Neurostimulation in the pudendal nerve block in pediatric surgery: a randomized controlled trial

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Background :

Neurostimulation is possible in the pudendal block considering that it is a mixed nerve.

The aim of this study was to compare the efficacy of neurostimulation compared to the loss of resistance in the pudendal block during circumcision surgery and anterior hypospadias in children .

Methods :

- Following Ethical Committee approval and parental informed consent
- Study design : a prospective randomized study
- Inclusion criteria :
 - 1 to 9 year-old
 - hypospadias surgery , urethral fistula repair or circumcision.
- No-inclusion criteria :
 - allergy to anesthetic products
 - coagulopathy
 - infection at the site of puncture
- Exclusion criteria :
 - a block’s failure
 - intraoperative parenteral analgesic surgical complication
- 2 groups:**
 - Group 1:** Block with loss of resistance
 - Group 2:** block with neurostimulation
- Efficiency of the pudendal block, Quality of postoperative analgesia evaluated by the CHEOPS score (awakening, H1, H2, H4, H6) , Need for analgesics in the hospital and at home and the parents satisfaction were recorded.
- Patients received paracetamol 15 mg per kg if CHEOPS> 7 and nalbuphine if persistent pain (CHEOPS> 7).
- The statistical analysis was carried out by SPSS software 19 (p is significant if < 0.05).

References :

1- Analgesia for infants’ circumcision. Bellini and al. Ital J Peditr. 2013
2- The Effectiveness of Pudendal Nerve Block Versus Caudal Block Anesthesia for Hypospadias in Children. Naja and al. anesthesia and analgesia. 2013

Results :

- 78 patients were included in the study and 7 were excluded
- The block rate failure was comparable in the 2 groups.
- 71 patients were included in the statistical analysis
- group 1 (n = 35 ; 88.6%) and group 2 (n = 36 ; 91.7%).
- The mean age of the patients was 42 months [8-108]
All children were classified ASA I.
- The two groups were comparable for the demographic characteristics .

Table 1: The median of CHEOPS score for the 2 groups

	Group 1		Group 2		
	median	IR	median	IR	P
CHEOPS H0	5	[3 ; 11]	5	[4 ; 10]	0.90
CHEOPS H1	5	[4 ; 9]	5	[4 ; 9]	0.96
CHEOPS H2	5	[4 ; 6]	5	[4 ; 7]	0.84
CHEOPS H4	5	[4 ; 9]	5	[4 ; 8]	0.31
CHEOPS H6	5	[4 ; 7]	5	[4 ; 7]	0.96

Table 2: Analgesia requirement at hospital

	Group 1	Group 2	P
Paracetamol consumption	45.7%	38.8%	0.052

- At the hospital, there was no significant difference in the use of analgesics between the two groups.

Table 3: Analgesia requirement at home

	Groupe 1	Groupe 2	P
PPMP scale > 7	14 (40%)	9 (25%)	0.18
Paracetamol require	1 [1 ; 4]	1 [1 ; 3]	-
Ibuphil require	4 (28.6%)	3 (33.3%)	0.6

- At home, 23 patients (14 in group 1 and 9 in group 2) have received paracetamol, with no significant difference between the two groups.

Table 4: Parents’ satisfaction

	Satisfaction evaluation	Groupe 1	Groupe 2	P
Parents’ satisfaction	Low	5.7%	0	0.1
	Moderate	8.6%	0	
	Good	82.9%	91.7%	0.06
	Excellent	2.9%	8.3%	

- Parental satisfaction was insignificant in two groups (82.8% versus 97.2, p =0.052).

Conclusion :

Neurostimulation doesn’t increase the effectiveness of the pudendal block.