



Ultrasound guided interscalene brachial plexus block with low dose sedation – Technique of choice for reducing shoulder dislocation^{☆☆☆}

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To the editor:

We read with great interest the recent article by Raeyat Doost et al. [1] on “Ultrasound-guided interscalene nerve block vs procedural sedation with propofol and fentanyl for anterior shoulder dislocations”. They conclude that using ultrasound guided interscalene brachial plexus block (ISB) reduces time to discharge from emergency department (ED) but pain scores are lower using procedural sedation method. We beg to differ with their second statement on the analgesic efficacy. Our second author has successfully performed more than 50 ISBs in his ED, with or without low dose sedation, for reducing shoulder dislocation over the past 5 years.

A single-shot ISB has been widely considered as the gold standard and main component of multimodal analgesic strategy for pain relief after shoulder surgery. A recent meta-analysis [2] showed that a single-shot ISB can provide effective analgesia for up to 6 h with movement and 8 h at rest after shoulder surgery. ISB also produces opioid sparing and reduces postoperative opioid-related side effects [2]. In the context of shoulder dislocation reduction, the procedure requires short duration of pain relief and adequate muscle relaxation. ISB has been shown to provide superior analgesia and minimizes side effects of procedural sedation [1,3]. Most of these reports used intravenous fentanyl (2 µg/kg) and propofol (1 mg/kg) with further

titrated doses to achieve moderate sedation during the reduction procedure. In our opinion such doses are close to that used for induction of anesthesia. This may explain the transient hypotension, hypoventilation, and the prolonged length of stay in the ED in the procedural sedation group in the report by Raeyat Doost and colleagues [1]. We also believe that even with the above mentioned doses, some patients may still struggle during the procedure because fentanyl and propofol do not provide muscle relaxation. In contrast an ISB affects the sensory and motor innervation to the shoulder and thereby provides effective analgesia and muscles relaxation for the procedure.

The current recommendation for ISB is to use ultrasound guidance, with the block needle inserted in-plane and from a lateral to medial direction. Local anesthetic (LA) is injected between the C5 and C6 nerve roots (with no needle contact with the nerve roots), and using relatively small volumes (10–15 ml) [4]. To identify the nerve roots of the brachial plexus in the interscalene groove, we recommend performing a dynamic traceback scanning method (Fig. 1) instead of using anatomical landmarks and starting the scan at the level of the cricoid cartilage [1]. The dynamic traceback technique allows consistent imaging of the brachial plexus elements and thus higher success rate. It is particularly useful in patients with difficult anatomy and for practitioners with little experience in ultrasound guided regional anesthesia (UGRA) [5]. With this approach, the ultrasound transducer is initially positioned at the supraclavicular fossa and the image is optimized to visualize the elements of the brachial plexus as a “cluster of grapes” lying posterolateral to the pulsating subclavian artery. The brachial plexus is then traced cephalad to the interscalene grooves where the nerve elements are visualized as three hypoechoic structures lying between the anterior and middle scalene muscles, also referred to as the “stoplight sign” [4]. Ultrasound guidance,

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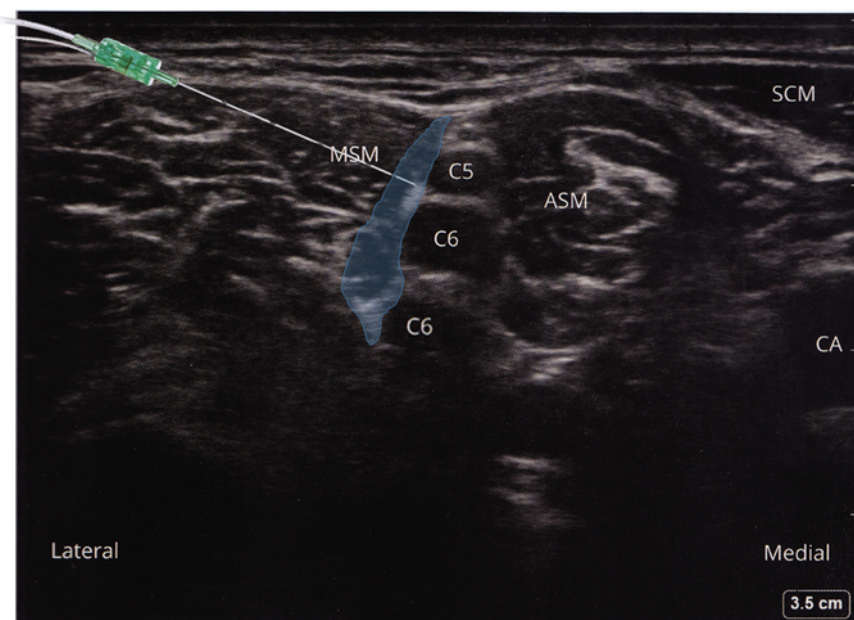


Fig. 1. Sonographic appearance of the brachial plexus at the interscalene groove. Needle shall be inserted from lateral to medial, with local anesthetic 10–15 ml deposited in between C5 and C6 nerve roots (without the need for the needle tip in contact the nerve roots). Ultrasound image depicting the “stoplight” sign, referring to 3 hypoechoic structures found between the anterior and middle scalene muscles. ASM, anterior scalene muscle; CA, carotid artery; MSM, middle scalene muscle; SCM, sternocleidomastoid muscle. The figure has been modified with permission [4].

when compared to peripheral nerve stimulation alone [6] for ISB results in fewer needle passes, faster block performance, lower LA volume requirement, faster onset of sensory block, higher success rate, and fewer incidence of vascular puncture. A successful block renders the shoulder area insensate (C5 and C6 dermatomal distribution) with inability to abduct the shoulder joint. As the pain is alleviated, it is our experience that patient require minimal or no sedation during the manipulation.

However ISB should be performed by a practitioner competent with UGRA. There are vital structures, such as pleura, lung, vertebral artery, carotid sheath, in the vicinity of the interscalene groove and potential complications such as pneumothorax, vascular puncture, etc. may occur. The use of short acting LA like lidocaine is desirable for shoulder dislocation reduction procedure because the pain is short-lived. It is recommended to use low LA volume i.e. 10 ml to minimize the incidence of phrenic nerve block (PNB), a common side effect following ISB from high LA volume usage [7]. Gautier et al. [8] showed that 5 ml of 0.75% ropivacaine for ultrasound guided ISB was sufficient to accomplish surgical anesthesia for shoulder surgery. Although most cases of PNB are transient and asymptomatic, those with underlying lung pathology or morbidly obese may develop respiratory compromise. Therefore ISB is not recommended in patient with severe chronic lung disease and it is important to rule out lung pathology in a patient with shoulder dislocation before considering ISB. Following ISB, lung ultrasound should be performed routinely to look for sonographic evidence of PNB and rule out pneumothorax [9].

Acknowledgements

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