

## A COMPARITIVE STUDY OF BUPIVACAINE 0.5% AND ROPIVACAINE 0.5% FOR SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK (PERIVASCULAR APPROACH)

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**ABSTRACT: INTRODUCTION:** Peripheral nerve blocks have become important in clinical practice because of their role in post-operative pain relief, shortening of patient recovery time & avoiding risks and adverse effects of General anaesthesia. Bupivacaine is a long acting local anaesthetic. Due to its long duration of action and combined with its high quality sensory blockade compared to motor blockade it has been the most commonly used local anaesthetic for peripheral nerve blocks. Ropivacaine is a newer, long acting local anaesthetic whose neuronal blocking potential used in peripheral nerve blockade seems to be equal or superior to Bupivacaine. Studies show that it has significantly greater safety margin over Bupivacaine. Hence here is an attempt through the study to compare Bupivacaine with Ropivacaine in supraclavicular brachial plexus block **AIMS AND OBJECTIVES:** To compare the effect of Bupivacaine 0.5% & Ropivacaine 0.5% used for Supraclavicular approach to brachial plexus block with respect to Onset time of Sensory blockade, Onset time of Motor blockade, Duration of Sensory blockade, Duration of Motor blockade, Duration of Analgesia, Side effects/ Complications. **METHOD OF COLLECTION OF DATA:** Sixty patients aged between 18 years and 60 years, of physical status ASA grade 1 and ASA grade 2 undergoing elective upper limb surgeries lasting more than 30 minutes were included in the study after getting ethical clearance. Each patient was randomly allocated to one of the two groups of 30 patients each. The patients were explained about the procedure and premeditated with Tab Alprazolam 0.5mg. The anesthetic technique employed was supraclavicular brachial plexus block using 30 ml of either 0.5% bupivacaine or 0.5% ropivacaine. **RESULTS:** In our study, we observed that onset time of sensory block was earlier in Bupivacaine group (Group B) having a mean value of  $17.70 \pm 2.35$  minutes in comparison with Ropivacaine group (Group R) having a mean value of  $22.13 \pm 3.05$  minutes, which is statistically significant. onset time of Motor block was earlier in Bupivacaine group (Group B) having a mean value of  $25.43 \pm 2.22$  minutes in comparison with Ropivacaine group (Group R) having a mean value of  $27.90 \pm 1.88$  minutes which is statistically significant. Duration of sensory block was  $342.00 \pm 47.66$  minutes with Bupivacaine group and  $302.00 \pm 42.38$  minutes with Ropivacaine group. The duration of sensory block was longer in Bupivacaine group compared with Ropivacaine group. The Duration of Motor block was  $369.00 \pm 41.05$  minutes with Bupivacaine group and  $336.00 \pm 37.29$  minutes with Ropivacaine group. The duration of Motor block was longer in Bupivacaine group compared with Ropivacaine group. The mean time from onset of block to request of Analgesics was taken as total Duration of Analgesia. The Duration of Analgesia was  $372.00 \pm 42.86$  minutes with Bupivacaine group (Group B) and  $341.00 \pm 36.52$  minutes with Ropivacaine group (Group R) in our study. The duration of Analgesia was longer in Bupivacaine group compared with Ropivacaine group. No patient in our study developed any significant Side effects. **CONCLUSION:** On the basis of our

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study, we can draw the conclusion that at equal volumes Bupivacaine 0.5% has an advantage over Ropivacaine 0.5% for Supraclavicular Brachial Plexus block in terms of early onset of Sensory blockade, early onset of Motor blockade, Prolonged Duration of Sensory blockade, Prolonged Duration of Motor blockade, Prolonged Duration of Analgesia.

**KEYWORDS:** Supraclavicular brachial plexus block, perivascular approach, bupivacaine, ropivacaine.

**INTRODUCTION:** Peripheral nerve blocks have become important in clinical practice because of their role in post-operative pain relief, shortening of patient recovery time & avoiding risks and adverse effects of General anaesthesia. Hence, peripheral nerve blockade is now a well-accepted concept for comprehensive anaesthetic care.

Regional nerve blocks are based on the concept that pain is conveyed by nerve fibers, which can be interrupted anywhere along their pathway. For upper limb Surgeries, Brachial plexus block is the preferred Regional anaesthesia technique<sup>1</sup>. Brachial plexus block<sup>2</sup> at the supraclavicular level provides anaesthesia for the upper limb surgeries by blocking the middle & lower plexus<sup>3</sup> (Median, Radial and Ulnar N).

Local anaesthetics administered as regional nerve blocks provide post-operative pain relief by blocking signal transmission to dorsal horn<sup>4</sup>. Bupivacaine is a long acting local anaesthetic<sup>5</sup>. Due to its long duration of action and combined with its high quality sensory blockade compared to motor blockade it has been the most commonly used local anaesthetic for peripheral nerve blocks.

Ropivacaine is a newer, long acting local anaesthetic whose neuronal blocking potential used in peripheral nerve blockade seems to be equal or superior to Bupivacaine.<sup>6</sup> Studies shows that it has significantly greater safety margin over Bupivacaine because of lower CNS and Cardiac toxicity<sup>7</sup> and hence can be used in higher concentrations. One of the drawbacks of Ropivacaine mentioned is its less intense motor blockade compared to Bupivacaine.<sup>8</sup>

Hence here is an attempt through the study to compare Bupivacaine with Ropivacaine in supraclavicular brachial plexus block<sup>9</sup>. This study is designed to compare 30 ml of Bupivacaine 0.5 % and 30 ml of Ropivacaine 0.5 % for supraclavicular brachial plexus block by perivascular approach.

**AIMS AND OBJECTIVES OF THE STUDY:** The present study was a prospective study at Kempegowda Institute Of Medical Sciences, Bangalore in the Department of Anaesthesiology with the objective to compare the effect of Bupivacaine 0.5% & Ropivacaine 0.5% used for Supraclavicular approach to brachial plexus block with respect to:

- Onset time of Sensory blockade.
- Onset time of Motor blockade.
- Duration of Sensory blockade.
- Duration of Motor blockade.
- Duration of Analgesia.
- Side effects/ Complications.

**MATERIALS AND METHODS: Source of data:** Present study entitled "A Comparative study of Bupivacaine 0.5% and Ropivacaine 0.5% for supraclavicular Brachial plexus block (Perivascular approach)" was carried out in the department of Anaesthesiology, Kempegowda Institute Of Medical Sciences, Bangalore from December 2011 to July 2013.

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**Study Design:** Comparative randomized study.

**Sample Size:** Two groups of 30 each.

**Sampling Method:** Simple random sampling.

**Statistical Analysis:** Student's t-test.

**METHOD OF COLLECTION OF DATA:** Sixty patients aged between 18 years and 60 years, of physical status ASA grade 1 and ASA grade 2 undergoing elective upper limb surgeries lasting more than 30 minutes were included in the study after getting ethical clearance from the college ethical committee.

Each patient was visited pre-operatively and the procedure explained and written and informed consent was obtained. Complete blood count, Blood grouping, Blood sugars, Bleeding time, Clotting time, Blood urea, Serum Creatinine, serum electrolytes (sodium, potassium, chloride) chest x-ray, ECG were done. All the patients were pre-medicated with tablet Alprazolam 0.5mg overnight and the morning of surgery.

**Inclusion Criteria:** Patients aged between 18 years to 60 years under physical status ASA grade 1 and ASA grade 2, of weight 50 kg to 80 kg scheduled for elective upper limb surgeries after obtaining written informed consent from patient/ patient attenders.

**Exclusion Criteria:** Known allergy to local anaesthetics, Patient's refusal, History of Cardiovascular disorders, Neuromuscular disorders, Bleeding disorders or patient on Anticoagulant therapy, Hepatic failure, Renal failure, pregnancy, Brachial plexus injury, Local infections.

Each patient was randomly allocated to one of the two groups of 30 patients each:

Group B – i.e., Bupivacaine group receives 30 ml Bupivacaine 0.5% (5 mg/ml).

Group R – i.e., Ropivacaine group receives 30 ml Ropivacaine 0.5% (5 mg/ml).

All the necessary equipment and drugs needed for administration of general anaesthesia were kept ready in order to manage failure of block.

**PROCEDURE:** Intravenous access obtained in the limb opposite to that undergoing surgery with a large bore iv cannula. Standard multi parameter monitors (Datex Ohmeda) ECG, Pulse oximeter, Noninvasive blood pressure were connected and monitored in all the patients and recorded at interval of 5 minute in the first 30 minutes and every 30 minutes thereafter.

Patient was placed in supine position with the head turned away from the side to be blocked. Arm to be anaesthetized adducted and extended towards the ipsilateral knee as far as possible. Supraclavicular area aseptically prepared and draped. An intradermal wheal raised about 1 cm above the mid-clavicular point.

Sub-clavian artery palpable in supraclavicular fossa was used as landmark. A 23gauge needle inserted behind the artery in backward-inward-downward direction till paresthesia in the forearm elicited. After negative aspiration for blood, 30 ml of respective drug was injected depending on whether patient is allotted to either of group B or R.

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**ASSESSMENT OF SENSORY BLOCK:** Sensory block was assessed by pin prick with 23g hypodermic needle in skin dermatomes c4-t2 once in every minute for initial 30 minutes and then after every 30 minutes till patient regained normal sensations and graded according to Visual analogue scale (VAS) as:

- 0-No Pain.
- 2-Annoying (Mild pain).
- 4-Uncomfortable (Moderate pain).
- 6-Dreadful (Severe pain).
- 8-Horrible (Very severe pain).
- 10-Agonizing (Worst possible pain).

**ASSESSMENT OF MOTOR BLOCK:** Quality of motor block was assessed at the same intervals and graded according to Modified Lovett's Scoring as:

- Grade 6- Normal.
- Grade 5 –slightly reduced muscular force.
- Grade 4 – pronounced reduction.
- Grade 3 – slightly impaired mobility.
- Grade 2 – pronounced mobility impairment.
- Grade 1 – Almost complete paralysis.
- Grade 0 – Complete paralysis.

**The effect on the following parameters were Observed:**

- Onset time of Motor blockade- taken from the completion of injection of study drug till the patient develops motor blockade.(Lovett's Grade 1)
- Onset time of Sensory blockade- taken from the completion of injection of study drug till the patient does not feel the pin prick.(Visual analogue scale score -0)
- Duration of Motor blockade- taken from the Onset of Motor blockade till complete recovery of motor power. (Lovett's grade 6)
- Duration of Sensory blockade – taken from the Onset of Sensory blockade till the patient feels pin prick. (visual analogue scale of 2)
- Duration of Analgesia - taken as the time between the onset of sensory action and onset of pain, was the time when patient received first dose of analgesic. Supplemental analgesia was given when visual analogue scale score was more than 4.

Patients were watched for Bradycardia, Convulsions, Restlessness, Disorientation, Drowsiness, Nausea, Vomiting & any other complications.

All the values were expressed as Mean±Standard deviation; statistical comparison was performed by student's t-test & chi-square test.

A two tailed p value of >0.05 was considered to be statistically not significant, a p value of <0.05 as statistically significant, a p value of <0.01 as statistically highly significant & a p value of <0.001 as statistically very highly significant.

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**RESULTS:** The present study was conducted on 60 consenting patients aged between 18-60 years. Group B received 30ml of 0.5% Bupivacaine. Group R received 30ml of 0.5% Ropivacaine for Brachial plexus block by supraclavicular approach.

### Demographic Data:

Age in years	Group B		Group R	
	No	%	No	%
21-30	7	23.3	7	23.3
31-40	10	33.3	9	30.0
41-50	10	33.3	12	40.0
51-60	3	10.0	2	6.7
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>
Mean $\pm$ SD	39.47 $\pm$ 9.12		39.23 $\pm$ 9.09	

**Table 1: Age distribution of patients studied**

Samples are age matched with P=0.921.

Gender	Group B		Group R	
	No	%	No	%
Male	23	76.7	21	70.0
Female	7	23.3	9	30.0
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

**Table 2: Gender distribution of patients studied**

Samples are gender matched with P=0.559.

As shown in table1, both the groups, Group B (Bupivacaine) and Group R (Ropivacaine) are age matched.

As shown in table 2, both the groups, Group B (Bupivacaine) and Group R (Ropivacaine) are gender matched.

Height (cm)	Group B		Group R	
	No	%	No	%
<160	6	20.0	5	16.7
160-170	17	56.7	20	66.7
>170	7	23.3	5	16.7
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

**TABLE 3: DISTRIBUTION OF PATIENTS ACCORDING TO HEIGHT (cms)**

As shown in table 3, both the groups are matched with respect to the Height of the patient.

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Weight (kg)	Group B		Group R	
	No	%	No	%
<60	7	23.3	8	26.7
60-70	13	43.3	15	50.0
70-80	10	33.3	7	23.3
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

**Table 4: DISTRIBUTION OF PATIENTS ACCORDING TO WEIGHT (Kg)**

As shown in table 4, both the groups, group B and group R, are matched with respect to weight of the patients.

HR	Group B	Group R	P value
0 min	86.63±6.99	84.03±7.98	0.185
5 min	86.27±6.49	82.80±7.21	0.055
10 min	84.67±5.88	81.80±6.65	0.082
15 min	82.07±4.86	79.53±7.23	0.117
20 min	80.13±5.20	77.87±6.17	0.129
25 min	76.67±4.62	76.53±5.61	0.920
30 min	74.67±4.34	74.73±4.74	0.955

**TABLE 5: COMPARISON OF HEART RATE IN TWO GROUPS STUDIED**

As shown in table 5, Heart rate variation between the groups, group B and group R, at every 5 minute interval from 0-30 min, is not statistically significant ( $p>0.05$ ).

SBP (mm Hg)	Group B	Group R	P value
0 min	126.53±8.22	124.47±7.53	0.314
5 min	126.33±6.69	125.13±6.05	0.469
10 min	123.80±5.81	122.93±6.21	0.579
15 min	121.87±5.68	120.07±6.23	0.247
20 min	117.80±5.57	117.60±5.74	0.892
25 min	116.00±5.38	116.20±5.37	0.886
30 min	114.00±4.90	114.80±4.44	0.510

**Table 6: COMPARISON OF SYSTOLIC BLOOD PRESSURE (mm hg) IN TWO GROUPS STUDIED**

As shown in table 6, systolic blood pressure (mm hg) variation between the groups, group B and group R, at every 5 min interval from 0-30 minutes, is not statistically significant ( $p>0.05$ ).

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<b>DBP (mm Hg)</b>	<b>Group B</b>	<b>Group R</b>	<b>P value</b>
0 min	79.87±5.43	81.60±6.40	0.263
5 min	79.73±2.27	80.73±5.45	0.357
10 min	79.47±3.52	79.27±5.77	0.872
15 min	79.47±1.96	78.13±4.95	0.176
20 min	76.93±4.63	77.67±4.24	0.525
25 min	76.13±4.81	76.73±5.77	0.663
30 min	75.60±4.74	76.20±4.44	0.615

**TABLE 6: COMPARISON OF DIASTOLIC BLOOD PRESSURE (mm hg) IN TWO GROUPS STUDIED**

As shown in table 6, Diastolic blood pressure (mm hg) variation between the groups, Group B and Group R, at every 5 min interval from 0-30 minutes, is not statistically significant ( $p>0.05$ ).

<b>MAP (mm Hg)</b>	<b>Group B</b>	<b>Group R</b>	<b>P value</b>
0 min	95.42±5.75	95.89±5.79	0.755
5 min	95.27±3.24	95.53±5.06	0.809
10 min	94.24±3.42	93.82±4.65	0.690
15 min	93.60±2.72	92.11±4.74	0.141
20 min	90.56±4.48	90.98±4.18	0.707
25 min	89.42±4.63	89.89±4.46	0.692
30 min	88.40±4.37	89.07±3.87	0.534

**Table 7: COMPARISON OF MEAN ARTERIAL PRESSURE (mm hg) IN TWO GROUPS STUDIED**

As shown in table 7, Mean blood pressure (mm hg) variation between the groups, Group B and Group R, at every 5 min interval from 0-30 minutes, is not statistically significant ( $p>0.05$ ).

<b>Study variables</b>	<b>Group B</b>	<b>Group R</b>	<b>P value</b>
<b>DOS</b>	<b>123.50±31.87</b>	<b>114.67±25.43</b>	<b>0.240</b>

**Table 8: COMPARISON OF DURATION OF SURGERY(DOS) IN TWO GROUPS STUDIED**

As seen in table 8, There is no statistically significant difference found between the two groups with respect to the duration of surgery ( $p>0.05$ ).

<b>Study variables</b>	<b>Group B</b>	<b>Group R</b>	<b>P value</b>
SENSORY ONSET TIME	17.70±2.35	22.13±3.05	<0.001
MOTOR ONSET TIME	25.43±2.22	27.90±1.88	<0.001

**TABLE 9: COMPARISON OF GROUP B AND GROUP R ON THE BASIS OF ONSET TIME OF SENSORY AND MOTOR BLOCKADE**

Onset time of Sensory and Motor blockade was earlier in Group B when compared with Group R. The p value was < 0.001 which is statistically very highly significant.

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Study variables	Group B	Group R	P value
DURATION OF SENSORY BLOCKADE	342.00±47.66	302.00±42.38	0.001
DURATION OF MOTOR BLOCKADE	369.00±41.05	336.00±37.29	0.002

**Table 10: COMPARISON OF GROUP B AND GROUP R ON THE BASIS OF DURATION OF SENSORY AND MOTOR BLOCKADE**

Duration of Sensory and Motor blockade was prolonged in Group B when compared with Group R. The p value was 0.001 and 0.002 respectively which is statistically very highly significant.

Study variables	Group B	Group R	P value
DURATION OF ANALGESIA	372.00±42.86	341.00±36.52	0.004

**TABLE 11: COMPARISON OF GROUP B AND GROUP R ON THE BASIS OF DURATION OF ANALGESIA**

Duration of Analgesia was prolonged in Group B when compared with Group R. The p value was 0.004 which is statistically very highly significant.

Complication	Group B		Group R	
	No	%	No	%
Nil	28	93.3	30	100.0
Vomiting	2	6.7	0	0.0
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

**TABLE 12: COMPLICATIONS/ SIDE EFFECTS**

As shown in table 12, the side effects/ complication rate are almost negligible if right dose is used and properly deposited.

**DISCUSSION:** Brachial plexus blockade for upper limb surgeries is the most common major peripheral nerve block technique. The supraclavicular approach to brachial block is carried at the level of trunks of brachial plexus. It provides most effective blockade since plexus is blocked at the middle of Brachial plexus, resulting in homogenous spread of anaesthetic drug throughout the plexus.

A significant difference exists between various local anaesthetics like Lignocaine, Mepivacaine, Bupivacaine in terms of Onset times, total Duration and safety profile when used in Brachial blocks. Ropivacaine is a newer long acting amide local anaesthetic found to be equally efficacious to Bupivacaine, but with a better safety profile when used in Brachial block.

Sixty ASA 1 and ASA 2 patients undergoing elective upper limb surgeries lasting more than 30 minutes were included in the study. Patients were divided into 2 groups of 30 each (Group B and Group R). Group B received supraclavicular Brachial plexus block with 30 ml of 0.5% Bupivacaine.

Group R received supraclavicular Brachial plexus block with 30 ml of 0.5% Ropivacaine. Parameters observed included Onset time of sensory block, Onset time of Motor block, Duration of Sensory block, Duration of Motor block, Duration of Analgesia and Side effects.

**Patient characteristics across the Groups:** The patients in our study groups did not vary much with respect to Age, Sex, Height or Weight.

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The type of surgeries performed was almost identical in both the groups. The study groups did not vary much with respect to Duration of surgery (Statistically not significant).

**Changes in the perioperative cardiovascular Parameters:** There was no significant difference between the study groups with respect to pattern of changes in Heart rate, Systolic blood pressure, Diastolic blood pressure, Mean arterial pressure peri operatively.

**Onset time of Sensory and Motor block:** In our study, we observed that onset time of sensory block was earlier in Bupivacaine group (Group B) having a mean value of  $17.70 \pm 2.35$  minutes in comparison with Ropivacaine group (Group R) having a mean value of  $22.13 \pm 3.05$  minutes, which is statistically significant.

In our study, we observed that onset time of Motor block was earlier in Bupivacaine group (Group B) having a mean value of  $25.43 \pm 2.22$  minutes in comparison with Ropivacaine group (Group R) having a mean value of  $27.90 \pm 1.88$  minutes which is statistically significant.

Hence, we conclude that Bupivacaine 0.5 % has an advantage of early onset of Sensory and Motor blockade when compared to Ropivacaine 0.5% for Supraclavicular brachial plexus block at equal volume.

**Duration of Sensory block and Motor block:** In our study the Duration of sensory block was  $342.00 \pm 47.66$  minutes with Bupivacaine group and  $302.00 \pm 42.38$  minutes with Ropivacaine group. The duration of sensory block was longer in Bupivacaine group compared with Ropivacaine group, which is statistically significant.

The Duration of Motor block was  $369.00 \pm 41.05$  minutes with Bupivacaine group and  $336.00 \pm 37.29$  minutes with Ropivacaine group. The duration of Motor block was longer in Bupivacaine group compared with Ropivacaine group, which is statistically significant.

Hence, we conclude that Bupivacaine 0.5 % has an advantage of prolonged Duration of Sensory and Motor blockade when compared to Ropivacaine 0.5% for Supraclavicular brachial plexus block at equal volume.

**Duration of Analgesia:** The mean time from onset of block to request of Analgesics was taken as total Duration of Analgesia. The Duration of Analgesia was  $372.00 \pm 42.86$  minutes with Bupivacaine group (Group B) and  $341.00 \pm 36.52$  minutes with Ropivacaine group (Group R) in our study. The duration of Analgesia was longer in Bupivacaine group compared with Ropivacaine group, which is statistically significant.

**Adverse Effects/ Complications:** No patient in our study developed any significant Side effects. In our study 2 patients in the Bupivacaine group complained of Nausea and had vomiting compared to none of the patients in Ropivacaine group. This signifies that adverse effects were not significant in both the groups.

**Summary:** The study was a prospective, randomized study carried out at Kempegowda Institute of Medical Sciences, Bangalore. Sixty ASA 1 and ASA 2 patients undergoing elective upper limb surgeries lasting more than 30 minutes were included in the study.

Patients were divided into 2 groups of 30 each. (Group B and Group R). Group B received supraclavicular Brachial plexus block with 30 ml of 0.5% Bupivacaine. Group R received

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supraclavicular Brachial plexus block with 30 ml of 0.5% Ropivacaine. Parameters observed included Onset time of sensory block, Onset time of Motor block, Duration of Sensory block, Duration of Motor block and Duration of Analgesia, Side effects.

Under all asepsis, all the patients were administered Supraclavicular Brachial plexus block by perivascular approach. All necessary equipment's and drugs needed for administration of general anaesthesia were kept ready in order to manage failure of the block.

The patients in our study groups did not vary much with respect to Age, Sex, Height or Weight. The type of surgeries performed was almost identical in both the groups. The study groups did not vary much with respect to Duration of surgery (Statistically not significant).

There was no significant difference between the study groups with respect to pattern of changes in Heart rate, Systolic blood pressure, Diastolic blood pressure, Mean arterial pressure perioperatively.

Onset of sensory blockade was faster in Group B (Bupivacaine) i.e.,  $17.70 \pm 2.35$  minutes compared to Group R (Ropivacaine) i.e.,  $22.13 \pm 3.05$  minutes which was statistically significant. Duration of sensory blockade was also longer in Group B (Bupivacaine) i.e.,  $342.00 \pm 47.66$  minutes compared to Group R (Ropivacaine) i.e.,  $302.00 \pm 42.38$  minutes and was statistically significant. Onset of Motor blockade was faster in Group B (Bupivacaine) i.e.,  $25.43 \pm 2.22$  minutes compared to Group R (Ropivacaine) i.e.,  $27.90 \pm 1.88$  minutes which were statistically significant.

Duration of Motor blockade was also longer in Group B (Bupivacaine) i.e.,  $369.00 \pm 41.05$  minutes compared to Group R (Ropivacaine) i.e.,  $336.00 \pm 37.29$  minutes and was statistically significant. Also, the time for demand of analgesics was prolonged in Group B (Bupivacaine) i.e.,  $372.00 \pm 42.86$  minutes compared to Group R (Ropivacaine) i.e.,  $341.00 \pm 36.52$  minutes and this difference was statistically significant.

With the present study we can summarize that Bupivacaine 0.5 % has early onset of Sensory blockade, early onset of Motor blockade, Prolonged Duration of Sensory blockade, Prolonged Duration of Motor blockade, Prolonged Duration of Analgesia when compared to Ropivacaine 0.5 % at equal volumes. Both the drugs maintain stable hemodynamic profile peri operatively and are devoid of any side effects at the concentration and volumes used for the study.

**CONCLUSION:** On the basis of our study, we can draw the conclusion that at equal volumes Bupivacaine 0.5% has an advantage over Ropivacaine 0.5% for Supraclavicular Brachial Plexus block in terms of:

- Early onset of Sensory blockade.
- Early onset of Motor blockade.
- Prolonged Duration of Sensory blockade.
- Prolonged Duration of Motor blockade.
- Prolonged Duration of Analgesia.

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