



Original Research Article

Comparison Between Supraclavicular and Infraclavicular Brachial Plexus Blocks in Patients Undergoing Forearm Surgeries at Rural Tertiary Care Center

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ABSTRACT

Background: In the context of rural healthcare settings, where resources may be limited and patient populations often face unique challenges, the optimization of regional anesthesia techniques takes on particular significance, potentially addressing issues related to healthcare accessibility, cost-effectiveness, and patient outcomes.

Objective: to contribute valuable evidence regarding the comparative efficacy, safety, and practical considerations of supraclavicular versus infraclavicular brachial plexus blocks specifically in the rural tertiary care setting

Methods: A prospective observational study was conducted among 60 patients undergoing forearm surgeries at Department of Anaesthesia operation theatre of tertiary care centre. Duration of study was conducted from July 2023 to June 2025.

Result: The study included equal distribution with 30 patients in each group, with mean age of 37.5±11.5 years in supraclavicular group and 42.6±11.5 years in infraclavicular group. Both groups showed similar block characteristics with no significant differences in sensory block onset (10.1±2.2 vs 11.0±2.2 minutes) and duration (389±27.5 vs 380±28.8 minutes). Motor block parameters were comparable between groups, with onset times of 12.7±2.4 vs 13.3±2.0 minutes and durations of 350±15.7 vs 344±17.1 minutes. Excellent hemodynamic stability was observed in both groups with no significant differences in blood pressure, heart rate, or SpO2 levels throughout the procedure. Pain management was equally effective in both groups, with similar VAS scores and analgesic requirements (Diclofenac: 45±37.4 mg vs 60±30.5 mg). A significant difference was found in complications profile (p=0.03), with supraclavicular group showing 30% complication rate including Horner's syndrome (13.3%) and dyspnea (13.3%), while infraclavicular group demonstrated 96.7% complication-free rate.

Conclusion: While both techniques provide equally effective anesthesia for forearm surgeries, the infraclavicular approach offers superior safety profile with significantly fewer respiratory complications, making it the preferred choice for clinical practice.

Keywords: Supraclavicular, Infraclavicular, Brachial Plexus Blocks, Forearm Surgeries.

INTRODUCTION

The comparative efficacy of supraclavicular versus infraclavicular blocks has been the subject of considerable clinical investigation, though consensus regarding the optimal approach for forearm surgeries remains elusive.

The consideration of block-related complications represents an essential element in comparing supraclavicular and infraclavicular approaches. Historically, the supraclavicular approach has been associated with a higher risk of pneumothorax due to the proximity of the pleura, with reported incidence rates ranging from 0.5% to 6% in the pre-ultrasound era. However, as documented by Perlas et al. in their prospective observational study of 510 patients, the introduction of ultrasound guidance has dramatically reduced this risk to less than 0.1%.¹ Nevertheless, other complications

remain relevant to the comparative evaluation of these techniques. Chin et al. reported that while both approaches carry risks of vascular puncture and hematoma formation, the infraclavicular approach may be associated with a higher incidence of vascular complications due to the proximity of the axillary vessels, though these events rarely result in clinical significance when ultrasound guidance is employed.² Additionally, transient neurological symptoms, while uncommon with either technique (reported incidence less than 3% for both approaches), represent an important consideration in technique selection, particularly for patients with pre-existing neurological conditions or anatomical variations that may increase procedural complexity.

In rural healthcare settings, where resource limitations may be more pronounced and patient transportation costs more significant, these economic considerations take on heightened importance, potentially influencing institutional protocols and individual practitioner preferences regarding optimal technique selection.

The consideration of practitioner training and learning curve dynamics represents an important practical aspect in comparing supraclavicular and infraclavicular approaches, particularly in rural healthcare settings where anesthesia providers may have varying levels of experience with advanced regional techniques. Both approaches require substantial technical skill and anatomical knowledge, though the learning curve characteristics may differ. In their educational study analyzing the learning curves of anesthesia residents,

In the specific context of rural healthcare settings, several additional factors warrant consideration when comparing supraclavicular and infraclavicular approaches. Rural facilities often face unique challenges including limited specialist availability, potentially longer transport times to higher-level care facilities, and patient populations with distinct demographic and health profiles compared to urban centers. These considerations may influence the evaluation of the optimal brachial plexus block technique, with factors such as block reliability, complication management capabilities, and resource requirements taking on particular significance. Furthermore, the implementation of standardized protocols for regional anesthesia in rural settings must balance evidence-based practice with practical considerations including provider comfort, equipment availability, and institutional capabilities for managing potential complications. This study aims to contribute valuable evidence regarding the comparative efficacy, safety, and practical considerations of supraclavicular versus infraclavicular brachial plexus blocks specifically in the rural tertiary care setting, potentially informing technique selection and protocol development for similar healthcare environments.

MATERIAL AND METHODS

This prospective observational study conducted at Department of Anaesthesia, operation theatre of tertiary care centre following approval from the Institutional Ethics Committee. Duration of study was conducted from July 2023 to June 2025.

Sample size: A total of 60 patients were included in the study, based on a sample size calculation using the formula

- $S = Z^2 \times P \times Q / E^2$,
- With the prevalence of forearm surgeries estimated at 3-11% and applying these values, a sample size of 60 patients was determined. The patients were randomly allocated into two equal groups: Group A (n=30) receiving supraclavicular brachial plexus block and Group B (n=30) receiving infraclavicular brachial plexus block.

Inclusion criteria:

1. Those willing to participate in the study with due written consent.
2. Patients with American Society of Anaesthesiologists (ASA) physical status I and II.
3. All patients for forearm surgeries.
4. Age between 18 to 60 years
5. Gender-both male and female

Exclusion criteria:

1. Patient's refusal.
2. Patients with ASA grade III and IV.
3. Patients with allergy to local anaesthetic.
4. Local infection at any of the puncture sites.
5. Any coagulation disorder or any neurological or psychological problem that may interfere with proper subjective interpretation of the results.
6. Sepsis.
7. Severe liver and kidney disease.

METHODOLOGY

Written informed consent was obtained from all patients after thorough explanation of the procedure, its risks, and potential complications. Preoperatively, patients underwent a detailed history taking, clinical examination, and relevant investigations including complete blood count, liver and kidney function tests, ECG, and chest X-ray. A record of baseline characteristics and demographic profile was maintained for each participant.

On the day of surgery, all patients received standard premedication consisting of tablet pantoprazole 40 mg and tablet alprazolam 0.25 mg the night before surgery. In the pre- operating room, an intravenous line with 20G was secured and 500ml ringer lactate given before procedure, and standard monitoring including non-invasive blood pressure, ECG, and oxygen saturation was established. Baseline vital parameters were recorded.

For Group A (supraclavicular approach), patients were positioned supine with a small pillow between the shoulder blades, the head turned to the opposite side, and the arm adducted. After identifying the lateral border of the sternocleidomastoid muscle, the fingers were slowly moved laterally to feel the interscalene groove between the anterior and medial scalene muscles. A point 1.5-2 cm above the clavicle was marked in the groove where the anterior scalene muscle could be palpated, the pulsation of the subclavian artery was felt, and a Stimuplex needle was inserted in a backward, slightly medial, and posterior direction. Flexion and extension movement at the wrist at 0.4 mA was taken as the endpoint, and 30 mL of 0.375% bupivacaine was injected using a 22G, 5 cm insulated needle.

For Group B (infraclavicular approach), the lateral coracoid approach was employed. Patients were placed in the supine position, and after taking all aseptic precautions, the coracoid process was identified. A point about 2 cm medial and 2 cm inferior to the coracoid process was marked, and an insulated stimulating needle was inserted perpendicular to the skin. Using a nerve stimulator with a 22G insulated stimulator needle, the infraclavicular block was administered until the distal motor response (contraction of the middle and ring finger) was elicited with a current of 0.5 mA. At this point, 30 mL of 0.375% bupivacaine was injected.

Following administration of the blocks, sensory assessment was performed over the peripheral nerve distribution areas (radial, ulnar, median, and musculocutaneous) to determine the onset and completeness of analgesia. Motor blockade was evaluated by Modified Bromage scale for upper limb (0-3) where,

0-Indicates no block. The patient can fully flex and extend the arm and forearm.

1. Partial block. The patient can flex the forearm but has some difficulty weakness in flexing the arm.
2. Almost complete block. The patient has difficulty flexing the arm and some weakness in flexing the forearm
3. Total block. The patient cannot flex either the arm or the forearm.

Block performance time was defined as the time interval from sterile skin preparation to termination of injection and removal of the nerve stimulator needle. The block was assessed, and surgery was allowed to proceed only when adequate sensory and motor blockade was achieved. If the block was inadequate, it was supplemented with general anesthesia, and these cases were considered as block failures.

Intraoperative complaints of pain, particularly in cases of radial nerve sparing, were addressed by administering fentanyl 2 µg/kg IV. The duration of surgery was defined as the time interval between incision to closure of the skin. After completion of the block, all patients were evaluated for any complications related to the block, such as pneumothorax, vascular puncture, Horner's syndrome, or phrenic nerve palsy.

Postoperative pain was assessed using a Visual Analog Scale (VAS) ranging from 0-10, where,

0=no pain, 1-3=mild pain, 4-6=moderate pain, 7-10=severe pain

When the VAS score exceeded 4, rescue analgesia in the form of diclofenac sodium 1.5 mg/kg IM was administered. The duration of analgesia was recorded as the time from the onset of sensory block to the first request for rescue analgesia. A chest X-ray was performed 24 hours after successful block to rule out complications like pneumothorax.

During data collection, the following parameters were recorded: time taken for the procedure, duration of analgesia, time to first dose of injection diclofenac, total dose of injection diclofenac, total dose of injection paracetamol, and any complications. The quality of analgesia was assessed based on the need for supplementation with general anesthesia, intraoperative analgesic requirements, and the duration of postoperative pain relief.

Statistical Analysis

All data was collected and analysed using appropriate statistical methods. Student t- test and chi-square test were applied for testing statistical significance. Quantitative data was expressed as mean and standard deviation, while qualitative data was presented as frequencies and percentages. A p-value of less than 0.05 was considered statistically significant. The analysis was conducted using SPSS software version 25.

RESULTS

The supraclavicular group (Group A) had a mean age of 37.50 ± 11.54 years, while the infraclavicular group (Group B) had a mean age of 42.63 ± 11.47 years. The p-value of 0.089 indicates no statistically significant difference between groups. The age distribution shows Group A had more younger patients (43.3% in 20-30 years category) compared to Group B (16.7%), while Group B had more patients in the 51-60 years category (36.7% vs 20.0%).

Group A had 36.7% males and 63.3% females, while Group B had 46.7% males and 53.3% females. The p-value of 0.432

indicates no statistically significant difference in gender distribution between the two groups, ensuring good demographic matching.

Group A had a mean weight of 74.18 ± 13.08 kg, while Group B had 74.49 ± 12.36 kg. The p-value of 0.924 shows no significant difference in weight between the groups, indicating excellent baseline matching for this anthropometric parameter.

Table 1: ASA Physical Status of patients in both the groups

ASA Status	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
ASA I	15 (50.0%)	14 (46.7%)	0.796
ASA II	15 (50.0%)	16 (53.3%)	

This table shows the American Society of Anesthesiologists (ASA) physical status classification. Both groups had similar distributions with 50.0% ASA I and 50.0% ASA II patients in Group A, compared to 46.7% ASA I and 53.3% ASA II in Group B. The p-value of 0.796 confirms no significant difference in patient health status between groups.

The supraclavicular block took 9.30 ± 1.58 minutes on average, while the infraclavicular block took 8.69 ± 1.37 minutes. The p-value of 0.116 indicates no statistically significant difference in procedure time between the two techniques.

Table 2: Sensory Block Characteristics

Variables	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
Onset of sensory block (min)	10.10 ± 2.17	11.00 ± 2.21	0.117
Duration of sensory block (min)	389.10 ± 27.50	379.9 ± 28.8	0.21

The onset of sensory block was 10.10 ± 2.17 minutes for supraclavicular vs 11.00 ± 2.21 minutes for infraclavicular ($p=0.117$). The duration was 389.10 ± 27.50 minutes for supraclavicular vs 379.9 ± 28.8 minutes for infraclavicular ($p=0.21$). Neither parameter showed significant differences, indicating comparable sensory block effectiveness.

Table 3: Motor Block Characteristics

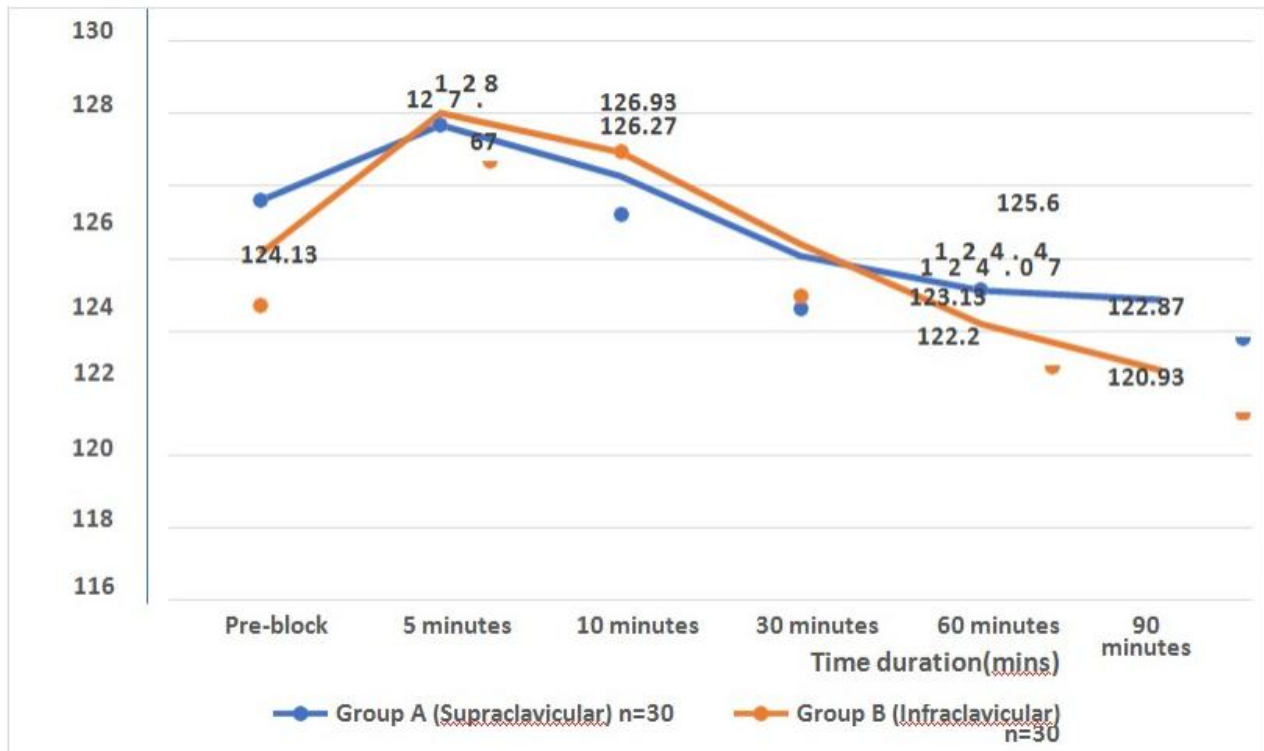
Variables	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
Onset of motor block (min)	12.70 ± 2.38	13.3 ± 2.03	0.29
Duration of motor block (min)	350.20 ± 15.71	343.70 ± 17.07	0.13

Motor block onset was 12.70 ± 2.38 minutes for supraclavicular vs 13.3 ± 2.03 minutes for infraclavicular ($p=0.29$). Duration was $350.20 \pm$

15.71 minutes for supraclavicular vs 343.70 ± 17.07 minutes for infraclavicular ($p=0.13$). Both techniques provided similar motor block characteristics with no significant differences.

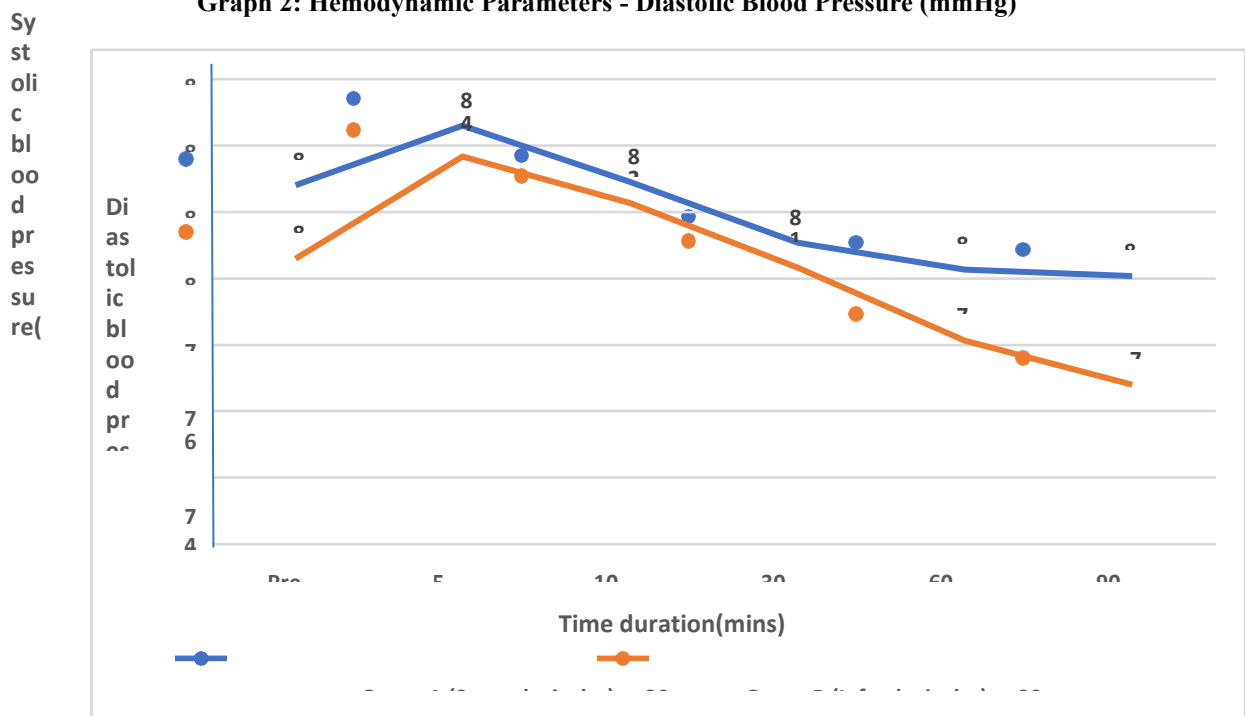
Both groups maintained stable systolic pressures throughout the monitoring period (pre-block through 90 minutes), with values ranging from 120-128 mmHg. All p-values were >0.05 , indicating no significant hemodynamic differences between techniques at any time point.

Graph 1: Hemodynamic Parameters - Systolic Blood Pressure (mmHg)



Both groups showed consistent diastolic pressures ranging from 76-84 mmHg across all time points. All p-values exceeded 0.05, demonstrating equivalent hemodynamic stability between both block techniques.

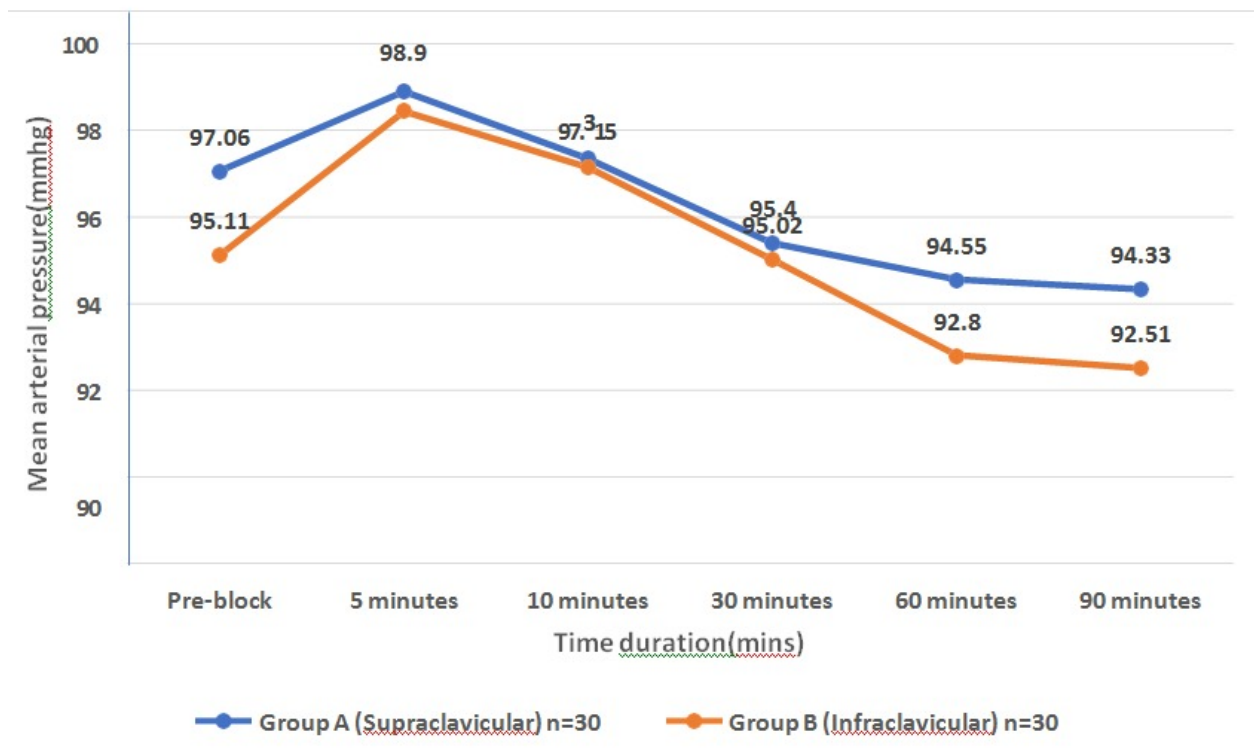
Graph 2: Hemodynamic Parameters - Diastolic Blood Pressure (mmHg)



Both groups maintained stable MAP values ranging from 92-98 mmHg throughout the monitoring period. All p-values

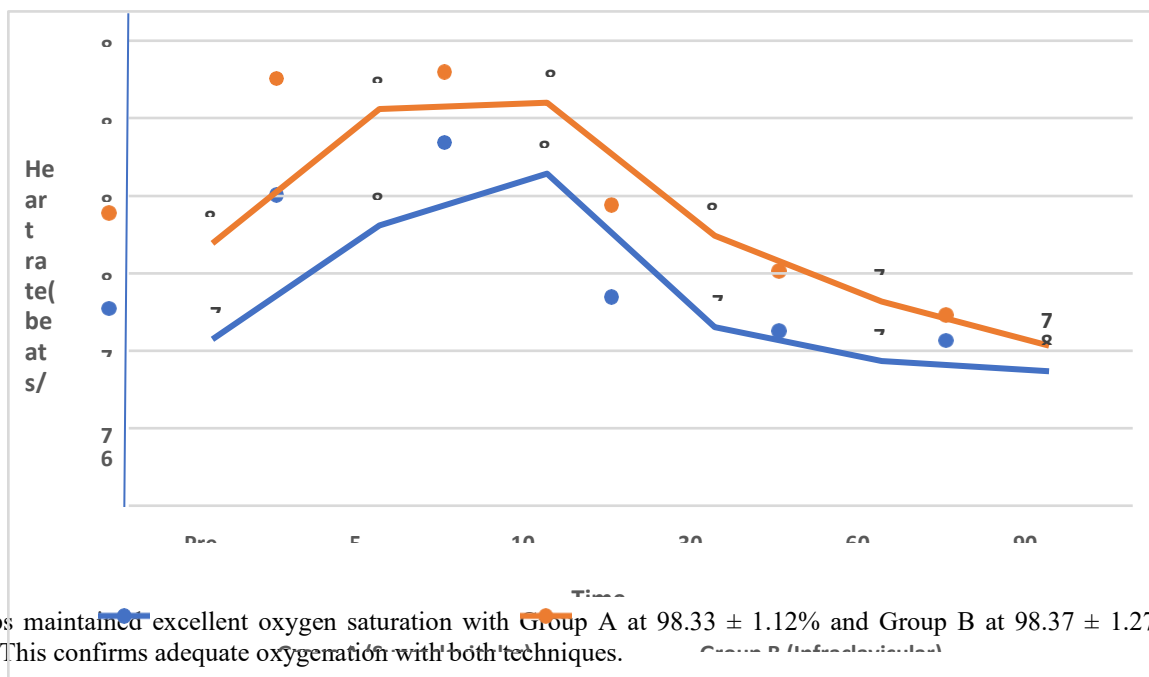
were >0.05, confirming similar cardiovascular stability between both techniques.

Graph 3: Hemodynamic Parameters – mean arterial Pressure (mmHg)



Both groups maintained heart rates between 77-84 beats per minute across all time points. All p-values were >0.05, indicating no significant differences in cardiac response between the two block techniques.

Graph 4: Hemodynamic Parameters - Heart Rate (beats/min)



Both groups maintained excellent oxygen saturation with Group A at $98.33 \pm 1.12\%$ and Group B at $98.37 \pm 1.27\%$ ($p=0.915$). This confirms adequate oxygenation with both techniques.

Graph 5: SpO2 Monitoring

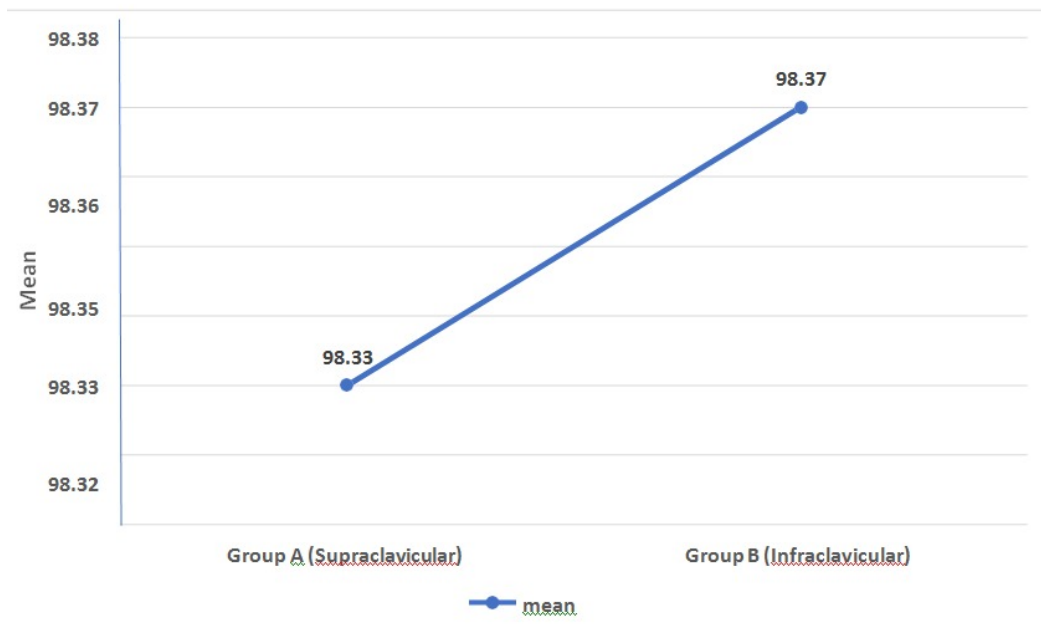


Table 4: Pain Assessment - Visual Analog Scale (VAS) Scores

Time Points	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
2 hours	0.90 ± 0.76	1.30 ± 0.95	0.077
4 hours	2.86 ± 0.50	3.00 ± 0.95	0.47
8 hours	4.40 ± 0.68	4.47 ± 0.73	0.715
12 hours	5.73 ± 0.45	5.67 ± 0.48	0.581

This table tracks postoperative pain levels using VAS scores. Pain scores gradually increased over time in both groups, from approximately 1 at 2 hours to around 5.7 at 12 hours. All p- values were >0.05, indicating similar pain control effectiveness between both techniques.

Table 5: Postoperative Analgesic Requirements

Variables (Mean ± SD)	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
Total Diclofenac dose (mg)	45.00 ± 37.37	60.00 ± 30.51	0.094
Total Paracetamol dose (mg)	733.33 ± 365.15	783.33 ± 339.46	0.585

Group A required 45.00 ± 37.37 mg of Diclofenac vs 60.00 ± 30.51 mg in Group B (p=0.094). Paracetamol usage was 733.33 ± 365.15 mg vs 783.33 ± 339.46 mg respectively (p=0.585). Neither difference was significant. All patients in Group A (100%) had successful blocks without requiring conversion to general anesthesia, while 2 patients in Group B (6.7%) required conversion. The p-value of 0.492 suggests this difference was not statistically significant.

Table 6: Complications Profile

Complications	Group A (Supraclavicular) n=30	Group B (Infraclavicular) n=30	P-value
None	21 (70%)	29 (96.7%)	0.03
Horner's syndrome	4 (13.3%)	0 (0.0%)	
Dyspnea	4 (13.3%)	0 (0.0%)	
Vascular puncture	1 (3.3%)	1 (3.3%)	

Group A had complications in 30% of patients (21 had none, 4 had Horner's syndrome, 4 had dyspnea, and 1 had vascular puncture), while Group B had only 3.3% complications (29 had none, 1 had vascular puncture). The p-value of 0.03 indicates a statistically significant difference, with supraclavicular blocks having higher complication rates, particularly Horner's syndrome and dyspnea, likely due to the proximity to sympathetic chain and phrenic nerve respectively.

DISCUSSION

The demographic profile of our study population demonstrated comparable baseline characteristics between the two groups. The age distribution in our study showed a mean age of 37.50 ± 11.54 years in the supraclavicular group compared to 42.63 ± 11.47 years in the infraclavicular group, with no statistically significant difference ($p=0.089$). This finding aligns closely with Abhinaya et al.³, who reported mean ages of 32.40 ± 11.25 years for supraclavicular and 33.53 ± 14.21 years for infraclavicular groups ($p=0.733$).

Block Performance Time Comparison

Our findings regarding block performance time present an interesting contrast to the literature. We observed that the supraclavicular approach required a mean time of 9.30 ± 1.58 minutes compared to 8.69 ± 1.37 minutes for the infraclavicular approach, showing no significant difference ($p=0.116$). However, this finding differs from several key studies in the literature. Abhinaya et al.³ reported significantly faster performance times for infraclavicular blocks (9.57 ± 3.19 minutes) compared to supraclavicular blocks (11.53 ± 2.90 minutes) with $p=0.015$.

In contrast to our study, Sreelal et al.⁴ (2020) reported comparable block performance times (224.54 ± 34.38 seconds vs 226.82 ± 37.21 seconds, $p=0.8296$) and Rathod et al.⁵ (2022) found that supraclavicular blocks were significantly faster (6.87 ± 2.10 minutes) than infraclavicular blocks (12.35 ± 1.63 minutes) with $p<0.001$. The variation in results across studies likely reflects differences in operator experience, technique variations, and injection strategies employed.

Onset and Duration of Block

Sensory Block Characteristics

One of the most critical aspects of any regional anesthetic technique is the speed of onset and duration of action. In our study, the onset of sensory block was 10.10 ± 2.17 minutes for the supraclavicular group and 11.00 ± 2.21 minutes for the infraclavicular group ($p=0.117$), indicating no statistically significant difference between the two approaches. Similar finding was noted in the study by Rathod et al.⁵ (2022) where faster sensory onset with supraclavicular blocks (10.05 ± 1.10 minutes) compared to infraclavicular (13.28 ± 1.27 minutes) with $p=0.02$ was found.

Motor Block Characteristics

Motor block onset in our study was similar between groups (12.70 ± 2.38 minutes for supraclavicular vs 13.3 ± 2.03 minutes for infraclavicular, $p=0.29$). Our motor block findings present interesting contrasts with recent studies. Abhinaya et al.³ reported faster motor block onset in the infraclavicular group (7.32 ± 2.90 minutes) compared to supraclavicular (8.68 ± 3.50 minutes), though their difference was not statistically significant ($p=0.121$) (95).

Hemodynamic Stability

In the present study, hemodynamic parameters including systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), heart rate (HR), and oxygen saturation (SpO_2) were closely monitored following administration of supraclavicular and infraclavicular brachial plexus blocks. The results revealed no statistically significant differences between the two groups across all time intervals. Both techniques maintained stable SBP and DBP values, indicating that neither approach induced hypotension or hypertension during the perioperative period. This hemodynamic stability is particularly important in patients undergoing forearm surgeries, where maintaining cardiovascular equilibrium is essential. This finding is consistent with the study by Shaikh et al.⁶, who monitored systolic blood pressure at regular intervals and reported no significant variation between the supraclavicular and infraclavicular groups. Their graphical data showed a consistent BP trend throughout the procedure, reinforcing the safety of both approaches.

Mean arterial pressure remained consistent throughout the observation period in the current study, further supporting the cardiovascular neutrality of both block techniques. Abhinaya RJ et al.³ reported similar findings, with no significant changes in MAP between the supraclavicular and infraclavicular groups.

In our study, oxygen saturation levels were consistently high—ranging between 98% and 100%—in both groups, with no statistically significant differences observed. This indicates that neither block technique compromised respiratory function or oxygenation. Shaikh et al.⁶ reported similar findings, with SpO_2 values remaining stable throughout the procedure in both groups. No cases of desaturation or respiratory distress were noted, and their data closely mirrors your results.

Pain Assessment and Postoperative Analgesia

Visual Analog Scale Scores

Pain assessment using Visual Analog Scale (VAS) scores at various time intervals showed no significant differences between the two groups. At 2 hours post-surgery, VAS scores were 0.90 ± 0.76 for supraclavicular and 1.30 ± 0.95 for infraclavicular groups ($p=0.077$). The scores progressively increased over time in both groups, reaching 5.73 ± 0.45 and

5.67 ± 0.48 respectively at 12 hours (p=0.581). These findings indicate that both techniques provide comparable pain relief in the immediate postoperative period. Sreelal et al.⁴ evaluated postoperative pain using VAS and found comparable duration of analgesia between supraclavicular and infraclavicular groups. Although they did not report VAS scores at multiple time points, their conclusion supports your observation that both techniques offer similar pain control over time, with no significant difference in analgesic efficacy.

Postoperative Analgesic Requirements

Our study noted that although Group B required slightly more analgesics, the differences were not statistically significant, suggesting comparable postoperative pain control between the two techniques. Sreelal et al.⁴ did not report quantitative analgesic consumption (i.e., mg of diclofenac or paracetamol), but they did measure duration of analgesia which supports our findings—both blocks offer similar analgesic duration, which likely translates to comparable analgesic requirements. Their protocol used diclofenac as rescue analgesia when VAS > 4, similar to ours, reinforcing the consistency in pain management strategies.

Block Success Rate and Conversion to General Anesthesia

The success rate of regional anesthesia is a crucial outcome measure that reflects the reliability and effectiveness of the technique. In our study, the supraclavicular approach achieved a 100% success rate without any conversion to general anesthesia, while the infraclavicular approach had a 93.3% success rate with 2 patients (6.7%) requiring conversion to general anesthesia. While this difference was not statistically significant (p=0.492), it suggests a potential advantage of the supraclavicular approach in terms of block reliability. Our findings align remarkably well with key studies in the literature. Abhinaya et al.³ reported identical success rates of 93.3% for both supraclavicular and infraclavicular approaches, which closely matches our infraclavicular success rate.

Complications and Safety Profile

The safety profile represents one of the most important considerations when choosing between different regional anesthetic techniques. Our study demonstrated a significantly higher incidence of complications in the supraclavicular group compared to the infraclavicular group (30% vs 3.3%, p=0.03). This finding is remarkably consistent with multiple studies in the literature that have highlighted the superior safety profile of infraclavicular blocks.

Horner's syndrome was observed in 4 patients (13.3%) in the supraclavicular group and none in the infraclavicular group in our study. This finding aligns closely with Abhinaya et al.³, who reported Horner's syndrome in 3 patients (10%) in the supraclavicular group compared to none in the infraclavicular group. Chaudhary et al.⁷ reported 4 patients (10%) in their supraclavicular group developing Horner's syndrome, with none in the infraclavicular group.

Dyspnea was observed in 4 patients (13.3%) in the supraclavicular group and none in the infraclavicular group in our study. This aligns with Abhinaya et al.³, who reported clinically symptomatic diaphragmatic paresis in 1 patient (3.3%) in their supraclavicular group, confirmed by chest X-ray and associated with breathing difficulty and decreased oxygen saturation (SpO₂ 92%). After 24 hours we did chest x-ray of this 4 patients who encountered dyspnea during study to rule out pneumothorax which get documented after 24 hours and none of this patient had pneumothorax on chest x-ray

Vascular puncture occurred in 1 patient (3.3%) in each group in our study, indicating no difference in this complication. This contrasts with several studies in the literature. Abhinaya et al.³ reported higher vascular puncture rates: 3 cases in the supraclavicular group compared to 1 case in the infraclavicular group. They attributed the higher incidence to the relative inexperience of operators, which they acknowledged as a study limitation.

Limitations and Future Directions

Our study has several limitations that should be acknowledged. The single-center design and relatively small sample size may limit the generalizability of findings. The study was conducted by operators with varying levels of experience, which could introduce bias in performance times and success rates. Additionally, the study did not include long-term follow-up to assess for persistent neurological complications, which, while rare, are important safety considerations.

CONCLUSION

Based on our findings and the comprehensive literature review, both supraclavicular and infraclavicular brachial plexus blocks are effective techniques for providing anesthesia and analgesia for forearm surgeries. While both approaches demonstrated comparable efficacy in terms of onset time, duration of block, and hemodynamic stability, the infraclavicular approach showed a superior safety profile with significantly fewer complications, particularly regarding Horner's syndrome and dyspnea.

The infraclavicular approach may be the preferred technique when safety considerations are paramount, particularly in patients with respiratory compromise or when the risk-benefit ratio favors a more conservative approach. However, the supraclavicular approach remains a valuable technique with better success rates and may be preferred in certain clinical scenarios or based on operator experience.

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