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ORIGINAL ARTICLE

A Comparative Study between Ultrasound Guided Anterior Glenoid Block Combined with Subomohyoid Anterior Suprascapular Block Versus Ultrasound Guided Interscalene Block in Diagnostic Shoulder Arthroscopy

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Background Interscalene brachial plexus block (ISB), while considered the standard for analgesia in shoulder arthroscopy, often causes hemidiaphragmatic paresis, limiting its application in specific populations. The current study is dedicated to compare the analgesic efficiency, diaphragmatic function preservation, and motor power between a combination of sub-omohyoid anterior suprascapular block (SASB) and anterior glenoid block (AGB) versus ISB in patients undergoing diagnostic shoulder arthroscopy.

Methods In the current prospective randomized controlled trial, 60 ASA I–II patients aged 18–65 years undergoing diagnostic shoulder arthroscopy were randomized into two groups (n= 30 each). Group A underwent SASB+AGB; Group B received ISB. The primary outcome was the degree of preserved diaphragmatic function (DPDF), measured via ultrasonographic excursion. Secondary outcomes included postoperative pain scores (NRS), degree of preserved handgrip strength (DPHS), and adverse events. Assessments were performed preoperatively and at 0, 4, 8 and 24 hours postoperatively.

Results Both groups demonstrated significant postoperative pain reduction with no significant difference in NRS scores ($p>0.05$). Group A showed better preservation of diaphragmatic function ($p<0.001$) and hand motor power ($p<0.001$) in comparison with Group B. No complications were reported in either group.

Conclusion SASB combined with AGB provides comparable analgesia to ISB in shoulder arthroscopy while offering superior preservation of diaphragmatic function and upper limb motor power. This technique may serve as a safer alternative in patients at risk for respiratory compromise or motor weakness.

Keywords Anterior glenoid block, Diaphragmatic function, Interscalene brachial plexus block, Shoulder arthroscopy, Sub-omohyoid anterior suprascapular block.

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INTRODUCTION

Interscalene brachial plexus block (ISB) is widely recognized for its excellent ability to control pain in shoulder procedures. Nonetheless, its application can be restricted in specific patient groups because it may lead to paralysis of the hemidiaphragm by affecting the phrenic nerve. The shoulder joint is mainly supplied by sensory fibers primarily from the suprascapular, axillary, and subscapular nerves[1].

Advancements in anatomical research have facilitated the development of novel nerve blocks targeting sensory input to the acromioclavicular and glenohumeral joints.

A notable approach entails injecting local anesthetic (LA) into the tissue beneath the subscapularis muscle, targeting the articular branches of the subscapular and axillary nerves supplying the glenohumeral joint[2].

Because of the close anatomical relationship and the potential for proximal diffusion, administering an anterior suprascapular nerve block beneath the omohyoid muscle's inferior belly within the supraclavicular fossa can reliably anesthetize the brachial plexus' superior trunk, even when only minimal amounts of local anesthetic are used[3].

Thus, we assumed that the sub-omohyoid anterior suprascapular block (SASB) may serve as an effective alternative to the superior trunk block, providing pain relief similar to the interscalene block, but with fewer related complications[3].

PATIENTS AND METHODS

Over a six-month period, from September 25, 2024, to March 30, 2025, this randomized controlled study was conducted in the integrated surgical suites of Ain Shams University Hospitals in Cairo, Egypt. This research included male and female participants between 18 and 65 years old who were classified as ASA physical status I or II, and scheduled for unilateral diagnostic shoulder arthroscopy.

Exclusion criteria comprised: infection at the injection site, hepatic, renal or cardiac impairment, allergy to any study drug, neuromuscular or coagulopathy disorders, chronic opioid or analgesic abuse, or a history of psychiatric illness. Sixty participants were randomized equally into two groups, (*n*= 30 each) (Figure 1). The study received ethical clearance under approval number FAMSU R143/2024.

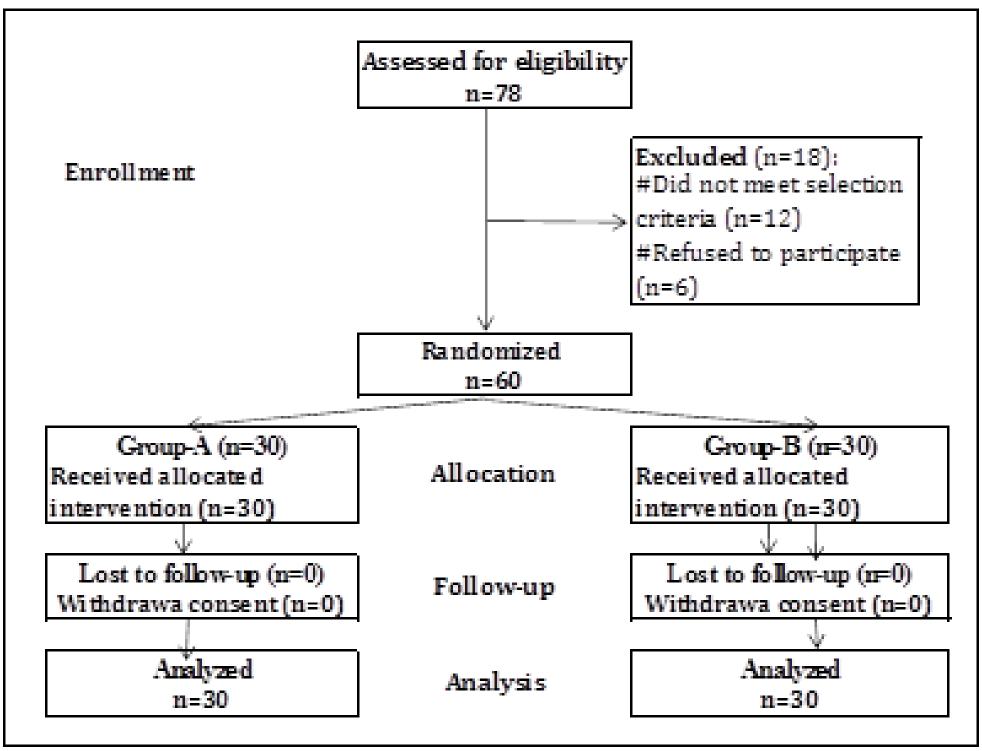

Fig. 1: Study flow diagram (CONSORT).

All participants provided written informed consent. Confidentiality was maintained, and participants retained the right to discontinue at any stage.

This study was registered at ClinicalTrials.gov (ID: NCT06609590).

Randomization was achieved via computer-generated sequences, and allocation was managed by an independent data coordinator using sealed, sequentially numbered opaque envelopes. An expert in regional anesthesia, otherwise uninvolved in the study, carried out the blocks. Individuals were randomly distributed into either group, - Group A received a combination of anterior glenoid block (AGB) and sub-omohyoid anterior suprascapular block (SASB), - Group B (control) received a conventional interscalene block (ISB).

Each patient received a comprehensive evaluation, which involved history, clinical examination, and laboratory testing. Fasting guidelines were followed (8 hours for solids, 2 hours for clear liquids). In the OR, patients were monitored (NIBP, ECG, SpO_2), and IV access was administered with Ringer's acetate at 10mLkg. Pain was evaluated utilizing the Numeric Rating Scale (NRS), following prior preoperative instruction[4].

Block Techniques:

In group A, with the patient supine, a 2–6MHz curvilinear transducer was positioned parallel to the clavicle's undersurface and advanced caudally to visualize the tuberosities, glenoid, and subscapularis muscle. Upon reaching the edge of the glenoid fossa, 15mL of 0.5% bupivacaine was administered from medial to lateral through the deltoid and subscapularis muscles until reaching the bone (Figure 2)[5].

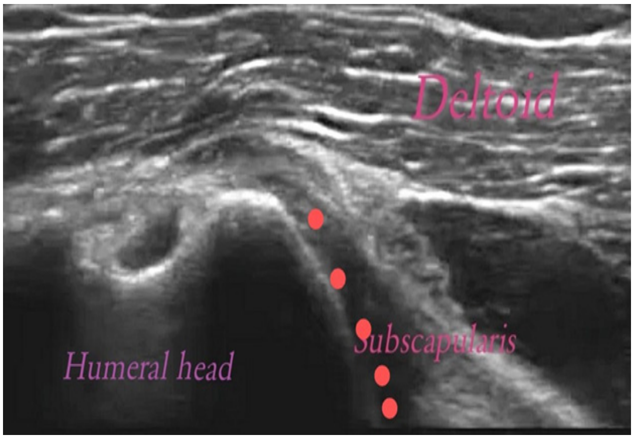

Fig. 2: Ultrasound guided anterior glenoid block. Red dots indicate the trajectory of the local anesthetic solution.

An anterior suprascapular nerve block was performed by administering 4mL of 0.5% bupivacaine into the supraclavicular fossa under ultrasound visualization using a curvilinear probe (SonoSite, M-Turbo) to visualize the suprascapular nerve beneath the omohyoid's inferior portion (Figure 3). A 22G, 9-cm spinal needle was advanced in-plane laterally to medially. After a negative aspiration, LA was administered in 5mL aliquots to achieve circumferential spread[6].

In group B, the ultrasound probe was positioned transversely to get a clear visualization for the brachial plexus, situated between the anterior and middle scalene muscles, before administering the interscalene nerve block (Figure 4). After verifying the absence of blood upon aspiration, a 22G spinal needle was advanced in-plane, and 15mL of 0.5% bupivacaine was delivered in 5-mL doses[6].

A single experienced orthopedic surgeon conducted all procedures according to standard diagnostic arthroscopy protocols[7].

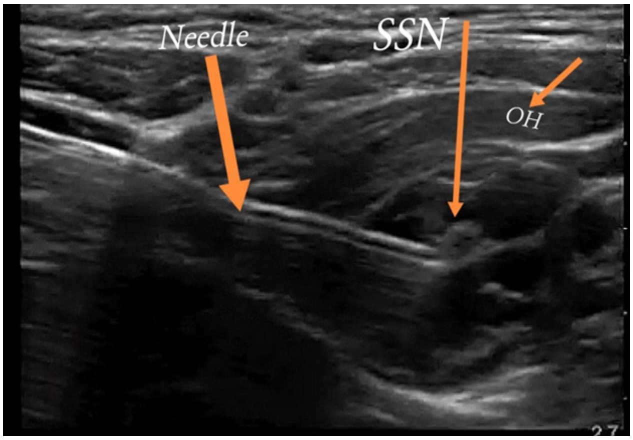

Fig. 3: Ultrasound guided anterior suprascapular nerve block. SSN: Suprascapular nerve; OH: Omohyoid muscle.

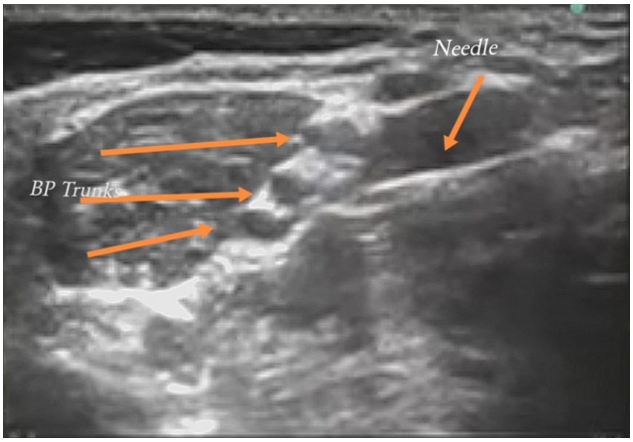

Fig. 4 : Ultrasound guided interscalene block; BP trunks: Brachial plexus trunks.

Outcome Measures:

The degree of preserved diaphragmatic function (DPDF) was evaluated by comparing the postoperative diaphragmatic excursion amplitude to the pre-block (baseline) measurement. This assessment was conducted in the recovery area utilizing a curvilinear probe (Sono Site, Transportable fuji M-turbo ultrasound system). The ultrasound probe was positioned between the midclavicular and midaxillary lines, aligned with the hemidiaphragm on the same side as the nerve block. A 2–5 MHz curvilinear ultrasound probe was utilized to conduct the examination while the patient maintained deep breathing in a supine position. An 11-point NRS was employed for pain intensity assessment using both immediately before surgery starts and immediately after operation. The degree of preserved handgrip strength (DPHS) was calculated by comparing postoperative measurements to pre-block baseline values. Baseline grip strength was assessed using a bulb dynamometer, which measures compression force (0–30 PSI) when patients squeeze its compressible handle with maximum effort. Patients were instructed to exert their strongest possible grip during preoperative testing[8]. Measurements were done before surgery, immediately postoperative, 4, 8 and 24 hours postoperatively, adverse effects were documented. The study's primary outcomes were assessed over a 24-hour period following surgery.

Primary outcome: DPDF, calculated by comparing the postoperative diaphragmatic excursion amplitude to the baseline measurement, assessed via curvilinear ultrasound.

Secondary outcomes: Pain scores (NRS), DPHS, measured using a bulb dynamometer), and adverse events.

Sample Size and Statistical Analysis:

Using PASS version 11.0[9], and assuming a significant difference in ipsilateral diaphragmatic excursion (ISB: 0.89±0.81 vs. SASB-A: 0.24±0.55)[10], a minimum of 19 patients per group was calculated for 80% power and α= 0.05. We included 30 patients per group to accommodate possible participant attrition and allow for secondary analyses.

Data were analyzed using IBM SPSS version 28.0 (IBM Corp., Chicago, USA). Quantitative data were assessed for normality (Shapiro-Wilk), described as mean±SD, and compared through *t*-tests and RMANOVA with Dunnett's post hoc test. Qualitative data were compared using Chi-square or Fisher's exact test. Significance was set at $p<0.05$.

The clinical significance was expressed in the form of relative effects. It was presented as intergroup comparisons for continuous outcomes (e.g., NRS, HDE, DPHS) and was performed using independent *t*-tests. The results of these comparisons are presented as the mean difference between Group A and Group B (calculated as Mean_GroupA – Mean_GroupB) along with its standard error (SE) and 95% confidence interval (CI). This value, labeled in the results tables as 'Relative Effect,' represents the absolute effect size of the intervention (SASB+AGB) compared to the control (ISB). This addition will ensure the methodology is transparent.

RESULTS

Baseline characteristics of the groups, as outlined in Table (1), revealed no statistically significant differences in terms of age, sex distribution, Body Mass Index (BMI), ASA classification, or operative duration ($p>0.05$).

According to Table (2), the two groups revealed a significant decline in pain scores postoperatively ($p<0.001$), with no significant intergroup differences, indicating comparable analgesic efficacy.

Table (3) indicated no significant differences between both groups in preoperative deep inspiratory Ipsilateral HDE (p= 0.741). Group A showed non-significant postoperative HDE measurements (p= 0.060) while Group B showed significant reduction in HDE measurements postoperatively ($p<0.001$) with significant difference between both groups ($p<0.001$) concerning the postoperative deep inspiratory HDE as well as PDPF with a mean difference of 0.73±0.11 and 0.39±0.02 respectively, this indicates better phrenic nerve affection with less diaphragmatic palsy in Group A.

Table (4) indicated no significant differences between both groups concerning preoperative DPHS (p= 0.306), then became significantly lower in Group B from immediately postoperative ($p<0.001$) until 8 hours post-procedure ($p<0.001$), to become non-significantly different at 12 hours and 24 postoperatively (p= 0.847 and p= 0.506 respectively). DPHS immediately postoperative until 8 hours postoperatively were significantly lower than preoperative. These results imply that Group A had a faster motor recovery.

No side effects (hematoma, nerve injury, allergy) were reported in either group.

Table 1: Demographic characteristics between the study groups:

Variables		Group-A (Total= 30)	Group-B (Total= 30)	*p*-value
Age (years)		32.9±6.3	34.5±5.6	^0.304
Sex (*n*, %)	Male	25(83.3%)	27(90.0%)	§0.607
	Female	5(16.7%)	3(10.0%)	
BMI (kg/m^2)		28.5±2.6	29.1±2.7	^0.407
ASA (*n*, %)	I	18(60.0%)	17(56.7%)	#0.793
	II	12(40.0%)	13(43.3%)	
Operation duration (minutes)		34.1±4.6	33.4±4.2	^0.521

Data presented as Mean±SD or number (%); BMI: Body Mass Index; ASA: American Association of Anaethiologists; ^: Independent *t*-test; #: Chi square test; §: Fisher's Exact test.

Table 2: Pain score between the study groups:

Time points	Group-A (Total= 30)	Group-B (Total= 30)	^*p*-value	Relative effect	
				Mean±SE	95% CI
Preoperative	2.2±0.7	2.0±0.7	0.289	0.2±0.2	-0.2–0.6
Postoperative	0.7±0.6	0.8±0.6	0.513	-0.1±0.2	-0.4–0.2
# *p*-value	<0.001*	<0.001*			
Change (post-pre)	-1.6±1.1	-1.3±1.0	0.263	-0.3±0.3	-0.8–0.2

Data presented as Mean±SD unless mentioned otherwise; ^: Independent *t*-test; #: Paired *t*-test (comparison between postoperative and preoperative); SE: Standard error; CI: Confidence interval; Relative effect: Effect in Group-A relative to that in Group-B.

Table 3: Deep inspiratory Ipsilateral HDE (cm) between the study groups:

Time points	Group-A (Total= 30)	Group-B (Total= 30)	^*p*-value	Relative effect	
				Mean±SE	95% CI
Preoperative	2.01±0.43	2.05±0.44	0.741	-0.04±0.11	-0.26–0.19
Postoperative	2.00±0.43	1.27±0.44	<0.001*	0.73±0.11	0.51–0.96
# *p*-value	0.060	<0.001*			
Change (post-pre)	-0.01±0.03	-0.78±0.02	<0.001*	0.77±0.01	0.76–0.78
DPDF	0.99±0.01	0.60±0.10	<0.001*	0.39±0.02	0.36–0.43

Data presented as Mean±SD unless mentioned otherwise; ^: Independent *t*-test; #: Paired *t*-test (comparison between postoperative and preoperative); SE: Standard error; CI: Confidence interval; Relative effect: Effect in Group-A relative to that in Group-B.

Table 4: DPHS (psi) between the study groups:

Time points	Group-A (Total= 30)	Group-B (Total= 30)	^*p*-value	Relative effect	
				Mean±SE	95% CI
Preoperative	16.5±1.4	16.8±1.3	0.306	-0.4±0.4	-1.1–0.3
PO hour-0	16.2±1.4	3.4±1.0⌂	<0.001*	12.8±0.3	12.2–13.5
PO hour-2	16.3±1.5	5.8±1.2⌂	<0.001*	10.5±0.3	9.8–11.2
PO hour-4	16.3±1.5	10.6±1.4⌂	<0.001*	5.7±0.4	4.9–6.4
PO hour-8	16.4±1.5	13.6±1.7⌂	<0.001*	2.8±0.4	1.9–3.6
PO hour-12	16.5±1.4	16.4±1.2	0.847	0.1±0.3	-0.6–0.8
PO hour-24	16.5±1.4	16.7±1.3	0.506	-0.2±0.3	-0.9–0.5
#p-value	0.124	<0.001*			

PO: Postoperative; Data presented as Mean±SD unless mentioned otherwise; ^: Independent *t*-test; #: RMANOVA test (comparison between times and preoperative), had "⌂" symbol based on post hoc Dunnet's test; SE: Standard error; CI: Confidence interval; Relative effect: Effect in Group-A relative to that in Group-B.

DISCUSSION

While the interscalene brachial plexus block is highly effective for pain relief in shoulder surgeries, it carries the potential complication of hemidiaphragmatic paralysis caused by phrenic nerve involvement. This risk may limit its suitability for some patient groups[11].

Shoulder joint's sensory innervation derives principally from the suprascapular, axillary, and subscapular nerves[12]. Advances in anatomical research have enabled anesthesiologists to develop innovative nerve blocks that selectively block sensory input to the glenohumeral and acromioclavicular joints. A notable technique involves injecting LA pericapsularly, deep within the subscapularis muscle, targeting axillary and subscapular nerves' articular branches responsible for glenohumeral joint innervation[2].

This study aimed to compare different nerve block techniques in terms of postoperative pain control, preservation of diaphragmatic function and preservation of hand grip strength following diagnostic shoulder arthroscopy. The results revealed that Group A (AGB+SASB) exhibited significantly higher HDE and a better DPDF than group B(ISB) postoperatively, this denotes less risk of phrenic nerve block. Group A exhibited significantly higher measurements of DPHS postoperatively relative to group B. The present study results showed that Group A Group A had a comparable pain perception to group B. And so, it provided effective analgesia after shoulder arthroscopy.

Importantly, the incidence of complications such as hematoma, nerve injury, or anaphylaxis showed no significant differences between groups.

Since complications like hematoma, nerve damage, or allergy are uncommon, larger studies are necessary to accurately determine their incidence. Although no severe adverse events were noted in this study, its small sample size limits the ability to detect rare complications.

Xu *et al.,*[5] mentioned that anterior glenoid block during shoulder arthroscopy could potentially lower the phrenic nerve block incidence. Additionally, targeting the articular branches of the axillary and subscapular nerves might help preserve grip strength, which is often compromised with traditional interscalene block.

Similarly, Gupta *et al.,*[10] conducted a comparative study evaluating single injection, ultrasound guided Suprascapular nerve block via an anterior approach (SSB A) versus ISB in for arthroscopic shoulder procedures. Their findings demonstrated that SSB-A provided similar pain relief to ISB while maintaining hemidiaphragmatic excursion (HDE) and respiratory function. The analgesia persisted for an entire day in the two groups. Ipsilateral below the omohyoid muscle[13,14]. Research indicates this technique may avoid phrenic nerve involvement[15].

Abdalla *et al.,*[7] accomplished a multicenter randomized clinical trial to compare anterior suprascapular nerve blocks with interscalene blocks for outpatient arthroscopic shoulder procedures. Their findings demonstrated that a single-injection suprascapular block was equally effective as an interscalene block in managing postoperative pain during the initial 24 hours. Additionally, both techniques showed comparable efficacy in blocking the brachial plexus's superior trunk.

In a clinical study, Hashem *et al.,*[16] evaluated postoperative pain and hand motor function following shoulder arthroscopy, comparing ultrasound-guided interscalene nerve blocks with suprascapular nerve blocks. Their results demonstrated a notable reduction in hand grip strength (measured via bulb dynamometer) in the interscalene group, indicating significant motor impairment, consistent with our findings.

Nasir H. and colleagues[17], performed a systematic review and meta-analysis investigating sixteen randomized trials that evaluated ISB with suprascapular block for shoulder procedure. The study primarily assessed total 24-hour oral morphine usage and resting pain scores, while secondary outcomes included block-related and respiratory complications. The analysis revealed comparable morphine consumption and pain levels between both techniques at the 24-hour mark, with the exception of the first postoperative hour, where ISB provided superior pain relief. However, SSB was associated with fewer adverse effects, making it a safer alternative, mainly for high-risk patients, including those with pulmonary conditions, severe obesity, or obstructive sleep apnea.

Conversely, the findings reported by Konradsen and colleagues[18], who conducted a comparative study between interscalene brachial plexus block and suprascapular nerve block for managing post-arthroscopic acromioplasty pain, aligned with those of the current investigation regarding the significant decline in hand grip strength among patients receiving ISB. This reduction was associated with greater patient discomfort. Furthermore, their results indicated that SSNB provided more effective pain control compared to ISB, leading them to recommend the use of SSNB for shoulder arthroscopy procedures. Notably, unlike the present study, the nerve blocks in their research were administered using a nerve stimulator without ultrasound guidance. Additional factors that may have influenced the differing outcomes include variations in anesthetic dosage or concentration, differences in patient characteristics or baseline functional status, and discrepancies in rehabilitation or physiotherapy protocols.

CONCLUSIONS

In diagnostic shoulder arthroscopy, the combination of SASB and AGB offer similar postoperative analgesia, preserved diaphragmatic function, and improved DHPS compared to ISB. Using SASB and AGB together effectively manages post-arthroscopy shoulder pain while preserving diaphragmatic movement and hand strength. This method also prevents hemidiaphragmatic weakness, making it safer for patients with poor respiratory function or those who cannot tolerate the motor deficits caused by ISB.

LIMITATIONS

This study has notable constraints. It relies on ultrasound-guided methods that demand skilled operators. The limited sample size (60 participants) could restrict the broader applicability of the results. Without a control group lacking nerve blocks, it's difficult to assess their true effectiveness. Furthermore, the 24-hour follow-up period is too brief to evaluate sustained pain relief, opioid requirements, or functional recovery. Longer follow-up intervals (such as 7,30 or 90 days) would offer better insight into chronic pain, recovery outcomes, and complications. A single anesthesiologist performed all the blocks. Multiple expert anesthesiologists would have helped to avoid this limitation.

While no significant complications were reported, the limited sample size may have failed to capture uncommon adverse events. Conducting a larger, multicenter study is advised to enhance the evaluation of safety.

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CONFLICT OF INTERESTS

There are no conflicts of interest.

REFERENCES

1. Laumonerie P, Dalmas Y, Tibbo ME, *et al*. Sensory innervation of the human shoulder joint: the three bridges to break, J Shoulder Elbow Surg. 2020;29:e499–e507.

2. Tran J, Peng PWH, Agur AMR. Anatomical study of the innervation of glenohumeral and acromioclavicular joint capsules: implications for image-guided intervention. Reg Anesth Pain Med. 2019:rapm–2018–100152.

3. Arad E, Li Z, Sitzman TJ, Agur AM, Clarke HM: Anatomic sites of origin of the suprascapular and lateral pectoral nerves within the brachial plexus. Plast, Reconstr Surg 2014; 133: 20e–7e .

4. Eid GM, El said Shaban S, Mostafa TA. Comparison of ultrasound guided genicular nerve block and knee periarticular infiltration for postoperative pain and functional outcomes in knee arthroplasty – A randomised trial. Indian J Anaesth 2023;67:885-92.

5. Cheng Xu, MD, Chengyu Wang, MD, Yang Xu, MD, Aizhong Wang, PhD, and Jie Lu, MD. Anterior Glenoid Block as an Alternative Technique to Interscalene Brachial Plexus Block. www.anesthesia-analgesia.org. February 2024 • Volume 138 • Number 2.

6. Abdallah FW, Wijeysundera DN, Laupacis A, *et al*. Subomohyoid anterior suprascapular block versus interscalene block for arthroscopic shoulder surgery: a multicenter randomized trial. Anesthesiology. 2020;132:839–853.

7. Faraj W. Abdallah, Duminda N. Wijeysundera, Andreas Laupacis, Richard Brull, Aaron Mocon, Nasir Hussain, Kevin E. Thorpe, M.Math., Vincent W. S. Chan. Subomohyoid Anterior Suprascapular Block versus Interscalene Block for Arthroscopic Shoulder Surgery. A Multicenter Randomized Trial. Anesthesiology 2020; 132:839–53.

8. Maher C, Yoon S, Donovan S, Mendonca RJ. (2018). Reliability of the bulb, dynamometer for assessing grip strength. Open J Occup Ther. 6(2):10, [cited 2022 Nov 5]. Available from: https:// schol arwor ks. wmich. edu/ ojot/ vol6/ iss2/ 10.

9. Hintze, J. (2011). PASS 11. NCSS, LLC. Kaysville, Utah, USA. www.ncss.com.

10. Gupta, K., Gupta, M., Sabharwal, N., Subramanium, B., Belani, K. G., and Chan, V. (2023). Ultrasound-guided anterior suprascapular nerve block versus interscalene brachial plexus block for arthroscopic shoulder surgery: A randomised controlled study. Indian Journal of Anaesthesia, 67(7), 595-602.

11. Gautier P, Vandepitte C, Ramquet C, DeCoopman M, Xu D, Hadzic A. The minimum effective anesthetic volume of 075% ropivacaine in ultrasound-guided interscalene brachial plexus block. Anesth Analg. 2011;113:951–955.

12. El-Boghdadly K, Chin KJ, Chan VWS. Phrenic nerve palsy and regional anesthesia for shoulder surgery: anatomical, physiologic, and clinical considerations. Anesthesiology. 2017;127:173–191.

13. Sun C, Ji X, Zhang X, Ma Q, Yu P, Cai X, *et al*. Suprascapular nerve block is a clinically attractive alternative to interscalene nerve block during arthroscopic shoulder surgery: A meta analysis of randomized controlled trials. J Orthop Surg Res 2021;16:376.

14. White L, Reardon D, Davis K, Velli G, Bright M. Anterior suprascapular nerve block versus interscalene brachial plexus block for arthroscopic shoulder surgery: A systematic review and meta analysis of randomized controlled trials. J Anesth 2022;36:17 25.

15. Blasco L, Laumonerie P, Tibbo M, Fernandes O, Minville V, Lopez R, *et al*. Ultrasound guided proximal and distal suprascapular nerve blocks: A comparative cadaveric study. Pain Med 2020;21:1240 7.

16. Mohamed Medhat Mohamed Hashem, Sherif Farouk Ibrahim, Waleed Ahmed Mansour, Noha Mohamed

Abdelaziz and Niven Gerges Fahmy. A comparative study between ultrasound guided interscalene and ultrasound guided suprascapular nerve blocks in postoperative pain and hand motor power affection in shoulder scope surgeries. Ain-Shams Journal of Anesthesiology (2023) 15:26 https://doi.org/10.1186/s42077-023-00324-8.

17. Hussain N, Goldar G, Ragina N, Banfield L, Laffey JG, Abdallah FW. (2017). Suprascapular and interscalene nerve block for shoulder surgerya systematic review and meta-analysis. Anesthesiology. 127(6):998–1013. [cited 2022 Nov 5]. Available from: https:// pubs. asahq. org/ anest hesio logy/ artic le/ 127/6/ 998/ 19150/ Supra scapu lar- and- Inter scale ne- Nerve- Block- for.

18. Konradsen LKP, Larsen V. (2009). Suprascapular nerve block or interscalene brachial plexus block for pain relief after arthroscopic acromioplasty. Ambul Surg 15:16–19.