

**Research Article****Comparison of Caudal Block versus Penile Nerve Block In Terms Of Post-Operative Pain In Children Undergoing Penile Procedures****<sup>1</sup>Faiza Malik, <sup>2</sup>Hafiz Ali Abbas Gillani,  
and <sup>3</sup>Muhammad Aqeel**<sup>1</sup>University of Health Sciences, Lahore, Pakistan.<sup>2</sup>Medical Officer, THQ Hospital, Khairpur Tamewali, Pakistan.<sup>3</sup>Services Hospital, Lahore, Pakistan**ABSTRACT**

**Background:** Patient's comfort during the procedures especially penile procedures in children is of prime importance. It eases the pressure on doctors during the procedures and makes painless interaction with the children during the act of penile surgical procedures. Painless feel is mandatory in pediatric age groups for the comfortable accomplishment of penile surgery in children. Various techniques and methods are available for the achievement of set objective. In the most employed and common techniques those relieve the feeling of pain are nerve blocking, inguinal block, penile block and Caudal block. Post-surgical pains are relieved through these techniques and methods.

**Study Design:** Design of the in-hand research project is Randomized Controlled Trial (RCT).

**Place and Duration:** The in-hand research was completed in the period of six months. The time span extends from March to September, 2012. Venue of the research was in Islamabad at Pakistan Institute of Medical Sciences (PIMS).

**Results:** For both the groups i.e. penile and caudal block respectively group "A & B" mean age of  $3.2 \pm 2.4$  years was selected for the former and  $3.9 \pm 2.8$  years was selected for the latter group. Both the groups presented the proportion of circumcision as 22.1 & 19.1 respectively. Number of cases falling in the category of circumcision were fifteen and thirteen of each case respectively. Longer duration anesthesia administration was observed when we compared the administration time of caudal to the time of penile block. Time taken by the penile group anesthesia administration was  $102.1 \pm 15.4$  minutes. Whereas, time taken by the caudal group anesthesia administration was  $113.4 \pm 11.8$  minutes. Both the groups regarding pain scale measurement reflected unlike readings. Group "A" of penile block reflected less pain scoring when the rate was compared with the patients of group "B" of caudal block. P-value of 0.0001 was present during the act of data analysis during the comparison of penile and caudal block responses in the children taken as patients of penile procedures.

**Conclusion:** It is clearly reported that the amount of penile anesthesia is heavier than the dose of caudal anesthesia administration for the pain relief in post-operative and peri-operative cases of penile surgeries of children with the age limit of fifteen days to a maximum of twelve years.

**Keywords:** Post-operative pain, Peri-operative pain, Penile surgery, Penile block, caudal block and Anesthesia.

**INTRODUCTION**

No comparison was made in the previous studies or there are few efforts made in the comparison and recommendation of penile block and caudal block. Necessity of this research had been rationalized in the latest developments in the field of anesthesia as there are multiple companies and methods have been introduced over the passage of time for the pain relieving in the cases of peri and

post-operative pains specially in children of low age ratios [1]. Use of opioids and other related methods is common in the operations of children. In the pediatrics cases painless interaction is very important and emphasized. Procedures such as circumcision and reconstructive use penile block method to relieve the pain. Numerous studies have shown various results regarding the efficacy of

modalities, blockades and anesthetic aids. The same topic was also researched in Germany [3, 4, 5]. The research reflected a less rate of maturation in penile over caudal group. Counts of both the analgesics were penile as 5/33 and 15/27 for penile and caudal groups respectively. 0.05 was observed as p-value. No difference was observed in pain scale in the both caudal and penile analgesic. A commonly used technique is caudal block mostly employed in the region blocks. Few experts also deduce that caudal block has almost replaced penile block in the children surgeries [3, 4]. Caudal block focuses the long-lasting analgesia and minimum side-effects of the anesthetic. Maheen, in her studies favors the implementation of penile block as it can manage the factor of pain effectively in comparison to caudal analgesia. Readings of pain scale are 51.2 and 27.9 percent respectively for both types of nerve blocking systems. In the remote regions mostly used technique is penile block in the cases of penile surgeries, evidence is needed for the advocacy of this argument.

**LITERATURE REVIEW**

Most employed and common techniques those relieve the feeling of pain are nerve blocking, inguinal block, penile block and Caudal block. Post-surgical pains are relieved through these techniques and methods. Design of the in-hand research project is Randomized Controlled Trial (RCT). The in-hand research was completed in the period of six months. The time span extends from March to September, 2012. Venue of the research was in Islamabad at Pakistan Institute of Medical Sciences (PIMS). For the research project a total of 136 male cases were short listed with the age factor starting from just fifteen days to a maximum of twelve years. Total number of cases

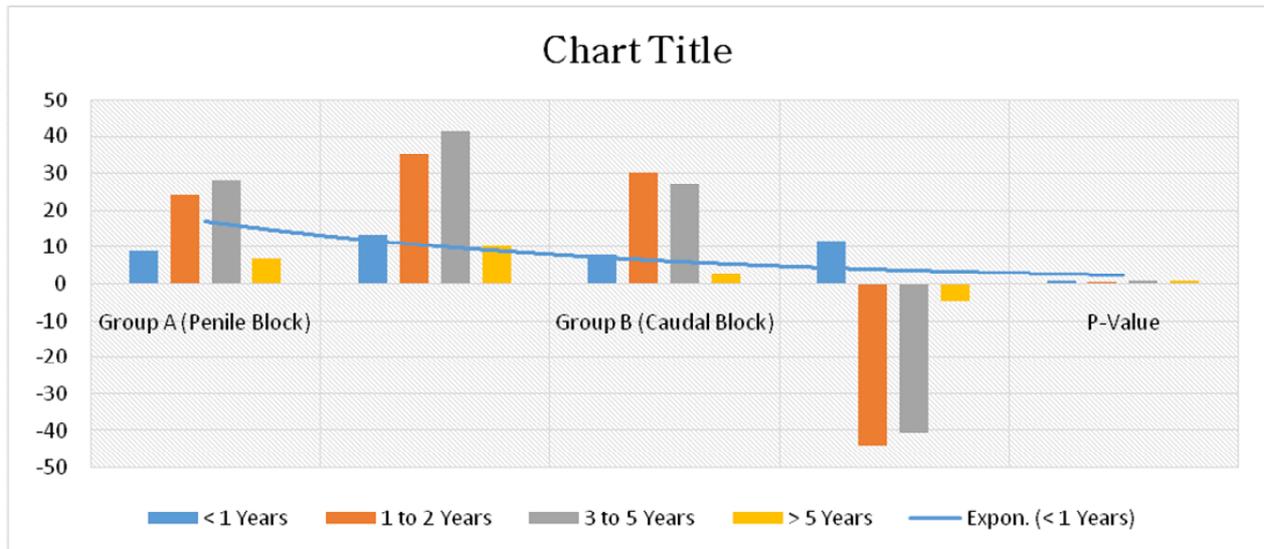
were divided in to sub groups of equal strength. Each group consisted of sixty-eight cases. One group was named Penial Block Group “A” and the second group was named as Caudal Block Group “B”. For the measurement of pain scale was used. Vital elements of the pain scale were activity, crying, legs, face and consoliability. The principle objective of all this effort was the comparison of Penile and Caudal Block for their effectivity and usefulness with minimum complexities and morbidities. Research was continued after the process of permission accordance by the caretakers and parents of the children and ethical committee permission for the nature of research. Data collection was performed on a predesigned and specific form. Brief history and clinical examination was also considered for the data collection. The post-operative pain scale data collection was made in intervals varying from one to twelve hours maximum. SPSS V-11 and Che-Square test was used for the analysis of data and variables, comparisons were drawn on the basis of surgical type, age, gender and pain variables. Calculation of mean age was accomplished through T-Test with due consideration of time duration and p-value as < 0.05.

**RESULTS**

For both the groups i.e. penial and caudal block respectively group “A & B” mean age of  $3.2 \pm 2.4$  years was selected for the former and  $3.9 \pm 2.8$  years was selected for the latter group. Both the groups presented the proportion of circumcision as 22.1 & 19.1 respectively. Mainly the cases were in the range of 1-5 years in both penile and caudal block regions with a ratio of 76.4 and 84.8 percent respectively. There was no visible difference in the both age groups as they were similar (Table-I).

**Table 1:** Age of study subjects in the two groups

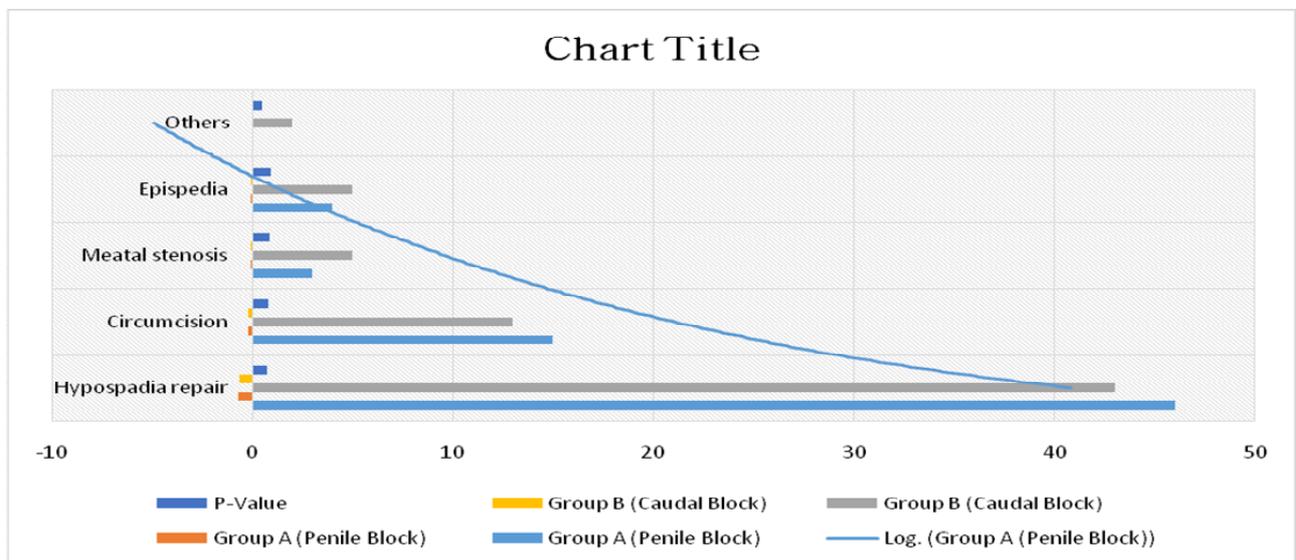
Mean + SD	3.2 + 2.4		3.9 ± 2.8		0.39
Number	n=60		n=60		
Groups	Group A (Penile Block)		Group B (Caudal Block)		P-Value
Age	Number	Percentage	Number	Percentage	
< 1 Years	9	13.2	8	11.7	0.78
1 to 2 Years	24	35.2	30	44.1	0.38
3 to 5 Years	28	41.2	27	40.7	0.86
> 5 Years	7	10.3	3	4.4	0.74



How various groups responded to both the types of the surgeries in terms of number, percentage and p-value is reflected below (Table II).

**Table II:** Type of penile surgery done in the study

Groups	Group A (Penile Block)		Group B (Caudal Block)		P-Value
	Number	Percentage	Number	Percentage	
Hypospadias repair	46	-67.60%	43	-63.20%	0.72
Circumcision	15	-22.10%	13	-19.10%	0.83
Meatal stenosis	3	-4.40%	5	-7.30%	0.87
Episcidia	4	-5.80%	5	-7.30%	0.91
Others	0	0.00%	2	-2.90%	0.49



\* Difference in proportions was calculated using chi-square test

**Administration of Anesthesia in Penile and Caudal Block Groups**

Longer duration anesthesia administration was observed when we compared the administration time of caudal to the time of penile block. Time taken by the penile group anesthesia administration was  $102.1 \pm 15.4$  minutes. Whereas, time taken by the caudal group anesthesia administration was  $113.4 \pm 11.8$  minutes.

Both the groups regarding pain scale measurement reflected unlike readings. Group “A” of penile block reflected less pain scoring when the rate was compared with the patients of group “B” of caudal block. P-value of 0.0001 was present during the act of data analysis during the comparison of penile and caudal block responses in the children taken as patients of penile procedures.

**Table III:** Post-Operative Pain Comparison in both the groups of the research study

Time	Group A (Penile Block)	Group B (Caudal Block)	P-Value
One hour	1.5 + 0.4	1.9 + 0.5	0.001
3 hours	1.6 + 0.5	2.8 + 0.9	<0.001
6 hours	1.8 + 0.5	3.9 + 1.5	<0.001
9 hours	2.5 + 0.8	5.4 + 1.6	<0.001
Overall	3.6 + 1.1	5.5 + 1.2	<0.001

\* Difference in means calculated using student’s t-test

In both the cases and groups at a rate of 1.5 percent bleeding was observed in the children of penile surgery and in caudal block group motor block was observed of same rate as mentioned for the penile group.

**DISCUSSION**

Patient’s comfort during the procedures especially penile procedures in children is of prime importance. It eases the pressure on doctors during the procedures and makes painless interaction with the children during the act of penile surgical procedures. Painless feel is mandatory in pediatric age groups for the comfortable accomplishment of penile surgery in children. Various techniques and methods are available for the achievement of set objective. In the most employed and common techniques those relieve the feeling of pain are nerve blocking, inguinal block, penile block and Caudal block. Post-surgical pains are relieved through these techniques and methods. Design of the in-hand research project is Randomized Controlled Trial (RCT). In terms of venue and duration, in-hand research was completed in the period of six months. The time span extends from March to September, 2012. Venue of the research was in Islamabad at Pakistan Institute of Medical Sciences (PIMS). In the discussion of materials and resources in this research project a total of 136 male cases were short listed with the age factor starting from just fifteen days to a maximum of twelve years. Total number of cases were divided in to sub groups of equal strength. Each group consisted of sixty-eight cases. One group was named Penial Block Group “A” and the second group was named as Caudal Block Group

“B”. For the measurement of pain scale was used. Vital elements of the pain scale were activity, crying, legs, face and consoliability. The principle objective of all this effort was the comparison of Penile and Caudal Block for their effectivity and usefulness with minimum complexities and morbidities. If we discuss the results and outcomes in both the groups i.e. penial and caudal block respectively group “A & B” mean age of  $3.2 \pm 2.4$  years was selected for the former and  $3.9 \pm 2.8$  years was selected for the latter group. Both the groups presented the proportion of circumcision as 22.1 & 19.1 respectively. Number of cases falling in the category of circumcision were fifteen and thirteen of each case respectively. Longer duration anesthesia administration was observed when we compared the administration time of caudal to the time of penile block. Time taken by the penile group anesthesia administration was  $102.1 \pm 15.4$  minutes. Whereas, time taken by the caudal group anesthesia administration was  $113.4 \pm 11.8$  minutes. Both the groups regarding pain scale measurement reflected unlike readings. Group “A” of penile block reflected less pain scoring when the rate was compared with the patients of group “B” of caudal block. P-value of 0.0001 was present during the act of data analysis during the comparison of penile and caudal block responses in the children taken as patients of penile procedures [9].

If we compare the pain scale of both the groups penile groups faced and felt less pain and reflected low incidence of post-procedure pain factor. Whereas, in the group of caudal blocks the pain factor was measures more than penile cases. The count of pain in penile block ranged from 1.2 to 2.5 whereas in the caudal block group the same count was noticed from 1.9 to 5.9, in the time duration. Various experts recommend one over the other for multiple reasons and varying grounds. Ashley recommends in the post-operative pains penile block over caudal block when compared in terms of pain relieving factors [10]. Kundra also supports penile analgesia in children post-operative conditions over the caudal block as caudal block leads to motor block in few cases [12]. According to Metzelder, penile block is superior to caudal block in the distal repair of hypospadias cases and also in the conditions of peri-operative analgesia [2]. Current research paper also validates the previous findings of different researchers in terms of effectivity of pain control in the comparison of penile and caudal block for the peri-operative and post-operative conditions, it is recommended that penile block has better results over the use of caudal block. Although research was limited to the readings of one t twelve hours, later effects of pain in children are not covered in the scope of the research study. Long-term penile or caudal block effects were also excluded and factors of patient's satisfaction and before the operation conditions were also excluded from the scope of the research.

## CONCLUSION

Longer duration anesthesia administration was observed when we compared the administration time of caudal to the time of penile block. Time taken by the penile group anesthesia administration was  $102.1 \pm 15.4$  minutes. Whereas, time taken by the caudal group anesthesia administration was  $113.4 \pm 11.8$  minutes. Both the groups regarding pain scale measurement reflected unlike readings. Group "A" of penile block reflected less pain scoring when the rate was compared with the patients of

group "B" of caudal block. P-value of 0.0001 was present during the act of data analysis during the comparison of penile and caudal block responses in the children taken as patients of penile procedures. It is clearly reported that the amount of penile anesthesia is heavier than the doze of caudal anesthesia administration for the pain relief in post-operative and peri-operative cases of penile surgeries of children with the age limit of fifteen days to a maximum of twelve years. Doctors and experts also fine penile block easier to administrate as there is no need of expert and anesthetists and a doctor can administrate it on his own. Multi-dimensional studies are required and recommended for the missing parts of the study to compare penile and caudal block in the peri-operative conditions and after the twelve hours bracket the reaction of analgesics and pain scale measurement.

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