

Complications of circumcision with Plastibel: are they age related?

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Abstract:

Objective: To find out the relationship of complications of Plastibel circumcision with age of the child.

Study Design: Comparative descriptive study.

Setting & Duration: Department of pediatric surgery Civil Hospital Karachi, Zubaida Medical Centre, Al-Khidmat Hospital, Shah Faisal Colony & Usman Memorial Hospital. From April 2005 to Jan 2009 (3 years & 10 months).

Methodology: 906 children undergoing circumcision with Plastibel were studied.

Their age, place of procedure, size of Plastibel used, duration for spontaneous separation of Plastibel, early and late complications were recorded on a proforma. Post operative follow up was carried out on 7th day, 14th day and after 3 months. After collecting the data cases were divided into 3 groups, Group A under 2 years of age, Group B 2 to 5 years of age & Group C more than 5 years of age. Finally time of separation of Plastibel, early and late complications in these groups was compared.

Results: Their age varies from 1 day to 11 years. In most cases, circumcision was performed as an isolated procedure in Operation Theater under local anesthesia. We found that in group A 11.5 % cases had their Plastibel shed off within 5 days which was not seen in any other group. In Group A 55.9 % children had their Plastibel shed off within 7 days. In group B most (55.3 %) children have their Plastibel shed off between 8th to 10th day and in group C most (34.3 %) children have their Plastibel shed off after 10 days and larger proportion (31.3 %) needs removal.

In Group A only 4.9 % children had early complications, while in Group B early complications were 7.9 % and in Group C 41.7 %. Similarly late complications were also more common in group C (4.4 %) while in Group B it was 1.07 % and in Group A it was 1.8 %.

Conclusion: We concluded that Complications of circumcision with Plastibel are related to the age of the child as the age advances the rate of complications increases.

There is a high incidence of both early and late complications of circumcision with Plastibel in children above 5 years of age & Circumcision with Plastibel is best for children under 2 years of age.

Key words: Circumcision, Plastibel, Circumcision complications.

Introduction:

Circumcision is one of the oldest known surgical procedures in the world ¹. For Muslims and Jews, it is a religious requirement. For others, it is prompted by hygienic and medical considerations. It is also performed for certain condi-

tions of glans and prepuce such as phimosis and recurrent balanitis etc ². It has certain advantages, such as, personal hygiene, reducing the incidence of penile carcinoma and infections ³.

Circumcision can be performed by a number of

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techniques and various devices are used to carry out this procedure such as Plastibel, Gomco clamp, Preputome etc. Circumcision with Plastibel is now widely practiced all over the world as it is simple, quick and easy procedure with minimal complications and can be performed under local anesthesia ⁴.

Plastibel is a disposable plastic device. It is bell shaped with a groove close to the edge. The bell is inserted into the preputial cavity (over the glans and under the foreskin) and the foreskin is tied around it with a tight string. Blood flow to the prepuce distal to ligature is ceased and undergoes necrosis. After few days, the prepuce distal to the string falls off, providing a bloodless circumcision, with no open wound ^{5,6}.

In Pakistan circumcision is performed in nearly all Muslim males as a religious ritual. It is performed at all ages from newborn to adulthood. Most doctors and parents delay circumcision in newborn period because of fear of its complications ⁴. Now as the people are more aware, more children are being circumcised in their neonatal age, but older children (> 5 years) are still coming for circumcision especially from poor and illiterate community. These children are usually circumcised by Plastibel under local anesthesia as it is simple and easy procedure, but this is not free of complications ^{7,8}. This study is performed to find out the effect of age on complications in circumcision with Plastibel.

Methodology:

This prospective study was conducted in various hospitals of Karachi (Civil Hospital Karachi, Zubaida Medical Centre, Al-Khidmat Hospital Shah Faisal colony & Usman Memorial Hospital) from April 2005 to Jan 2009 (3 yrs. & 10 months). All children undergoing circumcision with Plastibel by qualified surgeon were included. Their age, place of circumcision, time of shedding of Plastibel, early and late complications were recorded on a Performa. These cases were followed up on 7th & 14th day and after 3 months, 323 patients did not return after 2nd visit (2 wks).

After collecting the data cases were divided into 3 groups, Group A under 2 years of age, Group B 2 to 5 years of age & Group C more than 5 years of age. Finally time of spontaneous shedding of Plastibel, early and late complications in these groups was compared. Early complications which were recorded were bleeding, infection and Bell impaction. Late complications were excessive skin removal and incomplete circumcision.

Results:

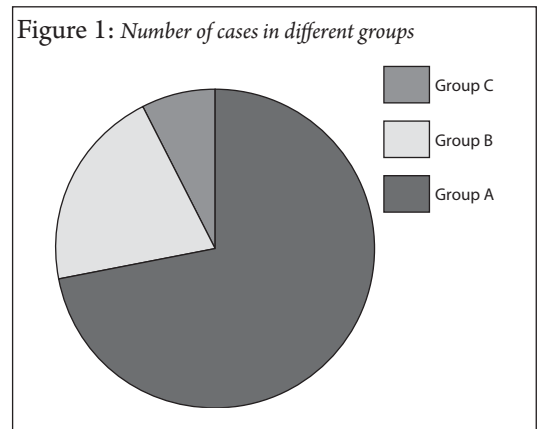
From April 2005 to Jan 2009 (3 yrs. & 10 months) a total of 906 children underwent

Table 1: Place of procedure

Age group	Operation		Dressing Room
	Theatre	O.P.D.	
A	603	22	28
B	179	04	03
C	67	-	-
Total	849	26	31

circumcision with Plastibel were studied. Age range is 11 years (From 1 day to 11 years). Most of them was carried out in operation theatre (Table – I).

In 819 cases circumcision was carried out under local anesthesia while in 87 it was done under general anesthesia. In 824 cases circumcision was performed as an isolated procedure, while



in 82 cases circumcision was carried out in combination with other surgical procedure like herniotomy, P.P.V. ligation & orchidopexy etc.

Table 2: Time of spontaneous shedding of Plastibel

Group	Within 5	5 To 7 Days	8 To 10 Days	More Than	Needs
	Days			10 Days	Removal
A	78 (11.4 %)	291(44.5 %)	231(35.3 %)	42(6.4 %)	11(1.6 %)
B	None	34(18.2 %)	103(55.3 %)	35(18.8 %)	14(7.5 %)
C	None	06(8.9 %)	17(25.3 %)	23(34.3 %)	21(31.3 %)

The number of patients belonging to various groups are shown in Fig – I.

Regarding the duration of shedding of Plastibel, spontaneous shedding of Plastibel within 5 days was only observed in group A in 11.4 % cases. Most (44.5 %) children in group A have their Plastibel shed off between 5th to 7th day (Table – II) and only 1.6 % needs removal of Plastibel because of bell impaction in 7 cases, bleeding in 2 & infection not controlled with sitz bath & oral antibiotics in 2 cases. In group B most (55.3 %) children have their Plastibel shed off between 8th to 10th day, nobody have Plastibel shedding within 5 days & 7.5 % needs removal because of bell impaction in 9 cases, bleeding in 1 and infection not controlled with sitz bath & antibiotics in 3 cases, while in 1 case it was removed for parent's wishes. Similarly in group C most (34.3 %) children have their Plastibel shed off after 10 days, nobody have their bell separation within 5 days and larger proportion (31.3 %) needs removal as 15 had Plastibel impaction, 2 had bleeding, 2 had infection not responding to sitz bath & antibiotics & 2 for the parent's wishes.

The rate of early complications was lowest among group A (4.87 %), while it was highest in group C, 41.7 % (Table – III). In group A bleeding occurred in 0.3 %, infection in 3.5 % and Plastibel impaction in 1.07 % cases. In group B bleeding occurred in 0.5 %, infection in 2.6 % and Plastibel impaction in 4.8 % cases. However

in group C, bleeding occurred in 2.9 %, infection in 16.7 % and Plastibel impaction in 22.1 % cases. Bleeding require removal of Plastibel and suturing, Plastibel impaction needs its removal; however infection was mostly controlled by sitz bath & antibiotics and only few needs removal (2 in group A, 3 in group B & 2 in group C).

Late complications were assessed in only 583 cases, as 323 patients did not return after 2nd visit (2 wks). In group A excessive skin removal was seen in 4 (0.6 %) and incomplete circumcision in 8 (1.2 %) cases. In group B & C incomplete circumcision was the only late complication seen in 2 (1.07 %) and 3 (4.4 %) cases respectively (Table – III).

Discussion:

As with any surgical procedure circumcision with Plastibel is also associated with complications. The commonly reported early complications are minor, related to bleeding, superficial sepsis and impaction of Plastibel. However, case reports of significant complications have been documented, including necrotising fasciitis, urine retention and ischemic necrosis of the glans^{9,10}. The late complications include excessive skin removal and incomplete circumcision.

Circumcision is one of the oldest known surgical procedures; it has been performed for more than 5000 years¹. About 25 % of total male population of the world is circumcised. It is a religious requirement for Muslims and Jews and for others; it is prompted by hygienic and medical considerations. It is also performed for certain conditions of glans and prepuce such as phimosis and recurrent balanitis etc^{2,3}. It can be performed by a number of techniques and various devices are used to carry out this procedure.

Table 3: Complications

Age Group	Early Complications						Late Complications			
	Bleeding		Infection		Bell Impaction		Excessive Skin Removal		Incomplete Circumcision	
	Count	%	Count	%	Count	%	Count	%	Count	%
A	02	0.3 %	23	3.5 %	07	1.07 %	04	0.6 %	08	1.2 %
B	01	0.5 %	05	2.6 %	09	4.8 %	-	-	02	1.07 %
C	02	2.9 %	11	16.7 %	15	22.1 %	-	-	03	4.4 %
Total	05	3.7 %	39	22.8 %	31	27.97 %	04	0.9 %	13	6.67 %

Plastibel is one of them. It is most frequently used for circumcision all around the world as it is simple, quick and easy procedure with minimal complications that can be performed under local anesthesia ^{4,11}.

We observed that the time of separation of Plastibel is related to the age of the child the younger the child is the more are the chances for early Plastibel separation. In our study early spontaneous separation of Plastibel within 5 days was only seen in younger age group (group A) which was not seen in other groups. This is because of thin prepuce in these children. Similarly in group A, 55.9 % children have bell shed off within 7 days, 35.3 % have their bell shedding in 8 to 10 days. Thus a total of 91.2 % have bell fall off in 10 days. In group B only 18.2 % children have bell separation within 7 days and 55.5 % had bell separation in 8 to 10 days. Thus a total of 73.7 % had bell fall off in 10 days. On the other hand in group C only 8.9 % cases had bell shedding in 7 days 25.5 % have their bell fall off within 8 to 10 days, and in 34.3 % cases bell fall off after 10 days. 31.3 % cases need removal of Plastibel. These facts are due to thick fore-skin in these cases^{4,8}.

The incidence of haemorrhage is low in case of Plastibel and is usually occurs if the string is loose, or if the dorsal slit in the inner skin tears up during insertion of bell ¹². In our study the rate of bleeding was quite low in group A & group B 0.3 % and 0.5 % respectively, but it was significantly high in group C (2.9 %). This may be because these children have thicker fore-skin which is less likely to strangulate completely by string in addition these children having more frequent and forceful erections as compared to the younger age groups ¹³. However Lazarus et al ¹⁴ described a high bleeding rate of 18 %, while Fraser described it to be 10 % ⁷.

In group A and group B The rate of infection was also low 3.5 % and 2.6 % respectively as compared to group C where the infection rate was 16.7 %. Infection is more common if circumcisions are not performed with full aseptic technique as with other surgical procedures or

if the bell stays for longer period of time, as it is a foreign material ^{4,6}. This is again due to the fact that older children have thick fore-skin that is difficult to strangulate completely and they take longer time to shed off as compared to younger children who have thin fore-skin that become easily strangulated with string and they fall off early. Mak et al described infection rate of 13.7 % ¹⁵, while others have described infection rate of 4.2 & 5.2 % ^{16,17}.

Impaction of Plastibel occurs if the string is not tight enough to cause strangulation and necrosis of the fore-skin or if the fore-skin is too thick to be strangulated by the string. Impaction also occurs if large sized bell is used where the ring slips proximal to the glans or the glans passes through the ring during erection ^{4, 18}. Impaction of the Plastibel was therefore more frequently seen in group C (22.1 %) as compared to group A & B where bell impaction was seen in only 1.07 % & 4.8 % respectively. These facts were also due the presence of thick fore-skin and more frequent and powerful erections in the higher age group ^{4,5}.

Late complications were few in our cases. Excessive skin loss occurred in 0.6 % in group A while this complication was not encountered in other groups. This may be due to excessive traction on the skin during placement of Plastibel or due to the use of larger sized bell as compared to size of the glans ^{1,12}. Excessive redundant skin (Incomplete circumcision) occurred in 1.2 % in group A, while it was encountered in 1.07 % & 4.4 % cases of group B & C respectively. Wiswell et al reported frequency of this complication as 1.3 % ⁸.

Thus as with any surgical procedure circumcision with Plastibel is not free of complications, however these can be minimized by performing the procedure under strict aseptic conditions, selection of correct size of the device, ensuring that the ligature is secured tight enough to cause strangulation of distal prepuce and above all limiting the procedure to younger age group i.e. under 2 years of age.

Conclusion:

We therefore conclude that:

1. Complications of circumcision with Plastibel are related to the age of the child as the age advances the rate of complications increases..
2. There is high incidence of both early and late complications of circumcision with Plastibel in children above 5 years of age.
3. Circumcision with Plastibel is best for children under 2 years of age.

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CORRIGENDUM

Memon ZA, Qureshi S, Maher M. Outcome of ileostomy closure: an audit in Surgical Ward 2, JPMC, Karachi. *Pak J Surg* 2009; 25(4): 230-34.

The authors should read “Zahid Ali Memon, Shamim Qureshi, Mumtaz Maher”.

The objective in abstract should read “To evaluate the complications associated with ileostomy takedown.”

The editors regret the errors.