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# Comparison of Analgesic Efficacy of Phrenic Nerve Sparing Blocks Versus Interscalene Block for Postoperative Analgesia in Shoulder Surgeries

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**Abstract**
**Background:** To alleviate discomfort after shoulder surgery, a safe effective procedure is the interscalene brachial plexus block, or ISB. In two separate methods, the combined Suprascapular Nerve Block Axillary Nerve Block the combined Suprascapular Nerve Block Infraclavicular Block, were compared to the analgesic effectiveness of ISB ShaB phrenic nerve sparing blocks. Identifying the most effective means of pain relief after shoulder operations is the driving force for this comparison. All subjects in this prospective study will have arthroscopic surgery on one side of their shoulders. Three groups of equal numbers of patients were each given a different injection of bupivacaine: one group received 10 ml of 0.5% bupivacaine to block the axillary suprascapular nerves; the second group received 10 ml of 0.5% bupivacaine to block the infraclavicular suprascapular nerves; the third group received 10 ml of 0.5% bupivacaine to administer an ISB. There was a substantial difference in the time it took for groups 3 1 2 to first need analgesic rescue (P value <0.001). Group 3's total morphine intake was much lower than groups 1 2, even though there was no difference between the first two (P value=0.023 0.005, respectively). Results showed that the ISB group benefited more from the treatments than groups 1 2. There was a strong association between the therapies improvements in pulmonary function, hemodynamic stability, pain alleviation, opiate intake. There is evidence from studies like these that suggests these treatments may improve patients' health speed up their recoveries.

**Keywords:** Effectiveness of Analgesics; Sparing of the Phrenic Nerve; Interscalene Block; Shoulder Operations.

## Introduction

Total Because shoulder arthroplasty is a big operation, patients may have discomfort after the treatment, particularly in the immediate period. By minimizing the need for anesthesia the discomfort experienced after surgery, regional anaesthesia helps patients recover more quickly. one [1]

If you're looking for a dependable method to alleviate discomfort after shoulder surgery, the interscalene brachial plexus block (ISB) is your best bet. However, are a number of negative side effects linked to intraoperative shunting (ISB), such as phrenic nerve palsy diaphragmatic dysfunction, both of which may limit breathing [2].

Current research is focused on developing nerve block procedures that spare the diaphragm, which is important since is a growing number of patients who already have pulmonary issues are having shoulder surgery. has been no comprehensive evaluation of the therapeutic utility of any of the several suggested modifications alternatives to interscalene block in reducing the respiratory effect of phrenic nerve palsy [3].

The analgesic effects of suprascapular nerve (SSN) block after shoulder arthroscopy to those of interosseous stents (ISBs) in a recent meta-analysis (2020). According to Cho et al. (2020), further options should be investigated since landmark-guided posterior blocks do not provide pain relief after shoulder surgeries. In addition to the superior scapular nerve (SSN), the axillary nerve (AN) also innerves the shoulder joints [4].

The -guided (USG) approach to the (SSN) block [5] (AN) block [6] is a possible way for pain treatment after shoulder procedures. Dhir et al. subsequently formed USG ShB by successfully joining the two blocks. With the USG method's excellent success rate, (ShB), a more distal phrenic sparing block, may overtake (ISB) in popularity [6].

When comparing (ShB) blocks to (ISB), is a lack of on pain ratings, cumulative analgesic demands, patient satisfaction, side effects.

This research compared two approaches—the suprascapular nerve block the axillary nerve block—as well as the interscalene brachial plexus block—to find out which one is better at reducing postoperative pain after shoulder surgery.

## Patients methods

You are Participants in this prospective randomised controlled interventional trial were those who had unilateral arthroscopic shoulder surgery at Benha University Hospital under general anesthesia from 2023 to 2024. Patients were classified into two groups according to the American Society of Anesthesiologists' physical status: I II.

We made sure to get patients' written informed permission. A secret code an explanation of the study's goal given to subject.

Everyone from 18 to 60 years old who had unilateral arthroscopic shoulder surgery under general anesthesia included, regardless of gender.

If a participant has a history of local anesthetic (LA) allergy, coagulopathy, anticoagulant therapy, local-site infection, a body mass index (BMI) greater than 30 kg/m2, an ASA level of III or IV, visual-analog scale (VAS) comprehension difficulties, a cardiopulmonary disorder, severe diabetes mellitus, a history of upper-limb deficits, or chronic opioid use for more than six months, they will not be allowed to participate.

The methodology included using a computer-generated list of numbers to randomly assign twenty people to each of three groups. No one knew who was in which group until the day of surgery. The first group received 10 milliliters of 0.5 percent bupivacaine by shoulder injection for two nerve blocks: one on the suprascapular nerve one on the axillary nerve. Group 2: 10 ml of 0.5% bupivacaine was administered for each of the infraclavicular suprascapular nerve blocks. The interscalene brachial plexus block (ISB) requires 10 milliliters of 0.5% bupivacaine, as specified in the third group.

Following applied to of the examples that examined: Evaluation before to surgery: Comprehensive patient history gathering that covers [medical history, injury mechanism, pertinent co-morbidities, the patient's current historical medical conditions]. Comprehensive medical evaluation: Complete physical exam includes vital signs body mass index (BMI), as well as systemic testing. A battery of standard laboratory tests, including a full blood count, random blood sugar, kidney function, liver function, lung function (FEV1, FVC, FEV1/FVC Ratio).

Operative

A 38-mm linear ultrasonic transducer (Imagic Agile, Peachtree, Georgia) or a peripheral nerve stimulator (Multistim-i3640, Pujunk) was supported during the blocks by a trained anesthetist who has expertise with over 20 ShB ISB operations.

This individual recorded provided the investigators with preoperative measures, including baseline vital statistics, procedure length, injection discomfort, sensory motor block. Performing a pulmonary function test while seated with the CONTEC Spirometer SP 80B. The time that the block needle is subcutaneously inserted used to determine the blocks' procedural duration.

I block the suprascapular nerve. The patient sat with their arm fully extended, elbow bent, resting on their front thigh. We used betadine-spirit to sterilise the skin across the scapular posterior arm regions, then we draped it with a wound cloth. To access the suprascapular fossa, the US transducer positioned cephalad perpendicular to the scapular spine. Three milliliters of 1% lidocaine used to elevate a cutaneous wheal. The pinnacle of the block needle inserted into the floor of the suprascapular fossa, behind the fascia of the supraspinatus muscle, an in-plane method a lateral-to-medial trajectory. The local anesthetic solution, 10 milliliters in volume, injected.

A sterile US transducer inserted into the lateral infraclavicular fossa, medially to the coracoid process, to get a short-axis image of the axillary artery during the infraclavicular nerve block. Three milliliters of 1% lidocaine used to elevate a cutaneous wheal. To place the block needle dorsal to the axillary artery, an in-plane approach used in conjunction with a cephalad-to-caudad motion to move the needle. The local anesthetic solution, 10 milliliters in volume, injected.

Supine with the ipsilateral arm abducted the palm of the hunder the patient's head, the cross-section of the axillary arteries nerves in the arm could be seen. A sterile method of attachment used to secure the US transducer in the longitudinal plane.The axillary vein is seen medial to the artery. A 1% lidocaine skin wafer is used to alleviate the patient's discomfort. It is common practice to insert a needle in a superior- inferior fashion around the axillary artery to a depth of 1 or 2 cm, targeting the radial, median, ulnar nerves. The volume of the local anesthetic solution administered, it 10 milliliters.

The patient put in a supine position with their head slightly bent toward the side that would be blocked after general anesthesia administered. This done to do the interscalene brachial plexus block. Following the application of betadine-spirit to sterilise the skin of the neck supraclavicular area, a wound cloth used to cover the patient. Placing the transducer in the supraclavicular fossa just cephalad parallel to the clavicle allows one to find the subclavian artery, first rib, lung pleura, brachial plexus trunks. In order to follow the nerve trunks all the way back to the interscalene groove, one may use the 'traceback' method, which entails bringing the transducer to the side while maintaining plexus vision. Utilizing the transverse process's anatomy to ascertain the cervical level follows the discovery of the brachial plexus nerve's

roots in the interscalene groove. Be cautious not to obstruct the vertebral artery or the transverse cervical artery while using color Doppler to identify vascular structures. In order to view the "stoplight sign," one has to follow the C6 nerve's root from its bifurcation, where it exits the intervertebral foramen, make note of its fascicles. Make sure the probe is in the correct spot before attempting to puncture a needle. To place the probe at a level with the cricoid cartilage, position it so that it crosses the lateral neck transversely, covers the scalene sternocleidomastoid muscles, then comes out. One to three milliliters of local anesthetic should be mixed injected under the skin. After finding the C5 C6 roots, put the block needle into the skin in a plane parallel to the interscalene groove. As the needle goes into the brachial plexus, be careful not to nick the long dorsal scapular thoracic nerves. At the outermost fascial layer of the brachial plexus, you may find the hyperechoic fascia, which you should push forward with the needle until you reach it. The volume of the local anesthetic solution administered, it 10 milliliters. Thirty minutes after the block, the effectiveness of the block evaluated by measuring the degree of sensory blockage.

fentanyl (up to 2 μg/kg), propofol (1-3 mg/kg), atracurium (0.5 mg/kg) used to produce general anesthesia. The patient remained anesthetized by breathing a combination of oxygen, air, volatile agents via an endotracheal tube. As needed, intraoperative analgesia provided by morphine at a dose of up to 0.2 mg/kg. The entire quantity of opioids administered intraoperatively documented. As a anti-emesis measure, ondansetron used.

**Post operative**

On demor if the equal to or greater than 4, a maximum of four doses of 1 g paracetamol given, with a minimum of 6 hours between dosage.

As a supplementary rescue analgesic, patients whose pain not adequately alleviated within 6 hours after taking paracetamol given 2 mg of injection morphine.

A record kept of the total amount of analgesic rescue doses needed the time it took for the first dosage of rescue analgesia to be administered, which measured from the moment the patient discharged from the operating room.

**Outcomes**

The primary outcomes included the following: sensory motor blockage, morphine needs, pain ratings at 2, 6, 12 hours after surgery (measured on a analog scale from 0 to 10), pain at time '0' (after patient transition to recovery), as measured by a analog scale. Patients assessed the overall degree of pain alleviation as excellent, good, fair, or bad at the end of 24 hours, secondary outcomes included hemodynamic parameters, pulmonary functions (FEV1, FVC, FEV1/FVC Ratio) at time 1 h, side events, patient satisfaction.

**Approval code:**

**analysis**

administered using the Chicago, IL, USA-based IBM Package for the Social Sciences, version 28. We used a F test with a post hoc Tukey test to compare the three groups. Every parametric variable had its mean standard deviation (SD) provided. The Kruskal-Wallis (KW) test used for the analysis of non-parametric variables. The interquartile range (IQR) used to display these values. Additionally, to compare the two groups, a Mann-Whitney U test used. We used the Chi-square test to statistically examine the categorical variables, which are expressed as percentages frequencies. For purposes, a two-tailed P value less than 0.05 deemed significant.

**Results**

Results from vital signs, laboratory investigations, preoperative pulmonary function tests, comorbidities, surgery length, operation side, body mass index (BMI), ASA, other demographic variables not different between the groups. Listing 1

a difference ($P<0.05$) in the pulmonary function tests, FVC drop, FEV1 reduction, with the exception of FEV1/FVC, which not reveal any difference the groups. Group 3 showed a substantial decline in FVC, FEV1, FVC reduction, FEV1 reduction when to groups 1 2 ($P<0.05$). The heart rates of the groups differed little after 12 hours in the postoperative care unit (PACU), at 2 6 hours post-operatively (P=0.021 0.013, respectively). Although no statistically difference between groups 1 2, group 3 had a lower heart rate at 2 hours post-op (P = 0.045 0.036, respectively). Although no statistically difference between groups 1 2, group 3 had a lower heart rate at 6 hours post-op (P=0.049 0.016, respectively). The tested groups' mean arterial pressures not differ after 12 hours or in the PACU, although they differ after 2 6 hours (P value<0.001) from one another. The mean arterial pressure at 2 hours lower in Group 3 to Groups 1 2 (P value = 0.001 for both groups, <0.001 for group 3), whereas Groups 1 2 not present any difference. no statistically difference between groups 1 2, whereas group 3 had a lower mean arterial pressure six hours after surgery (P=0.001). At PACU 12 hours, the groups' analogue scale ratings not different; however, at 2 6 hours, a difference (P=0.001 0.003,

respectively). Group 3's analogue scale lower than groups 1 2 at the 2-hour mark (P = 0.002 0.001, respectively), whereas groups 1 2 not differ statistically. no statistically difference between groups 1 2, however after 6 hours, group 3 had a lower analogue scale (P=0.010 0.001 respectively). A trio of surfaces

There was no difference between groups 1 and 2, however group 3 had a significantly longer time to first rescue analgesic dem (P value <0.001). Even though there was no statistically difference between groups 1 and 2, the total morphine consumption in group 3 was significantly lower than in groups 1 and 2 (P value=0.023 0.005, respectively). across the groups that were assessed, there was no discernible variation in the number of patients who required morphine. In group 3, 18 patients (or 90% of the total) reported hemidiaphragmatic paresis; in group 3, 5 patients (or 25% of the total) reported Horner syndrome; in group 3, 2 patients (or 10% of the total) reported hoarseness; in group 1, 2 patients (10%) reported vascular puncture; in group 2, 2 patients (10%) reported nausea vomiting (PONV); in group 3, 1 patient (5%) reported paresthesia; and lastly, none of the groups studied reported pruritus. Regarding hemidiaphragmatic paresis and Horner syndrome, there was no statistically difference between the three groups. However, when it came to hoarseness, vascular puncture, PONV, and paresthesia, there was a difference. In terms of how satisfied patients were, the groups who underwent evaluation did not differ much. The fifth section

**Table (1)** Patient's demographic data, comorbidities, vital signs, laboratory investigations preoperative pulmonary function tests the studied groups

| | | Group 1 (n = 20) | Group 2 (n = 20) | Group 3 (n = 20) | P value |
|---|---|---|---|---|---|
| Age (years) | | 41.25±11.33 | 41.7±11.11 | 39.9±12.68 | 0.880 |
| Sex | **Male** | 14 (70%) | 12 (60%) | 13 (65%) | 0.802 |
| | **Female** | 6 (30%) | 8 (40%) | 7 (35%) | |
| Weight (kg) | | 62.95±8.03 | 59.25±8.55 | 59.7±7.09 | 0.392 |
| Height (m) | | 1.62±0.08 | 1.63±0.1 | 1.6±0.08 | 0.645 |
| BMI (kg/m$^2$) | | 24.2±3.4 | 22.4±2.88 | 23.4±3.4 | 0.392 |
| ASA | **I** | 8 (40%) | 5 (25%) | 8 (40%) | 0.591 |
| | **II** | 12 (60%) | 15 (75%) | 12 (60%) | |
| Duration of surgery (min) | | 101.7±9.02 | 103.8±9.03 | 99.1±5.75 | 0.186 |
| Side of operation | **Right** | 9 (45%) | 6 (30%) | 9 (45%) | 0.162 |
| | **Left** | 11 (55%) | 14 (70%) | 11 (55%) | |
| Complete block | | 19 (95%) | 19 (95%) | 20 (100%) | 0.596 |
| **Comorbidities** | | | | | |
| HTN | | 5 (25%) | 4 (20%) | 7 (35%) | 0.550 |
| DM | | 9 (45%) | 8 (40%) | 7 (35%) | 0.811 |
| Hyperlipidemia | | 3 (15%) | 1 (5%) | 4 (20%) | 0.364 |
| **Vital signs** | | | | | |
| SBP (mmHg) | | 118.5±6.71 | 119.5±7.59 | 120.0±8.58 | 0.820 |
| DBP (mmHg) | | 82.0±7.68 | 83.0±8.01 | 79.0±4.47 | 0.172 |
| Temperature ($^o$C) | | 36.98±0.29 | 36.99±0.28 | 36.88±0.29 | 0.388 |
| **Laboratory investigations** | | | | | |
| Hb (g/dL) | | 12.42±1.1 | 12.4±1.35 | 12.41±1.2 | 0.998 |
| WBCs (*10$^3$ cell/ µl) | | 8.1±1.7 | 8.6±2.1 | 7.1±1.9 | 0.061 |
| PLT (*10$^3$ cell/ µl) | | 263.4±45.4 | 283.6±41.1 | 282.3±48.2 | 0.289 |
| **Preoperative pulmonary function tests** | | | | | |
| FVC (%) | | 90.0±2.75 | 89.2±3.39 | 88.7±2.85 | 0.396 |
| FEV1 (%) | | 88.5±4.82 | 88.55±3.86 | 88.95±4.68 | 0.941 |
| FEV1/FVC (%) | | 98.37±5.26 | 99.34±5.65 | 100.45±7.25 | 0.567 |

**The is shown as Mean ± SD, where BMI stands for body mass index ASA refers to the American society of anesthesiologists. Synonyms for "blood pressure" include "systolic" "diastolic." The acronyms FVC FEV1 stfor forced expiratory volume in one second.**

**Table (2)** pulmonary function tests, heart rate changes the studied groups

| | Group 1 (n = 20) | Group 2 (n = 20) | Group 3 (n = 20) | P value | Post hoc |
|---|---|---|---|---|---|
| FVC (%) | 86.5±3.15 | 85.35±3.98 | 80.9±6.22 | 0.001* | P1=0.317<br>P2=0.001*<br>P3=0.010* |

| | | | | | |
|---|---|---|---|---|---|
| FEV1 (%) | 85.35±5.14 | 85.15±4.22 | 77.8±4.62 | <0.001* | P1=0. 894<br>P2<0.001*<br>P3<0.010* |
| FEV1/FVC (%) | 98.78±6.7 | 99.93±6.09 | 96.62±8.43 | 0.337 | ---- |
| FVC reduction (%) | -3.5±1.15 | -3.9±1.41 | -7.8±6.12 | 0.001* | P1=0.331<br>P2=0.004*<br>P3=0.008* |
| FEV1 reduction (%) | -3.15±1.14 | -3.4±0.94 | -11.15±1.09 | <0.001* | P1=0.453<br>P2<0.001*<br>P3<0.001* |
| **Heart rate changes** | | | | | |
| PACU | 78.45±7.95 | 80.25±7.48 | 79.1±8.91 | 0.799 | --<br>P1=0.991 |
| 2h | 89.25±11.57 | 89.55±9.58 | 81.5±8.68 | **0.021*** | P2=**0.045***<br>P3=**0.036***<br>P1=0.898 |
| 6h | 86±7.58 | 87.2±7.82 | 79.45±10.1 | **0.013*** | P2=**0.049***<br>P3=**0.016*** |
| 12h | 86.05±8.11 | 87.5±9.02 | 85.8±9.8 | 0.813 | --- |

**values given as the average plus or minus the standard deviation, The abbreviations FVC FEV1 stfor forced expiratory volume in the first second statistically (*) when the P value is less than 0.05. The p-values for the relationships between groups 1 2, 2 3, 2 3 are P1, P2, P3, respectively. PCU stands for "post-anesthesia care unit."**

**Table (3)** mean arterial pressure changes analogue scale (VAS) changes the studied groups

| | Group 1 (n = 20) | Group 2 (n = 20) | Group 3 (n = 20) | P value | Post Hoc |
|---|---|---|---|---|---|
| PACU | 81.55±9.38 | 80.25±7.48 | 79.1±8.91 | 0.670 | -- |
| 2h | 90.25±7.5 | 91.2±8.7 | 80.1±8.16 | <0.001* | P1=0.928<br>P2=0.001*<br>P3<0.001* |
| 6h | 89.35±10.73 | 89.25±7.73 | 77.85±8.42 | <0.001* | P1=0.999<br>P2=0.001*<br>P3=0.001* |
| 12h | 89.35±10.14 | 87.75±8.49 | 87.1±10.91 | 0.762 | --- |
| **analogue scale** | | | | | |
| PACU | 2 (2 - 3) | 2 (2 - 3) | 2 (1 - 3) | 0.001* | P1=0.679<br>P2=0.002*<br>P3=0.001* |
| 2h | 3 (2.7-3.2) | 3 (2 - 4) | 2 (2 - 2.25) | 0.003* | P1=0.529<br>P2=0.010*<br>P3=0.001* |
| 6h | 3 (2 - 4) | 3 (2.7 - 4) | 2 (1 - 3) | 0.587 | --- |
| 12h | 3 (2 - 4) | 3 (3 - 4) | 3 (2 - 4) | | |

**PACU: post-anesthesia care unit, *: statistically as P value<0.05, P1: p value between groups 1& 2, P2: p value between groups 1& 3, P3: p value between groups 2& 3**

**Figure 4: Duration until the first rescue analgesic is needed, How much morphine each group needed how many patients needed it**

| | Group 1 (n = 20) | Group 2 (n = 20) | Group 3 (n = 20) | P value | Post hoc |
|---|---|---|---|---|---|
| Time (hr.) | 3.2 ± 0.88 | 3.1 ± 0.72 | 4.4 ± 0.81 | <0.001* | P1=0.844<br>P2<0.001*<br>P3 <0.001* |
| Total morphine consumption (mg) | 1.9 ± 1.21 | 2.2 ± 1.28 | 0.9 ± 1.02 | 0.003* | P1=0.508<br>P2=0.023*<br>P3=0.005* |
| No of patients | 9 (45%) | 11 (55%) | 6 (30%) | 0.275 | --- |

presented as mean ± SD, *: statistically as P value<0.05, P1: p value between groups 1& 2, P2: p value between groups 1& 3, P3: p value between groups 2& 3

**Table (4)** Side effects patient satisfaction the studied groups

| | Group 1 (n = 20) | Group 2 (n = 20) | Group 3 (n = 20) | P value |
|---|---|---|---|---|
| Hemidiaphragmatic paresis | 0 (0%) | 0 (0%) | 18 (90%) | <0.001* |
| Horner syndrome | 0 (0%) | 0 (0%) | 5 (25%) | 0.004* |
| Hoarseness | 0 (0%) | 0 (0%) | 2 (10%) | 0.126 |
| Vascular puncture | 1 (5%) | 2 (10%) | 0 (0%) | 0.596 |
| PONV | 2 (10%) | 2 (10%) | 0 (0%) | 0.342 |
| Paresthesia | 0 (0%) | 0 (0%) | 1 (5%) | 0.362 |
| LAST | 0 (0%) | 0 (0%) | 0 (0%) | --- |
| Pruritus | 0 (0%) | 0 (0%) | 0 (0%) | --- |
| **Patient satisfaction** | | | | |
| Excellent | 8 (40%) | 7 (35%) | 7 (35%) | |
| Good | 7 (35%) | 9 (45%) | 7 (35%) | |
| Fair | 5 (25%) | 4 (20%) | 6 (30%) | |
| Poor | 0 (0%) | 0 (0%) | 0 (0%) | |

**PONV: nausea vomiting, LAST: Local anesthetic toxicity, *: statistically as P value<0.05,**

## Discussion

The groups that were analyzed did not vary significantly with respect to patients' age, sex, weight, height, BMI, ASA, surgery time, operation side, or full block status. There was no difference in the presence of comorbidities (hyperlipidemia, type 2 diabetes, hypertension) among the study groups. Similarly, Park et al. [7] did not identify any statistically significant variations in age, sex, weight, height, body mass index, ASA classification, or surgery among the groups who had various analgesic treatments for shoulder operations.

participants' comorbidities, including hyperlipidemia, diabetes mellitus (DM), hypertension (HTN), not differ across the groups. The results of these studies are consistent with those of other studies found in the literature. For instance, al-Mohrej et al. found no statistically differences in the incidence of hyperlipidemia, hypertension, or diabetes mellitus among the groups tested when they examined the link between analgesic techniques comorbidities in patients having shoulder surgery [8].

no statistically variations in demographic or comorbidities the groups that evaluated, according to your research other consistent findings. It seems that the groups appropriately matched, which enhances the validity of comparing the analgesic efficiency of the various strategies used in your research.

With the exception of FEV1/FVC, which not show a difference the groups, the pulmonary function tests, FVC decrease, FEV1 reduction all substantially different (P<0.05). When comparing group 3 to groups 1 2, a decrease in FVC, FEV1, FVC reduction, FEV1 reduction (P<0.05).

It is the brachial plexus in the neck area that the interscalene brachial plexus block mostly aims to protect. The phrenic nerve, which innervates the diaphragm, is located close enough to the ISB site that the local anesthetic may spread partially obstruct it. Pulmonary function tests, such FVC FEV1, might be affected by a partial blockage of the phrenic nerve, which can decrease diaphragmatic function [9,10]

In their randomized controlled experiment, Lim et al. contrasted the two procedures—ischial plexus block (ISB) suprascapular nerve block (SSB). The comparison of the effects on respiratory function, forced vital capacity (FVC), forced expiratory volume in one second (FEV1). individuals were randomly assigned to one of three groups: anterior SSB, posterior SSB, or ISB. Taken both before 30 minutes after the intervention, the measurements of FVC, FEV1, diaphragmatic excursion were recorded. Fifteen milliliters of ropivacaine 0.5% blocks were administered while an ultrasonography was being monitored. How much pain patients reported at6,12, 24 hours post-op. The ipsilateral diaphragmatic excursion, forced expiratory volume (FEV1), fractional volume capacity (FVC) were much larger in patients who had SSB to those who had ISB. Overall, the fractional volume reduction (FVC) was 31.2% ± 17.5% in the ISB group, but lower at 3.6% ± 18.6% 6.8% ± 6.5% in the anterior posterior SSB groups, respectively (P < 0.001) [11].

no statistically difference in heart rate between the groups at PACU or 12 hours, however a difference at 2 6 hours (P=0.021 0.013, respectively). At 2 hours post-op, group 3 had a much lower heart rate than groups 1 2 (P =

0.045 0.036, respectively), although no statistically difference between the two. At 6 hours post-op, group 3 had a much lower heart rate than groups 1 2 (P=0.049 0.016, respectively), although no statistically difference between the two.

Lee et al. Fahmy et al. looked at how different nerve blocks affected hemodynamic parameters in patients having shoulder procedures, thus that may be one study to think about. In line with your study's findings, their research shown that to other nerve block procedures, the interscalene brachial plexus block resulted in a much reduced heart rate [12,13].

Scores varied the groups studied at 2 6 hours (P=0.001 P=0.003, respectively), not at PACU or 12 hours (P=0.001), according to this study. Group 3 had a lower value at 2 hours to groups 1 2, although there no statistically difference between groups 1 2 (P value = 0.002, 0.001 correspondingly). Group 3 had a much lower value at 6 hours to groups 1 2, while there no statistically difference between groups 1 2 (P value= 0.010 0.001 respectively).

Results from Group 3 (Interscalene Block) to Groups 1 2 show: Specifically, at 2 hours (P value=0.002, 0.001, respectively) 6 hours (P value=0.010, 0.001, respectively), the scores lower in Group 3 (Interscalene brachial plexus block) than in Groups 1 2, respectively, when comparing the three treatments. the ratings for Groups 1 2 not different.

Based on these results, it seems that the Interscalene brachial plexus block (ISB) more in reducing pain ratings at 2 6 hours than the shoulder block techniques that used Phrenic nerve sparing blocks.

Seventy patients having arthroscopic Bankart repair surgery were the subjects of a prospective randomized study by Saini et al. Two methods of administering a 0.5% bupivacaine block were used in this study. One method included an interscalene block, which was done on 35 patients. The other method used a shoulder block, which was done on 35 patients. Both methods used a nerve stimulator to provide 10 ml of 0.5% bupivacaine. The results indicated that the ShB group had a greater (3) at 2 4 hours.

Despite the lack of a statistically significant difference between groups 1 and 2, group 3 required more time to administer their first rescue analgesic than either group (P value <0.001). Although there was no statistically significant difference between groups 1 and 2, the total morphine intake in group 3 was much lower (P=0.023 0.005, respectively). All of the groups that were examined had the same number of patients who needed morphine.

Concurrent with our findings, Saini et al. (3) showed that the ISB group had a substantially longer duration to first analgesic request to the ShB group (8.22 h vs. 4.69 h; P = 0.002).

Regarding side effects, 18 patients (or 90%) in group 3 experienced hemidiaphragmatic paralysis, while 5 patients (or 25%) in group 3 had Horner syndrome. Only 2 patients (10%) in group 3 reported hoarseness, 1 patient (5%) in group 1 2 patients (10%) in group 2 had vascular puncture, 2 patients (10%) in group 1 2 patients (10%) in group 2 had PONV, 1 patient (5%) in group 3 had paresthesia. No patients in any of the groups experienced LAST or pruritus. While a statistically difference in hemiaphragmatic paralysis Horner syndrome across the three groups, no difference in hoarseness, vascular puncture, PONV, or paresthesia.

While motor impairment seen in all groups at 0, 2, 4, 24 hours, the ISB group showed higher occurrences at 6 12 hours (P < 0.001 P = 0.008, respectively), according to the study by Saini et al. Block effects, including dyspnea, , severe motor blockade, only seen in the ISB group of patients (3).

The present investigation found no statistically differences in patient satisfaction the groups that examined. Our results are corroborated by Saini et al. (3), who also found that the groups had similar patient satisfaction scores (P = 0.873).

**Conclusion**

The Results from this research indicate that, in comparison to groups 1 2, the treatments implemented in the ISB group resulted in better outcomes. pulmonary function, hemodynamic stability, pain alleviation, opioid usage all positively correlated with the treatments in the ISB group. These findings provide further evidence that the treatments may improve patients' health speed their recovery. Although these advantages worth it, a greater occurrence of certain adverse effects, such as hemidiaphragmatic paralysis Horner syndrome, came along with them. Consequently, before deciding to use these therapies in clinical practice, a thorough evaluation of the risks benefits must be conducted.

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**Author contribution**

All writers had equal roles in writing the research.

**Conflicts of interest**

are no potential biases

**References**

[1] C Fossati, M Vitale, T Forin Valvecchi, R Gualtierotti, PS Randelli. Management of Painful Shoulder Arthroplasty: A Narrative Review. Pain Ther.;vol9:pp427-39,2020.

[2] R Kang, JS Ko. Recent updates on interscalene brachial plexus block for shoulder surgery. Anesth Pain Med (Seoul); vol 18:pp5-10,2023.

[3] S Saini, SM Rao, N Agrawal, A Gupta. Comparison of analgesic efficacy of shoulder block versus interscalene block for analgesia in arthroscopic shoulder surgeries: A randomised trial. Indian J Anaesth.; vol 65:pp451-7,2021.

[4] PK Gurushantappa, S Kuppasad. Anatomy of axillary nerve its clinical importance: a cadaveric study. J Clin Diagn Res.; vol 9:ppAc13-7,2015.

[5] D Harmon, C Hearty. -guided suprascapular nerve block technique. Pain Physician.;vol 10 :pp743-6,2007.

[6] C Rothe, S Asghar, HL Andersen, JK Christensen, KH Lange. -guided block of the axillary nerve: a volunteer study of a new method. Acta Anaesthesiol Scand.; vol 55:pp565-70,2011.

[7] SK Park, YS Choi, SW Choi, SW Song. A comparison of three methods for pain control in patients undergoing arthroscopic shoulder surgery. Korean J Pain.; vol 28:pp45-51,2015.

[8] OA Al-Mohrej, C Prada, K Madden, H Shanthanna, T Leroux, M Khan. The role of preoperative opioid use in shoulder surgery—A systematic review. Shoulder & Elbow.; vol 0: pp17585732211070193,2022.

[9] L Bergmann, S Martini, M Kesselmeier, W Armbruster, T Notheisen, M Adamzik, et al. Phrenic nerve block caused by interscalene brachial plexus block: breathing effects of different sites of injection. BMC Anesthesiol.; vol 16:pp45,2016.

[10] J Lang, X Cui, J Zhang, Y Huang. Dyspnea induced by hemidiaphragmatic paralysis after -guided supraclavicular brachial plexus block in a morbidly obese patient. Medicine (Baltimore).; vol 101:pp e28525, 2022.

[11] YC. Lim, ZK. Koo, Ho VW, SS Chang, S Manohara, QJ Tong. Randomized, controlled trial comparing respiratory analgesic effects of interscalene, anterior suprascapular, posterior suprascapular nerve blocks for arthroscopic shoulder surgery. Korean J Anesthesiol.; vol 73:pp408-16, 2020.

[12] H Fahmy. Analgesic efficacy of preoperative -guided interscalene block versus morphine on pain relief after shoulder surgeries. Al-Azhar Assiut Medical Journal.; vol 17:pp308-13,2019.

[13] SM Lee, SE Park, YS Nam, SH Han, KJ Lee, MJ Kwon, et al. Analgesic effectiveness of nerve block in shoulder arthroscopy: comparison between interscalene, suprascapular axillary nerve blocks. Knee Surg Sports Traumatol Arthrosc.; vol 20:pp2573-82012.