

Erector Spinae Plane (ESP) vs Transversus Abdominis Plane Block (TAP) in Decreasing Opioid Consumption After Laparoscopic Surgeries: An Evidence Based Review

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INTRODUCTION

Despite being minimally invasive, laparoscopic surgeries run the risk of causing moderate to severe levels of pain post-operatively because of the addition of visceral pain that is a result of the pneumoperitoneum needed to proceed laparoscopically.¹ Untreated post-operative pain leads to prolonged recovery, patient dissatisfaction, exacerbation of comorbidities, and worse outcomes. Currently, anesthesia providers use opioids or perform transversus abdominis plane (TAP) block to combat this pain. A TAP block has been seen to be inconsistent in blocking necessary spinal levels and does not contain visceral pain-relieving effects. Erector spinae plane block is a novel technique that has been increasingly used across various surgeries with promising results in pain-relieving effects due to its wide coverage of analgesia and visceral pain-relieving effects.²

PROJECT PURPOSE

- ❑ Incorporating regional blocks, particularly ESP and TAP, into a multimodal anesthetic plan has shown promising results in decreasing opioid consumption, increasing patient satisfaction, and accelerating recovery time.
- ❑ This evidence-based review sets out to discover a regional anesthetic, either a ESP or TAP block, that can produce better patient outcomes after laparoscopic surgeries, as pain remains an issue for up to 70% of patients.³

METHODOLOGY

- ❑ 3 databases: Embase, Pubmed, Medline
- ❑ Inclusion criteria = published within the years of 2017-2023, only RCTs, contained participants within the age range of 18-65 years old, written in English, had full-text accessibility, and pertained to the topic of interest.
- ❑ 127 articles were initially identified; 15 were accepted after applying the inclusion and exclusion criteria

PICO

In adults undergoing laparoscopic surgeries, which regional anesthetic technique, erector spinae plane (ESP) or transversus abdominis plane block (TAP), is more efficient in decreasing opioid consumption?

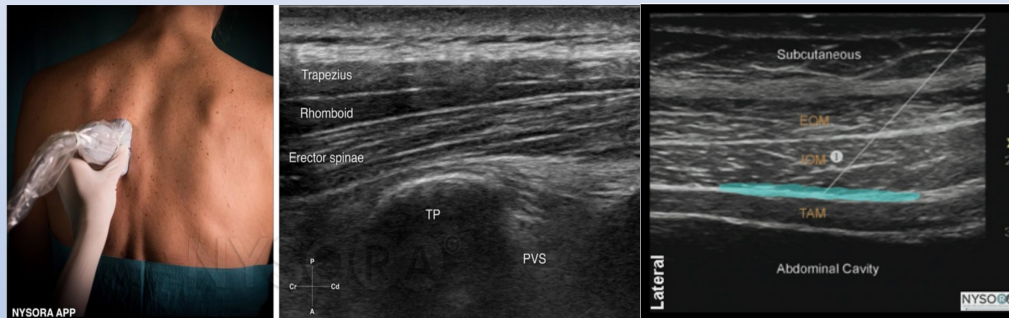


Image reference <https://www.nysora.com/erector-spinae-plane-block/> & <https://www.nysora.com/techniques/truncal-and-cutaneous-blocks/truncal-and-cutaneous-blocks/>

Literature Review Table

Author	Design Sample	Major Findings
Altiparmak et al, 2019.	Randomized controlled trial.	ESP block administration prior to a laparoscopic cholecystectomy contributes to a vast reduction in tramadol consumption post-operatively, in NRS scores at each time frame post-surgery, and in rescue doses of opioid analgesics.
Altinsoy et al, 2022.	Randomized controlled trial.	Performing a unilateral ESP block for a patient undergoing a inguinal herniorrhaphy caused lower PCA usage, reduced NRS scores, and higher QoR-40 scores.
Vrsajkov et al, 2018.	Randomized controlled trial.	A TAP block showed to cause lower pain scores and less tramadol usage post-operatively.
Zhao et al, 2021 .	Randomized controlled trial.	As moderate post-operative pain is associated with laparoscopic colorectal cancer surgery, a posterior TAP block proves to show success in decreasing analgesic requirements more than no regional anesthetic technique

RESULTS

Administering anesthesia for a laparoscopic case is much more common than doing so for an open-abdominal procedure because as time has progressed and technology has advanced, surgical instruments have been created to enter the abdomen through small keyhole incisions. However, post-operative pain remains a critical unsolved issue that leaves the patient vulnerable to post-operative complications. With the evidence provided within the 15 articles and information that was provided throughout these studies, it can be concluded that a multimodal approach with the inclusion of an erector spinae plane (ESP) block was found to be the most effective way to treat post-operative pain after a laparoscopic procedure because of its visceral pain-relieving effects and its ability to provide a wider analgesia coverage.² Patients experienced less pain by documentation of pain rating scores, needed less rescue analgesia, used the PCA pump less, and were overall more satisfied.

IMPLICATIONS

- ❑ ESP blocks → wider coverage of analgesia and have shown to have the missing visceral aspect that has not been able to be adequately treated with IV medications or a TAP block.⁸ Also, is more consistent in blocking T7 & T8 dermatomes unlike a TAP block..
- ❑ ESP blocks → decrease opioid consumption, NRS pain scores, PCA pump usage, and receive higher patient satisfaction based on questionnaires.
- ❑ Anesthesia providers should consider incorporating an ESP block for laparoscopic cases to reduce opioid consumption and improve patient satisfaction.

REFERENCES

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