COMPARISON OF POST CIRCUMCISION COMPLICATIONS AND WOUND HEALING IN NEONATES AND INFANTS BY PLASTIBELL METHOD

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ABSTRACT

Objective: To compare the frequency of post circumcision complications like bleeding and infection along with wound healing in neonates and infants by Plastibell method.

Study Design: Quasi experimental study.

Place and Duration of Study: Combined Military Hospital Rawalpindi, 3 Mountain Medical Battalion Bhimber and Pak Emirates Military Hospital Rawalpindi, from Apr 2008 to Apr 2016.

Methodology: A total of 400 patients (group A = 200 Infants and group B = 200 Neonates) were included in the study that underwent circumcision by Plastibell Method. Patients were followed up in the surgical Out-patients department (OPD) after 5 days for assessment and earlier in case of any complication. Outcomes were measured by absence or presence of infection, post operative bleeding and cosmetic acceptance by the parents.

Results: Comparison between the two groups showed the bleeding rate was 8% in group A and 7% in group B (p=0.704). Infection rate was 6% in group A and 5% in group B (p=0.661). Four percent of circumcisions in group A revealed delayed wound healing as opposed to 2% in group B (p=0.241).

Conclusion: In our study no significant difference was found between the two patient groups in terms of bleeding, infection and the cosmetic outcome. Circumcision by Plastibell device is an acceptable method with comparable results in both Infants and neonates.

Keywords: Circumcision, Complications, Neonate and Infants, Plastibell method.

INTRODUCTION

Circumcision is the commonest surgery performed in infants[1]. According to American Academy of Pediatrics, circumcision reduces the risk of UTI of infancy, phimosis, paraphimosis, balanoposthitis and future risk of penile cancer development[2]. In addition, there is evidence that circumcised men have a lower risk of acquiring HIV and human papilloma virus[3]. In the neonate and infant, indications for circumcision include febrile UTI, congenital anomaly predisposing to UTI (i.e. hydronephrosis or VUR), megaprepuce, recurrent balanoposthitis, balanitis xerotica obliterans and secondary phimosis[4]. Contra-indications to neonatal circumcision include hypospadias, epispadias, chordee, webbed penis, micro phallus, and hidden penis secondary to hydrocele or hernia[4].

As yet there is no consensus for the best age and method for circumcision[5]. There are different kinds of surgical techniques for circumcision. The most commonly used amongst them is the Plastibell method[5]. Circumcision like any other surgical procedure carries a risk of complications[6]. Complications of circumcision include bleeding, infection, meatal stenosis, and inadequate removal of foreskin, penile injury, urethral injury, and painful scarring[6].

There are only few studies conducted to compare the results of performing Plastibell circumcision in neonates and infants either locally or internationally[7].

The objective of this study was to determine the best age for circumcision by comparing the frequency of post circumcision complications like bleeding and infection along with wound healing in neonates and infants by a standard Plastibell Method. The results of our study can be applied on the patients presenting in Surgical Outpatient Department, Pak Emirates Military Hospital,

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Rawalpindi as such that the age with minimum complication rate and satisfactory surgical site healing will be adapted as a standard and all parents would be recommended, that age for their child's circumcision.

METHODOLOGY

This quasi experimental study was conducted at Combined Military Hospital Rawalpindi, 3 Mountain Medical Battalion Bhimber and Pak Emirates Military Hospital Rawalpindi from April 2008 to April 2016. Four Hundred Patients (200 infants and 200 neonates) were included in the study. Patients were divided into two equal groups depending on their age i.e. group A with 200 neonates and group B with 200 infants. Both groups underwent a standard Plastibell method of circumcision by the same surgical team. According to World Health Organization definition a neonate is a new born child under 28 days of age whereas an Infant is a child between one month and one year.

Children between the ages of 3 weeks to 1 year with permission of parents to participate in the study were included. Exclusion criteria was children with hypospadias, chordee, epispadias, webbed penis, microphallus, hidden penis secondary to a large hydrocele or hernia and with deranged bleeding or clotting profile.

After obtaining informed written consent from the patient's parents the genitalia were prepared with a povidone-iodine solution and draped in a sterile fashion. A dorsal penile nerve block was applied using 1% xylocaine, with additional anesthetic administered circum-ferentially about the penile base (maximum 3 mL). The prepuce was first fully retracted to expose the coronal sulcus and retained smegma removed. The tip of the prepuce was then grasped with two artery forceps and pulled forward over the glans with light traction. The phimotic ring was stretched with a clamp and the foreskin was retracted slightly; a dorsal slit was made. A straight hemostat was placed on the dorsal prepuce at the 12 o'clock position and held in place for 10 seconds. The clamp was removed and the crushed line was incised. The foreskin was then retracted completely, exposing the glans. On occasion more than one dorsal slit was necessary. The frenulum was not incised. Next, an appropriate size Plastibell was obtained. The available diameters range from 1.1 to 1.7cm. Most newborns will require 1.2 or 1.3 cm size.

The Plastibell was placed over the glans, and the foreskin was drawn up over the device. The Plastibell should fit loosely over the glans. There is a groove in the Plastibell. A heavy linen thread which comes with the Plastibell device was then tied tightly around the Plastibell in the groove. The foreskin was excised, and the Plastibell remains in place, until it eventually falls off usually within 4 to 7 days. Parents were advised to start sitz baths (Luke warm water with few drops of Dettol solution in it) from next morning twice daily for one week and let the dressing be off at its own. Syrup Calpol (Paracetamol) was advised as analgesic in accordance with the age of the child. Patients were followed up in the surgical OPD after 5 days for assessment and earlier in case of any complication.

Outcomes were measured by the presence or absence of infection, post-operative bleeding and cosmetic acceptance by the parents. In our study bleeding was considered as present, if the dressing got soaked enough to be changed or the blood trickled down the surgical site. Infection was noted as present, if pus was identified at the surgical site or organisms were isolated from the fluid from the surgical incision site on culture sentivity. Wound Healing was considered satisfactory when granulation tissue was evident from the wound margins and the final appearance was such that the glans was fully exposed and cut edge of prepuce was lying proximal to the coronal sulcus. Normally incisional space is filled with granulation tissue by 5th day.

Data had been analyzed using SPSS-20. Mean and standard deviation (SD) were calculated for the quantitative variables. Frequency and percentages were calculated for qualitative variables. The complications were compared

using chi square test, A *p*-value <0.05 was considered as significant.

RESULTS

The age of the patients varied from 3 weeks to 6 months. Mean age of neonates in group A was 14 ± 2 days and infants in group B was 3 ± 0.5 months respectively.

The bleeding rate was 8% in group A and 7% in group B (*p*=0.704). Infection rate was 6% in group A and 5% in group B (*p*=0.661).

Ninety six percent of circumcisions in group A had a satisfactory wound healing as opposed to 98% of group B meaning 4% of circumcisions in group A revealed delayed wound healing as opposed to 2% of group B (*p*=0.241).

Table: Comparison of post operative bleeding, infection and wound healing in two groups.

	Group-A	Group-B	*p*-value
Bleeding			
Present	16 (8%)	14 (7%)	0.704
Absent	184 (92%)	186 (93%)	
Infection			
Present	12 (6%)	10 (5%)	0.661
Absent	188 (94%)	190 (95%)	
Satisfactory Wound Healing			0.241
Present	192 (96%)	196 (98%)	
Absent	8 (4%)	4 (2%)	

There was insignificant difference in terms of bleeding, infection and wound healing between the both groups. Results of both groups were comparable and statistically non-significant (table).

DISCUSSION

About one-sixth of the world's men undergo circumcision for religious, ethnic and medical reasons[8]. In Muslim World, 97% of the male population undergoes religious circumcision early in their life[9]. Since long, it has been a common practice that circumcision is conducted by untrained professionals under unhygienic conditions despite obvious contra-indications. With improvement in literacy rate, the number of circumcisions performed by the trained doctors is increasing and the complication rate is decreasing[10]. It is, therefore, of great importance to identify the best age and method of circumcision with minimum complication rate and satisfactory cosmetic outcome in our set up. Routine neonatal circumcision is a safe procedure[11]. The commonly used techniques for circumcision in our set up are conventional open technique, bone-cutter technique and Plastibell technique. Religion, culture and ethnic rites are the major determinants of circumcision overall[12]. In our setup, religion appears to be the only indication for circumcision.

The overall complication rate of the procedure ranges between 0.19% and 3.1%[13] however, it was higher in some studies. Upon a retrospective study, Linus reported 20.2% complication rate in infants[14]. The comparatively less complication rate (17.6%) was reported in other randomized trials of childhood subjects[15].

The bleeding rate was 8% in group A and 7% in group B. There was no significant difference between the bleeding rates of two groups. Mousavi[16] reported post circumcision bleeding complication rate of 9%. Fraser[17] reported postoperative bleeding complication in 11% cases of bone-cutter method and in 10% cases of conventional open technique. Rehman[18] reported a bleeding rate of 9% whereas William[19] stated it to be 6% in their studies respectively.

Wound infection is another feared complication of any surgical procedure. In our study the infection rate was 6% in group A and 5% group B. This is significantly lower than those reported by Mak[15]. (13.7% in bone-cutter and 14.9% in dissection group). Fraser[17] reported 6% infection rate with Plastibell which is same as in our study. Sorensen[20] reported infection rate of 5% with bone-cutter method[21].

Patients were examined on follow up and their post circumcision wound healing was assessed. In group A 96% whereas in group B 98% had satisfactory wound healing. Victor[21] reported 96% satisfactory wound healing rate amongst the infants.

The results of this study were in accordance to any of the internationally conducted studies.

CONCLUSION

Since there was no statistically significant difference in the results of neonates and infants who underwent circumcision by Plastibell method in terms of bleeding, infection and the cosmetic outcome, it is recommended that circumcision should preferably be performed in the neonatal period as there is no advantage if it is delayed till infant stage.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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