Original Article

Safe Practice of Bipolar Current for Hemostasis in Pediatric Circumcision with Plastibell at a THQ Hospital Lahore: A Single Surgeon Experience

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ABSTRACT

Objective: To determine the outcome of use of bipolar current for hemostasis in pediatric circumcision with Plastibell performed by a single surgeon at a THQ hospital in order to recognize safe use of bipolar current was the objective of this study.

Study Design: Retrospective Study

Place and Duration of Study: This study was conducted at the Government THQ Hospital Sabzazar, Lahore form June, 2018 to December, 2020.

Materials and Methods: 541 uncircumcised infants, aged 1-9 months. Infants with Congenital Cardiac & respiratory disorders, Jaundice, Bleeding disorders, Urinary tract infection, Balantitis, Paraphimosis, buried penis and for Revision circumcision, were excluded. All circumcisions were performed with the use of Plastibell device by the single consultant surgeon under local anesthesia. Bipolar current with short burst was utilized at frenulum to secure hemostasis. Infants' demographics and postoperative outcome were recorded.

Results: The mean age of infants was 3.07±1.94 months (Range: 1-9 months). Only one infant (0.18%) had congenital abnormality i.e. albinism. Mean clotting time and Mean Bleeding time were 10.04±1.29 min. and 3.51 ±0.98 min, respectively. Mean duration of surgery and Mean hospital stay were 5.97±4.01 min. and 20.54±10.96 min., respectively. There was penile swelling in 4.25% infants, Hemorrhage in 0.0%, Glans injury in 0.0%, Meatus injury in 0.0%, Urine retention in 0.0%, Penile/ glans necrosis in 0.0% and Wound infection in 0.0% infants. Removal of Plastibell for hemostasis was not required in any case (0.0%) in our study.

Conclusion: Bipolar current for hemostasis in pediatric circumcision is safe in experienced hands.

Key Words: Bipolar Current; Hemostasis; Pediatric Circumcision; Plastibell

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INTRODUCTION

Circumcision is the primogenital surgical procedure.[1] Being the oldest procedure, many medical and non-medical personals are trained to perform this procedure. Worldwide, people are ready to go for this procedure for ritual & non-ritual purposes.[2] According to WHO, approximately 30% males are circumcised, globally.[3,4] However, in Muslim countries, this operation is mandatory for every male child.[5]

Technique of circumcision has suffered several modifications in every era. [5,6] Though none of these is gold standard procedure but all practices focus on safe and simple circumcision.[7] Circumcision is not free of complications and overall complication rate is 0.2% to 2%.[8,9] Bleeding being the number one complication, hemostasis in circumcision has given the priority in all techniques. Incidence of post circumcision hemorrhage ranges from 0.1% to 35%. [10,11]

Surgeons rely on electric current for hemostasis. Electro surgery has gained a renowned position in this regard. However, use of bipolar current in controlling bleeding during circumcision is always remain controversial.[12] In a retrospective study by Harty NJ[13] et al, post-operative hemorrhage after using bipolar current was reported in 0.6% for the single surgeon. However, in a study by Rasool N, none of the child was observed with postoperative bleeding after bipolar cauterization of frenular band.[14] The purpose of this study was to determine the outcome of use of bipolar current for hemostasis in pediatric circumcision with Plastibell

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performed by a single surgeon at a THQ hospital Lahore in order to recognize safe use of bipolar current.

MATERIALS AND METHODS

This retrospective study was conducted at the Government THQ Hospital Sabzazar, Lahore form June 01, 2018 to December 31, 2020. This study included 541 uncircumcised infants between 1 to 9 months of age. Infants with Congenital Cardiac & respiratory disorders, Jaundice, Bleeding disorders, Urinary tract infection, Balantitis, Paraphimosis, buried penis and for Revision circumcision, were excluded from the study. The study was approved from Ethical Review committee as per institutional guidelines. All circumcision was performed with the use of Plastibell device by the single consultant surgeon under local anesthesia (plain lignocaine 2%) as penile block. Bipolar current (9 watt) with short burst was utilized at frenulum on small amount of tissue (1-2 mm) at one time to secure hemostasis. Infants demographics and Perioperative data including operating room time, length of stay, Post-operative Hemorrhage, swelling, wound infection, urine retention, Glans or meatus injury, penile necrosis after procedure & on follow up visits (2 weeks post-circumcision) were recorded. All the collected data was entered into SPSS version 22 and analyzed. Outcome was presented as frequency and percentage.

RESULTS

Characteristics of infants are shown in Table I. The mean age of infants was 3.07±1.94 months. Only one infant (0.18%) had congenital abnormality i.e. albinism. Perioperative outcome of pediatric circumcision is shown in table 2.

Table No.1: Characteristics of infants (n=541)

Variables		No. of patients (%)
Age (months)	Mean±SD	3.07±1.94
Congenital abnormality		1 (0.18%)
Clotting time	Mean±SD	10.04±1.29 min.
Bleeding time	Mean±SD	3.51 ±0.98 min.

Table No.2: Perioperative outcome of pediatric circumcision (n=541)

Operative outcomes	No. of patients (%)
Mean duration of surgery (Mean±SD)	5.97±4.01 min.
Hemorrhage	0 (0.0%)
Penile Swelling	23 (4.25%)
Urine retention	0 (0.0%)
Glans injury	0 (0.0%)
Meatus injury	0 (0.0%)
Penile/ glans necrosis	0 (0.0%)
Wound infection	0 (0.0%)
Removal of Plastibell for hemostasis	0 (0.0%)
Mean hospital stay	20.54±10.96 min.

DISCUSSION

Bleeding is a renowned post circumcision complication that doesn't need any introduction. Medical and non-medical personnel all are very much aware of it. Several practices are established to minimize this complication. One of these is electrosurgery which is well practiced these days for hemostasis. But the frequent use of electrosurgery doesn't eliminate the risk of electrosurgical burn. Safe use of electrosurgical current is decidedly endorsed in circumcision as electrosurgical burn can lead to penile necrosis, which is stressed as malpractice and a medicolegal case.[15] Bipolar modes of electrosurgery is well respected in open and laparoscopic surgery because of its safe use. Present study shared the outcome of use of bipolar current for hemostasis in pediatric circumcision with Plastibell to recognize safe use of bipolar current by consultant surgeon.

We included infants only in present study with a mean age of 3.07±1.94 months (Range: 1-9 months). Similar to our study, 96.5% was infants (range: 8 days -13 months) in a study by Okeke LI[7] et al. Conversely, in a study by Rasool N [14], 78.23% children were neonates, 19.68% infants, 2.07% children were between 1-2 years of age. A higher age group (Mean±SD; 3.7 ± 4.9 years) was studied by Harty NJ [13] et al. However, Mujawar P[16] et al, included all age groups (1-60 years) in his study and majority i.e.52.0% was <5 years of age. In our study, Mean duration of surgery was short i.e. 5.97±4.01 min. as compared to a study by Mujawar P[16] et al, who reported a longer mean operative time i.e. 21 min.

Out of 541 infants who underwent circumcision in present study, penile swelling was observed in 4.25% infants which was managed conservatively. A higher number of post circumcision swelling (6.0%) was reported by Mujawar P[16] et al. However, post circumcision complications i.e. Plastibell impaction on glans and post-operative phimosis were observed in 1.03% cases (0.51% each) in a study by Rasool N [14]. Okeke LI[7] et al, reported post circumcision complications in 20.2% of cases i.e. redundant prepuce (53.8%), excessive loss of prepuce (24.6%), skin bridges (16.9%), amputated glans (3.1%) and buried penis (1.5%).

Similar to a study by Rasool N [14], incidence of hemorrhage after circumcision was not reported in any infant (0.0%) in present study. However, Harty NJ [13] et al, reported incidence of bleeding in 0.6% cases and all cases managed conservatively. Mujawar P[16] et al, reported hematoma formation in 6.0% cases in his prospective study. Similar to a study by Mujawar P[16] et al, no inury to glans (0.0%) and urthera (0.0%) or infection (0.0%) was observed in any infant in present study.

Complication rate is very low (4.25%) and of minor intensity i.e. penile swelling in present study that was managed conservatively. None of the infant (0.0%) was required removal of Plastibell in order to deal with post circumcision mishap. Use of bipolar current with short burst and small amount of tissue coagulated at one time are the possible explanations of low complication rate in our study. Other reason is that all circumcision was performed by consultant surgeon however in a study by Okeke LI[7] et al, only 35.1% circumcision was performed by doctors. Furthermore, the tight knot application around Plastibell device after adequate removal of foreskin up to corona of glans aids in inhibiting blood oozing from cut skin margins and proximal migration of Plastibell device. All circumcision in present study was performed for ritual purpose like Okeke LI[7] et al, conversely Mujawar P[16] et al, who executed circumcision with medical indications i.e. balanoposthitis, also, however there was no stated surgical site infection in either of these studies.

This is one of the largest study in literature. Further studies in different setups are needed to evaluate the outcome.

CONCLUSION

It is concluded that the bipolar current for hemostasis in pediatric circumcision is safe in experienced hands. So, the extracted formula of safe and swift circumcision from present study is the circumcision by open technique (with Plastibell device), utilizing bipolar current for hemostasis by proficient surgeon.

Author's Contribution:

Concept & Design of Study:	Sidra Dil Muhammad
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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