ORIGINAL ARTICLE

A Comparative Study between Bilateral Ultrasound-Guided Suprazygomatic Maxillary Nerve Block with or without Bilateral Nasociliary Nerve Block for Postoperative Pain Control in Nasal Surgery

Mohamed I. Hashish, Amr S. A. Hamroush, Mahmoud G. Salim *

Department of Anesthesiology, Intensive Care and Pain Management, Faculty of Medicine for Boys, Al-Azhar University, Cairo, Egypt

Abstract

Background: ***Nasal surgery is commonly associated with varying degrees of pain. The main anesthetic goal in the postoperative period is early and pain-free recovery, with return of the protective airway reflex. A range of painful side effects, including emerging agitation, self-extubation, hemorrhage, aspiration, hypoxia, and the need for reoperation, are typical after nasal surgery.***

Aim and objectives: ***To determine if nasal surgery patients require opioids during or after surgery for a bilateral ultra-guided suprazygomatic maxillary (US-SZM) nerve block, in conjunction with or in lieu of a nasociliary nerve block.***

Subjects and methods: ***Al-Azhar University Hospital hosted this prospective, double-blind, randomized controlled trial from April 2023 to February 2025. Subjects in this study were undergoing elective nose surgery and had either an ASA physical status I or II.***

Results: ***There was a significant relationship between groups A, B, and C when comparing the efficacy of first rescue analgesia. No statistically significant difference was found between groups A, B, and C with respect to the amount of fentanyl (mic.gm).***

Conclusion: ***When comparing the groups, the time it took for the first dose of rescue analgesia was significantly different. Patients undergoing nasal surgery under general anesthesia benefit greatly from bilateral nasociliary and maxillary nerve blocks in terms of perioperative pain, opioid requires, and emerging agitation. As a result, we determined that these blocks are effective pain management techniques.***

Keywords: Maxillary Nerve Block; Bilateral Nasociliary Nerve Block; Nasal Surgery

1. Introduction

Nausea, vomiting, hypoxia, respiratory depression, and decreased alertness are side effects of using high dosages of drugs to treat pain. However, by incorporating regional nerve block treatments alongside general anesthesia, these side effects can be effectively prevented. A well-known method for producing efficient postoperative analgesia, pre-emptive analgesia is a pain management strategy that is started before surgery to avoid central sensitization caused by incisional and inflammatory damage.[1]

Under typical conditions, cortisol levels do in fact follow a diurnal cycle, with secretion peaking at 8 am and falling steadily until it hits rock bottom at midnight. Nevertheless, cortisol levels rise in reaction to any kind of stress, including pain and trauma. The stress and trauma experienced during surgical procedures lead to an increase in cortisol release following the procedure. In addition, the rapid metabolic and hormonal changes that occur in reaction to stress and injury cause stress hyperglycemia.[2]

The nose, nasal mucosa, septum, and nasal cavity are mainly supplied by the maxillary and nasociliary nerves.[3]

Accepted 15 June 2025.
Available online 31 July 2025

* Corresponding author at: Anesthesiology, Intensive Care and Pain Management, Faculty of Medicine for Boys, Al-Azhar University, Cairo, Egypt.
E-mail address: mahmoudgyushy22@gmail.com (M. G. Salim).

https://doi.org/10.21608/aimj.2025.446668

Patients undergoing nose surgery may be considered for multimodal pain regimes that include a regional method, such as a bilateral suprazygomatic maxillary (SZM) and nasociliary nerve block, to assist in decreasing perioperative narcotic use and respiratory complications. In order to avoid vascular harm, the maxillary nerve block should be performed using the suprazygomatic method rather than the infrazygomatic one. The precise and targeted effect on the maxillary sinus nerves is believed to give superior pain control with the suprazygomatic method. In comparison to the infraglenoid method, it is also more convenient and easier to execute.[4]

With the help of ultrasound guidance, the vascular anatomy and neural structures could be better identified, and the risk of puncture consequences was reduced. The block's success rate is increased when the injected local anesthetics can be seen before they expand outside the pterygopalatine fossa.[5]

The purpose of this research was to determine if nasal surgery patients needed opioids during or after the procedure if a suprazygomatic maxillary (US-SZM) nerve block was performed bilaterally with or without a nasociliary nerve block.

2. Patients and methods

Al-Azhar University Hospital hosted this prospective, double-blind, randomized controlled trial from April 2023 to February 2025. Subjects in this study were undergoing elective nose surgery and had either an ASA physical status I or II. Formal ethical approval was obtained from the local ethics council of Al-Azhar University Hospital. Individual patients' written informed consent was required before they could participate.

Sample size calculation:

In order to find a representative sample and make sure the results are legitimate, the researchers used G*Power software (latest ver. 3.1.9.7; Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany) to compute the sample size.

Based on the results of the prior randomized controlled trial performed by Parthasarathy et al.,[6] group A had a noticeably longer duration to initial rescue analgesia (543.27±156.5 vs. 199.84±206, P=0.02) than group B. With a 95% confidence level, 90% power, and 5% α error, a sample size of 80 patients is considered typical. If we assume a 10% dropout rate during follow-up (f), then there would be 30 cases in total for each group. Assumed attrition rate (f)=10% q=1÷(1-f) Approximately 90 examples are reached when q=1÷0.9=1.1 and n=80×1.1=88.

Randomization:

Following the acquisition of written informed consent, a total of ninety patients were divided into three equal groups by means of computer-generated random numbers: Patients in Group A (n=30) underwent a combination of a bilateral US-SZM block with 5mL of 0.25% bupivacaine and a bilateral nasociliary nerve block with 2-3mL of 0.25% bupivacaine on each side following general anesthesia. Patients in Group B (n=30) also underwent a bilateral US-SZM block with 5mL of 0.25% bupivacaine on each side following general anesthesia. Finally, patients in Group-C (n=30) received the standard intraoperative analgesia without nerve blocks, consisting of 2mcg/kg of fentanyl and 15mg/kg of paracetamol.

Eligibility criteria:

The study's inclusion criteria were patients' ages (ranging from 21 to 60), their ASA physical status (I or II), and the fact that they were having elective nose surgery. Exclusion criteria included patients' inability to understand the study protocol, bleeding disorders, pregnancy, refusal, or allergies to local anesthetic solutions.

Outcome assessment:

The primary outcome is the assessment of using the Riker Sedation-Agitation Scale (RSAS) at PACU. Secondary outcomes included: Time to first request of rescue analgesia in minutes, Intraoperative fentanyl consumption (mcg), The cumulative morphine consumption in the first 24 hours (mg), VAS score at PACU, 1, 4, 8, 12, and 24 hours, Time from PACU arrival to discharge (MAS ≥9).

Serum glucose (mg/dl) and cortisol (mcg/dL) levels, measured at baseline, after induction, at 12 and 24 hours after surgery, Heart rate (beats/min), mean blood pressure (MBP) (mmHg), Complications, and Patient satisfaction.

Method:

Comprehensive patient histories, physical exams, a general evaluation to rule out systemic disorders, and standard laboratory testing were all part of the standard medical care for all patients. The Mallampati score was utilized for airway assessment.[7]

Nerve block technique:

A 24-gauge needle was used to provide the nasociliary nerve block. The needle was entered 1 cm above the inner canthus and then drawn medially and rearward, maintaining contact with the bone at the anterior ethmoidal foramen. In order to do the US-SZM block, the anesthesiologist felt and marked the highest point between the zygomatic arch and the anterolateral orbital rim. It was also possible to see the pterygopalatine fossa by directing the 5-13 MHz linear probe of the Ultrasound Machine (MTurbo, SonoSite Inc., USA) posteriorly under the lateral malar eminence in a transverse orientation. Chlorhexidine gluconate was used to prepare the skin.

Five milliliters of 0.25% bupivacaine on each side make up the block solution for a single injection. Dosage was determined based on the typical behavior of adolescents and young adults. A 25-gauge spinal Quincke needle was inserted into the skin at a 45-degree angle, about 1 centimeter superior-posterior from the apex. The needle was then inserted into the fossa. Before injecting the block solution, the needle tip was confirmed by sonographically seeing 0.5-1 mL of normal saline. To reduce the possibility of intravascular injection, many aspirations were performed in order to view the maxillary artery pulsation, which was desirable but inconclusive. With or without clear identification of the maxillary nerve, successful deposition was defined as locoregional dissemination of the block solution into any section of the fossa. It was then followed by the contralateral block using the identical procedure.

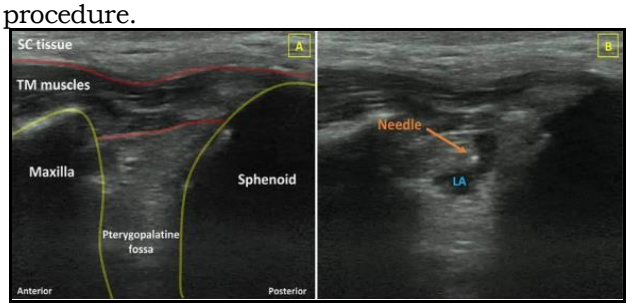

Figure 1. Blocking the suprazygomatic maxillary nerve with ultrasound guidance.

Riker Sedation-Agitation Scale (RSAS):

Patients who are agitated are graded according to the intensity of their agitation. A SAS 4 (same as calm and appropriate, might even be dozing) is indicated if the patient is awake or awakens easily to voice ("awaken" implies replies with voice or head shaking to a query or follows orders). SAS 3 is used if the patient awakens with further stimulation, like shaking, but only after a while. A SAS 2 occurs when a patient becomes more responsive to greater physical stimulation, which could be harmful, but never awakens to the point where they can answer yes or no or follow instructions. A SAS 1 is characterized by a lack of reaction to unpleasant physical stimuli. This aids in classifying sedentary patients as either eventually awakenable (SAS 3), arousable (SAS 2), or completely unresponsive (SAS 1), depending on the situation.[8]

Any score of 5 or above on the sedation agitation scale was considered to be an emergency agitation.[9]

Once patients were cleared to return to the post-anesthesia care unit (PACU), the modified Aldrete score was used every ten minutes to assess the quality of recovery. At 7:30 am, following anesthetic induction and again 24 hours following surgery, cortisol levels were determined in peripheral vein blood samples. Until the test, the plasma was kept at -70°C after being centrifuged to separate it.

Visual Analogue Scale (VAS):

Early in the 1920s, researchers began using visual analogue scales (VAS; 0–10, with 0=no pain) to quantify various subjective clinical phenomena, including pain. On the line, the patients were instructed to indicate their subjective level of pain using a mark. A final, objective evaluation of the patient's symptoms was provided by measuring the personal score.

In order to measure nausea and vomiting after surgery, a four-point scale was used. 0 indicates no nausea, 1 indicates mild nausea, 2 indicates severe nausea requiring antiemetics, and 3 indicates retching, vomiting, or both. Patients who experienced nausea and vomiting after surgery (PONV) with a score of 2 or higher were given 4mg of ondansetron intravenously.

Using a four-point scale, patient satisfaction was evaluated. [Scale 1-excellent, Scale 2-good, Scale 3-fair, Scale 4-poor].

Intraoperative and postoperative analgesic regimen:

The typical analgesic regimen of 2 mcg/kg fentanyl and 15mg/kg paracetamol was administered to all patients. If there is a rise of 20% or more in the baseline values of systolic blood pressure and heart rate, fentanyl one mcg/kg was given intravenously as an opioid rescue.

Paracetamol 15mg/kg administered intravenously every 8hours was the standard treatment for all research participants. For patients whose VAS was greater than 3, the dosage of intravenous morphine was adjusted to 2mg every 10 minutes until the VAS was equal to or less than 3, as long as the respiratory rate was greater than 10 breaths per minute. Failure was defined as a VAS score greater than 3 following three consecutive 2mg IV morphine doses.

Statistical Analysis:

Recorded data were analyzed using the statistical package for the social sciences, version 22.0 (SPSS Inc., Chicago, Illinois, USA). Normality of distribution was first assessed using the Shapiro-Wilk test. In parametric data, mean±standard deviation (SD) was used, whilst in non-parametric data, median and inter-quartile range (IQR) were used. Categorical data were expressed as frequency and percentage. Continuous parametric variables were compared between the three groups, utilizing one-way Analysis of Variance (ANOVA) test, whilst the non-parametric or ordinal variables were compared using the Kruskal-Wallis test. Categorical data were compared using Chi-square (x2) or Fisher's exact test. A p-value less than 0.05 was deemed significant.

3. Results

Table 1. Demographic data between studied groups.

	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	P-VALUE
SEX				
MALE	16(53.33%)	17(56.66 %)	18(60%)	0.873
FEMALE	14(46.67%)	13(43.33%)	12(40%)	0.873
AGE	40.939±5.9232	38.45±5.12	42.11±5.22	0.0329
BMI	27±2.03	26.5±1.99	26.77±1.88	0.6172
ASA STATUS				
I	28(%93.3)	26(%86.7)	29(%96.7)	0.338
II	2(%6.7)	4(%13.3)	1(%3.3)	

P-value<0.05 was statistically significant.

Groups-A, B, and C did not differ significantly in terms of sex, body mass index (BMI), or ASA status when comparing demographic data, however there was a statistically significant difference in terms of age. (Table 1)

Assessment of agitation

Analysis of Riker Sedation Agitation Score (SAS) at PACU admission revealed a non-significant inter-group difference, with an overall test result (X2=14.92, P-value=0.061). Despite the overall non-significant result, a clinically significant value existed. Dangerous agitation was completely absent in groups-A and B, whilst it occurred in one patient in group. SAS 4 was significantly more prevalent in group-A than groups-B and C (P-vale=0.038). (Table 2) Agitation was treated according to the severity with fentanyl 25-50 mcg and propofol 10-30 mg bolus dose. Intravenous dexmedetomidine 0.5mcg/kg was added with tachycardia.

Table 2. Sedation/Agitation assessment by Riker Sedation Agitation Score(SAS)

SAS Score N(%)	Group-A (n=30)	Group-B (n=30)	Group-C (n=30)	P-value
7(Dangerous agitation)	0	0	1(3.3)	0.35
6(Very agitated)	1(3.3)	1(3.3)	3(10)	0.31
5(Agitated)	2(6.7)	3(10)	5(16.7)	0.42
4(Calm and cooperative)	20(66.7)	18(60)	12(40)	0.038*
3(Sedated)	5(16.7)	6(20)	7(23.3)	0.79
2(Very sedated)	2(6.7)	2(6.7)	2(6.7)	1
1(Unarousable)	0	0	0	-
Emergence agitation	3(10)	4(13.3)	9(30)	0.044*

Pain assessment parameters:

Table 3. Comparison between the groups regarding analgesia consumption and recovery time.

	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	P-VALUE
INTRAOPERATIVE FENTANYL CONSUMPTION (MCG)	125.57±11.20	122.72±12.01	127.51±10.19	0.372
POSTOPERATIVE MORPHINE (MG)	2.4±1.2	2.8±1.5	4.8±1.2	≤0.001
TIME TO MAS>9	15.07±1.98	15.60±2.19	20.43±2.72	≤0.001
TIME TO FIRST RESCUE ANALGESIA (MINUTES)	543.27±156.5	199.84±206	220.25±235	≤0.001

P-value<0.05 was statistically significant.

Groups-A, B, and C weren't different statistically with respect to the amount of fentanyl (mcg). Postoperative morphine consumption was significantly lower in group-A than B and C. In addition, there was a statistically significant difference between the groups regarding the time to modified aldrete score more than 9. The time to first request of analgesia was significantly more prolonged in group-A, rather than B and C. (Table 3)

Table 4. VAS score comparison between the studied groups.

VAS SCORE	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	F VALUE	P-VALUE
AT PACU	1.1±0.5	1.3±0.5	5.1±2.5	89.4	≤0.001
1 HOUR	1.7±1.1	1.9±0.8	4.8±2.1	47.2	≤0.001
4 HOURS	2.1±1.3	2.5±1.7	4.5±2.5	18.9	≤0.001
8 HOURS	3.6±1.5	3.4±1.3	5.3±2.4	12.8	≤0.001
12 HOURS	2.8±1.1	2.6±1.3	5.5±2.1	45.3	≤0.001
24 HOURS	3.5±1.3	3.7±1.1	4.1±1.9	1.7	0.185

Assessment of VAS score:

Comparison between the three groups, utilizing one way ANOVA test revealed a significant difference regarding VAS score at PACU, 1, 4, 8, and 12 hours after surgery. Post-hoc analysis confirmed that VAS score was significantly reduced in groups-A and B when compared to group-C, while showing no significant difference when compared to each other. (Table 4)

Table(5):Comparison of serum glucose (mg/dl) of the studied groups

	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	F-VALUE	P-VALUE
BASELINE	77.50±5.82	75.33±8.41	74.11±7.50	1.65	0.198
AT INDUCTION	81.93±7.34	84.12±7.23	85.44±6.92	1.84	0.166
AT 12H	85.07±6.98	88.60±7.19	115.43±9.72	124.78	0.001
AT 24H	85.6±10.88	90.67±9.83	108.33±10.20	38.9	0.001

P-value<0.05 is significant

No statistically significant difference was reported between the 3 groups, regarding serum glucose recordings at baseline and after induction of anesthesia. A statistically significant difference existed between groups at 12 and 24 hours, with the least readings noticed in group-A. (Table 5)

Table 6. Comparison of serum cortisone (mcg/dL) of the studied groups

	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	F-VALUE	P-VALUE
BASELINE	12.53±2.34	13.37±3.51	13.71±3.17	1.18	0.312
AT INDUCTION	9.53±2.34	10.12±2.23	9.44±1.92	0.939	0.395
AT 12H	10.07±1.98	10.60±2.19	14.43±2.72	25.8	0.001
AT 24H	8.52±1.88	8.67±1.83	13.52±4.20	29.58	0.001

P-value<0.05 is significant

No statistically significant difference presented between the 3 groups, regarding the serum cortisone at induction and baseline. Serum cortisone levels at 12 and 24 hours were significantly lower in A than groups-B and C. (Table 6)

Hemodynamic variables

Table 7. Comparison between studied groups according to heart rate (beat/min).

HEART RATE (BEAT/MIN)		GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	P-VALUE
INTRAOPERATIVE	Baseline	86.71±5.38	84.19±4.49	88.65±6.38	0.834
	5 min.	78.32±6.20	79.03±5.27	85.8±6.54	0.621
	10 min.	74.10±5.10	72.06±5.18	83.04±6.72	0.582
	15 min.	81.26±6.69	82.06±5.41	88.86±6.4	0.547
AT PACU		88.32±4.38	86.22±6.47	92.37±6.74	0.683
POSTOPERATIVE	2 hs	85.14±7.23	83.39±6.23	82.29±6.59	0.281
	4 hs	79.68±6.30	81.16±7.55	83.29±4.59	0.790
	8 hs	71.29±4.50	76.29±4.82	85.09±7.86	0.632
	12 hs	77.29±4.91	78.09±4.62	86.06±5.50	0.944
	24 hs	73.29±5.25	74.81±5.77	81.06±5.28	0.822

Table 8. Noninvasive mean blood pressure levels post-operatively (MBP) between studied groups

MBP (MMHG)		GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	P-VALUE
INTRAOPERATIVE	Baseline	75.74±5.04	78.34±3.99	86.06±5.50	0.215
	5 min.	77.33±4.51	79.62±4.83	81.06±5.28	0.863
	10 min.	81.29±6.77	83.71±5.92	82.09±7.86	0.452
	15 min.	83.44±5.12	85.12±7.18	79.34±3.99	0.462
AT PACU		61.73 ±2.6	60.63±2.96	62.06±4.81	0.276
POSTOPERATIVE	2 hs	61.44±2.58	60.34 ±2.95	61.81±4.87	0.265
	4 hs	62.83±2.64	61.83±2.98	63.17±4.91	0.339
	8 hs	62.83±2.64	61.74±3.01	63.19±4.96	0.288
	12 hs	64.71±2.72	63.71±3.06	65.11±5.03	0.333
	24 hs	65.49±2.75	64.37 ±3.13	65.90±5.09	0.276

Table 7 and 8 showed that there was no significant difference between the three groups regarding mean blood pressure and heart rate, either intraoperative or post-operative readings.

Complications

Table 9. Complications between studied group.

	GROUP-A (N=30)	GROUP-B (N=30	GROUP-C (N=30)	P-VALUE
NAUSEA & VOMITING	3(10%)	6(20%)	7(23.33%)	0.372
LARYNGEAL SPASM	1(3.34%)	2(6.66%)	3(10%)	0.585
BRONCHOSPASM	1(3.34%)	1(3.34%)	2(6.66%)	0.769
DESATURATION	0	0	2(6.66%)	0.129
NERVE INJURY	0	0	0	1
HEMATOMA FORMATION	4(13.34%)	2(6.66%)	0	0.117
SYSTEMIC TOXICITY OF LOCAL ANESTHETICS	2(6.66%)	1(3.34%)	0	0.355

Regarding complications, this study showed that there was no statistically significant difference between the studied groups (Table 9). Postoperative nausea and vomiting scored 1 in 4 out of 7 patients in group-C, 3 out of 6 patients in group-B, and 2 out of 3 patients in group-A. Score 2 was detected in 1, 3 and 3 patients in groups-A, B and C respectively, which required intravenous administration of 4 mg ondansetron to control. Importantly, desaturation (SpO2=88% and 85%) occurred in two cases of group-C, which was primarily attributed to laryngeal spasm. This condition was promptly managed through the application of jaw thrust maneuver with continuous positive pressure ventilation of 100% oxygen via a tight-fitted facemask, alongside with proper oropharyngeal suctioning. Moreover, 2 cases in group-A and one case in group-B reported circumoral numbness. The three patients were hemodynamically stable. No further neurological symptoms presented, and the condition was spontaneously resolved.

Table 10. Patient satisfaction between studied group.

	GROUP-A (N=30)	GROUP-B (N=30)	GROUP-C (N=30)	P-VALUE
PATIENT SATISFACTION				
SCALE 1-EXCELLENT	24(80%)	23(76.66%)	11(36.66%)	0.0136
SCALE 2-GOOD	3(10%)	4(13.34%)	13(43.34%)	
SCALE 3-FAIR	2(6.66%)	2(6.66%)	4(13.34%)	
SCALE 4-POOR	1(3.34%)	1(3.34%)	2(6.66%)	

P-value<0.05 was statistically significant.

This table showed that there was a statistically significant difference between the studied groups, regarding patient satisfaction, (Table 10)

4. Discussion

Emergence agitation is common after nasal surgeries, and it can cause serious problems, including bleeding and longer hospital stays, which slow down the healing process.[10]

Postoperative discomfort from nasal procedures performed under general anesthesia is typically mild to moderate, but can be extremely severe in rare cases.[11]

We found no statistically significant variations in sex, BMI, or ASA status across Groups-A, B, and C when it came to demographic data. Despite the fact that the age groups compared showed statistically significant differences.

The current study is in agreement with Parthasarathy et al.,[6] who planned to administer intraoperative fentanyl doses under general anesthesia for nose surgeries after first blocking the maxillary and nasociliary nerves. They divided 51 patients into two groups and called them group A and group B, respectively. After being given general anesthesia, patients in group A (n=26) had a 12-milliliter mixture of 0.5% bupivacaine and 2% lignocaine administered as a local anesthetic block to both the nasociliary and maxillary nerves. The control group, Group B, consisting of 25 patients, did not have any nerve blocks. They found no statistically significant difference in age, gender, BMI, or ASA status among the individuals that were investigated.

Furthermore, our findings are in line with Boselli et al.,[12] We planned to find out whether perioperative morphine dosage is decreased with the use of infratrochlear nerve blocks with 0.25% levobupivacaine and bilateral extraoral infraorbital nerve blocks under general anesthesia with desflurane and remifentanil for outpatient rhinoseptoplasty. In terms of age, gender, weight, height, and ASA status, they showed that the groups under study were not significantly different from one another.

The average duration before initial rescue analgesia was 543.27±156.5 in group-A, 122.72±12.01 in group-B, and 127.51±10.19 in group-C, according to the current study. We found that the time it took for each group to receive their first dose of rescue analgesic was significantly different.

Furthermore, our findings are in line with Parthasarathy et al.,[6] the average duration till the first analgesic was 543.27±156.5 minutes in group A and 199.84±206 minutes in group B. It took significantly longer for group A to experience their first analgesic than group-B (P=0.017).

Likewise, our study aligns with Rezaeian et al.,[13] who showed that there was a statistically significant difference between the two groups in terms of rescue analgesia(P=0.01).

Group-A had an average fentanyl quantity of 125.57±11.20 mic.gm, group-B had

122.72±12.01 mic.gm, and group-C had 127.51±10.19 mic.gm, according to the current study. In terms of total fentanyl dose, we could not find any statistically significant differences among the three groups.

Likewise, our findings are consistent with Boselli et al.,[12] They demonstrated that the control group had a mean total perioperative morphine dose of 9.5 3.5 mg, while Group LB had a lower dose of 2.5 2.8mg(P<0.001). Group LB did not vary from the control group in terms of the median [IQR] morphine dose given in the PACU (2(0-5) mg versus 2(0-4) mg, P=0.85).

Our findings, on the other hand, were at odds with Parthasarathy et al.,[6] found that group-A had a considerably lower mean total intraoperative fentanyl dose(μg) than group-B(2.31±11.76 vs. 41.20±31.00, P=0.00). Group A had one patient out of twenty-six(3.8% of the total) who needed a fentanyl repeat dose intraoperatively, while Group B had seventeen patients out of twenty-five (68% of the total).

In this study, nausea and vomiting were reported by 7-patients (23.33% of the total), 6-patients (20%) in group-B, and 3-patients (10%) in group-C. We found no statistically significant difference in the incidence of postoperative sequelae such as nausea, vomiting, laryngeal spasm, bronchospasm, desaturation, nerve injury, hematoma formation, and systemic toxicity of local anesthetics among the groups that were evaluated.

Furthermore, the present investigation is consistent with Parthasarathy et al.,[6] who proved that regarding postoperative nausea and vomiting(PONV), the groups under study did not differ significantly.

Likewise, our findings are consistent with Boselli et al.,[12] who demonstrated that the groups under study did not differ significantly with respect to postoperative oedema, hematoma, or nausea.

Our findings showed that 24-patients (80% of the total) in group-A, 23-patients (76.66% of the total), and 11-patients (36.66% of the total) in group-B and group-C, respectively, reported exceptional levels of satisfaction on the patient satisfaction measure. We found a statistically significant difference in patient satisfaction levels among the groups we looked at.

In addition, the current research is consistent with Rezaeian et al.,[13] who proved that the groups under study differed statistically with respect to patient satisfaction, with the intervention group reporting much greater levels of satisfaction than the control group.

In terms of contentedness among patients, our research found that Boselli et al.,[12] 12-patients(71% of the LB group) and 14 patients (73% of the control group) indicated an outstanding level of satisfaction on the scale. Of the patients in the control group, 4(21%) reported high levels of satisfaction, whereas 5(29%) in the LB group did as well. In terms of patient satisfaction, they discovered no statistically significant difference among the groups that were examined.

4. Conclusion

When comparing the groups, the time it took for the first dose of rescue analgesia was significantly different. Patients undergoing nasal surgery under general anesthesia benefit greatly from bilateral nasociliary and maxillary nerve blocks in terms of perioperative pain, opioid requires, and emerging agitation. As a result, we determined that these blocks are effective pain management techniques.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article

Funding

No Funds : Yes

Conflicts of interest

There are no conflicts of interest.

References

1. Xuan C, Yan W, Wang D, et al. Efficacy of preemptive analgesia treatments for the management of postoperative pain:a network meta-analysis. Br J Anaesth.2022;129(6): 946-958.
2. Prete A, Yan Q, Al-Tarrah K, et al. The cortisol stress response induced by surgery:A systematic review and meta-analysis. Clin Endocrinol (Oxf).2018;89(5):554-567.
3. Niekrash CE. Anatomy of the nose and paranasal sinuses. In Applied head and neck anatomy for the facial cosmetic surgeon.2020;79-84. Cham:Springer International Publishing.
4. Chiono J, Raux O, Bringuier S, et al. Bilateral suprazygomatic maxillary nerve block for cleft palate repair in children:a prospective, randomized, double-blind study versus placebo. Anesthesiology.2014;120(6):1362-1369.
5. Gadsden JC. The role of peripheral nerve stimulation in the era of ultrasound-guided regional anaesthesia. Anaesthesia.2021;76 Suppl 1:65-73.
6. Parthasarathy S, Krishnapriyanka KJ, Saravanan B. Effectiveness of pre-emptive nerve block on opioid consumption in patients undergoing nasal surgery under general anaesthesia:A double-blinded randomised controlled study. Indian J Anaesth.2022;66(2):133-139.
7. Roth D, Pace NL, Lee A, et al. Airway physical examination tests for detection of difficult airway management in apparently normal adult patients.Cochrane Database Syst Rev.2018;5(5):CD008874.

8. Riker RR, Fraser GL, Simmons LE, et al. Validating the Sedation-Agitation Scale with the Bispectral Index and Visual Analog Scale in adult ICU patients after cardiac surgery. Intensive Care Med.2001;27(5):853-858.
9. Riker RR, Picard JT, Fraser GL. Prospective evaluation of the Sedation-Agitation Scale for adult critically ill patients.Crit Care Med.1999;27(7):1325-1329.
10. Lee SJ, Sung TY. Emergence agitation:current knowledge and unresolved questions.Korean J Anesthesiol.2020;73(6):471-485.
11. Yu P, Zhang J, Zou Y, et al. Effect of Preventive Analgesia with Nalbuphine and Dexmedetomidine in Endoscopic Sinus Surgery. Pain Res Manag.2022:2344733.
12. Boselli E, Bouvet L, Augris-Mathieu C, et al. Infraorbital and infratrochlear nerve blocks combined with general anaesthesia for outpatient rhinoseptoplasty:A prospective randomised, double-blind, placebo-controlled study. Anaesth Crit Care Pain Med.2016;35(1):31-36.
13. Rezaeian A, Hashemi SM, Dokhanchi ZS. Effect of Sphenopalatine Ganglion Block with Bupivacaine on Postoperative Pain in Patients Undergoing Endoscopic Sinus Surgery.Allergy Rhinol (Providence).2019;10:2152656718821282