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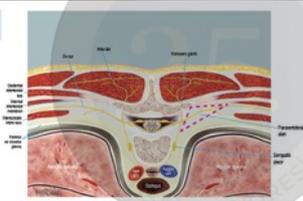
KLİNİK ÇALIŞMA / ORIGINAL ARTICLE

**Torakotomi sonrası postoperatif ağrı kontrolünde torakal epidural ve paravertebral bloğun karşılaştırılması**  
*Comparison of thoracic epidural and paravertebral analgesia for postoperative pain control after thoracotomy*

Tülin ÖZTÜRK,<sup>1</sup> İsmet TOPÇU,<sup>1</sup> Seda YALDIZ,<sup>2</sup> Alper ÖZBAKKALOĞLU,<sup>1</sup> Kıvanç ASIK,<sup>1</sup> Alp YENTİR<sup>1</sup>

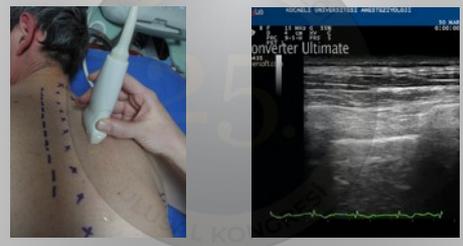
**Özet**  
Amaç: Bu randomize kontrollü kör çalışmada, torakal paravertebral analjezin torakotomi sonrası postoperatif ağrı, hemodinamik ve solunum hızlarına etkileri, epidural analjeziye ile karşılaştırıldı.  
Geçer ve Yöntem: Elektif açık akciğer cerrahisi planlanan 35 hasta hasta prospektif olarak bu çalışmaya alındı. Operasyondan 1 saat önce, 18 hastaya epidural kateter (grup ED), 17 diğer hastaya ultrason rehberliğinde paravertebral kateter (grup PV) takıldı. Standart genel anestezi uygulandı. Anestezi sonrası, tüm hastalar postoperatif analjezi için epidural veya paravertebral kateter aracılığıyla 0.1-1 levobupivakain ve morfin 0.1 mg mL<sup>-1</sup> aldılar. Torakotomi ile hasta kontrolü analjezi rejimi 24 saat için ayarlandı. Yirmi dört saat içinde kullanılan lokal anestezi morfin ve tramadol (klinik) total miktarları toplam olarak kaydedildi. VAS ağrı skoru, sedasyon skoru, yan etkiler ve hemodinamikler (kan basıncı, kalp hızı, solunum sayısı, postoperatif 1, 2, 3, 4, 6, 12 ve 24 saatlerde kör bir gözlemler tarafından değerlendirildi).  
Bulgular: Sonuç ve hastaları için kateter Grup PV'de 20.8±1.3 and 23.1±1.5; Grup ED' dekinden 25.1±3.5 and 32.5±4.3; torakotomi olarak antaki 0.9±0.6, 3.05 skordan PV grup ve ED grupları arasında anlamlı olarak farklı değildi (p=0.3). Grup PV'de 3 hasta, grup ED'de 5 hasta anesteziye ilaç gerektirdi (p=0.05). 1 saatte PV grubunda sedasyon, ED grubundakilerden daha düşük idi (p=0.001). ED grubunda 5 (%28) hastada hipotansiyon gelişti (p=0.02).  
Sonuç: Torakotomi sonrası ağrı gidermede, 0.1 levobupivakain ve 0.1 mg mL<sup>-1</sup> morfin ile paravertebral blok alternatif olabilir.

**PVB - ANATOMİ**



Spinal sinirlerin ön ve arka dalları, sempatik zincir, yağ dokusu ve damarlar içerir.

**TEKNİK KLASİK**

PHILIPS TPVB MI 0-4 09/10/2013  
13-10-09-134425 KOCAELI UNIVERSITY HOSP TIS 0.1 13:47:25

Nerve0-4cm  
12-4  
32Hz  
5.0cm

2D  
Res  
Gn 55  
55  
2/3/4

**SONOANATOMY...**

Transverse Process

Costa-transverse ligament

Pleura

5.0cm

PHILIPS TPVB MI 0-4 09/10/2013  
13-10-09-134425 KOCAELI UNIVERSITY HOSP TIS 0.1 13:47:11

Nerve0-4cm  
12-4  
32Hz  
5.0cm

2D  
Res  
Gn 55  
55  
2/3/4

**Step Sign**

Transverse Process

Pleura

Pleura

5.0cm



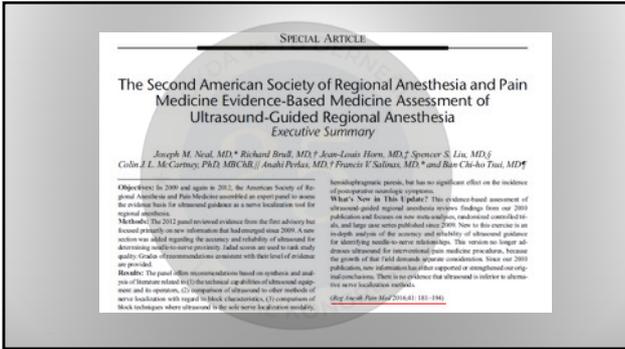


TABLE 7. Evidence-Based Recommendations for USG Truncal Block

Block	Grade of Recommendation	Level of Evidence
Thoracic paravertebral	B	III-III
PECS	A	II-III
Intercostal	C	III
TAP	A	Ia-IIb
Rectus sheath	A	I
Transversalis fascia	B	III
IIH	A	IIb-IIb

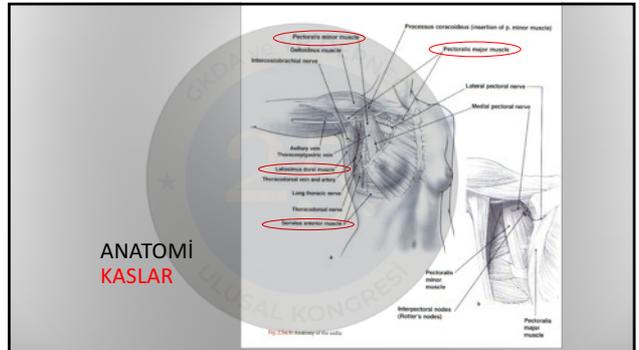
Note that levels of evidence for paravertebral, intercostal, TAP, rectus sheath, and IIH blocks are derived in part from comparison with alternative landmark-based techniques. The remaining blocks are typically performed using only USG.

(Reg Anesth Pain Med 2016;41: 181-196)

**Pektoral Blok ?**

**The 'pecca block': a novel technique for providing analgesia after breast surgery**

● KOLAY BİR ALAN BLOĞU!  
 ● KOMPARTMAN-FASYA BLOĞU  
 ● MOTOR VE DUYUSAL SINIRLERİN BLOKAJI



## ANATOMİ SINIRLAR

1. N. PECTORALIS  
LATERAL: C5-C7  
MEDIAL: C8-T1
2. T2-T6 SPİNAL SINIRLAR  
LATERAL  
ANTERİOR
3. N. THORACICUS LONGUS VE N. THORACODORSALIS

Fig. 16-3. Anatomy of the axilla.

## Surgical Anatomy of the Pectoral Nerves and the Pectoral Musculature

ANDREA PORZIONATO, VERONICA MACCHI, CARLA STECCO, MARIOS LOUKAS, R. SHANE TUBBS, and RAFFAELE DE CARO

Distal Pectoral Nerve	CS
Neurotmesis	13.4%
Autolysis	8.4%
Reflux	1.1%
Medial	40.1%
Elbow	43.8%
Distal Pectoral Nerve	4.7%

Fig. 1. Distribution of the distal pectoral nerves. The distal pectoral nerves are divided into 4 groups: (1) the proximal group, (2) the middle group, (3) the distal group, and (4) the subpectoral plexus.

Fig. 2. Subpectoral plexus.

## Eficacia analgésica del bloqueo de los nervios pectorales en cirugía de mama

R. Blasco, M. Garrido García, P. Díez García, B. Acea Nebrija, S. López Álvarez, A. Ponsado Castiella **2011**

Fig. 1. Colocación de la jeringa en el espacio infraclavicular.

Fig. 2. Imagen ultrasonográfica del pecto mayor (PM) y pecto menor (PMn) por encima de la arteria (AA) y vena (AV) axilar.

"We mainly use it for the insertion of breast expanders and subpectoral prosthesis. Other potential indications are traumatic chest injuries, iatrogenic pectoral muscle dissections, pacemakers, Port-a-caths and chest drains."

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

R. Blasco, A. Fajardo, T. Parra Maldonado

Figure 1. Dissection of the axilla. Pectoralis major muscle (PM), pectoralis minor (PMn), axillary vein (AV), intercostobrachial nerve (ICBN), serratus anterior muscle (SAM), long thoracic nerve (LTN) and thoracoacromial nerve (TAN).

Figure 2. Dermalone distribution when Pecs II is performed between serratus muscle and axillary intercostal muscle.

Figure 3. Comparison of the probe inserting the rib entry and at the lateral border of pectoralis major muscle (right). We can identify pectoralis major muscle (PM), pectoralis minor (PMn), serratus muscle (SAM), rib 2 (R2), rib 3 (R3), rib 4 (R4) and long thoracic nerve (LTN).

## PEKTORAL BLOKLAR

Endikasyon:

- Ekspander yerleşimi/Subpektoral protez
- Travmatik göğüs cerrahisi
- Pacemaker veya interkostal tüp yerleşimi
- Tümör rezeksiyonu/Mastektomi
- Aksiller Küretaj

- SUPIN POZİSYON
- LİNERER PROB
- 50-80 MM İĞNE
- 30 ML LA (TOTAL)
- (0.25% LEVOBUPIVAKAİN)

## PEKTORAL BLOK Tİ P II (MODİ Fİ YE)

- 10ML LA PEKTORALİ S Mİ NÖRİ LE PEKTORALİ S MAJÖR KASLARI ARASINA
- 20 ML LA PEKTORALİ S Mİ NÖRİ LE SERRATUS ANTERİ OR KASI ARASINA

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

R. Blanco,<sup>1</sup> T. Parras,<sup>2</sup> J. G. McDonnell<sup>3</sup> and A. Prats-Galino<sup>4</sup> Anaesthesia 2013

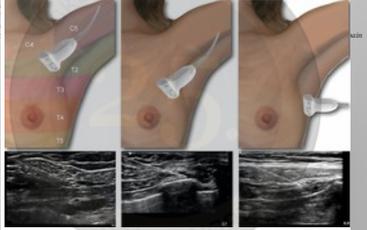


Figure 2 Graphic representing probe position and ultrasound image obtained during a Pecs I block (left), Pecs II block (middle) or a serratus plane block (right).

"All volunteers reported an effective block that provided long-lasting paraesthesia (750–840 min)."

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

R. Blanco,<sup>1</sup> T. Parras,<sup>2</sup> J. G. McDonnell<sup>3</sup> and A. Prats-Galino<sup>4</sup>

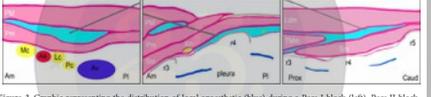


Figure 3 Graphic representing the distribution of local anesthetic (blue) during a Pecs I block (left), Pecs II block (middle) and serratus plane block (right). PM, pectoralis major; Pm, pectoralis minor; Ldm, latissimus dorsi; Tm, Teres major; Sm, serratus muscle; Icn, intercostal nerve; Lc, lateral cord; P, posterior cord; Mc, medial cord of the brachial plexus; Aa, axillary artery and Av, axillary vein together with the ribs, three (3), four (4) and rib five (5). Am, orientation anteromedial; Pl, posterolateral; Prox, proximal and Caud, caudal.

Blockade of the lateral cutaneous branches of the thoracic intercostal nerves (T2–T12) "may achieve complete paraesthesia of the hemithorax."

SERRATUS PLAN BLOĞU

- HEDEF: TORAKODORSAL SİNİR, T2-12
- ENDİ KASYONLAR: LATİSSİMUS DORSİ FLEP REKONSTRÜKSİYONU
- 40 ML LA ENJEKSİYONU 5. KOSTA SEVİYESİNDE MİDAKSİYON İÇEREN LATİSSİMUS DORSİ VE SERRATUS ANTERİOR



Ultrasound-Guided Serratus Anterior Plane Block Versus Thoracic Epidural Analgesia for Thoracotomy Pain

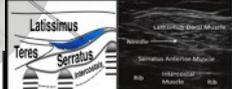
Amour Elmaghrabi, MD, PhD,<sup>1</sup> Nour Mohamed Abdellatif, MD,<sup>1\*</sup> Ghada M. Beshandy, MD,<sup>2</sup> and Tarek Abdel-Hakem Kattah, MD<sup>3\*</sup>

epidural catheters were inserted preoperatively to be activated before initiation using a lower dose regimen to the SAPP group. Heart rate, mean arterial pressure, and the visual analog pain score (VAS) measurements were recorded for 24 hours. Rescue analgesia using intravenous morphine, 0.1 mg/kg, was administered if the VAS was >3.

Measurements and Main Results: Compared with preoperative values, the mean arterial pressure in the SAPP group did not change significantly ( $p = 0.18$ ), whereas it decreased significantly ( $p = 0.006$ ) in the T2E group. VAS scores and the total dose of morphine required were comparable in the 2 groups.

Conclusion: SAPP appeared to be a safe and effective alternative for postoperative analgesia after thoracotomy. © 2018 Elsevier Inc. All rights reserved.

KEY WORDS: thoracotomy, acute pain, thoracic epidural analgesia, serratus anterior plane block, postoperative pain

The efficacy of serratus anterior plane block in analgesia for thoracotomy: a retrospective study

Korpin Erkanal<sup>1</sup>, Burcu Metin Erkanal<sup>2</sup>

**Abstract**  
 Purpose: A multimodal analgesic approach is necessary for post-thoracotomy pain, which can be severe. Intravenous acetaminophen and peripheral nerve blocks are frequently used. The aim of this study was to evaluate the efficacy of serratus anterior plane block (SAPP) in the management of post-thoracotomy pain.

**Conclusion** Our study suggests that SAPP is an effective adjuvant treatment option for thoracotomy analgesia.

**Keywords:** Thoracotomy; Analgesia; Serratus anterior plane block; Bupivacaine; Morphine

Morphine consumption (mg)	VAS		P
	Group M (n = 20)	Group S (n = 20)	
1st hour	6.25 ± 3.51	5.2 ± 0.76	0.041
2nd hour	4.65 ± 1.38	2.7 ± 0.57	<0.001
4th hour	4.05 ± 1.23	2.3 ± 0.46	<0.001
6th hour	3.9 ± 1.11	2.6 ± 0.94	<0.001
8th hour	3.6 ± 0.88	2.1 ± 1.33	<0.001
12th hour	3.45 ± 0.67	1.75 ± 1.11	<0.001
24th hour	3.3 ± 0.97	1.8 ± 0.76	<0.001

A randomised trial of serratus anterior plane block for analgesia after thoracoscopic surgery

M. H. Park,<sup>1,2</sup> J. A. Kim,<sup>1,3</sup> H. J. Ahn,<sup>4</sup> M. K. Yang,<sup>5</sup> H. J. Son<sup>6</sup> and B. G. Seong<sup>7</sup>

**Summary**  
 We evaluated the effect of pre-operative serratus anterior plane block on postoperative pain and opioid consumption after thoracoscopic surgery. We randomly allocated 89 participants to block with 30 ml ropivacaine 0.375% (n = 44) or no block without pleurodesis or sham procedure (n = 45). We analysed results from 42 participants in each group. Serratus anterior plane block reduced mean (SD) remifentanyl dose during surgery, 0.12 (0.06) mg·h<sup>-1</sup> vs. 0.16 (0.06) mg·h<sup>-1</sup>, p = 0.016, and reduced mean (SD) fentanyl consumption in the first 24 postoperative hours, 3.81 (1.91) µg·kg<sup>-1</sup> vs. 5.71 (1.61) µg·kg<sup>-1</sup>, p = 0.00004. Block also reduced the worst median (IQR) pain scores reported in the first 24 postoperative hours: 6 (5–7) (3–10), p = 0.027. Block decreased dissatisfaction with pain management, categorised as 'highly unsatisfactory', 'unsatisfactory', 'neutral', 'satisfactory' or 'highly satisfactory', 1 (2/21) (10%) vs. 17 (41/151) (11%), p = 0.038. There were no differences in the rates of nausea, vomiting, dizziness or length of hospital stay. Serratus anterior plane block may be used to reduce pain and opioid use after thoracoscopic lung surgery.

Introop. Remif. dozu ilk 24 saat fentanil dozu Ağrı skorlarını

J. Cardiovasc. Ultrasound, 2019 Feb;33(2):418-425. doi: 10.1009/jcvs.2018.08.203. Epub 2018 Aug 31.

**Comparison of the Efficacy of Ultrasound-Guided Serratus Anterior Plane Block, Pectoral Nerves II Block, and Intercostal Nerve Block for the Management of Postoperative Thoracotomy Pain After Pediatric Cardiac Surgery.**

Shahzad B., Chohan S.P., Saini S., Bhatt D.P., Bhatia A.S., Sarokin L., Khan M.S.  
 © Author Information

**Abstract**  
**OBJECTIVE:** The aim of this study was to compare the relative efficacy of ultrasound-guided serratus anterior plane block (SAPB), pectoral nerves (Pecs II) block, and intercostal nerve block (ICNB) for the management of post-thoracotomy pain in pediatric cardiac surgery.  
**DESIGN:** A prospective, randomized, single-blind, comparative study.  
**SETTING:** Single-institution tertiary referral cardiac center.  
**PARTICIPANTS:** The study comprised 108 children with congenital heart disease requiring surgery through a thoracotomy.  
**INTERVENTIONS:** Children were allocated randomly to 1 of the 3 groups: SAPB, Pecs II, or ICNB. All participants received 3 mg/kg of 0.2% ropivacaine for ultrasound-guided block after induction of anesthesia. Postoperatively, intravenous paracetamol was used for multimodal and history was used for rescue analgesia.  
**MEASUREMENTS AND MAIN RESULTS:** A modified objective pain score (MOPS) was evaluated at 1, 2, 4, 6, 8, 10, and 12 hours post-exubation. The early mean MOPS at 1, 2, and 4 hours was similar in the 3 groups. The late mean MOPS was significantly lower in the SAPB group compared with that of the ICNB group ( $p < 0.001$ ). The Pecs II group also had a lower MOPS compared with the ICNB group at 6, 8, and 10 hours ( $p < 0.001$ ), but the MOPS was comparable at hour 12 ( $p = 0.301$ ). The requirement for rescue fentanyl was significantly higher in ICNB group in contrast to the SAPB and Pecs II groups.  
**CONCLUSION:** SAPB and Pecs II fascial plane blocks are equally efficacious in post-thoracotomy pain management compared with ICNB, but they have the additional benefit of being longer lasting and are as easily performed as the traditional ICNB.  
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**KEYWORDS:** intercostal nerve block, pectoral nerves II block, postoperative pain, serratus anterior plane block, thoracotomy, ultrasound-guided

Author, Year	Study Type	Surgery/Indication	Block Type	N	Injection
Kunhabdulla et al., 2014	Case report	Analgesia for rib fracture	Serratus plane	1	20 mL bolus 0.125% bupiv, then infusion of 0.0625% bupiv. at 7-12 mL/h
Madabhuti et al., 2015	Case report	Analgesia for thoracotomy	Serratus plane	1	6 mL bolus 1% lignocaine, then infusion of bupivacaine 0.1% at 7 mL/h
Kunhabdulla et al., 2014	Case report	Analgesia for rib fracture	Serratus plane	1	20 mL bolus 0.125% bupiv, then infusion of 0.0625% bupivacaine at 7-12 mL/h
Madabhuti et al., 2015	Case report	Analgesia for thoracotomy	Serratus plane	1	6 mL bolus 1% lignocaine, then infusion of bupiv. 0.1% at 7 mL/h
Hetto, 2016	Randomized controlled trial	Radical mastectomy	Serratus plane	64	30 mL 0.25% bupivacaine, Serratus plane; 15 mL 0.25% bupivacaine, PNB

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**KOMPLİKASYONLAR?**

- PNÖMOTORAKS
- IV ENJEKSİYON
- LA TOKSİSİTESİ

**EREKTÖR SPİNA PLAN BLOĞU**

- KRONİK AĞRI TEDAVİSİ 2016
- VAKA SUNULARI
- RCT ???
- DEVAM EDEN ÇALIŞMALAR

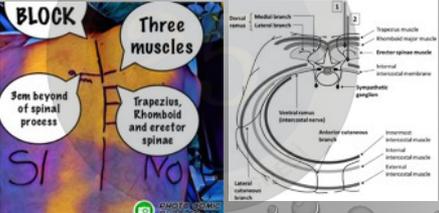
*"Lokal anesteziğin erektör spina kasının altına verildiği bir fasyal plan bloğu"*



CHRONIC AND INTERVENTIONAL PAIN  
 BRIEF TECHNICAL REPORT

**The Erector Spinae Plane Block**  
 A Novel Analgesic Technique in Thoracic Neuropathic Pain

Mauricio Forero, MD, FIPP\*, Sanjib D. Adhikary, MD,† Hector Lopez, MD,‡  
 Calvin Tsui, BMSc,§ and Ki Jun Chin, MBBS (Hons), MMed, FRCP(C)  
 (Reg Anesth Pain Med 2016;41: 621-627)



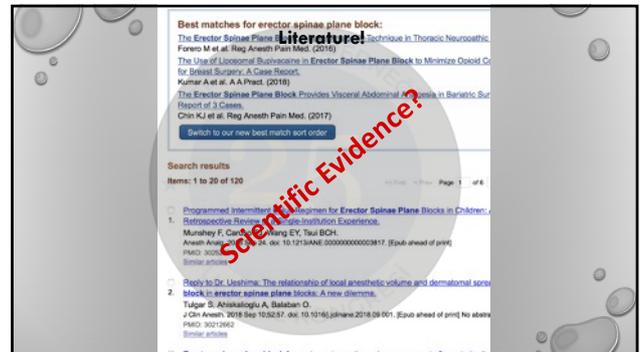
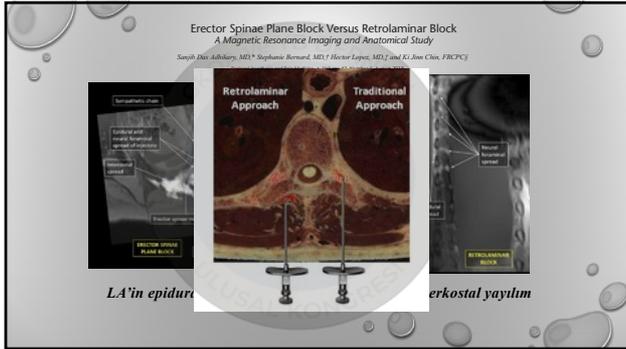
**BLOCK**  
 Three muscles  
 Trapezius, Rhomboid and erector spinae  
 Sem beyond of spinal process

CHRONIC AND INTERVENTIONAL PAIN  
 BRIEF TECHNICAL REPORT

**The Erector Spinae Plane Block**  
 A Novel Analgesic Technique in Thoracic Neuropathic Pain

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 (Reg Anesth Pain Med 2016;41: 621-627)

- Kronik nöropatik ağrı tedavisi
- Torasik cerrahide postoperatif analjezi





Original Article  
**Ultrasound-Guided Serratus Plane Block Versus Erector Spinae Block for Postoperative Analgesia After Video-Assisted Thoracoscopy: A Pilot Randomized Controlled Trial**  
 Khaled M. Gaballah, MD, Wesameh A. Soltan, MD, Nadia M. Bahgat, MD  
 Department of Anesthesiology, Faculty of Medicine, Minia University, Minia, Egypt

**Objective:** There is no gold standard for the management of postoperative pain after video-assisted thoracoscopic surgery (VATS). Interfascial nerve blocks were proposed as simple and effective options.  
**Design:** The present pilot randomized trial aimed to compare the perioperative analgesic effect of ultrasound-guided erector spinae plane block (ESB) with serratus plane block (SPB) in patients undergoing VATS.  
**Setting:** University hospitals.  
**Participants:** Sixty adult patients scheduled to undergo VATS were enrolled in the study.  
**Interventions:** Patients were randomly assigned in a 1:1 ratio to receive either single-shot ultrasound-guided ESB or SPB.  
**Measurements and Main Results:** The primary outcomes were pain severity, time to first postoperative analgesia, and intraoperative and postoperative analgesic requirements. Data analysis was performed with MedCalc, Version 15.8 (MedCalc, Ostend, Belgium). The ESB group showed a significantly lower VAS<sub>max</sub> score than the SPB group from the 4th hour ( $p=0.04$ ) to the 6th hour postoperatively ( $p=0.002$ ), and the VAS<sub>mean</sub> score was significantly lower in ESB group than the SPB group because the patients were alert ( $p < 0.001$ ); this trend was consistent until the 20th hour postoperatively. Similarly, the time for first required analgesic was significantly longer in the ESB group ( $p < 0.001$ ). The mean arterial pressure was significantly higher in the SPB group than in the ESB group 12 hours postoperatively ( $p < 0.001$ ). No major side effects were observed in either of the study groups.  
**Conclusion:** ESB provided superior analgesia and longer time to first required analgesic than did SPB.  
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**KOMPLİKASYONLAR...**

- HEMODİNAMİK DENGESİZLİK
- EPİDURAL/SPİNAL YAYILIM
- PNÖMOTORAKS

**Pneumothorax after the erector spinae plane block**  
 Hiroshi Uehama, MD, PhD  
 Department of Anesthesiology, Showa University Hospital, Tokyo, Japan

Original Article  
**Bilateral Erector Spinae Plane Block for Acute Post-Surgical Pain in Adult Cardiac Surgical Patients: A Randomized Controlled Trial**  
 Siva N. Krishna, DNB<sup>1</sup>, Sandeep Chauhan, MD<sup>2</sup>, Debesh Bhoi, MD<sup>1</sup>, Brajesh Kaushal, MD<sup>1</sup>, Suruchi Hasija, DM<sup>3</sup>, Tsering Sanedun, Mch<sup>1</sup>, Akshay K. Risoi, Mch<sup>1</sup>

**Objective:** To examine the analgesic efficacy of bilateral erector spinae plane (ESP) block compared with conventional treatment for pain after cardiac surgery in adult patients.  
**Design:** A prospective, randomized, controlled, single-blinded study.  
**Setting:** Single-center tertiary teaching hospital.  
**Participants:** One hundred and six adult patients undergoing elective cardiac surgery with cardiopulmonary bypass.  
**Interventions:** Patients were randomized into 2 groups. Patients in group 1 (ESP block group,  $n=53$ ) received ultrasound-guided bilateral ESP block with 3 mg/kg of 0.375% ropivacaine before anesthesia induction at the T8 transverse process level. Patients in group 2 (paracetamol and tramadol group,  $n=53$ ) received paracetamol (1 gm every 6 hours) and tramadol (50 mg every 8 hours) intravenously in the postoperative period. The primary study outcome was to evaluate pain at rest using an 11-point numeric rating scale (NRS). Mann-Whitney U test was used for comparing NRS scores.  
**Measurements and Main Results:** The postoperative pain level after extubation and duration of analgesia during which NRS was  $< 4$  of 10 was compared between the groups. The median pain score at rest after extubation in group 1 was 0 of 10 until hour 6, 3 of 10 at hour 8, and 4 of 10 at hours 10 and 12 postextubation. These were significantly less in comparison with group 2 ( $p=0.0001$ ). Patients in group 1 had a significantly higher mean duration of analgesia ( $8.98 \pm 0.14$  hours), during which NRS was  $< 4$  of 10, compared with group 2 ( $4.60 \pm 0.12$  hours) ( $p=0.0001$ ).  
**Conclusion:** ESP block safely provided significantly better pain relief at rest for longer duration as compared to intravenous paracetamol and tramadol.  
 Journal of Cardiothoracic and Vascular Anesthesia 33 (2019) 968–975

Variable	Group 1	Group 2	p Value
	Group 1 Mean $\pm$ SE n=53	Group 2 Mean $\pm$ SE n=53	
Time to extubation/Recovery of mechanical ventilation (min)	43.06 $\pm$ 3.20	302.62 $\pm$ 2.17	0.000
Total rescue analgesia need (mg)	480.88 $\pm$ 63.86	107.50 $\pm$ 107.87	0.000
Total rescue analgesia need (mg)	82.02 $\pm$ 4.29	214.25 $\pm$ 2.59	0.000
Total opioid usage (mg)	174.31 $\pm$ 10.75	204.02 $\pm$ 24.46	0.000
Duration of analgesia/prolongation during which NRS score was $< 4$ (h)	215.62 $\pm$ 4.65	103.64 $\pm$ 2.79	0.000
	107.17 $\pm$ 24.36	4.02 $\pm$ 0.76	0.000
	8.98 $\pm$ 0.14	4.60 $\pm$ 0.12	0.000
Time to analgesia (h)	33.6 $\pm$ 0.94	32 $\pm$ 0.86	0.000
Time to analgesia (h)	36.17 $\pm$ 3.18	62.70 $\pm$ 6.86	0.000
Time to first analgesic (h)	13.8 $\pm$ 0.51	30 $\pm$ 0.43	0.000
Time to first analgesic (h)	10.11 $\pm$ 0.23	49 $\pm$ 3.28	0.000
	120.76 $\pm$ 16.52	188.64 $\pm$ 8.91	0.000
Total length of ICU stay (h)	43.17 $\pm$ 3.18	68.24 $\pm$ 3.36	0.000
	153.8 $\pm$ 6.55	684.62 $\pm$ 20.84	0.000

**CEVAPLANMAMIŞ SORULAR !**

- RANDOMİZE KONTROLLÜ ÇALIŞMALAR?
- CERRAHİ ANESTEZİ VS ANALJEZİ ?
- OPTİMUM DOZ?
- BLOK KOMBİNASYONLARI ?

