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Effect of Modifecations of Plastibell Circumcision Technique on Bleeding and Extraskin Complications in Infants

WALID IBRAHIM, M.D.

General Surgery Senior Consultant, New Cairo Hospital, M.Sc., Ain Shams Univeristy, MRCS London

Abstract

Background: Male circumcision is a common outpatient procedure in Arabic and Islamic countries for religious reason. In Saudi Arabia, Plastibell circumcision technique is a verified -proven method in infant up to 4 months.

Aim of Study: The objective of this study is to identify the effect of some modifications on the technique of plastibell circumcision on bleeding and extra skin complications in infants.

Patients and Methods: 600 male participants were included in this study. They visited the surgery clinic at Al Jazeera medical complex, Riyadh, Saudi Arabia over a period of 12 months from June 1, 2022 to May 30, 2023. Patients with the age of the infant should be less than 4 months, patients who met inclusion criteria were randomly divided into the experimental (E) and the control group (C). The procedures were performed by the surgical registrar and medical nurse with a topical local spray anesthesia to the penis. During this year we modulate our method and performance to avoid the complications we faced, and we get the best results at the end.

Results: The study showed that there were significant differences after intervention between both groups in occurrence of bleeding and extra skin.

Conclusion: Circumcision using a plastic bell can be done with a very minimal percentage of complication if we follow certain roles and modifications in the procedure to avoid bleeding and extra skin as well as proximal slippage of the bell.

Key Words: *Circumcision – Plastibell – Complications.*

Introduction

MALE circumcision means surgical removal of the foreskin or the prepuce that covers the glans penis (Fig. 1). It remains one of the most common operations performed globally **[1]** for therapeutic, prophylactic, religious or cultural social reasons. Demographic and health surveys ranked Arabic and Islamic world among the high male circumcision prevalence nations **[2]**. Recently however, these procedures are carried out using plastibell device **[3]**. Since it was first reported in 1956 **[4]**, Plastibell circumcision has gained widespread use **[5]**. The World Health Organization (WHO)'s manual on male circumcision listed the technique as a well proven method with respect to its results and complications. Plastibell device is a clear plastic ring with handle. The ring, which comes in different sizes, has a deep groove running circumferentially. A cotton thread is usually included in the pack. In order to reduce complications such as bleeding in its classical form **[6]**. Plastibell circumcision is safe and easy to perform especially in infants using only local anesthesia with very few associated mishaps and excellent outcome in infants. Complication rate depends upon the method used, age and general condition of the baby, co morbid, anatomical abnormalities, training of the practioner and settings in which circumcision has been carried **[7]**. Many complications are reported in literature, commonest being bleeding **[8]**. Prepuce, glans and frenulum are highly vascularized areas, so even little blood loss is a risk and can become fatal if not addressed promptly **[9]**. Post circumcision bleeding rate can be reduced to minimum with subtle and careful technique of hemostasis of frenular band and its area. There is variable incidence of post circumcision bleeding reported in different studies, ranging between 4- 35% **[10]**.

The objective of this study is to identify the effect of new technique of plastibell circumcision on bleeding and extra skin complications in infants.

Correspondence to: Dr. Walid Ibrahim, General Surgery Senior Consultant, New Cairo Hospital, M.Sc., Ain Shams Univeristy, MRCS London

Fig. (1): Male circumcision means surgical removal of the foreskin or the prepuce.

Patients and Methods

Participants 600 male participants at the age of two days and four months were included in this study. They visited the surgery clinic at Al Jazerera medical complex, Riyadh, Saudi Arabia over a period of 12 months from June 1, 2022 to May 30, 2023. The Medical Complex ethical committees approved the study. The technique was arranged through the specialty registrar and the nurse of the clinic in a small operating room with approval of written consent from the parent before starting the procedure. Patients with the following criteria had been enrolled in the study; patients with the age of the infant should be less than 4 months according to the protocol and all patients gave their written consent before enter the study. Before randomizing, subjects who refused signing the consent were excluded, Bleeding time and clotting time was done in normal level up to 10 minutes before the procedure as defensive medicine in Arabic countries. The patients who met inclusion criteria were randomly divided into the experimental (E) and the control group (C).

The Procedure of the study:

The Procedure of the study: Verbal explanation about the importance of the study and main points of achievement were explained to every patient. The experiential group undergo with the same conventional procedure of circumcision in addition to new technique using: On the other hand the study group was treated with the conventional technique of circumcision. The new procedure started by lying the baby in a supine position and spraying of a local anesthesia lidocaine 2% then retraction of the foreskin with a piece of a cotton gauze to remove the Smegma and good cleaning of the head of the penis with avoidance of injury to the frenulum to avoid bleeding, if we discovered injury to the frenulum we retract the foreskin and gentil compression stops the bleeding after a while. Then we select the proper size of the bell that only cover the upper part of the glans penis, by this way we prevent proximal slippage of the bell which is one of the complications we face in 2 babies, After that we re-retract the foreskin over the head and catch both sides of the foreskin with mosquito artery forceps, the dorsum of the foreskin was crushed at 12 O'clock for ten seconds and slit until the corona was visible by this way we can put the plastic bell. Athird mosquito artery forceps is used to close the gap of the foreskin we made (Fig. 2) then we put the thread and tie it to control the part of the skin which we will get red off. By this way we prevent extra skin complication which is not accepted in our society.

The total number of this study includes 600 infants at the age of 2 day to 4 months. During the study, we faced two complications, bleeding, and excess skin after healing of the procedure. Regarding bleeding complication, in the 1st months of the study, 4 babies developed bleeding immediately after the procedure which was perfused and saved with removal of the bell and control of the bleeding with ligation of the frenulum. One baby had bleeding profusely during the procedure and stopped after compression for 20 minutes, other baby had small bleeding but stopped after elevation of the body of the penis up with a cotton gauze and plaster. Two cases of extra skin were presented, and we convinced the parents to wait as with passage of time they get better as penis grows. Overlying skin adjusts well in accordance with the length of shaft of penis, rarely requiring surgical correction **[11]**.

Fig. (2): A third mosquito artery forceps is used to close the gap of the foreskin.

Statistical analysis: Continuous variables were presented as mean and standard deviation while categorical variables were described by frequency and percentage. Because most of the measured data were not normally distributed, nonparametric tests had been used for analyses. The Wilcoxon test was used to test the differences in outcome

measures within group. The Mann-Whitney U test was used for comparison between the groups. Significant differences were assumed at $p<0.05$. Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) version 21.0.

Shows the flow chart of patient s through the study.

Results

Table (1) represents the demographic and clinical characteristics of patients. Both groups were comparable in respect to age ($p=0.0023$), duration of study ($p=0.421$), and bleeding (p 0.462), extraskin ($p=0.232$). There were no significant differences as regard to age and sex. Bleeding & extra skin were assessed for both groups. Table (1).

Table (1)

Variable	Experiential group	Control group	*p*-value
Age (months)	2.75±0.21	2.60±0.18	0.0023
Duration (months)	10.35±2.14	11.85±1.54	0.421
Bleeding	1.6±0.02	10.4±2.24	0.462
Extra Skin	0.66±0.002	8.3±0.43	0.232

Discussion

Plastibell circumcision is a simple, quick, easy and safe procedure but various reasons may lead to a potential life-threatening hemorrhage. Kaplan et al., reported proximal migration of the bell, necrotizing fascitis of skin of penis, injury to the glans, rupture of bladder secondary to the proximal urinary obstruction, hematoma and impacted Plastibell after circumcision **[12]**. Late complications include wound infection, meatal stenosis, phimosis, inadequate or overdone circumcision leading to buried penis, urethral fistula, and sepsis. Even death due to significant hemorrhage has been reported in literature **[13]**. In our study, total 6 cases of post circumcision bleeding, 2 cases of retained bell proximally and 2 cases of extra skin were recorded. In our study we faced annoying complications in the 1st days including bleeding from the frenulm, impaction of the plastic bell and extra skin after complete healing then we modify our technique to avoid such unacceptable complications in our community and get the best results to achieve circumcision with minimal complications at the end of the study.

Causes of post circumcision bleeding were due to injury to the frenulum during retraction of the foreskin to clean the head of the penis (Fig. 3) and can be avoided early by either careful cleaning or early control of the bleeding with ligation and elevation of the penis up after wrap up with a cotton gauze and plaster at the end of the procedure even if there is no obvious bleeding. (Fig. 4).

Fig. (3): Causes of post circumcision bleeding were due to injury to the frenulum.

Fig. (4): Gauze with plaster to elevate the penis up, helps to stop bleeding.

Backward retraction of the bell can be avoided by choosing a well fit size of the bell that only cover the upper part of the head of the penis **[14]**. The shedding days should be between the 4th to the 7th day and if the bell did not separate at the 7th day, we should remove it at the 8th day. Do not wait for 14 days as the chance of impaction is increased greatly.

Excess skin post healing is recorded and not accepted by the parents in our community, so we overcome this complication by usage of a 3rd mosquito artery to pull more skin to then we tie the thread and cut the extra skin. However, the post circumcision cosmetic results with be gain later as the penis grows up and modulate itself.

Conclusion:

Circumcision with Plastibell is a safe procedure in infants up to 4 months with minimal complications, slight changes in practice will lead to minimizing the risk of bleeding and other complication with satisfaction of the parent.

Competing interests:

Authors declare that there is no competing interest regarding the publication of this paper.

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تأثير تعديلات تقنية الطهارة بطريقة الحلقة البلاستيك على النزيف والجلد الزائد عند الرضع

يعتبر ختان الذكور إجراءاً شائعاً فى العيادات الخارجية فى الدول العربية والإسلامية أسباب دينية. فى المملكة العربية السعودية، تقنية ختان البلاستيك هى طريقة مثبتة ومثبتة فى الرضع حتى عمر أشهر والهدف من هذه الدراسة هو التعرف على تأثير بعض التعديلات على تقنية الختان بطريقة الحلقة البلاستيكية على النزيف مضاعفات الجلد الزائدة عند الرضع. تضمنت هذه الدراسة على ٦٠٠ مشارك من الذكور حيث قاموا بزيادة عيادة الجراحة فى مجمع الجزيرة الطبى، الرياض، المملكة العربية السعودية على مدى ١٢ شهراً من ١ يونيو ٢٠٢٢ إلى ٣٠ مايو ٢٠٢٣ وتم تقسيمهم إلى مجموعتين مجموعة تتم الطهارة بالطريقة التقليدية ومجموعة تتم الطهارة بطريقة الحلقة البالستيكية وكان هناك فرق واضح فى حدوث المضاعفات حيث تجنينا حدوث المضاعفات المحتملة فى مجموعة الطهارة بطريقة الحلقة البلاستيكية حيث قلة نسبة حدوث النزيف وحدوث جلد زائد بالقضيب بعد تمام الشفاء الإجراء يبدأ بوضع الطفل فى وضعية الاستلقاء ورش مخدر موضعى ليدوكائين ٢٪ ثم سحب القلفة بقطعة من شاش القطن لتنظيف رأس القضيب بشكل جيد مع تجنب إصابة اللجام حتى الا يحدث النزيف، إذا إكتشفنا إصابة فى اللجام، فإننا نسحب القلفة ونقوم بالضغط الخفيف حتى يتوقف النزيف. ثم نختار الحجم المناسب للجرس الذى يغطى الجزء العلوى فقط من حشفة القضيب، وبهذه الطريقة تمنع انزلاق الحلقة البلاستيكية للخلف وهو أحد المضاعفات التى نواجهها بعد إتمام الطهارة بأيام، وبعد ذلك نقوم بإعادة وشق حتى لمدة شر ثوان سحب القلفة فوق الرأس وأمسك جانبى القلفة بملقط شريانى، تم سحث ظهر القلفة عند الساعة ١٢ ظهراً يصبح رأس القضيب مرئياً وبذلك يمكننا وضع الجرس البالستيكى يتم استخدام ملقاط شريانى ثالث لسد فجوة القلفة التى صنعناها (الشكل ٢) ثم نضع الخيط وربطه للتحكم فى جزء الجلد الذى سوف نقوم بازالته، وبهذه الطريقة تمنع تواجد جلد زائد مستقبال للطفل بعد الشفاء.