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Avoidance of Redundant Foreskin or Excessive Skin Removal at Circumcision with Reducing Early Post Operative Complications

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Annotation: Circumcision is one of the world's most common and oldest medical procedures. Circumcision is the surgical removal of the prepuce (foreskin) covering the glans of the human penis It was highly regarded as a rite of passage to adulthood and a hygienic process. The most common indication of circumcision is social and ritual, millions of boys undergo circumcision for different reasons including religious, cultural, social and medical reasons. To study age group of boys undergone circumcision develop higher incidence of operative and postoperative early complications with avoiding or reducing of these complications. prospective study conducted over a period between November 2013 and October 2021, on boys ≤ 3 years, who attending surgical private clinic for circumcision, 380 boys were analyzed , the cases were divided into two groups according to age; Group A 240 neonate and infant (1 day to 1 year old), while Group B toddler or children (1 year to 3 years old). All the surgeries were performed by the same surgeon and all cases followed up for 1 month to record and treat any early complications may developed. This study revealed regular (symmetrical) cut line at foreskin removal site without redundant skin or excessive skin removal after circumcision for all cases in this study . In general the neonates and infants had a lower risk of complications than children. Bleeding was the commonest early complication in in both groups. Prolong penile skin oedema was the least early complication developed. Infection and wound separation also developed in same small number of cases. , the appropriate age of circumcision is to be a neonate and infant. For prevention of debilitating and prolonged complications, it should only be performed in medical institutions by suitably trained surgeons.

Keywords: Circumcision, Complications, Foreskin, Glans, Infant, Neonate.

Introduction

Circumcision is the surgical removal of the prepuce (foreskin) covering the glans of the human penis . The practice of circumcision has existed for thousands of years as part of cultural and religious teachings.(Raveenthiran V. 2018) .

It was highly regarded as a rite of passage to adulthood and a hygienic process. Recent knowledge of female circumcision has also fueled the discussions on the validity of male circumcision.(Zurynski Y.2015, Varol N 2014, Matar L.2015, Foddy B. 2013).

Circumcision is one of the world's most common and oldest medical procedures . Circumcision in children and infants is one of the most common surgeries worldwide .(Prabhakaran S. 2018) Globally, approximately 30% of men are circumcised. *(WHO/UNAIDS* 2008)

The most common indication of circumcision is social and ritual, millions of boys undergo circumcision for different reasons including religious, cultural, social and medical reasons .(Palit V.2007, Shah T. 1999) Medical indications for circumcision include but are not limited to phimosis,

paraphimosis, and chronic urinary tract infections. Elective circumcision may be indicated in regions with increased HIV and human papillomavirus (HPV).

Furthermore, some authors have hypothesized that it may prevent sexually transmitted diseases (STDs). (Ezomike U *2022,* Jacobs AJ. *2021* Mavlu *.2015)* male circumcision reduces men's risk of heterosexually-acquired HIV-1. (Auvert B.2005, Gray RH .2008) , circumcised men have lower rates of penile cancer and urinary tract infections, while the partners of these men are reported to have lower rates of cervical cancer. (Razzag S. 2018)

The neonatal age or infancy are the safest stage for medical circumcision to be performed.(Weiss H.A.2010) Neonatal period or infancy are the safest time for circumcision to be performed . (Weiss HA .2010, UNAIDS .2010) . Acceptability of neonatal circumcision among new mothers was more than 90%.(Plank RM. 2010) .

The main factors leading to complications are age, lack of sterility, improper cauterization, and inexperienced circumcisers. (. Alkhenizan A.2016, Morris BJ. 2019) The main early and late complications of circumcision are bleeding, glans injury, infection, adhesion, excessive foreskin removal, meatal stenosis and phimosis, and false micropenis (inconspicuous penis). (Omole F.2020, Rezakhaniha S.2021, American Academy 2012, Friedman B.2016)

Contraindications to circumcisions include an unhealthy infant, anatomic pathology, and bleeding disorders.. The procedure should be postponed if the infant is found to have electrolyte or metabolic abnormalities (e.g., hypoglycemia), a bacterial infection, has yet to urinate, or to has a hypoxic cardiac disorder. The penis should be evaluated for anatomical anomalies such as micropenis, concealed penis, swelling of the foreskin, and hypospadias. (Earp BD.2018, Roth JD.2016)

Aims of study

1. Detect age of boys undergone circumcision associated with high incidence of operative and postoperative early complications.
2. Avoidance immediate operative complications of circumcision related to procedure.
3. Reducing early postoperative circumcision complications.

Patients and method

This a prospective study conducted over a period between November 2013 and October 2021, on boys ≤ 3 years, who attending surgical private clinic for circumcision . A written informed consent was obtained from all the parents for participation in the study after adequate counseling . Patients with hypospadias, epispadias, micropenis, disorders of sexual development, micropenis and infective conditions of the external genitalia , any significant history of coagulopathy in the family, cardiac problem were excluded from circumcision . In this study 380 boys were analyzed , the cases were divided into two groups according to age ; Group A 240 neonate and infant (1 day to 1 year old) , while Group B toddler or children (1 year to 3 years old). All the surgeries were performed by the same surgeon and all cases followed up for 1month to record and treat any early complications may developed .

Procedure:

Under local anesthesia ,supine position , prepare the area include penis and surrounding tissue by use antiseptic povidone solution , release any adhesions between glans and foreskin and freeing glans and corona completely from foreskin, removing smegma and cleaning free new area (glans and corona) with antiseptic povidone solution, marking the external layer of foreskin at level of corona symmetrically around it , rolling up the external layer of foreskin until the line of marking above level of glans tip , lifting up prolapsed internal layer (mucosa) of foreskin , applying clamp or cutter at level of marking line above glans tip, before removal or cutting foreskin assessing or palpating glans must below level of clamp to avoid glans injury then excising foreskin by using heat for cutting , local antibiotic at site of surgery or wound and glans without dressing twice daily till healing and avoid

direct contact between glans and napkin to avoid irritation and meatitis development by two ways either avoid napkin at all or putting cup to cover penis and separate glans from contact with napkin .

Result

In this research 380 boy were analyzed, 240 of them neonates and infants (1 year and less) and 140 children (1-3 years). This study revealed regular (symmetrical) cut line at foreskin removal site without redundant skin or excessive skin removal after circumcision for all cases in this study .

All early complications developed in 10 cases (4.16%) neonates and infants , also 11 cases (7.86%) children , In general the neonates and infants had a lower risk of complications than children .

Bleeding was the commonest early complication in 7 cases (1.25% neonates with infants and 2.85% children) had bleeding either from cutaneous vessels, mucosal laceration or tear of the frenulum , all cases of bleeding occur at time of surgery and managed immediately by ligations.

Prolong penile skin oedema more than 7 days was the least early complication developed in 4 cases (0.41% neonates and infants , 2.14% children) all cases were managed by follow up without specific treatment and resolve after 10 to 14 days .

Regarding other early complications discovered in our study ; infection develop in 5 cases (1.25% in neonates and infants , 1.42% in children) all cases managed by local daily dressing with antiseptic povidone iodine , local and oral antibiotic and the conditions resolve within 3 to 5 days of treatment .

Also wound separation of external skin from internal mucosa occur shortly after circumcision with prolapsed mucosa over glans was developed in 5 cases (1.25% in neonates and infants , 1.42% in children) treated with reposition of mucosa at proper site just below or at level of penile corona .

Our study had not record any other complications like meatitis , urine retention , glans injury or hematoma.Also present study had not any circumcision revision. The result of our study mentioned in table below

Complications of circumcision	Incidence among Neonate and infant	Incidence among children
Redundant foreskin	0	0
Excessive foreskin removal	0	0
Bleeding	1.25%	2.85%
Infection	1.25%	1.42%
Irregular cut line	0	0
Prolong penile skin	0.41%	2.14%
Wound separation	1.25%	1.42%
Glans injury	0	0
Urine retension	0	0
Meatitis	0	0
Surgical revision	0	0

Total	4.16%	7.86%

Table of circumcision complications incidence among neonate, infant and children.

Discussion

Our study revealed regular (symmetrical) cut line at foreskin removal site , while other studies via the dorsal slit and modified Mogen clamp method ; it is not possible to cut the prepuce skin completely symmetrically.(4. Lei JH 2016, Güler, Yavuz 2022).

Our study revealed all cases were circumcised without redundant skin or excessive skin removal , while other studies circumcisions were done by The Mogen clamp or Plastibell method leaving too much/too little foreskin (Plank RM 2013 , Chan PS 2018, Bawazir OA 2019 , Shah T 1999) , studies of circumcisions were done via the dorsal slit the redundant skin was 3.1% (Güler, Yavuz 2022) , redundant skin 0.8% and excessive skin removal 2.5%(Siroosbakht S. 2022). Reason about good result in our study , we detect proper site for removing foreskin.

most complications in our study occur in cases of age more than 1 year old in percent neonates and infants : children was approximate to 1:2 it was comparative to other studies. (Morris BJ 2019, Alkhenizan A2016 , . Hung YC, Chang DC 2019 , . El Bcheraoui 2014 , Weiss H.A. 2010) . Conversely, a studies concluded that the complications of circumcision were more frequent in infants than in children (Ketabchi AA 2017 , Siroosbakht S 2022)

In our study commonest early complication was bleeding occur 1.25% in neonates and infants, and 2.85% in children comparative to another study in percent of complications but differ in age group occurrence was mainly 2.5% neonates and 1.3% children (Siroosbakht S. 2022) . high incidence of bleeding 4.42% infant in the Gomco group (Bawazir OA 2019) , 3.32% in **Mogen** group (Plank RM 2013), 5.6% in dorsal slit and 6.5% modified Mogen clamp method. (Güler, Yavuz 2022). Lower incidence of bleeding in presented study because we use heat for cutting , avoid circumcision for cases with infected or oedematous foreskin and excluding cases of coagulopathy.

Regarding infection develop in 5 cases (%1.25 in neonates and infants ,% 1.42 in children)while in other studies occur in higher incidence ; the infection rate was averaged 13.7% and 14.9% in Plastibell and conventainal group respectively (15. Kaplan G.W. 1983) . In another study ; Fraser, reported an infection rate of 4% in both methods. (Fraser I.A 1981) while Sorensen recorded 5% with Plastibell device technique.(Sörensen S.M.1988). Lower incidence of infection in presented study because we use postoperative local antibiotic and antiseptic solution in addition to excluding cases predisposing for infection like infected or severe oedematous foreskin .

In presented study ; Prolong penile skin oedema more than 7 days was the least early complication developed in 4 cases (0.41% neonates and infants , 2.14% children) while penile oedema occur in 10.6% in Plastibell group circumcision. (Bawazir OA. 2019)

Our study had not record any other complications like meatitis , urine retention , glans injury, adhesion and hematoma while all these complications occurred in other studies (Omole F. 2020, Rezakhaniha S. 2021, Plank RM 2013, Chan PS. 2018, Güler, Yavuz 2022). Surgical risks include, but are not limited to, infection, incision of the glans and urethra, necrosis of the glans, foreskin adhesions, phimosis, or penile loss. (American Academy 2012, Friedman B 2016)

Also present study had not any circumcision revision while occur in in 4.3% and 3.1% in dorsal slit and modified Mogen clamp method respectively.(Güler, Yavuz 2022)

Recommendations

1. Advice early neonatal or infantile circumcision to avoid complications that have high incidence in boys more than 1 year old.
2. Advice circumcision in general to reduce STD , penile carcinoma and cervical carcinoma (circumcised men have lower rates of penile cancer and urinary tract infections, while the partners of these men are reported to have lower rates of cervical cancer).

3. Advices regarding operation.

A. For prevention or reducing of debilitating and prolonged complications, it should only be performed in medical institutions by suitably trained surgeons.

B. Avoid using monopolar diathermy to avoid ischemic necrosis of penis.

C. Assessing level of glans tip below foreskin excision site before cutting to avoid glans injury.

D. Avoid immediate circumcision for conditions associated with extensive oedema of prepuce like phimosis or paraphimosis until resolve oedema by doning dorsal slit for releasing constricting ring , this will reduce risk of operative and postoperative complications like glans injury, too much removal or too little removal of foreskin, bleeding , infection and prolong healing time.

4. Advice regarding postoperative follow up ; avoiding contact glans and wound of circumcision to napkin wall for 1 week either by avoid napkin at all or putting cup to cover penis and separate glans from contact with napkin to avoid irritation and inflammation of new exposed area of penis by napkin wall or by continuous exposure to urine.

Conclusion

The ratio of early complications of circumcision is higher in children compared to neonates and infants. The results of this study showed that for prevention or lowering of developing operative and early postoperative complications, the appropriate age of circumcision is to be a neonate and infant . For prevention of debilitating and prolonged complications, it should only be performed in medical institutions by suitably trained surgeons.

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