

Combined cervical plexus and upper trunk block as a regional anaesthesia technique for successful insertion of permanent pacemaker

Sir,

Insertion of permanent pacemaker is an invasive procedure even though the degree of nociception is not very significant. Transvenous access to the heart chambers and insertion of permanent pacemaker is usually done under local anaesthesia (LA). Hence, the anaesthesiologist's role in such type of cases is only monitoring the vitals and administration of sedatives as and when required. The administration of general anaesthesia may not be very suitable in cases where there are multiple cardiac problems. If anxiety of the patient precludes administration of LA, a combination of regional anaesthesia with sedation is the choice.^[1] The skin and the subcutaneous tissue just below the clavicle are supplied by the supraclavicular nerves. The selective blockade of supraclavicular nerves needs more technical knowledge and suitable equipment and hence a proximal target of the superficial cervical plexus is an option. The dorsal scapular and suprascapular nerves are clearly described to innervate the area lateral to that of nociception and blockade of such nerves supplying the adjacent areas may increase surgeon comfort. Hence, we thought of targeting the upper trunk^[2] and the superficial cervical plexus to block all the involved nerves. A 43-year-old, 75-kg woman with no known systemic co-morbidities came to the emergency department with complaints of chest pain for 3 days and a mild swelling of lower limbs. On arrival, patient was conscious, oriented, afebrile with bilateral pitting pedal oedema and a pulse rate of 48–49/minute. The electrocardiogram (ECG) revealed complete heart block. The other investigations including complete blood count, coagulation profile, thyroid function tests, and cardiac echocardiography were normal. She tested negative for coronavirus disease-19. The patient was shifted to cardiac catheterisation laboratory and connected to pulse oximeter, ECG and non-invasive blood pressure monitor. After 1 mg of intravenous midazolam, an ultrasound (Sonosite X

porte -USA- HFL probe) scanning was done along the posterior border of the sternocleidomastoid muscle and the cervical plexus of nerves was identified [Figure 1a]. Under direct visualisation, 5 mL of 0.5% bupivacaine was administered and the spread was seen. The formation of upper trunk of the brachial plexus was identified and 5 mL of 0.5% bupivacaine was injected [Figure 1b]. Sensory loss was observed from just above the clavicle to around 2–3 inches below the clavicle. The outer border of the infraclavicular fossa was also numb. The implantation of pacemaker was uneventful [Figure 2a]. The whole procedure lasted for 45 min. A post-procedural ultrasound revealed bilateral normal diaphragmatic movements. Raza *et al.*^[3] have successfully conducted nerve blocks for pacemaker implantation with combined cervical plexus and intercostal nerve blocks. The area of supply of intercostal nerves will lie a little below the site of pacemaker insertion. [Figure 2b]. Veve *et al.* in their work have stated that usually LA technique is adopted for pacemaker insertion because of the presence of comorbidities.^[4] The subclavian nerve supplies the subclavius muscle but is not described in innervation of part of the skin. The lateral pectoral nerve may supply the lateral part of the infraclavicular fossa. The suprascapular nerve supplies the supraspinatus and infraspinatus muscles and it can supply a twig just under the acromion. Hence, we wanted to block the upper trunk and we were successful. Koshy *et al.*^[5] successfully did tracheostomy with landmark-guided superficial cervical plexus block. Mavarez *et al.*^[6] have described pacemaker insertion with pectoral nerve (PECs) block alone. The PECs block will target the pectoral nerves along with intercostal nerves. To conclude, a combined block of the superficial cervical plexus and upper trunk of brachial plexus can be an anaesthetic option for insertion of permanent pacemaker.

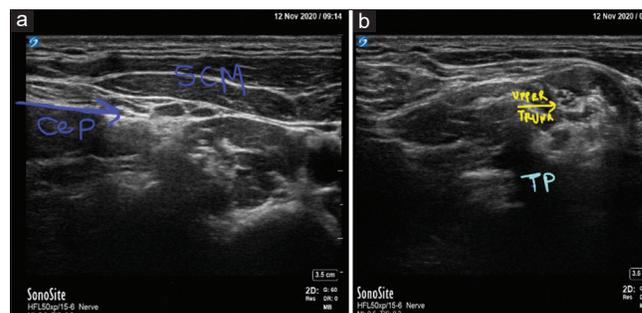


Figure 1: (a) Cervical plexus (CeP) and sternocleidomastoid (SCM) muscle. (b) Upper trunk and transverse process (TP)

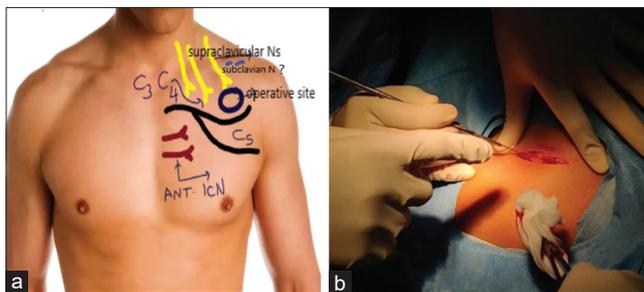


Figure 2: (a) Possible innervation of the site of surgery. (b) Procedure of insertion

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

1. Gaitan BD, Trentman TL, Fassett SL, Mueller JT, Altemose GT. Sedation and analgesia in the cardiac electrophysiology laboratory: A national survey of electrophysiologists investigating the who, how, and why? *J Cardiothorac Vasc Anesth* 2011;25:647-59.
2. Sivashanmugam T, Sripriya R, Jayaraman G, Ravindran C, Ravishankar M. Truncal injection brachial plexus block: A description of a novel injection technique and dose finding study. *Indian J Anaesth* 2020;64:415-21.
3. Raza SM, Vasireddy AR, Candido KD, Winnie AP, Masters RW. A complete regional anaesthesia technique for cardiac pacemakerinsertion. *J Cardiothorac Vasc Anesth* 1991;5:54-6.
4. Veve I, Melo LF. Anaesthesia for pacemaker insertion. *Semin Cardiothorac Vasc Anesth* 2000;4:138-43.
5. Koshy RC, Thankamony H. Superficial cervical plexus block for urgent tracheostomy. *Indian J Anaesth* 2019;63:65-6.
6. Mavarez AC, Ripat CI, Suarez MR. Pectoralis plane block for pacemaker insertion: A successful primary anesthetic. *Front Surg* 2019;6:64.

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