



# Serratus Anterior Plane Block Facilitated Weaning from Mechanical Ventilator in a Case of Thoracic Trauma

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Dear Editor,

A 64-year-old male was admitted in the intensive care unit with blunt trauma chest following a road traffic accident. The patient sustained multiple injuries in the form of rib fractures of fourth to sixth ribs on the left side, fifth rib on the right side (Figure 1), wedge compression fracture of fourth thoracic vertebra, undisplaced fracture of pelvis and right zygoma fracture. The patient required ventilatory support in the form of synchronised intermittent mandatory ventilation following this injury; norepinephrine infusion was required to maintain the blood pressure. The patient was tracheostomised in view of prolonged need of supportive ventilation. The patient was consciously oriented and reported the chest pain visual analog scale (VAS) score of 80-100 mm; this often gave rise to asynchronised ventilation and inability to initiate a spontaneous breathing trial during the weaning process.

The pain clinic was requested to manage pain in this patient to accelerate the weaning process; we planned to perform serratus anterior plane block (SAP) under ultrasound guidance on the right side with the patient in the supine position. A linear USG probe (6-13 MHz) was placed along the mid-axillary line at the level of fourth and fifth ribs<sup>1,2</sup> (Figure 2A), an 18G epidural needle was guided in an in-plane approach to hit the fifth rib (Figure 2B), and a 20 mL 0.1% ropivacaine was injected via the epidural needle. This separated the serratus anterior muscle plane from the rib and inter-costal muscles (Figure 2C), and thereafter, the 19G epidural catheter was threaded in the SAP. Thereafter, continuous infusion of 0.1% ropivacaine with 1  $\mu\text{g mL}^{-1}$  fentanyl was started at 8 mL h<sup>-1</sup>.

The SAP block provided significant improvements in the spontaneous breathing efforts, but still the patient was complaining of pain on the left chest. So we placed a catheter in the SAP in the left side under USG guidance, and continuous infusion was started at 6 mL h<sup>-1</sup> on each side; the second SAP block was done a day after the first one. The average VAS score reported after the SAP block was less than 25 mm. The patient was gradually weaned off the ventilator support by the third day of starting continuous infusion on both the sides and maintained on air thereafter. The infusion rate of the SAP block was tapered to 3 mL h<sup>-1</sup> by the sixth day and stopped on the seventh day, followed by the removal of the catheter. The patient was prescribed oral analgesics in the form of paracetamol of 650 mg every 6 hours and tramadol of 50 mg on SOS basis.

In the present case, the SAP block provided effective analgesia facilitating early weaning and recovery of the patient admitted in the intensive care unit with multiple injuries. Thoracic epidural and paravertebral blocks are the ideal choices mentioned in the literature to provide analgesia in these situations. However, we preferred the SAP block because of two reasons: First, the requirement of norepinephrine infusion for maintenance of blood pressures in this case, both thoracic epidural and paravertebral blocks, are not the ideal choice in this circumstance. Second, the placement of thoracic epidural would have been more challenging in view of the presence of multiple rib fractures, fourth thoracic vertebral compression fracture, and pelvic fracture, whilst the SAP block on both the sides was performed with the patient in the supine position.



**Figure 1. Chest X ray with multiple rib fractures.**

Hence, the SAP block is a safe and effective analgesic option along with thoracic epidural, paravertebral block, and intercostal nerve block for cases of thoracic trauma with multiple rib fractures.

**Ethics Committee Approval** N/A.

**Informed Consent:** Written informed consent was obtained from the participant who participated in this study.

**Peer-review:** Externally peer-reviewed.

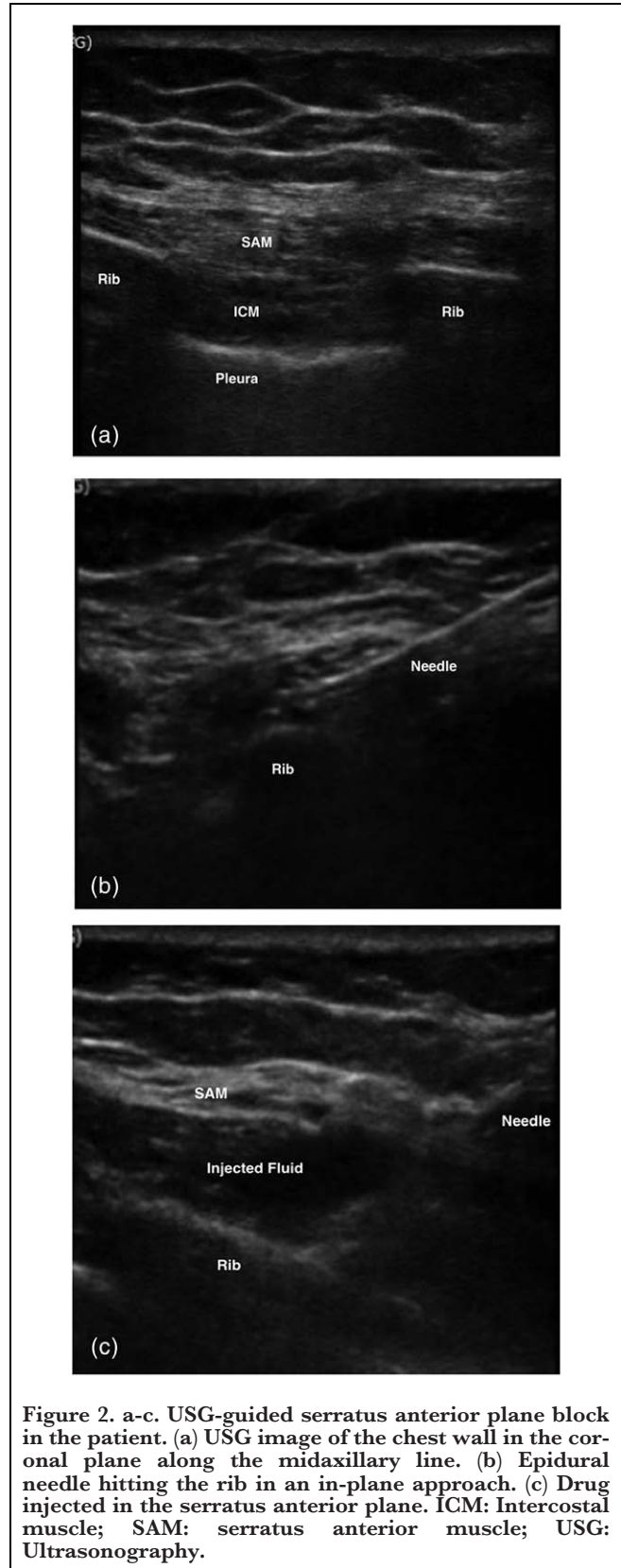
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**Figure 2. a-c. USG-guided serratus anterior plane block in the patient. (a) USG image of the chest wall in the coronal plane along the midaxillary line. (b) Epidural needle hitting the rib in an in-plane approach. (c) Drug injected in the serratus anterior plane. ICM: Intercostal muscle; SAM: serratus anterior muscle; USG: Ultrasonography.**