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ORIGINAL RESEARCH

A Comparative Clinical Study for Efficacy of Lateral and Classical Approach of Supraclavicular Brachial Plexus Block with 0.5% Ropivacaine in Upper Limb Surgeries

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ABSTRACT

Background: Supraclavicular brachial plexus block described as "spinal of upper limb" due to the dense motor and sensory blockade below mid humerus. The Lateral approach is speculated to be equipotent, less complication and higher success rate as compared to Classical approach. **Aim and objectives:** We aimed $_{toa}$ comparative clinical study for efficacy of lateral and classical approach of supraclavicular brachial plexus block with 0.5% ropivacaine in upper limb surgeries.

Material and Methods: This was a prospective, randomized study and single blinded study, conducted on 108 patients of ASA I&II of either sex, aged >18 years and with informed and written consent. & Who undergoing to upper limb surgeries with supraclavicular brachial plexus block by Lateral and Classical approaches. Patients were allocated into two groups (group L and group C) of each have 54 patients.Statistical software SPSS trial Ver 20 was used for statistical analysis of results.

Results: Time to perform the block was shorter, Number of attempts was less and complications were less by the Lateral approach when compared to Classical approach with p value <0.05%. The mean time to onset of sensory and motor blockade and the mean duration of sensory and motor blockade did not differ between the two approaches with p value >0.05.

Conclusions: The Lateral approach is better option to Classical approach in terms of less time to perform, lesser number of attempts adequacy of block, tourniquet tolerance and less complications and higher success rate.

Keyword-Supraclavicular block, lateral approach, classical approach, Ropivacaine.

INTRODUCTION

Brachial plexus block is an effective method for providing anesthesia to the upper limb from the shoulder to the fingertips. There are many approaches as Interscalene block, Supraclavicular branchial plexus block, Infraclavicular brachial plexus block, and Axillary brachial plexus block.[1]

Advantages of supraclavicular block are potent intraoperative and postoperative analgesia, reduction in opioid requirement and general anesthesiarelated side effects. It provides faster recovery and lesser hospital stay days.[4]

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

Supraclavicular classical approach blocks the entire arm distal to mid humerus. The risk of pneumothorax, phrenic nerve palsy and vessel puncture are some serious and displeasing complications associated with this approach which need to be managed promptly[5].

Lateral approach to reach the brachial plexus in supraclavicular route, where brachial plexus is the first structure to be placedin the line of injection and then subclavian artery and then pleura.Lateral approach is associated with less risk of puncturing vessel and pleura and is a safer technique than classical approach[6,7].

Ropivacaine is a long-acting regional anesthetic agent that is structurally related to bupivacaine. It is S (-) enantiomer, unlike bupivacaine, which is a racemic mixer, developed for the purpose of reducing potential toxicity and improving relative sensory and motor block profiles.

Aims and Objectives

Aims

- To compare the clinical efficacy and safety of classical and lateral approach for supraclavicular brachial plexus block with 0.5 % Ropivacaine for upper limb surgeries distal to elbow joint.

Objectives

A. Primary Objective

- To evaluate whether lateral approach has shown to be a safe and effective alternative to classical approach for supraclavicular brachial plexus block.

B. Secondary Objective

- To observe any complications of supraclavicular block by either approach.
- To observe any side effect of drug used.

MATERIALANDMETHODS

The present study entitled **"A COMPARATIVE CLINICAL STUDY FOR EFFICACY OF LATERAL AND CLASSICAL APPROACH OF SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK WITH 0.5% ROPIVACAINE IN UPPER LIMB SURGERIES**, conducted on 108 patients who were fulfill the eligibility criteriastudied with informed and written consent,subsequently patients wereallocated into two groups of each have 54 patients.

The institutional ethical committee no.: (54/IEC-GRMC/2020)

Registration in clinical trial registry India:(CTRI/2022/10/046575)

Method of collection of data:close envelope method

Studydesign: Prospective, single blinded, randomized controlled study.

Sample size:108

Formula used:sample size was calculated using the following formula

$$\underline{N_1=N_2=N=[Z_{\alpha/2}\sqrt{2PQ} + Z_1\text{- ß}\sqrt{P_1Q_1+P2Q_2}]^2}$$
$$(P_1 - P_2)^2$$

Inclusion Criteria

- ASA grade I and II.
- Both sex of age group >18yrs
- Undergoing upper limb surgery for elective and emergency

Exclusion Criteria

- History of allergy /sensitivity to local anesthetic agent.
- Bleeding disorders
- History of significant neurological, psychiatric or neuromuscular disorder, Renal dysfunction, Cardiac diseases, Liver diseases.
- Pregnant and lactating women

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

- Infection at the puncture site
- Negative consent

Parameters observed

1. **Mean time to perform bloc**k:from the time of skin disinfection to the end of injection.
2. **Number of attempts**.
3. **Tourniquet tolerance**
4. **Successful block** – defined as analgesia in the all nerves.

(Musculocutaneous, median, ulnar, radial and medial cutaneous nerve of the forearm).

5. **Onset of Sensory block** – A successful sensory block was defined as thesubjective feeling of loss of pain, heaviness, tingling and numbness.
6. **Onset of motor block** – Onset of motor blockade was assessed every 2 minute after the block using four point scale

i. Normal power
ii. Weakness but able to move arm
iii. Not able to move arm but the fingers
iv. Complete motor Blockade

Attaining a score of iii was considered as the onset of motor Block

7. **Duration of motor Blockade** – When (iii) in the four-point scale changes to (ii) the motor blockade is said to be reversed. The duration of motor block in noted from the time from scale (iii) to Scale (ii)
8. **Duration of sensory blockade** – The pain was assessed using visual Analogue scale having 10cm length numbered from 0 to 10. Patient was explained about the visual Analogue scale as 0 – No pain and 10 the worst possible pain and was asked the score in visual analogue scale.
9. **Vital parameters:** Pulse rate,Blood pressure,Respiratory rate, Oxygen saturation, monitored periodically
10. **Complications:** Pneumothorax, Accidental vessel puncture, nerve injury, local anesthetic toxicity.

Methodology

Preparation of the Patient

On the day of the surgery andafter patient's arrival in the operating theatre intravenous RL solution was started @ 10-15 drops/min or 10ml/kg in contralateral forearm. Standard monitoring devices were applied including NIBP, HR, pulse oximeter and ECG.

Patients were allocated to 2 groups, Group L (n=54 patients) and Group C (n=54 patients) by close envelope method.

Group L: supraclavicular Brachial block was given by the Lateral approach

Group C: supraclavicular Brachial block was given by the Classical approach

Techniques

Lateral Approach[4]

The patient was taken in supine with head turned to opposite sideand arm pulled down gently, A small pillow or folded sheet was placed below the shoulder at interscapular area to make the field more prominent.

- The insertion point for Lateral approach was 1 cm above the clavicle at the junction of inner 2/3rd and outer 1/3rd of the clavicle. This point was about 1 cm medial to border of trapezius muscle. The path is behind the omohyoid muscle (posterior triangle of neck) and parallel to clavicle in the interscalene plane.
- Contraction for forearms muscles or biceps was obtained at an electricity intensity of .4 - 0.6 mA. Once nerve plexus located 30 ml of inj. Ropivacaine 0.5% injected after negative aspiration[6].

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

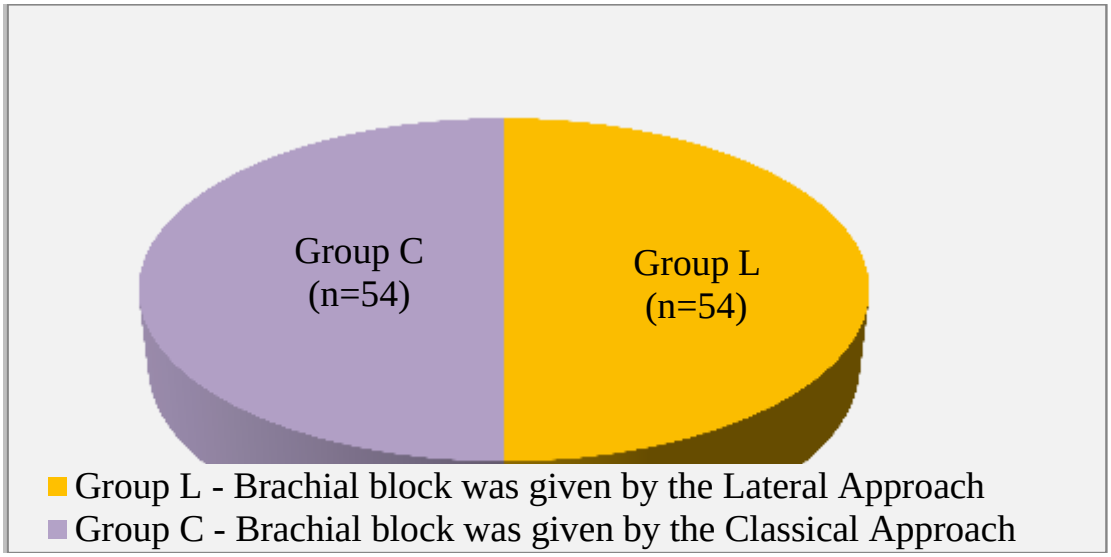
Classical Approach[4]

- Patient was placed in a supine position with the head turned to opposite side from the side to be blocked. The arm was pushed down to depress the clavicle. The posterior border of sternocleidomastoidwas felt, by asking the patient to raise the head while keeping the head turned to opposite side.
- The Insertion point for classical approach was 1cm above the midpoint of the clavicle the pulsation of the Subclavian artery can be felt in theinterscalene groove Subclavian artery guarded by thumb the needle was directed caudally, posteriorly and slightly medially until paresthesia was elicited and remaining procedure same as described in lateral approach[7].

OBSERVATIONS AND RESULTS

Table 1: Distribution according to group

Groups	No. of Patients	Approach for Supraclavicular brachial plexus block
Group L	54	Brachial block was given by the Lateral Approach
Group C	54	Brachial block was given by the Classical Approach



Graph 1: Distribution according to group

Table 2: Distribution of patients according to age

Age (years)	Groups				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Less than 21	8	14.8%	6	11.1%	14	13.0%
21-30	13	24.1%	11	20.4%	24	22.2%
31-40	7	13.0%	12	22.2%	19	17.6%
41-50	13	24.1%	9	16.7%	22	20.4%
51-60	7	13.0%	8	14.8%	15	13.9%
More than 60	6	11.1%	8	14.8%	14	13.0%
Total	54	100.0%	54	100.0%	108	100.0%
Mean±SD	40.26±16.04		41.61±16.49		40.94±16.04	

Unpaired 't' test applied. P value = 0.667, Statistically insignificant

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

Table 3: Distribution of patients according to gender

Gender	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Male	37	68.5%	38	70.4%	75	69.4%
Female	17	31.5%	16	29.6%	33	30.6%
Total	54	100.0%	54	100.0%	108	100.0%

Pearson Chi-Square = 0.044, df =1, p value = 0.835, Statistically insignificant Fisher's Exact Test = 1.000

Table 4: Distribution of patients according to ASA grade

ASA Grade	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Grade I	25	46.3%	24	44.4%	49	45.4%
Grade II	29	53.7%	30	55.6%	59	54.6%
Total	54	100.0%	54	100.0%	108	100.0%

Pearson Chi-Square = 0.037, df = 1, p value =0 .847, Statistically insignificant Fisher's Exact Test=1.000

Table 5: Distribution of patients according to Number of attempts

Number of attempts	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
1	35	64.8%	5	9.3%	40	37.0%
2	17	31.5%	25	46.3%	42	38.9%
3	2	3.7%	22	40.7%	24	22.2%
4	0	0.0%	2	3.7%	2	1.9%
Total	54	100.0%	54	100.0%	108	100.0%
Range	1-3		1-4		1-4	
Mean±SD	1.39±.56		2.39±.71		1.89±.81	

Pearson Chi-Square = 42.690, df = 3, p value 0.000, Highly Significant

Table 6: Comparison of mean time to perform block (in minutes) between the two groups

Groups	No.	Mean±SD	't' value	P value
Group L	54	2.87±.87	-11.601, df=106	0.000
Group C	54	4.72±.79		

Unpaired 't' test applied. P value = 0.000, Highly Significant

Table 7: Comparison of mean time of onset of sensory block (in minutes) between the two groups

Groups	No.	Mean±SD	't' value	P value
Group L	54	9.02±1.37	-1.006, df=106	0.317
Group C	54	9.30±1.50		

Unpaired 't' test applied. P value = 0.317, Statistically insignificant

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

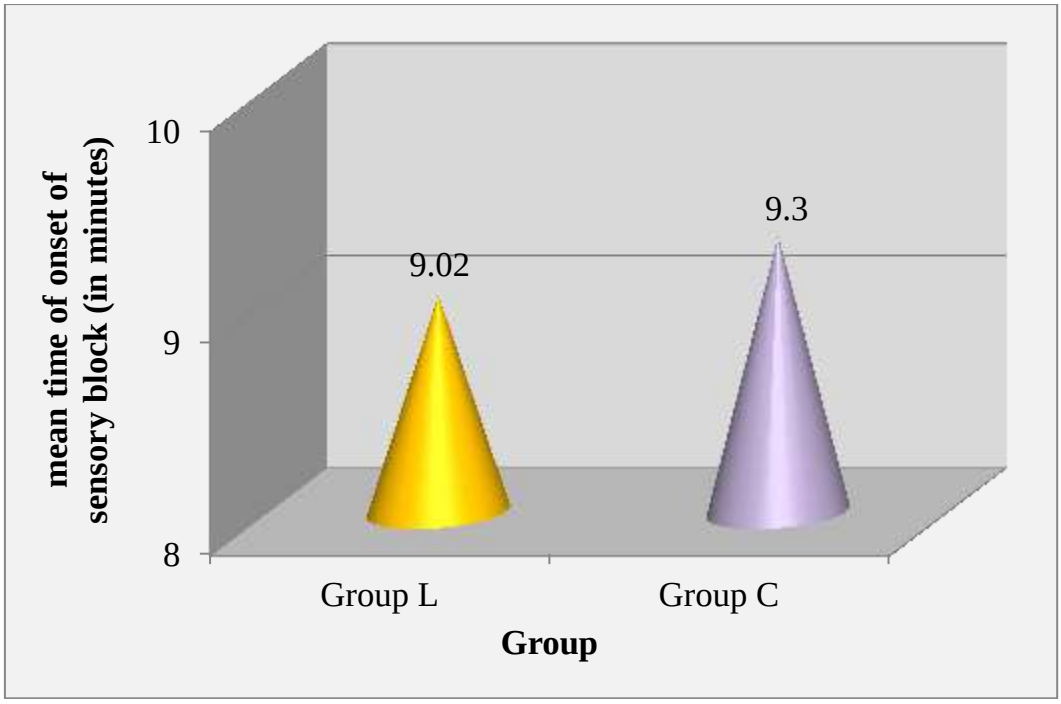


Fig. 7: Comparison of mean time of onset of sensory block (in minutes) between the two groups

Table 8: Comparison of mean time of onset of motor block (in minutes) between the two groups

Groups	No.	Mean±SD	't' value	P value
Group L	54	15.31±1.31	-0.071, df=106	0.944
Group C	54	15.30±1.39		

Unpaired 't' test applied. P value = 0.944, Statistically insignificant

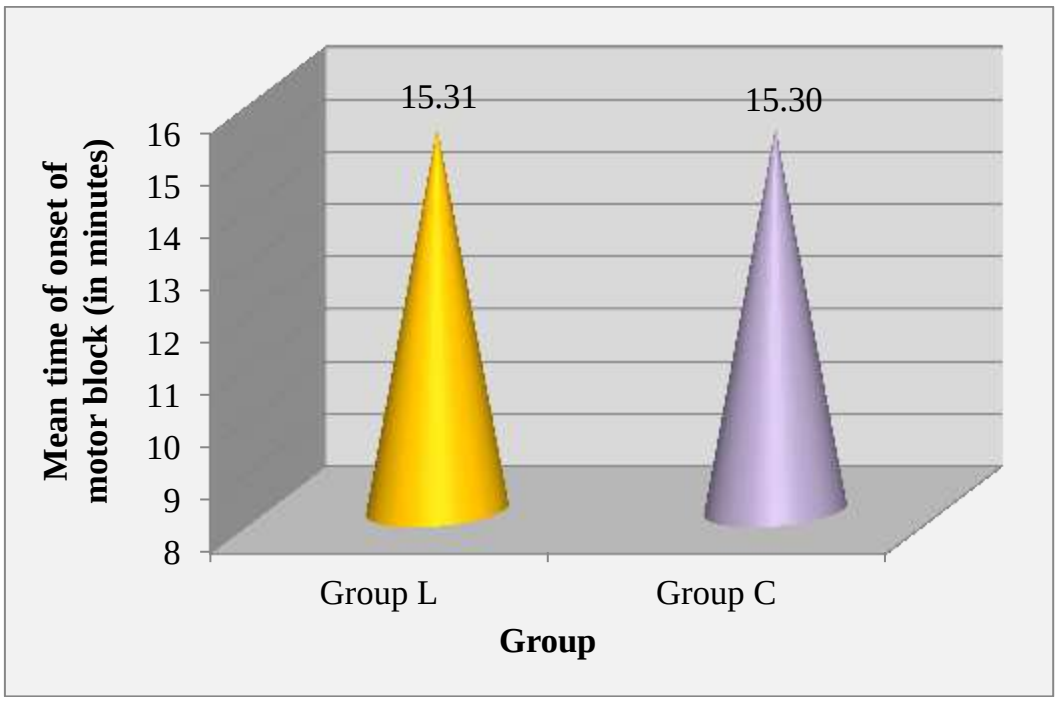


Fig. 8: Comparison of mean time of onset of motor block (in minutes) between the two groups

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

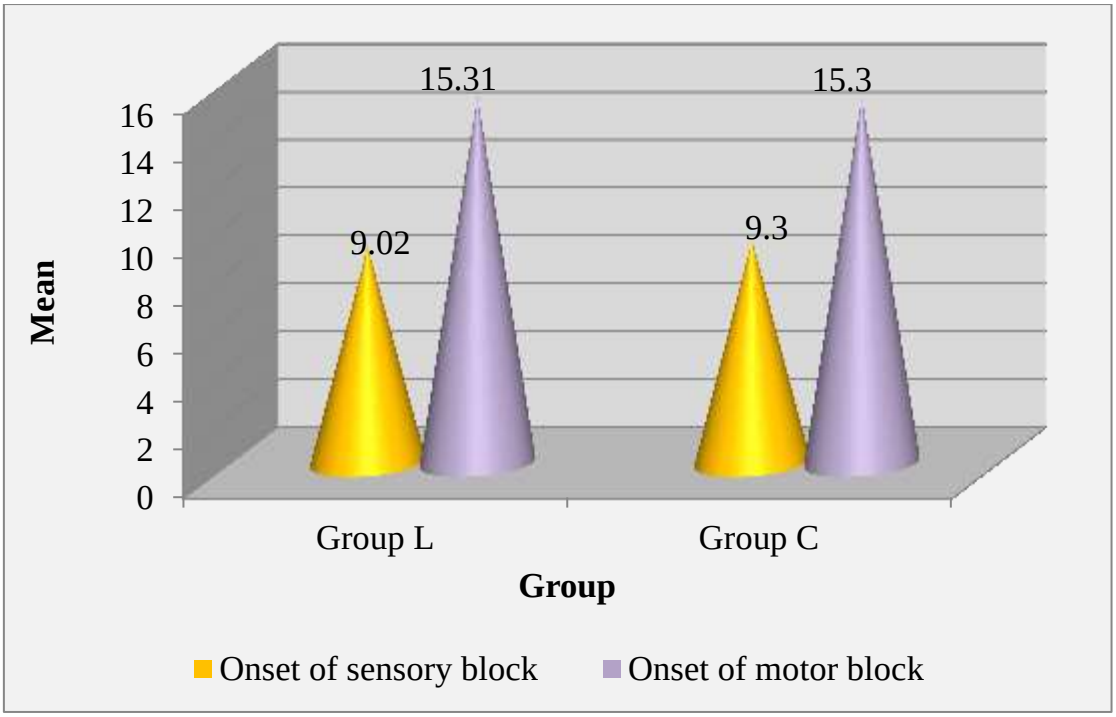


Fig. 9: Comparison of onset of (in minutes) of sensory and motor block in both the groups

Table 9: Comparison of mean duration of sensory block (in minutes) between the two groups

Groups	No.	Mean±SD	't' value	P value
Group L	54	410.93±62.89	1.917, df=106	0.058
Group C	54	388.61±57.97		

Unpaired 't' test applied. P value = 0.058, Statistically insignificant

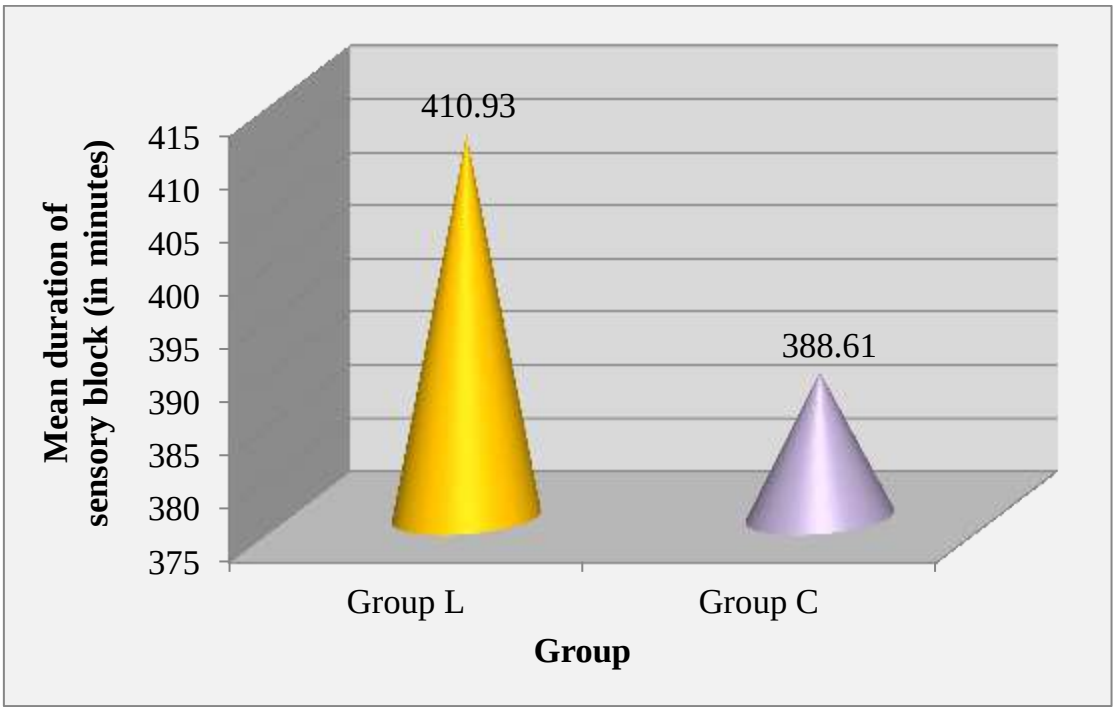


Fig. 10: Comparison of mean duration of sensory block (in minutes) between the two groups

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

Table 10: Comparison of mean duration of motor block (in minutes) between the two groups

Groups	No.	Mean±SD	't' value	P value
Group L	54	277.50±55.03	1.865, df=106	0.065
Group C	54	257.50±56.40		

Unpaired 't' test applied. P value = 0.065, Statistically insignificant

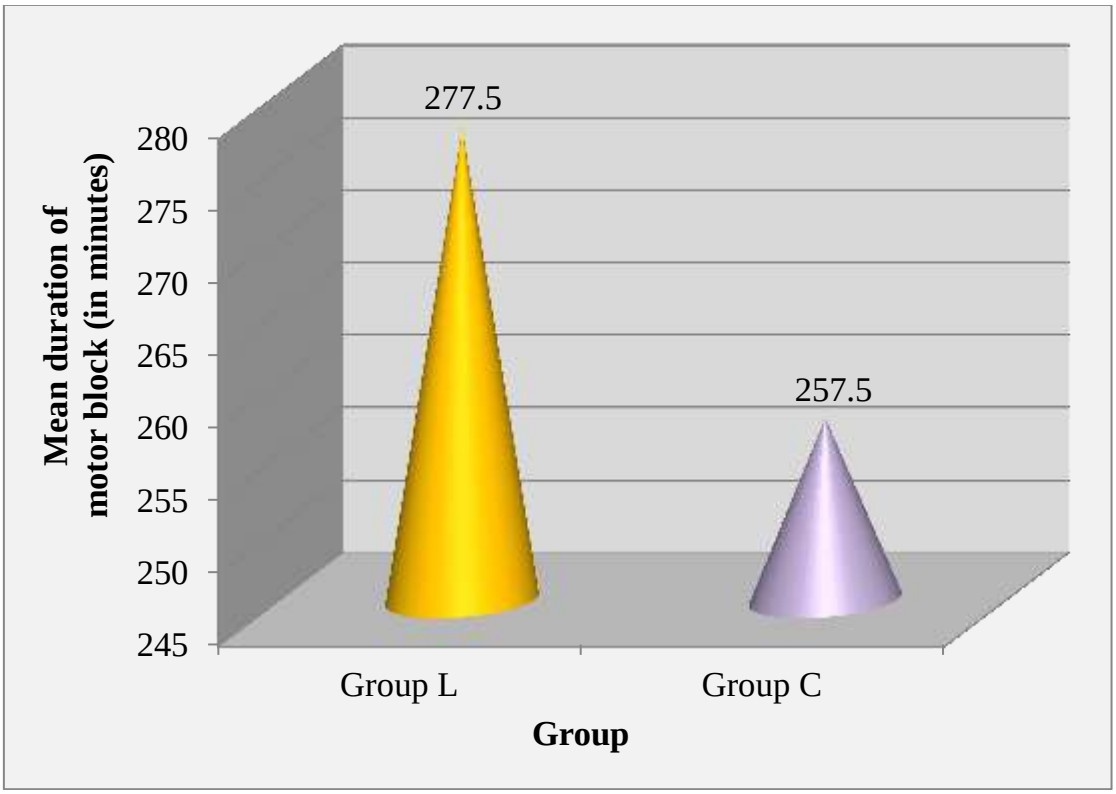


Fig. 11: Comparison of mean duration of motor block (in minutes) between the two groups

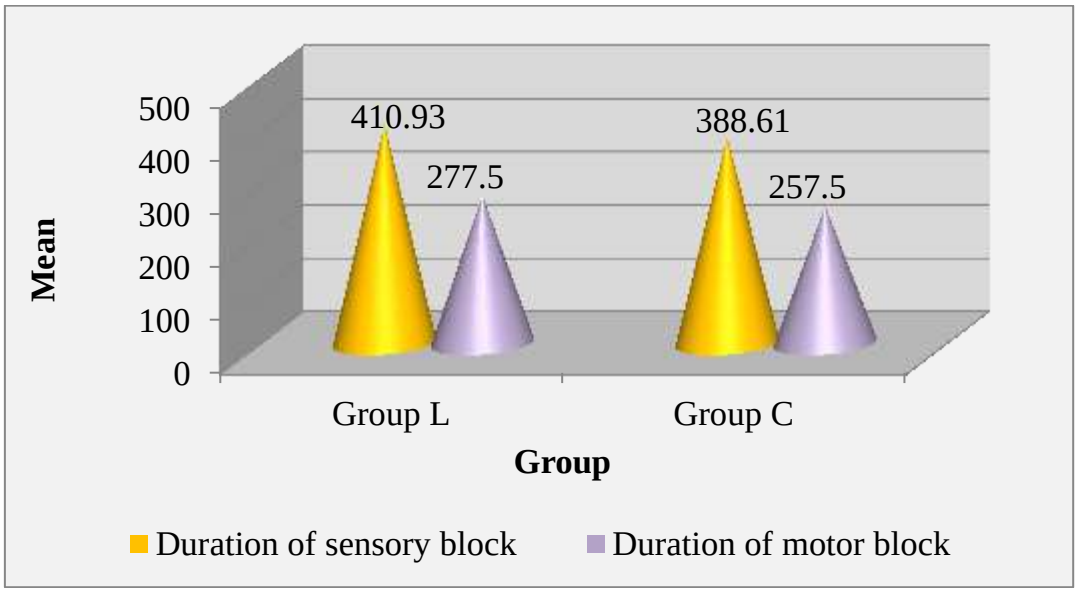


Fig. 12: Comparison of duration (in minutes) of sensory and motor block in both the groups

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

Table 11: Comparison of tourniquet tolerance in both the groups

Tourniquet tolerance	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Good	50	92.6%	40	74.1%	90	83.3%
Fair	4	7.4%	14	25.9%	18	16.7%
Total	54	100.0%	54	100.0%	108	100.0%

Pearson Chi-Square = 0.667, df =1, p value = 0.010, Statistically SignificantFisher's Exact Test = .018

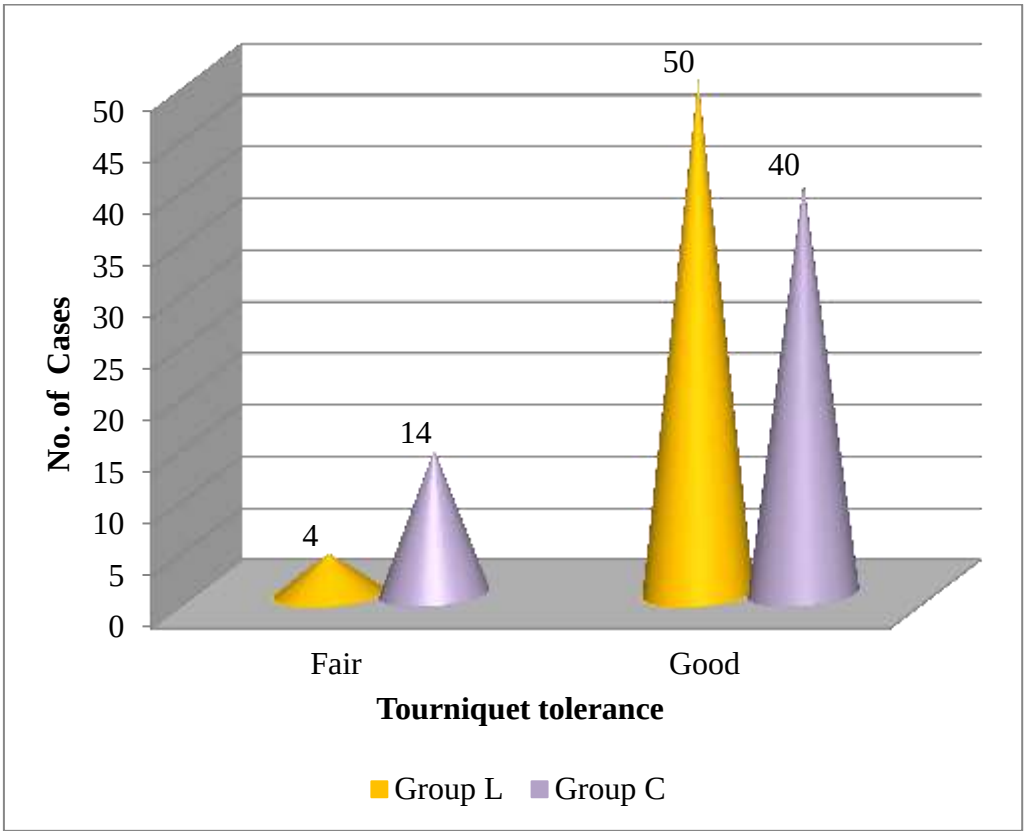


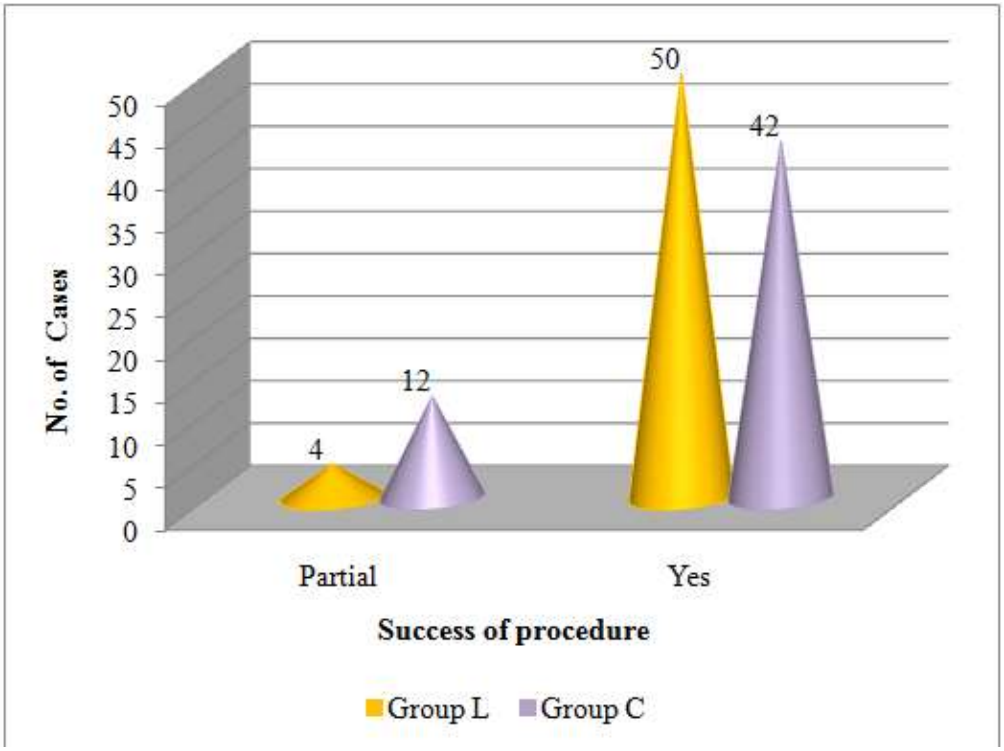
Fig. 13: Comparison of tourniquet tolerance in both the groups

Table 12: Comparison of success of procedure in both the groups

Success of procedure	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Partial	4	7.4%	12	22.2%	16	14.8%
Yes	50	92.6%	42	77.8%	92	85.2%
Total	54	100.0%	54	100.0%	108	100.0%

Pearson Chi-Square = 4.696, df =1, p value = 0.030, Statistically SignificantFisher's Exact Test = 0.055

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

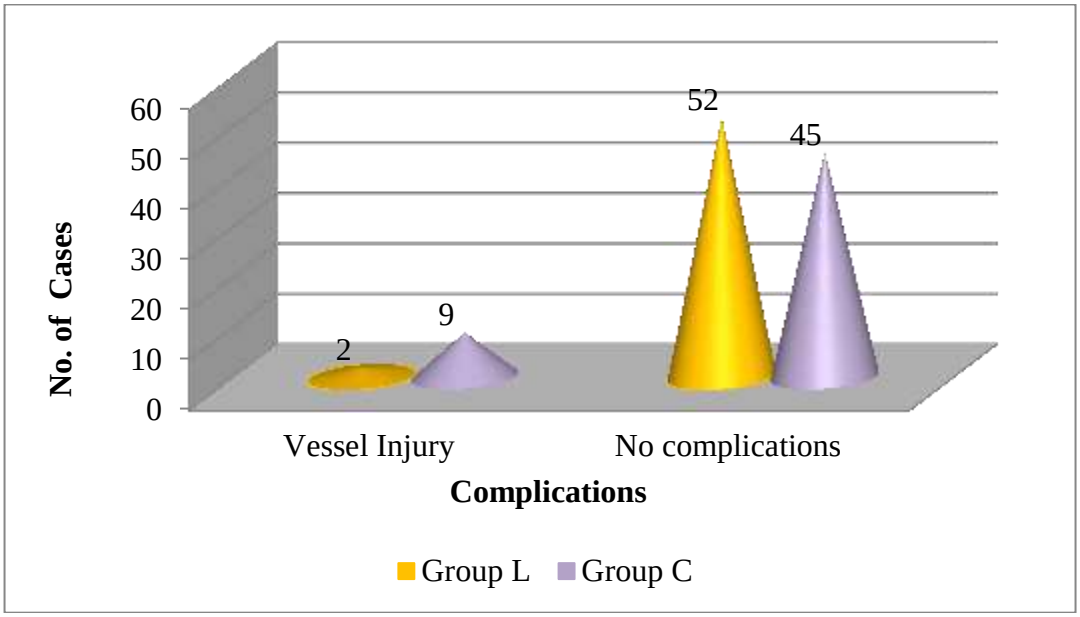


Graph 14: Comparison of Success of procedure in both the groups

Table 13: Comparison of complications in both the groups

Complication	Group				Total	
	Group L		Group C			
	No.	%	No.	%	No.	%
Vessel Injury	2	3.7%	9	16.7%	11	10.2%
No complications	52	96.3%	45	83.3%	97	89.8%
Total	54	100%	54	100%	108	100%

Pearson Chi-Square = 4.960, df =1, p value = 0.026, Statistically SignificantFisher's Exact Test = .052



Graph 15: Comparison of complications in both the groups

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

DISCUSSION

The present study entitled **"A COMPARATIVE CLINICAL STUDY FOR EFFICACY OF LATERAL AND CLASSICAL APPROACH OF SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK WITH 0.5% ROPIVACAINE IN UPPER LIMB SURGERIES"** was a prospective randomized study on 108 patients of ASA grade I and II undergoing upper limb surgeries under supraclavicular brachial plexus block.

Supraclavicular Brachial plexus block also offers a specific advantage to the patients, surgeon, anesthesiologist, and surgical facility. Since anesthesia is limited to a restricted portion of the body on which the surgery was performed, so it is also possible and desirable for the patient to remain ambulatory[4].

Ropivacaine is a local anesthetic which is most commonly used in supraclavicular brachial plexus block now-a-days. It blocks the generation and the conduction of nerve impulses, mainly by increasing the threshold for electrical excitation in the nerve, by slowing the propagation of the nerve impulse, and also by reducing the rate of rise of the action potential.10

Number of Attempts (Table 5)

In **Group L,** 3 attempts were taken in 2 cases (3.7%), 2 attempts in 17 cases (31.5%) and single attempt in 35 cases (64.8%) and the mean value was 1.39±.56. In **Group C**, 4 attempts in 2 cases (3.7%), 3 attempts in 22 case (40.7%), 2 attempts in 25 case (46.3%) and single attempt in 5 cases (9.3%) was taken and the mean valuewas 2.39±.71. The difference was statistically significant ($p<0.01$), showing that significant less numbers of attempts weretaken inLateral group as compared to Classical group.

In accordance with our study, study done by **ZAMIR et al[2]** also showed that the numbers of attempts were less in Lateral approach as compared to Classical approach. The number of attempts in theLateral approach, range from 1 to 3 attempts and mean value was 1.4 with standard deviation of 0.62. In Perivascular approach(conventional), range from 1 to 4 attempts, mean value was 2.33 and standard deviation of 0.71.The difference in both groups was statistically significant ($p = 0.0001$).

Time to Perform the Block (Table 6)

In **Group L,** the time to perform the block ranged from 2- 5 minuteswith the mean value of 2.87±.87. In **Group C**, Time to perform the block ranged from 3-6 minuteswith the mean value of 4.72±.79. The difference between both the groups was statistically significant (p value <0.05), showing that time to perform the block wassignificant less in Group L as compared to group C.

In accordance with our study,**S. ARAULRAJAN et al[4]**in their study concluded that the mean time to perform the block in Lateral approach was less as compared to Classical approach which was statistically significant (p value <0.05).

S.ARAUL RAJAN et al[4] also found similar results and observed that the time to perform block in Lateral approach ranged from 2- 5 minutes with a mean of 2.9 and standard deviation of 0.84 while in Classical approach, the time to perform block range from 3-6 minutes with the mean of 4.7 and standard deviation of 0.92. The difference in both groups was statistically significant ($p = 0.0001$).

Time of Onset of Sensory Block (Table 7)

In **Group L,** meantime for onset of sensory block was 9.02±1.37 minutes while in **Group C**, meantime for onset of sensory block was 9.30±1.50 minuteswhich showed that the mean difference in both the groups was statistically insignificant ($p>0.05$) and both groups were comparable.

Similar findings were seen in study done by **ANJANA et al[5]** and **ZAMIR et al[2],**which showed that the difference in time of onset of sensory block in both groups was statistically insignificant ($p>0.05$) and both the groups are comparable.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

ZAMIR et al[2], found that the time for onset of sensory was 5.893 ± 2.132 minutes in group C, while it was 5.667 ± 2.057 minutes in group L. The difference was statistically insignificant in both group (p value 0.682)

ANJANA et al[5] found that, the mean time to onset of sensory block for classical approach, it was 9.10±1.12 minutes and for lateral approach it was 8.75±0.96 minutes. The difference was statistically insignificant in both groups (P value = 0.13).

Time Of Onset Of Motor Block(Table8)

In **Group L,** meantime for onset of motor block was 15.31±1.31 minutes whileIn **Group C**, meantime of onset of motor block was 15.30±1.39 minutes. The difference between both the groups was statistically insignificant with p value >0.05 and the time of onset of motor block was comparable in both the groups.

Similar findings found by **ANJANA et al**[5], that themean time to onset of motor block for classical approach was 13.25±1.32 minutes and for Lateral approach was 12.85±1.42 minutes which shows statistically insignificant (P value >0.05). The time of onset of motor block was comparable in both the groups.

Duration Of Sensory Block(Table 9)

In **Group L,** meanduration of sensory block was 410.93±62.89 minutesand in**Group C**, meanduration of sensory block was 388.61±57.97 minutes. The mean difference was statistically insignificant with p value >0.05 in both groups. The duration of sensory block in both the groups was comparable.

In accordance of our study,**ANJANA et al**[5] who found out that the duration of sensory block in both the groups was statistically insignificant. (p >0.05). The mean duration of sensory block for classical approach was 188.95±28.45 minutes and for lateral approach was 196.16±30.25and the difference in both groups was statistically insignificant (p value was >0.05).

Duration of Motor Block (Table 10)

In **Group L,** meanduration of motor block was 277.50±55.03 minutes and in **Group C**, meanduration of motor block was 257.50±56.40 minutes. The mean difference was statistically insignificant (p value >0.05) and the duration of motor block in both the groups was comparable.

In accordance of our study;**ZAMIR et al**[2] in their study,the duration of motor block in Classical approach was 172.500 ± 24.664 minutes and in Lateral approach was 179.500 ± 32.599 minutes with p value 0.363 which was statistically insignificant (p>0.05).

Tourniquet Tolerance (Table 11)

In **Group L,** good tourniquet tolerance was observedin 50 patients (92.6%) and fair tourniquet tolerance in 4 patients (7.4%) while in **Group C**, good tourniquet tolerance was observed in 40 patients (74.1%) and fair tourniquet tolerance in 14(25.9%).The above association was found to be statistically significant (p<0.05) which showed Lateral approach is more effective as compared to Classical approach.

In accordance of our study, **S. ARAUL RAJAN et al**[4] in their study also found out that torniquet tolerance was better in lateral approach than classical approach. In their study tourniquet tolerance inLateral approach was good in 29 patients (96.7%) and fair in 3.30% while inClassical approach tourniquet tolerance was good in 23 patients (76.7%) and fair in 7 patient (23.3%). The difference was statistically significant (p = 0.0262).

In another study done by **PRASAD P K et**[3]al, 56 % of patients in classical approach had good torniquet tolerance whereas 80 % of patients in Lateral approach had good torniquet tolerance and the difference was statistically significant (p <0.05). The results of their study were similar to our study.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

Success of Procedure (Table 12)

In **Group L**, totally effective and successful blocks were seen in 50 patients (92.6%) while In **Group C**, totally effective and successful blocks were seen in 42 patients (77.8%). The above association was found to be statistically significant ($p < 0.05$) which shows that totally effective and successful blockade was higher in Lateral approach than classical approach.

PRASAD P K et al[3] in their study found out that the block in classical approach, totally effective blocks were observed in 16 patients (64%) and in Lateral approach, the effective blocks were observed in 22 patients (88%) and the difference was statistically significant (p value <0.05).

ANJANA et al[5] and **ZAMIR et al[2]** in their study also found that success of procedure was higher in Lateral approach than classical approach and the result was statistically significant ($p < 0.05$).

COMPLICATIONS (Table 13)

In **Group L**, 2 patients (3.7%) had vessel injury and in **Group C**, 9 patients (16.7%) hadvessel injury. The above association was found to be statistically significant with p value <0.05 which shows that Lateral approach had lesser complication as compared to classical approach.

In accordance of our study,**S. ARAUL RAJAN et al[4]** found out that in the Lateral approach had no complicationsand in perivascular approach, 7 patients out of 30 had vessel injury. The difference in both groups was statistically significant (p value< 0.05).

ZAMIR et al[2] in their study also reported no vessel injury in Lateral approach as compared to conventional approach in which 4 patients out of 30 had vessel injury. The difference in both groups was statistically significant (p value <0.05).

Other complications such as pneumothorax, Horner's syndrome, phrenic nerve palsy,local anesthetic toxicity was not seen in the group L and C. Study done by **KOTHARI D[7]** also observed no other serious complications such as pleural puncture, pneumothorax with Lateral approach.

Summary

The present study entitled **"A COMPARATIVE CLINICAL STUDY FOR EFFICACY OF LATERAL AND CLASSICAL APPROACH OF SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK WITH 0.5% ROPIVACAINE IN UPPER LIMB SURGERIES**" was conducted at Gajra Raja Medical College and J.A. Group of Hospitals, Gwalior (MP).

Parameters were observed mean time to perform block, number of attempts, onset of sensory and motor block, duration of sensory & motor block and block related complications and tourniquet tolerance.

1. Time to perform block was shorter in Lateral approach when compared to Classical approach.
2. Number of attempts were less in Lateral approach as compared with Classical approach.
3. Onset of both motor and sensory block were same in both groups.
4. Duration of sensory and motor block were also same in both groups
5. Success rate was 92.6% in Lateral approach as compared to Classical approach in which success rate was 77.8%
6. Tourniquet tolerance and its quality was also better in Lateral approach than Classical approach.
7. Only 2 out of 54patients (3.7%) had vessel injury in the Lateral approach and 9 out of 54 patients (16.7%) had vessel injury in the Classical approach. So, complication rate was lesser in Lateral approach as compared to Classical approach.

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These inferences provide evidence that the supraclavicular brachial plexus block by Lateral approach is more effective technique of when compared with Classical approach and is associated with very less incidence of complications as compared with Classical approach.

CONCLUSION

From our study it was concluded that:

1. Supraclavicular brachial plexus block by Lateral approach provides an adequate effective sensory and motor blockade.
2. The Lateral approach takes lesser time to perform the block and had lesser number of attempts as compared to Classical approach.
3. It also had good tourniquet tolerance and high success rate.
4. There were lesser complications in Lateral approach in comparison to the Classical approach.

REFERENCES

1. Pester JM, Varacallo M. Brachial Plexus Block Techniques. 2022 Feb 12. In: Stat Pearls [Internet]. Treasure island (FL): Stat pearls Publishing; 2022 Jan.
2. Zamir SZ, Suresh YV, Kamath SS. Comparison of conventional and lateral approach to supraclavicular brachial block. Indian j public health res dev [Internet]. 2019;10(8):754https://doi.org/10.5958/0976-5506.2019.01980.6
3. Prasad P K, Lakshmi S, Sophia P, Sirisha V. Comparison of lateral approach with conventional approach of supraclavicular brachial plexus block: A prospective randomized comparative study. J evol med dent sci [Internet]. 2014;3(31):8661–9.https://doi.org/10.1016/j.rapm.2005.11.001
4. S.Arul Rajan, M. Bhavani, T. Murugan. Comparative study of lateralapproach and subclavian perivascular approach of supraclavicular brachial plexus block using the peripheral nerve stimulators. IAIM, 2018; 5(5): 57-62.
5. Sahu A, Khadse P, Sadhankar A. Lateral vs classical approach of supraclavicular brachial plexus block for orthopedic surgeries below mid-humerus: A comparative study. Int J Contemp Med Res [IJCMR] [Internet]. 2019;6(10). DOI:10.21276/ijcmr.2019.6.10.2
6. DK Sahu and Anjana Sahu. Lateral approach for Supraclavicular brachial plexus block. Indian J Anaesth. 2010 May-Jun; 54(3): 215–218. DOI: 10.4103/0019-5049.65364
7. Kothari D. Supraclavicular brachial plexus block: A new approach, Indian J Anaesth 2003;47:287-8.
8. McClure JH. Ropivacaine. British Journal of Anaesthesia1996; 76:300-307
9. Partridge BL, Katz J, Benirschke K. Functional anatomy of the brachial plexus sheath: Implications for anesthesia. Anesthesiology, 1987; 66: 743-7.
10. Markham A, Faulds D. Ropivacaine: a review of its pharmacology and therapeutic use in regional anaesthesia. Drugs 1996;52: 429-49
11. Kuthiala G, Chaudhary G. Ropivacaine: A review of its pharmacology and clinical use. Indian J Anaesth. 2011;55(2):104
12. William PL, Warwick R, Dyson M, Bannister LH. Gray's Anatomy . 37th ed London: Churchill Livingstone;1989
13. Winnie AP. Plexus Anaesthesia Vol.1.,1st ed 1984 p.83 81
14. Johnson D, Ellis H. Pectoral girdle and upper limb. In: Gray's- The anatomical basis of clinical practice. 38thEdn. Churchill Livingstone;1999.p.801-941
15. Klein SM, Melton MS, Grill WM, Nielsen KC. Peripheral nerve stimulation in regional anesthesia. Reg Anesth Pain Med [Internet]. 2012;37(4):383–92.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 04, 2023

16. Ranganathan KD, Natarajan K, Karmegam G, Anandan H. Comparative Study of Lateral Approach and Parascalene Approach of Brachial Plexus Block for Upper Limb Surgeries using Nerve Stimulator. Int J Sci Stud 2016;4(4):154-156
17. Singh S, Goyal R, Upadhyay KK, Sethi N, Sharma RM, Sharma A. An evaluation of brachial plexus block using a nerve stimulator versus ultrasound guidance: A randomized controlled trial. J Anaesthesiol Clin Pharmacol2015;31:370-4
18. Kumar, A., Shadangi, B.K., Agarwal, J., & Agnihotri, V.M. (2012). Lateral Approach Of Supraclavicular Brachial Plexus As A Better Alternative To Conventional Supraclavicular Brachial Plexus Block. The Internet Journal of Anesthesiology, 30.