

## A novel experience of ultrasound-guided erector spinae plane block with sedation in breast cancer surgery: a case report

Tanveer Alam, Rabeea Sajid Qureshi, Syed Raza Mehdi

### Abstract

We report the anaesthetic management of a breast cancer patient, at a high risk for undergoing general anaesthesia, using a single-shot ultrasound-guided Erector Spinae Plane Block (ESPB) with monitored sedation. Targetted at T4, 20mL of 0.375% bupivacaine provided complete surgical anaesthesia in 15 minutes. Concurrent sedation was administered with target-controlled infusion of propofol with entropy monitoring throughout the procedure. The surgery lasted 90 minutes and the patient remained pain free and haemodynamically stable throughout. At the end of the surgery, the patient received 1 g of paracetamol intravenously, and did not require any further analgesics other than routinely administered paracetamol until her discharge from the hospital. On top of the successful execution of our plan, this case was especially interesting as her postoperative analgesia remained completely opioid-free.

**Keywords:** ultrasound, breast cancer, esp block, erector spinae plane block, fascial plane block, pain, analgesia, regional anaesthesia.

**DOI:** 10.47391/JPMA.8510

**Submission completion date:** 16-12-2022

**Acceptance date:** 11-05-2023

### Introduction

As one of the various types of interfascial plane blocks described in literature and being clinically applied as part of multimodal analgesia, the Erector Spinae Plane Block (ESPB) is a modern procedure that is rapidly gaining popularity due to its easy technique, effectiveness, and low risk of associated complications<sup>1</sup>. Originally described by Forero et al. in 2016<sup>2</sup> for managing neuropathic pain, it has since then been employed successfully for pain relief in different types of surgeries including laparoscopic cholecystectomy<sup>3</sup>, cardiac surgery<sup>4</sup>, thoracotomy<sup>5</sup> and lumbar spine surgery<sup>6</sup>. Furthermore, of the limited

.....  
Shaukat Khanum Memorial Cancer Hospital and Research Center, Lahore, Pakistan.

**Correspondence:** Tanveer Alam. Email: drtanveeralam@yahoo.com

**ORCID ID.** 0000-0002-7045-2964

number of published case reports involving ESPB, majority have elucidated its use for perioperative analgesia for breast cancer surgery<sup>7,8</sup>.

We are henceforth providing an account of successful anaesthetic management of a modified radical mastectomy case done with ESPB under monitored sedation.

### Case Report

A 61-year-old ASA III female patient (158 cm, 57.8 kg), diagnosed with breast and ovarian cancer syndrome, was scheduled for a left-sided modified radical mastectomy in May, 2021 at Shaukat Khanum Memorial Cancer Hospital and Research Center, Lahore, Pakistan. Exemption was obtained from the Institutional Review Board prior to reporting this case.

On preoperative anaesthesia assessment, she was classified as a high-risk candidate for undergoing general anaesthesia; given her long-standing history of uncontrolled diabetes (HbA1C 13.1), hypertension, hyperthyroidism, and asthma with multiple exacerbations in the previous 6 months. Her recent CT scan showed bilateral airspace disease with ground glass appearance. Moreover, she had undergone chemotherapy for breast carcinoma until January 2021 and her functional capacity was less than 4 metabolic equivalents (METs).

To avoid the risks related to general anaesthesia, we planned to opt for ESPB with deep sedation. The patient was counselled, and she agreed to undergo surgery with the aforementioned plan. Written informed consent was taken from the patient before proceeding with the case as well as before drafting the manuscript for publication.

After being brought into the operating room, her IV line was checked, and intravenous fluids were started. Standard anaesthetic monitoring was connected including end-tidal CO<sub>2</sub> and entropy. Patient was sedated with target-controlled infusion of propofol, keeping entropy between 60 and 80. Adequate oxygenation was ensured throughout the duration of the procedure through a Hudson face mask, with the oxygen flow kept at 5L.

ESPB was performed in the lateral position using the 5-13

MHz GE Logiq™ 12L-RS linear ultrasound probe. We scanned in a paramedian sagittal orientation and targeted the T4 transverse process for the block. The overlying layers of trapezius, rhomboid major and erector spinae muscles were identified, and the transverse process was located with the probe approximately 2 cm away from the midline. After ensuring asepsis with Chlorhexidine skin preparation, a 22-gauge 50-mm beveled peripheral nerve block needle was inserted in the interfascial plane between the Erector Spinae muscle and the transverse process in the ultrasound image. Hydrodissection was done with 0.9% normal saline to confirm the location following which, a total of 20 mL 0.375% bupivacaine was administered. We appreciated the spread of local anaesthetic solution from T4 up to T8 within the plane. The patient reported a complete loss of sensation to cold from T3 to T7 in approximately 15 minutes.

Surgery was effectively completed under ESPB. Before the end of the procedure, 1 g paracetamol was given to the patient intravenously for postoperative analgesia and further doses were scheduled to be given every eight hours, in addition to 50 mg Tramadol IV on demand. After the surgery, the patient was shifted to Post Anaesthesia Care Unit (PACU) and had an uneventful and painless recovery with a pain score of 2/10 on the Numerical Rating Scale. Even after transfer to the in-patient department, her pain was well controlled with eight hourly paracetamol 1 g. The analgesia was prolonged enough that she did not request for Tramadol throughout her postoperative stay. She was discharged the next evening with oral analgesics. She experienced no complications related to local anaesthetics or the block throughout her stay.

## Discussion

As an evolving modality, ESPB is being used and preferred in various settings to deal with both acute and chronic pain due to its convenience in terms of lesser technical competence, time required to perform this block<sup>9</sup> and a lower risk of associated complications compared to other more invasive truncal blocks<sup>10</sup>.

We employed ESPB as an alternative to general anaesthesia for a patient with multiple co-morbidities. As a result, not only did we avoid a poor possible outcome related to general anaesthesia, but we also managed to limit the overall perioperative opioid consumption. Hence, we averted all undesirable side effects linked to the use of opioids such as sedation, respiratory depression, and delayed patient mobilization<sup>11</sup>.

Our successful use of this block as a sole anaesthetic in

breast cancer surgery is seemingly a novel addition to the armamentarium of anaesthetics in high-risk populations.

Furthermore, we suggest meticulous preoperative planning, surgical team involvement and patient education to achieve effective results. Should the block fail, a back-up plan, including general anaesthesia or total intravenous anaesthesia should also be discussed with such high-risk patients.

## Conclusion

Our case illustrates the use of ESPB with monitored deep sedation for breast surgeries as an effective anaesthetic as well as analgesic technique especially in patients that have high risk for undergoing general anaesthesia.

While our case report may add to the limited literature centered around this block, we encourage using this block in more scenarios, so one may be able to draw further statistical conclusions regarding its effectiveness.

Exemption was obtained from the Institutional Review Board prior to reporting this case.

**Disclaimer:** The abstract has not been previously published or presented in a conference. The manuscript was not part of a research, PhD or thesis project.

**Conflict of Interest:** None.

**Source of Funding:** None.

## References

1. Kot P, Rodriguez P, Granell M, Cano B, Rovira L, Morales J, et al. The erector spinae plane block: a narrative review. *Korean J Anesthesiol* 2019;72:209-20. doi: 10.4097/kja.d.19.00012.
2. Forero M, Adhikary SD, Lopez H, Tsui C, Chin KJ. The Erector Spinae Plane Block: A Novel Analgesic Technique in Thoracic Neuropathic Pain. *Reg Anesth Pain Med* 2016;41:621-7. doi: 10.1097/AAP.0000000000000451.
3. Tulgar S, Kapakli MS, Senturk O, Selvi O, Serifsoy TE, Ozer Z. Evaluation of ultrasound-guided erector spinae plane block for postoperative analgesia in laparoscopic cholecystectomy: A prospective, randomized, controlled clinical trial. *J Clin Anesth* 2018;49:101-6. doi: 10.1016/j.jclinane.2018.06.019.
4. Macaire P, Ho N, Nguyen T, Nguyen B, Vu V, Quach C, et al. Ultrasound-Guided Continuous Thoracic Erector Spinae Plane Block Within an Enhanced Recovery Program Is Associated with Decreased Opioid Consumption and Improved Patient Postoperative Rehabilitation After Open Cardiac Surgery-A Patient-Matched, Controlled Before-and-After Study. *J Cardiothorac Vasc Anesth* 2019;33:1659-67. doi: 10.1053/j.jvca.2018.11.021.
5. Tulgar S, Selvi O, Ozer Z. Clinical experience of ultrasound-guided single and bi-level erector spinae plane block for postoperative analgesia in patients undergoing thoracotomy. *J Clin Anesth* 2018;50:22-3. doi: 10.1016/j.jclinane.2018.06.034.
6. Ueshima H, Inagaki M, Toyone T, Otake H. Efficacy of the Erector Spinae Plane Block for Lumbar Spinal Surgery: A Retrospective Study. *Asian Spine J* 2019;13:254-7. doi: 10.31616/asj.2018.0114.
7. Talawar P, Kumar A, Bhoi D, Singh A. Initial experience of erector

- spinae plane block in patients undergoing breast surgery: A case series. *Saudi J Anaesth* 2019;13:72-4. doi: 10.4103/sja.SJA\_560\_17.
8. Siow W, Cheng Lim, J, Woon K. Erector Spinae Plane Block for Mastectomy and Breast Flap Reconstructive Surgery: A Three Case Series. *Open J Anesthesiol* 2020;10:30-7. doi: 10.4236/ojanes.2020.101003.
  9. Aoyama Y, Sakura S, Tsuchiya R, Wittayapairoj A, Saito Y. Erector Spinae Plane Block and Paravertebral Block for Breast Surgery: A Retrospective Propensity-Matched Noninferiority Trial. *J Pain Res* 2020;13:2367-76. doi: 10.2147/JPR.S265015.
  10. Petsas D, Pogiati V, Galatidis T, Drogouti M, Sofianou I, Michail A, et al. Erector spinae plane block for postoperative analgesia in laparoscopic cholecystectomy: a case report. *J Pain Res* 2018;11:1983-90. doi: 10.2147/JPR.S164489.
  11. Benyamin R, Trescot AM, Datta S, Buenaventura R, Adlaka R, Sehgal N, et al. Opioid complications and side effects. *Pain Physician* 2008;11(Suppl 2):s105-20.
-