



Original Article

Outcome of circumcision in children with or without antibiotics in a tertiary Hospital

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Abstract

Introduction: As circumcision is a common paediatric operation in Bangladesh, it logically demands cost-effectiveness and safety for people's benefit. Antibiotics abuse or its irrational use is a problem in our country. This study will help other surgeons to do clean surgery without antibiotics, which will ensure cost-effectiveness and preserving natural body immunity.

Objective: The study was conducted to determine the outcome of circumcision in children with or without antibiotics.

Methodology: It was a quasi-experimental study done at Paediatric Surgery unit of Institute of Child and Mother Health (ICMH), Matuail, Dhaka from August 2019 to January 2020 after taking approval for this protocol from the ethical committee of ICMH. The male infants and children who attended Paediatric Surgery OPD of Institute of Child and Mother Health (ICMH) with an intention to do circumcision voluntarily for religious cause or other reasons, included in this study excluding congenital anomaly and randomly allocated in two groups. They were counseled properly and enrolled in the study with taking written informed

consent. On the scheduled operation day of every Wednesday, circumcision was done after doing investigations and anaesthetic check-up. One group of 30 patients received antibiotics and another group of 30 patients were without antibiotics. They were discharged on the same day as a day care surgery and advised for follow up in a follow-up schedule of 1 week, 2 weeks and 1 month. The recovery outcomes were assessed and recorded in the data sheets.

Results: 02 participants (07%) among all 30 participants without antibiotics after circumcision developed postoperative wound infection like pus in the wound, rest 28 participants (93%) without antibiotics recovered uneventful with only pain management therapy and regular cleaning by warm water bathing. Another group of 30 participants with antibiotics recovered without any post-operative complications after doing circumcision.

Conclusion: Antibiotics are not necessarily mandatory for circumcision wounds. Clean surgery and proper maintenance of asepsis during per-operative and postoperative period played important role in good recovery outcome, without or treatable mild postoperative complications.

Key words: Circumcision, Antibiotics

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Introduction

Circumcision, which is performed more commonly for religious and cultural reasons than for other indicated conditions, such as phimosis, para-phimosis, balanoposthitis, recurrent UTI, smegmal cyst, is a routine operation in many countries and has a centuries-long history¹. It is the most common surgical procedure performed in male children². Like other countries, it is also a common operation in Bangladesh. After doing this circumcision, antibiotics prophylaxis is a habitual practice. By clean surgery we mean that an uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital

or infected urinary tract is not entered, wounds are closed primarily and if necessary, drained with closed drainage³. Clean incised wound does not require antibiotics. The risk of postoperative wound infection is lowest after clean surgical procedures⁴. Both povidone iodine and chlorhexidine-ethanol have minimized wound contamination in a clean surgery⁵. Traditionally after circumcision, a full course of oral prophylactic antibiotics is written in our centre of ICMH. The basic surgical skills of preoperative preparation, excellent surgical technique, fastidious wound care and post-operative management are corner stone's of infection prophylaxis³.

Prophylactic antibiotics are not the substitute for good surgical practice including strict aseptic technique⁶. The aseptic technique such as barrier premises, laminar flow within the operating theatre, separate changing areas for theatre personnel and the minimum traffic of personnel in the theatre during the course of surgery is well recognized⁷.

Only postoperative pain management by paracetamol, antihistamine and local application of jasocaine jelly is sufficient for circumcision wound and healing occurs in its natural process. Oral 3rd generation of cephalosporin is prescribed commonly which is costly. The unnecessary use of antibiotics is, however, a burden on patients financial resources and the indiscriminate use of antibiotics result in the emergence of resistant strains of organism responsible for nosocomial infection⁸.

Materials and methods

The male infants and children attended ICMH paediatric surgery OPD with an intention to do circumcision voluntarily for religious purpose or others who had definite surgical cause for circumcision were included

in this study and they were divided in two groups with or without antibiotics. The parents or legal guardians were counseled properly and the written consent was taken for this study. After doing physical examinations excluding congenital anomaly in the genitourinary systems and appropriate investigations, participants were sent to anesthesia department for anesthetic checkup. Every Wednesday was the scheduled operation day of paediatric surgery unit of ICMH and circumcision was done by vicryl rapid 5/0 atraumatic or 5/0 chromic catgut suture. One group of 30 patients were given post-operative antibiotics (cefixime) and analgesic therapy as usual for one week. Another group of 30 patients were given only analgesia (paracetamol+ jasocaine jelly + antihistamine syrup) for five days.

They were allowed to go home with an advice for regular warm -water bathing and to come for follow up after 1 week, 2 weeks and 1 month. If they face any untoward events, our cell phone numbers were provided to the guardians for immediate correspondence. Discharge paper contained operation note and detail information of the patients. On every follow up, healing status and complications which were the denominating factors for outcomes, recorded in the structured data sheet. This was a quasi-experimental study and it was approved duely from the ethical and review committee of ICMH. Chi-square test was done at significant level.

Results and observation

Age of the study participants were one month to twelve years

Table -I
Age distribution of the study participants (n=30+30)

Age group in years	With antibiotic		Without antibiotic	
	Number of participants	Percentage (%)	Number of participants	Percentage (%)
1 month to <5 yrs	4	13	9	30
5 to <8.5 yrs	17	57	19	63
8.5 to 12 yrs	9	30	2	7
Total	30	100	30	100

Socioeconomic status of participants (n=30+30)

The socioeconomic status of the guardians of the participants were categorized in 3 groups a) Lower income group-Monthly income<30000 taka, b) Middle income group-Monthly income 30000-100000 taka c) Higher income group-Monthly income >100000 taka monthly.

Table - II
Socioeconomic status of participants (n=30+30)

Socio-economic condition	With antibiotics		Without antibiotics	
	Number of participants	Percentage (%)	Number of participants	Percentage (%)
Lower income group	3	10	5	17
Middle income group	25	83	22	73
Higher income group	2	7	3	10
Total	30	100	30	100

Clinical Presentation :

Table - III
Clinical presentation of the study participants (n=30+30)

Presentation	With antibiotics		Without antibiotics	
	Number of participants	Percentage (%)	Number of participants	Percentage (%)
Phimosis	4	13	6	20
Paraphimosis	2	7	0	0
Recurrent UTI	2	7	5	17
Religious/ritual	22	73	19	63

Outcomes after circumcision

After doing circumcision, 30 participants were discharged home without antibiotics and they were given only paracetamol and jasocaine jelly for pain management and antihistamine, for control of itching

and edema. Another group of 30 participants after circumcision, discharged with antibiotics, paracetamol, jasocaine jelly and antihistamine. Each group was followed up separately to see the outcomes after 1 week, 2 weeks and at 1 month. Outcomes were documented and given below in table.

Table - IV
Follow-up results assessing outcomes (n=30+30)

Follow-up results assessing outcomes	With antibiotics	Without antibiotics	P value
Feeling ill (Fever)	No	No	0.52
Any bleeding	No	No	
Presence of pus from the wound	No	2 patients (7%)	
Swelling and tenderness on/or around wound	8 patients (27%)	12 patients (40%)	
Skin discoloration	No	No	

(*Chi-square test was done)

Financial cost in taka for a patient

Financial expenditure for the treatment budget of a family in Bangladesh is a burning problem. We have calculated the cost of one patient.

Table - V
Financial Cost

Financial cost for each circumcision with antibiotic	Financial cost for each circumcision without antibiotic
2260/- taka	1710/- taka

Discussion

Prior approval from institutional review board of ICMH, the study period was from August 2019 to January 2020. Two groups of participants with or without antibiotics after circumcision were included in this study and each group consisted 30 in number.

We have seen that majority of patients belong 5yrs to <8.5 yrs of age in both groups of with (57%) or without (63%) antibiotic. Here there is no significant age difference between the groups. Probably the parents usually feel comfortable to allow their children to do a surgery like circumcision in this age. This finding has a similarity with the article of Rizvi SA et al⁹ and Hull TH, Budiharsana M¹⁰.

The socioeconomic condition of the most participants in both groups belong to middle income group because of the low-cost availability for health service in the government hospitals. This finding is dissimilar with the literature review of WHO/UNAIDS where prevalence of circumcision in Ethiopia is high(93%) but circumcised men are from high income group and live in the urban area¹¹.

After studying the clinical status of the participants, we found majority of study sample without antibiotics 19 (63%), with antibiotics 22(73%) undergone circumcision because of religious purpose. So, it is clear that in our country, circumcisions are commonly done for religious and cultural reasons than for other indications. This observation is similar with the observation of Dunsmuir WD et al.¹

The outcome of circumcision is always connected with the facts of uneventful complications-free recovery after doing circumcision. Among all complications, haemorrhage and infection are the most common complications after circumcision¹². In another article, common complication of circumcision included

haemorrhage (35%), wound infection(10%), meatitis(8-20%) and UTI(2%) respectively¹³. There is 0.5-10 percent of morbidity after circumcision in literature review^{14,16}. In our study, no participants developed fever and haemorrhage in both groups after circumcision because of per-operative aseptic measure under deep sedation and meticulous use of electrocautery for every vascular bleeding. The highly vascular frenulum was tied with vicryl suture. There was no chance of postoperative bleeding. The outcome of circumcision without antibiotics reveals that only 02 patients (07%) had pus on the circumcision-wound and 28 (93%) circumcised patients without antibiotics recovered uneventful with only pain management therapy and regular cleaning by warm water bathing. Our study's wound infection result of 7% is within the range of literature review result^{9,13,15}.

The outcome of circumcision with antibiotics developed no post-operative complications. Eight participants(27%) with antibiotics and 12 participants (40%) without antibiotics reported swelling and tenderness on/or around wound. This has similarity with the statement of WHO/UNAIDS -the risk of adverse events after circumcision mainly bleeding, infection and swelling and these are readily treatable¹¹.

Here we see that clean surgical procedures always reduces chance of post operative wound infection which is similar with the observation of Cuschieri S.A. et al⁴. Due to COVID-19 Pandemic, we could not take large sample-size to make a concrete conclusion for avoidance of routine use of prophylactic antibiotics. The conventional thought of giving prophylactic antibiotics in a cleanly done surgery (including aseptic surgical technique, proper wound care, gentle tissue handling) should be discouraged.

Two patients who developed infection in the group of without antibiotics belong to lower socioeconomic group. The guardians could not maintain cleanliness and local hygiene at home.

The correct use of antibiotics in patients undergoing surgery is vitally important because misuse of potent antimicrobial agents leads to drug toxicity, super-infection, increase in healthcare cost and colonization of wards by highly resistant strains of bacteria.⁹

Financial costs are less in the group of circumcision without antibiotics. The unnecessary use of antibiotics causes monetary loss and put a financial burden upon the people, which is similar with the article of Wallace WC et al.⁷

Conclusion

Use of prophylactic antibiotics is not routinely mandatory for circumcision. Proper maintenance of aseptic procedure during preparation of surgical field and also during course of surgery is a key factor for preventing post operative wound complications.

Conflict of interest: None

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