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Original Research Article

Comparison of the efficacy of bupivacaine versus bupivacaine plus dexamethasone during surgical TAP block for post operative analgesia after caesarean section

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ABSTRACT

Introduction and Aim: 1: Dexamethasone is steroid which can be used as add on to local anesthetic for prolonging the duration of action and has been studied in different neuroaxial blocks. We undertake this study by comparing the efficacy of bupivacaine alone versus bupivacaine plus dexamethasone during the surgical TAP block during caesarean section; 2: To correlate the advantages, disadvantages and adverse effects of the drugs during the surgical TAP block.

Methods and Materials: A double blind randomized control study to include 100 women was approved by the institutional ethics committee. Patients were randomized as Group A: received surgical TAP block with Bupivacaine alone. Group B: received TAP block with Bupivacaine plus dexamethasone.

Dose of the drug was adjusted with respect to the weight of the patient and surgical TAP block was administered via trans-peritoneal route. Visual analogue score (VAS) was assessed by a blinded observer. Time required for rescue analgesia in minutes was measured. The 'Mann-Whitney U test' was used for statistical analysis.

Results: The duration of post operative analgesi a was prolonged in group B. Group A Bupivacaine had post op duration of analgesia (mean± SD 268.80±125.53 minutes), Group B Bupivacaine plus dexamethasone had post op duration of analgesia (mean± SD 466.8±207.86). There were no reported complications during the surgical technique or any adverse effects to bupivacaine and dexamethasone administered for the TAP block.

Conclusion: Surgical TAP block with bupivacaine plus dexamethasone is more effective than with bupivacaine alone.

1. Introduction

A lower segment caesarean section commonly induces moderate to severe post operative pain for 48 hours.[1] Adeqate pain relief should be provided to post caesarean patients.

TAP block is a regional block anesthesia technique that earmarks the sensory nerve supply of anterior and lateral abdominal wall and has been proven as an effective method to reduce postoperative pain and analgesic requirement for lower abdominal surgeries in various clinical trials.[2,3]

The TAP block can be performed successfully using any one of the three techniques: the blind technique, ultrasound directed technique and the surgical TAP block by the operating surgeon.

The surgical TAP block technique has the distinct advantages of maintenance of asepsis, visible and easy maneuverability of the needle and tactile confirmation of correct needle placement and no added risks.

Regional bupivacaine alone is short lived.[4] Adjuvant may be used to prolong the local analgesia duration.[5] Dexamethasone due to its anti inflammatory and blocking effects on neural discharge and nociceptor C fibers transmission could be used as a local anesthetic adjuvant.[6]

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We undertake this study by comparing the efficacy of bupivacaine alone versus bupivacaine plus dexamethasone during the surgical TAP block during caesarean section.

Providing post-operative analgesia by TAP block with these long acting drugs will ease the post–operative discomfort of the patient and promote early breast feeding. The overall need of parenteral analgesics could also be reduced.[7]

2. Materials and Methods

A randomiz ed controlled double blind study including 100 women who required caesarean section was sanctioned by institutional ethics committee. Written informed consent was obtained from all patients. Simple randomization technique was used to reduce the bias by picking of envelopes. High risk caesarean deliveries with ASA3,known allergy to any drug, requiring general anesthesia, vertical incision and those with thrombocytopenia (platelet $\leq$ 1,00,000) were excluded from the study. Patients with height less than 150 cms and more than 180 cms were also excluded from the study as the dose required for spinal anesthesia is different. All included patients received spinal anesthesia with 2.2cc of 0.5% Bupivacaine heavy.

The included patients were randomized in two groups. Group A received Bupivacaine 0.25% in dose of 0.25 ml/kg. Group B received Bupivacaine 0.25% in dose of 0.25 ml/kg plus dexamethasone 8 mg.

Surgical TAP block was administered for all the patients via the transperitoneal route. Post operative analgesia was monitored by a blinded observer using the visual analogue score (VAS). Rescue analgesia with injection diclofenac 75 mg intramuscular was administered when patient complained of pain (VAS-3).

The Mann Whitney U test was used for statistical analysis. Side effects of the drugs were also noted and documented.

3. Results

100 patients were recruited in the study 50 received bupivacaine and 50 received bupivacaine plus dexamethasone.

Both the groups were comparable with BMI. (Table 1)

The duration of surgery in both groups was comparable, Group A had mean duration of surgery 51.8 min, Group B had mean duration of surgery 55 min, the difference of 4 min is comparable.

The duration of post operative analgesia in minutes was statistically significant. Bupivacaine group had a mean duration of analgesia of (mean $\pm$ SD 268.8$\pm$125.53 min). Bupivacaine plus dexamethasone group had a mean duration of analgesia of (mean $\pm$ SD 466.8$\pm$207.86). The 'Mann Whitney U test' was used for statistical analysis and the difference was significant in the mean duration of post operative analgesia in both the groups with p value of 0.001 (Table 2).

Table 1: Profile of both groups

Characteristics Mean $\pm$SD			**P Value (Not significant)**
	Group A Bupivacaine n = 50	Group B Bupivacaine+ Dexamethasone	
Height (cm)	156.56 $\pm$ 4.06	154.36$\pm$6.144	
Weight (kg)	68.64 $\pm$ 10.99	65.18$\pm$10.05	
BMI	27.96$\pm$4.12	27.36$\pm$4.03	0.473

Table 2: Duration of analgesia

	Mean $\pm$SD Group A Bupivacaine n = 50	Group B Bupivacaine plus dexamethasone n = 50	**P Value (S ignificant)**
Duration of post op analgesia (mins)	268.80 $\pm$125.53	466.80 $\pm$207.860	$<$0.001

There were no observed complication of the procedure, and no side effects of the drugs used.

4. Discussion

TAP block has been shown to reduce postoperative pain, need of opioids, thereby allowing for early ambulation and early discharge, after a multitude of lower abdominal operations including caesarean section.[8]

The benefits of adequate post operative analgesia are numerous and include a reduction in the postoperative stress response, a reduction in postoperative morbidity and in certain type of surgeries postoperative analgesia does yield an improved surgical outcome.[9–11]

This study shows that the addition of 8mg dexamethasone to 40 ml bupivacaine for bilateral TAP block resulted in prolonged analgesia and significant reduction of pain scores (VAS), decreased requirement of postoperative analgesics. There was good acceptance from the patients and there was decreased incidence of vomiting, and better patient satisfaction in terms of pain relief.

In the present study, the addition of dexamethasone to Bupivacaine in TAP block was compared. The duration of analgesia in dexamethasone group was longer 466min, than 268min in bupivacaine alone group.

This study demonstrates that dexamethasone significantly prolongs the analgesic effect of plain bupivacaine used as single injection for bilateral TAP block in lower segment caesarean patients.

5. Conclusion

TAP block is a safe and effective way of relieving postoperative pain in caesarean patients. Addition of dexamethasone to bupivacaine significantly amplifies its effects by prolonging the analgesia duration and thus enhancing the patients acceptability.

Women undergoing caesarean section need optimal pain management. TAP block is important component of multimodal analgesia for post caesarean pain relief and dexamethasone is indeed a safe and effective adjunct that prolongs the duration of the block.

6. Source of funding

None.

7. Conflict of interest

None.

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