Role of Superficial Cervical Plexus Nerve Block as an Adjuvant to Local Anesthesia in the Maxillofacial Surgical Practice

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ABSTRACT

Purpose: Infiltration techniques are used as an adjuvant to regional anesthesia. In this study, we evaluated the efficacy of the superficial cervical plexus nerve block, as an alternative to local infiltration techniques; in the management of mandibular fractures and peri-mandibular space infections.

Methods: A prospective randomized controlled trial was conducted on 24 patients having either mandibular fractures or peri-mandibular space infections; and were scheduled for surgery under regional anesthesia (eg, inferior alveolar nerve block, long buccal nerve block). The control group involved delivering a combination of regional anesthesia along with local infiltration. The experimental group received regional anesthesia with a superficial cervical plexus nerve block. The following parameters were studied: pain, onset and duration of anesthesia, time interval until first analgesic request, pulse rate and blood pressure [at different time intervals].

Results: Intergroup comparison was done using unpaired *t*-test. Intragroup comparison was done using repeated measures ANOVA (for >2 observations), followed by a post hoc test. The superficial cervical plexus nerve block group showed highly statistically significant ($P < .01$) improvement in terms of intraoperative pain at 30 minutes, duration of anesthesia, intraoperative anesthetic requirement, time interval until first analgesic request and intraoperative diastolic blood pressure at 10 minutes.

Conclusion: It can be concluded that the combination of a regional anesthesia technique with a superficial cervical plexus nerve block is an alternative and safe technique for patients undergoing surgery for mandible fractures and perimandibular space infections, with clear advantages over local infiltration.

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Peri-operative pain management in surgery is critical for better care and optimal functional outcomes.[1] Most anesthetists, surgeons and patients believe that surgery is principally safe if it can be performed under regional or local anesthesia (LA), rather than general anesthesia (GA). [2] GA necessitates a greater degree of preoperative preparation, an increased complexity of care and associated higher costs and complications. On the contrary, regional anesthesia (RA) has fewer complications and several advantages like ease of performance, greater safety and cost effectiveness. [3]

Mandibular fractures (MF) and odontogenic space infections are commonly encountered in the maxillofacial practice. Gassner et al [2003] stated that MF account for 25% of all maxillofacial fractures from his elaborate research over a duration of 10 years.[4] Space infections of the head, neck and face region are another area of concern, with submandibular space involvement as 1 of the most frequent presentations.[5] It has been well-documented that MF and localized peri-mandibular fascial space infections can be treated adequately with a combination of regional and local infiltration LA techniques.[6,7] However, pain control under infiltrations were not optimal.

The superficial cervical plexus nerve block [SCPNB] technique is widely used in head and neck surgeries [e.g., lymph node dissection, thyroidectomy, minimally invasive parathyroidectomy, carotid endarterectomy, tympano-mastoid surgery etc.] as it has a low rate of complications and is straightforward to master. [8,9] Exploration of this technique might yield better results in common maxillofacial pathologies like fractures of the mandible and odontogenic space infections. Though there is a paucity of literature in this regard, current evidence identifies the role of the SCPNB in the surgical drainage of head and neck abscesses, excision of superficial pathologies in the perimandibular region and management of MFs. [10-12]

With this background in mind, we hypothesized the effectiveness of the SCPNB as an adjuvant to regional anesthesia in maxillofacial surgery. We conducted a study with the aim to evaluate the efficacy of the SCPNB in the management of MFs and perimandibular space infections.

Materials and Methods

TRIAL DESIGN

A 2-armed [1 experimental arm (EA) treated under nerve block (NB) + SCPNB and another control arm (CA) treated with NB + local infiltration], single-center, randomized controlled clinical trial was planned. The research protocol was prepared according to guidelines of the World Medical Association Declaration of Helsinki and approved by the local institutional ethical committee (EC Ref No. dated 18/05/2018). The study was registered to the Clinical Trial Registry-India (Reg. No-CTRI/2020/09/027854). The study was conducted at the Department of Oral and Maxillofacial surgery, Government Dental College and Hospital, Mumbai from September 2020 to November 2020. Computer generated randomization of subjects was performed using http://www.randomization.com (Seed No.-12056). To avoid bias, a single author [VN] was responsible for allocation of subject based on the randomization chart.

INCLUSION AND EXCLUSION CRITERIA

The sample comprised of male and female patients belonging to the age group of 18 to 65 years. The presence of mandibular fractures and perimandibular space infections were confirmed based on the necessary clinical and radiographic investigations. Patients were included in the study only if they met the inclusion criteria and were willing to undergo surgical management under RA.

- Mandibular fractures:

The following fractures were considered: body, angle, symphysis and para-symphysis mandibular fractures restricted to a single side. Patients with condylar fractures, bilateral mandibular fractures and additional associated cranio-maxillary fractures were excluded from the study.

- Perimandibular space infections:

The following perimandibular space infections were considered: submental, submandibular and sublingual space infections involving 1 or both sides. Presence of additional facial space infections were excluded.

All patients presenting with a history of documented allergy to LA, pregnancy, active infectious diseases (ie, HIV, hepatitis), uncontrolled diabetes mellitus, alcoholism, drug abuse, ongoing treatment with anti-platelet and/or anticoagulant agents, ongoing treatment with immunosuppressants were excluded. Patients unwilling to undergo surgical management under RA were also excluded from the study.

All subjects were informed about the study protocol and possible risks associated and gave written informed consent for the same in the language (in English, Hindi, Marathi) that he and/or she understands.

INTERVENTIONS

After taking a detailed case history and performing the necessary clinical and radiographic investigations, the patients were randomized in to their respective groups and admitted to the ward a day before surgery. All the patients administrated with antibiotics and analgesics through intravenously on the day of admission regardless of their diagnosis.

All MFs were treated with open reduction and internal fixation (ORIF) through intraoral approach only. Perimandibular space infection were managed via extraoral approach based on the foci of pus collection. The foci of collection were confirmed through clinical and ultra-sonographic findings. The offending tooth was extracted at the time of incision and drainage whenever possible.

The patients in the CA were treated under the indicated intraoral mandibular nerve block (inferior alveolar nerve block and lingual nerve block and long buccal nerve block). This was supplemented with an extraoral subcutaneous infiltration of LA (Fig 1). The patients in the EA were treated under a similar indicated intraoral mandibular nerve block, and SCPNB on the same side. The volume of LA deposited were as follows: 1.8 to 2mL for IANB, 0.6mL for long buccal nerve block, 2-3mL for extraoral infiltration in CA and 3-5mL for SCPNB in EA patients. Additional LA was given if needed intraoperatively.

SCPNB TECHNIQUE

The patient was placed in a supine position with the head turned to the side, contrary to the 1 to be blocked. After scrubbing and draping, 3 points were marked on the neck with a sterile skin marker: the mastoid process, sternal head of sternocleidomastoid (SCM) muscle and a point midway between these 2 points. All 3 points were joined along the posterior border of SCM muscle (Fig 2). Three to 5mL of LA was injected alongside the second point using a "fan" technique with superior-inferior needle redirections, 1 to 2 cm below and above the posterior border of the SCM muscle (Fig 3). At this point, the terminal branches from superficial plexus emerge as 4 distinct nerves (lesser occipital nerve, great auricular nerve, transverse cervical nerve and supraclavicular nerve) from the posterior border of the SCM. Prior to injecting, multi-planar aspiration was performed to avoid injecting into a vessel. Care was also taken not to insert the needle too deep.

ARMAMENTARIUM

A 26-gauge long needle (Nirlife) was used to administer the local anesthetic in both arms, intra-orally and extra-orally. The anesthetic agent used was 2% lignocaine with adrenaline 1:200000 (CADILA pharmaceuticals limited⍰). The volume of LA deposited was as follows: 1.8 to 2 mL for IANB, 0.6mL for long buccal nerve block, 2-3 mL for extraoral infiltration in CA and 3-5mL for SCPNB in EA patients; additional LA was given as required. It should be noted that based on the technique described above, a larger initial volume of local anesthetic [approximate 1mL more] was injected in the EA, as compared to the CA. Postoperative medications were given intravenous as per severity of condition (3 to 5 days) and postoperative instructions were given to the patient. All the patients were followed for 7 days.

OUTCOMES

- *Primary outcome*

The primary outcomes assessed were pain after SCPNB and extra-oral infiltration assessed at the fixed time intervals (immediately, intraoperatively 10 minutes after incision and immediate postoperatively) on a Visual Analogue Scale (VAS), time of onset of anesthesia (evaluated by soft tissue anesthesia by pinching the skin with tooth forceps) and duration of anesthesia from the onset to until the soft tissue anesthesia wore off by subjective and objective symptoms.

FIGURE 1. Showing infiltration with LA being deposited subcutaneously in submental region.

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FIGURE 2. Showing the 3-point markings 1 at mastoid process, other 1 at sternal head and midpoint of the line joining these 2 points on posterior border of SCM.

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FIGURE 3. LA being deposited at midpoint 1cm cephalically and caudally on posterior border of SCM and LA should be deposited subcutaneously till bleb noticed.

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- *Secondary outcomes*

The following secondary outcomes were assessed: pulse and blood pressure were assessed preoperatively (T-0) and intraoperative at 10 minutes (T-1) and 30 minutes (T-2) after the initial incision (Truscope III digital monitor), intraoperative anesthetic requirement was recorded as "yes" or "no" and time interval to first analgesic request was recorded. Side effects/ complications were also recorded perioperatively and over the following week.

SAMPLE SIZE

The study population was selected randomly from the outpatient department. Minimum 12 patients in each arm were included, as per the sample size formulae [13] based on mean and standard deviation values-

$$n = \frac{2\left(Z_\alpha + Z_\beta\right)^2[s]^2}{d^2}$$

where Z_α is the z variate of alpha error that is, a constant with value 1.96, Z_β is the z variate of beta error i.e. a constant with value 0.84 by considering 80% power with type I error to be 5% and Type II error to be 20% with a standard deviation (SD) of 1.8 and true difference of at least 2.1 units between the groups.

BLINDING

Effective blinding of the patients and the surgeon was not possible due to the nature of the study.

STATISTICAL ANALYSIS

The data obtained was compiled on a Microsoft Office Excel Sheet (v 2010, Microsoft Redmond Campus, Redmond, Washington, United States) and subjected to statistical analysis using statistical package for social sciences (SPSS v 21.0, IBM). Descriptive statistics like frequencies and percentage for categorical data, mean and standard deviation (SD) for numerical data has been depicted. Intergroup comparison was done using *t*-test. Intragroup comparison was done using repeated measures ANOVA (for >2 observations), followed by post hoc test whenever necessary. Comparison of frequencies of categories of variables with groups was done using the chi-square test. For all the statistical tests, $P < .05$ was considered to be statistically significant, keeping α error at 5% and β error at 20%, thus giving power to the study as 80%. The statistical significance level was set at P<0.05 and highly significant at $P < .01$.

Results

DEMOGRAPHIC DATA

After assessing 67 patients, 24 subjects were enrolled in the study and approximately 66% of the patients were men. A detailed Consolidated Standards of Reporting Trials (CONSORT) flowchart is illustrated outlining the study (Fig 4). The distribution of age (P = .50), sex (P = 1.0), etiology (P = .24) and diagnosis (P= .52) between both the groups was nonsignificant (Table 1). Thirty-three and a third percent of the patients were diagnosed with perimandibular space infections and the remaining 66.7% were diagnosed with MFs. Road traffic accidents were the most common (54%) etiological factor among fracture patients and odontogenic infections [100%] among space infection patients. Distribution as per diagnosis is described in detail (Table 2).

PAIN, ONSET AND DURATION OF ANESTHESIA

The VAS score for pain was lower in the EA at all time intervals and was statistically significant postoperatively (P = .001) (Fig 5). Time to onset of anesthesia was significantly (P< .05) shorter in the CA (mean of 9.58 seconds) as compared to the EA (mean of 154.25 seconds. The duration of anesthesia was significantly (P < .05) longer in the EA with 50.7 minutes than in CA which was 35.5 minutes (Table 3).

PULSE AND BLOOD PRESSURE READINGS

There was no significant difference between both the groups with respect to pulse and blood pressure readings in the preoperative phase. Pulse, SBP and DBP readings in the EA and CA groups were higher in the intra-operative phase [T-1 and T-2], indicative of an increase in anxiety and pain sensation. Pulse readings at the T-1 and T-2 intervals showed higher values in the CA as compared to the EA. However, this difference was not statistically significant. The only statistical difference [P = .009] noted was with respect to DBP at T1 [CA = 83.83 mm Hg versus EA = 75 mm Hg] (Table 4) (Fig 6 and 7).

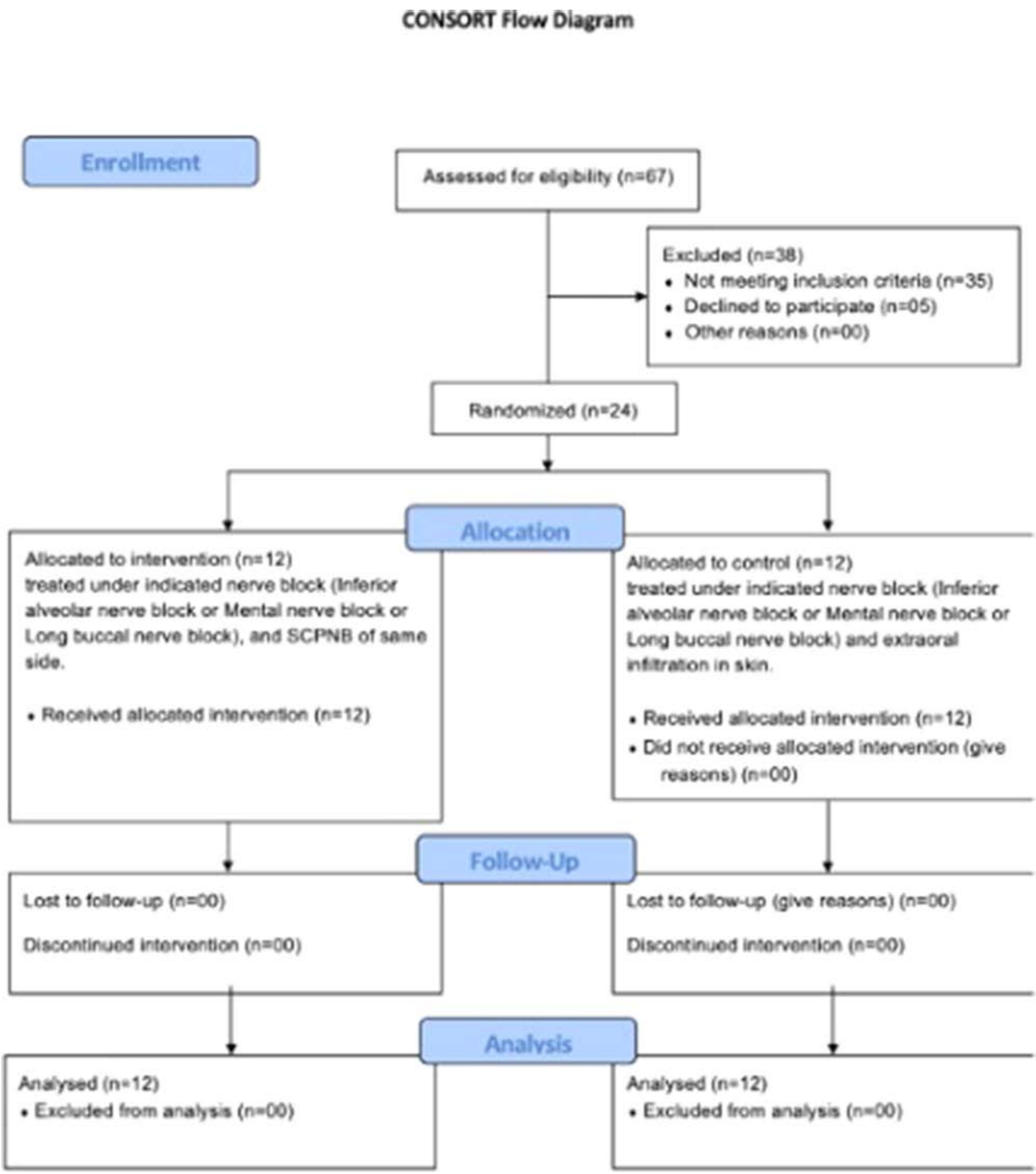

FIGURE 4. CONSORT flowchart.

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FIRST ANALGESIC REQUEST, INTRAOPERATIVE ANAESTHETIC REQUIREMENT AND COMPLICATIONS

The first analgesic request by the patient was significantly later in the EA, which was 17.5 minutes postop and in CA was 7.2 minutes (P = .001) (Table 3). In our study, only 4 patients in the EA required intraoperative anesthetic, as compared to 10 participants in the CA group [P < .05]. There were no complications in both the groups associated with LA techniques.

Table 1. TYPE OF SURGERY AND DEMOGRAPHIC DATA

	EA	CA	*P* Value
Surgery (Mandibular fracture fixation/incision and drainage)	9/3	7/5	
Sex (M/F)	8/4	8/4	1.000
Age (Mean± SD)	30.5 ± 8.939	33 ± 9.115	.505

Abbreviations: EA, Experimental arm; CA, Control arm; M, male; F, Female; SD, Standard Deviation.

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Table 2. DEPICTING THE DIFFERENT DIAGNOSIS WITH FREQUENCY

		Frequency			
Sr. No.	Diagnosis	EA	CA	Total	Percent
1	Mandibular angle fracture	3	2	5	20.9
2	Mandibular angle and parasymphysis fracture	1	0	1	4.2
3	Mandible body fracture	2	0	2	8.4
4	Parasymphysis fracture	3	4	7	29.2
5	Submandibular space infection	0	1	1	4.2
6	Ludwig's angina	0	2	2	8.3
7	Submandibular and sublingual space infection	1	0	1	4.2
8	Mandibular body and parasymphysis fracture	0	1	1	4.2
9	Submandibular and submental space infection	1	2	3	12.5
10	Submental space infection	1	0	1	4.2
	Total	12	12	24	100.0

Abbreviations: EA, Experimental arm; CA, Control arm.

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Discussion

Surgical management is considered successful when it avoids pain, functional limitation and gives the desired results. The role of successful anesthesia is indispensable in this regard. There is a paucity of literature on the usage of SCPNB in oral and maxillofacial surgery. This may be due to a lack of knowledge about the indications, contraindications, armamentarium and injection technique among the dental community, along with an underlying fear of giving extraoral nerve blocks. Past literature has documented the role of SCPNB in the surgical drainage of abscesses, excision of superficial pathologies in perimandibular region and MFs.[10-12] However, a refined study protocol was required to establish this. Therefore, we conducted a prospective, randomized controlled trial to evaluate the efficacy of SCPNB in the management of MFs and peri-mandibular space infections.

Our study evaluated the efficacy of SCPNB as an adjuvant to mandibular regional anesthesia techniques in the management of MFs and perimandibular space infections. We observed that the SCPNB was highly effective in providing RA in the cervical region and controlling pain intraoperatively and postoperatively, with no block-related complications.

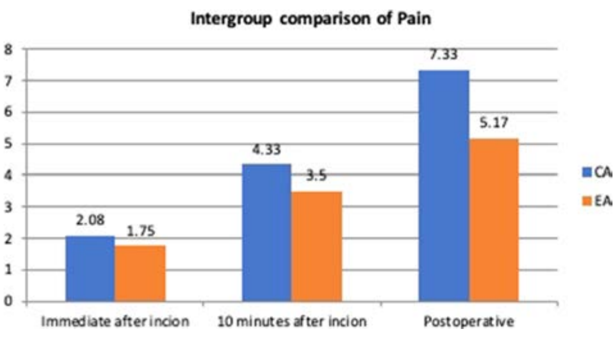

FIGURE 5. Showing mean VAS score immediately after incision, intra-operatively 10 minutes after incision and postoperatively in EA and CA. EA ,experimental arm; CA, control arm.

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Table 3. INTERGROUP COMPARISON OF NUMERICAL VARIABLES ASSESSED IN STUDY

Sr. No.	Variables Assessed	Arm	N	Mean	Standard Deviation	Standard Error Mean	t value	P value of t test
1	Time of onset of anesthesia	CA	12	9.58	3.988	1.151	-7.621	.000*
		EA	12	154.25	65.638	18.948		
2	Pain Immediate	CA	12	2.08	0.900	0.260	0.983	.336†
		EA	12	1.75	0.754	0.218		
3	Pain Intraoperative 10 minutes after incision	CA	12	4.33	1.497	0.432	1.758	.093†
		EA	12	3.50	0.674	0.195		
4	Duration of anesthesia	CA	12	35.5	10.041	2.899	-4.121	.000*
		EA	12	50.75	7.967	2.300		
5	Pain postoperative	CA	12	7.33	1.826	0.527	3.739	.001*
		EA	12	5.17	0.835	0.241		
6	First analgesic	CA	12	7.208	4.6781	1.3504	-3.817	.001*
		EA	12	17.5	8.0848	2.3339		

Abbreviations: EA, experimental arm; CA, control arm; N, number of patients.

* Highly significant.

† Non significant.

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Table 4. INTERGROUP COMPARISON OF PULSE AND BLOOD PRESSURE AT VARIOUS INTERVAL

Sr. No.	Variables Assessed	Arm	N	Mean	Standard Deviation	Standard Error Mean	t value	P value of t test
1	Pulse at T-0	CA	12	76.5	6.735	1.944	0.632	.534†
		EA	12	74.33	9.792	2.827		
2	Pulse at T-1	CA	12	86.17	10.667	3.079	1.373	.183†
		EA	12	81.25	6.326	1.826		
3	Pulse at T-2	CA	12	99.75	9.864	2.847	1.733	.097†
		EA	12	92.75	9.919	2.863		
4	SBP at T-0	CA	12	121.33	8.998	2.598	-1.797	.086†
		EA	12	127.17	6.740	1.946		
5	DBP at T-0	CA	12	81.50	4.523	1.306	2.028	.055†
		EA	12	78.17	3.460	0.999		
6	SBP at T-1	CA	12	124.33	17.328	5.002	0.851	.404†
		EA	12	114.83	34.562	9.977		
7	DBP at T-1	CA	12	83.83	8.462	2.443	2.855	.009*
		EA	12	75	6.578	1.899		
8	SBP at T-2	CA	12	136	16.270	4.697	-0.710	.485†
		EA	12	140.33	13.506	3.899		
9	DBP at T-2	CA	12	88.17	7.107	2.052	0.822	.420†
		EA	12	85.83	6.793	1.961		

Note: T-0-preoperatively, T-1-Intraoperative at 10 minutes, T-2-Intraoperative at 30 minutes after incision after the initial incision.

Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; EA, experimental arm; CA, control arm; N, number of patients.

* Highly significant.

† Non significant.

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A SCPNB alleviates the pain in skin incisions and tissue dissection in the cervical region of the neck. It can be administered using well-defined anatomical landmarks with a posterior or lateral approach. Further accuracy can be achieved if the block is administered under ultrasonography guidance.[14] Currently, the SCPNB is used, alone or in combination with deep or intermediate cervical plexus blocks, to control pain after surgeries in the neck region and has shown high clinical significance for the same.[8,9,14] In oral and maxillofacial surgery, the versatility of SCPNB has been reported in the management of MFs,

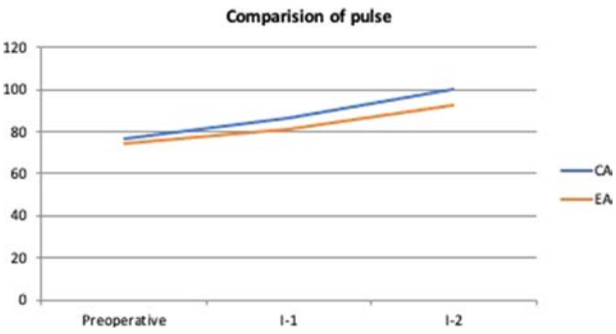

FIGURE 6. Showing comparative results of pulse in both the arms with higher values in CA. T-1-Intraoperative at 10 minutes, T-2-Intraoperative at 30 minutes after incision. EA ,experimental arm; CA, control arm.

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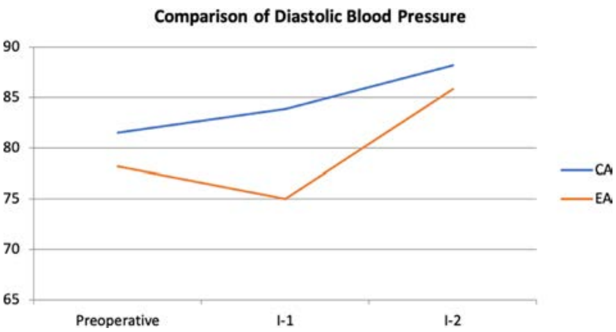

FIGURE 7. Showing comparative results of Diastolic Blood Pressure at 3 different intervals. T-1-Intraoperative at 10 minutes, T-2-Intraoperative at 30 minutes after incision. EA ,experimental arm; CA, control arm.

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draining of abscesses, lymph node biopsies and enucleation of radicular cysts in angle region with promising results.[7,11-13]

Thorough drainage of the peri-mandibular space infection and accurate open reduction and internal fixation [ORIF] of the mandibular fracture segments to achieve normal occlusion were the main aims of our treatment. We followed the standard protocol of incision and drainage with simultaneous extraction of the offending tooth for space infections (Hiltons method) and performed ORIF of the mandibular fractures as per Association of Osteosynthesis principles.[15,16] A single patient of Ludwig's angina underwent a delayed extraction [3 days after incision and drainage] on account of the initially presenting severe trismus which improved over time.

Studies have documented the use of around 3 to 20 mL of local anesthesia solution for successful SCPNB action. In our study, we were able to achieve adequate pain control with 3 to 5 mL of LA. [17,18] Mukhopadhya et al [19] used 5-7 mL of local anesthesia solution for successful SCPNB action, which is in accordance with our findings. Hakim et al [12] used 5 to 10 mL of local anesthesia solution for successful SCPNB action during incision and drainage of perimandibular space infections and MF management. Howlader et al [20] used 5 to 6 mL of LA for successful SCPNB action during fixation of sub-condylar fractures. Based on our results and various studies, 3 to 10 mL of LA can be considered sufficient for successful SCPNB action during the management of MFs and odontogenic space infections, obviating the need for excessive volumes of local anesthetic.

Overall pain was lower in the EA group during the intra-operative phase [$P > .05$] and the post-operative phase [$P < .05$]. This made the patients of the EA group more comfortable throughout the operation. On the other hand, patients in the CA group experienced more pain during manipulation of tissues and fracture segments, necessitating additional and/or repeat infiltrations with LA.

The mean intraoperative VAS score in our study was 3.5. In comparison, Howlader et al [20] observed a mean VAS score of 0.57 during ORIF of sub-condylar fractures in all 7 patients. Misra et al [7] reported a mean VAS score of 2 during incision and 4.4 during exploration, which was strikingly similar to our study. The VAS score was more in our study on account of the heterogeneous disease profile and the inclusion displaced mandibular fractures which would have increased the time and amount of intraoperative manipulation required.

Misra et al [7] reported that 1 of their patients had extreme pain (VAS score- 9) for which they resorted to midazolam and fentanyl. In our study, 1 subject of the EA group [unilateral submandibular and submental infection] experienced moderate pain (VAS score- 5). This may be attributed to patient anxiety or other confounding factors that we failed to document in our study. We did not resort to any additional measures, as the pain subsided after 10 minutes. Similarly, 1 subject from CA group suffered from severe pain [VAS score-8] during manipulation of fracture segments, for which a repeat local infiltration was administered skin and tissues in the vicinity of the fracture segment.

Different studies have documented a time to onset of anesthesia for the SPCNB ranging from 2-8 minutes.[19] The time to onset of anesthesia in our study was 2 to 3 minutes, which is in line with the literature.

The duration of anesthesia governs the ability to perform a surgical procedure painlessly for a required period of time, before the need to administer subsequent doses. For managing MFs and perimandibular space infections, an intermediate duration of anesthesia is required. The duration of anesthesia reported in the literature for the SPCNB is 2 to 3 hours. In comparison, however, our study documented a duration of anesthesia of 50.7 minutes. [21] A longer duration of anesthesia may be attributed to the use of a larger volume of the local anesthetic, a long-acting anesthetic agent and the presence of varying concentrations of vaso-constrictors. The usage of ultrasonography [USG] guidance would also facilitate the exact deposition of the local anesthetic near the nerve trunk. It should be noted that we used a smaller volume of local anesthetic in our study and performed the SPCNB technique without USG guidance.

The duration of anesthesia was lower in CA, requiring repeated local infiltrations to control the perioperative pain. This ultimately increases the risk for local anesthetic toxicity; although, no such reaction occurred in our study.

Pulse and blood pressure fluctuations have a significant relationship towards pain perception. An increase in the pulse rate, SBP and DBP was observed in both the groups. However, the increase was of a lesser magnitude [$P > .05$] in the EA as compared to the CA. This may be suggestive of a correlation between an increase in the intensity of pain due to the action of LA wearing off [22] [Table 3].

The first analgesic request was significantly ($P = 0.001$) later in the EA [17.5 minutes postoperatively] as compared to the CA [7.2 minutes postoperatively], which suggests that patients in EA were pain-free for a longer duration postsurgically. In our study, only 4 patients in the EA required intraoperative anesthetic, as compared to 10 participants in the CA group [$P < .05$].

Chellappa et al [6] studied 23 patients who were treated under RA and extraoral infiltration for ORIF of mandibular fractures. A satisfactory postoperative occlusion was obtained in 22 patients; while 4 patients developed complications related to treatment. In comparison, we did not encounter any such complications. This could be attributed to proper patient selection and compliance to postoperative instructions.

Common complications during SCPNB administration include inadvertent injection into blood vessels, inadequate degree of block, hematoma, syncope, and accidental deep cervical block [which may cause phrenic nerve palsy].[23] Mishra et al [2019] documented a severe complication of SPCNB; wherein 1 patient developed seizures and a cardiac arrest during exploration of a peri-mandibular space infection.[7] However, no such complications were documented in our study. This could be attributed to proper patient selection and an intra-operative multi-planar aspiration technique.

Tran et al [2010] documented an 80 to 85% success rate with the SCPNB technique, irrespective of whether it was administered using anatomical landmarks or guided by USG. In our study, the success rate was 100% using the anatomical landmark technique.[24] Thus, we can conclude that the manual method of SCPNB delivery is sufficient for peri-mandibular surgical procedures; which has been similarly supported by previous studies in the literature.[7,10]

Limitations of the Study and Future Scope

A study that includes a larger sample size with a more homogenous population (similar disease profile) is recommended. Attention to confounding factors of pain that may be observed among study subjects will yield better results. It is also advisable to record the additional dose of intraoperative local anesthetic administered in each arm. This would help gain a clear idea of the total volume of local anesthetic administered by the end of the procedure. In our study, we only recorded the frequency of subjects who required the same and can be considered a limitation of our study.

In conclusion, we observed that the SCPNB was highly effective in providing regional anesthesia in the cervical region and controlling pain intraoperatively and postoperatively for perimandibular operative procedures, with no block-related complications. The SCPNB also has the advantage of being a safe and straightforward technique, which can be readily mastered by the oral and maxillofacial surgeon. Thus, it can be concluded that the combination of a SCPNB with a concomitant mandibular nerve block has a high success rate and good patient acceptability, and can be used to enhance the scope of oral and maxillofacial procedures performed successfully under local anesthesia.

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