Scapular surgery under combined thoracic paravertebral and interscalene blocks

Sir,

Scapular fractures are relatively rare (0.5-1%) and many of them are managed conservatively.[1] Nowadays surgical fixation is preferred for better functional outcomes. Usually general anaesthesia is required as the procedure involves extensive tissue dissection and prolonged uncomfortable positioning. We report a combined thoracic para-vertebral (TPVB) and interscalene blocks (ISB) for scapular fixation. To the best of our knowledge this technique has not been reported in literature.

A 22-year-old man weighing 78 kg was posted for plate and screw fixation of a comminuted and displaced scapular body fracture. He had a run-over injury of his left chest 20 days back resulting in scapular and multiple rib fractures with left haemo-pneumothorax. An intercostal drain was placed which was subsequently removed. The patient was in considerable pain preoperatively. In the operation theatre intravenous access was secured and monitoring (Electrocardiogram, pulse oximetry, noninvasive blood pressure) was initiated. Ultrasound (Sonoray DS50 plus, Ultrasound systems, Chennai, India) guided TPVB was performed at T7-T8 level using a 16 G Tuohy needle (Romsons, India) on the left side in sitting position. After confirming pleural drop sign on ultrasound, a mixture of 6 ml 2% lignocaine with adrenaline, 8 ml 0.5% bupivacaine and 6 ml normal saline was injected. Subsequently a 16 G epidural catheter was introduced and fixed away from the surgical field. The patient was then turned supine and ultrasound guided interscalene block (ISB) was performed with 15 ml of 0.25% bupivacaine. After confirming absence of pain on deep palpation and skin hypoesthesia over scapular region, the patient was positioned in right lateral with a slight anterior tilt aided by appropriate supports [Figure 1a]. The incision site was infiltrated with 10 ml of 1% lignocaine with adrenaline. Intraoperative sedation was administered with 50 µg of dexmedetomidine over 15 minutes followed by an infusion of 15 µg/hour. A bolus of 50 µg of fentanyl was administered as the patient complained of shivering. Open reduction and internal fixation of the scapula was done by the modified Judet posterior approach. Total blood loss was around 350 ml. The patient was arousable and comfortable throughout the surgery which lasted for 90 minutes. Position of the paravertebral catheter was confirmed postoperatively by injection of 2 ml of iohexol [Figure 1b]. A bolus of 8 ml of 0.125% bupivacaine through the catheter provided
adequate post-operative analgesia for 4 hours. Further boluses were continued for 48 hours.

Regional techniques are preferable in the coronavirus disease (COVID) era as general anaesthesia is aerosol generating. The scapula is innervated by the dorsal scapular (C5), upper and lower subscapular (C5, C6) and suprascapular nerves (C5, C6). The muscles (18 in number) attached to scapula receive nerve supply from cranial to thoracic nerve roots. Recently a combination of erector spinae block (ESB) and ISB was used for fixation of a glenoid rim fracture. However, this method involved a single injection of a rather large volume of local anaesthetic and required repeated boluses of propofol and fentanyl throughout the intraoperative period making the degree of surgical anaesthesia obtained questionable. The surgical site was lateral, near the neck of the scapula and did not involve medial scapula like in our case.

Compared to ESB, TPVB, an interfascial block acts on a well confined space, blocking both the dorsal and ventral nerve roots producing denser blocks. The catheter helps in titrated dosing. A potential complication of this ISB-TPVB approach is respiratory insufficiency due to combined paralysis of diaphragm and intercostal muscles. Careful avoidance of C4 nerve root during the ISB can prevent this problem. Total local anaesthetic dosing recommendations should be adhered to avoid toxicity, as thoracic blocks result in high systemic levels.

In conclusion, we used a combination of thoracic paravertebral and interscalene blocks to provide surgical anaesthesia for scapular fixation. Further studies evaluating this approach are warranted to evaluate its feasibility in routine anaesthesia practice.

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There are no conflicts of interest.

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