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CASE REPORT **OPEN ACCESS**

Landmark Guided Interscalene Brachial Plexus Block as A Sole Mode of Anaesthesia in A Case of Clavicle Fracture: A Case Report

Dr. Meenaxi Dholey[1]*, Dr. Unnati Shedmake[2], Dr. Sneha Baldota[3], Dr. Moksha Joshi[2]

[1]Head of the Department, Grade 1 DNB Teacher, Senior Consultant Anaesthesia, Pt. Madan Mohan Malviya Shatabdi Hospital, Govandi, Mumbai, India
[2]Post Graduate, Department of Anaesthesia and Critical Care, Grant Govt. Medical College and JJ Hospital, Mumbai, Maharashtra 400008, India
[3]DA, DNB (Anaesthesia), IDCCM, Senior Registrar, Pt. Madan Mohan Malviya Shatabdi Hospital, Govandi, Mumbai, India

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***Corresponding Author**
Dr. Meenaxi Dholey

Head of the Department, Grade 1 DNB Teacher, Senior Consultant Anaesthesia, Pt. Madan Mohan Malviya Shatabdi Hospital, Govandi, Mumbai, India

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A B S T R A C T

Introduction: Trauma to the upper extremities are very common especially in younger individuals who often sustain these injuries by way of moderate to high-energy mechanisms such as motor vehicle accidents or sports injuries, whereas elderly individuals are more likely to sustain injuries because of the sequela of a low-energy fall‟[1]. There are numerous conservative treatment options available, the most common being the use of a sling or 'figure-of-eight' bandage however, Surgical treatment is indicated if mediastinal structures are placed at risk because of fracture displacement, in case of soft-tissue compromise, or when multiple trauma and/or "floating shoulder" injuries are present [2]. In the latter, the common anaesthetic technique for patients is general anesthesia (GA) however Regionalanesthesia (RA) can be a preferred as an alternative to (GA) to avoid complications as well as to provide post operative analgesia. The aim of this study is to determine if Interscalene brachial Plexus block is a safe alternative to general anaesthesia for Clavicle surgeries. ***Objective:*** To report a case of Clavicle fracture fixation surgery done under interscalene block solely. ***Methods:*** A literature review was conducted using databases such as PubMed, Elsevier, and GoogleScholar to identify relevant studies comparing ISB and GA for clavicle fracture surgeries. ***Result:*** We present a case of a 40 year old male with right clavicle fracture following an alleged history of trauma, who underwent ORIF and plating in supine position under Interscalene block. ***Conclusion***: We conclude that Interscalene Block is well tolerated and has favourable outcomes as compared to general anesthesia and can be considered for clavicle fixation surgeries.
Keywords: "Interscalene block," "general anesthesia," "clavicle fracture," "regional anesthesia," and "postoperative outcomes."

INTRODUCTION

The clavicle is one of the most commonly broken bones in the body. It accounts for about 5 % of all adult fractures and occurs in people of all ages [3].

Non-displaced clavicle fractures can be treated by conservative or nonsurgical treatment such as immobilization with a sling, pain control, and physical therapy [4]. However, surgery may be needed for more complicated fractures such as open fractures, displaced fractures with skin tenting, clavicle fractures, concomitant vascular injury, and nerve injuries [5].

While general anaesthesia is the most sought after mode of Anaesthesia for clavicular surgeries as it provides immobility along with deep and efficient anesthesia to cover the entire clavicle bone but it comes with its own complications which can be avoided by Regional Anaesthesia, which imparts better hemodynamic stability, less nausea and vomiting, better intraoperative and postoperative analgesia, fewer side effects, shorter hospital stay, and improved patient satisfaction [6].

The sensory innervation of the clavicle remains controversial however a cadaveric investigation has found the clavicle and clavicular joints to be innervated by the subclavian, lateral pectoral, and supraclavicular nerves [7].

CASE

A 40 year old male, ASA-I presented with complaints of pain and swelling over the right clavicular region after an alleged history of trauma due to slip and fall. Patient had no history of trauma to head/chest/abdomen. No history of ENT bleed/vomiting/Loss of consciousness or convulsions.

Medical history: Patient has no significant medical or surgical history.

Case Findings

Patient is lean thin, with fair general condition. On pre-anaesthetic examination patient was found to be vitally stable. Patient had normal systemic examination and a normal Airway. Preoperative laboratory examination results were found to be within normal limit. Patient was explained about the RA procedure, along with its pros and cons; After discussing the options, the patient expressed a preference for regional anesthesia.

On Xray -Right lateral 1/3rd shaft clavicle fracture was noted. Estimated duration of surgery as per orthopedician was 2hrs.

Case Management

Pre-operatively, the Lignocaine sensitivity test was done. Patient's consent for Anaesthesia and surgery was checked. Nil by mouth status confirmed and the availability of blood and blood products were checked.

The entire stepwise procedure of Interscalene block was explained to the patient in the layman terms, as the Anaesthetic & analgesic outcomes of a Landmark guided block mainly depends on the patient's response.

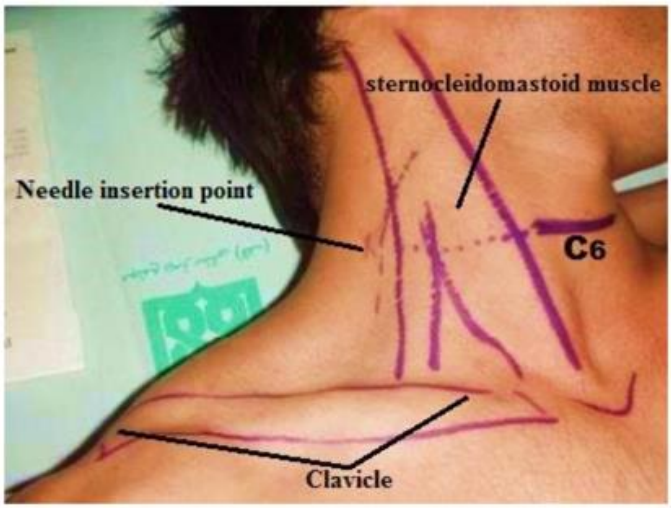
Patient was taken on the OT table and baseline vital parameters were noted. A peripheral cannula of 20G was secured, antiemetic Inj Ondansetron 4mg IV was given and intravenous fluid RL, was started.

Positioning

Patient was laid supine with a shoulder roll placed underneath and face turned towards the opposite side.Before cleaning the skin, the proper landmarks were identified and marked with a marking pen.

The 3 major landmarks required for the block are the clavicle, the clavicular head of the sternocleidomastoid, and the external jugular vein. Another helpful landmark is the cricoid cartilage.

After identifying these landmarks, the skin was painted, and the anterior and middle scalene muscles were palpated with sterile gloves. This is located just posterior to the clavicular head of the sternocleidomastoid around the level of the cricoid cartilage. The external jugular vein usually crosses the interscalene groove. A 22-gauge needle was inserted to target the brachial plexus at the level of the C5-C6 nerve roots just posterior to the external jugular vein approximately 3 to 4 cm above the clavicle and advanced at an angle perpendicular to the skin plane.



(8) Landmarks for ISB

Parasthesia was elicited as described by the patient and Inj Lignocaine + Adrenaline 7mL + Inj Bupivacaine 8 mL + NS 10mL + Inj Buprenorphine 30mcg was constituted out of which 15mL drug volume was deposited at the site of maximum paresthesia after confirmation of negative aspiration of blood.

Assessment of sensory and motor blocks was performed every 5 min after local anaesthetic injection, for a total duration of 30 min.

Sensory block was tested in the C5 and C6 dermatomes using a blunt tip needle by the Pin-prick test:

1. No perception
2. Decreased sensation
3. Normal sensation

Motor block was tested using arm abduction (C5), and forearm flexion (C6)

1. In ability to overcome gravity
2. Reduced force compared to contralateral arm
3. No loss of force

A successful block was concluded as sensory (score, 0) and motor (score, 0) block in the distribution of the C5 and C6 nerve roots within 30 min of performing the ISB block.No immediate adverse events like hyper/hypotension, tachycardia /bradycardia was seen.

The procedure went on for 120 mins, the patient was awake throughout the procedure and didn't need any sedation. Patient was hemodynamically and vitally stable during the entire perioperative period.

The patient experienced minimal pain postoperatively, with a pain score of 2/10. The block provided excellent analgesia for the first 12 hours. Patient was discharged on postoperative day 1 with oral analgesics.No complications apart from a mild transient weakness in the affected arm was noted, resolving within 24hours.

CLINICAL DISCUSSION

In our case, no sedation or analgesic was used during the intraop period. The patient was hemodynamically stable with blood loss around 100-150ml, which was tolerable. Total anesthesia time was reduced due to awake patient condition. The hospital stay was reduced to 1 day which further added to the patient's convenience. The time required for rescue analgesia was significantly delayed. Overall, this case illustrates the advantages of using an interscalene block for clavicle fracture fixation, including improved postoperative pain control, reduced reliance on opioids, and quicker recovery times compared to general anesthesia. The ISB provided effective analgesia with fewer side effects and complications, aligning with the current literature suggesting regional anesthesia may offer significant benefits in upper extremity surgeries.

Further, stable intraoperative conditions, reduced blood loss, decreased opioid intake and early ambulation contributed to early patient discharge which added to patient and surgeon satisfaction.

CONCLUSION

Interscalene block offers significant advantages over general anesthesia for patients undergoing surgical fixation of clavicle fractures. The enhanced pain management, reduced opioid consumption, improved respiratory function, faster recovery, and greater patient satisfaction highlight the potential of ISB as a preferred anesthetic technique. As the field of regional anesthesia continues to evolve, further studies are warranted to optimize techniques and expand their application in orthopedic surgery. Our case study replicated the findings of previous studiesand concluded that interscalene block can be used as an alternative to general anesthesia for clavicle surgeries.

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