ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

# Comparison Of Effect Of Buprenorphine Versus Phenylephrine As An Adjuvant To Bupivacaine InUltrasound Guided Supraclavicular Block.

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**ABSTRACT**

Supraclavicular approach to brachial plexus block is routinely used all over the world for surgeries of upper limb because of the anatomical ease of blocking nerve roots at this level of brachial plexus. Over many years many adjuvant drugs like vasoconstrictor adrenaline have been tried with local anesthetics to prolong intraoperative anesthesia and postoperative analgesia. peripheral opioid administration improves regional anesthesia without centrally mediated side effects. This Randomised comparative double blinded study was conducted in patients admitted to SVMCH & RC in the year December 2019 to June 2021 for elective upper limb surgical procedure below shoulder. Total sample of 90 of which 45 in one group and 45 in other group. Due to covid 19 pandemic, we were unable to collect full sample size, hence reporting with obtained sample size of 52. The aim of our study is to analyze the block characteristics, the quality and duration of analgesic effects of buprenorphine and phenylephrine as an adjuvant to bupivacaine in supraclavicular brachial plexus block for upper limb surgeries below shoulder. among the study population, those who undergone bupivacaine with phenyl pine the mean duration of sensory blockade in mins was 457.58 ± 63.15 and those who undergone bupivacaine with buprenorphine the mean duration of sensory blockade in mins was 426.67 ± 44.53. the mean difference of duration of sensory blockade in mins between study group was statistically significant (p value 0.048) among the study population, those who undergone bupivacaine with phenyl pine the mean duration of motor blockade (in mins) was 385.65 ± 60.07 and those who undergone bupivacaine with buprenorphine the mean duration of motor blockade (in mins) was 361.9 ± 37.76. the mean difference of duration of motor blockade (in mins) between study group was not statistically significant (p value 0.115) among the study population, those who undergone bupivacaine with phenyl pine the mean time for 1st rescue analgesia in mins was 462.58 ± 63.15 and those who undergone bupivacaine with buprenorphine the mean time for 1st rescue analgesia in mins was 431.67 ± 44.53. the mean difference of time for 1st rescue analgesia in mins between study group was not statistically significant (p value 0.058) we conclude that both phenylephrine and buprenorphine can be effectively used as an adjuvant to bupivacaine in supraclavicular block to prolong the duration of block as well as analgesia.

**Keywords:** Buprenorphine, Phenylephrine, Brachial Plexus Block, Ultrasound.

https://doi.org/10.33887/rjpbcs/2023.14.6.70

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ISSN: 0975-8585

## INTRODUCTION

According to the International Association for the Study of Pain, pain is defined as "an unpleasant sensory and/or emotional experience associated with current or perceived tissue damage, or expressed in terms of such injury" [1]. Physiological and Psychological impacts of pain can be considerable during and after surgery. Anaesthesia has evolved through the years as new procedures and medications have been developed to offer anaesthesia and analgesia with the fewest possible adverse effects [2]. Regional anaesthesia is a method of numbing a specific part of the body to allow procedures to be done without affecting the consciousness of the patient [3]. Peripheral nerve blocks involvesinjecting an anaesthetic drug closer to a peripheral nerve to stop pain signals from reaching thebrain by inhibiting impulse transmission distally in a nerve terminal. Nerve blocks are effective in providing anaesthesia for procedures involving the extremities, treating acute pain as well as diagnosing and treating persistent pain [4]. This is preferred over general anaesthetic for the several advantages it has to offer, including the avoidance of airway manipulation, fewer drugs, less systemic adverse effects and shorter recovery time. Post procedural recovery time has beenproven to be shortened with these techniques because of much lower pain levels after surgery, early ambulation and initiation of physical therapy [5]. Our study is about one such commonly performed peripheral nerve block for upper extremity. Brachial plexus block offers excellent anaesthesia for the entire upper limb [6]. Supraclavicular approach is preferred among the various techniques to brachial plexus block because it is densely organised and encased in a fascial sheath at this location. Some factors to be considered to ensure success of brachial plexus block are the knowledge about the anatomy ofthe plexus and landmarks, precise needle insertion, and the proper injection of local anaesthetic solution [7]. The use of ultrasound for these purposes further enhances the success rate by aiding in deposition of drug closer to nerve precisely, thus lowering the risk of harm to nearby tissues, and also nerve injuries by avoiding intraneural injection. It also reduces the amount of local anaesthetic used, lowering the risk of systemic toxicity [8].

## MATERIALS AND METHODS

This Randomised comparative double blinded study was conducted in Patients admitted to SVMCH & RC in the year December 2019 to June 2021 for elective upper limb surgical procedure below shoulder. Total sample of 90 of which 45 in one group and 45 in other group .Due to covid 19 pandemic, we were unable to collect full sample size, hence reporting withobtained sample size of 52.

### Inclusion criteria

- ASA I & II
- All patients aged 20 to 70 years
- Patients undergoing elective upper limb surgeries below shoulder.

### Exclusion criteria

- Patient refusal
- Infection at the site of injection
- Coagulation disorders
- Hypersensitivity to local anaesthetics and opioids
- Patients with history of hypertension, myocardial infarction and peripheral neuropathy.

Complete pre anaesthetic evaluation was done to all the patients who met our inclusion criteria and consenting for this study.All Patients were pre medicated before night with Tab. Pantoprazole 40mg, Tab. Metoclopramide 10 mg and Tab. Alprazolam 0.5mg.The study population were randomized into either of the two groups (Group B or Group P) by computer generated randomization method. In ***Group B [BUPRENORPHINE]:*** The patients received 20ml of 0.5% Bupivacaine with 3 µg/kg Buprenorphine [Drawn from 300µg/ml solution using insulin syringe and made to 1 ml by addition of normal saline] In ***Group P [PHENYLEPHRINE]****:* The patients received 20ml of 0.5% Bupivacaine with 150µg of Phenylephrine [0.75 ml of 200µg/ml solution drawn using insulin syringe and made to 1ml by addition of 0.25 ml of normal saline] **Blinding** - The principal investigator who performs all ultrasound-guided supraclavicular BPBs and collects procedural data and will take no further part in data collection. Patients who are recruited for the study will be unaware of the group allocation. The anesthesiologist (outcome assessor) who performs the sensory-motor assessment after the BPB will not be present during

block placement and will be also blinded to group allocation. After shifting to operating room, intravenous access was secured with 18 G cannula. Baseline vitals [BP, pulse rate, Spo2, ECG and temperature] were recorded and continually monitored. Under strict aseptic precautions, supraclavicular block was performed under ultrasound guidance as described earlier. After a satisfactory drug deposition, the final needle removal time will be taken as Block Time "Zero" for assessment of onset of sensory and motor blockade. Assessment was done by a blinded observer every 5 minutes till motor and sensory block was attained. Sensory blockade was assessed in the territories of musculocutaneous nerve (MCN) - lateral forearm, median nerve (MN) - tip of middle finger, ulnar nerve (UN) - tip of little finger and radial nerve (RN) - anatomical snuff box. Commencing 60 min after the block, VAS will be assessed at hourly intervals for the next 4 hours and at 2, 4, 6, 8, 10, 12, and 24 hours after surgery. VAS pain score was assessed usinga 10-point numeric rating scale (0 = no pain and 10 = worst imaginable pain). Paracetamol (1 g) and diclofenac sodium (50 mg) were administered intravenously, as a slow infusion (over 15 minutes), for rescue analgesia whenever the numeric rating scale pain score increased greater than 3. The time of administration of the first dose of rescue analgesia was also recorded and number of rescue analgesics required for the first 24 hours was noted. Other side effects like nausea, vomiting, pruritus, shivering and drowsiness were noted. Sensory-motor assessment was also be repeated at 24 hours after the BPB to ensure that there was no residual block, neurological deficit, or both. The Patients also were directly questioned for the presence of any symptoms suggestive of persistent paresthesia or dysesthesia in the same upper extremity.

**Statistical analysis**

The data obtained was analysed by statistical package for social science (SPSS Version 23.O).Age, weight, height, Blood pressure, pulse rate, onset and duration of motor and sensory block, duration of analgesia, VAS score, time for first rescue analgesia and total number of rescue analgesics in 24 hours were analysed using Descriptive statistics and student 't' test was used for comparison between two groups. Quality of Surgical analgesia, Pruritus, nausea, vomiting, shivering were analysed using Chi-square test. This test was used to assess the difference between two proportions and the association between the two variables.

**Table 1: Descriptive analysis of age in study population (N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Age | 33.19 ± 11.11 | 32.00 | 17.00 | 67.00 |

Among the study population, the mean age was 33.19 ± 11.11 (17 to 67)

**Table 2 Descriptive analysis of group in the study population (N=52)**

| Group | Frequency | Percentages |
|---|---|---|
| Bupivacaine with Phenylephrine | 31 | 59.62% |
| Bupivacaine with Buprenorphine | 21 | 40.38% |

Among the study population, 59.62% of them received Bupivacaine with Phenylephrine in block and 40.38% of them received Bupivacaine with Buprenorphine.

**Table 3: Descriptive analysis of anesthetic technique in the study population (N=52)**

| Anesthetic Technique | Frequency | Percentages |
|---|---|---|
| Left side supraclavicular block under ultrasound guidance | 13 | 25.00% |
| Right side supraclavicular block under ultrasound guidance | 39 | 75.00% |

Among the study population Anaesthetic Technique, 25.00% of them undergone left side supraclavicular block under ultrasound guidance and 75.00% of them undergone right side

supraclavicular block under ultrasound guidance.

**Table 4: Descriptive analysis of pulse /min, SBP, DBP, baseline spo2 in study population(N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Pulse /Min | 80.12 ± 10.3 | 80.00 | 58.00 | 100.00 |
| SBP | 121.18 ± 10.89 | 120.00 | 110.00 | 140.00 |
| DBP | 76.47 ± 8.2 | 70.00 | 70.00 | 90.00 |
| Baseline Spo2 | 4.86 ± 19.31 | 0.99 | 0.98 | 100.00 |

Among the study population, the mean pulse was 80.12 ± 10.3, the mean SBP was 121.18 ± 10.89, the mean DBP was 76.47 ± 8.2 and the mean SPO2 was 4.86 ± 19.31.

**Table 5: Descriptive analysis of height, weight, BMI in study population (N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Height (cm) | 161.94 ± 7.23 | 162.00 | 143.00 | 180.00 |
| Weight (Kg) | 64.78 ± 14.51 | 62.00 | 35.00 | 115.00 |
| BMI | 24.74 ± 5.28 | 24.00 | 16.60 | 44.90 |

Among the study population, the mean height was 161.94 ± 7.23, the mean weight was 64.78 ± 14.51, the mean BMI was 24.74 ± 5.28.

**Table 6: Descriptive analysis of Hb gm%, RBS mg/dl, urea mg/dl, creatinine mg/dl in study population (N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Hb Gm% | 13.69 ± 2.12 | 14.05 | 9.00 | 18.20 |
| Rbs Mg/Dl | 108.33 ± 32.85 | 99.50 | 72.00 | 264.00 |
| Urea Mg/Dl | 22.85 ± 7.11 | 20.00 | 16.00 | 50.00 |
| Creatinine Mg/Dl | 0.82 ± 0.19 | 0.80 | 0.60 | 1.30 |

Among the study population, the mean hb was 13.69 ± 2.12, the mean RBS was 108.33 ± 32.85,the mean urea was 22.85 ± 7.11, the mean creatinine was 0.82 ± 0.19.

**Table 7: Descriptive analysis of duration of surgery in study population (N=)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Duration Of Surgery | 2.05 ± 0.46 | 2.00 | 1.00 | 3.00 |

Among the study population, the mean Duration Of Surgery was 2.05 ± 0.46.

**Table 8: Descriptive analysis of time of onset of sensory blockade in min, time of onsetof motor blockade in min in study population (N=)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Time Of Onset Of Sensory Blockade In Min | 3.65 ± 0.84 | 3.00 | 2.00 | 6.00 |
| Time Of Onset Of Motor Blockade In Min | 7.35 ± 1.15 | 8.00 | 4.00 | 10.00 |

Among the study population, the mean Time Of Onset Of Sensory Blockade In Min was 3.65 ± 0.84, the mean Time Of Onset Of Motor Blockade In Min was 7.35 ± 1.15.

ISSN: 0975-8585

**Table 9: Descriptive analysis of heart rate across different time period in studypopulation (N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| 0 Min | 79.56 ± 10.03 | 78.00 | 58.00 | 120.00 |
| 5 Mins | 78.69 ± 8.97 | 78.00 | 56.00 | 108.00 |
| 15 Mins | 77.5 ± 9 | 78.00 | 54.00 | 100.00 |
| 30 Mins | 76.83 ± 9.08 | 79.00 | 52.00 | 94.00 |
| 60 Mins | 76.27 ± 9.46 | 78.00 | 52.00 | 94.00 |
| 120 Mins | 75.27 ± 9.37 | 76.00 | 52.00 | 94.00 |
| 360 Mins | 75.5 ± 9.56 | 77.00 | 52.00 | 93.00 |
| 720 Mins | 75.63 ± 9.71 | 78.00 | 54.00 | 92.00 |
| 24s | 75.21 ± 10.12 | 78.00 | 54.00 | 100.00 |

Among the study population, the mean heart rate was 79.56 ± 10.03, 78.69 ± 8.97, 77.5 ± 9, 76.83 ± 9.08, 76.27 ± 9.46, 75.27 ± 9.37, 75.5 ± 9.56, 75.63 ± 9.71, 75.21 ± 10.12 at 0 mins, 5 mins,15 mins,30 mins,60 mins,120 mins,360 mins,720 mins, 24 s respectively.

**Table 10: Descriptive analysis of SBP across different time period in study population(N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| 0 Min | 120.54 ± 11.82 | 120.00 | 100.00 | 150.00 |
| 5 Mins | 120.13 ± 12.34 | 120.00 | 101.00 | 160.00 |
| 15 Mins | 138.9 ± 137.72 | 120.00 | 99.00 | 1110.00 |
| 30 Mins | 118.92 ± 10.99 | 120.00 | 99.00 | 157.00 |
| 60 Mins | 119.75 ± 10.78 | 120.00 | 96.00 | 158.00 |
| 120 Mins | 119.71 ± 10.69 | 120.00 | 99.00 | 144.00 |
| 360 Mins | 139.83 ± 151.66 | 120.00 | 101.00 | 1210.00 |
| 720 Mins | 120.13 ± 11.37 | 120.00 | 106.00 | 158.00 |
| 24s | 118.83 ± 10.17 | 120.00 | 106.00 | 146.00 |

Among the study population, the mean SBP was 120.54 ± 11.82, 120.13 ± 12.34, 138.9 ± 137.72, 118.92 ± 10.99, 119.75 ± 10.78, 119.71 ± 10.69, 139.83 ± 151.66, 120.13 ± 11.37, 118.83 ± 10.17 at 0 mins,5 mins,15 mins,30 mins,60 mins,120 mins,360 mins,720 mins, 24 srespectively.

**Table 11: Descriptive analysis of DBP across different time period in study population(N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| 0M DBP MMHG | 74.94 ± 8.58 | 70.00 | 55.00 | 90.00 |
| 4M DBP | 73.81 ± 7.91 | 70.00 | 53.00 | 90.00 |
| 15 DBP | 74.15 ± 8.87 | 70.00 | 52.00 | 100.00 |
| 30 M DBP | 73.62 ± 9.05 | 70.00 | 55.00 | 100.00 |
| 60M DBP | 74.58 ± 8.81 | 77.00 | 55.00 | 96.00 |
| 120 M DBP | 75.77 ± 8.59 | 72.00 | 56.00 | 100.00 |
| 360M DBP | 73.73 ± 7.86 | 70.00 | 50.00 | 100.00 |
| 720M DBP | 73.79 ± 6.38 | 70.00 | 58.00 | 90.00 |
| 24S DBP | 74.12 ± 5.99 | 70.00 | 60.00 | 90.00 |

Among the study population, the mean DBP was at 74.94 ± 8.58, 73.81 ± 7.91, 74.15 ± 8.87, 73.62 ± 9.05, 74.58 ± 8.81, 75.77 ± 8.59, 73.73 ± 7.86, 73.79 ± 6.38, 74.12 ± 5.99 at 0 mins, 5 mins,15 mins,30 mins,60 mins,120 mins,360 mins,720 mins, 24 s respectively.

ISSN: 0975-8585

**Table 12: Descriptive analysis of MAP across different time period in study population(N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| 0M MAP | 91.12 ± 10.29 | 86.00 | 77.00 | 116.00 |
| 4M MAP | 88.92 ± 8.08 | 86.00 | 73.00 | 110.00 |
| 15 M MAP | 88.48 ± 8.4 | 86.00 | 72.00 | 116.00 |
| 30 M MAP | 88.83 ± 9.43 | 86.00 | 71.00 | 116.00 |
| 60M MAP | 89.21 ± 9.07 | 90.00 | 69.00 | 116.00 |
| 120M MAP | 108.15 ± 126.09 | 91.50 | 72.00 | 997.00 |
| 360M MAP | 88.67 ± 8.03 | 86.00 | 73.00 | 116.00 |
| 24S MAP | 87.88 ± 7 | 86.00 | 73.00 | 110.00 |

Among the study population, the mean MAP was at 91.12 ± 10.29, 88.92 ± 8.08, 88.48 ± 8.4, 88.83 ± 9.43, 89.21 ± 9.07, 108.15 ± 126.09, 88.67 ± 8.03, 87.88 ± 7 at 0 mins, 4 mins, 15 mins,30 mins,60 mins,120 mins,360 mins, 24 s respectively.

**Table 13: Descriptive analysis of spo2 across different time period in study population(N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| 0M SPO2 | 99.62 ± 0.49 | 100.00 | 99.00 | 100.00 |
| 4M SPO2 | 99.67 ± 0.55 | 100.00 | 98.00 | 100.00 |
| 15M SPO2 | 99.77 ± 0.43 | 100.00 | 99.00 | 100.00 |
| 60M SPO2 | 99.79 ± 0.41 | 100.00 | 99.00 | 100.00 |
| 120M SP02 | 99.73 ± 0.49 | 100.00 | 98.00 | 100.00 |
| 360M SPO2 | 99.75 ± 0.48 | 100.00 | 98.00 | 100.00 |
| 720M SPO2 | 99.79 ± 0.41 | 100.00 | 99.00 | 100.00 |
| 24S SP02 | 99.81 ± 0.4 | 100.00 | 99.00 | 100.00 |

Among the study population, the mean SPO2 was at 99.62 ± 0.49, 99.67 ± 0.55, 99.77 ± 0.43, 99.79 ± 0.41, 99.73 ± 0.49, 99.75 ± 0.48, 99.79 ± 0.41, 99.81 ± 0.4 at 0 mins, 4 mins, 15 mins, 60 mins,120 mins,360 mins, 720 mins, 24 s respectively.

**Table 14: Descriptive analysis of duration of sensory blockade in mins, duration of motorblockade (in mins), time for 1st rescue analgesia in mins in study population (N=52)**

| Parameter | Mean ± SD | Median | Minimum | Maximum |
|---|---|---|---|---|
| Duration Of Sensory Blockade In Mins | 445.1 ± 57.95 | 420.00 | 360.00 | 660.00 |
| Duration Of Motor Blockade (In Mins) | 376.06 ± 53.1 | 360.00 | 300.00 | 600.00 |
| TimeFor1St Rescue Analgesia In Mins | 450.1 ± 57.95 | 425.00 | 365.00 | 665.00 |

Among the study population, the mean Duration of Sensory Blockade In Mins was 445.1 ± 57.95, the mean Duration Of Motor Blockade (In Mins) was 376.06 ± 53.1, the mean Time For1St Rescue Analgesia In Mins was 450.1 ± 57.95.

**Table 15: Descriptive analysis of VAS across different time period in study population(N=52)**

| Parameter | Median (IQR) |
|---|---|
| Vas 1 | 0 (0 to 0) |
| Vas 2 | 0 (0 to 0) |
| Vas 3 | 0 (0 to 0) |
| Vas 4 | 0 (0 to 0) |
| Vas 7 | 6 (6 to 6) |
| Vas 10 | 4 (4 to 4) |
| Vas 13 | 2 (2 to 2) |

| | |
|---|---|
| Vas 16 | 2 (2 to 2) |
| Vas19 | 2 (2 to 2) |
| Vas 21 | 2 (2 to 2) |
| Vas 24 | 2 (2 to 2) |

Among the study population, the median VAS score was 6 (6 to 6), 4 (4 to 4), 2 (2 to 2), 2 (2 to 2), 2 (2 to 2), 2 (2 to 2), 2 (2 to 2) at 7 hours, 10 hours, 13 hours, 16 hours, 19 hours, 21hours, 24 hours respectively.

**Table 16: Comparison of mean of duration of sensory blockade in mins between group(N=52)**

| Parameter | GROUP (Mean± SD) | | P value |
|---|---|---|---|
| | Bupivacaine with Phenylepine (N=31) | Bupivacaine with Buprenorphine (N=21) | |
| Duration of sensory Blockade in mins | 457.58 ± 63.15 | 426.67 ± 44.53 | 0.048 |

Among the study population, those who undergone Bupivacaine with Phenylpine the mean Duration Of Sensory Blockade In Mins was 457.58 ± 63.15 and those who undergone Bupivacaine with Buprenorphine the mean Duration Of Sensory Blockade In Mins was 426.67 ± 44.53. The mean difference of Duration Of Sensory Blockade In Mins between study group was statistically significant (p value0.048)

**Table 18: Comparison of mean of duration of motor blockade (in mins) between group (N=52)**

| Parameter | GROUP (Mean± SD) | | P value |
|---|---|---|---|
| | Bupivacaine with Phenylepine(N=31) | Bupivacaine with Buprenorphine(N=21) | |
| Duration Of Motor Blockade (In Mins) | 385.65 ± 60.07 | 361.9 ± 37.76 | 0.115 |

Among the study population, those who undergone Bupivacaine with Phenyl pine the mean DURATION OF MOTOR BLOCKADE (IN MINS) was 385.65 ± 60.07 and those who undergone Bupivacaine with Buprenorphine the mean DURATION OF MOTOR BLOCKADE (IN MINS) was 361.9 ± 37.76. The mean difference of DURATION OFMOTOR BLOCKADE (IN MINS) between study group was not statistically significant (p value 0.115)

**Table 19: Comparison of mean of time for 1st rescue analgesia in mins between group (N=52)**

| Parameter | GROUP (Mean± SD) | | P value |
|---|---|---|---|
| | Bupivacaine with Phenylepine (N=31) | Bupivacaine withBuprenorphine (N=21) | |
| Time For 1st Rescue Analgesia In Mins | 462.58 ± 63.15 | 431.67 ± 44.53 | 0.058 |

Among the study population, those who undergone Bupivacaine with Phenyl pine the mean Time For 1st Rescue Analgesia In Mins was 462.58 ± 63.15 and those who undergone Bupivacaine with Buprenorphine the mean Time For 1st Rescue Analgesia In Mins was 431.67 ± 44.53. The mean difference of Time For 1st Rescue Analgesia In Mins between study group was not statistically significant (p value 0.058)

## DISCUSSION

Many orthopedic, plastic and reconstructive surgeries might be prolonged, hence adding an adjuvant to local anaesthetic in nerve blocks would be necessary to help in avoiding conversionto general anaesthesia in the middle of the surgery, and also would offer adequate postoperative analgesia thus avoiding use of multiple drugs, in turn negating its side effects. The success of a brachial plexus block is dependent on nerve location, precise needle placement, and the proper injection of local anaesthetic

solution. The use of ultrasound for these purposes increases the success rate while simultaneously lowering the risk of injury to nearby structures, such as nerve injuries. It also reduces the volume of local anaesthetics, which reduces the risk of systemic toxicity [9]. Buprenorphine is an opioid with, a longer duration of action, ease of availability, and low cost, so it was chosen for this study [10]. It has been successfully utilised as an adjuvant to local anaesthetic in a variety of regional anaesthetic procedures to extend analgesia duration [11]. Phenylephrine is a selective -alpha1 adrenergic agonist that causes vasoconstriction, delaying the absorption of local anaesthetics injected [12]. As a result, the local anesthetic's activity at that spot is prolonged. We intended to compare the block characteristics, quality, and duration of analgesic effects of Buprenorphine and Phenylephrine as an adjuvant to Bupivacaine in supraclavicular brachial plexus block for upper limb procedures below the shoulder. Hence the aim of this study was tostudy the onset and duration of sensory blockage between the two groups. Among the study population, the mean age was 33.19 ± 11.11 (17 to 67). This was supported by the results in a study conducted by Patil Setal**,** where the mean age was found to be 34 years [13]. Among the study population Anaesthetic Technique, only one- fourth of them undergone left side supraclavicular block under ultrasound guidance and whereas majority of them undergone right side supraclavicular block under ultrasound guidance. This may due to the fact that majority of the participants had the habit of using right the most. Among the study population, the mean pulse was 80.12 ± 10.3, the mean SBP was 121.18 ± 10.89, the mean DBP was 76.47 ± 8.2 and the mean SPO2 was 4.86 ± 19.31. Baseline vital parameters were similar between both groups. The mean BMI belonged to the category of Normal BMI. Among the study population, the mean Duration of Surgery was 2 hours. Among the study population, the mean Time of Onset of Sensory Blockade in Min was 3.65 ±0.84, the mean Time of Onset of Motor Blockade In Min was 7.35 ± 1.15 [14]. Among the study population, those who received Bupivacaine with Phenylephrine, the mean duration of sensory blockade in minutes was 457.58 ± 63.15 and those who received Bupivacaine with Buprenorphine, the mean duration of sensory blockade in minutes was 426.67 ± 44.53. The mean difference of duration of sensory blockade in minutes between study group was statistically significant (p value 0.048). This reveals that the duration of block was significantly prolonged in group which received bupivacaine with phenylephrine [15]. The mean duration of motor blockade in patients undergone bupivacaine with phenylephrine is better as when it is compared with the group that received Bupivacaine with buprenorphine.However, this difference is not statistically significant [16-20].

## CONCLUSION

The supraclavicular block is safe alternative to general anesthesia for upper limb surgeries. Dueto the advancements in regional anesthesia with the use of ultrasound guidance, it is consideredto be safer and more successful than surface landmark approach. Our study revealed that the duration of sensory and motor block as well as the time required for first rescue analgesic wasprolonged in group which received phenylephrine compared to buprenorphine, though only the prolonged duration of sensory block was found to be statistically significant. Hence, we conclude that both phenylephrine and buprenorphine can be effectively used as an adjuvant tobupivacaine in supraclavicular block to prolong the duration of block as well as analgesia.

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