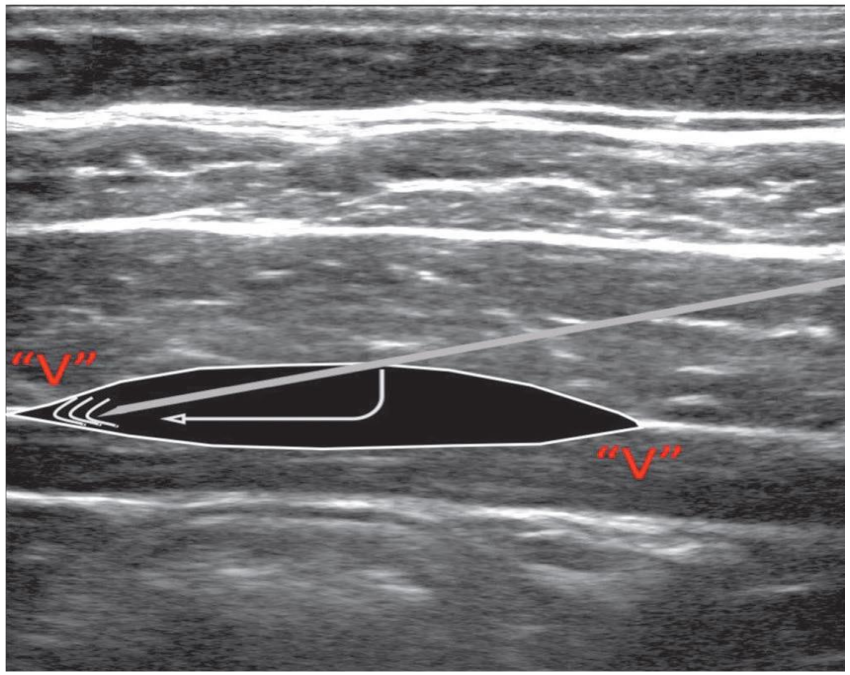
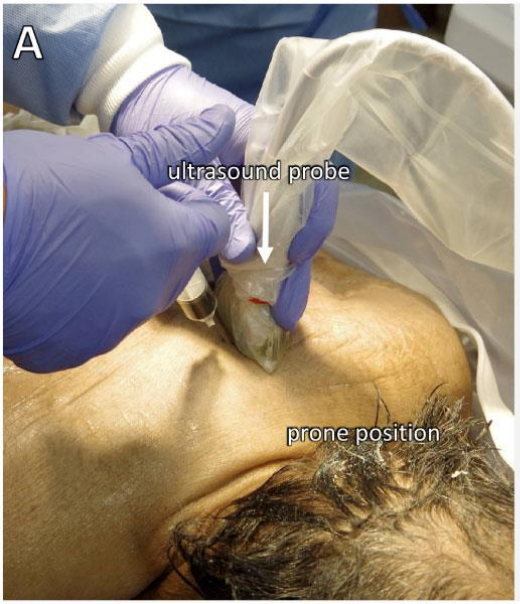
TABLE II.—*Factors to consider for fascial plane blocks.*

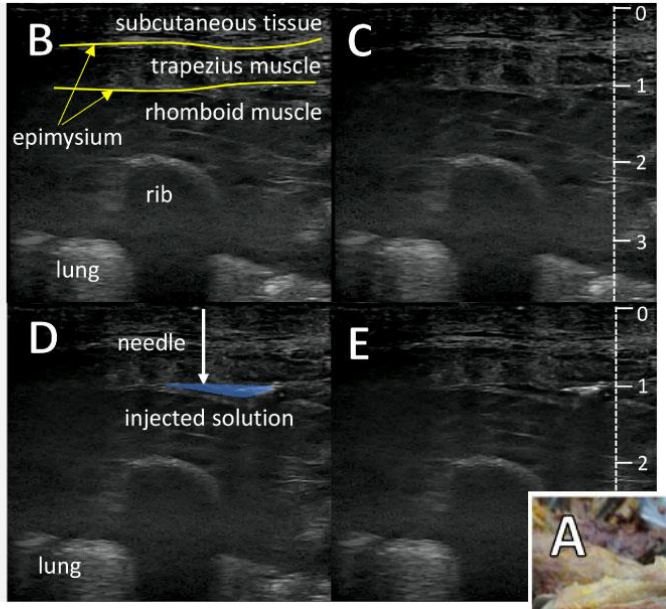
Parameters	Variables
Operator related/technique related	Personal skill and experience
	Choice of technique
	Needle bevel contour and angle
	Needle insertion angle
	Fascia disruption with multiple passages
	Static or dynamic injection (dynamic double "V" sign)
	Injection pressure and speed
	Probe pressure
Patient related	Type of fascial plane: anatomical site
	Age
	BMI
	Anatomical variants and lines of fusion
	History of previous surgery, trauma, disease, irradiation and adhesions or scar tissue
	Patient positioning
	Muscles contractions after the block
	Muscles stiffness
	Spontaneous or artificial ventilation
	Patient physical status
Drug related	Drug
	Volume
	Concentration
	Adjuvants
	pH, temperature



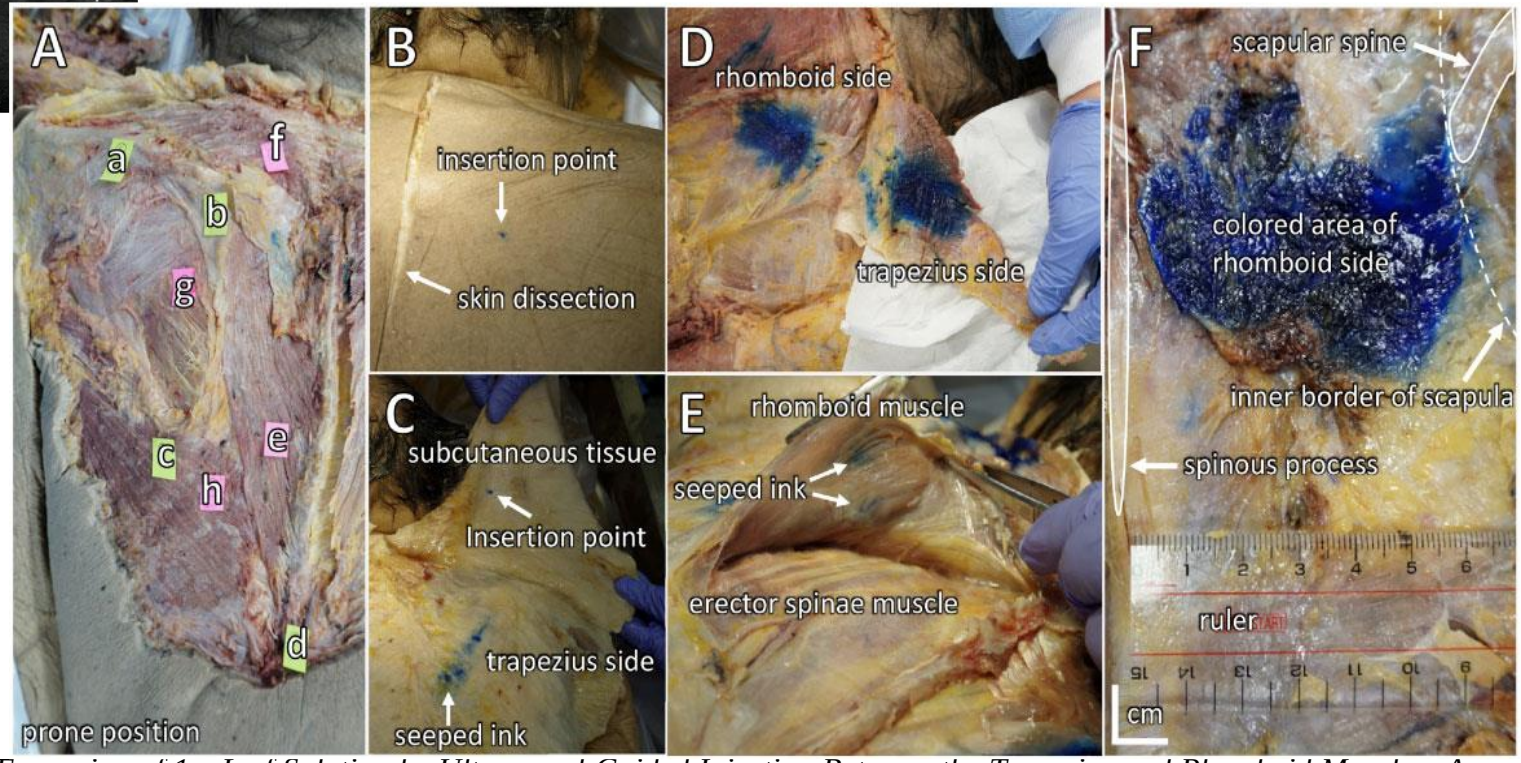


Какую площадь может покрыть местный анестетик?





- 1 мл между трапецией и ромбом, средняя площадь 24,5 см^2, со стороны трапеции и 18,82 см^2 со стороны ромба.

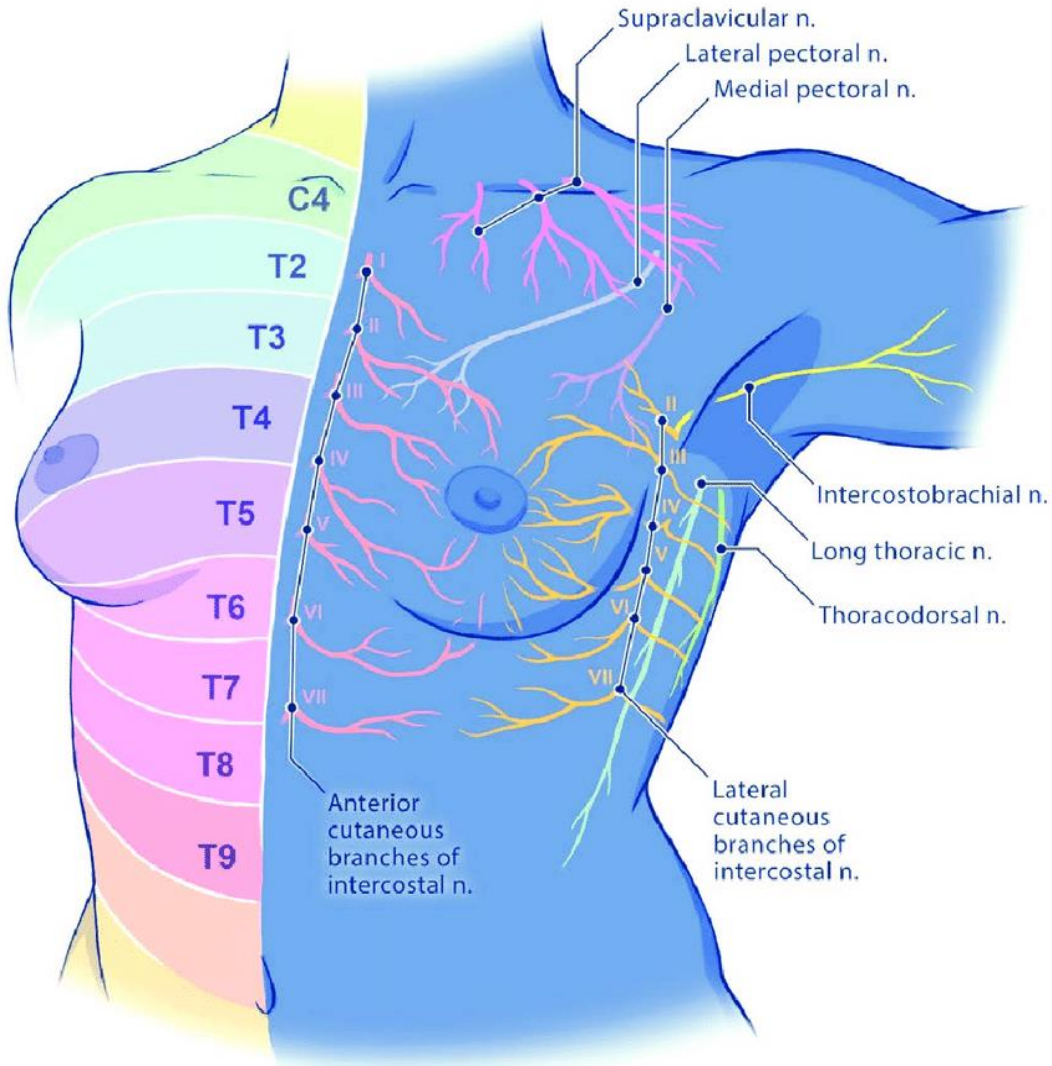


Kimura, H., Kobayashi, T., Zenita, Y., Kurosawa, A., & Aizawa, S. (2019). Expansion of 1 mL of Solution by Ultrasound-Guided Injection Between the Trapezius and Rhomboid Muscles: A Cadaver Study. Pain Medicine. doi:10.1093/pm/pnz170

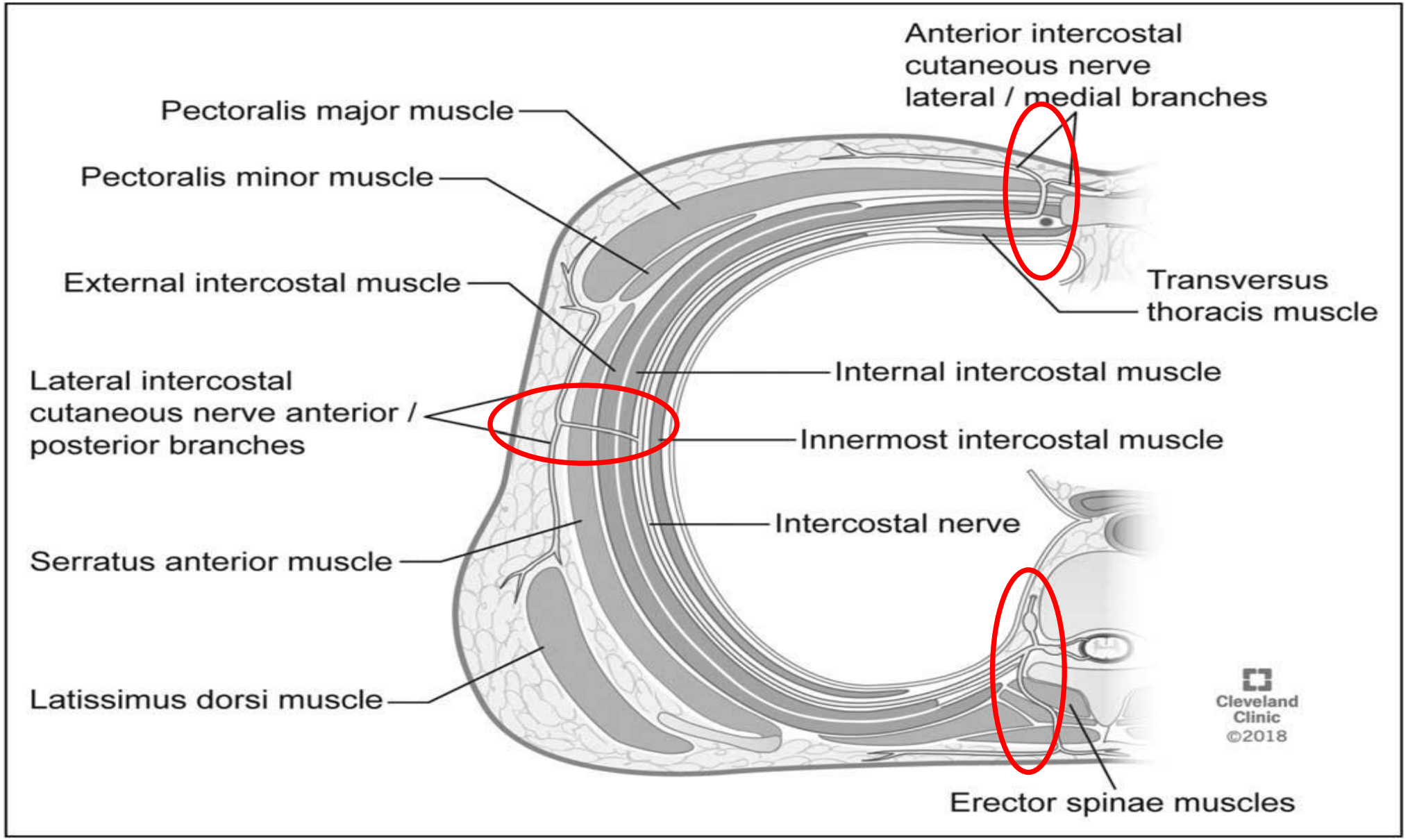
Иннервация

- Источники:

1. Шейное сплетение: надключичный нерв (C3-4).
2. Плечевое сплетение: медиальный (C8-Th1) и латеральный грудные нервы (C5-C7), длинный грудной нерв (C5-C7), торакодорсальный нерв (C6-C8).
3. Вентральные ветви спинальных нервов Th1-11: межреберные нервы Th1-11, интеркостобрахиальный нерв (ветвь Th2).



Tokita, H. K., Polanco, T. O., Shamsunder, M. G., Dabic, S., Patel, V. G., Allen, R. J., Nelson, J. A. (2019). Non-narcotic Perioperative Pain Management in Prosthetic Breast Reconstruction During an Opioid Crisis. Plastic and Reconstructive Surgery - Global Open, 7(6), e2299. doi:10.1097/gox.0000000000002299



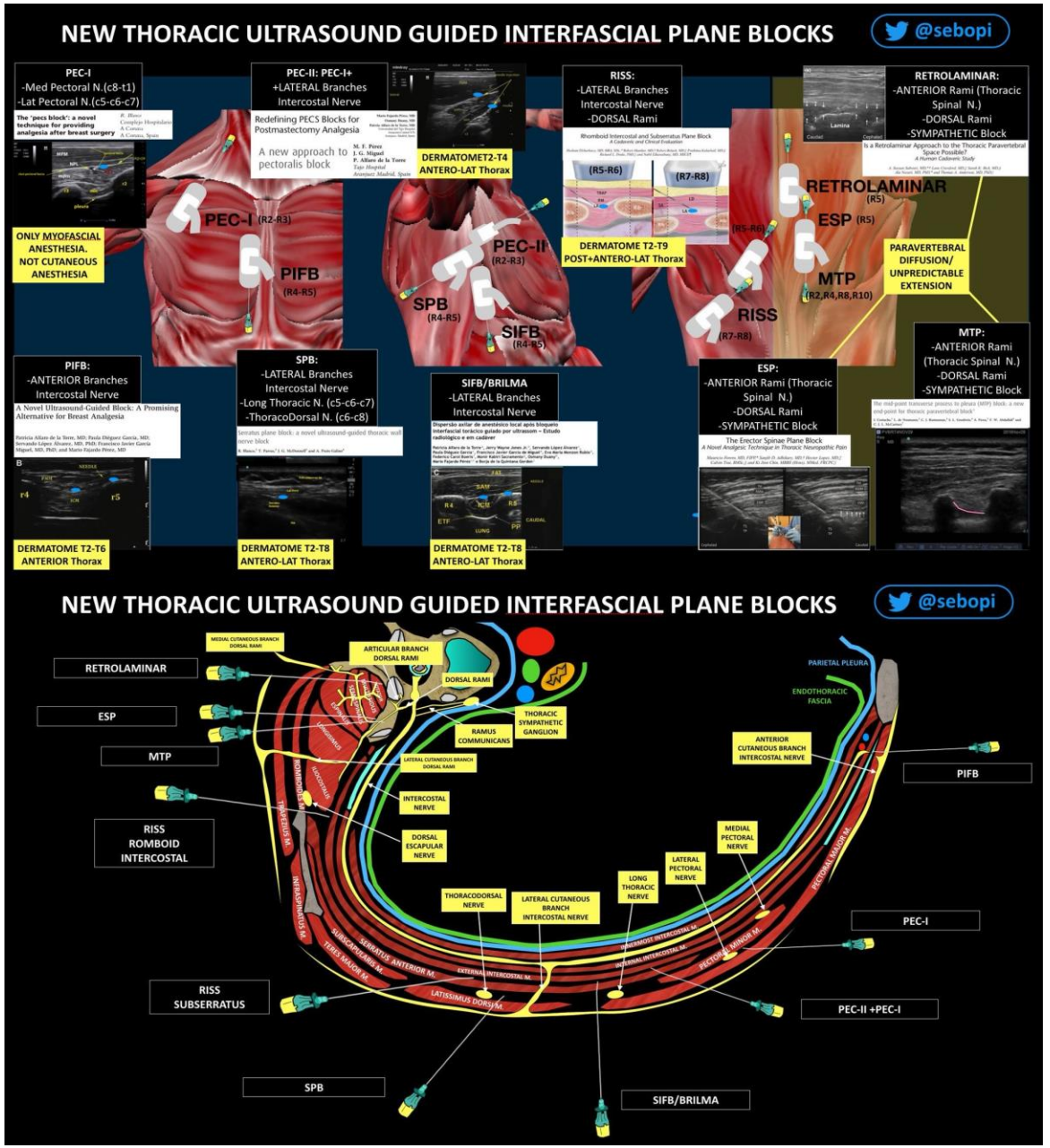
Marciniak, D., Kelava, M., & Hargrave, J. (2019). Fascial plane blocks in thoracic surgery. Current Opinion in Anaesthesiology, 1. doi:10.1097/aco.0000000000000803

Область применения

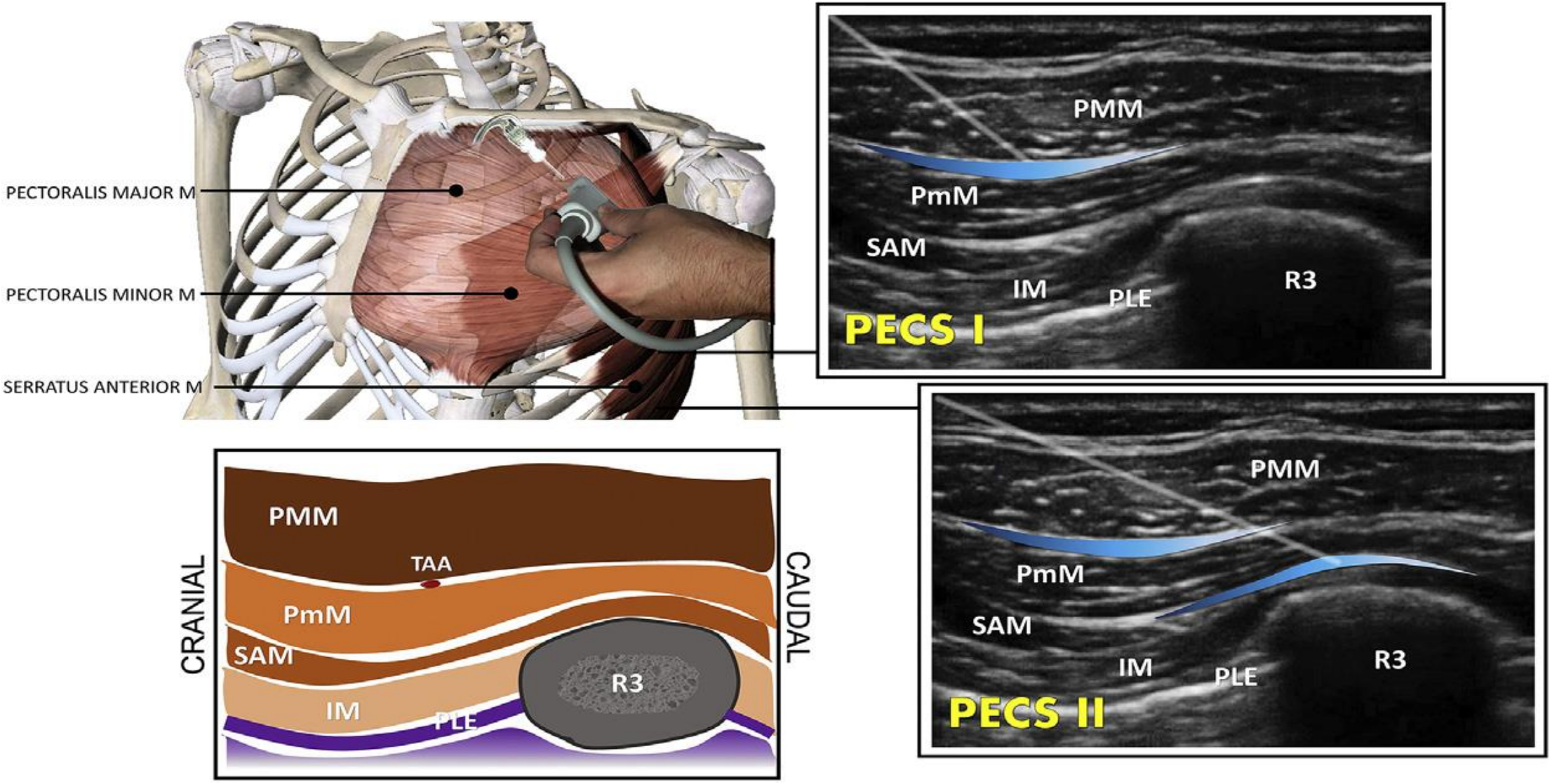
- Операции на молочной железе.
- Торакальные операции.
- Кардиохирургия.
- Операции в области подмышечной впадины.
- Хронические болевые синдромы.
- Переломы ребер.
- Имплантация венозных порт – систем, кардиостимулятора.

Плоскостные блоки груди

- PECS 1 – pectoralis nerve (Blanco et al. 2011).
- PECS 2 (Blanco et al. 2011).
- RISS – rhomboid intercostal and subserratus plane block (Hesham Elsharkawy et al. 2018).
- Retrolaminar (Sabouri et al. 2018).
- PIFB – pectointercostal fascial block (Torre et al. 2014).
- SPB – serratus plane block (Blanco et al. 2013).
- BRILMA - branches of the intercostal nerves in the middle axillary line (Torre et al. 2017).
- SIFB - serratus–intercostal plane block (Torre et al. 2014).
- ESP – erector spine plane block (Forero et al. 2016).
- MTP – mid-point transverse process to pleura block (Costashe et al. 2017).



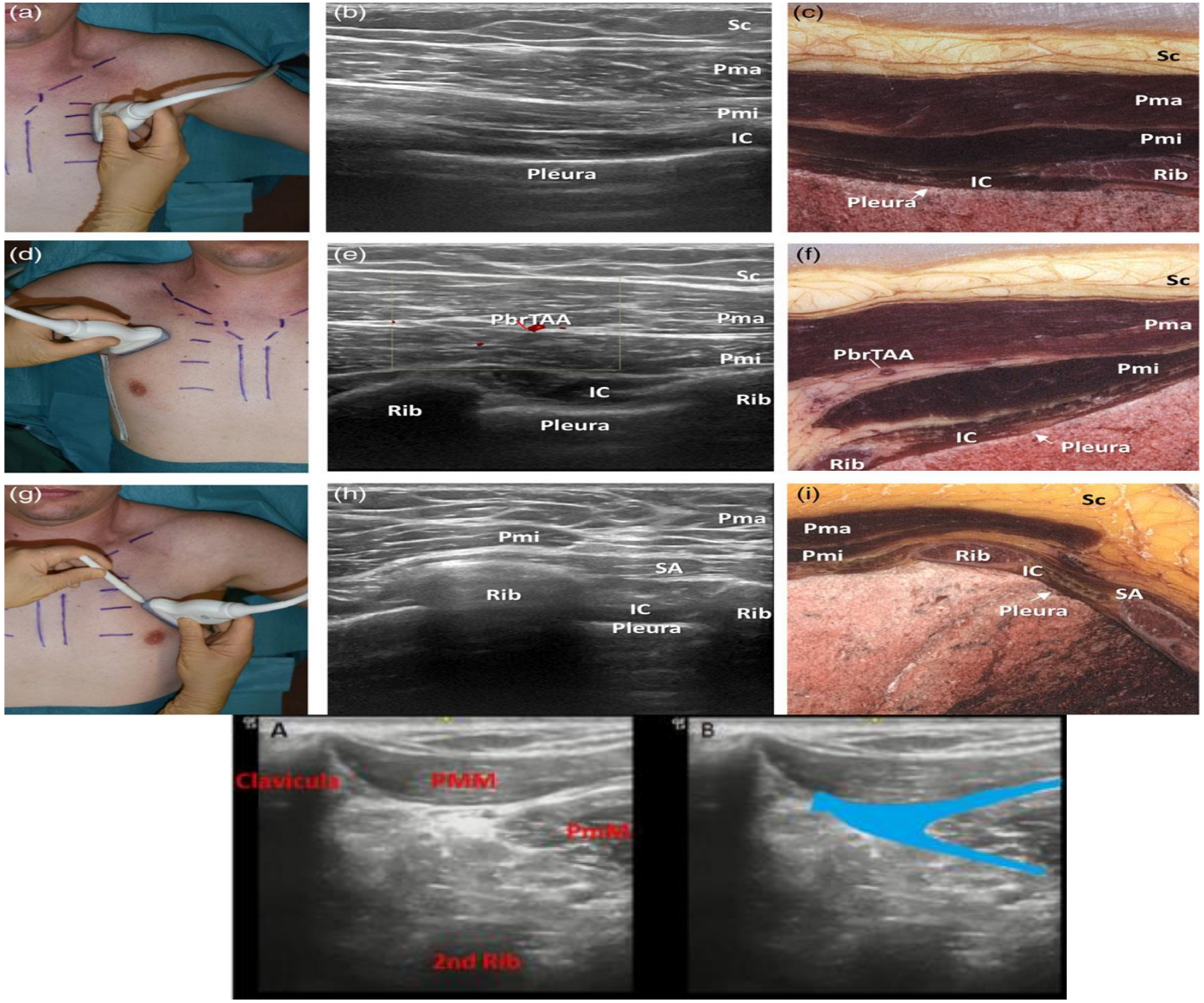
PECS – pectoralis nerve



Chin, K. J., Pawa, A., Forero, M., & Adhikary, S. (2019). Ultrasound-Guided Fascial Plane Blocks of the Thorax. Advances in Anesthesia. doi:10.1016/j.aan.2019.08.007

Блоки PECS

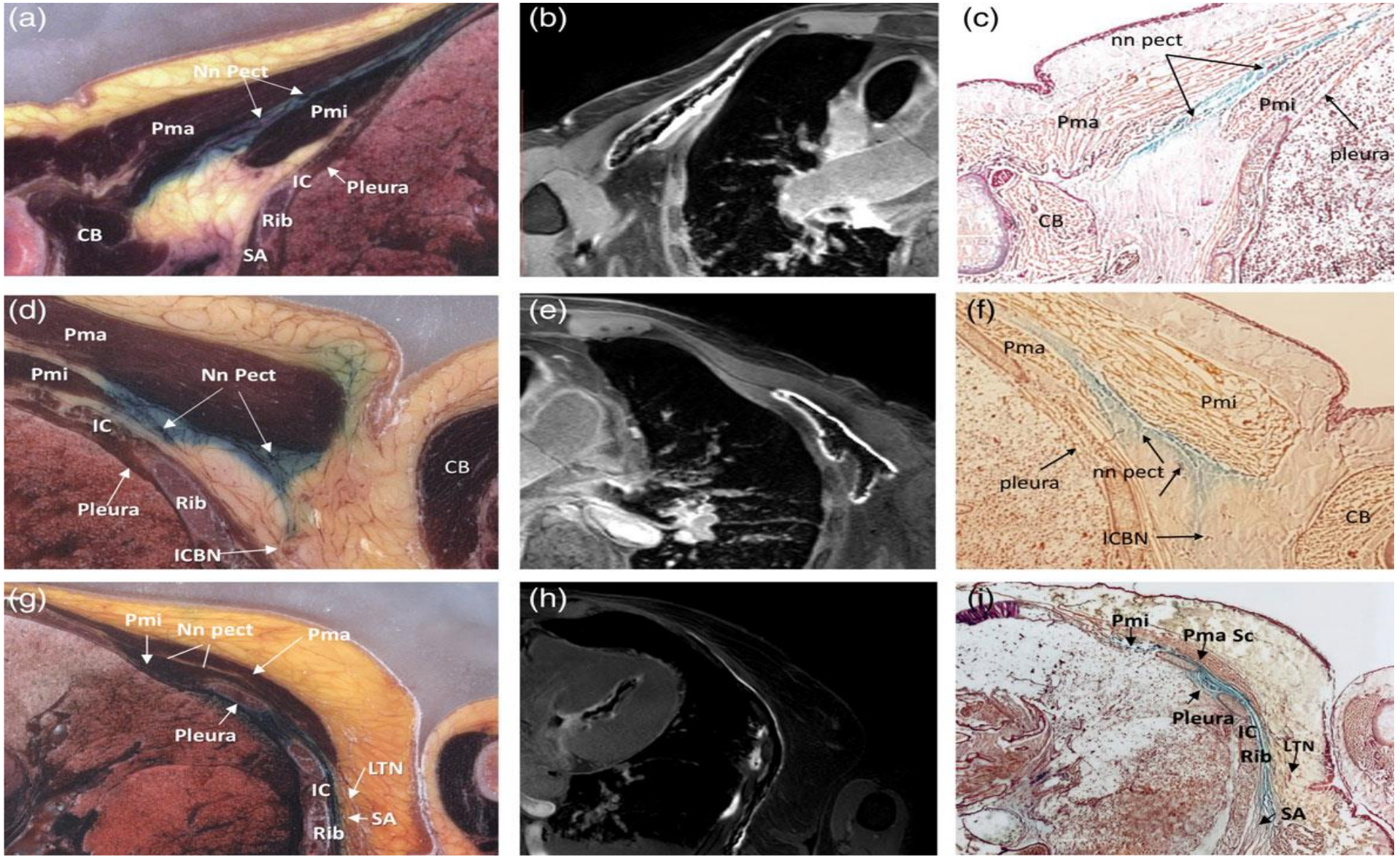
- PECS 1 medial
- PECS 1 lateral
- PECS 2
- PECS Zero



Versyck, B., Groen, G., van Geffen, G.-J., Van Houwe, P., & Bleys, R. L. (2019). The Pecs Anesthetic Blockade: Correlation between Imaging and Histology. Clinical Anatomy. doi:10.1002/ca.23333

Tulgar, S., Selvi, O., Thomas, D. T., Deveci, U., & Ozer, Z. (2020). A novel approach to blockage of pectoral nerves: Ultrasound guided Modified Clavipectoral Fascial Plane Block (PECs-Zero). Journal of Clinical Anesthesia, 59, 49–50. doi:10.1016/j.jclinane.2019.06.024

PECS – pectoralis nerve



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PECS – pectoralis nerve

TABLE 1. Overview of the studied nerves who are stained (+) or not stained (−) for each of the three approaches (medial Pecs I, Lateral Pecs I, and Deep injection for Pecs II)

	Pecs I medial approach	Pecs I lateral approach	Additional injection for Pecs II
Lateral pectoral nerve	+	+	−
Medial pectoral nerve	+	+	−
Intercostobrachial nerve	−	+	−
Lateral cutaneous part of intercostal nerve III	−	−	+
Lateral cutaneous part of intercostal nerve IV	−	−	+
Lateral cutaneous part of intercostal nerve V	−	−	+
Lateral cutaneous part of intercostal nerve VI	−	−	+
Long thoracic nerve	−	−	+

Versyck, B., Groen, G., van Geffen, G.-J., Van Houwe, P., & Bleys, R. L. (2019). The Pecs Anesthetic Blockade: Correlation between Imaging and Histology. Clinical Anatomy. doi:10.1002/ca.23333

PECS vs PVB

Table 1 Characteristics of included studies

	Methods	Participants	Interventions	Outcomes
Abo-Sabaa *et al* 2019[17]	RCT, blinding unclear	60 adult females for breast cancer surgery	PECs 2 block vs T3 paravertebral block before GA	Pain, time to rescue analgesia, opioid requirement, PONV
El-Sheikh *et al*[18]	RCT, blinding unclear	41 adult females for breast cancer surgery	PECs block vs 1 level paravertebral block before GA	Pain, opioid requirement, length of stay
Hetta and Rezk[19]	RCT, observer and clinician blinded	64 adult females for mastectomy with axillary LN clearance	PECs 2 vs T2, T4, T6 paravertebral block before GA	Pain score and time to rescue analgesia
Jin *et al*[20]	RCT, Observer blinded	80 adult females for radical mastectomy	PECs 2 vs T3 paravertebral block before GA	Pain, opioid requirement
Joshi *et al*[21]	RCT, observer blinded	60 adult females for modified radical mastectomy	PECs 2 block vs T4 paravertebral block after GA	Pain, tramadol requirement
Kulhari *et al*[22]	RCT, observer blinded	78 adult females for radical mastectomy	PECs 2 block vs T3 paravertebral block after GA	Pain, analgesia related complication, opioid and NSAIDs consumption
S Pillai *et al*[23]	RCT, observer blinded	39 adult females for modified radical mastectomy	PECs 2 block vs T2, T4 paravertebral block before GA	Pain, opioid requirement, time to rescue analgesia
Siddeshwara *et al*[24]	RCT, observer blinded	65 adult females for modified radical mastectomy	PECs2 block after GA vs T3 paravertebral block	Pain score, opioid requirement, PONV, time to rescue analgesia, patient satisfaction
Syal and Chandel[25]	RCT, observer, patient and clinician blinded	65 adult females for modified radical mastectomy	PECs 2 block vs T4 paravertebral block postoperative vs systemic analgesia	Pain score, opioid requirement, time to rescue analgesia
Wahba and Kamal [26]	RCT, observer blinded	60 adult females for mastectomy and LN clearance	PECs 2 block vs T4 paravertebral block before GA	Pain score, opioid requirement, PONV

GA, general anethesia; LN, lymph nodes; NSAID, nonsteroidal anti-inflammatory drug; PEC, pectoral ; PONV, postoperative nausea and vomiting; RCT, randomized controlled trial.

Conclusion Our systematic review suggests that PECs and PVB are comparable in postoperative analgesia efficacy for mastectomy, and further studies are unlikely to alter the conclusion. The choice of technique should, therefore, be based on practitioner skill and institutional guidelines.

Заключение: *в нашем систематическом обзоре сделан вывод, что PECS и PVB сопоставимы в анальгетической эффективности в послеоперационном периоде после мастэктомии, маловероятно, что дальнейшие исследования могут повлиять на это заключение.*

Jin, Z., Durrands, T., Li, R., Gan, T. J., & Lin, J. (2020). Pectoral block versus paravertebral block: a systematic review, meta-analysis and trial sequential analysis. Regional Anesthesia & Pain Medicine, rapm–2020–101512. doi:10.1136/rapm-2020-101512

PECS (pectoralis nerve)

Table 2 Summary of studies and the highest level of evidence according to the Oxford Centre for Evidence-Based Medicine Levels of Evidence [12] for pectoral nerves blocks (PECS).

Indication	Comparator	Highest level of evidence	Available studies	Outcomes with intervention
Thoracotomy	Intercostal nerve blocks (five-level single-injection)	Level 2	one RCT (n = 108) [19]	Lower pain scores and opioid requirements with PECS blocks
	SAPB	Level 2	one RCT (n = 108) [19]	Comparable pain scores and opioid requirements between PECS blocks and SAPB
Video-assisted thoracoscopic surgery	Not applicable	Level 4	one case series (n = 10) [35]	Analgesic benefit lasting 18–24 h with pain scores < 6, > 50% required no opioids [35]
Median sternotomy	Systemic analgesia	Level 2 evidence for PECS 2 block Level 4 evidence for PECS 1 block	one RCT (n = 40) [21] one retrospective cohort study (n = 112) [27]	Lower pain scores up to 18 h and fewer episodes of rescue analgesia with PECS blocks [21]. Reduced opioid consumption with PECS blocks [27]
Cardiac interventional procedures	Systemic analgesia	Level 3	two retrospective cohort studies (n = 32) [28], (n = 26) [33] three case series (n = 4) [43], (n = 3) [44], (n = 6) [46] one case report [56]	PECS 2 blocks used alone and in combination with GA to facilitate cardiac device implantation and transcatheter procedures. PECS 1 blocks provided effective analgesia in paediatric patients in combination with GA for cardiac device implantation
Thoracic trauma	Not applicable	Level 4	PECS only two case series (n = 14) [49]; (n = 2) [52] one case report [61] PECS and SAPB one case series (n = 2) [39] one case report [58]	Reduced pain scores in patients with rib fractures with PECS 2 blocks alone and in combination with SAPB
Portacath insertion	Local anaesthetic wound infiltration	Level 4	one retrospective cohort study (n = 25) [24]	No clinically significant difference in postoperative pain scores or opioid requirements of the five patients who received PECS 1 blocks
	Not applicable	Level 4	one case report [43]	Patient comfortable and required no opioids
Chest wall liposuction	Not applicable	Level 4	one case report [43]	Patient comfortable and required no opioids

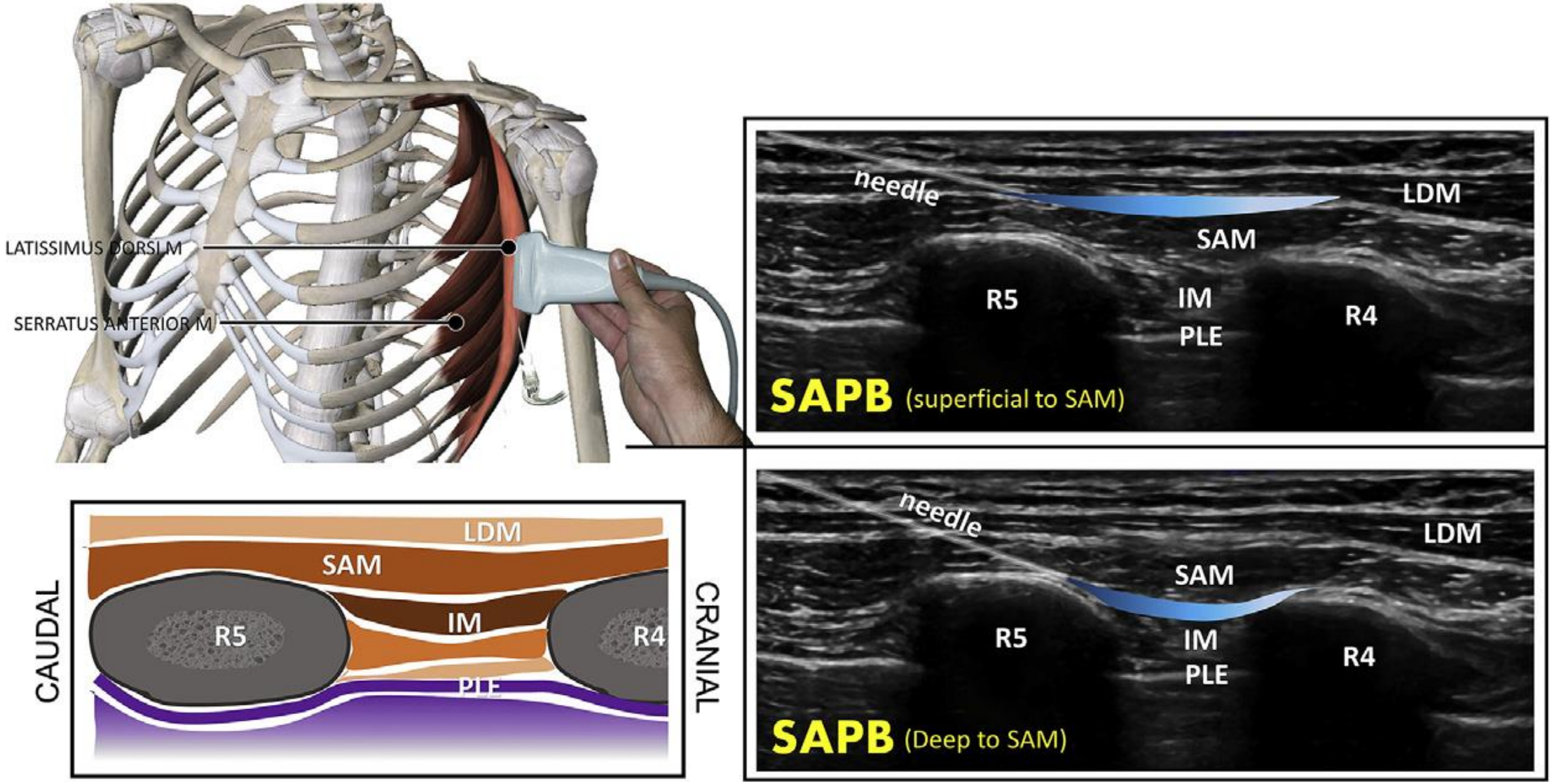
GA, general anaesthesia; RCT, randomised control trial; SAPB, serratus anterior plane block.

В заключении, исследование применения SAP и PECS блоков в кардиохирургии и травме по прежнему находятся на ранней стадии. Тем не менее, ***существующие доказательства говорят о том, что эти блоки могут быть безопасным и эффективным дополнением для торакальной анальгезии, особенно там где более инвазивные техники такие как эпидуральная торакальная анальгезия или торакальная паравертебральная блокада не выполнимы.*** *Нужны дальнейшие сравнительные исследования для определения какая из техник имеет лучшее соотношение риск/польза в соответствии с хирургической ситуацией.*

In conclusion, research into the use of serratus anterior plane and PECS blocks in cardiothoracic surgery and trauma is still at an early stage. Nevertheless, the current evidence indicates that these blocks may be a safe and effective option for thoracic analgesia, particularly where more invasive techniques such as thoracic epidural analgesia or thoracic paravertebral blockade are not feasible. Further, comparative trials are needed to determine which technique offers the optimal benefit-to-risk ratio in specific surgical settings.

Jack, J. M., McLellan, E., Versyck, B., Englesakis, M. F., & Chin, K. J. (2020). The role of serratus anterior plane and pectoral nerves blocks in cardiac surgery, thoracic surgery and trauma: a qualitative systematic review. Anaesthesia. doi:10.1111/anae.15000

SAPB (serratus anterior plane block)



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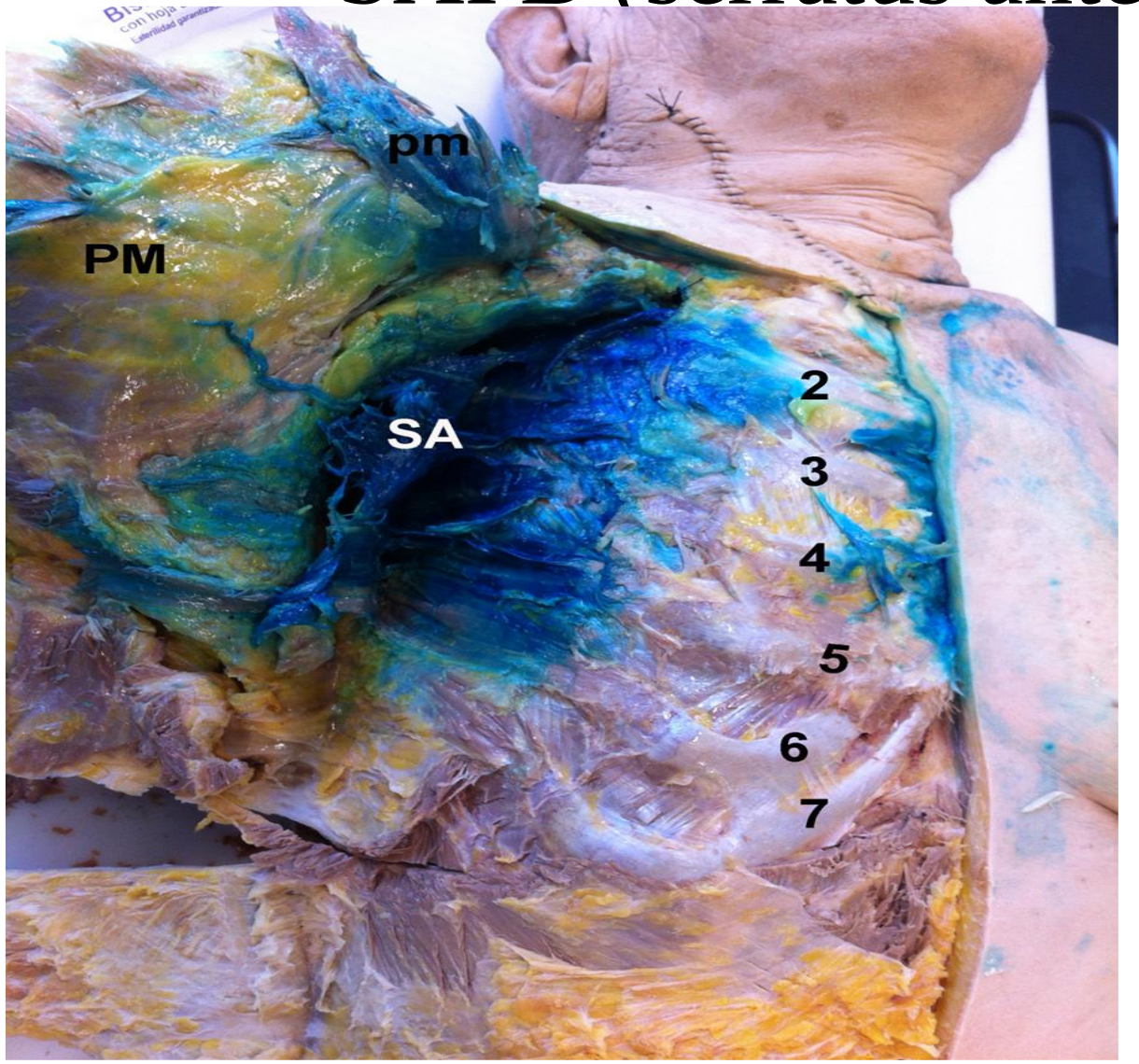
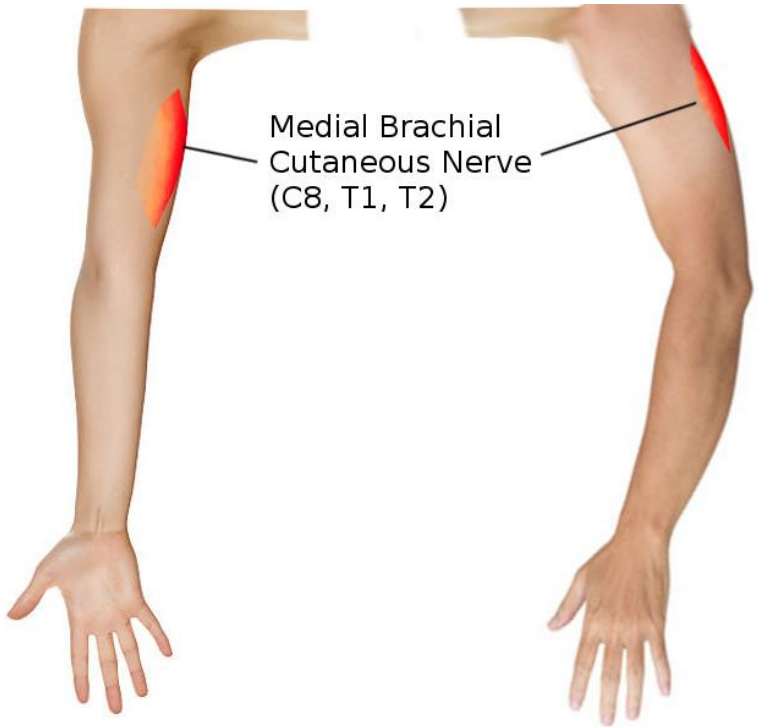
SAPB (serratus anterior plane block)



- intercostobrachial nerves
- medial brachio-cutaneous nerve (C8-Th1)
- the intercostal from T1 to T3



Torre, P. A. de la, Jones Jr., J. W., Álvarez, S. L., Garcia, P. D., Miguel, F. J. G. de, Rubio, E. M. M., Gordon, B. de la Q. (2017). Axillary local anesthetic spread after the thoracic interfacial ultrasound block - a cadaveric and radiological evaluation. Brazilian Journal of Anesthesiology, 67(6), 555–564. doi:10.1016/j.bjan.2016.10.009

SAPB (serratus anterior plane block)

Table 1 Summary of studies and the highest level of evidence according to the Oxford Centre for Evidence-Based Medicine levels of evidence [12] for serratus anterior plane blocks (SABP).

Indication	Comparator	Highest level of evidence	Available studies	Outcomes
Thoracotomy	Systemic analgesia	Level 2	one RCT (n = 90) [18] 2 retrospective cohort studies (n = 40) [23]; (n = 197) [30] three case series (n = 25) [36]; (n = 7) [37]; (n = 4) [38] two case reports [54,55]	Lower pain scores and opioid requirements with SAPB [18]
	Intercostal nerve blocks (five-level single-injection)	Level 2	one RCT (n = 108) [19] one retrospective cohort study (n = 42) [34]	Lower pain scores and opioid requirements with SAPB [19]
	Thoracic paravertebral block (single-injection)	Level 2	one RCT (n = 90) [18] one retrospective cohort study (n = 197) [30]	Similar analgesic effect up to 9–12 h. Superior pain scores and opioid consumption at 12–24 h with TPVB. Fewer episodes of hypotension associated with SAPB [18]
	Thoracic epidural	Level 2	one RCT (n = 40) [20] one retrospective cohort study (n = 50) [25]	Similar 2-hourly pain scores (except at 14 h, 16 h and 22 h) and similar opioid requirements. Higher MAPs and fewer hypotensive episodes associated with SAPB [20]
	PECS 2 block	Level 2	one RCT (n = 108) [19]	Comparable pain scores and opioid requirements between SAPB and PECS blocks [19]
	Continuous wound infusion	Level 4	one retrospective cohort study (n = 46) [22]	Lower early pain scores (but no difference at time-points 6 h, 24 h and 48 h) and 50% reduction in 48-h cumulative opioid consumption with SAPB [22]
Video-assisted thoracoscopic surgery	Systemic analgesia	Level 2	five RCTs (n = 85) [13] (n = 46) [14], (n = 40) [15], (n = 104) [16], (n = 84) [17]. one retrospective cohort study (n = 34) [31]	Lower pain scores and 21–46% reductions in opioid consumption [13–17] with SAPB. No significant differences in heart rate and MAP [13, 16]
Thoracic trauma	Not applicable	Level 4	SAPB only one retrospective cohort study (n = 50) [29] five case series (n = 5) [40], (n = 9) [47], (n = 11) [48], (n = 5) [51], (n = 17) [53] five case reports [57,59,60,62,63] PECS and SAPB one case series (n = 2) [39] one case report [58]	SAPB reduced pain scores in patients with rib fractures
Cardiac interventional procedures	Not applicable	Level 3	one cohort study (n = 20) [26] two case series (n = 12) [45]; (n = 19) [50]	SAPB used as sole anaesthetic technique instead of GA [26]. SAPB used in combination with GA [50]; and as a standalone anaesthetic technique [26, 45] to facilitate cardiac device implantation
Minimally invasive repair of pectus excavatum (Nuss procedure)	Systemic analgesia	Level 4	one retrospective cohort study (n = 95) [32]	Reduced 24-h opioid requirement and no difference in median postoperative pain scores with SAPB

Jack, J. M., McLellan, E., Versyck, B., Englesakis, M. F., & Chin, K. J. (2020). The role of serratus anterior plane and pectoral nerves blocks in cardiac surgery, thoracic surgery and trauma: a qualitative systematic review. Anaesthesia. doi:10.1111/anae.15000

Received: 28 April 2023 | Revised: 26 September 2023 | Accepted: 23 October 2023

DOI: 10.1111/aas.14355

RESEARCH ARTICLE

acta Anaesthesiologica Scandinavica

An ultrasound-guided serratus anterior plane block with continuous local anaesthetic infusion and epidural analgesia for rib fracture pain

Anna R. Lundén | Pekka Tarkkila

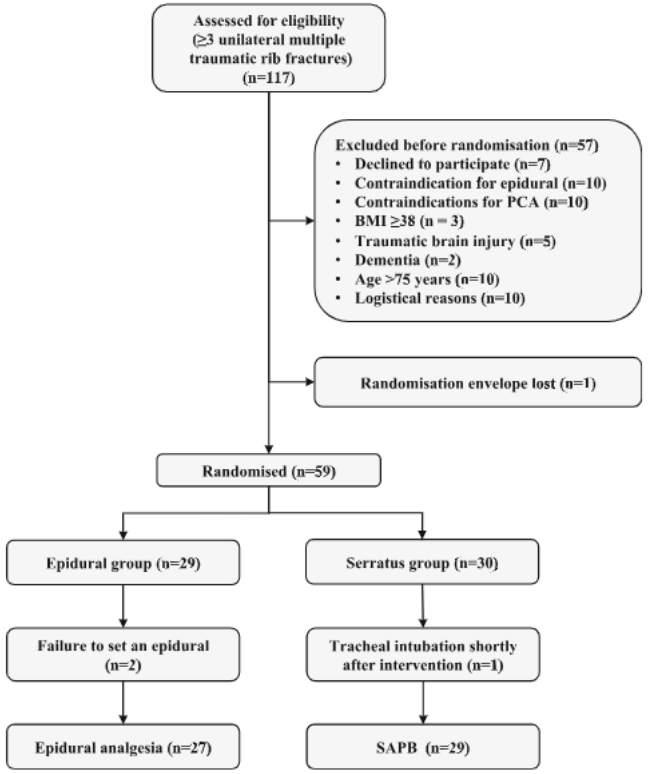
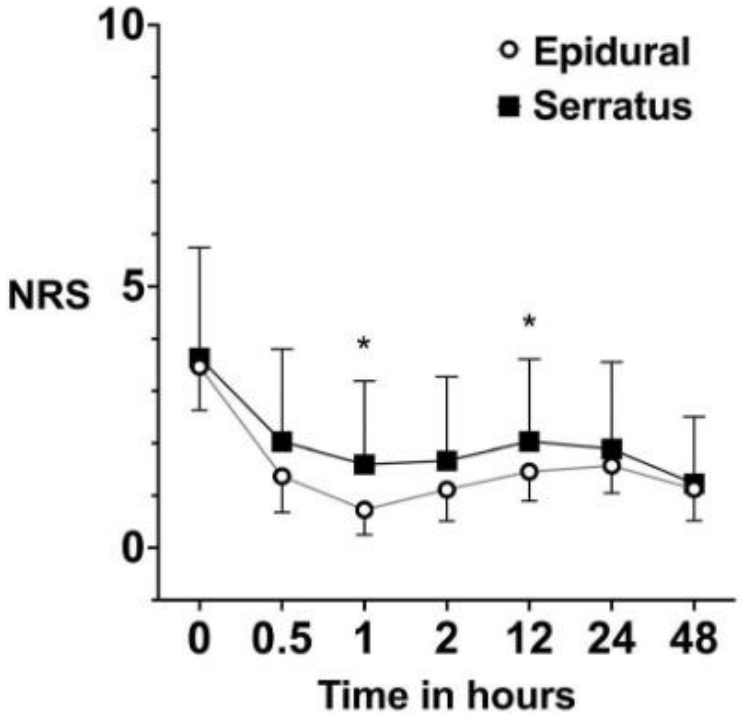


TABLE 2 Other injuries than rib fractures.

Concomitant injury	Epidural group ($n = 29$)	Serratus group ($n = 30$)	p
Pneumothorax or hemopneumothorax	18 (62)	22 (73)	.77
Flail chest	3 (10)	3 (10)	1
Other thoracic injury	6 (3)	6 (20)	1
Clavicular fracture	6 (21)	9 (30)	.56
Scapular fracture	3 (10)	4 (13)	1
Upper limb injury	3 (10)	5 (17)	.71
Lower limb injury	4 (14)	4 (13)	1
Facial injury	1 (3)	6 (20)	.11
Spinal fracture	2 (7)	7 (23)	.15
Abdominal injury	2 (7)	4 (13)	.67
Pelvic injury	3 (10)	5 (17)	.71
Patients with other injuries, total	27 (93)	30 (100)	

Note: Values, number of patients and percent of total within group. One patient could have several concomitant injuries.
Abbreviation: n, number of patients.



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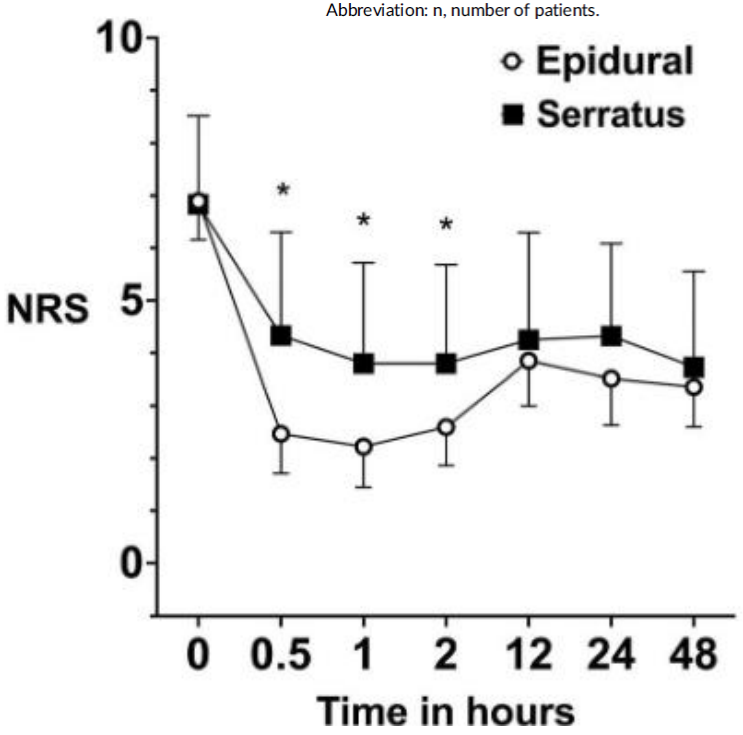
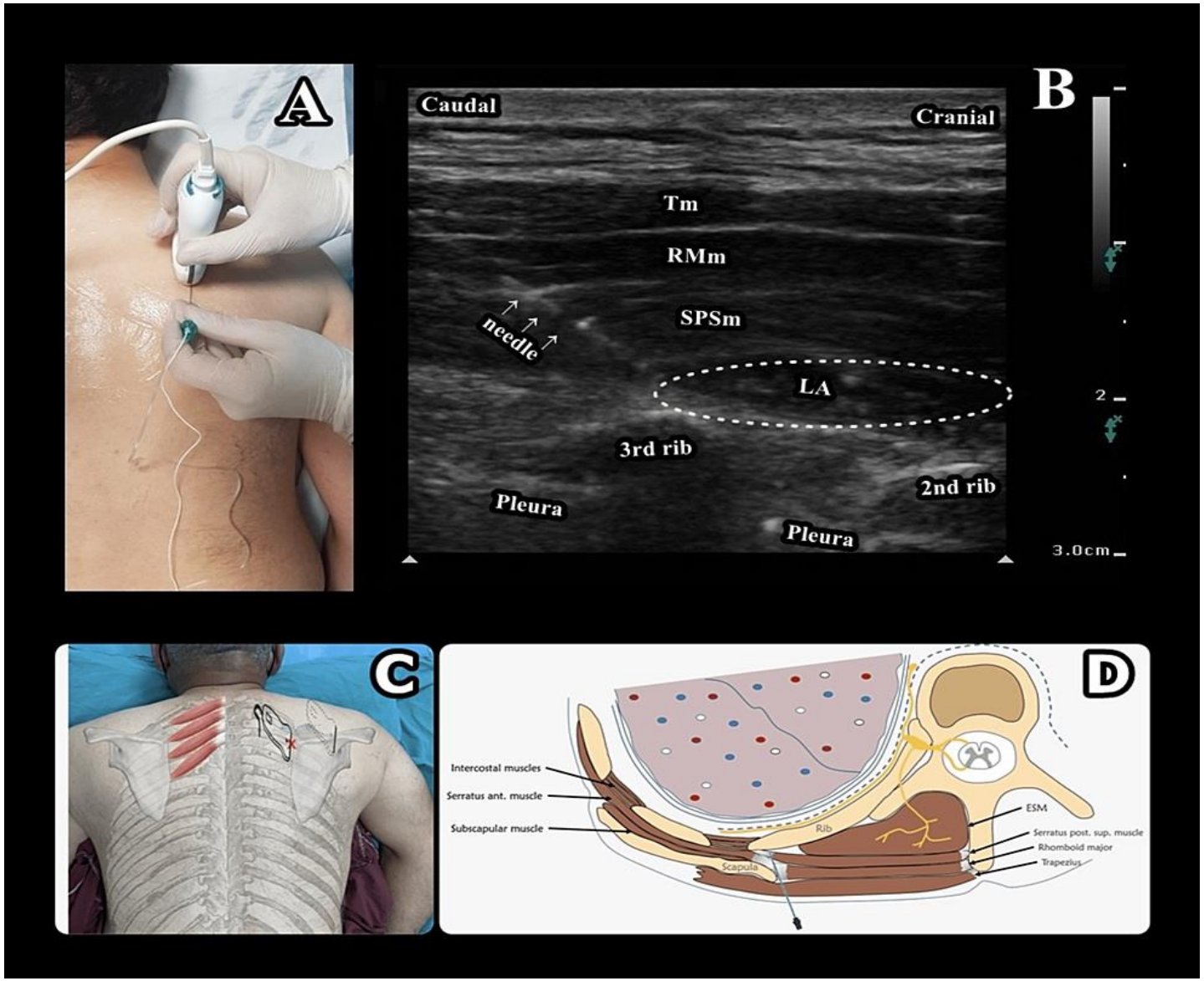


При движении

SPSIP
(serratus posterior superior intercostal plane block)

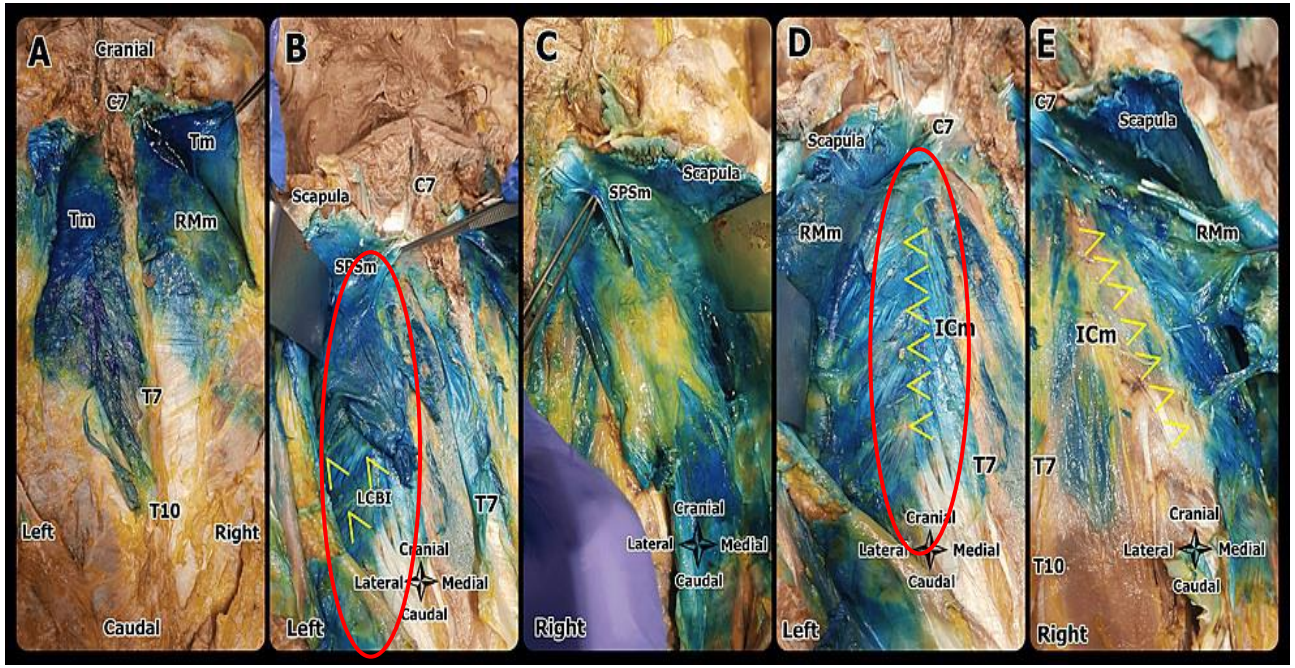


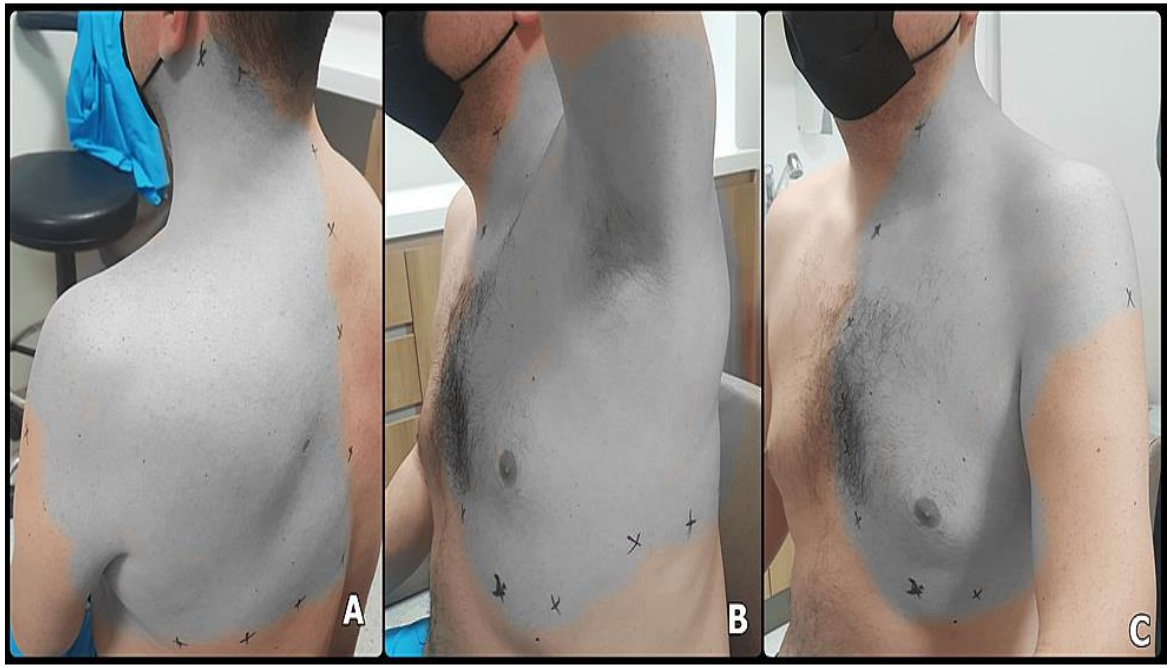
Tulgar S, Ciftci B, Ahiskalioglu A, et al. (February 03, 2023) Serratus Posterior Superior Intercostal Plane Block: A Technical Report on the Description of a Novel Periparavertebral Block for Thoracic Pain. Cureus 15(2): e34582. DOI 10.7759/cureus.34582

Serratus Posterior Superior Intercostal Plane Block: A Technical Report on the Description of a Novel Periparavertebral Block for Thoracic Pain

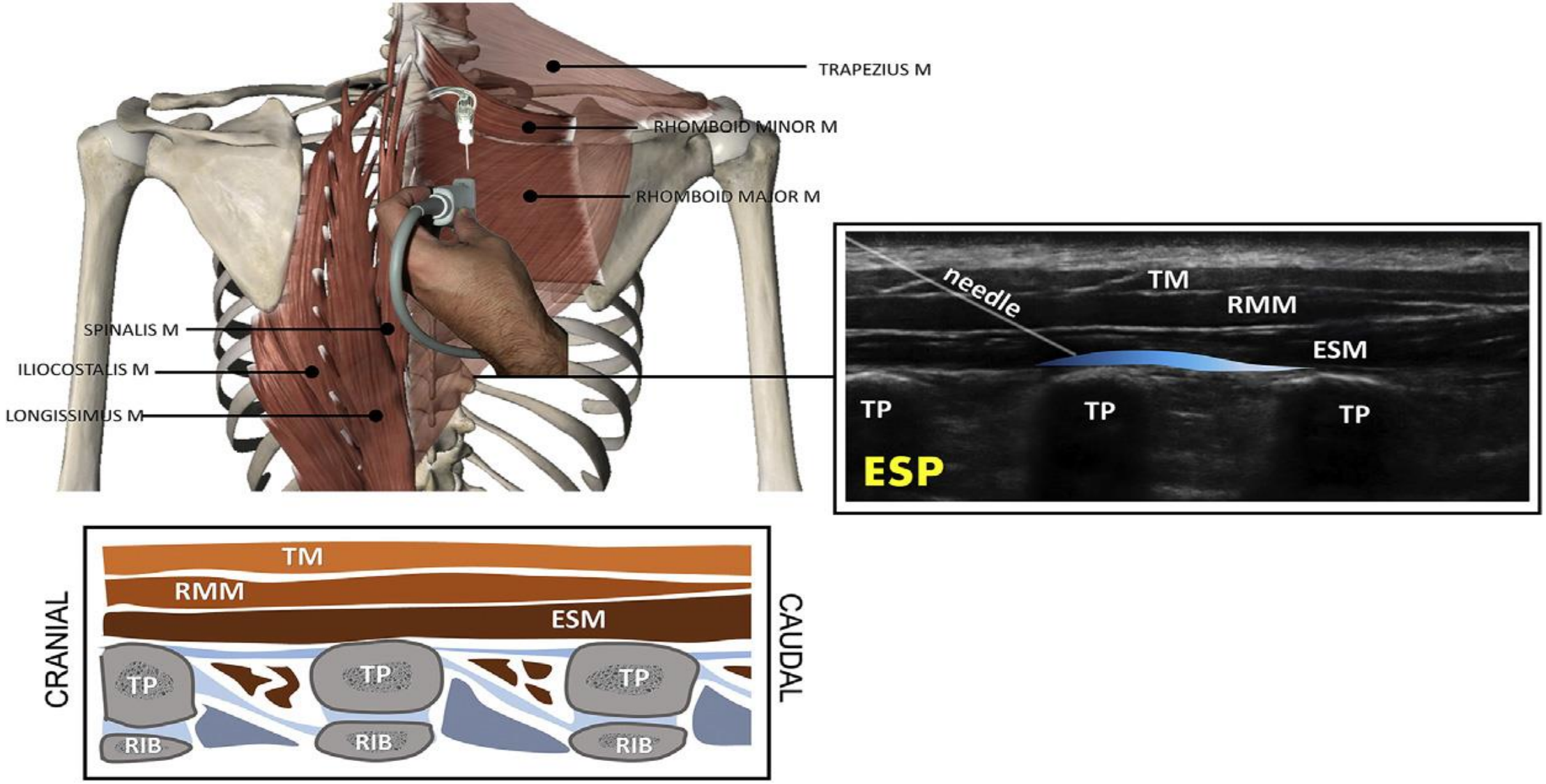
Serkan Tulgar • Bahadır Ciftci • Ali Ahiskalioglu • Bora Bilal • Bayram U. Sakul • Ali O. Korkmaz • Nureda N. Bozkurt • Alessandro De Cassai • Augusto J. Torres • Hesham Elsharkawy • Haci A. Alici

Published: February 03, 2023 **DOI:** 10.7759/cureus.34582





ESP (erector spinae plain block)



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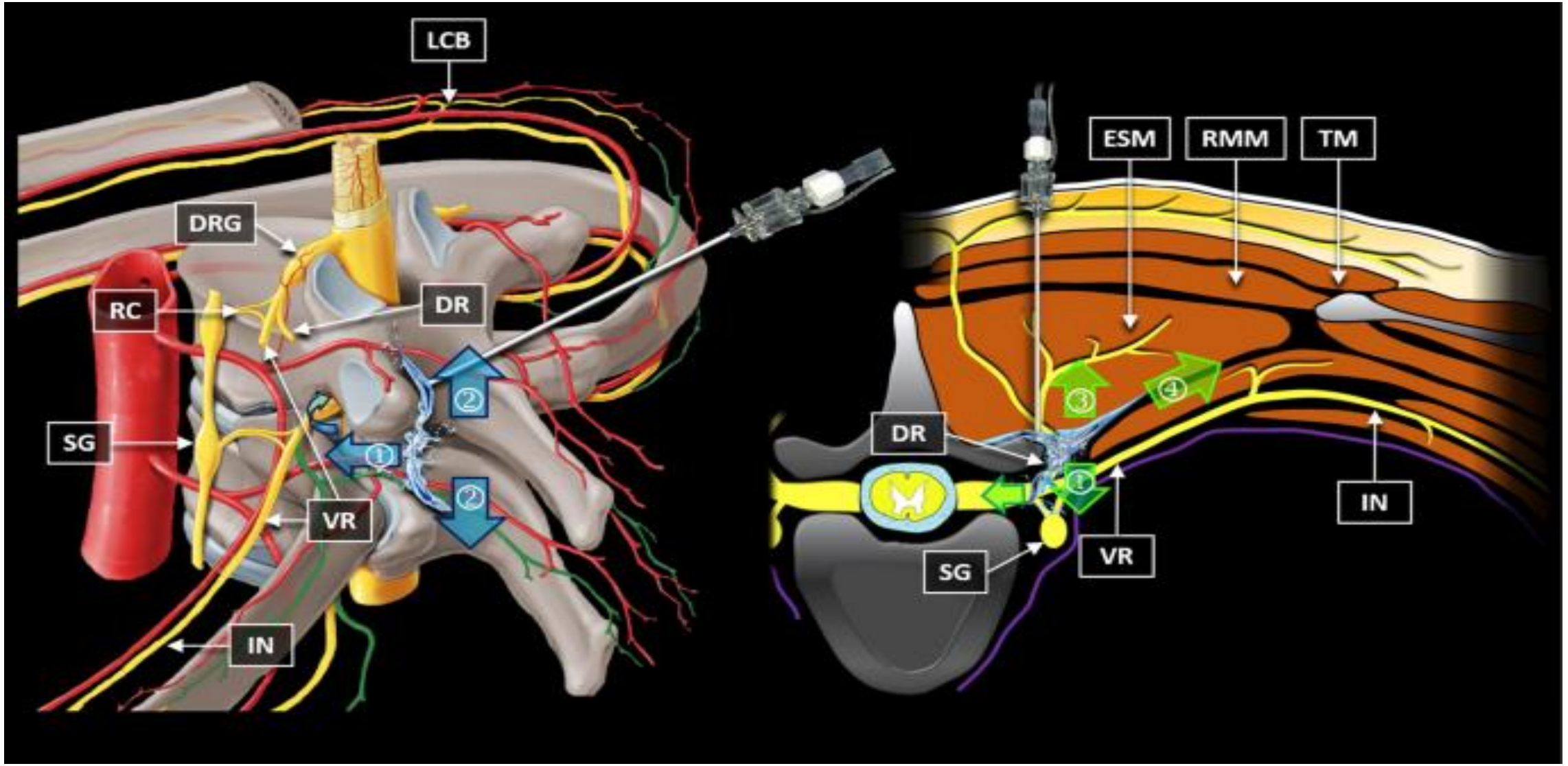
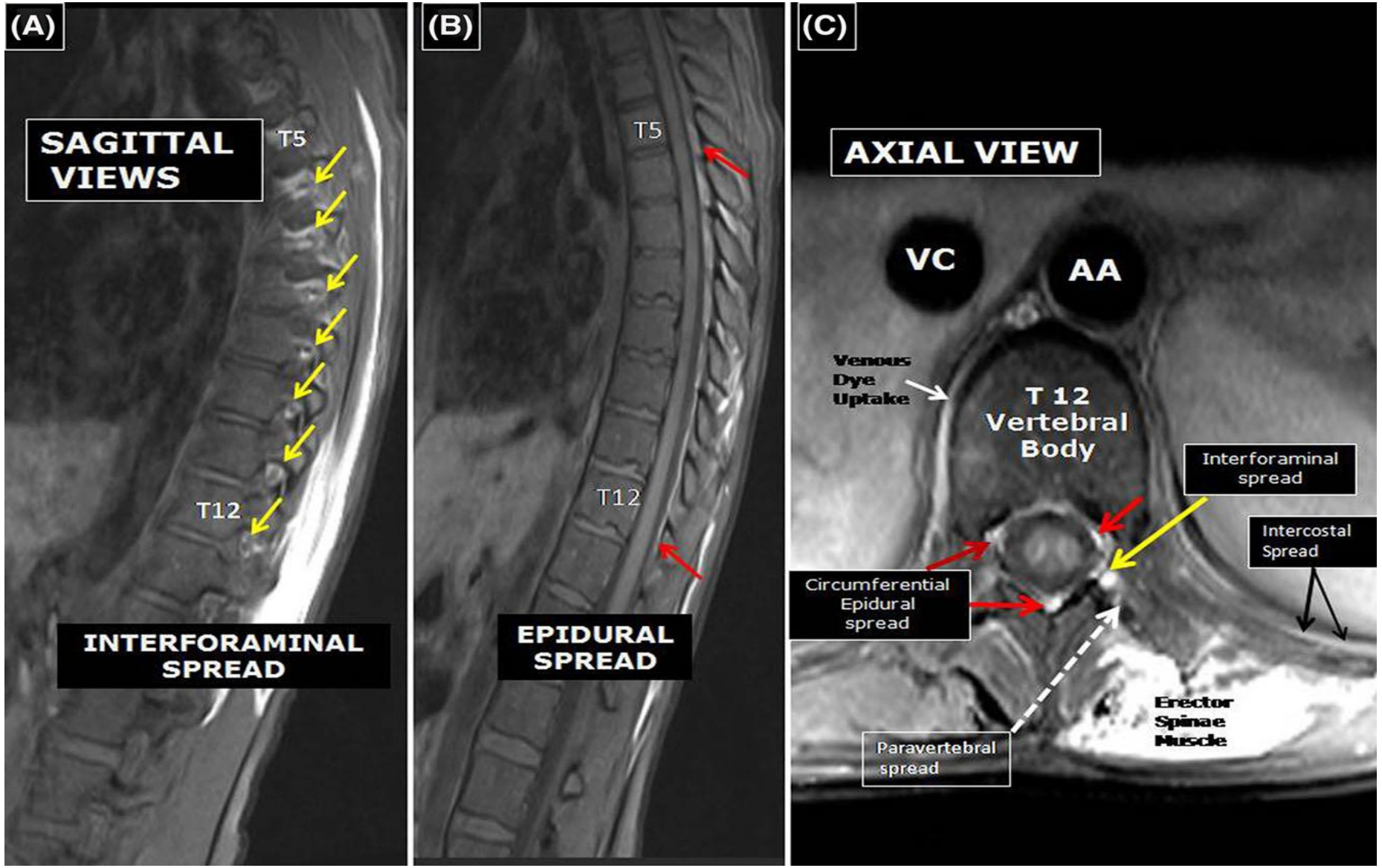


Ki Jinn Chin MBBS (Hons), MMed, FRCPC & Kariem El-Boghdadly MBBS, FRCA, MSc (2021) Mechanisms of action of the erector spinae plane (ESP) block: a narrative review Canadian Journal of Anesthesia/Journal canadien d'anesthésie volume 68, pages387–408 (2021)

ESP (erector spinae plain block)



Schwartzmann, A., Peng, P., Maciel, M. A., & Forero, M. (2018). Mechanism of the erector spinae plane block: insights from a magnetic resonance imaging study. Canadian Journal of Anesthesia/Journal Canadien D'anesthésie. doi:10.1007/s12630-018-1187-y

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Comparison of injectate spread and nerve involvement between retrolaminar and erector spinae plane blocks in the thoracic region: a cadaveric study

H.-M. Yang, Y. J. Choi, H.-J. Kwon, J. O, T. H. Cho, S. H. Kim

First published: 16 August 2018 | https://doi.org/10.1111/anae.14408 | Citations: 150

Summary

Although different injection locations for retrolaminar and erector spinae plane blocks have been described, the two procedures have a similar anatomical basis. In this cadaveric study we compared anatomical spread of dye in the thoracic region following these two procedures. Following randomisation, 10 retrolaminar blocks and 10 erector spinae plane blocks were performed on the left or right sides of 10 unembalmed cadavers. For each block, 20 ml of dye solution was injected at the T5 level. The back regions were dissected and the involvement of the thoracic spinal nerve was also investigated. Twenty blocks were successfully completed. A consistent vertical spread, with deep staining between the posterior surface of the vertebral laminae and the overlaying transversospinalis muscle was observed in all retrolaminar blocks. Moreover, most retrolaminar blocks were predominantly associated with fascial spreading in the intrinsic back muscles. With an erector spinae plane block, dye spread in a more lateral pattern than with retrolaminar block, and fascial spreading in the back muscles was also observed. The number of stained thoracic spinal nerves was greater with erector spinae plane blocks than with retrolaminar blocks; median 2.0 and 3.5, respectively. Regardless of technique, the main route of dye spread was through the superior costotransverse ligament to the ipsilateral paravertebral space. Although erector spinae plane blocks were associated with a slightly larger number of stained thoracic spinal nerves than retrolaminar blocks, both techniques were consistently associated with posterior spread of dye and with limited spread to the paravertebral space.

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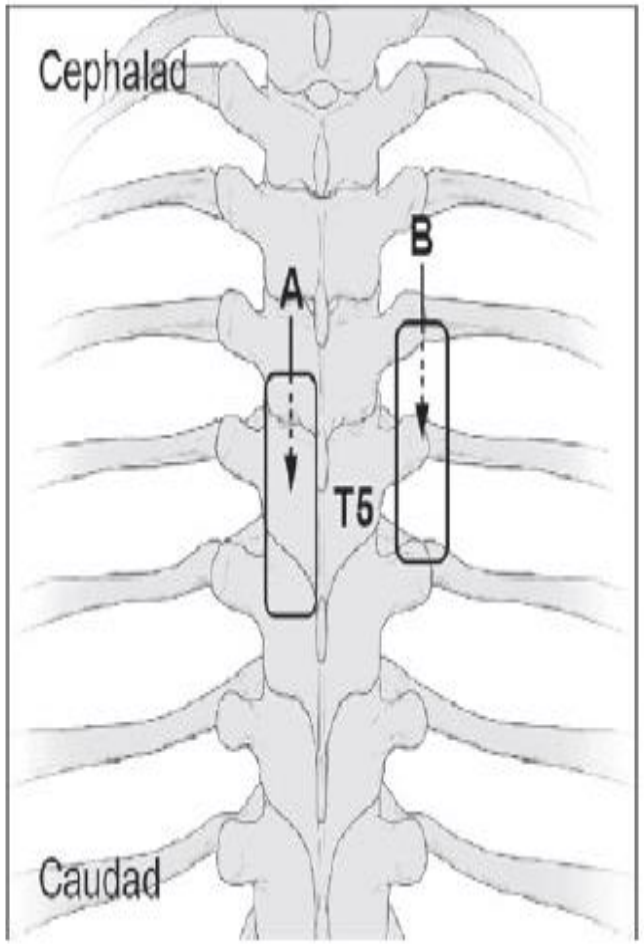

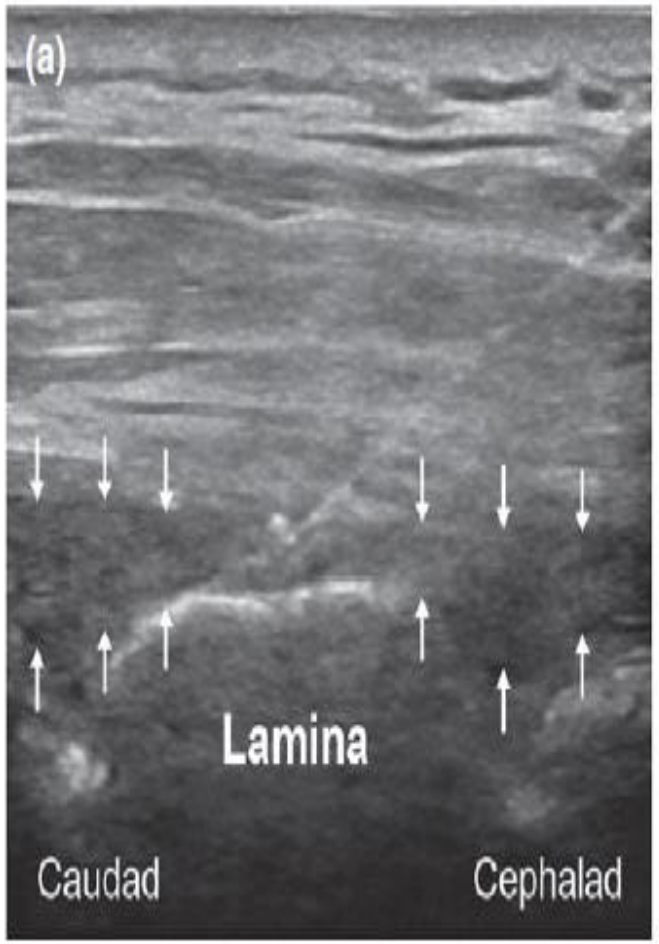

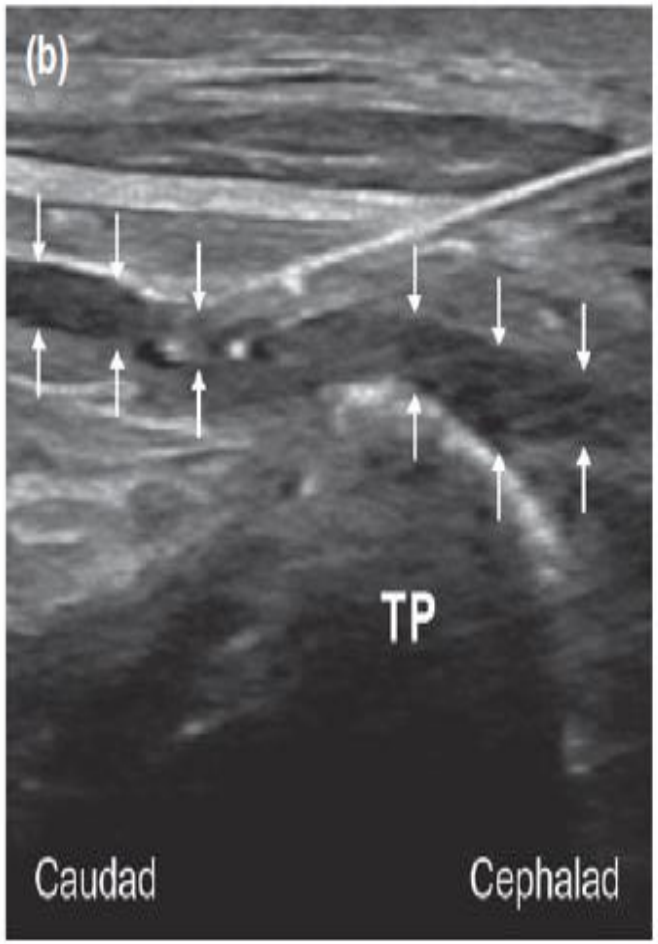

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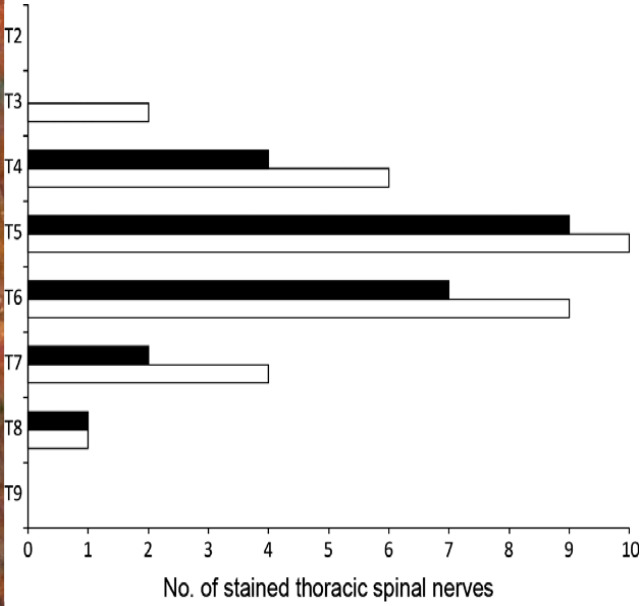
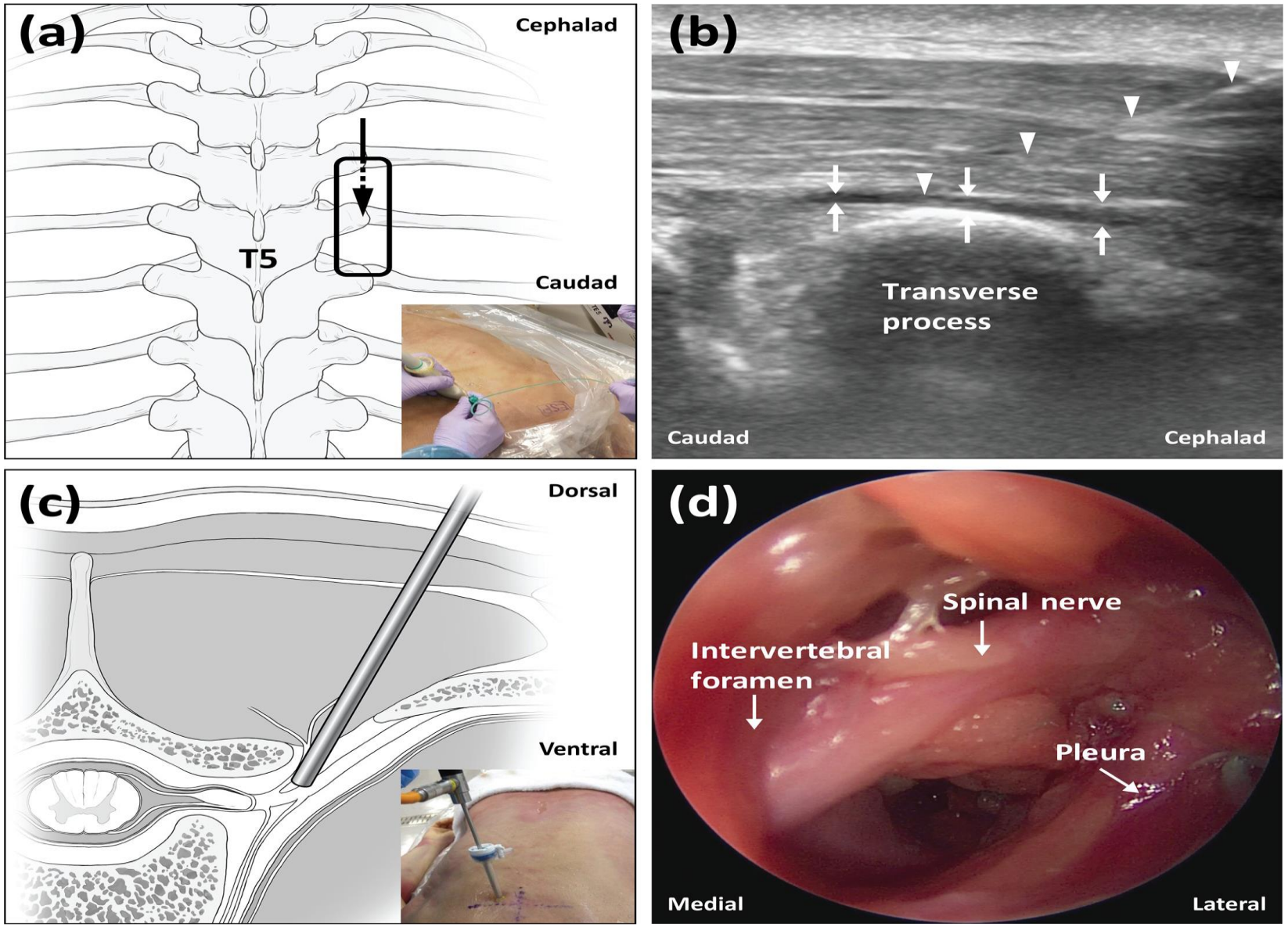


ESP (erector spinae plain block)



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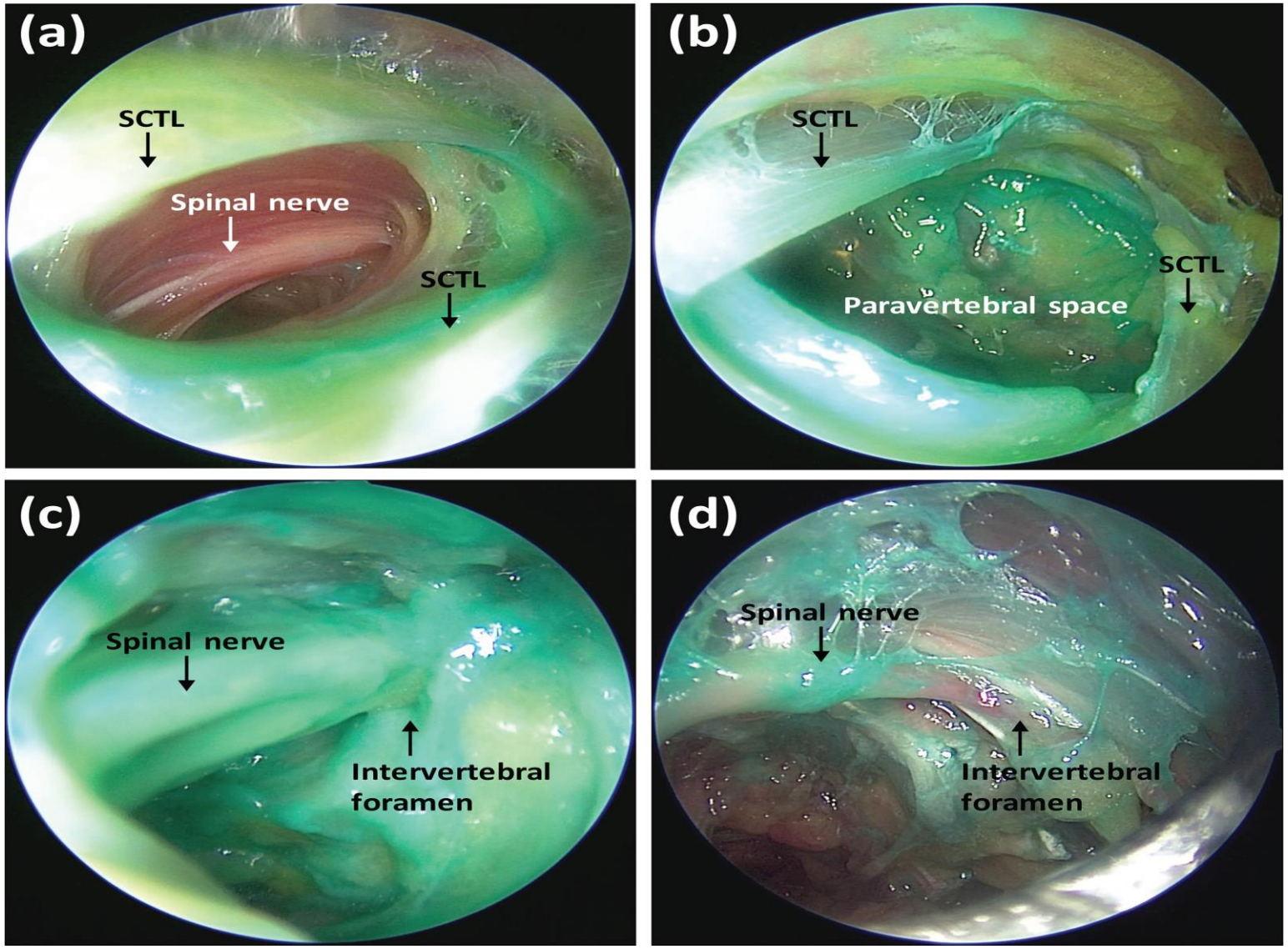

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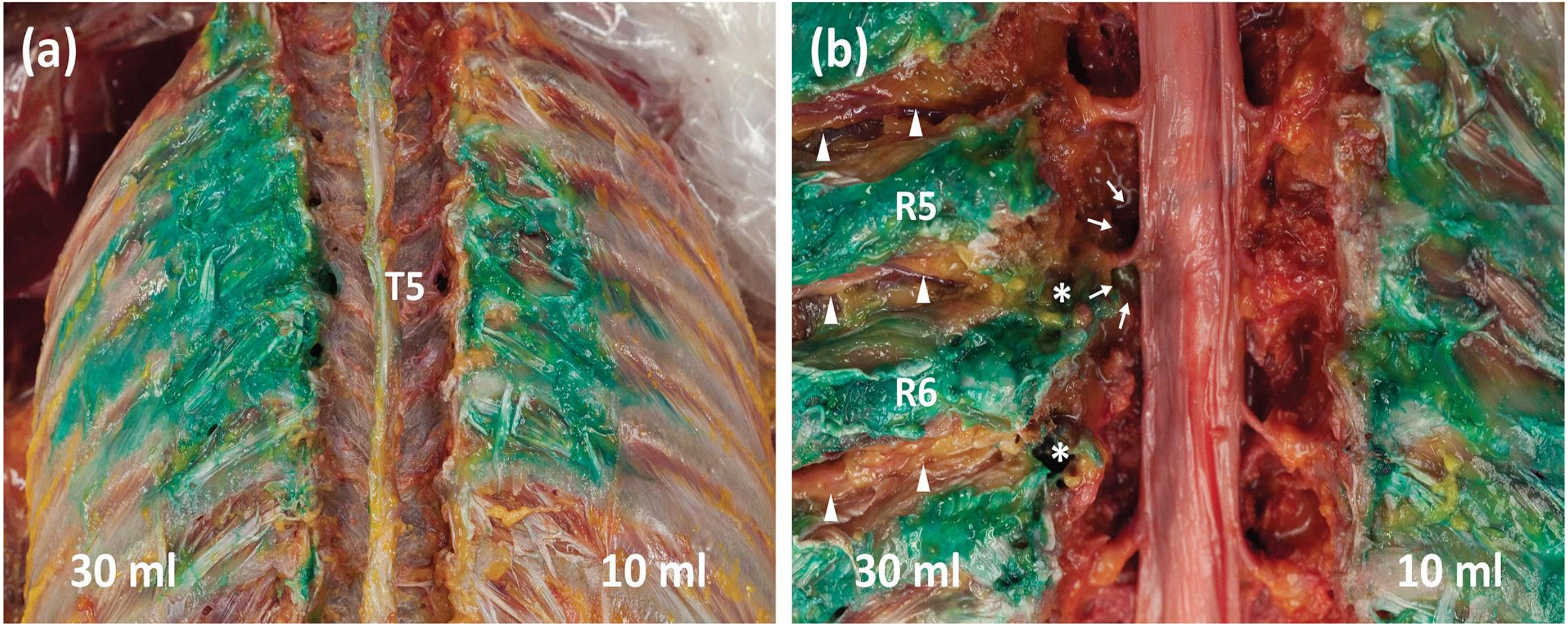

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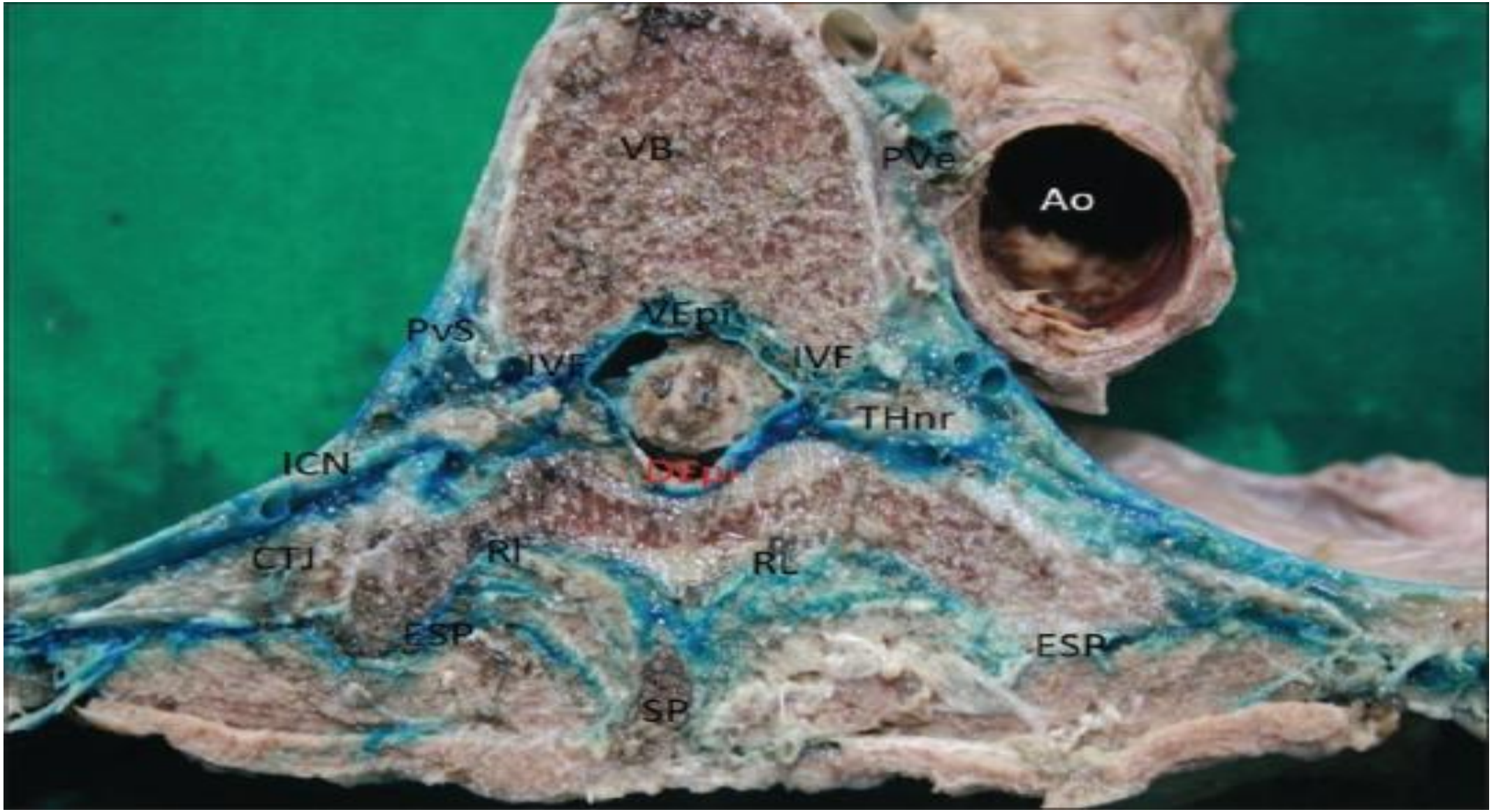

Thoracic paravertebral and erector spinae plane block: A cadaveric study demonstrating different site of injections and similar destinations (2019) *Sandeep Diwan, Rajendra Garud, and Abhijit Nair Thoracic paravertebral and erector spinae plane block: A cadaveric study demonstrating different site of injections and similar destinations Saudi J Anaesth. 2019 Oct-Dec; 13(4): 399–401. doi: 10.4103/sja.SJA_339_19*

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Review J Clin Anesth. 2021 Feb;68:110063. doi: 10.1016/j.jclinane.2020.110063. Epub 2020 Oct 5.

Erector spinae plane block: A narrative review with systematic analysis of the evidence pertaining to clinical indications and alternative truncal blocks

Mohammed S, Prangmalee L

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PMID: 330321

J Clin Anesth. 2019 May;54:61-65. 0.040. Epub 2018 Nov 3.

the effects of modified pectoral nerve or spinae plane block on

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Minerva Anestesiol. 2024 Jan-Feb;90(1-2):98-99. doi: 10.23736/S0375-9393.23.17599-7. Epub 2023 Sep 21.

High-thoracic erector spinae plane (HT-ESP) block together with interscalene brachial plexus (ISP) block for total shoulder arthroplasty

[Article in Er I Gonçalves

Affiliations

PMID: 3335

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Francesco Marrone [1], Carmine Pullano [2], Saverio Paventi [3], Marco Tomei [3], Chiara Pezzella [3], Sabrina Crecco [3]

Zhi. 2019 Oct 8;99(37): .0376-2491.2019.37.007

Case Re

Epub 2018 Apr 21.

-guided erecto ith pregabalin

undergoing laparoscopic cholecystectomy: Randomized, controlled trial

Anesth Essays Res. Oct-Dec 2018;12(4):825-831. doi: 10.4103/aer.AER_142_18

Erector spinae plane endarterectomy

Başak Altıparmak [1], Melike Korkmaz Toker [2], Semra Gümüş Demirbilek [3]

Affiliations + expand

PMID: 30851501 DOI: 10.1016/j.jclinane.201

Hironobu Ueshima [1], Otake Hiroshi [2]

Affiliations + expand

PMID: 29684726 DOI: 10.1016/j.jclinane.2018.04.004

Comparison of Ultrasound-Guided Lumba Spinae Plane Block and Transmuscular Qu Lumborum Block for Postoperative Analg and Proximal Femur Surgery: A Prospecti Randomized Feasibility Study

Serkan Tulgar [1], Halil Cihan Kose [2], Onur Selvi [1], Ozgur Senturk [1], David Terence Thomas [3], Mehme

Anaesthesia. 2019 May;74(5):585-593. doi: 10.1111/anae.14579. Epub 2019 Feb 10.

Pain Med. 2021 Jan 12;pnaa466. doi: 10.1093/pm/pnaa466. Online ahe

Affiliati

PMID:

Erector Spinae Plane Catheters: A Novel Ir in Total Hip Arthroplasty

Noha Tageldin [1], Ugonna Chukwumaife [2], Eslam Elsayed [1], Danielle Eusuf [2], Ja Clifford Shelton [4 5]

Affiliations + expand

PMID: 33432341 DOI: 10.10

The effect of erector spinae plane block on respiratory and analgesic outcomes in multiple rib fractures: a retrospective cohort study

S D Adhikary [1], W M Liu [2], E Fuller [1], H Cruz-Eng [1], K J Chin [3]

Affiliations + expand

PMID: 30740657 DOI: 10.1111/anae.14579

J Cardiothorac Vasc Anesth Epub 2020 Feb 1.

Anesth Essays Res. Apr-Jun 2019;13(2):334-339. doi: 10.4103/aer.AER_77_19.

Ultrasound-Guided Erector Spinae Plane Block Compared to Modified Pectoral Plane Block for Modified Radical Mastectomy Operations

Mona Gad [1], Khaled Abdelwahab [2], Ahmed Abdallah [2], Mohamed Abdelkhalek [2], Mahmoud Abdelaziz [2]

Affiliations + expand

PMID: 31198256 PMCID: PMC6545931 DOI: 10.4103/aer.AER_77_19

Bilateral Contin Open Abdomina

Veronica Zullino [1], Daniele Bo Martina Rinta-Nikkola [1], Massimo Gambardella [1]

Affiliations + expand

PMID: 32127265 DOI: 10.1053/j.jvca.2020.01.053

Indian J Anaesth. 2020 Jan;64(1):77-79

ector spinae plane hnique for simple diorespiratory crip

sha Sundararajan [1], Parthasarathy S

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PMID: 32001917 PMCID: PMC6967364

J Clin Anesth. 2021 Feb;68:110090. 10090. Epub 2020 Oct 20.

Randomized Controlled Trial J Clin Anesth. 2021 May;69:110153. doi: 10.1016/j.jclinane.2020.110153. Epub 2020 Dec 7.

Erector spinae plane block combined w infiltration analgesia for total hip arth randomized, placebo controlled, clinic

Mark J Lennon [1], Senthuren Isaac [2], Dale Currigan [3], Sinead O'Leary [4],

Randomized Controlled Trial J Cardiothorac Vasc Anesth. 2019 Feb;33(2):368-375. doi: 10.1053/j.jvca.2018.05.050. Epub 2018 Jun 4.

Bilateral Erector Spinae Plane Block for Acute Post-Surgical Pain in Adult Cardiac Surgical Patients: A Randomized Controlled Trial

Siva N Krishna [1], Sandeep Chauhan [2], Debesh Bhoi [3], Brajesh Kaushal [2], Suruchi Hasija [2], Tsering Sangdup [4], Akshay K Bisoi [4]

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PMID: 30055991 DOI: 10.1053/j.jvca.2018.05.050

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Randomized Controlled Trial Ann Card Anaesth. Jul-Sep 2018;21(3):323-327. doi: 10.4103/aca.ACA_16_18.

Comparison of continuous thoracic epidural analgesia with bilateral erector spinae plane block for perioperative pain management in cardiac surgery

P S Nagaraja [1], S Ragavendran [1], Naveen G Singh [1], Omshubham Asai [1], G Bhavya [1], N Manjunath [1], K Rajesh [2]

Affiliations + expand

PMID: 30052229 PMCID: PMC6078032 DOI: 10.4103/aca.ACA_16_18

Case Reports Rev Esp Anestesiol Reanim (Engl Ed). 2020 Mar;67(3):153-158. Epub 2020 Feb 11.

pinae plane block for scoliosis

Saudi J Anaesth. Apr-Jun 2020;14(2):275-276. doi: 10.4103/sja.SJA_43_20. Epub 2020 Mar 5.

Erector spinae plane block growing potential: Pain management in laparoscopy nephrectomy

do Longo [1], Felice Eugenio Agrò [1]

: PMC7164479 DOI: 10.4103/sja.SJA_43_20

2):263-264. doi: 10.4103/sja.SJA_654_19. Epub 2020 Mar 5.

sth. 2020 Feb;59:84-88.

Jul 4.

ck and thoracic paravertebral compared to IV-morphine: A randomized controlled trial

Yavuz Gürkan [1], Can Aksu [2], Alparslan Kuş [1], Ufuk H Yörükoğlu [1]

Affiliations + expand

PMID: 31280100 DOI: 10.1016/j.jclinane.2019.06.036

Expanding Role of the Erector Spinae Plane Block for Postoperative and Chronic Pain Management

Ivan Urits [1], Karina Charipova [2], Kyle Gress [2], Patrick Laughlin [3 4 5], Vwaire Orhurhu [6], Alan D Kaye [7], Omar Viswanath [8 9 10]

Affiliations + expand

PMID: 31372769 DOI: 10.1007/s11916-019-0812-y

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ang [2], YuKe Tian [1]

ons + expand

1330457 DOI: 10.1016/j.jclinane.2019.07.002

Randomized Controlled Trial World Neurosurg. 2019 Jun;126:e779-e785. doi: 10.1016/j.wneu.2019.02.149. Epub 2019 Mar 8.

Postoperative Analgesic Efficacy of the Ultrasound-Guided Erector Spinae Plane Block in Patients Undergoing Lumbar Spinal Decompression Surgery: A Randomized Controlled Study

Ahmet Murat Yayik [1], Sevim Cesur [2], Figen Ozturk [2], Ali Ahiskalioglu [3], Ayse Nur Ay [2], Erkan Cem Celik [2], Nuh Cagrı Karaavci [4]

Affiliations + expand

PMID: 30853517 DOI: 10.1016/j.wneu.2019.02.149

ESP vs TEA

Journal List › Ann Card Anaesth › v.21(3); Jul-Sep 2018 › PMC6078032

Annals of Cardiac Anaesthesia

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Ann Card Anaesth. 2018 Jul-Sep; 21(3): 323–327.
doi: 10.4103/aca.ACA_16_18

PMCID: PMC6078032
PMID: 30052229

Comparison of Continuous Thoracic Epidural Analgesia with Bilateral Erector Spinae Plane Block for Perioperative Pain Management in Cardiac Surgery

PS Nagaraja, S Ragavendran, Naveen G Singh, Omshubham Asai, G Bhavya, N Manjunath, and K Rajesh[1]

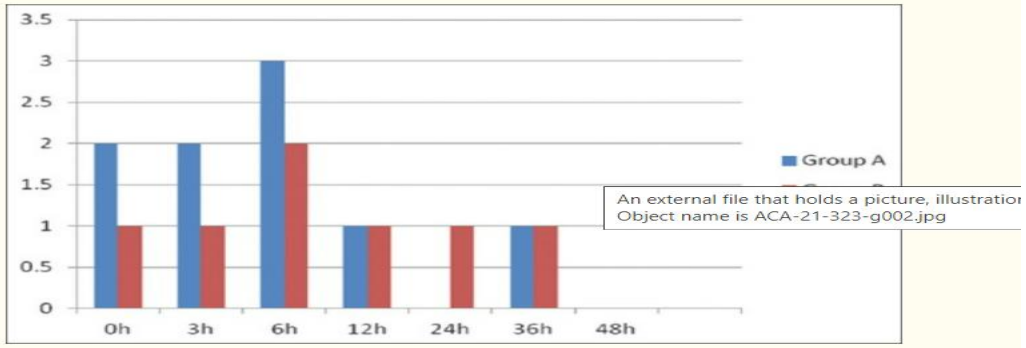

Figure 2

Rescue analgesic requirement between Group A (thoracic epidural analgesia) and Group B (erector spinae plane block). X– axis: time interval in hours postextubation. Y– axis: Number of rescue analgesic episodes

Table 2b

Visual analog scale between Group A (thoracic epidural analgesia) and Group B (erector spinae plane block) during cough

VAS (cough)	0 h	3 h	6 h	12 h	24 h	36 h	48 h
Group A (*n*=25)	2.16±1.21	2.36±0.76	2.52±0.87	2.76±1.13	3.08±0.70	2.96±1.21	2.72±1.37
Group B (*n*=25)	1.88±1.39	2.44±0.92	2.6±1.29	2.4±1.47	2.36±1.07	1.8±1.08	1.36±0.70
P	0.45	0.74	0.79	0.34	0.007	0.0008	0.0001

VAS: Visual analog scale

Conclusion:

ESP block is easy to perform and can serve as a promising alternative to TEA in optimal perioperative pain management in cardiac surgery.

Заключение: ESP блок прост в исполнении и может быть использован как многообещающая альтернатива, в оптимальном периоперационном контроле боли в кардиохирургии.

ESP vs PVB

Indian Journal of Anaesthesia
Official publication of the Indian Society of Anaesthesiologists
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Indian J Anaesth. 2019 Dec; 63(12): 1008–1014.
Published online 2019 Dec 11. doi: 10.4103/ija.IJA_310_19
PMCID: PMC6921308
PMID: 31879425

Role of erector spinae plane block versus paravertebral block in pain control after modified radical mastectomy. A prospective randomised trial

Mona Raafat El Ghamry and Asmaa Fawzy Amer

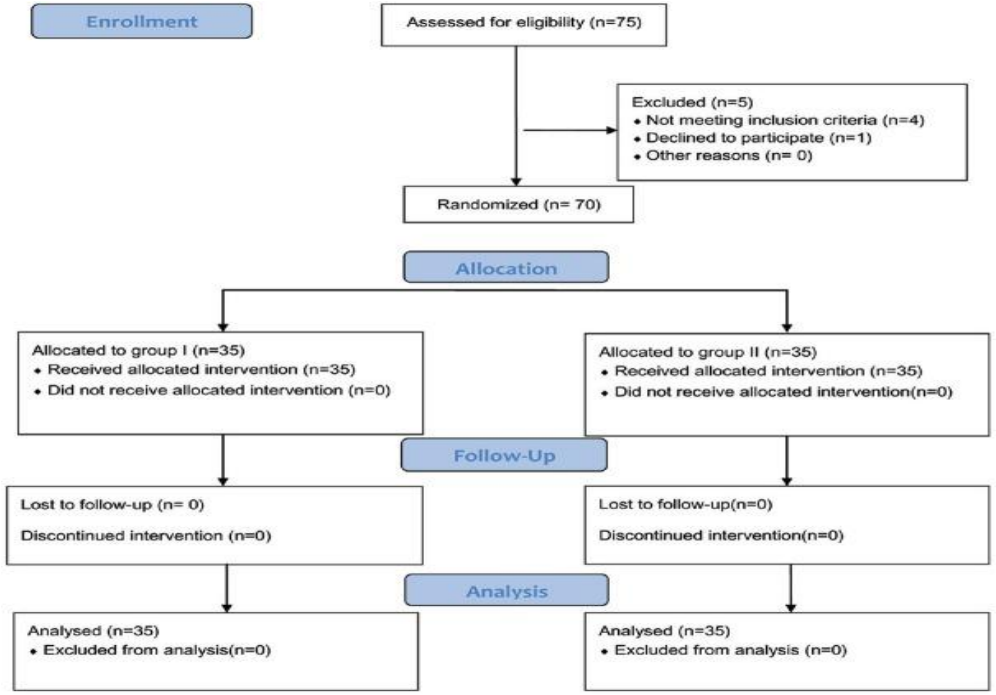


Table 2

Intra-operative and post-operative opioid consumption, time to first analgesic request and complications

Variable	Group I	Group II	*P*
Intra-operative fentanyl consumption (μg)	141.2±11.9	135.9±14.5	0.11
Total post-operative morphine (mg)	27.3±2.9	26.7±2.1	0.32
Time to first analgesic request (h)	6.35±0.42	6.58±0.60	0.075
Nausea (%)	12 (34.3%)	10 (28.6%)	0.60
Vomiting (%)	4 (11.4%)	3 (8.6%)	0.69
Pneumothorax (%)	4 (11.4%)	0 (0.0%)	0.114

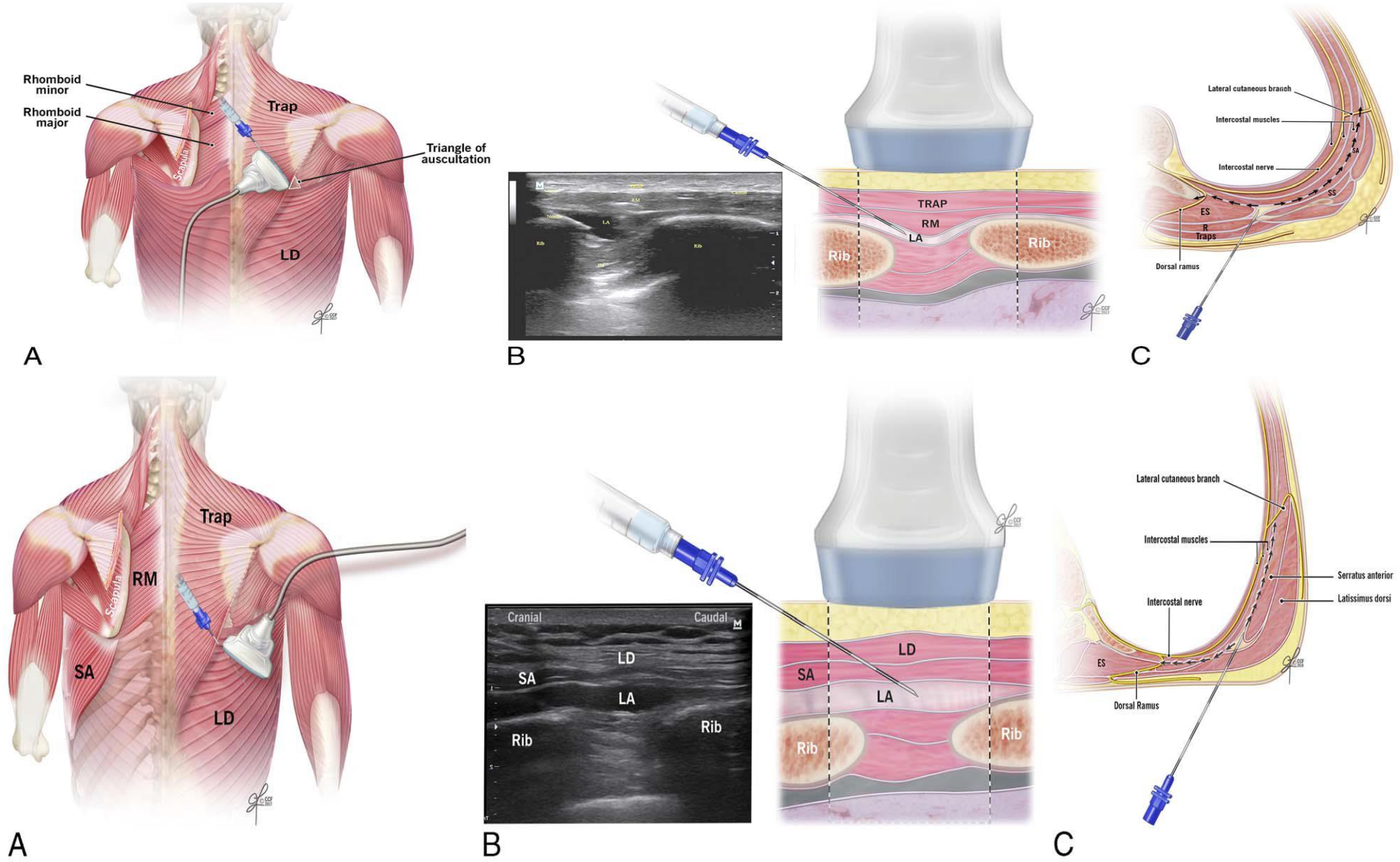
Data presented as mean±SD or patient's number. SD – Standard deviation

Conclusion:

Both TPVB and ESPB can be effectively used in controlling post-mastectomy pain and reduce intra-operative and post-operative opioid consumption.

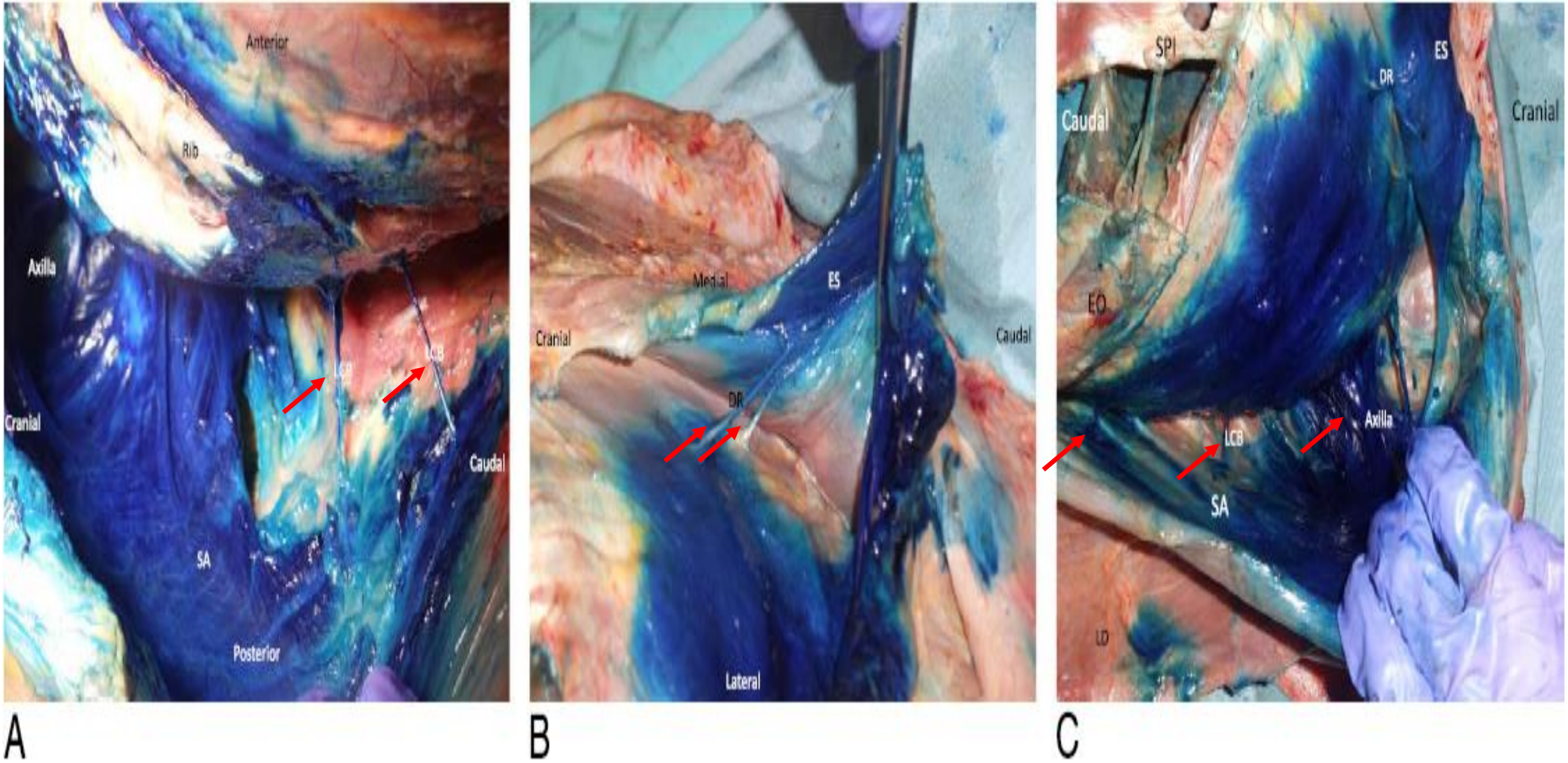
PVB и ESPB блок могут быть эффективно использованы для контроля боли после мастэктомии, снижения интраоперационного и послеоперационного использования опиоидов.

RISS – rhomboid intercostal and subserratus plane block



Elsharkawy, H., Maniker, R., Bolash, R., Kalasbail, P., Drake, R. L., & Elkassabany, N. (2018). Rhomboid Intercostal and Subserratus Plane Block. Regional Anesthesia and Pain Medicine, 1. doi:10.1097/aap.0000000000000824

RISS – rhomboid intercostal and subserratus plane block



Elsharkawy, H., Maniker, R., Bolash, R., Kalasbail, P., Drake, R. L., & Elkassabany, N. (2018). Rhomboid Intercostal and Subserratus Plane Block. Regional Anesthesia and Pain Medicine, 1. doi:10.1097/aap.0000000000000824

RISS – rhomboid intercostal and subserratus plane block

TABLE 1. Summary of Cases

Patient Age, y/Sex	Pathology	Technique	RI Injectate Volume*	RI Location	SS Injectate Volume*	SS Location	Dermatomal Coverage	Visual Analog Score (Pre → Post)	Duration of Analgesia
Single-shot blocks									
1. 81/M	T4–T8 rib fractures	Block	10 mL	T6	10 mL	T9	T2–T9	10 → 2	12 h
2. 64/F	Chest tube ×2	Block	10 mL	T6	20 mL	T9	T4–T10	9 → 2	12 h
3. 77/F	Chest tube ×2	Block	10 mL	T6–T7	10 mL	T9	T3–T8	10 → 4	16 h
4. 69/M	Subcostal incision	Block	10 mL	T6	10 mL	T10	T5–T10	10 → 2	24 h
Catheter infusions									
5. 42/F	Ventral hernia repair	Catheter	10 mL	T6	10 mL	T6–T7	T4–T9	8 → 3	4 d
6. 57/F	VATS, pneumonectomy, and 6th rib resection	Catheter	10 mL	T4–T5	10 mL	T6–T7	T4–T9	9 → 3	4 d
7. 51/M	Cancer pain at T3–T6 right lateral chest wall	Catheter	10 mL	T4–T5	10 mL	T6–T7	T3–T9	10 → 2	2 d
8. 41/F	Open cholecystectomy	Catheter	10 mL	T6	10 mL	T8	T5–T12	10 → 4	5 d
9. 92/F	T4–T7 rib fractures	Catheter	20 mL	T3–T4	15 mL	T6–T7	†	10 → 2‡	2 d
10. 77/M	Open pancreaticoduodenectomy	Bilateral catheters	10 mL per side	T5	10 mL per side	T7–T8	Right: T6–T10 Left: T8–T11	9 → 5	2 d
11. 57/F	Open adrenalectomy	Bilateral catheters	10 mL per side	T5	10 mL per side	T6–T7	Right: T7–T12 Left: T8–T10	2–4 Post§	3 d
12. 66/M	Left lung transplant	Catheter	10 mL	T3–T4	10 mL	T4–T5	T3–T6	9 → 3	6 d
13. 57/F	Open adrenalectomy	Bilateral catheters	10 mL per side	T5	10 mL per side	T7	Right: T7–T11 Left: T6–T10	8 → 3	3 d
14. 65/M	Right lung transplant	Catheter	10 mL	T4	10 mL	T6	T4–T8	9 → 4	4 d
15. 54/M	Liver wedge resection	Bilateral catheters	10 mL per side	T5	10 mL per side	T8	Right: T7–T11 Left: T6–T10	7 → 0	5 d

*For patients receiving single-shot blocks, 0.5% bupivacaine was injected; for patients receiving a catheter, ropivacaine 0.2% was injected as a bolus through the needle with the volume listed here followed by an infusion of ropivacaine 0.2% at a basal rate of 4 to 8 mL/h and a bolus of 6 to 12 mL every 60 minutes through RI catheters.

†Unable to attain due to language barrier.

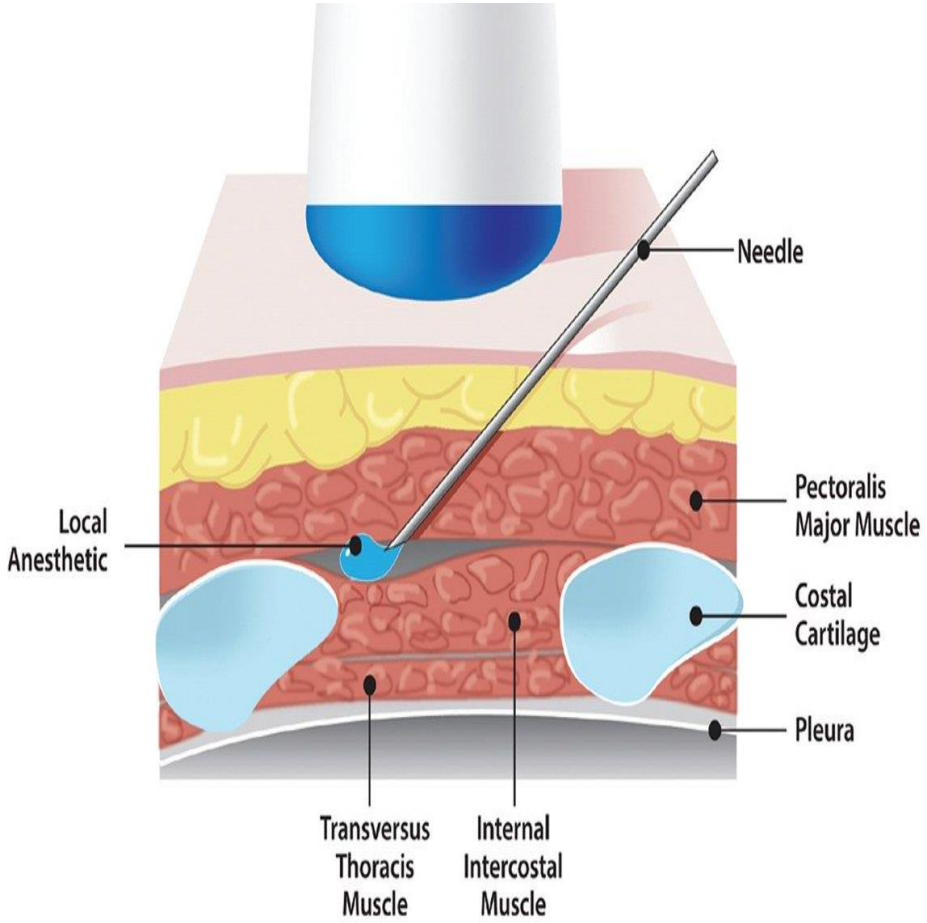
‡Using FACES scale, interpreter, and daughter interpretation due to language barrier.

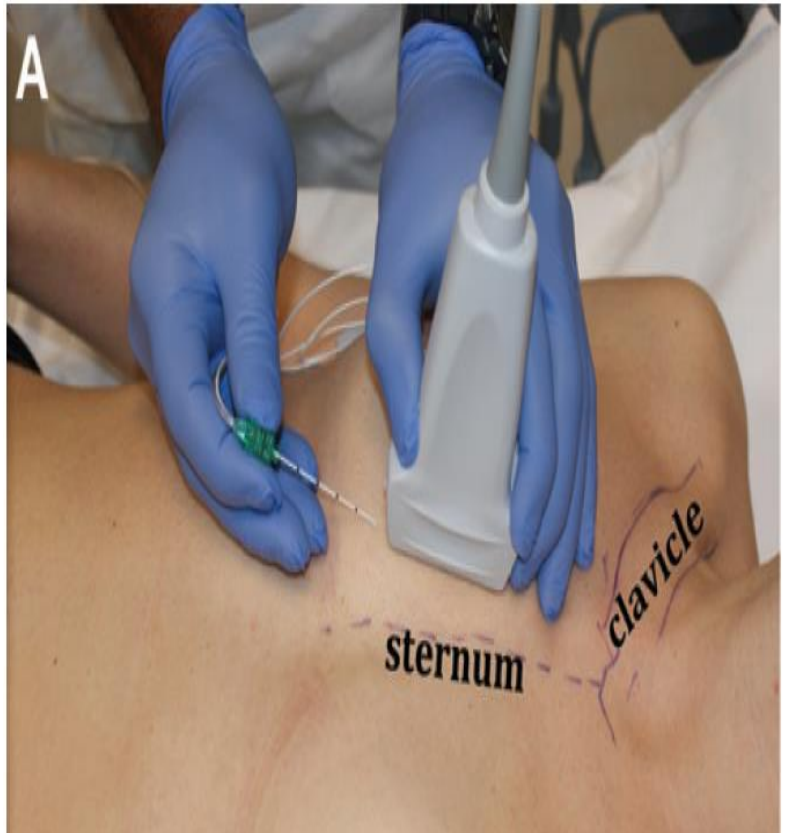
§Block was performed under general anesthesia; therefore, preprocedure pain score is not applicable.

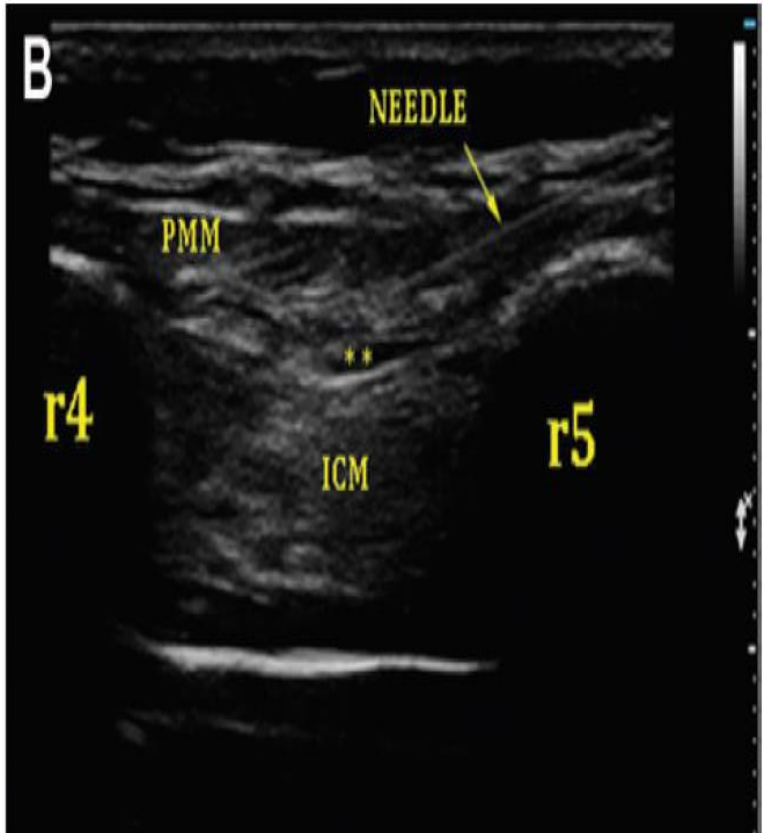
RI indicates rhomboid intercostal; SS, subserratus plane; VATS, video-assisted thoracoscopic surgery.

Elsharkawy, H., Maniker, R., Bolash, R., Kalasbail, P., Drake, R. L., & Elkassabany, N. (2018). Rhomboid Intercostal and Subserratus Plane Block. Regional Anesthesia and Pain Medicine, 1. doi:10.1097/aap.0000000000000824

PIFB – pectointercostal fascial block







De la Torre, P. A., Garcia, P. D., Alvarez, S. L., Miguel, F. J. G., & Perez, M. F. (2014). A Novel Ultrasound-Guided Block: A Promising Alternative for Breast Analgesia. Aesthetic Surgery Journal, 34(1), 198–200. doi:10.1177/1090820x13515902

PIFB – pectointercostal fascial block

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pectointercostal fascial block

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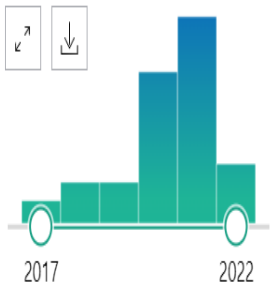

1 **Pectointercostal Fascial Block** (PIFB) as a Novel Technique for Postoperative Pain Management in Patients Undergoing Cardiac Surgery.

Cite

Kumar AK, Chauhan S, Bhoi D, Kaushal B.

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J Cardiothorac Vasc Anesth. 2021 Jan;35(1):116-122. doi: 10.1053/j.jvca.2020.07.074. Epub 2020 Jul 30.

PMID: 32859487 Clinical Trial.

OBJECTIVE: To determine the efficacy of **pectointercostal fascial block** in relieving postoperative pain in patients undergoing cardiac surgery. ...In group 2 participants (interventional group), bilateral **pectointercostal fascial block** was ...

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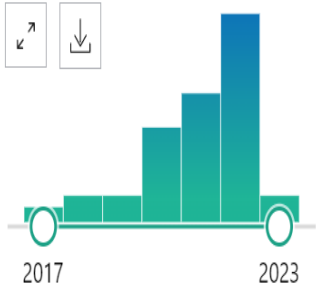

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PIFB – pectointercostal fascial block

Randomized Controlled Trial > Pain Physician. 2020 Sep;23(5):485-493.

The Analgesic Efficacy of Pecto-Intercostal Fascial Block Combined with Pectoral Nerve Block in Modified Radical Mastectomy: A Prospective Randomized Trial

Mohamed M Abu Elyazed [1], Mohamed S Abdelghany [1], Shaimaa F Mostafa [1]

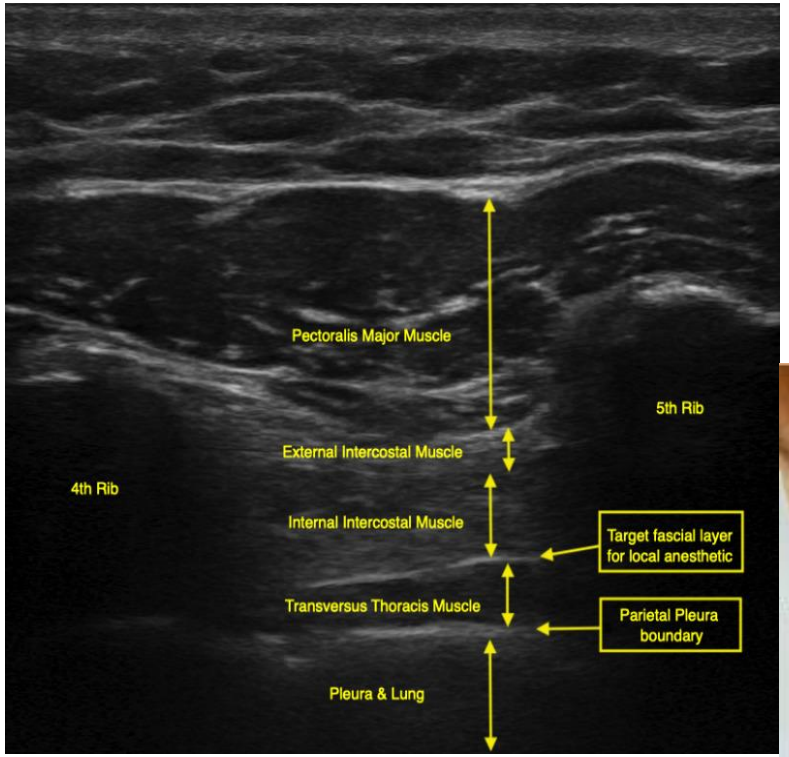
Table 2. *Intra- and postoperative opioid consumption in both groups.*

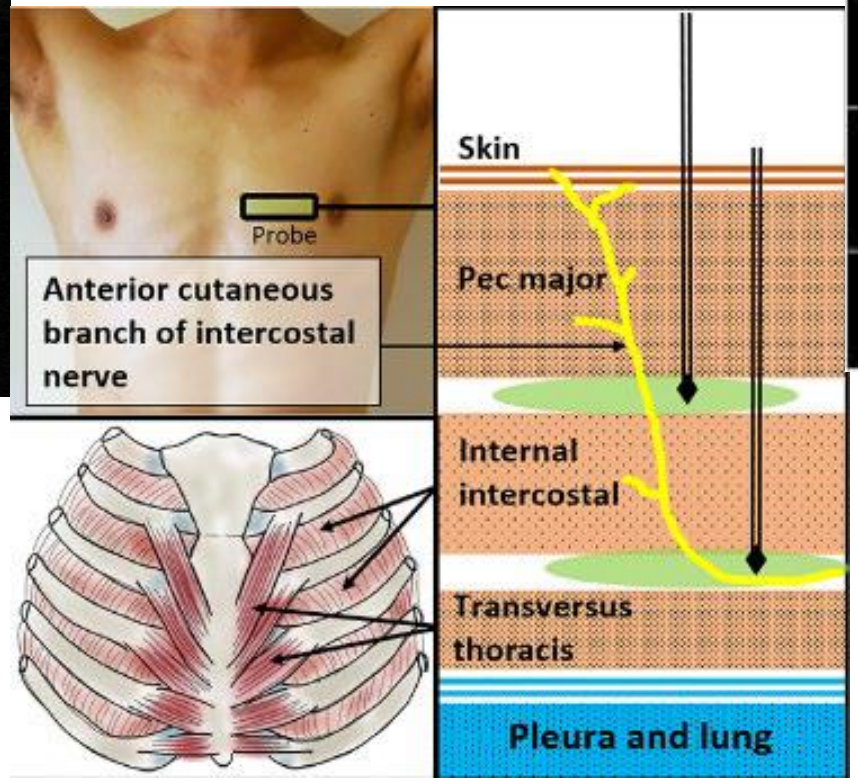
	Pecs II Group	PIFB-Pecs II Group	Relative Risk/Median Difference	*P* Value	(95% CI)
Number of patients who required intraoperative fentanyl (%)	17 (56.7%)	7 (23.3%)	2.43	0.018	1.182–4.991
Intraoperative fentanyl consumption (μg)	57.5 (0–75)	0.0 (0–15)	0	0.022	0–60
Time to first morphine dose (min)	196 (163.8–248.8)	327.5 (266.3–360.0)	115	< 0.001	79.98, 150.00
Morphine titration consumption (mg)	6.0 (3.0–9.0)	3.0 (3.0–3.75)	3.0	0.002	(0.0; 3.0)
PCA morphine consumption in the first 24 hours (mg)	8.0 (6.0–10.0)	5.0 (4.0–5.0)	4.0	< 0.001	(3.0; 5.0)
Cumulative morphine consumption (mg)	14.0 (11.0–18.0)	8.0 (7.0–9.0)	6.0	< 0.001	(4.0; 8.0)

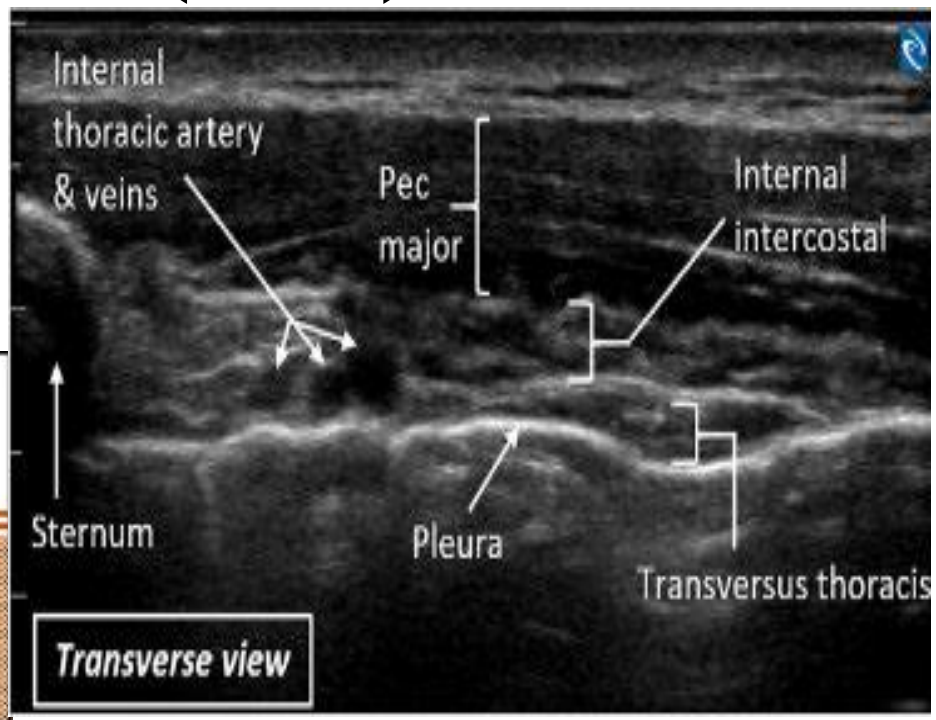
Conclusions: The combination of Pecs II and PIFB provide better perioperative analgesia for MRM than Pecs II alone.

Заключение: комбинация PECS2 и PIFB обеспечивает лучшую анальгезию при модифицированной радикальной мастэктомии, чем изолированное применение PECS2.

Transversus thoracic muscle plane (TTP) block







Ueshima, H., & Kitamura, A. (2015). Clinical experiences of ultrasound-guided transversus thoracic muscle plane block: a clinical experience. Journal of Clinical Anesthesia, 27(5), 428–429. doi:10.1016/j.jclinane.2015.03.04

Liu G, Gao M, Hu Y, Wang B, Lin Y, Guan Y, Chen G, Zhang P, Hu Y, Cai Q, Qin W. Effects of Ultrasound-Guided Transversus Thoracic Muscle Plane Block on Postoperative Pain and Side Effects: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. J Cardiothorac Vasc Anesth. 2023 May;37(5):788-800. doi: 10.1053/j.jvca.2022.11.001. Epub 2022 Nov 5. PMID: 36435722.

Chin KJ, Versyck B, Pawa A. Ultrasound-guided fascial plane blocks of the chest wall: a state-of-the-art review. Anaesthesia. 2021 Jan;76 Suppl 1:110-126. doi: 10.1111/anae.15276. PMID: 33426660.

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Original Article

Deep Parasternal Intercostal Plane Block for Intraoperative Pain Control in Cardiac Surgical Patients for Sternotomy: A Prospective Randomized Controlled Trial

Henry M.K. Wong, FHKCA, FANZCA, FHKAM, MScHSM[*,1],
P.Y. Chen, MN[*], Geoffrey C.C. Tang, MBBS[*],
Sandra L.C. Chiu, MPH[†],
Louis Y.H. Mok, FHKCA, FANZCA, FHKAM[*],
Sylvia S.W. Au, FHKCA, FANZCA, FHKAM[*],
Randolph H.L. Wong, FRCSEd, FCSHK, FHKAM[‡]

[*]*Department of Anesthesia and Intensive Care, Prince of Wales Hospital, New Territories, Hong Kong, China*
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Objectives: Sternotomy pain is common after cardiac surgery. The deep parasternal intercostal plane (DPIP) block is a novel technique that provides analgesia to the anterior chest wall. The aim of this study was to investigate the analgesic effect of bilateral DPIP blocks on intraoperative pain control in cardiac surgery.

Design: This is a double-blinded, prospective randomized controlled trial (Oct 2020-Dec 2022).

Settings: This study was conducted in a single institution, which is an academic university hospital.

Participants: Eighty-six elective cardiac surgical patients with median sternotomy were recruited.

Interventions: Patients were randomly divided into DPIP or control group. Either 20ml 0.25% levobupivacaine or 0.9% normal saline was injected for the DPIP under ultrasound guidance after induction of general anaesthesia.

Measurements and Main Results: The primary outcome was intraoperative opioids consumption and hemodynamic changes at sternotomy. Secondary outcomes included postoperative morphine consumption, postoperative pain and time to tracheal extubation. Intraoperative opioids requirement was reduced from a median (IQR) intravenous morphine equivalence of 21.4mg (13.8-24.3mg) in control group to 9.5mg (7.3-11.2mg) in the DPIP group ($P<0.001$). Hemodynamic parameters were more stable in DPIP group at sternotomy, as evidenced by lower percentage increase in systolic, diastolic and mean arterial blood pressure from baseline. No difference was observed in time to tracheal extubation, postoperative morphine consumption, postoperative pain score and spirometry.

Conclusions: Bilateral DPIP block provides effective intraoperative analgesia and opioid-sparing. It may be included as part of the multimodal analgesia for enhanced recovery in cardiac surgery.

Transversus thoracic muscle plane (TTP) block

Review > J Cardiothorac Vasc Anesth. 2023 May;37(5):788-800. doi: 10.1053/j.jvca.2022.11.001.
Epub 2022 Nov 5.

Effects of Ultrasound-Guided Transversus Thoracic Muscle Plane Block on Postoperative Pain and Side Effects: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Guoqing Liu [1], Meiling Gao [2], Yang Hu [3], Bangjun Wang [3], Yunhua Li
Gang Chen [4], Peng Zhang [4], Yinghua Hu [4], Qiang Cai [5], Wen Qin [6]

Affiliations + expand

PMID: 36435722 DOI: 10.1053/j.jvca.2022.11.001

Abstract

The effects of the transversus thoracic muscle plane (TTP) block on postoperative pain have become increasingly controversial. This meta-analysis compared the effects of the TTP block versus no block on postoperative analgesia and side effects to determine whether this new technique is a reliable alternative for pain management. PubMed, Cochrane Library, Embase, Web of Science, ClinicalTrials.gov, China National Knowledge Infrastructure, Chongqing VIP information, and Wanfang Data were searched for clinical studies investigating the analgesic effect of the TTP block compared to controls. The primary outcomes included the postoperative pain scores at rest and during movement, morphine consumption in 24 hours, and the rate of postoperative nausea and vomiting (PONV). Eleven randomized controlled trials (RCTs), including 682 patients, were reviewed. The meta-analysis showed that the TTP block significantly could reduce the pain scores at 0 (at rest: mean difference [MD], -2.28; 95% CI: -2.67 to -1.90) (during movement: MD: -2.09, 95% CI: -2.62 to -1.56) and 12 hours (at rest: -1.42, 95% CI: -2.03 to -0.82) (during movement: MD: -2.13, 95% CI: -2.80 to -1.46) after surgery, 24-hour postoperative analgesic consumption (MD: -23.18, 95% CI: -33.71 to -12.66), and the incidence of PONV (odds ratio, 0.36, 95% CI: 0.15-0.88). Furthermore, the trial sequence analysis confirmed the result of less 24-hour postoperative analgesic consumption in the TTP block group. As a novel technique, the TTP block exhibited a superior postoperative analgesic effect during the early postoperative period. Nevertheless, additional well-designed RCTs are needed.

Keywords: postoperative analgesia; side effects; transversus thoracic muscle plane block.

Выводы:

- Исследования на трупах не коррелируют в полной мере с «реальностью».
- Применять проще.
- Применять безопаснее (возможен опосредованный доступ к PVS и ES).
- Применять быстрее (технический аспект).

ВЧЕРА

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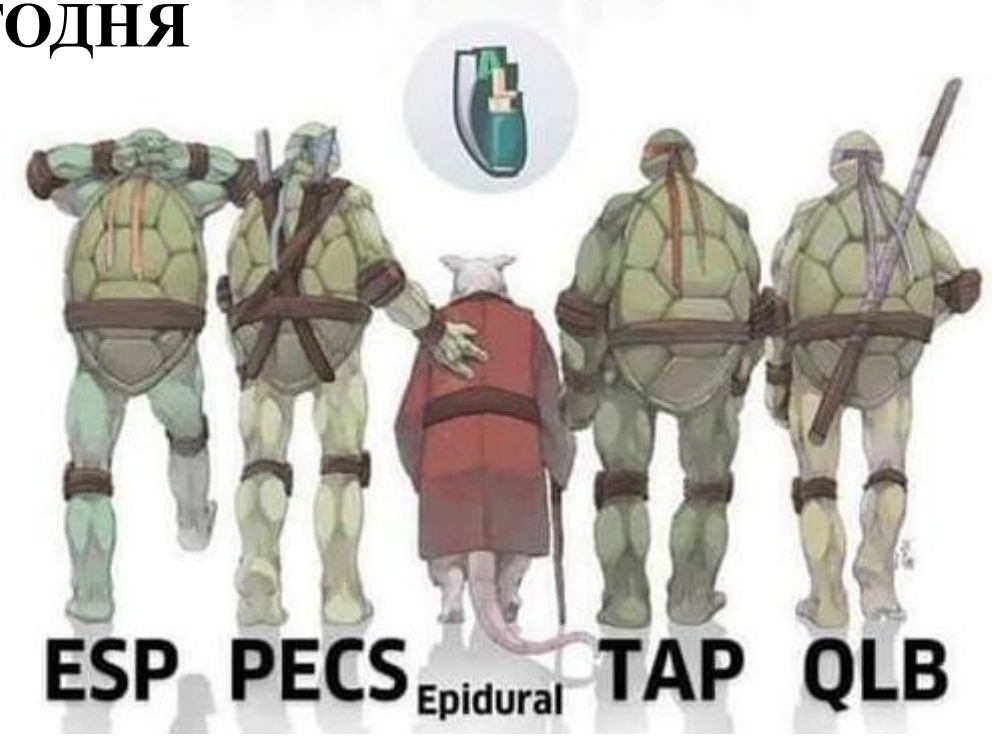

Благодарю за внимание!

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