



Superior Trunk Block: Ultrasound Guided Novel Approach for Shoulder Surgery

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Introduction

The use of ultrasound in clinical anaesthesia has largely contributed to the development of the nerve block technique in recent years. In the standard ultrasound-guided interscalene brachial plexus block, the C5 and C6 nerve roots are directly infiltrated. Hemi diaphragmatic paresis almost usually follows arthroscopic shoulder surgery, despite the fact that it offers highly effective postoperative analgesia [1]. Other issues include the potential for intraneural injection into the relatively exposed roots as well as damage to the long thoracic nerve or dorsal scapular nerve [2]. Burckett-St. Laurent, et al. [3] described the superior trunk block as a development of the traditional interscalene block technique that addresses these drawbacks. Since the C5 and C6 nerve roots fuse to form the superior trunk, local anaesthetic injections around the superior trunk should have a similar effect on the shoulder's analgesia because all of the terminal nerves that innervate the shoulder originate distal to the superior trunk. Additionally, because the injection site is farther from the phrenic nerve, there should be less chance of hemidiaphragmatic paresis [4].

Before starting any nerve blocks, the patient is given a breakdown of the advantages, disadvantages, and possible alternatives. Standard monitoring with emergency drugs & cart should be kept ready to manage the toxicity of local anesthesia if occurred. Supine the patient and turn their head to the opposite side. In order to create extra space for the placement of the needle, keep pillow beneath the patient's ipsilateral shoulder. The most suitable place

for the provider to stand is at the head of the bed and adjust patient's bed height as per provider comfort [5]. Procedure begins with scanning the supraclavicular fossa with a linear probe (high frequency probe) to locate or identify the important structures like pleura, first rib, subclavian artery, and brachial plexus. Identify the brachial plexus and follow it proximally to locate its division into C5, C6 and C7 roots. The nerve roots are identified by looking at 3 hypoechoic structures ('stoplight sign' of traffic signal) between anterior scalene and middle scalene muscle [5]. After that, move the probe slowly toward caudally from the C5 and C6 roots until they form superior trunk by converging. The Supra-scapular nerve also emerges at superior trunk level looks like hypo-echoic round shaped structure and it provides sensory innervation at shoulder area. In addition, try to identify the transverse cervical and dorsal scapular arteries, which are closely located near trunk and try to prevent unintentional arterial puncture. Select a location in the ST where the supra-scapular nerve will take off, this location will serve as final scanning plane for the block.

To perform the block, place a pajunk needle in-plane towards the superior trunk from posterior to anterior and lateral to medial. Once the needle tip is reached near to the the superior trunk (proximal to the take-off of supra-scapular nerve), perform a negative aspiration to prevent intra-vascular injection. Inject 1 to 2 mL of a local anaesthetic to make sure the tip is in the right spot and local anaesthetic agent has spread to the area next to the superior trunk.

Repeat incremental injection (up to 12-15 ml of Inj. Ropivacaine 0.5 % or Bupivacaine 0.5 %) and observe the spread of local anesthetic agent near the superior trunk [5]. Finally, assess the motor and sensory of arm and shoulder area to evaluate the success of procedure.

Various complications associated with superior trunk block are vascular injury, brachial plexus injury, ipsilateral phrenic nerve palsy (perhaps less common than ISB), Horner syndrome and injury to the dorsal scapular nerve [6].

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Conflict of Interest

No conflict of interest.

References

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