Section: Anaesthesiology

Original Research Article

COMPARITIVE EVALUATION OF ROPIVACAINE AND ROPIVACAINE WITH DEXAMETHASONE IN USG GUIDED SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK FOR UPPER EXTREMITY SURGERIES

Boga Sowmya[1], Pravin Ubale[2], Mangi Manasa[3]

[1]Junior Resident, Department of Anaesthesiology, Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, Maharashtra, India.
[2]Additional Professor, Department of Anaesthesia, Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, Maharashtra, India.
[3]Junior Resident, Department of Anaesthesiology, Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, Maharashtra, India.

Received *: 16/07/2026*
Received in revised form *: 18/08/2026*
Accepted *: 01/09/2026*

Corresponding Author:
Dr. Boga Sowmya,
Junior Resident, Department of Anaesthesiology, Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, Maharashtra, India.
Email: bsowmya246@gmail.com

DOI: 10.70034/ijmedph.2026.3.674

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (3); 4311-4316

ABSTRACT

Background: Ultrasound-guided supraclavicular brachial plexus block is a widely used regional anaesthetic technique for upper extremity surgeries. The addition of adjuvants to local anaesthetics has been explored to improve block characteristics and prolong postoperative analgesia. Dexamethasone has emerged as a promising adjuvant due to its analgesic and anti-inflammatory properties**. Aim:** To compare the efficacy of ropivacaine alone and ropivacaine with dexamethasone in ultrasound-guided supraclavicular brachial plexus block for upper extremity surgeries.
Materials and Methods: This prospective randomized comparative study included 80 ASA Grade I and II patients aged 18–60 years undergoing elective upper limbsurgeries. Patients were allocated into two groups of 40 each. Group R received 23 mL of 0.5% ropivacaine with 2 mL normal saline, while Group R+D received 23 mL of 0.5% ropivacaine with 2 mL dexamethasone.
The onset and duration of sensory and motor blockade, duration of postoperative analgesia, Visual Analogue Scale(VAS)scores, and hemodynamic parameters were assessed**.**

Results: The R+D group demonstrated significantly faster onset of sensory block (5.0 ± 1.24 vs. 5.97 ± 1.44 min; p=0.004) and motor block (9.05 ± 1.89 vs. 11.50 ± 2.54 min; p<0.001). Sensory block duration (625 ± 75.6 vs. 432 ± 67.9 min), motor block duration (547 ± 73.5 vs. 378 ± 61.4 min), and duration of analgesia (736 ± 80.0vs. 493 ± 84.6 min) were significantly longer in the R+D group (p<0.001). Postoperative VAS scores were significantly lower with dexamethasone. Hemodynamic parameters remained stable in both groups
Conclusion: Dexamethasone is an effective and safe adjuvant to ropivacaine in ultrasound-guided supraclavicular brachial plexus block. It significantly hastens block onset, prolongs sensory and motor blockade, extends postoperative analgesia, and improves postoperative pain control without causing significant hemodynamic instability.
Keywords: Ropivacaine, Dexamethasone, Supraclavicular Brachial Plexus Block, Ultrasound Guidance, Postoperative Analgesia, Upper Extremity Surgery, Regional Anaesthesia.

INTRODUCTION

Regional anaesthesia has become an integral component of modern anaesthetic practice, particularly for upper extremity surgeries, owing to its ability to provide effective intraoperative anaesthesia, prolonged postoperative analgesia, reduced opioid consumption, decreased risk of aspiration due to intact pharyngeal and laryngeal reflexes, better hemodynamic stability and early patient recovery. Among the various regional anaesthetic techniques, the supraclavicular brachial plexus block is widely regarded as one of the most reliable approaches for surgeries involving the arm, forearm, and hand because it produces dense anaesthesia of the upper limb distal to the shoulder. The introduction of ultrasound guidance has further revolutionized the practice of brachial plexus blockade by enabling direct visualization of neural structures, adjacent vessels, pleura, and needle trajectory, thereby improving block success rates and minimizing complications such as vascular puncture and pneumothorax.[1,2]

Ropivacaine is a long-acting amide local anaesthetic that has gained popularity for peripheral nerve blocks due to its favorable pharmacological profile. Compared with bupivacaine, ropivacaine possesses lower cardiotoxicity and neurotoxicity while providing effective sensory and motor blockade. Its differential blockade characteristics favor sensory over motor block at lower concentrations, making it particularly suitable for ambulatory and orthopedic procedures. Despite these advantages, the duration of analgesia provided by ropivacaine alone may be insufficient for prolonged postoperative pain relief, prompting the exploration of various adjuvants to enhance block quality and duration.[3,4]

Postoperative pain remains a significant concern following upper extremity surgeries. Inadequately controlled pain can lead to patient discomfort, delayed mobilization, prolonged hospital stay, increased healthcare costs, and a greater risk of developing chronic pain syndromes. Therefore, extending the duration of analgesia without increasing adverse effects has become an important objective in regional anaesthesia research. Various adjuvants including opioids, clonidine, dexmedetomidine, magnesium sulfate, and corticosteroids have been investigated to prolong the analgesic effects of local anaesthetics in peripheral nerve blocks.[5,6,10]

Among these agents, dexamethasone has emerged as a particularly promising adjuvant. Dexamethasone is a potent synthetic glucocorticoid with anti-inflammatory and analgesic properties. When added to local anaesthetic solutions, it has been shown to accelerate block onset, prolong sensory and motor blockade, and significantly extend postoperative analgesia. The proposed mechanisms include suppression of inflammatory mediators, inhibition of ectopic neuronal discharge, modulation of potassium channel activity on nociceptive C fibres, and reduction of perineural inflammation. Furthermore, dexamethasone is inexpensive, readily available, and associated with a favorable safety profile when used in appropriate doses.[7,8]

Several clinical studies and meta-analyses have demonstrated that the addition of dexamethasone to long-acting local anaesthetics significantly improves block characteristics and patient satisfaction. However, variations in study design, dosage, route of administration, and local anaesthetic concentration have resulted in differing conclusions regarding the magnitude of benefit. Consequently, further studies are required to establish the efficacy of dexamethasone as an adjuvant toropivacaine specifically in ultrasound-guided supraclavicular brachial plexus block for upper extremity surgeries.[9,10]

The present study was therefore undertaken to compare the efficacy of ropivacaine alone with ropivacaine combined with dexamethasone in ultrasound-guided supraclavicular brachial plexus block. The study aimed to evaluate the onset and duration of sensory and motor blockade, duration of postoperative analgesia, postoperative pain scores, and hemodynamic stability, thereby assessing whether dexamethasone provides clinically meaningful benefits as an adjuvant to ropivacaine in patients undergoing upper extremity surgical procedures.

The present study aimed to compare the efficacy of ropivacaine alone versus ropivacaine with dexamethasone in ultrasound-guided supraclavicular brachial plexus block for upper extremity surgeries. The objectives were to evaluate theonset and duration of sensory and motor blockade, duration of postoperative analgesia, postoperative pain scores, and hemodynamic parameters between the two groups.

MATERIALS AND METHODS

Study Design: Prospective, randomized, comparative study

Study Population: Eighty patients aged 18–60 years, belonging to ASA physical status I and II, scheduled for elective upper limb orthopaedic surgeries under ultrasound-guided supraclavicular brachial plexus block.

Sample Size: 80 patients, divided equally into two groups (40 patients in each group).

Study Duration: As per the study protocol during the designated study period.

Study Place: Orthopaedic Operation Theatre

Inclusion Criteria

- Patients aged between 18 and 60 years.
- ASA physical status Grade I and II.
- Both male and female patients.
- Patients undergoing elective upper extremity orthopaedic surgeries.

- Patients willing to provide informed written consent.

Exclusion Criteria

- ASA physical status Grade III and IV.
- Peripheral neuromuscular disease or sensory-motor deficits.
- Bleeding disorders or coagulation disorders.
- Allergy to local anaesthetic agents .
- Inability to visualize/localize the brachial plexus adequately under ultrasound guidance.
- Refusal to participate in the study.
- Pregnant women.
- Skin lesions or infection at the block site.
- Severe respiratory disease.

Study Groups

- Group R (n = 40): Received 23 mL of 0.5% ropivacaine + 2 mL normal saline.
- Group R+D (n = 40): Received 23 mL of 0.5% ropivacaine + 2 mL dexamethasone.
- Primary Outcome Measure:
- Duration of postoperative analgesia.

Secondary Outcome Measures

- Onset of sensory blockade.
- Duration of sensory blockade.
- Onset of motor blockade.
- Duration of motor blockade.

Statistical Analysis

Data were analyzed using SPSS version 16.0. Continuous variables were expressed as mean ± standard deviation and compared using the unpaired Student's t-test. Categorical variables were expressed as frequencies and percentages and analyzed using the Chi-square test. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Baseline Characteristics of Study Groups

Variable	Ropivacaine + Dexamethasone (n=40)	Ropivacaine(n=40)
Age (years), Mean ± SD	38.9 ± 11.9	38.4±14.8
Female, n (%)	18 (45.0)	23(57.5)
Male, n (%)	22 (55.0)	17(42.5)
ASA Grade I, n (%)	22 (55.0)	24(60.0)
ASA Grade II, n (%)	18 (45.0)	16(40.0)

Table 2: Comparison of Onset of Sensory and Motor Block

Parameter	Ropivacaine + Dexamethasone (n=40)	Ropivacaine(n=40)	P-value
Onset of Sensory Block (min), Mean ± SD	5.0 ± 1.24	5.97 ± 1.44	0.004
Onset of Motor Block (min), Mean ± SD	9.05 ± 1.89	11.50 ± 2.54	<0.001

Table 3: Comparison of Duration of Sensory and Motor Block

Parameter	Ropivacaine + Dexamethasone (n=40)	Ropivacaine(n=40)	P-value
Duration of Sensory Block (min), Mean ± SD	625 ± 75.6	432 ± 67.9	<0.001
Duration of Motor Block (min), Mean ± SD	547 ± 73.5	378 ± 61.4	<0.001

Table 4: Comparison of Duration of Postoperative Analgesia

Parameter	Ropivacaine + Dexamethasone (n=40)	Ropivacaine(n=40	P-value
Duration of Analgesia (min), Mean ± SD	736 ± 80.0	493 ± 84.6	<0.001

Table 5: Repeated Measures ANOVA for Postoperative VAS Scores

Source	F-value	P-value
Time Effect (VAS Score)	254.3	<0.001
Time × Group Interaction	23.3	<0.001
Group Effect	40.4	<0.001

Table 6: Hemodynamic Parameters (Summary ANOVA Results)

Parameter	Time Effect (P-value)	Group Effect (P-value)
Pulse Rate	<0.001	0.129
Systolic Blood Pressure	<0.001	0.034
Diastolic Blood Pressure	0.002	0.42

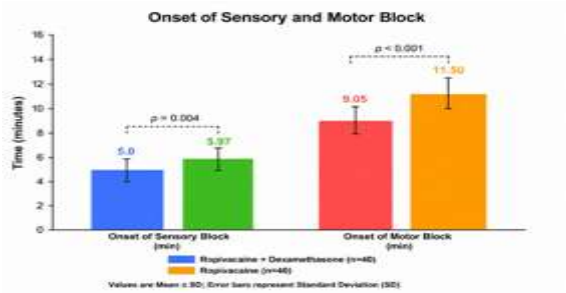

Figure 1: Comparison of Onset of Sensory and Motor Block

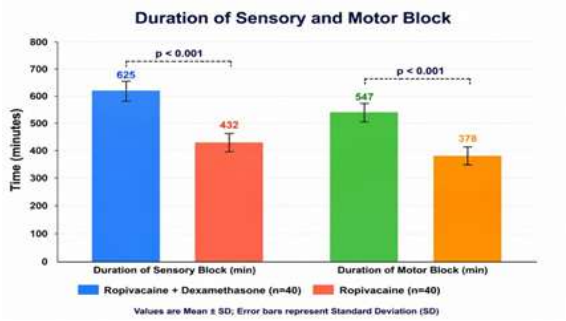

Figure 2: Comparison of Duration of Sensory and Motor Block

Table 1. Baseline Characteristics of Study Groups

A total of 80 patients were enrolled in the study, with 40 patients allocated to each group. The mean age of patients in the Ropivacaine plus Dexamethasone (R+D) group was 38.9 ± 11.9 years, while that in the Ropivacaine-only group was 38.4 ± 14.8 years, indicating comparable age distribution between the groups. In the R+D group, 22 (55.0%) patients were male and 18 (45.0%) were female, whereas the Ropivacaine group included 17 (42.5%) males and 23 (57.5%) females. Regarding ASA physical status, Grade I patients constituted 55.0% and 60.0% of the R+D and Ropivacaine groups, respectively, while Grade II patients accounted for 45.0% and 40.0%. These findings demonstrate that both groups were comparable with respect to demographic and preoperative clinical characteristics.

Table 2. Comparison of Onset of Sensory and Motor Block

The onset of sensory block was significantly faster in patients receiving dexamethasone as an adjuvant. The mean onset time of sensory block in the R+D group was 5.0 ± 1.24 minutes compared with 5.97 ± 1.44 minutes in the Ropivacaine-only group. This difference was statistically significant ($p = 0.004$). Similarly, the onset of motor block occurred significantly earlier in the R+D group, with a mean onset time of 9.05 ± 1.89 minutes, whereas patients receiving Ropivacaine alone achieved motor blockade after 11 .50 ± 2.54 minutes. The difference was highly significant ($p < 0.001$). These results indicate that the addition of dexamethasone accelerates the onset of both sensory and motor blockade.

Table 3. Comparison of Duration of Sensory and Motor Block

The duration of both sensory and motor blockade was significantly prolonged in the R+D group compared with the Ropivacaine-only group. The mean duration of sensory block was 625 ± 75.6 minutes in the R+D group, whereas it was 432 ± 67.9 minutes in the Ropivacaine group. This represents an increase of approximately 193 minutes with dexamethasone supplementation and was highly significant ($p < 0.001$). Likewise, the mean duration of motor block was 547 ± 73.5 minutes in the R+D group compared with 378 ± 61.4 minutes in the Ropivacaine-only group, reflecting a prolongation of approximately 169 minutes. This difference was also highly significant ($p < 0.001$). These findings suggest that dexamethasone substantially enhances the duration of nerve blockade when used with ropivacaine

Table 4. Comparison of Duration of Analgesia

The primary outcome measure of the study, namely duration of postoperative analgesia, showed a marked improvement in the dexamethasone group. Patients receiving Ropivacaine with dexamethasone experienced a mean analgesic duration of 736 ± 80.0 minutes, whereas those receiving Ropivacaine alone had a mean duration of 493 ± 84.6 minutes. The difference of approximately 243 minutes (over 4 hours) was highly statistically significant ($t = 13.2$, $p < 0.001$). This finding demonstrates that dexamethasone is highly effective in prolonging postoperative pain relief when used as an adjuvant in ultrasound-guided supraclavicular brachial plexus block.

Table 5. Repeated Measures ANOVA for Postoperative VAS Scores

Repeated measures ANOVA revealed significant changes in postoperative pain scores over time. The within-subject analysis showed a highly significant time effect on VAS scores ($F = 254.3$, $p < 0.001$), indicating that pain intensity varied significantly during the postoperative observation period. Furthermore, a significant interaction between time and treatment group was observed ($F = 23.3$, $p < 0.001$), suggesting that the pattern of pain score changes differed between the two groups. The between-subject analysis also demonstrated a significant overall group effect ($F = 40.4$, $p < 0.001$), confirming that patients in the R+D group experienced lower postoperative pain scores than those in the Ropivacaine-only group. These findings support the superior analgesic efficacy of dexamethasone as an adjuvant to ropivacaine.

Table6. Hemodynamic Parameters

Assessment of hemodynamic variables demonstrated overall cardiovascular stability in both groups throughout the study period. Pulse rate showed significant variation over time within subjects ($p < 0.001$); however, no significant difference was observed between the study groups ($p = 0.129$). Similarly, systolic blood pressure

exhibited significant temporal changes ($p < 0.001$), with a modest but statistically significant overall group difference ($p = 0.034$). Diastolic blood pressure also varied significantly over time ($p = 0.002$), but there was no significant difference between the groups ($p = 0.420$). These findings indicate that the addition of dexamethasone to ropivacaine did not result in clinically important hemodynamic instability and was well tolerated by the patients.

DISCUSSION

In the present study, both groups were comparable with respect to baseline demographic characteristics, including age, gender distribution, and ASA physical status, indicating successful randomization and minimizing the possibility of confounding factors influencing the outcomes. The mean age was 38.9 ± 11.9 years in the Ropivacaine plus Dexamethasone (R+D) group and 38.4 ± 14.8 years in the Ropivacaine group. Similar demographic comparability was reported by Shrestha et al., who found no significant differences in age, sex distribution, or ASA grading between patients receiving dexamethasone as an adjuvant and those receiving local anaesthetic alone for brachial plexus block, thereby ensuring that differences in block characteristics were attributable to the intervention rather than baseline disparities.[11] Likewise, Cummings et al. observed comparable demographic characteristics among study groups investigating dexamethasone in peripheral nerve blocks.[12]

The onset of sensory blockade was significantly faster in the R+D group (5.0 ± 1.24 minutes) compared with the Ropivacaine-only group (5.97 ± 1.44 minutes), while motor blockade onset was also significantly reduced (9.05 ± 1.89 vs. 11.50 ± 2.54 minutes). These findings are consistent with those reported by Biradar et al., who demonstrated that dexamethasone added to local anaesthetic solutions accelerated the onset of peripheral nerve blockade and improved block quality.[13] Similarly, Daret et al. found that dexamethasone significantly shortened sensory and motor block onset times in patients undergoing upper limb surgery under brachial plexus block.[14] The earlier onset observed in the present study may be explained by dexamethasone-induced modulation of nerve membrane function and reduction of perineural inflammation, facilitating rapid diffusion and action of local anaesthetic agents.

A major finding of the present study was the significant prolongation of sensory blockade in the dexamethasone group. The mean duration of sensory block increased from 432 ± 67.9 minutes in the Ropivacaine group to 625 ± 75.6 minutes in the R+D group. These results are in agreement with the observations of jong et al., who reported a substantial increase in sensory block duration when dexamethasone was used as an adjuvant during brachial plexus blockade.[15] Similarly, Parrington et al. demonstrated prolonged sensory blockade and delayed requirement for rescue analgesia following perineural dexamethasone administration.[16] The prolonged sensory blockade observed in the present study supports the hypothesis that dexamethasone exerts direct effects on nociceptive C-fibers and suppresses inflammatory mediators responsible for pain transmission.

Motor blockade duration was also significantly prolonged in the present investigation, increasing from 378 ± 61.4 minutes in the Ropivacaine-only group to 547 ± 73.5 minutes in the R+D group. Comparable findings were reported by Albrecht et al., who observed significantly prolonged motor blockade with dexamethasone added to local anaesthetic mixtures during supraclavicular brachial plexus block.[17] Similarly, Birdar et al. documented extended motor block duration among patients receiving dexamethasone as an adjuvant, attributing this effect to enhanced local anaesthetic action around nerve fibers.[13] The marked prolongation of motor blockade in the current study further confirms the efficacy of dexamethasone in improving the overall quality and duration of regional anaesthesia.

The most clinically relevant outcome of the present study was the significantly prolonged duration of postoperative analgesia in the dexamethasone group. Patients receiving Ropivacaine with dexamethasone experienced analgesia for 736 ± 80.0 minutes compared with 493 ± 84.6 minutes in the Ropivacaine group, representing an increase of approximately four hours. These findings closely resemble those reported by Santhoshkumar S, Palaria U et al.who demonstrated significantly prolonged postoperative analgesia following the addition of dexamethasone to brachial plexus blocks.[18] Similarly, Islam et al. reported a marked extension of analgesic duration and reduced analgesic consumption in patients receiving dexamethasone as an adjuvant.[19] The enhanced analgesic duration observed in the present study likely results from the combined anti-inflammatory and neural membrane-stabilizing effects of dexamethasone, which reduce postoperative nociceptive signaling.

Postoperative pain assessment using VAS scores further supported the superiority of dexamethasone supplementation. Repeated-measures ANOVA revealed a highly significant time effect, group effect, and time-group interaction, indicating consistently lower pain scores throughout the postoperative period in patients receiving dexamethasone. These findings are comparable to those reported by Santhoshkumar S, Palaria,[18] who observed lower postoperative pain scores and delayed requirement for rescue analgesia in patients receiving dexamethasone. Similarly, Islam et al,[19] demonstrated superior pain control with dexamethasone-containing brachial plexus blocks, reinforcing the analgesic benefits observed in the present study.

Hemodynamic parameters remained largely stable throughout the study in both groups. Although pulse rate, systolic blood pressure, and diastolic blood pressure demonstrated expected physiological fluctuations over time, no clinically significant adverse hemodynamic effects attributable to dexamethasone were observed. Similar hemodynamic stability has been documented by Santhoshkumar S, Palaria U et al,[18] and Parrington et al,[16] who reported that dexamethasone did not adversely affect cardiovascular parameters when used as a peripheral nerve block adjuvant. The present findings therefore support the safety profile of dexamethasone when administered in conjunction with ropivacaine during ultrasound-guided supraclavicular brachial plexus block.

Overall, the findings of the present study demonstrate that the addition of dexamethasone to ropivacaine significantly improves block characteristics by accelerating onset, prolonging sensory and motor blockade, extending postoperative analgesia, reducing postoperative pain scores, and maintaining hemodynamic stability. These results are consistent with previously published literature and support the routine consideration of dexamethasone as an effective adjuvant in ultrasound-guided supraclavicular brachial plexus block for upper extremity surgeries.

CONCLUSION

The present study demonstrated that the addition of dexamethasone to ropivacaine in ultrasound-guided supraclavicular brachial plexus block significantly enhanced the quality and duration of regional anaesthesia for upper extremity surgeries. Patients receiving ropivacaine with dexamethasone experienced a faster onset of both sensory and motor blockade, significantly prolonged sensory and motor block durations, and a markedly longer duration of postoperative analgesia compared with those receiving ropivacaine alone. Furthermore, postoperative pain scores were significantly lower in the dexamethasone group, indicating superior pain control and improved patient comfort. Hemodynamic parameters remained stable throughout the perioperative period, and no significant adverse effects attributable to dexamethasone were observed, confirming its safety as an adjuvant. Based on these findings, dexamethasone can be considered an effective and safe adjunct to ropivacaine in ultrasound-guided supraclavicular brachial plexus block, providing prolonged analgesia and improved perioperative outcomes in patients undergoing upper extremity surgical procedures.

REFERENCES

1. Neal JM, Gerancher JC, Hebl JR, Ilfeld BM, McCartney CJL, Franco CD, et al. Upper extremity regional anesthesia: essentials of our current understanding. Reg Anesth Pain Med. 2009;34(2):1 34–70.
2. Bruce BG, Green A, Blaine TA, Wesner LV. Brachial plexus blocks for upper extremity orthopaedic surgery.J Am AcadOrthopSurg 201 2; 20:38–47.
3. McClure JH. Ropivacaine. Br J Anaesth. 1 996;76(2):300–7.
4. Knudsen K, Beckman Suurkü la M, Blomberg S, Sjö vall J, Edvardsson N. Central nervous and cardiovascular effects of i.v infusions of ropivacaine, bupivacaine and placebo in volunteers. Br J Anaesth.1 997;78:507–1 4.
5. Duma A, Urbanek B, Sitzwohl C, Zimpfer M, Kapral S. Clonidine as an adjuvant to local anaesthetic axillary brachial plexus block: A randomized, controlled study. Br J Anaesth. 2005;94:1 1 2-6.
6. Sarma BA, Sundari MR, Suman KVJ, Rao DBVM. Low dose dexmedetomidine an adjuvant to bupivacaine in supraclavicular brachial plexus block. IOSR Journal of Dental and Medical Sciences(IOSR-JDMS). 201 5;1 4(6)Ver. ll:1 04-07
7. Vieira PA, Pulai I, Tsao GC, Manikantan P, Keller B, Connelly NR. Dexamethasone with bupivacaine increases duration of analgesia in ultrasound-guided interscalene brachial plexus blockade. Eur J Anaesthesiol. 201 0;27(3):285–8.
8. Golwala MP, Swadia VN, Dhimar AA, Sridhar NV. Pain relief by dexamethasone as an adjuvant to local anaesthetics in supraclavicular brachial plexus block. J Anaesthesiol Clin Pharmacol. 2009;25(3):285–288.
9. Baloda, R., Bhupal, J. P., Kumar, P., & Gandhi, G. S. (201 6). Supraclavicular Brachial Plexus Block with or Without Dexamethasone as an Adjuvant to 0.5% Levobupivacaine: A Comparative Study. Journal of clinical and diagnostic research: JCDR, 1 0(6), UC09–UC1 2. https://doi.org/1 0.7860/JCDR/201 6/1
10. Choi S, Rodseth R, McCartney CJ. Effect of Dexamethasone as a local anaesthetic adjuvant for brachial plexus block: a systematic review and meta-analysis of randomised trials. Br J Anaesth. 201 4;1 1 2(3):427-39
11. Shrestha BR, Maharjan SK, Tabedar S. Supraclavicular brachial plexus block with and without dexamethasone: a comparative study. Kathmandu Univ MedJ. 2003;1 (3):1 58-60.
12. Cummings KC III, Napierkowski DE, Parra-Sanchez I, Kurz A, Dalton JE, Brems JJ, et al. Effect of dexamethasone on the duration of interscalene nerve blocks with ropivacaine or bupivacaine. Br J Anaesth. 201 1 ;1 07(3):446-53.
13. Biradar et al. Effect of dexamethasone added to lidocaine in supraclavicularbrachial plexus block: A prospective, randomised, double-blindstudy. Indian J Anaesth 201 3Mar;57(2):1 80-4
14. Dar F, Najar M, Jan N. Effect of addition of dexamethasone to ropivacaine in 1 41 supraclavicular brachial plexus block. Indian Journal of Pain. 201 3;27(3):1 65-9.
15. De Jong RH, Wagman IH. Physiological mechanism of peripheral nerve block by local anaesthetics. Anesthesiology 1 963;24:684-727.
16. Parrington SJ, O'Donnell D, Chan VW, Brown-Shreves D, Subramanyam R, Qu M, et al. Dexamethasone added to mepivacaine prolongs analgesia after supraclavicular brachial plexus blockade. Reg Anesth Pain Med. 201 0;35(5):422-6.
17. Albrecht E, Kern C, Kirkham KR. A systematic review and meta-analysis of perineural dexamethasone for peripheral nerve blocks. Anaesthesia. 201 5;70(1):71
18. Kumar S, Palaria U, Sinha AK, Punera DC, Pandey V. Comparative evaluation of ropivacaine and ropivacaine with dexamethasone in supraclavicular brachial plexus block for postoperative analgesia. Anesthesia, Essays and Researches. 201 4;8(2):202- 208. doi:1 0.41 03/0259-1 1 62.1 34506.)
19. Islam SM, Hossain MH, Maruf AA. Effect of addition of dexamethasone to local anaesthetics in supraclavicular brachial plexus block. J Armed Forces Med Coll Bangladesh. 201 1 ;7(1):1 1 -4.