



Caudal Versus Non-Caudal Block in Pediatrics Urological Procedures and their Outcome- An Audit in a Tertiary Care Center.

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Abstract

Introduction and Objective:- Caudal Block is commonly used nowadays to have a better post op pain control in children. When post op pain is controlled effectively, it improves patient recovery, appetite, comfort and psychological satisfaction. Here we share audit of our experience of using caudal block in urological procedure in children, and their outcome.

Methods and Materials:- It is an audit retrospective in nature. We collected data on 114 pediatric patients. We recorded postoperative pain scores in caudal and non-caudal block patients.

Results:- The mean age of the patients was 61.61 ± 4.25 months. Of these 52 (45.6%) procedures involved caudal block and 62 (54.4%) did not involve caudal block. Of the procedures, 35 were Posterior Urethral Valve fulguration (PUV) + cystoscopy, 17 were Herniotomy, 30 were orchidopexy, 14 were circumcision, and 12 were sting procedure and 6 miscellaneous.

Conclusion:- We concluded that caudal block was effective in controlling post op pain in children who had undergone various urological procedures.

Key Words:- Caudal block, Pain, Post-surgical Pain.

Introduction

A caudal block is a type of central neuraxial block, most of the time utilized in children to cater analgesia for surgeries up to the umbilicus. In adults it is used for chronic low back pain management. Caudal blocks can be performed either by utilizing the blind technique or with improved accuracy under ultrasound or fluoroscopic guidance.

Caudal anesthesia is a routinely used regional anesthetic technique that can be much useful in provision of peri- and post-operative analgesia. It can be used either as sole anesthetic modality or can be an ancillary to

general anesthesia.

Anesthetists carry out caudal epidural techniques by gaining access to the epidural space through the sacral hiatus. In adults, the level of spinal cord ending is at L1-2 and the dural sac at S1-2. In children, the spinal cord finish at L3-4 and the dural sac at S3-4, with cephalad progression over the first year of life. In young infants, it is possible to enter the dural sac during the performance of a caudal epidural block.

Methods: -

It was an audit study. We collected data on 114 pediatric patients. We compared the postop pain score in caudal and non-caudal block patients. The parents of children were advised to make sure that the children were nil orally up to 6 hours before surgery, and clear fluid orally was allowed only up to 4 hours before surgery.

The child positioning for caudal block was in the lateral decubitus. In this position, the legs were bend at the hip and knee such that the patient was in a stable position. Children were induced General anesthesia before caudal placement. Before caudal block the area was cleaned and prepped with chlorhexidine. Single-shot caudal blocks with a 22-gauge short-beveled Tuohy needle was utilized. Caudal blocks were usually performed with 0.25% bupivacaine in a dose of 1 ml/kg, just after induction of general anaesthesia.

After surgery, the children were shifted to post operative recovery area and were observed up to 60 minutes in recovery area and then in postoperative surgical ward for 24 h, and observations were recorded at 1, 12, and 24 h. Nurse on duty assessed pain score using FLACC score (scale of 0–10 based on the child's Face, Arm movement (substituted for Leg movement), Activity, Crying and Consolability, each graded between 0 and 2 points. In postoperative ward, resident urology on duty, also recorded the patient for the following parameters. Type of analgesia and total dose till 48 hours of surgery, (need for Nalbuphine needed or Paracetamol or Brufen) were recorded in proformas.

Results:-

The mean age of the patients was 61.61 ± 4.25 months. Of these 52 (45.6%) procedures involved caudal block and 62 (54.4%) did not involve caudal block. Of the procedures, 34 were Posterior Urethral Valve fulguration (PUV), + cystoscopy 17 were Herniotomy, 30 were orchidopexy, 14 were circumcision, and 12 were sting

procedure and 6 miscellaneous. Please see table 1 for more details of procedures undergoing caudal block.

Caudal Block (n=52)		Non-Caudal Block (n=62)	
Procedure	Number Patients %	Procedure	Number Patient%
PUV Fulguration + Cystoscopy	18(51.4%)	PUV Fulguration + Cystoscopy	17(48.6%)
Circumcision	10(71%)	Circumcision	4(29%)
Herniotomy	8(47%)	Herniotomy	9(53%)
Orchidopexy	12(40%)	Orchidopexy	18(60%)
Sting Procedure	4(33%)	Sting Procedure	8(66%)
Miscellaneous		Miscellaneous	6(100%)

Table-1 (procedures done under caudal and non-caudal block).

After calculating pain at 1,12 and 24 hours we divided pain category intensity wise into pain score 1-3 = Mild discomfort; 4-6 = Moderate pain; 7-10 = Severe discomfort/pain. Please see table 2 for more details.

PAIN SCORE	Time of recording pain post operative period	CAUDAL BLOCK (% patients)	NON-CAUDAL BLOCK (% patients)
No Pain	1 hour	21.84%	11.2%
	12 hours	55.7%	33.87%
	24 hours	77.22%	59.67%
Mild Pain	1 hour	42.30%	43.54%
	12 hours	30.76%	35.48%
	24 hours	11.26%	17.74%
Moderate Pain	1 hour	23.07%	29.03%
	12 hours	9.61%	14.51%
	24 hours	5.6%	11.29%
Severe Pain	1 hour	12.89%	16.23%
	12 hours	3.94%	16.14%
	24 hours	5.6%	11.3%

Table-2 (pain scores in postoperative period in caudal and non-caudal block).

Discussion: -

The first author to describe caudal anaesthesia in children within urological surgical procedures was Meredith Campbell in 1933 (7). Over passage of time other studies found that the technique was easy to perform even for beginners.

Nowadays, nearly one quarter of all the anaesthesia related procedures in children include regional anaesthesia (8). Notable among them are single-injection caudal blocks (In range of 80% in European centres up to 97% in the USA. (8,9) According to one reputable data in children, caudal blocks are mainly used in children (age range 1-3 years).

Ben-David *et al.* explained the the role of caudal epidural block in lowering the GA requirements intraoperatively and resultant pain relief in the post operative period (10). Caudal block results in reduced requirements for the sedative-hypnotic in GA (12). Cesim *et al.*'s study also shed light on the vitality of role of the caudal block in achieving better postoperative pain control (13).

The advantages of using the regional anesthesia techniques include reduced utilization of opioids and their related side effects (14). In one study, out of the 38 children who received a caudal block, two children had

developed complications such as block failure in (5.3%), blood aspiration in 2.6% patients, and dural puncture in 2.6% (15). In our study we had one block failure and no other major complications related caudal block. This is deemed as very low rate of complications.

We can see from table 2 that caudal block patients in our audit had lower pain scores when compared to those children who did not have caudal block. We concluded that caudal block use in children in urological surgeries is a secure and safe regional anaesthesia technique. Similar to current studies, local anaesthetic toxicity was not found in our patients with the use of bupivacaine in a volume of 1 mL.kg^{-1} with a concentration of 0.25%.

Conclusion:

We concluded that caudal block was safe and effective in controlling post op pain in children who had undergone various urological procedures.

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