

Comparative Study of Patient Satisfaction Between Traditional and Modified Plastibell Method for Circumcision in a Tertiary Care Centre

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Abstract

Introduction: Phimosis is Inability to retract prepuce. At birth the foreskin is normally adherent to the glans penis. Incidence of pathological phimosis is 0.6%. Circumcision is a very old procedure. Any technique for surgery can be applied but rate of morbidity should be low. **Materials and Methods:** Study conducted in Department of surgery of a tertiary care hospital. Data collection of selected patients with relevant history, clinical examination, appropriate investigation and surgical intervention were included. **Results:** Study was conducted with 116 subjects with mean age of 3.1 years with surgery done by the dorsal slit method and mean age of 3.7 years by plastibell method. The average duration for dorsal slit procedure to complete is 15.7 minutes and for plastibell is 12.2 minutes. Mean blood loss occurred in dorsal slit method is 9.0 while that in plastibell is 6.0. Frequency of surgical site infection in dorsal slit method is 5.2% while that in plastibell method is 6.9%. Post-operative haemorrhage seen in dorsal slit method is 5.2% while that in plastibell is 1.7%. 89.7% of parents satisfied with dorsal slit method while 96.6% parents were satisfied with modified plastibell method. **Conclusion:** Study showed that plastibell has advantage of shorter time for surgery and relatively lower risk of post-operative bleeding when compared with dorsal slit method of circumcision. The cosmetic outcome as judged by parental satisfaction was also better with plastibell technique.

Keywords: Dorsal Slit Method, Cosmetic Outcome, Modified Plastibell Method, Phimosis

1. Introduction

Phimosis is inability to retract prepuce¹. It is difficult in taking prepuce back over glans. At birth the foreskin is normally adherent to the glans penis². Incidence of pathological phimosis is 0.6% of boys. Phimosis in adults occurs because of post balanitis. Diagnosis of phimosis is primarily clinical and no laboratory tests or imaging studies are required.

Mutilation of genitalia of males by humans started first in eastern Africa³. This surgery is in practice for about 5000 years⁴. It is very common surgery⁵. Phimosis is the reason for which circumcision is performed in Western societies. Other indications to perform

surgery is balanitis, posthitis and paraphimosis and also condylomata acuminata. Hypospadias as well as epispadias is contraindicated for surgery. Any technique for surgery can be applied but rate of morbidity should be low⁶.

WHO recommends open type of conventional surgeries which includes dorsal slit, sleeve resection, use of forceps for guidance and amputation. Drawback of such surgeries is that, it takes time, and involves stitches. It takes time to learn procedure well to maintain safety. Nowadays newer devices are seen which can be used sutureless. One of widely used device is plastibell⁷.

Thus, this study compares the traditional method and modified plastibell method for management of circumcision.

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2. Aims and Objectives

1. To compare between traditional method and modified plastibell method for management of circumcision in terms of cosmesis.
2. To study post-operative complication among traditional method and modified plastibell method.

3. Material and Methods

Study Area

This study was done in the Department of Surgery, tertiary care hospital.

Study Population

Patients coming to the OPD &/or cases admitted in the IPD for Phimosis, in the department of General Surgery at our hospital.

3.1 Inclusion Criteria

1. Subjects with Phimosis.
2. Age group-From birth to 15 years.
3. Parents giving their consent for study.

3.2 Exclusion Criteria

1. Hypospadias
2. Epispadias
3. Parents not giving consent for study

Study Design

A Prospective, Comparative study

Sample Size Calculation:

$$p = \frac{p_1 + rp_2}{1+r}$$

$$n' = \frac{\left[z_{1-\frac{\alpha}{2}} \sqrt{(r+1)p(1-p)} + Z_{1-\beta} \sqrt{rp_1(1-p_1) + p_2(1-p_2)} \right]^2}{r(p_2 - p_1)^2}$$

$$n \geq \frac{n'}{4} \left[1 + \sqrt{1 + \frac{2(r+1)}{(n'r|p_2 - p_1|)}} \right]^2$$

116 subjects diagnosed with phimosis in the department of surgery were divided randomly into one of the following two groups (58 each) using computer generated random numbers

Study Duration

From August 2017 to December 2019

Methodology

Patients visiting the OPD & admitted in the IPD for Phimosis during the above-mentioned period of evaluation at tertiary care center were taken for study with the help of relevant history, clinical examination, appropriate investigation and treatment which includes surgical intervention. Written informed consent was taken from each patient's parents and IEC approval. Subjects were treated as per their respective surgery group.

Following outcome parameters of study were used to compare two groups:

- Operative duration and amount of blood loss (assessed by using gauze visual analogue⁸).
- Early postoperative problems: infection, bleeding.
- Parental satisfaction (overall aesthetic outcome [satisfied, not satisfied]).

4. Results

Group Distribution of study subjects

116 subjects of phimosis in the department of surgery were divided randomly into one of the following two groups (58 each) using computer generated random numbers:

Group A – Conventional Surgery (Dorsal slit method) and; **Group B** – Modified Plastibell Technique.

Table 1. Age Distribution of study subjects

Age Group (years)	Group		Total
	A	B	
< 1	15	20	35
	25.9%	34.5%	30.2%
1-5	31	28	59
	53.4%	48.3%	50.9%
6-10	10	10	20
	17.2%	17.2%	17.2%
11-15	2	0	2
	3.4%	0.0%	1.7%
Total	58	58	116
	100.0%	100.0%	100.0%
p- value - 0.34			

Most of the children were below 5 years of age (81.03%). No statistical difference was seen between both study groups as per age distribution.

Mean age comparison among study groups

Mean age of the cases in conventional group was 3.1 years while it was 3.7 years in plastibell group respectively.

Table 2. Comparison of duration of surgery and blood loss among 2 procedures

Variables	Group	N	Mean	SD	p- value
Duration of Surgery (mins)	A	58	15.7	3.4	<0.05
	B	58	12.2	2.5	
Blood Loss (ml)	A	58	9.0	4.0	<0.05
	B	58	6.0	2.0	

Mean duration of surgery was significantly less in cases operated with plastibell technique (12.2 for plastibell method vs 15.7 mins for Dorsal slit method; $p < 0.05$). Also, mean blood loss significantly was lower (6.0 for Plastibell vs 9.0 ml for Dorsal slit method; $p < 0.05$).

Table 3. Distribution of study subjects as per post-op complications

Post-op Complications	Group		Total	p-value
	A	B		
Surgical Site Infection	3	4	7	1.0
	5.2%	6.9%	6.0%	
Post-op Haemorrhage	3	1	4	0.61
	5.2%	1.7%	3.4%	

None of the complications like Urethrocutaneous fistula, glandular injury, meatal stenosis found with any operative procedure.

Surgical site infections were seen in 5.2% and 6.9% cases of conventional and plastibell technique while post-op haemorrhage was reported in 5.2% and 1.7% cases respectively.

Parental satisfaction was reported to be 96.6% in plastibell group as comparing to 89.7% in conventional group respectively.

Table 4. Distribution of study subjects as per parental satisfaction levels

Parental Satisfaction	Group		Total
	A	B	
Satisfied	52	56	108
	89.7%	96.6%	93.1%
Not satisfied	6	2	8
	10.3%	3.4%	6.9%
Total	58	58	116
	100.0%	100.0%	100.0%
p- value - 0.27			

5. Discussion

Circumcision in males is a surgical procedure of removing partial or whole prepuce. Circumcision is performed very routinely. It is said that 1 out of 4 new born undergoes circumcision^{9,10}. Whichever technique is used for circumcision morbidity should be minimum¹¹. Open conventional surgeries include sleeve resection, dorsal slit, forceps guided and guillotine are WHO recommended. It is a time taking procedure as well as painful. It requires suturing. Nowadays various devices are available which does not require sutures. In disposable devices plastibell is more popular⁷.

6. Demography

Most of the children were below 5 years of age (81.03%) while 30.2% were below one year. Mean age of the cases in conventional group (Dorsal slit method) was 3.1 years while it was 3.7 years in plastibell group respectively.

Khan AA *et al.*¹² in their study observed the mean age in conventional group as 3.12 months while it was 3.37 months in plastibell group respectively.

Abdullah LB *et al.*¹³ in their study observed age at circumcision varied between 7 days and 10 years with majority of boys less than 3 years of age.

7. Operative Findings

In present study, Mean duration of surgery was found significantly less in cases operated with plastibell technique (12.2 for Plastibell vs 15.7 for Dorsal slit mins; $p < 0.05$). Mean blood loss was also significantly lower. For Plastibell it was 6ml and for Dorsal slit method it was 9ml (6.0 vs 9.0 ml; $p < 0.05$).

Abdullah LB *et al.*¹³ observed mean time required for dorsal slit method was 12 minutes and for plastibell it was 7 minutes also showing 7 ml average blood loss in dorsal slit and 4 ml blood loss in plastibell method.

Shinde *et al.*¹⁴ in their study observed mean surgical time as 4 ± 2 mins for plastibell technique.

Post-operative bleeding results from frenular artery injury or cut dermal edges.

8. Complications

Surgical site infections were seen in 5.2% and 6.9% cases of Dorsal slit method and plastibell technique while post-op hemorrhage was reported in 5.2% and 1.7% cases respectively.

Abdullah LB *et al.*¹³ in their study observed surgical site infection in 5 (4.2%) children; 2 from the dorsal slit group and 3 from the plastibell group. The rate was slightly lower in dorsal slit than plastibell method.

Shinde *et al.*¹⁴ in their study observed 15.47% children having not so major complications. Among neonates, 4.16% developed complication while in infants 20% were developed complications.

Mousavi *et al.*¹⁵ observed the overall rates of complications in conventional and Plastibell groups as 1.95% and 7.08%.

Khan A *et al.*¹² in their study observed circumcision; plastibell method has less chances of infection (4%) as compared to open method (15%).

Authors	SSI (Conventional)	SSI (Plastibell)
Abdullah LB <i>et al.</i> ¹³	3.33%	5%
Khan A <i>et al.</i> ¹²	15.0%	4.0%
Mousavi <i>et al.</i> ¹⁵	1.95%	7.08%
Present Study	5.2%	6.9%

9. Aesthetic Outcome

In present study, parental satisfaction was reported to be 96.6% in plastibell method and in conventional group 89.7%.

Abdullah LB *et al.*¹³ in their study found most of the parents/ guardians were satisfied with the procedure; 91% after the dorsal slit and 97% after the plastibell method.

However, Khan AA *et al.*¹² in their study observed that in plastibell group, 82% parents were found satisfied whereas in open group, 96% parents were satisfied.

Thus, to summarize, plastibell method has advantage of shorter time for surgery and relatively lower risk of post-operative bleeding as compared to dorsal slit method of circumcision. Also, the parenteral satisfaction for cosmesis was more for Plastibell method than Dorsal slit method.

We thus recommend modified plastibell method for management of circumcision in all cases.

10. Conclusion

Our study showed that plastibell has advantage of shorter time for surgery and relatively lower risk of post-operative bleeding when compared with dorsal slit method of circumcision. The cosmetic outcome as judged by parental satisfaction was also better with plastibell technique. We thus recommend modified plastibell method for management of circumcision in all cases.

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