Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 8s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Evaluation Of Analgesic Effect Of Two Different Doses Of Dexamethasone As An Adjuvant To 0.5% Bupivacaine In Ultrasound Guided Supraclavicular Brachial Plexus Block- A Randomized Double Blinded Controlled Study

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Cite this paper as: Anshil Bhatia, U.C. Verma, Mahendra Kumar, Shivika Nath, Nupur Aggarwal, (2025) Evaluation Of Analgesic Effect Of Two Different Doses Of Dexamethasone As An Adjuvant To 0.5% Bupivacaine In Ultrasound Guided Supraclavicular Brachial Plexus Block- A Randomized Double Blinded Controlled Study. *Journal of Neonatal Surgery*, 14 (8s), 888-894.

ABSTRACT

Introduction: Pain is a major problem in perioperative care. Supplementation of adjuvant along with local anaesthetic agent escalates the duration of analgesia in supraclavicular brachial plexus block and also decreases the requirements of intravenous analgesics. Comparison of the two different doses of Dexamethasone as an adjuvant to Bupivacaine was done for post operative pain management in ultrasound-guided Supraclavicular brachial plexus block.

Aim: The aim of the study was to evaluate and compare the duration of analgesia with two different doses of Dexamethasone (8mg Vs 4 mg) as an adjuvant to Bupivacaine in ultrasound-guided supraclavicular brachial plexus block.

Materials and methods: A randomized comparative double-blinded study was conducted in Thirty-six patients of age 18-65 years of ASA I & II scheduled for upper limb surgery under US-guided Supraclavicular brachial plexus block and were divided into three groups consisting of 12 patients each, Group D8 received 20 ml of 0.5% Bupivacaine and 2 ml of Dexamethasone 8 mg, Group D4 Patients received 20 ml of 0.5% Bupivacaine with 1ml normal saline (NS) and 1ml Dexamethasone 4 mg (Total volume of 22 ml) and Group B received 20 ml of 0.5% Bupivacaine with 2 ml (NS) (Total volume 22 ml). Duration of postoperative analgesia was recorded by using 100 points visual analogue scale (VAS).

Results: Demographic and surgical characteristics were similar in all three groups. Mean ± SD of duration of analgesia in group D8 was 1021.17 ± 251.19 minutes which was significantly higher as compared to groups D4 (688.5 ± 174.41 minutes, p value<.0001) and group B (523 ± 84.59 minutes, p value<.0001). Duration of analgesia in D4 was also significantly higher as compared to group B (p=0.034).

Conclusion: It is concluded that Inj Dexamethasone 8 mg as adjuvant to Bupivacaine significantly increases the duration of analgesia as compared to Dexamethasone 4 mg in ultrasound guided supraclavicular brachial plexus block.

Keywords: *Dexamethasone, 0.5% Bupivacaine, analgesia, ultrasound and supraclavicular block*

1. INTRODUCTION

Pain is an unpleasant sensory and emotional experience, linked to actual or potential tissue damage defined by the International Association for the Study of Pain (IASP) in 1979.

Acute postoperative pain if not managed adequately, may become a predictive factor for the development of Chronic Post-Surgical Pain (CPSP) which can occur in 10% to 65% of patients in postoperative period [(1)]. Pre-emptive analgesia is helpful in reducing both acute and chronic pain by prior prevention of central sensitisation produced by inflammatory and incisional injury.

Peripheral nerve blocks can be given in the region of the body where the nerves are accessible for external injection, with reversibly acting local anaesthetic (LA) drugs which causes the interruption of impulse conduction in nerves. A single-shot technique or continuous anaesthesia is given by placing a catheter to improve the quality and duration of analgesia, it is beneficial for patients. US guided supraclavicular brachial plexus block has improved the success rate of the block with precise and accurate localization as well as an improved safety margin

Local anaesthetic concentrations, volume and their correct placement decides the denseness and duration of block. Bupivacaine 0.5% is one of the most commonly used LA agents because of its higher potency and prolonged duration of action [(2)].

Many adjuvants are used with local anaesthetics in brachial plexus block to achieve a dense, quick and prolonged block. Drugs like morphine, pethidine, clonidine, dexamethasone, dexmedetomidine, butorphanol, buprenorphine are commonly used along with local anaesthetics for brachial plexus blocks [(3).]

Dexamethasone is a potent, long-acting glucocorticoid with analgesic and anti-inflammatory properties. It prolongs the blockade by inhibiting transmission of nociception to myelinated c-fibres and suppressing ectopic neuronal discharge. It is a long-acting glucocorticoid with $t^{1/2}$ life >36 hrs. It has been observed that dexamethasone as an adjuvant to local anaesthetics in different doses prolonged the duration of analgesia.

The present study is aimed to evaluate and compare the postoperative duration of analgesia with two different doses of Dexamethasone 8 mg vs 4 mg as adjuvant to 0.5% Bupivacaine in ultrasound-guided supraclavicular brachial plexus block.

2. MATERIALS AND METHOD

The present study was conducted after getting ethical clearance from Institutional Ethical Committee and registration with CTRI. Informed consent was taken from all thirty-six patients who were included in prospective, observational, randomised comparative double-blinded study. Patients belonging to American Society of Anaesthesiologists (ASA) grade I and II of either gender, aged 18- 65 yrs, scheduled for upper limb surgery. Patients were excluded from the study if they refused to participate in study, patients with history of allergy to study drugs, usage of corticosteroids, opioids or any other analgesics, any infection at the site of injection, pregnant females, patients with coagulopathy or bleeding diathesis, presence of any significant cognitive or psychiatric history, and previous history of endocrine disease.

Sample size was calculated based on the result of study conducted by Abdallah et al.[(4)] They observed that duration of analgesia was 25 h (19.5 to 27.4 h) in Dex8 mg group and 13.2 h (11.5 to 15) in control group. Taking these values as reference, the minimum required sample size with 95% power of study and 5% level of significance was 12 patients in each group. So total sample size was taken 36 patients in 3 groups.

All patients underwent pre-anaesthetic evaluation before procedure and every patient was explained about the pain assessment by VAS score. Once a patient gave consent to enter the trial then patient was randomized to either of the following three groups based on computer-generated randomized chart. Patients of **Group D8** received 20 ml of 0.5% Bupivacaine and 2 ml of Dexamethasone 8 mg and patients of **Group D4** received 20 ml of 0.5% Bupivacaine with 1ml NS and 1ml Dexamethasone 4 mg while patients **of Group B** received 20 ml of 0.5% Bupivacaine with 2 ml NS. (Total volume of 22 ml was used in each patients)

The drug was prepared by an anaesthesiologist who was not participating in the study. The investigator and patient both were not aware about the nature of drug and group to maintain blinding of the study.

In operation theatre all patients were monitored for their electrocardiogram (ECG), pulse oximetry (SpO_2) and Non-invasive blood pressure (NIBP: Systolic/Diastolic/Mean BP) and baseline values were recorded. Patients were premedicated with Inj Midazolam 0.05mg/kg IV 10 min prior to brachial plexus block.

Supraclavicular brachial plexus block was administered in supine position under strict aseptic condition. Patient's head was turned 45 degrees to the opposite side. To keep the plexus stretched, thin towel roll in between the interscapular region was placed and arm was kept by the side of chest. Then under all aseptic precautions, subclavian artery pulsations were felt at a point 1.5 to 2.0 cm posterior and cephalad to midpoint of clavicle. An intradermal wheel was raised with Inj Lignocaine 2% (0.5 ml), with 26G needle. After achieving the effect of local anaesthetic

US-guided brachial plexus block was performed by using US machine (Esaote MyLab Sigma), with high frequency (13-6 MHz) transducer and 38 mm linear array probe.

Probe was transversely placed in supraclavicular fossa. Pulsations of subclavian artery and brachial plexus was visualized on monitor. Brachial plexus was identified around the pulsations as hypoechoic circles known as "clusters of grapes". After identification of brachial plexus a 22G needle was inserted through the point of local infiltration with in-plane approach from lateral to medial direction and under visualization on monitor. After reaching at targeted area slow negative aspiration test was done and prepared drug solution as per allocated group, was injected and visualized on the monitor in real time.

After institution of the block the onset of sensory and motor block was assessed and after achieving complete block, surgery was allowed, vitals monitoring was continued throughout the surgery and appropriate fluid therapy was given to all the patients.

Intraoperative hemodynamic parameters (HR, SBP, DBP, MAP) and SpO_2 were monitored and recorded every 10 minutes till the end of surgery.

Post operatively all patients were kept under supervision for 24 hrs for assessment of pain and detection and management of any complication. Intensity of pain was evaluated by Visual analogue scale (VAS) where 0 represents no pain and 100 represents worst possible pain, first rescue analgesic was given when VAS score was ≥30. As rescue analgesia Inj Diclofenac sodium 75 mg in 100 ml NS IV was given over 10 minutes and time was noted.

The duration of analgesia was defined as time interval between the onset of complete sensory block and the time for request for the first rescue analgesic. Pain assessment was continued at the interval of 6 hrs, 9 hrs, 12 hrs and then 24 hrs of block.

All patients were kept under obervation for detection and management of any complication, if occurs, like Phrenic nerve palsy, Pneumothorax, Local anaesthetic toxicity, Intravascular injection and Subcutaneous emphysema.

Statistical Analysis

The data was entered in MS Excel spread sheet and analysed by using SPSS Version-25.0 IBM (Chicago). The comparison of the variables which were quantitative and not normally distributed in nature was analysed using Kruskal Wallis test (for more than two groups) and variables which were quantitative and normally distributed in nature were analysed ANOVA (for more than two groups). After ANOVA, a Post Hoc test (Bonferroni correction) was applied. The comparison of the variables which were qualitative in nature were analysed using Fisher's exact test as at least one cell had an expected value of less than 5.

3. RESULTS

Demographic characteristics of patients of all 3 groups are shown in Table 1. There was no statistically significant difference observed in age, gender, weight, height and duration of surgery in all three groups. (Table-1)($p>0.05$)

Table-1: Showing demographic characteristics of patients of all 3 groups with p value

Demographic Profile		**D8 (n=12)**	**D4 (n=12)**	**B (n=12)**	**'p' value**
Age (years)		32.25 ± 12.67	36.25 ± 16.19	31.42 ± 9.89	0.634
Gender	**Female**	2 (16.67%)	5 (41.67%)	2 (16.67%)	0.429
	Male	10 (83.33%)	7 (58.33%)	10 (83.33%)	
ASA Grade	**I**	10 (83.33%)	9 (75%)	10 (83.33%)	1
	II	2 (16.67%)	3 (25%)	2 (16.67%)	
Body mass index (kg/m^2)		24.52 ± 5.06	24.98 ± 3.13	24.21 ± 4.21	0.875

All the three groups were analysed for their degree of post-operative pain by VAS score to assess significant difference between them. On comparison, Mean ± SD of post operative pain score was 0 ± 0, 0.83 ± 2.89 and 20 ± 9.53 at 6 hrs, 4.17 ± 6.69, 15.83 ± 9 and 31.67 ± 10.3 at 9 hrs and 14.17 ± 7.93, 30 ± 8.53 and 18.33 ± 5.77 at 12 hrs in group D8, D4 and B respectively with p value <0.05 showing significant difference between the groups. VAS at 24 hrs was 20 ± 8.53, 22.5 ± 6.22 and 19.17 ± 9 in groups D8, D4 and B respectively, showed p value=0.637 which was statistically insignificant.

Table-2: Showing comparison of Mean ± SD of post-operative pain score (VAS) in all three groups with p values

Time intervals	D8 (n=12)	D4 (n=12)	B (n=12)	'p' value
At 6 hours	0 ± 0	0.83 ± 2.89	20 ± 9.53	<.0001 D8 vs D4:0.743 D8 vs B:<.0001 D4 vs B:<.0001
At 9 hours	4.17 ± 6.69	15.83 ± 9	31.67 ± 10.3	<.0001 D8 vs D4:0.023 D8 vs B:<.0001 D4 vs B:0.014
At 12 hours	14.17 ± 7.93	30 ± 8.53	18.33 ± 5.77	0.0002 D8 vs D4:<.0001 D8 vs B:0.367 D4 vs B:0.003
At 24 hours	20 ± 8.53	22.5 ± 6.22	19.17 ± 9	0.637 D8 vs D4:0.452 D8 vs B:0.9 D4 vs B:0.38

Mean ± SD of duration of analgesia (minutes) in D8 was 1021.17 ± 251.19 which was significantly higher as compared to groups D4 (688.5 ± 174.41, p value<.0001) and B (523 ± 84.59, p value<.0001). Duration of analgesia in D4 was significantly higher as compared to group B (p value=0.034) while in group D8 it was higher than group D4 and B. (Table 2, Fig 2).

Table 3:- Showing comparison of duration of analgesia (minutes) between three groups with p value.

Duration of analgesia	D8 (n=12)	D4 (n=12)	B (n=12)	'p' value	
Mean ± SD (minutes)	1021.17 ±251.19	688.5 ± 174.41	523 ± 84.59	<0.0001	D8vsD4: <0.0001 D8vsB: <0.0001 D4vsB: =0.034

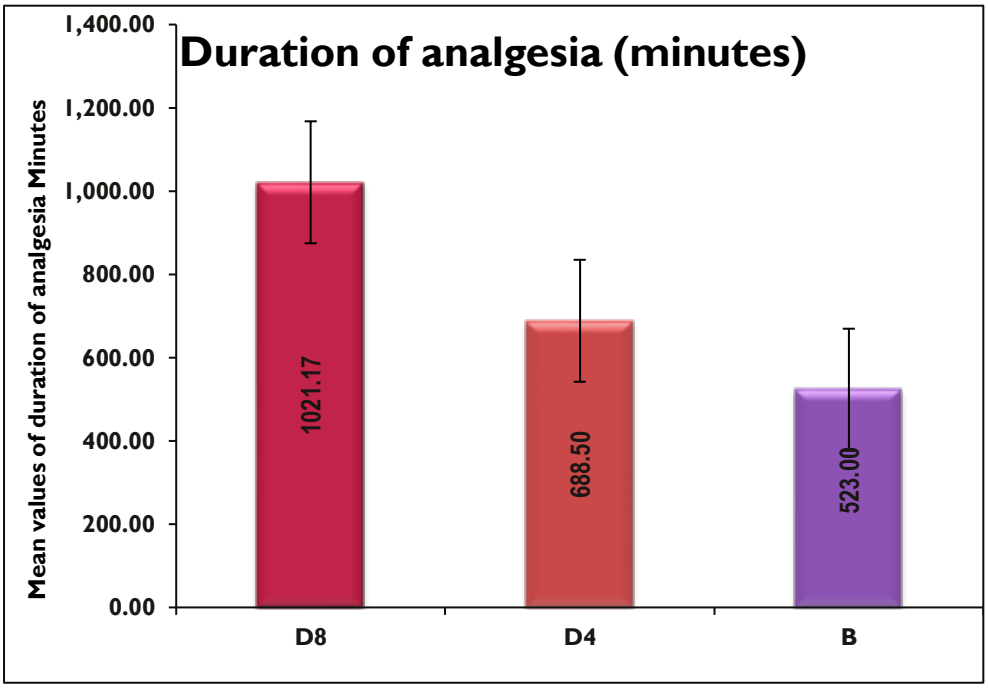

Figure-1: Showing comparison of duration of analgesia (minutes) between three groups

Thus, observations suggested that 8mg Dexamethasone provided significantly longer duration of analgesia as compared to 4mg Dexamethasone as an adjuvant to 0.5% bupivacaine in brachial plexus block.

No incidence of any postoperative complications seen in any patient of three groups.

4. DISCUSSION

Upper limb surgeries with peripheral nerve block provides analgesia for limited duration of time thus it increases the requirement for intravenous analgesics. Adding adjuvants to local anaesthetics for peripheral nerve blocks significantly prolongs the post operative analgesia.

In this study duration of analgesia was defined as the time interval between the onset of complete sensory block and the time for request for the first rescue analgesic. Intensity of pain was assessed by Visual analogue scale (VAS) and first rescue analgesic (Inj Diclofenac Sodium 75 mg) was injected intravenously if VAS score ≥30. Results of the present study suggested that 8mg Dexamethasone as adjuvant to 0.5% bupivacaine provided a significantly longer duration (1021.17 ± 251.19 min) of analgesia as compared to 4mg Dexamethasone as adjuvant to 0.5% bupivacaine (688.5 ± 174.41 min) and bupivacaine alone (523 ± 84.59 min) (p value<0.0001). However duration of analgesia provided by 4mg Dexamethasone as adjuvant to 0.5% bupivacaine (688.5 ± 174.41 min) was also significantly longer as compared to bupivacaine alone (523 ± 84.59 min). (p value=0.034)

The prolongation of analgesic effect with brachial plexus blocks may be related to several factors- including comparatively slow rates of vascular absorption from the brachial plexus sheath, larger doses of drug required for this regional anaesthetic technique and comparatively long segments of nerves exposed to local anaesthetic. Dexamethasone is one of the most optimal drugs which increases the efficacy of peripheral nerve blocks.

Abdallah et al [4] compared perineural and Intravenous 8mg Dexamethasone in patients who received ultrasound guided supraclavicular brachial plexus block to assess analgesic effects. They used 30 ml of 0.5% Bupivacaine along with 8 mg dexamethasone either perineurally or intravenously, and observed that the duration of analgesia was prolonged in both groups as compared to control group. (25 hours [19.5–27.4] vs 25 hours [17.6–23.6]) as compared with Control group (13.2 hours [11.5– 15.0] with p-value < 0.001). They concluded both the groups were comparable and effects were prolonged till 25 hrs.

Prolongation of duration of analgesia was seen in present study with 8 mg Dexamethasone was 1021.17 ± 251.19 min but it did not exceed till 24 hrs. This difference in the durations may be due to usage of increased volume (30 ml) in their study.

A prospective randomized, controlled, double-blinded study conducted by Baloda et al [5] to compare the effects of Dexamethasone 8 mg when added to Levobupivacaine 0.5% (30 ml) for supraclavicular brachial plexus block by using landmark technique. Duration of sensory block was significantly prolonged in the dexamethasone group (923±12.905 min) than group only consisting of Levobupivacaine (798.83±15.010 min).

In the present study, 20 ml of Bupivacaine 0.5% was used which prolonged the duration of analgesia till 1021.17 ± 251.19 min with 8 mg Dexamethasone group. These differences in the duration of analgesia might be due to drug delivery away from the area of anatomy due to landmark technique, which will influence the rate of diffusion and vascular absorption with the landmark technique. In our study, we used ultrasound which gives us more precision of anatomy and administration of the drug can be visualised in real-time which gives more accuracy.

In a study conducted by Woo and co-authors[6] to investigate the effects of different doses of dexamethasone as a perineural adjuvant, they used only 12 ml of ropivacaine 0.5% for interscalene block and then they proceeded surgery under general Anaesthesia. Dexamethasone doses of 2.5, 5, and 7.5 mg resulted in a first analgesic request time of 17.3 (12.2 to 22.0) h (P < 0.005), 24.2 (15.8 to 49.8) h (P < 0.001) and 19.9 (15.5 to 49.6) h (P < 0.001), respectively, most noticeable prolongation of analgesia was observed 5 mg dosage. In the present study it was evaluated that with the increase of Dexamethasone dose, the duration of analgesia also increased.

Kirkham et al [7] published a large meta-analysis to assess the optimal dose of perineural Dexamethasone to prolong analgesia after brachial plexus blockade by taking different doses of dexamethasone for the duration of analgesia, for analysis trials were grouped into low (1–4 mg) and moderate (5–10 mg) doses and according to the local anaesthetic (short-intermediate-acting LA and long-acting LA). The meta-regression revealed that a 4 mg dose of perineural Dexamethasone showed a ceiling effect when combined with short-/intermediate-acting or long-acting local anaesthetics. The duration of analgesia with (1-4mg) doses and (5-10 mg) was 277 (234–322) mins and 229 (161–297) mins respectively. With long-acting local anaesthetics, the mean differences with (5-10 mg) dose were 505 (342–669) mins and 509 (443–575) mins. In our study the Mean ± SD in (min) in D8 was 1021.17 ± 251.19, which was significantly higher as compared to groups D4 (688.5 ± 174.41, p value<0.0001, when added to 20 ml long- acting local anaesthetic.

In a study conducted by Tandoc et al [8] patients undergoing shoulder surgery under nerve stimulator-guided interscalene block with 0.5% Bupivacaine + Epinephrine (40 ml) with two different doses (4 mg and 8 mg) of Dexamethasone. The duration of analgesia was significantly prolonged in both D4 and D8 than the control group (21.6 ± 2.4 h), (25.2 ± 1.9 h) and

(13.3 ± 1.0 h) respectively with (p-value < 0.05).

Similar to present study, their study[8] reveals that two different doses (8 mg and 4 mg) both increase the duration of analgesia when compared with the control group. Group received 8 mg of Dexamethasone provides the highest prolongation in postoperative analgesia. They used 40 ml of volume, double what was used in our study.

Kantharaja et al[(9)] conducted a study to compare the efficacy of 4 mg Dexamethasone versus 2 mg Midazolam. When added to Bupivacaine 0.5% (18 ml) as an adjuvant in supraclavicular brachial plexus block under ultrasound guidance for upper-limb surgeries. Duration of analgesia was more in Group D (9.68 ± 0.77 h) when compared to Group M (6.82 ± 1.10 h) with a p-value <0.001. They concluded that patients who received Dexamethasone had a faster onset of sensory and motor block, prolonged duration of analgesia, and decreased postoperative analgesia requirement.

Mathew et al [(10)] also conducted a comparative study to assess the duration of analgesia between perineural and intravenous Dexamethasone 8 mg in supraclavicular brachial plexus block with 0.5% Bupivacaine with 25 ml volume, results showed onset of sensory and motor block in the perineural group was faster (10.2 ± 1.443 min) and (3.92±1.754min) than intravenous Group (11.60 ± 1.443 min) and (14.96 ± 1.274min).

Trabelsi et al. [(11)] conducted a study to evaluate the effect of Tramadol 100 mg and Dexamethasone 8 mg added as an adjuvant to 2% Lidocaine (15 ml) for a US-guided supraclavicular brachial plexus (SCBP) block. Time for first analgesia demand was 3(2;4), 4(3;5) and 18.5(16;22) hr in a group containing local anaesthetic with saline, Tramadol, and Dexamethasone respectively, which was longest in the Dexamethasone group with p-value <0.001 which was statistically significant. These results were comparable with our study as 8 mg Dexamethasone as adjuvant to bupivacaine (0.5%) prolonged duration of analgesia significantly.

5. CONCLUSION

The results and observations of the present study showed that both the doses of Dexamethasone (8mg and 4mg) as an adjuvant to bupivacaine (0.5%) significantly prolonged the duration of analgesia as compared to bupivacaine alone following Ultrasound - guided supraclavicular brachial plexus block in upper limb surgery. Statistical comparison also came to the conclusion that duration of analgesia was significantly longer with 8 mg Dexamethasone as compared to 4 mg Dexamethasone as adjuvant to bupivacaine (0.5%). Therefore, 8 mg Dexamethasone as adjuvant to local anaesthetic may be used safely to prolong the duration of postoperative analgesia.

REFERENCES

[1] Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and prevention. The Lancet. 2006;367:1618-25.

[2] Kohli S, Kaur M, Sahoo S, Vajifdar H, Kohli P. Brachial plexus block: Comparison of two different doses of clonidine added to bupivacaine. J Anaesthesiol Clin Pharmacol. 2013;29:491-5.

[3] Pathak RG, Satkar AP, Khade RN. Supraclavicular brachial plexus block with and without dexamethasone–a comparative study. Int J Sci Res Publ. 2012;2:1-7.

[4] Abdallah FW, Johnson J, Chan V, Murgatroyd H, Ghafari M, Ami N, et al. Intravenous dexamethasone and perineural dexamethasone similarly prolong the duration of analgesia after supraclavicular brachial plexus block: a randomized, triple-arm, double-blind, placebo-controlled trial. Reg Anesth Pain Med. 2015;40(2):125-32.

[5] Baloda R, Bhupal JP, Kumar P, Gandhi GS. Supraclavicular brachial plexus block with or without dexamethasone as an adjuvant to 0.5% levobupivacaine: a comparative study. J Clin Diagn Res:2016;10:UC09-UC12.

[6] Woo JH, Kim YJ, Kim DY, Cho S. Dose-dependency of dexamethasone on the analgesic effect of interscalene block for arthroscopic shoulder surgery using ropivacaine 0.5%: a randomised controlled trial. Eur J Anaesth. 2015;32(9):650-5.

[7] Kirkham KR, Jacot-Guillarmod A, Albrecht E. Optimal Dose of Perineural Dexamethasone to Prolong Analgesia After Brachial Plexus Blockade: A Systematic Review and Meta-analysis. Anesth Analg. 2018;126:270-9.

[8] Tandoc MN, Fan L, Kolesnikov S, Kruglov A, Nader ND. Adjuvant dexamethasone with bupivacaine prolongs the duration of interscalene block: a prospective randomized trial. J Anesth. 2011;25:704-9.

[9] Kantharaja HE, Nagaraj B, Thejesh HJ. A comparative study of dexamethasone versus midazolam as adjuvant to 0.5% bupivacaine in ultrasound-guided supraclavicular brachial plexus block for upper-limb surgeries. Anesth, Essays Res. 2020;14:183-8.

[10] Mathew R, Radha KR, Hema VR. Effect of perineural and intravenous dexamethasone on duration of analgesia in supraclavicular brachial plexus block with bupivacaine: a comparative study. Anesth, Essays Res. 2019;13:280-3

[11] Trabelsi W, Lebbi A, Romdhani C, Naas I, Sammoud W, Elaskri H. Dexamethasone provides longer analgesia than tramadol when added to lidocaine after ultrasound guided supraclavicular brachial plexus block. A randomized, controlled, double blinded study. Analg Resusc. 2013;2:2.