Bleeding following circumcision with plastibell: technical factors and prevention

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Abstract:
Background: Plastibell is commonly used all over the world for circumcision because of ease and fewer complications. Bleeding is one of the complications that may be serious. We performed this study to find out the cause of bleeding after plastibell circumcision in cases without bleeding disorder.
Methodology: This study was carried out from October 2010 to March 2013 at Civil Hospital, Karachi and other hospitals of Karachi where all children referred to pediatric surgeon for bleeding after circumcision with Plastibell were studied. Their data was collected Plastibell removed source of bleeding identified, bleeding controlled with bipolar diathermy and wound sutured.
Results: In this study 73 children with age varied from 6 days to 28 months were included. 53.4% circumcisions were performed by pediatrician, followed by general practitioner, non-doctor and surgeon 34.2%, 6.8% & 5.5% respectively. Most of the procedures (50.6%) were carried out in clinics.
Dorsal mucosal tear was found to be the most common cause of bleeding in (56.2%), followed by loose tie of plastibell thread (38.4%) and frenular tear (5.5%).
Conclusion: The two major cause of bleeding following circumcision with plastibell are dorsal mucosal tear and loose tie of Plastibel thread and both of them are preventable. Bleeding form dorsal mucosal tear can be prevented by application of mosquito artery forceps at the apex of dorsal slit made during the insertion of Plastibel. Similarly loose tie can be prevented by application of proper surgeon's knot; this prevents loosening of tie while second twist is being applied.

Keywords: Plastibell for circumcision, bleeding following circumcision, Plastibel technical factors

Introduction:
Circumcision is routinely performed as a religious ritual in Muslims and Jews males all over the world1. It is usually carried out in infancy or neonatal age. Various procedures and devices are used but none of them is free of complications. plastibell is most commonly used now-days for this purpose especially in young children and neonates2. Although it is relatively free of complications3, but bleeding is one of the complications that is frequently seen & may be life threatening4. This study is carried out to find the causes and source of bleeding after circumcision with plastibell in children without bleeding disorder.

Methodology:
This observational prospective study was conducted at Civil Hospital, Karachi and other hospitals of Karachi from October 2010 to March 2013. All children presented to pediatric surgeon with bleeding following circumcision with plastibell were included, while those having bleeding disorder were excluded from the study by performing their prothrombin time and APTT.
The data was recorded on a specially designed Proforma, regarding the age of the child, the onset of bleeding after circumcision, and whether the procedure was done by a surgeon, pediatrician, general practitioner or a non-doctor as well as the place where the circumcision was performed. All cases were explored in operation theatre, the plastibel was removed the source of bleeding was identified; recorded and controlled with bipolar diathermy finally the wound was sutured with chromic catgut.

Results:
During the study period 73 children presented with bleeding after circumcision with plastibel device were studied. Their age varied from 6 days to 28 months. The mean age was 6.4 months. Most of the children (43.8%) were between 1 to 6 months of age (Table 1).

Majority of them (46.6%) presented between 4 to 6 hours after circumcision (Figure 1).

53.4% of these circumcisions were performed by pediatrician, followed by general practitioner 34.2%, non-doctor 6.8% and surgeon 5.5%.

Most of the procedures (50.6%) were carried out in clinic (Table 2).

In 56.2% of the cases the cause of bleeding was found to be dorsal mucosal tear, loose tie of plastibel thread was the cause in 38.4%, while 5.5% had bleeding resulting from frenular tear (Figure 2).

Discussion:
In this study of 73 children having post circumcision bleeding following circumcision with plastibel, we found that the cause of bleeding in majority of them (56.2%) was tearing of dorsal mucosal slit while the second most common cause (38.4%) was loose tie of plastibel thread. Both of these causes of bleeding can be prevented by meticulous technique, reducing the incidence of this complication. A small number of cases (5.5%) are secondary to tearing of frenulum.

Circumcision is the most commonly done surgical procedure in children, that dates back to early Egyptian times of about 2300 BC. It is mostly performed for cultural and religious reasons and only a small percentage had a pure medical indication. The various methods for this procedure include plastibell, bone cutter method, open

![Table 1: Age of the patients](image)

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than 1 Month</td>
<td>11</td>
<td>15.1</td>
</tr>
<tr>
<td>1-6 Months</td>
<td>32</td>
<td>43.8</td>
</tr>
<tr>
<td>7-12 Months</td>
<td>23</td>
<td>31.5</td>
</tr>
<tr>
<td>13-18 Months</td>
<td>3</td>
<td>4.1</td>
</tr>
<tr>
<td>Above 18 Months</td>
<td>4</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>100.0</td>
</tr>
</tbody>
</table>

![Table 2: Place Of Circumcision](image)

<table>
<thead>
<tr>
<th>Place</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Theatre</td>
<td>06</td>
<td>8.2</td>
</tr>
<tr>
<td>Clinic</td>
<td>37</td>
<td>50.6</td>
</tr>
<tr>
<td>Dressing Room</td>
<td>26</td>
<td>35.6</td>
</tr>
<tr>
<td>Home</td>
<td>04</td>
<td>05.5</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>100</td>
</tr>
</tbody>
</table>

![Figure 1: Time of presentation after circumcision](image)

![Figure 2: Causes of bleeding](image)
method and gomco clamp etc. The first three are more commonly employed in our country and a large percentage of these patients are circumcised outside a properly equipped operating room.

Circumcision with plastibel is a safe and simple procedure, especially in experienced hands and for children below two years of age. Bleeding is one of the complications that may endanger life and occurs in 3-10% of cases. The detailed technique of the procedure has been nicely described in the literature; complications occur if these technical details are not followed meticulously.

In this study although we have shown in our results the age distribution, time of onset of bleeding, place of procedure and the procedure performed by whom, but the important thing which we have found is the cause of bleeding that needs to be discussed here.

We found that the cause of bleeding in 56.2% patients was dorsal mucosal tear. This occurs because of proximal tearing of the inner preputial layer at the time of insertion of plastibel. In the standard procedure dorsal slit is made in the prepuce after crushing with artery forceps to facilitate introduction of the plastibel. If the slit is made too deep or the incision in the inner mucosal layer of prepuce slips proximally at the time of inserting plastibel, this part of incision remains above the ligature and causes bleeding.

To prevent this incident we routinely apply mosquito artery forceps to grasp the two layers of prepuce at the apex of dorsal slit together, as shown in photograph - I. Similarly application of fine silk suture at the apex of dorsal slit holding the two layers together has also been described in literature.

Loose tie of plastibel thread was the second most common cause of bleeding found in 38.4% of our cases. If the tie is loose the skin distal to it will not strangulate completely and starts oozing blood from cut surface. This can be prevented by applying knot that is tight enough to strangulate. Loosening of thread usually occurs when the second knot is being tied and the first knot get loosen. This incident can be prevented by applying a proper surgical knot (giving two throws to the thread in first knot) as it prevents loosening while the second knot is being applied.

The available literature has discussed the incidence of various complications extensively but none have discussed specific causes of bleeding after plastibel circumcision, although few have highlighted the technical details to prevent post circumcision bleeding.

It is recommended that these technical aspects should be specifically highlighted during the training of personnel for circumcision with plastibel in order to minimize bleeding complication after plastibel circumcision.

**Conclusion:**
The incidence of bleeding following circumcision with plastibel can be minimized by meticulously following the technical details while applying plastibel. These technical aspects should be specifically highlighted during training of medical persons for circumcision with plastibel in order to reduce bleeding complication and improving the outcome.

**References:**