

Evaluating the Safety and Effectiveness of Superficial Cervical Plexus Block in Oral and Maxillofacial Surgery as an Alternative to General Anesthesia and Local Anesthesia in Space Infections: A Prospective Clinical Study

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ABSTRACT

Background: Regional anesthesia is the most common method to anesthetize the patient prior to office based procedures. Many techniques can be employed to achieve anesthesia of the dentition and surrounding hard and soft tissues of the maxilla and mandible. Aim of the study To assess the safety and effectiveness of superficial cervical plexus (SCP) block in oral and maxillofacial surgical (OMFS) practice as an alternative to general anesthesia in selective cases.

Materials and Methods: The total number of patients was 50, out of which 35 were male and 15 were female patients. Informed & written consent were obtained from the patients after they had the procedure explained to them. Medically compromised patients and those who were excessively anxious and apprehensive, patient who did not want the procedure to be done under regional anesthesia, and patients with a history of allergy to local anesthetic were excluded. All patients had their surgical procedures under regional anesthesia (SCP block with supplemental nerve blocks) performed by the same surgeon under the supervision of anesthesiologist with continuous monitoring.

Results: SCP block with concomitant mandibular nerve and

long buccal nerve block has a high success rate, low complication rate, and high patient acceptability as shown in the study.

Conclusion: Superficial cervical plexus block anesthesia is a safe and useful anesthetic technique with the low risk of accidents and complications, thus a good alternative for regional anesthesia in OMFS cases.

Keywords: Local Anesthesia, Cervical Block, Plexus.

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INTRODUCTION

Oral surgical and dental procedures are routinely performed in an outpatient setting. Regional anesthesia is the most common method to anesthetize the patient prior to office based procedures. Many techniques can be employed to achieve anesthesia of the dentition and surrounding hard and soft tissues of the maxilla and mandible. The type of procedure to be performed as well as the location of the procedure will determine the technique of anesthesia to be used. The superficial cervical plexus block (SCP) is simple and easy to perform, but unfortunately it is often overlooked as an option to general anesthesia.¹

Contemporary medicine uses general anesthesia (GA) as rather safe, useful, and simple way to achieve surgical anesthesia. The downside of GA is high economic cost, a number of highly trained personnel, morbidity, mortality, and high - cost equipment. The advantage of regional anesthesia includes stress - free anesthesia

as it prevents high catecholamine release, lower rate of blood loss because of local vasoconstrictors and sympathetic blockade, easy to perform techniques, lower morbidity rates in appropriate dosages of LA.² Cervical plexus block (CPB) was first performed by Halstead in 1884 at Bellevue and later, Kappis in Germany described the posterior route. Although Heidenhein introduced the lateral approach, it was Labat who popularized this technique in America. The superficial cervical plexus (SCP) block is frequently used in a variety of disciplines such as in thyroidectomy, carotid endarterectomy, vocal cord surgeries, and cervicogenic painful syndromes.³⁻⁵

Its application in oral and maxillofacial surgical (OMFS) has been in surgical drainage of an abscess in perimandibular region, excisions of superficial lesions, skin suturing in the corresponding dermatome.⁶

MATERIALS AND METHODS

The study was conducted in the postgraduate Department of Dental and Oral and Maxillofacial Surgery, Government Dental College & Hospital Srinagar, Jammu and Kashmir. Total number of patients included in the study was 50, out of which 35 were males and 15 were females. The mean age was 25 yrs. Informed written consent was obtained from the patients after they had the procedure explained to them. Exclusion criteria included patient’s refusal to undergo the procedure under regional anesthesia, allergy to LA, excessively anxious and apprehensive patients, significant upper airway compromise warranting an endotracheal intubation to secure airway. All patients had the procedure done by the same operating surgeon.

Landmark

- Mastoid process
- Chassaignac’s tubercle of C6 vertebra - parallel to cricothyroid cartilage.

The site of needle insertion is at the midpoint of the line connecting the mastoid process with the Chassaignac’s tubercle of C6 transverse process. This is the location of the branches of SCPs as they emerge behind the posterior of sternocleidomastoid muscle. LA used in our technique was 2% lidocaine (1:100,000 adrenaline), LA cartridges, 20 ml syringe, 25 gauge needle, marking pen, and surface antiseptic/alcohol swipes.

Procedure

The technique for an SCPB is as follows:

1. The patient lies supine with a small towel under the head, which is turned slightly toward the side that is not being blocked.
2. Against gentle resistance from the anesthetist’s hand, the patient is instructed to lift his or her head. A simultaneous slight

Valsalva’s maneuver is encouraged to help outline the sternocleidomastoid muscle and locate the external jugular vein.

3. The midpoint of the posterior border of the sternocleidomastoid muscle is located and marked. This usually corresponds with the external jugular vein as it crosses the border of the muscle

4. A 22-gauge 4-cm needle is advanced from 2-3cm superiorly and inferiorly into the subfascia along the border of the muscle, and 5-10 mL of local anesthetic is then infiltrated. Paresthesia is not sought. 10 to 15 minutes should be allowed after injection of the local anesthetic before the adequacy of the block is determined. Because of the close proximity of the accessory nerve [cranial nerve XI], the ipsilateral trapezius muscle is often paralyzed for the duration of the SCPB.

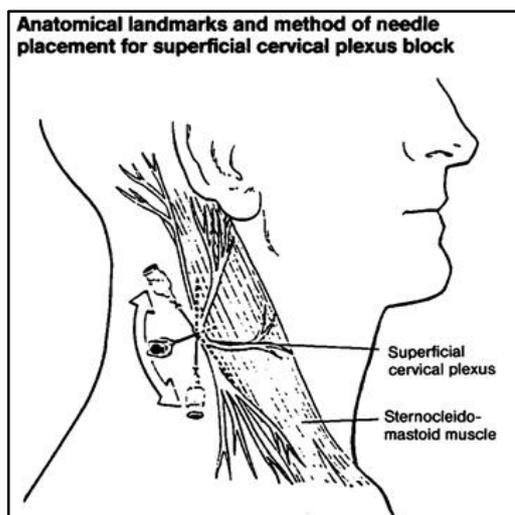
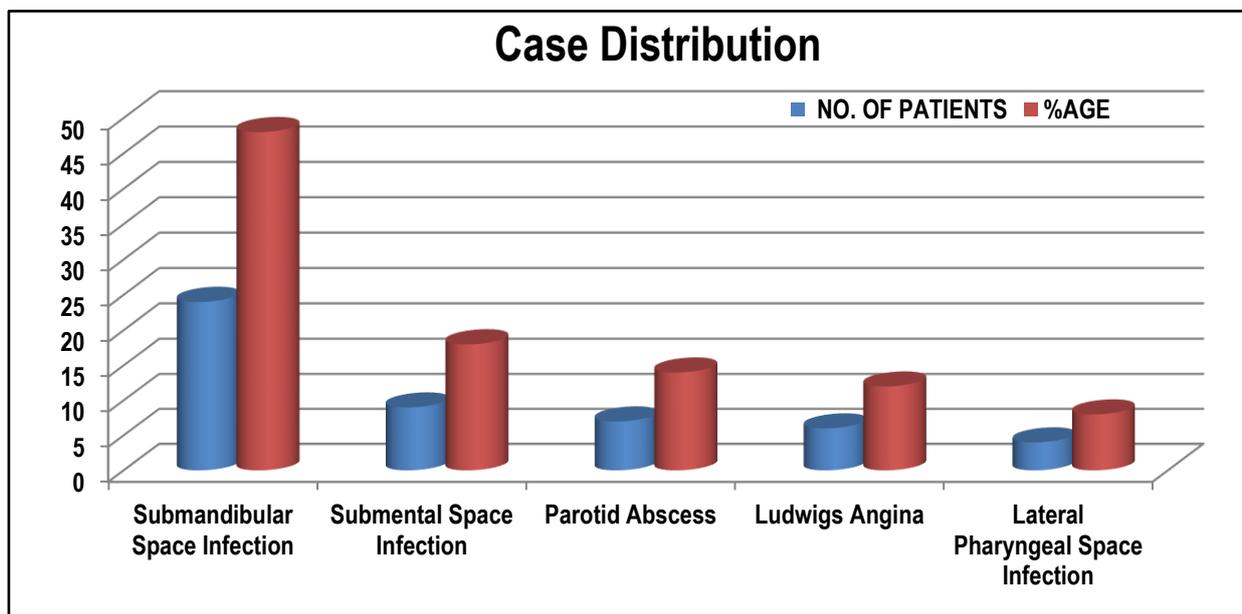


Table 1: Case Distribution

S No.	Diagnosis	No. of patients	%
1.	Submandibular Space Infection	24	48%
2.	Submental Space Infection	9	18%
3.	Parotid Abscess	7	14%
4.	Ludwigs Angina	6	12%
5.	Lateral Pharyngeal Space Infection	4	8%



RESULTS

Of the total number of 50 patients, 35 were male and 15 were female. All the patients had incision and drainage of perimandibular facial space infections. All patients had SCP block supplemented by inferior alveolar nerve block and long buccal nerve block depending on the anatomical location of surgery to achieve surgical anesthesia. The case distribution is shown in Table 1.

All patients had their surgical procedures under regional anesthesia (SCP block with supplemental nerve blocks) performed by the same surgeon with satisfactory anesthesia and analgesia without any complication.

DISCUSSION

Incision and drainage is usually done under local anesthesia in maxillofacial infections of odontogenic origin. Whenever the abscess involves the deeper facial spaces, GA is commonly used. The effective use of LAs can provide both patient comfort and safety to perform surgery in deeper planes of the neck and perimandibular region. SCP block takes care of the pain in skin incision and the necessary tissue dissection. By combining SCP block with our known techniques of nerve blocks such as the inferior alveolar and long buccal nerve blocks, a high level of safety and positive outcome was achieved. Similar results were obtained by Kamal Kanthan R.²

In a study of 10 patients. Arun Kr. Gupta⁷ used this block in drainage of Ludwig's angina and concluded that superficial cervical plexus block permits the surgical decompression in their case and in a rural hospital with limited resources it should be considered as an option. A thorough knowledge of the pertinent anatomy and the proper technique for the block is essential in order to achieve good clinical results. A number of potential side effects and complications like infection, hematoma, phrenic nerve blockade, LA toxicity, nerve injury, and spinal anesthesia are inherent to CPB, but they usually are of minimal significance if they are properly managed.¹ No adverse drug or technique incidents were recorded in our case series which is in accordance with the previous studies.

CONCLUSION

Finally, to conclude SCP block with concomitant mandibular nerve and/or long buccal nerve block has a high success rate, low complication rate, and high patient acceptability as shown in the study.

Our study as with previous studies shows that the notable anesthetic effect and adequate working time, summed with the low risk of accidents and complications, make this technique a good alternative for sensitive blockage of part of the cranial and cervical regions.

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