

Tramadol along with local anaesthetics in the penile block for the children undergoing circumcision

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Abstract

Objective: This study was to find out the total duration of postoperative analgesia following circumcision in children when Tramadol was used as an adjunct to local anaesthetics in penile block. **Methods:** Forty children of age 5 – 13 yrs, ASA I & II were enrolled in this study. Patients were premedicated with ketamine and atropine intramuscularly prior to separation from their parents and IV cannulation. Penile block was then performed under strict aseptic precautions with paramedian approach by 3cm long 23g ordinary needle where 4 ml of mixture of local anaesthetics and tramadol was given on each side of the base of penis at 11 and 2 o'clock positions. Duration of analgesia was recorded from the time of completion of surgery till the patients' first complain of pain and when additional analgesic was given. Intraoperative analgesia duration achieved by the penile block was not included in this study due to unavoidable overlapping of sedation and analgesia produced by the premedicated IM Ketamine (4-5 mg/kg), which lasts for 25 minutes to 30 minutes. Unless complicated, this is the usual surgery time in our hospital for this procedure. Because of this reason, the sedation score was not used in this study. Moreover, paediatric sedation score remains too impractical and unreliable in our context. **Results:** Addition of Tramadol with local anaesthetics in penile block prolonged the postoperative analgesia even up to 40hours. **Conclusion:** Tramadol as an adjunct with Local Anaesthetics extends the duration of postoperative analgesia and can be used safely for this purpose in the children.

Key words: Penile Block, Circumcision, Tramadol, Postoperative Analgesia.

Dorsal penile nerve block is a common form of regional anaesthesia and is a safe technique for circumcision in infants and children¹. Circumcision is the common surgical procedure in paediatric male patients for which penile block is widely used. It is the best technique to provide intraoperative and postoperative analgesia². The technique is simple to perform and it minimizes the need of other anaesthetic agents and technique like the caudal block which carries its own risks. Regional nerve block in paediatric patients demands sedation and analgesia prior to the procedure. Ketamine intramuscularly is the best agent in our hospitals for this purpose. Single dose IM ketamine (4-5 mg/kg) has its effect lasting for only 25-30 minutes when used as a premedication⁸. This is not sufficient to carry on painful surgical procedure like circumcision without intermittent top up. Penile block avoids additional ketamine use and if the block effect is increased, this will be an added advantage in the post operative period.

Surgery around sensitive areas causes intense pain and discomfort to the children. If the duration of

block can be prolonged, the stress of the pain following the surgery will be lessened. Pain free postoperative period decreases the stress to parents as well as the treating doctors; hastens ambulation and quick discharge from the PACU.

Different adjuvants have been added in regional nerve blocks to prolong the postoperative analgesia like clonidine, dexamethasone³, morphine etc. Tramadol has been used as an adjunct in axillary, brachial plexus block⁴ and also in caudal anaesthesia to extend the duration of postoperative analgesia⁵.

In this study Tramadol is selected because the efficacy of Tramadol in management of moderate to severe pain has been demonstrated in both in-patients and day care surgery cases⁶.

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Methodology

40 children of age 5-13 yrs and ASA I & II undergoing circumcision were selected for the study. Pre-Anaesthetic check up was performed for all the patients and fasted for 2 hrs for clear liquid and at least for 4 hrs for other fluids. They were premedicated with inj. atropine 0.01 mg/kg and inj. ketamine 5mg/kg intramuscularly before separation from their parents. After bringing the patient to operation room, each patient is monitored with pulse oximetry and ECG. IV cannulation was then done.

Inj. Bupivacaine (1mg/kg), lignocaine (<2mg/kg) and inj. Tramadol (2mg/kg) were mixed according to the body weight of the patients. The mixture was then diluted in D.W. to make the total volume of 8ml for all cases. Penile block was then performed under strict aseptic precautions with paramedian approach using 3cm long 23g ordinary needle where 4 ml of volume given on each side of penis at the base (Fig. 1). We waited for 10-15 mins after the block to achieve the effect. The block was then assessed by patient's reaction to painful stimuli to the area innervated by the nerve blocked. Surgery was then allowed only after the confirmation of successful block (no increase in HR, no tearing and no body movement after painful stimuli around the block area and operative site). Cases were excluded from the study if any additional analgesics were given thereafter. This was a linear study, so control group was not included. Duration of analgesia was recorded

from the time of completion of surgery till the patients complained of pain and demanded additional analgesics in postoperative ward. Patients were kept for 24 hrs observation and any complications during this period were noted. Duration of post operative analgesia was studied by the person who was not involved in the study. Patients were followed by the person every hourly. Moreover parents of the kids were also instructed to inform if patients complained of any pain at the surgery site in between.

Aim of study

To study the duration of postoperative analgesia with Local Anaesthetics mixed with Tramadol in penile block for children undergoing circumcision.

Exclusion criteria

- Failed penile block when additional IV anaesthetics and analgesia used during surgery.
- ASA other than I & II.

Results

Among the 40 children undergoing circumcision the maximum number of children were of age group 8 to 10 (Table1). In 17 cases the duration of analgesia lasted for 20 to 29 hours and in 2 cases it was more than 40 hours. In 6 cases the least duration of analgesia which was observed was from 8 to 10 hours (Table 2).

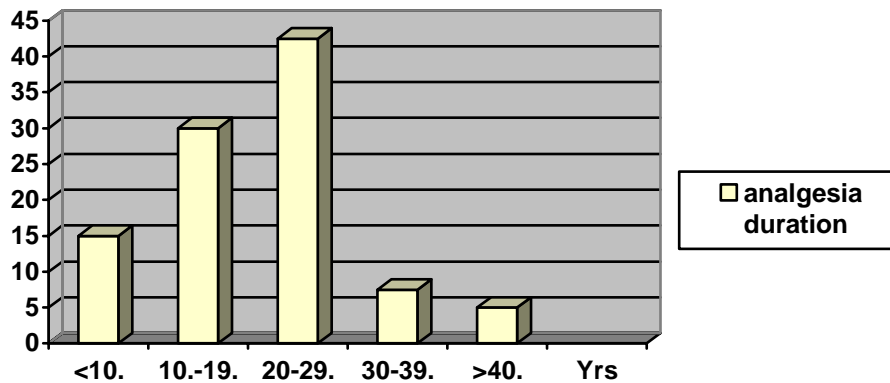
Table1. Age distribution

Age group (yrs)	No. of patients
5 – 7	11
8 – 10	20
11 – 13	9
Total	40

Table 2. Duration of Postoperative Analgesia

Analgesic duration (Hrs)	No. of cases	Percentage (%)
<10	6	15
10-19	12	30
20-29	17	42.5
30-39	3	7.5
>40	2	5

Bar Diagram of Analgesia period in different age group.



The postoperative analgesia in this study was found to be from 8 -76 hrs in total number of cases. The mean postoperative analgesia duration was 18.915 ± 1.582 hrs.

Fig. 1. Para median approach for penile block.



Discussion

Children of less than five years were not included in this study as pain expressed by younger children may not be understood appropriately during the record.

In this study maximum numbers of 17 children had been pain free for 20-29 hrs of postoperative period, 2 children had no experience of pain for more than 40 hrs, which was confirmed by telephone inquiry to the parents after patient had been discharged from the hospital. Only 6 patients had analgesic duration for less than 10 hrs which was still not less than 8 hrs.

4 cases were excluded from the study because of the failure of the penile block and due to addition of inj ketamine after surgery had been started. We noticed nausea and vomiting in 6 patients and urinary retention in 1 patient.

In this study Para median approach was preferred for the penile nerve block. Midline approach has its drawbacks like vessel injury leading to compressive haematoma and reports of thrombosis of dorsal penile artery and necrosis of glans².

The block was performed using two different types of local anaesthetics, bupivacaine and lignocaine so the dose of each drug was minimized according to the body weight of each patient.

Tramadol is an analgesic assumed to lack respiratory depressant effect, and had shown to provide effective and long lasting analgesia⁸. It has mixed opioid and non opioid activity. It inhibits the reuptake of norepinephrine and serotonin from the nerve endings thereby it is supposed to potentiate the effect of local anaesthetics when mixed together⁸. It may cause

nausea, vomiting, dry mouth, and sometimes seizures when dose is exceeded.

Roleaux, Blunt, Cuvillon et al studied the analgesic effect of Tramadol with mepivacaine 1.5% for axillary brachial plexus block and found increased postoperative analgesic period⁴.

Tramadol has been successfully used in herniorrhaphy in paediatrics age group even in caudal block by A.C Senel, A. Akyol et. al⁶.

In this study majority of patients and parents enjoyed pain free surgery and their satisfaction seems great.

Conclusion

Tramadol as an adjunct with Local Anaesthetics in this study produced the average duration of postoperative analgesia of 18 hours when used together in dorsal penile nerve block for circumcision and can be used safely for this purpose in the children.

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