

# **Circumcision by Plastibell - A review of the safety of the technique**

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## **ABSTRACT**

**Objective:** To review the results of Plastibell technique for circumcision in outpatient setting.

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**Design:** A descriptive study conducted on out patient basis during the years 1996- 1998, 2000-2002, and 2004-2008 at three different institutions. The data collection was computer based.

**Subjects and methods:** The circumcision was offered to all male babies' ages between one week and two years. Circumcision was carried out using the Plastibell® technique under 1% lignocain ring block/penile block anesthesia. A total of 330 circumcisions were performed and assessed postoperatively after 24 hours and then another visit after the removal of the device at outpatient.

**Results:** Of the 330 babies in 3 babies, all older than 6 months, the separated ring tracked back onto the shaft of the penis and had to be removed using a cutter. Ten babies were referred for incomplete separation of the Plastibell ring; the removal was not required and they detached spontaneously within a few days. Three babies were reviewed for bleeding within 24 hours of the operation. Two of these were seen immediately after circumcision, when the bleeding was seen to be from the torn frenulum. A single 3/0 catgut suture applied to the torn part under the same anesthesia and bleeding was stopped. The other baby found to have loose knot. Another silk noose tied around the previous one and a bleeding stopped. Four babies had referred for suspected wound infection but none was clinically significant. Only one parent showed concern due to late bleeding because of loose knot. Post operative results were excellent with adequate removal of foreskin in all cases.

**Conclusion:** The aim of the study was to provide safe circumcision requested on religious grounds. The technique was simple and easily learned. It is also applicable and safe till 6 months of age. The results are excellent and complications are negligible in this age group. In older babies the complications like overriding of ring are more common. In addition to this the use of local anesthesia in older babies is not sufficient to perform the procedure satisfactorily

**Keywords:** Circumcision. plastibell®

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## **INTRODUCTION**

Circumcision of the male infant by conventional methods is common practice in Pakistan. It's carried out invariably in Muslim population. In most of the hospitals and clinics, it is carried out routinely either by conventional dissection method or by bone cutting forceps. The major share of circumcision is taken up by traditional "Hajams" in Pakistan. Hajams are traditional circumcision practitioners who are practicing circumcision for generations after generation. They use shaving razor or other sharp cutting devices without any antiseptic preparations. Excessive bleeding, prolonged healing time, patients morbidity and infections are common complications.

These complications are also not infrequently seen in patients circumcised by the conventional techniques in hospitals and clinics leaving most of the parents unsatisfied. Therefore people still seek "Hajams" as they are cheaper and provide home services in most of the cases. The other techniques like Gomco clamp, Morgen clamp and Plastibell® device are excellent in terms of techniques and lesser complications. Gomco clamp and Morgen clamp not freely available in Pakistan. The Plastibell® is a circumcision device made of plastic marketed by Hollister Inc, USA. The purpose of this study is to evaluate the technique and its safety.

## **PATIENTS AND METHODS**

The service was offered to all male babies aged 1 week to 2 years on religious grounds. Babies were selected from those who delivered in the above mentioned institutions and from the outpatient clinics.

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All babies with hypospadias, epispadias and congenital cordae were excluded. Circumcision was carried out using the Plastibell technique under 1% local lignocain ring block/penile block anaesthesia. This service was offered randomly for all the babies born in the unit. The parents were allowed to join the study voluntarily. They were explained the technique, pre and post operative complications. Babies with jaundice or any other illness were excluded. No preoperative investigations conducted as it is essentially a bloodless procedure. Only the good general condition of the baby was taken into consideration. The procedure was done by the same surgeon.

**Operative procedure and management:** The baby was held by the assistant, sitting on a stool at head side of the baby. After cleaning the skin with methylated spirit, total of 1 cc of 1% lignocain was injected subcutaneously at the base of the penis in a ring fashion through a single puncture by using 1 cc insulin syringe as a dorsal penile block. Its safety is known<sup>1</sup>. Anesthesia was ensured by pinching the prepuce lightly with hemostat clamp. Then the prepuce was retracted back a little back to examine the position of the meatus. Two small hemostat clamps were placed at 3'O clock and 9'o clock position at the margins of the prepuce. The prepuce was stretched b pulling both hemostats with one hand. A third hemostat slipped under the prepuce over the dorsal surface of the glans and rotated all around the glans in order to break adhesions. After the prepuce was freed from adhesions, this hemostat is applied at 12'O clock position on to the prepuce down to the margins of glans. The hemostat applied earlier were removed and reapplied along the side of the central hemostat. The 12'O clock position hemostat removed. It left a strip of crushed skin in the midline over the dorsal surface of the prepuce. The prepuce was cut through this crushed skin by a fine scissors for approximately 1cm from the margin of the prepuce. By holding the side clamps in both hands, the skin was retracted back over to the shaft. During retraction, care was taken to avoid tearing of the frenulum. There was no bleeding due to presence of side clamps over cut deges. Glans was cleared off smegma by using saline soaked gauze. A set of plastibells of all sizes from a 1.1 to 1.7 were already present to measure the exact size of plastibell. The exact size was selected by placing the plastibell over glans. A plastibell that reached right over the margin of glans was selected. Care was taken during this selection, because a plastibell that overrides glans or remained short of margins, later on can cause complications. A new plastibell of the chosen size is used. Placed over the glans and the retracted skin was rolled over the ring of the plastibell by pulling the

clamps. The clamps were removed and reapplied over the both corners where the cut edge and the skin met. A third clamp was applied at the margins of the prepuce at 6'O clock position. All three clamps were held with one hand and pulled to straighten the skin. The plastibell repositioned with other hand in such a way that the handle of the plastibell was in line with the slit of the meatus. A large straight clamp was applied at the junction of the handle and the ring, incorporating the skin and the intervening handle. All the three small clamps were removed leaving the long clamp in place. The long clamp not only held skin and the clamp in place but also provided hemostasis. The skin of the prepuce was tied by the loop of a silk suture over the plastic ring, supplied in the plastibell pack. Clamp was removed and the skin was cut along the margins of the ring. The handle of the plastibell was broken apart. Cut edges of the skin examined for any bleeding points. This usually a blood less procedure if undertaken in a way described above. The baby was wrapped in a diaper and handed over to the mother.

The mother was advised to keep the baby in diaper all the time and for follow up after 24 hours or as the need arose. Antibiotic were never prescribed. Mild analgesia was given to the babies who were older than 6 months of age.

## RESULTS

The Incidence of complications (n=330)

Tracking back of ring	Haemorrhage	Infection	Other complications
1% (n=3)	1% (n=3)	0	0

All the babies were asked for follow up after 24 hours. Of the 330 babies, only 1.5% (n=5) required some follow up care. In 3 babies (1%) the separated ring was tracked back onto the shaft of the penis and had to be removed using a cutter. All of three babies were older than six months. After these incidences in older babies, this procedure was not carried out in babies older than six months. Only 7 babies older than six months were recruited earlier. Three babies were reviewed for bleeding within 24 hours of the operation. All of them returned immediately after the circumcision. In two of these babies the bleeding was from the torn frenulum. A single 3/0 plain catgut suture applied and bleeding stopped. The third was seen one hour after the procedure. On examination a loose knot is found and treated by reapplying the skin suture over the previous one with a secure knot. Bleeding stopped and baby sent home. The baby remained well and no further follow up needed till the spontaneous removal of the ring. No baby wad

returned for incomplete separation of the Plastibell® ring. All the rings detached spontaneously within a few days.

The minimum number of days required for complete healing and spontaneous detachment were 4 and maximum were 10 days with mean of 5.34 days. The mean duration required for the completion of the procedure was 12 minutes.

No intervention was required in the others. Antibiotic were never required. Analgesics prescribed in older babies on their mother's request. Five babies returned for the suspected wound infection but none was clinically significant. Parent satisfaction was excellent except in two cases who returned for bleeding. No other complications like bladder rupture encountered in our series.

## DISCUSSION

Circumcision of newborn male babies is a procedure undertaken traditionally in all muslim families. There are number of techniques available for circumcision. Traditionally circumcision was being carried out by "Hajams" who run their family business especially in our rural areas. They use crude techniques devoid of modern sterilization techniques which at times result in complications like hemorrhage or infection. People still approach them because they are cheap and can perform the procedure at their door step. People are hesitant to go the hospital because it is time consuming and cost them more. More over the methods used by the surgeons like bone cutter method or dissection method are not well accepted by the community because of application of stitches and daily dressing. Such babies also need special care by mother till there is complete healing. Mothers have to remain awake during the nights immediately after the circumcision in order to take care of the wound. Generally there is an element of parental dissatisfaction for these older methods. The new methods like Plastibell addressing these problems efficiently. This is a relatively newer technique and still there is hesitation among doctors to adopt it. Most of the surgeons are still performing circumcision with older surgical methods. This reservation is primarily due to fears of complications that are usually associated with all new procedures. The incidence of complications in a ten year overview was 0.2%<sup>2</sup>. The complications associated with this technique mentioned in the literature are:

1. Hemorrhage
2. infection
3. overriding of the ring to the shaft of the penis<sup>3</sup>
4. Glans ischemia or Meatal necrosis
5. incomplete excision of foreskin
6. bad cosmetic results

7. necrotizing faciitis<sup>4</sup>
8. long procedure time
9. parental dissatisfaction

There are three potential complications that can lead to other rare complications. These are hemorrhage, overriding of the ring and glans ischemia. The commonest cause of hemorrhage in this case is the loose application of the silk suture and frenulum tears. These are easily avoidable complications. A secure surgeon's knot with single loop of silk is enough to avoid hemorrhage. Frenulum tears occur when the cut skin was retracted too far back over to the shaft in order to replace it over the ring. If the care is taken while retracting the skin not beyond the margins of gland frenulum tears can be avoided. Overriding of ring or glans ischemia is due to placing either too big or too small size of Plastibell. We overcome this problem by keeping all sets of ring available to measure the exact size before actually placing it. We place the most appropriate looking size over the glans and choosing the one above or one below size in case the first ring does not fit well. The exact size is one in which the margins of the Plastibell® ring reaches 1 mm short of the margins of the glans by placing it loosely over the glans penis. Any ring that reaches halfway over the glans is considered short and any ring that overrides the margin is considered long. We learnt it after couple of circumcision and then did not face these complications after using this method of selection. In fact there are negligible numbers of complication in trained hands with this technique (9). We did not face other complications like meatal necrosis, urethral rupture or bladder rupture due to placing exact size of the ring. We also adopted to keep the baby constantly in diapers till the spontaneous detachment of the ring. The advantage of constant use of the diaper was many folds. The most important advantage was that it hid the wound from mother's eye and help alleviating the parental anxiety. Mothers didn't have to take extra care of the baby. It also kept the wound soft and wet due to constant wetting by the urine and the baby remains pain free. Since the silk knot was applied to the skin before cutting it, so the chances of infection of the wound were nil. In our series the continuous wetting of the wound by baby's urine did not cause any problem. The keeping of the baby in diaper was the major factor in parental satisfaction in our study.

The technique is easily learnt and as the experience increases the time required for circumcision also shortened. The time required for the spontaneous detachment of the ring depends upon the thickness of the foreskin that in turn depends upon the age and weight of the baby. In

babies whose age was less than two months the mean time for the detachment of the ring was 4 days.

The cosmetic results are excellent<sup>8</sup>. With the use of appropriate size ring, foreskin can be removed completely. We found parents extremely satisfied and in most of the cases parents brought other children for circumcision by Plastibell®. The technique is also cost effective. The Plastibell® device is cheap one and total cost per case is not more than 200 rupees. The cost is cut by avoiding analgesics and antibiotics.

## CONCLUSION

Plastibell® circumcision device is excellent technique and can be learnt fast<sup>5</sup>. It does not require meticulous sterilization or surgical techniques. It can be performed anywhere from hospital outpatient to patient's home. It can be taught to nurses or paramedics who can perform it with full proficiency. The chance of infection is almost nil and there are no major complications if learnt in proper way. In our study all complication occurred were during first six months indicating that with more experience the incidence of complications is almost none. Parent's satisfaction is excellent. Used on medical grounds this method is preferable<sup>6</sup>. It is found to be cheap and easy to use<sup>7</sup>.

We recommend the use of this technique generously and it should be preferred over old surgical techniques.

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