

Landmark-Guided Clavipectoralfascial Plane Block Combined with Superficial Cervical Plexus Block (Supraclavicular Branch) for Clavicular Implant Removal - A Case Series

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Abstract

Clavipectoralfascial plane block combined with superficial cervical plexus block has been used as an anesthetic and analgesic technique in mid-clavicle fracture surgeries. Although commonly performed under ultrasound guidance, a landmark-guided approach may be useful in resource-limited settings. Even though clavicular implant removal is minimally invasive surgery, general anaesthesia is most commonly performed anaesthesia technique and post-operative analgesia is a must. Here we studied 5 patients undergoing clavicular implant removal under land-mark guided clavipectoralfascial plane block with superficial cervical plexus block. Onset of analgesia, duration of blockade is noted and block related complications were observed.

Keywords: Landmark Technique, Clavipectoral Fascia.

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Introduction

Clavicle fractures account for 2.6% of all fractures, most commonly affecting the middle third.[1,2] The most commonly used anesthetic techniques for clavicle surgery is general anesthesia, alone or combined with peripheral nerve blocks.

General anesthesia carries the risk of aspiration, laryngospasm, perioperative airway deterioration, difficult airway, and delayed extubation.[3] In contrast, regional nerve block avoids many pulmonary complications and provides more complete postoperative analgesia. When regional anesthesia is the technique of choice, superficial cervical plexus block (SCPB) (combined or not with deep cervical plexus block) or interscalene or supraclavicular brachial plexus block is usually used. [4]

Interscalene brachial plexus block leads to incomplete analgesia and can be associated with ipsilateral phrenic nerve blockade and hemidiaphragmatic paralysis in nearly all patients whereas SCPB alone does not adequately anesthetize the periosteum and deeper structures.[5] The clavipectoral fascia plane block (CFPB) was described for the first time at the 36th Congress of the "European Society of Regional Anesthesia and Pain Therapy," in 2017, by Valdez involving the

injection of 10-15 mL of local anesthetic between the periosteum and clavipectoral fascia at the medial and lateral aspects of the fracture.[6,7,8]

In 2019, during the 44th Annual Meeting of the "Regional Anesthesiology and Acute Pain Medicine," Roqués described CFPB combined with the superficial cervical plexus block (SCPB), as an anesthetic technique, highlighting its potential utility in addition to post-operative analgesia of fractures of the middle third of the clavicle. [6]

We studied 5 patients posted for clavicular implant removal, and anesthetised them with land-mark guided CFPB combined with supraclavicular branch of SCPB. Ease of the procedure, onset of blockade and duration of analgesia noted.

Methodology

Written informed consent taken from the patients. Patient lies supine, monitors attached and sedation injection 1.5mg midazolam given intravenously, 5 liter oxygen delivered through face mask. 15 ml of .5% bupivacaine and 15ml of 2% lignocaine with adrenaline and 8mg dexamethasone solution taken. Head turned to opposite side.

For clavipectoral fascia block target drug has to be injected in clavipectoralfascial plane, located

between the clavicle and the pectoralis major muscle. Surface landmarks included the medial, middle, and lateral thirds of the clavicle. At each point, a needle was inserted almost perpendicular to the clavicle from the cephalic end until contact with the superior surface of the clavicle was achieved, followed by slight withdrawal and deposition of local anesthetic after negative aspiration. Using a

23-gauge needle, 9ml of solution injected each point. For superficial cervical plexus block midpoint of the posterior border of sternocleidomastoid identified. Needle inserted in subcutaneous plane and 5 ml injected downwards along the posterior border of sternocleidomastoid where the supraclavicular nerve travels.

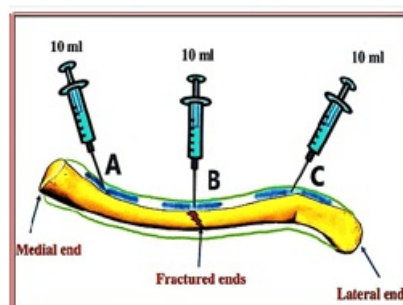


Figure 1:

We have done study on 5 patients who were undergoing clavicular implant removal. All patients had satisfactory anaesthesia with minimal sedation. None of the patients had any complication related to either of blocks. Post operatively all patients had a pain free period of an average of 8-9 hours after which first rescue analgesia was given.

Table 1:

Number of Patients	Onset of Analgesia (Minutes)	Analgesia Duration of Blockade(Hours))
1	4	9
2	5	8
3	3	10
4	4	8
5	5	9

Discussion

Implant removal, though less invasive, remains painful and necessitates adequate anesthesia for optimal patient comfort.[9] All the sensory nerves supplying the clavicle penetrate the clavipectoral fascia to innervate clavicle except for the

supraclavicular nerve, which innervates skin above the clavicle.[10] Any single block is usually insufficient to provide effective surgical or peri-operative analgesia. Sole regional anesthesia for clavicle surgeries has not been commonly practiced due to multiple innervations of the clavicle.[11]

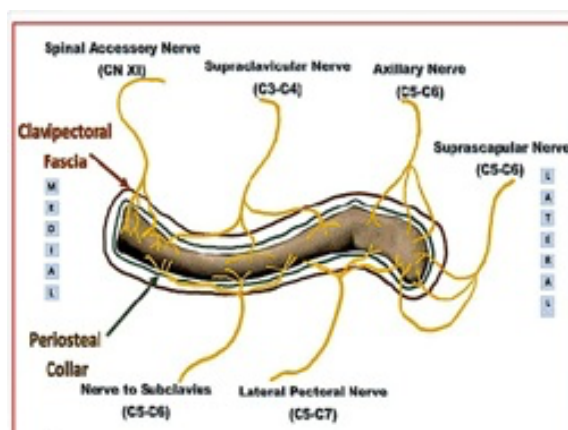


Figure 2:

Cervical plexus block and clavipectoral block can provide motor-sparing analgesia following clavicle surgery.[12] Mohamed et al demonstrated comparable analgesia between CFPB and superior

trunk block but significantly fewer respiratory complications with CFPB, noting the deeper needle placement and higher phrenic nerve involvement associated with superior trunk block.[13] Although

ultrasound guidance is preferred [14], landmark-based CFPB and SCPB are viable alternative when ultrasonography is unavailable, particularly in resource-limited settings and reduces the procedural timing. The landmark technique uses palpable anatomical references (the medial, middle, and lateral aspects of the clavicle), which facilitate precise needle placement with basic equipment and provide prompt, targeted sensory blockade. Landmark-based CFPB eliminates the delay associated with equipment setup and allows rapid turnover in high-volume environments.[7] All the patients had an uneventful recovery and rapid ambulation, in alignment with ERAS protocols. Since the regional anesthesia technique is simpler, easy with fewer side effects, implant removal can be performed as a day care procedure using landmark guided CFPB and SCPB (supraclavicular branch) as an anesthesia technique. Procedure is relatively safe as injection plane is superficial and avascular, minimising the risk of significant complications. Although CFPB with SCPB is considered a superficial fascial plane block, inadvertent spread or patient variability may affect efficacy. Given that the current evidence is limited to case small series, wider conclusions regarding safety and simplicity should be drawn cautiously. Since land-mark technique is used, accuracy of drug placement can not be obtained.

Conclusion

This case series affirms that landmark-guided CFPB with SCPB (supraclavicular branch) simple, safe, and effective anesthetic technique for clavicle implant removal. It allows for rapid and prolonged analgesia with excellent patient comfort and opioid-sparing management.

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