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Circumcision by plastibell technique: Boon for Low Income Countries (LIC) - A Case Series

Authors
Dr Kush Jhunjhunwala[1], Dr Mohammad Zahid[2], Dr Gurmeet Singh Sarla[3]
[1]Associate Professor, GMC, Nagpur, India
[2]Family Physician and Child Specialist, Private Practitioner, Nagpur, India
[3]Senior Advisor Surgery, MH Khadki, India
Corresponding author
Dr Gurmeet Singh Sarla
Senior Advisor Surgery, MH Khadki, India

Abstract

Introduction: *Circumcision is a religious practice as well as a surgical procedure having its risks and benefits. There are several surgical methods for circumcision. The choice depends on skill and preference of medical personnel performing the surgery. The plastibell technique is one of the commonly performed procedures done under local anaesthesia, mostly on new-borns, infants and young children. The results of the technique have been evaluated in many studies throughout the world. We have done a large number of cases and present the results of our retrospective descriptive study.*

Materials and Methods: *This retrospective descriptive study was conducted at the clinic of Dr Mohammad Zahid, Nal Sahib Square, Hansapuri, Nagpur from January 2013 to August 2023. Clinical records of the infants who underwent circumcision were collected. Infants whose parents requested methods other than plastibell and infants with bleeding disorders or a family history of such disorders were excluded from the study. The indication for circumcision was for religious reasons in all cases except in 15 of them. Post-operative complications if any were noted.*

Result: *A total of 9346 male babies underwent circumcision with the plastibell technique. The average age of the patients was between 7 day old neonate to 12 years. The mean operative time was 12.5 ±2.7 minutes. The time it took for the ring to fall off was 3 ± 9 days. Complications were seen in less than 0.3 percent cases. The commonest complication encountered were pain, swelling, bleeding and non-falling of ring in speculated time which were managed effectively with the help of paediatric surgeon.*

Conclusion: *Male circumcision is one of the oldest surgical procedures performed specially in Gulf and Asian countries. According to the results of our study, circumcision with the plastibell method is very safe, cheaper than other methods, less painful, less time consuming and with very rare incidences of side effects. In fact we recommend that it should be the method of choice for doing circumcision in low income countries like ours for the benefit of the masses.*

Introduction

Male circumcision is one of the oldest surgical procedures performed and has traditionally been practised throughout most of Africa, Asia, Australia, large parts of South and Central America, and smaller areas of North America[1]. Various techniques of circumcision have been described, the commonest being the surgical procedure involving either a conventional "cut and stitch" surgical procedure or use of a circumcision instrument and the use of certain instrumental techniques. The forceps-guided method, the dorsal slit method, and the sleeve resection method are well described by the World Health Organization in their Manual for male circumcision under local anaesthesia[6] Among the latter techniques, the plastibell, gomco clamp, and mogen clamp techniques have been widely used[2].

The plastibell technique has gained widespread popularity because of its low cost, ease of use, fewer complications, and requirement of local anaesthesia instead of general anaesthesia[3]. In this technique, a tight ligature is tied around the foreskin, drawn over a grooved plastic ring commonly known as the 'plastibell', and the skin distal to the ligature is excised. The ligature results in a circumferential line of ischemic necrosis and the plastibell falls off within the course of a couple of days.

The Plastibell technique is a safe procedure with reproducible results[2,4-6]. In this study which was carried out at Dr M Zahid's clinic, we evaluated the data of the boys who underwent circumcision with the Plastibell technique in the past 10 years. Infact this is one of the largest data regarding circumcision done by plastible technique in this part of the world.

Materials and Methods

This descriptive study was conducted at the clinic of Dr Mohomad Zahid, Hansapuri, Nagpur from Jan 2013 to August 2023.Around 9346 male new-borns, infants and young children were enrolled for the largest case series in this part of the world. Parents were explained all different procedures available for circumcision including option of going to surgeons, and only after they agreed for plastibell method were told to get enrolled for the same. Clinical records of all the children whose parents requested methods other than plastibell and infants with bleeding disorders or a family history of such disorders were excluded from the study. Detailed informed and written consent was obtained from the parents.

Steps which are involved in performing plastibell circumcision technique at our centre:

1) The child or infant is made to lie on his back and is made immovable by the bed sheet tied between his both the hands. Help of attendant was taken while the child was restrained.

2) Draping with sterile disposable plastic sheet was done and only the external genitalia was uncovered. Child was hooked to a multipara monitor for SpO2 and heart rate monitoring. The exposed genitalia was cleaned with antiseptic solution.

3) 2% lignocaine/Xylocaine was injected at 2oclock and 10'o clock position in skin as well as at the root of the phallus and frenulum. 1-2 ml of local anaesthesia drug was sufficient for good local effect.

4) After waiting for 1-2 min, the foreskin was hold by plain forceps at 3oclock and 9 o clock positions and the skin was freed from glans penis if it is attached to it. At times the forceps was coated with 1% lignocaine jelly to get the desired result of good local anaesthesia.

5) The skin is crushed at 3o clock and 9 o clock positions and good haemostasis is achieved by using cautery as an when required. The area is cleaned of smegma and other secretions. If bleeding occurs from inside, then we stich with absorbable surgical sutures. In less than 6 month old infants, mouth pacifiers were used to calm the babies with all due precautions to avoid sepsis. We have even pasted cartoons at ceilings and walls to distract the child while the procedure is going on.

6) The parents of the child were advised to give seize bath with lukewarm water to the child for next couple of days. At the same time they were asked to avoid using diapers as it can get stuck to the glans causing pain and discomfort.

7) A plastibell of appropriate size is inserted into the foreskin and placed over the head of the penis. This is a very important step. The plastibell has to be well placed to cut the foreskin to the right level. Commonly we use plastibell size 1.1 to 1.3. Rarely do we have to use size no. 1.5 for older kids. Once the plastibell is in place, extra skin is cut; the area is cleaned with betadine (Povidone) and saline. We took care to see it that the external urethral opening is in the centre so that the baby do not face any difficulty while micturition.

Plastibell method (or ring circumcision method) has shown lower complication rate and higher satisfaction of patients and doctors. In negligible number of cases, (statistically non-significant $p<0.05$), we encountered some infection which were managed locally by applying mupirocine ointment and cleanliness. Plastibell is a single-use-only disposable device, which prevents reuse and potential transmission of infection. Pain was managed by giving paracetamol appropriate for age wherever required.

Results

A total of 9346 records were identified that had at least one follow-up visit. We had babies from as young as 6 days to 12 years. The indication for circumcision was for religious reasons in all the cases. The mean operative time was 12.5min +-2.7min. Parents of 589 (6%) babies were worried about the presence of oedema at the circumcision site and they were reassured. No major complication was seen except in two cases where the age of the child was 11 years and 12 years and had excessive bleeding. We took help of paediatric surgeon and they were effectively managed. In one case the ring didn't separated on its own and got stuck and had to be cut by using bone cutter.

Parent's main worries before surgery regarding plastibell circumcision were fear of urinary problems 2553 (27.3%). fear of night awakening 2081 (22.2%) cosmetic concerns 1175 (12.57%) Fear of pain and bleeding in 667 cases (7.13%) and fear of fever 189 cases (2.02%).

Results and early post-operative complications:

- Mean age 23.5± 27 days
- Mean operative time 12.5±2.7 minutes
- Mean time from operation to fall of ring 3.6±8.0 days
- Primary haemorrhage 238(2.54%)
- Oedema at the circumcision site 1789(19.14%)
- Ring got stuck up 2 cases, bone cutter used to remove ring.(0.021%)
- Perpetual glandular fusion in 2 case.

Indication:

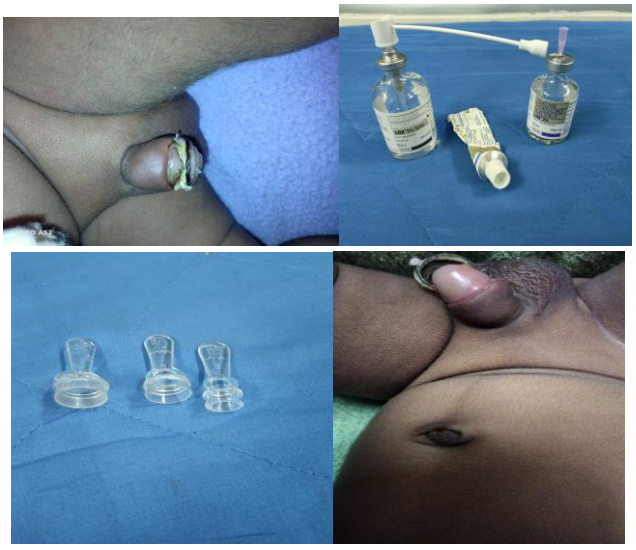
- Religious 9330 (99.8%)
- Medical 16 (0.17%)

Plastibell diameter (cm) used:

Commonest size used- 1.1 to 1.3, 1.5 in older children.

Interval between circumcision and Plastibell falling off:

- Spontaneously (1148) (12.28%)
- Within 5 days 963 (10.3%)
- 6 to 10 days 6094 (65.2%)
- 11-15 days 1067 (11.41%)
- More than 15 days 164 (1.75%)



Discussion

Male circumcision is done with a variety of techniques throughout the world. The indications for male circumcision are mostly religious and social needs. The idea of using a tourniquet approach to infant circumcision is attributed to Dr Cecil J. Ross who patented steel circumcision rings in 1939.[2] Subsequently, Dr Kariher patented a plastic ring with a removable handle in 1955.[2]

The Plastibell technique has the advantage of being a simple, haemostatic technique without the need for general anaesthetic[3]. The most important factor is cost and this is supposed to the cheapest amongst all. The technique has been adopted worldwide. The success has been validated in numerous studies [2,4,6,8]. In most of the studies, the choice of anaesthetic/analgesic has been penile nerve block/local lignocaine injections and xylocaine jelly[9-13], although no gold standard procedure to address the pain in circumcision has been established[14]. In our study, the choice of anaesthetic was 2% Lignocaine with 1ml-2ml solution infiltrated as a penile ring block. We took all precaution to do the procedure in a sterile environment and hence we encountered infections in very less number of patients (14-16)

In our study, there was huge number of newborns who were brought by the parents for circumcision on day 6-7 of life following the principle of "Aaqueequa", a religious practise followed by muslim community. Plastibell size selection is important in male circumcision, which is done by visual estimation of glans size after retraction of the foreskin and clearance of the smegma. Proper fitting is confirmed by applying two to three sizes from the range available. The one that fits appropriately is selected. Numerous complications can occur due to ill-fitting bell size, including proximal migration of the plastic ring and inadequate excision of the foreskin[15].

We were very comfortable with plastibell technique method as it can be done in OPD setting or a small clinic and it does not require hospitalisation of the child. The child can go home after 30-60 minutes of the procedure. We also made it sure that we communicated with the parents on social media using Whatsapp on daily basis till the ring falls or as and when required. We are still following the patients even after 10 years of doing the procedure. And this adds to the level of satisfactions amongst the parents and the society at large.

Various complications have been reported with the use of the plastibell technique but in very few. Those include bleeding, infection, proximal migration of the ring, and phimosis. Bleeding usually occurs when the dorsal slit is too lengthy and extends proximally to the application of the ring. If bleeding occurs from inside then we stitched with absorbable surgical sutures. Before approximating the skin, we ensured that the frenulum is aligned at the 6 o clockposition. The risk of bleeding is least with this technique as compared to all the other methods used for circumcision. Revision of the circumcision with the removal of the ring has been the solution often used[4].

Out of the rest, phimosis needs special attention and happens due to the use of a plastibell with a lower diameter and tearing of the inner layer of skin with the insertion of the plastibell. A local study has reported a 2.3% overall complication rate including a 1% plastibell impaction rate[12-14]. Another recent international study reported a 7.08% overall complication rate including a 2.6% plastibell impaction rate[15].

Thus the major benefits of this method includes no or minimum bleeding, no scarring, no hospital stay required, quick recovery, pain minimum or at times no pain at all and most important cheapest amongst all methods and patients can go home in approximately 20-30 minutes.

The USP of our study was that we meticulously followed all 9346 cases 24x7 on WhatsApp and phone calls and responded to all the queries and difficulties faced by the parents and the kids. Hence the level of satisfaction in all cases was to

the tune of more than 95%. Some had some minor issues, again which was addressed appropriately thus achieving satisfactory communication and follow up with each of them.

Conclusions

Male Circumcision is one of the oldest surgical procedures performed. Several methods are in practice but male circumcision using the Plastibell method is a safe method and is associated with fewer complications. It is an OPD procedure and can be done easily in a small clinic setting in less amount of money. Much better than done by untrained "Khatana" specialist like barber and quakes. According to the results of our study, circumcision with the plastibell method is less painful, less time consuming, quickest method and very rare incidences of side effects. In fact we recommend that it should be the method of choice for doing circumcision in low income countries like ours for the benefit of the masses.

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