



Comparison of dorsal penile nerve block at the beginning versus conclusion of circumcision repair in children for postoperative pain control: A randomized controlled trial



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Introduction: This study was conducted to determine optimal timing for dorsal penile nerve block (DPNB) in regard to postoperative pain control for pediatric patients undergoing circumcision. Performing nerve blocks prior to tissue manipulation has been shown to result in reduced postoperative pain medication requirements in adults. We hypothesized that patients receiving pre-incision DPNB would require less opioid medication than those receiving DPNB post-procedure.

Methods: In this randomized controlled trial, ninety-eight participants were recruited from November 2014 through September 2015; forty-four were enrolled into Group A (pre-incision DPNB) and forty into Group B (post-procedure DPNB). All participants were male, American Society of Anesthesiology physical classification status I or II and <12 years old. Each participant received general anesthesia maintained with sevoflurane and a laryngeal mask airway. Group A received DPNB immediately prior to incision and Group B received the block post procedure but before emergence. The anesthesiologist, nurse, participant and parents were all blinded to the treatment group. Statistical analysis was performed using a single-tailed paired t-test on multiple variables. Cosmetic scores were evaluated at a six-week follow up exam and analyzed using a chi-squared test.

References:

1. Ejlersen E, Andersen HB, Eliassen K, Mogensen T. A comparison between preincisional and postincisional lidocaine infiltration and postoperative pain. *Anesthesia & Analgesia*. 1992;74(4):495-498.
2. Chhibber AK, Perkins FM, Rabinowitz R, Vogt AW, Hulbert WC. Penile block timing for postoperative analgesia of hypospadias repair in children. *The Journal of Urology*. 1997;158(3 Pt 2):1156-1159.

Table 2. Participant features and results pre- and post-procedure

Participant Characteristics	Group A (pre-incision)	Group B (post-procedure)	P-value
Number of Participants	40	44	
Age in months (mean ± SD)	26.05 ± 30.58	18.59 ± 23.45	0.22
Weight in kg (mean ± SD)	13.62 ± 8.60	11.54 ± 5.43	0.19
ASA Classification (mean ± SD)	1.45 ± 0.50	1.30 ± 0.46	0.15
Participants receiving Pre-op midazolam	1	3	
Pain Medication Requirements			
Total Opioid in mcg (mean ± SD)	21.48 ± 13.58	26.94 ± 16.68	0.05
Intraoperative Opioid in mcg (mean ± SD)	19.81 ± 11.96	25.17 ± 15.83	0.04
Postoperative Opioid in mcg (mean ± SD)	1.67 ± 4.70	1.77 ± 4.50	0.46
Total Acetaminophen in mg (mean ± SD)	27.11 ± 52.54	47.20 ± 66.59	0.06
Surgical and PACU Times			
Wheels-in-wheels-out (operating room) time (min) (mean ± SD)	49.48 ± 11.68	51.95 ± 9.92	0.30
PACU Phase I time (min) (mean ± SD)	30.05 ± 14.66	31.91 ± 15.89	0.29
PACU Phase II time (min) (mean ± SD)	48.53 ± 18.66	57.39 ± 26.51	0.04
Total time wheels-in-wheels-out (operating room) + PACU (min) (mean ± SD)	125.10 ± 30.65	136.77 ± 33.87	0.05
Post surgical cosmetic score at six-week evaluation (chi-Square statistic)			
Cosmetic score = 1	34	37	0.90
Cosmetic score = 2	6	7	
Cosmetic score = 3	0	0	
Cosmetic score = 4	0	0	

Abbreviations: min = Minutes; ASA = American Society of Anesthesiology; PACU = Post-anesthesia care unit; SD = Standard deviation.

Penile Appearance	Numeric Score
Appropriate	1
Slight redundancy of prepuce	2
Penoscrotal webbing (over resection)	3
In need of revision	4

Results: Pre-procedure participant characteristics were similar between the groups (p>0.05). Group A required less opioid medication (p=0.04) and had a shorter PACU phase II time (p=0.04). Length of operating room time was not different between the groups (p=0.30). Cosmetic scores were also similar between the groups (p=0.90).

Discussion: Pre-incision was found to be the optimal time to perform DPNB regarding opioid consumption for pediatric patients undergoing circumcision. The reduction in opioids and reduced PACU time should aid in decreasing postoperative complications, as well as reduce the length of their hospital experience.

Conclusions: With regard to pediatric patients undergoing circumcision, the optimal time to perform DPNB is pre-incision.

