Erector Spinae Plane Anaesthetic Block for Multiple Rib Fractures in Critically Ill Patients

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Introduction:

Erector spinae plane block (ESPB) was first described in 2016 as an alternative for thoracic and abdominal wall analgesia. Local anaesthetic is injected between transverse processes and the erector spinae muscle, dispersing through multiple dermatomes. Shortly after its introduction, ESPB was incorporated in clinical practice, mainly after thoracic and abdominal surgeries and, more recently, as an analgesic strategy in acute and chronic pain syndromes.

We report two cases of multiple rib fractures where ESPB was used as key analgesic approach.

Case Report 1:

A 34-year-old male suffered a 3-meter fall, with brain trauma, multiple vertebral fractures and second to eight rib fractures with haemopneumothorax. There was poor thoracic excursion preventing successful ventilatory weaning.

Vertebral injuries precluded epidural catheter placement.

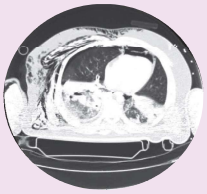


Image 1: Thorax CT: haemopneumothorax and subcutaneous enphysema

An ultrasound-guided ESPB was carried out: a peripheral catheter was positioned and secured in place and a continuous infusion of 5 ml/h 0.1% ropivacaine plus intermittent 10 ml boluses was commenced. The patient was successfully extubated at D8, and no rescue analgesia was needed.

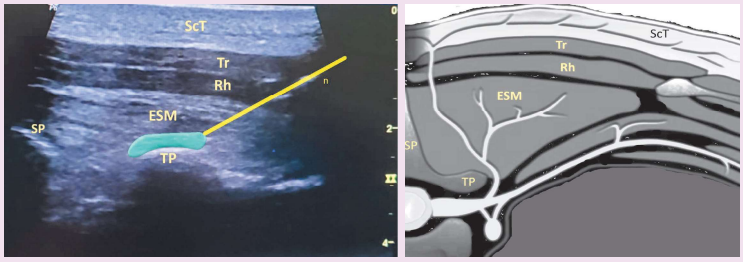


Image 2 and 3: Erector Spine Plane Block Procedure and Anatomy (ultrasound view on the right; anatomic ilustration on the left). ScT: Subcutaneous Tissue; Tr: Trapezius Muscle; Rh: Rhomboid Major Muscle; ESM: Erector Spine Muscle; SP: Spinous Process; TP: Transverse Process

Case Report 2:

A 17-year-old male was thrown from a motorcycle sustaining multiple right sided rib fractures and pulmonary contusions.

ESPB was performed at D3, aiming at facilitating ventilatory weaning.

A similar ropivacaine regimen was used.

Sedatives were suspended at D6, after wich the patient reported only minor pain, was able to breath spontaneously and cough adequately.

He was successfully extubated on the same day.

Image 4: Photo ilustrating patient positioning during ultrasound guided ESPB procedure

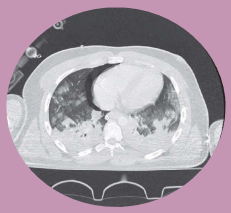
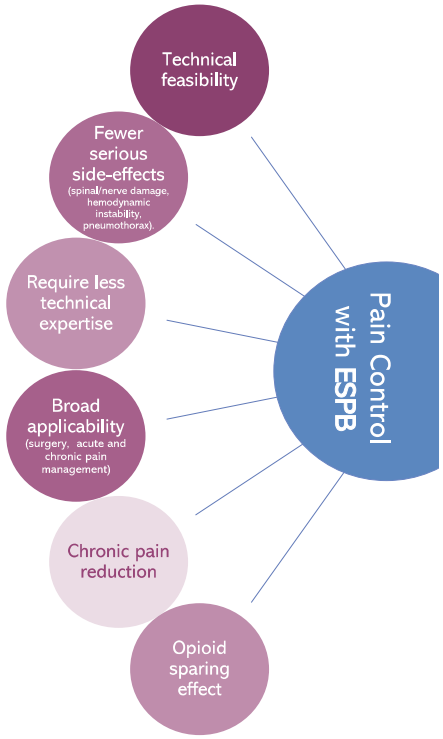


Image 5: Thorax CT: pneumothorax on the right and multiple bilateral pulmonary contusions

Discussion/Conclusion:

- Fascial plane blocks have several advantages, including greater **technical feasibility** and **hemodynamic stability** when compared with other analgesia strategies.
- These advantages are particularly important in severe trauma patients, as impaired haemostasis may contraindicate other analgesia options.
- Also, **less serious complications**, such as spinal/nerve damage or pneumothorax, are expected.
- Chest wall injuries have **significant morbidity and mortality.** Early and appropriate pain relief is crucial.
- ESPB use in critically ill patients is an analgesic strategy that can be used to facilitate ventilatory weaning, potentially narrowing duration of invasive ventilation and, possibly, avoid intubation.



Even though it requires formal evaluation, pain management with ESPB may be a valuable option for the prevention and treatment of acute respiratory failure in patients with thoracic trauma.

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