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## Cutaneous innervations encountered during mastectomy: A perplexing circuitry

Sir,

We read with great interest the original article by Syal and Chandel where they compared post-operative analgesic effect of paravertebral block, pectoral nerve block or PECS block and local infiltration in patients undergoing modified radical mastectomy.<sup>[1]</sup> As the use of ultrasound in regional anaesthesia has become quite popular, fascial plane blocks are evolving. PECS block is one such block. However, there is some confusion regarding PECS I and II block. PECS I is the block administered in the fascial plane between pectoralis major and minor muscles.

What authors have described and many anaesthesiologists get confused is that PECS II block is only the injection between pectoralis minor and serratus anterior muscle. However, in reality and as per Blanco's original description, PECS II is a modified PECS I block which includes the PECS I block along with injection in the myofascial plane between serratus anterior and pectoralis minor [Figure 1].<sup>[2]</sup> One reason could be a less volume of drug which was injected in the serratus anterior and pectoralis minor myofascial

plane in PECS II group. This myofascial plane injection targets three different nerves: the intercostal nerves (the anterior division of lateral cutaneous branch, mainly T3-T5), the long thoracic nerve of Bell which supplies serratus anterior and the thoracodorsal nerve which supplies latissimus dorsi muscle. A volume of 10 ml is insufficient to provide adequate nerve soakage leading to insufficient analgesia. The recommended dose is at least 20 ml of local anaesthetic.<sup>[3]</sup>

The nerves covered in PECS II block, i.e. medial pectoral nerve, lateral pectoral nerve and thoracodorsal nerve arise from medial, lateral and posterior cord of brachial plexus, respectively. Theoretically, an infraclavicular block can be considered equivalent to a PECS II block. But, this comes at the cost of motor blockade of the limb and higher chances of vascular puncture due to proximity with axillary vessels and cephalic vein at the site of injection. However, it does not address the intercostals nerves. Moreover, infraclavicular block has not been studied for providing analgesia for breast surgeries.

Axilla receives innervation from the intercostobrachial nerve which is a lateral cutaneous branch of T2 intercostal nerve. It supplies medial aspect of arm, axilla and the tail of breast which extends to axilla. The nerve has a variable course and therefore often gets spared with PECS block. The nerve is responsible for post-mastectomy pain syndrome if surgery is associated with axillary dissection.<sup>[4]</sup> The nerve could be blocked by performing a subcutaneous infiltration along the entire medial aspect of arm.

One nerve that always gets spared consistently is the supraclavicular nerve.<sup>[5]</sup> Supraclavicular nerve innervation relevant to mastectomy is less explored. The purpose of describing it here is to throw light on its existence and possible use in reconstructive/

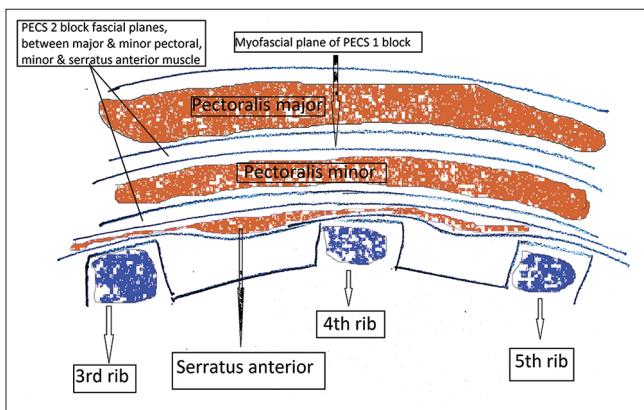


Figure 1: Diagrammatic representation of PECS I and PECS II block

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radical surgeries. The nerve along with the intercostals provide sensory innervations to anterior chest wall. Supraclavicular nerve arises from the superficial cervical plexus because of which neither the infraclavicular, TPVB nor the PECS block covers it.

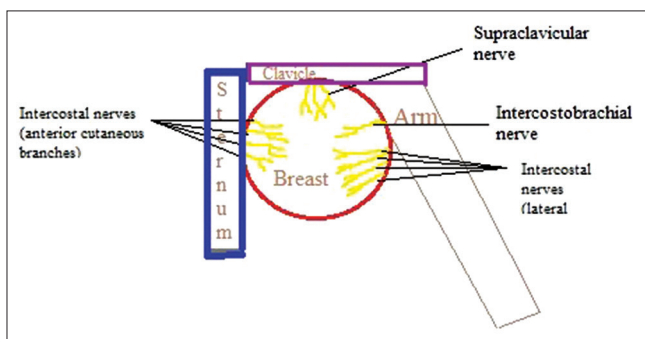
The innervation of chest wall is very complex [Figure 2]. TPVB covers the intercostals nerves and provided surgical anaesthesia. PECS block covers lateral and medial pectoral nerve along with intercostal nerves. Supraclavicular and intercostobrachial nerve needs separate injections. Therefore, a combination of approaches is required for optimal post-operative analgesia after mastectomy.

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**Conflicts of interest**

There are no conflicts of interest.



**Figure 2:** Areas of innervations of chest wall with supraclavicular, intercostobrachial and intercostals nerves

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