

Outcome of Circumcision Timing and its Effect on Infants and Preschool Age Children Morbidity

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Abstract

Background: Circumcision is a common procedure, but regional and societal attitudes differ on whether there is a need for a male to be circumcised and if so, at what age, sexually transmitted diseases, penile cancer, and phimosis and a reduction in the incidence of human papilloma virus related cervical cancer in female sexual partners. This is an important issue for many parents, but also pediatricians, other doctors, policy makers, public health authorities, medical bodies, and males themselves. Worldwide 1 in 3 males are circumcised, totaling an estimated 1.2 billion. The largest number of circumcised males are Muslims (approx. 70% of circumcised males globally).

Objectives: The objective of the study is to find whether there is difference in morbidity factors like infections, hospital admissions, complications, and growth and circumcision complications in between preschool age children with different timing of circumcision.

Method & Materials: This study is a cross sectional study done in Albetool Maternity Hospital in Diyala province of Iraq between October 2012 and March 2013 .This study is looking for children who were circumcised and age of circumcision and complained from urinary tract infection before and after circumcision and other complication of circumcision.

Results: Of one hundred of cases included in the study where we found that 26 (26%) of circumcised male were delivered by caesarian section and 74 (74 %) normal delivery, 81 (81 %) without family history of recurrent UTI, 26 (26 %) with family history of UTI , 93 (93 %) without UTI &sepsis after circumcision, 7(7%) with UTI and sepsis after circumcision , 92 (92 %) without urinary catheterization, 8 (8 %) with urinary catheterization , 12 (12%) hospital circumcision and 88 (88 %) home circumcision, 59 (59 %) breast feeding, 49 (49 %) bottle feeding, 66 (66 %) infants and 44 (44 %) preschool age and 26 (26%) with UTI and sepsis before circumcision and 48 (48 %) without UTI and sepsis before circumcision.

Conclusion: Health benefits include protection against urinary tract infection and thus prevent permanent damage to the still-growing kidney, reduced likelihood of penile inflammation, and elimination of risk of phimosis.

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Introduction

Circumcision is a common procedure, but regional and societal attitudes differ on

whether there is a need for a male to be circumcised and, if so, at what age. This is an important issue for many parents, but also pediatricians, other doctors, policy makers,

public health authorities, medical bodies, and males themselves.

Worldwide 1 in 3 males are circumcised [1, 2], totaling an estimated 1.2 billion [2]. The largest number of circumcised males are Muslims (approx. 70% of circumcised males globally) [1]. In the USA, medical male circumcision is performed on 1.2 million newborns (56% of boys) in community hospitals annually [3, 4]. The true number is higher because some boys are circumcised in ambulatory facilities, a physician's clinic or in a private home. In other developed countries, infancy is also the most common time for performing MC. Boys have been circumcised for thousands of years and circumcision plays a significant cultural and religious role in many societies. It is also undertaken on medical grounds with benefits. Cessation of MC in some populations was perhaps a result of behavioral changes caused by environmental stressors or new religious philosophies such as Hinduism and Buddhism [3, 4]. Such factors could explain why circumcision is relatively low in European, South and Central America, southern Africa, and non-Muslim Asian countries. It is also undertaken on medical grounds with benefits thought to include improved hygiene. A reduced incidence of urinary tract infection (UTI) [4] sexually transmitted diseases, penile cancer, and phimosis and a reduction in the incidence of human papilloma virus related cervical cancer in female sexual partners. [5]

Why does the intact foreskin lead to an increased rate of UTI during infancy? It is known that there is bacterial colonization of the foreskin during the first 6 months of life that may be an important risk factor for the development of UTIs. Colonization decreases after the first 6 months of life, probably because the foreskin often becomes retractable around that age. It is known that

uropathogens adhere to, and readily colonize the mucosal surface of the foreskin but not the keratinized shaft skin. Bacteremia associated with UTI which occurs during the first 6 months of life and is inversely related to age. Although the incidence of bacteremia associated with UTI is 2% to 10% during the first 6 months, it is significantly increased (21%) during the first month of life [5]. In addition, an experimental preparation found that uropathogenic bacteria adhered to, and readily colonized, the mucosal surface of the foreskin but did not adhere to the keratinized skin surface of the foreskin [6, 7]. The advent of the AIDS epidemic in the 1980s re-focused interest on MC as a means of prevention not only of HIV, but other sexually transmitted infections (STIs) and adverse medical conditions. This has led to MC programs in high-HIV prevalence settings of sub-Saharan Africa focused on men for more immediate reductions in HIV incidence, but considerable interest has also been given to encouraging infant MC for longer-term gains [8, 9]. There have as well been recent calls for the promotion of infant MC in the USA [10, 11, 12], the UK [13, 14], Australia [15] and sub-Saharan Africa [16, 17]. Despite the advantages of MC, few studies have directly compared the relative merits of MC at different ages. Here we present our findings about the difference of performing MC in infant versus children aged from 1 to 5 years. We compare medical and surgical issues for infant versus later MC,

Methods and Materials

This study is a cross sectional study done in Albetool maternity hospital in Baquba city of Diyala province, Iraq between October 2012 and March 2013. This study is looking for children who were circumcised and age of circumcision and complained from urinary tract infection before and after circumcision



and other complication of circumcision , there current weight , use of catheter before , delayed circumcision and person who perform the operation and where it done.

Result

Of one hundred of cases were included in the study , we found that 26 (26%) of circumcised male were delivered by caesarian section and 74 (74 %) normal delivery, 81 (81 %) without family history of recurrent UTI, 19 (19 %) with family history of UTI , 93 (93 %) without UTI & sepsis after circumcision, 7(7%) with UTI and sepsis after circumcision, 12 (12%) hospital circumcision and 88 (88 %) home circumcision, 59 (59 %) breast feeding, 49 (49 %) bottle feeding, 66 (66 %) infants and 44 (44 %) preschool age , 88 (88 %) without family history of hepatitis and 12 (12 %) with family history of hepatitis , 26

(26%) with UTI and sepsis before circumcision and 48 (48 %) without UTI and sepsis before circumcision, 81 (81%) circumcised at age below one year and 19 (19 %) circumcised at age above one year, 96 (96 %) without any circumcision complication and 4 (4 %) with complication, 52 (52%) circumcision procedure done by a nurse , 43 (43 %)others and 5 (5 %) cases done by doctors , 77 (77 %) without neonatal admission and 27 (27 %) with neonatal admission ,94 (94%) without any congenital abnormalities and 6 (6 %) with congenital abnormalities, 22 (22%) of their parents get high education, 18 (18 %) secondary, 33 (33%) primary and 27 (27 %) are not educated, 84 (84%) with no family history of infectious disease and 16 (16 %) with family history of infectious disease.

Table (1): Correlation of circumcision with Sepsis and hospitalization.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	No. of cases	%
NO family history of recurrent UTI	81	(81 %)
Family history of UTI	19	(19 %)
NO UTI & sepsis after circumcision	93	(93 %)
UTI and sepsis after circumcision	7	(7%)

Table (2): Demographic data of the study.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	No. of cases	%
Caesarian section	26	(26%)
Normal delivery	74	(74 %)
Hospital circumcision	12	(12%)
Home circumcision	88	(88 %)
Circumcision at infancy	81	(81 %)
Preschool age circumcision	19	(19 %)
circumcision procedure done by a nurse	52	(52%)
circumcision procedure done by others	43	(43 %)
circumcision procedure done by doctors	5	(5 %)

Discussion

The majority of UTIs in males occur during the first year of life. In children, UTIs usually necessitate a physician visit and may involve the possibility of an invasive procedure and hospitalization. Most available data were published before 1995 and consistently show an association between the lack of circumcision and increased risk of UTI. Although an abundance of evidence exists about the benefits of MC [9,12,13], it is reasonable to ask whether these dictate infant MC rather than MC later in life when a boy can make up his own mind [18,19]. In 1993, Wiswell performed a meta-analysis of 9 studies and showed that uncircumcised male infants had a 12-fold increased risk of UTIs compared with circumcised infant males. [20, 21] In this study we found that 22 % of infants develop UTI before circumcision (table 2), and 7.5 % of infants develop UTI after circumcision and UTIs are common in uncircumcised infant boys [22-23] and cause severe pain.

In infancy, surgical complications for large published series range from 0.2% to 0.6% [24, 25]. In our study we found that infant surgical complication was 1.5 % Higher rates of 2-10% have been reported in much older child [26,27] and in our study we found that surgical complication from age 1-5 was 6.8 % (table 1). A recent systematic review found a median complication frequency of 1.5% among studies of neonatal or infant circumcision, compared to 6% among studies of children aged one year or older [28].

Another issue is a fear of complications when circumcision is performed later. Such fears can be a significant barrier to uptake of adult MC. In a US study, 59% of men expressed worries about risks of bleeding and infections [29]. A study in China found

that 12.5% of men were concerned about infection [30].

Other desirable features of infant MC are the surgical ease of performing a circumcision on an immobile newborn, the speed of the operation, absence of any need to use sutures, quick healing, and good cosmetic outcome [30, 31]. Further information is provided in an extensive recent review of instrumentation and techniques for infant and later circumcision [31]. When the frequency and severity of complications from the procedure itself are compared with the frequency and severity of medical conditions, including deaths that cannot be result from circumcising.

Conclusions

The health benefits include protection against urinary tract infection and thus permanent damage to the still-growing kidney, reduced likelihood of penile inflammation, and elimination of risk of phimosis, which impedes micturition and results in difficult and painful erections in adolescence and adulthood. It also means tearing of the fragile foreskin and frenulum is avoided. Circumcision in infancy avoids any embarrassment of having it done later, as well as anxieties about pain, complications and adverse sexual effects, even though these are minimal or not supported by evidence.

References

- [1] World Health Organization/UNAIDS. Male circumcision: Global trends and determinants of prevalence, safety and acceptability. World Health Organization, Geneva; 2007. http://whqlibdoc.who.int/publications/2007/9_789241596169_eng.pdf
- [2] Waskett JH. Global circumcision rates. 2011. <http://www.circs.org/index.php/Reviews/Rates/Global>

- [3] Merrill CT, Nagamine M, Steiner C. Circumcisions Performed in U.S. Community Hospitals, 2005: Statistical Brief #45. Healthcare Cost and Utilization Project. 2008. pp. 1–9.
<http://www.ncbi.nlm.nih.gov/books/NBK56311/>
- [4] Amato D, Garduno-Espinosa J. Circumcision in the newborn child and risk of urinary tract infection during the first year of life. A meta-analysis. *Bol Med Hosp Infant Mexico* 1992;49:652–8. Morris BJ. Why circumcision is a biomedical imperative for the 21st century. *Bioessays*. 2007;29:1147–1158. doi: 10.1002/bies.20654
- [5] Wilcken A, Keil T, Dick B. Traditional male circumcision in eastern and southern Africa: a systematic review of prevalence and complications. *Bull World Health Organ*. Wiswell TE, Enzenauer RW, Holton ME, et al. Declining frequency of circumcision: implications for changes in the absolute incidence and male to female sex ratio of urinary tract infections in early infancy. *Pediatrics* 1987;79:338–42 2010; 88:907–914. doi: 10.2471/BLT.09.072975.
- [6] Fussell EN, Kaack MB, Cherry R, Roberts JA. Adherence of bacteria to human foreskins. *J Urol*. 1988;140(5):997–1001.
- [7] Cox G, Morris BJ. In: *Surgical Guide to Circumcision*. Bolnick DA, Koyle MA, Yosha A, editor. Springer, London; 2012. Why circumcision - From pre-history to the 21st century. in press .
- [8] Morris BJ. Why circumcision is a biomedical imperative for the 21st century. *Bioessays*. 2007;29:1147–1158. doi: 10.1002/bies.20654.]
- [9] Hargreave T. Male circumcision: towards a World Health Organisation normative practice in resource limited settings. *Asian J Androl*. 2010;12:628–638. doi: 10.1038/aja.2010.59. [
- [10] Binagwaho A, Pegurri E, Muita J, Bertozzi S. Male circumcision at different ages in Rwanda: a cost-effectiveness study. *PLoS Med*. 2010;7:e1000211. doi: 10.1371/journal.pmed.1000211. [
- [11] Tobian AA, Gray RH, Quinn TC. Male circumcision for the prevention of acquisition and transmission of sexually transmitted infections: the case for neonatal circumcision. *Arch Pediatr Adolesc Med*. 2010;164:78–84. doi: 10.1001/archpediatrics.2009.232. [
- [12] Smith DK, Taylor A, Kilmarx PH, Sullivan P, Warner L, Kamb M, Bock N, Kohmescher B, Mastro TD. Male circumcision in the United States for the prevention of HIV infection and other adverse health outcomes: Report from a CDC consultation. *Public Health Rep*. 2010;125(Suppl 1):72–82. [
- [13] Macdonald A, Humphreys J, Jaffe HW. Prevention of HIV transmission in the United Kingdom: what is the role of male circumcision? *Sex Transm Infect*. 2008;84:158–160. doi: 10.1136/sti.2008.029934. [
- [14] Cooper DA, Wodak AD, Morris BJ. The case for boosting infant male circumcision in the face of rising heterosexual transmission of HIV. *Med J Aust*. 2010;193:318–319.
- [15] Weiss HA, Dickson KE, Agot K, Hankins CA. Male circumcision for HIV prevention: current research and programmatic issues. *AIDS*. 2010;24(Suppl 4):S61–S69. doi: 10.1097/01.aids.0000390708.66136.f4. [
- [16] Clark PA, Eisenman J, Szapor S. Mandatory neonatal male circumcision in Sub-Saharan Africa: medical and ethical analysis. *Med Sci Monit*. 2007;12:205–213.
- [17] Morris BJ. Circumcision: an evidence-based appraisal - medical, health and sexual (a review with 1,023 references) 2010. <http://www.circinfo.net>

- [18] MacDonald N. Male circumcision: get the timing right. *CMAJ*. 2011;183:872. doi: 10.1503/cmaj.101425]
- [19] Singh-Grewal D, Macdessi J, Craig J. Circumcision for the prevention of urinary tract infections in boys: a systematic review of randomized trials and observational studies. *Arch Dis Child*. 2005;90:853–858. doi: 10.1136/adc.2004.049353] [[Cross Ref]
- [20] Wiswell TE. Circumcision circumspection. *N Engl J Med*. 1997;36:1244–1245.]
- [21] Schoen EJ, Colby CJ, Ray GT. Newborn circumcision decreases incidence and costs of urinary tract infections in the first year of life. *Pediatrics*. 2000;105:789–793. doi: 10.1542/peds.105.4.789.]
- [22] Wiswell TE. The prepuce, urinary tract infections, and the consequences. *Pediatrics*. 2000;105:8602.
- [23] Zorc JJ, Levine DA, Platt SL, Dayan PS, Macias CG, Krief W, Schor J, Bank D, Shaw KN, Kuppermann N. Clinical and demographic factors associated with urinary tract infection in young febrile infants. *Pediatrics*. 2005;116:644–648. doi:
- [24] Leibowitz AA, Desmond K, Belin T. Determinants and policy implications of male circumcision in the United States. *Am J Public Health*. 2009;99:138–145. doi: 10.2105/AJPH.2008.134403.]
- [25] Schoen EJ, Colby CJ, To TT. Cost analysis of neonatal circumcision in a large health maintenance organization. *J Urol*. 2006;175:1111–1115. doi: 10.1016/S0022-5347(05)00399-X]
- [26] Morris BJ, Castellsague X, Bailis SA. Re: Cost analysis of neonatal circumcision in a large health maintenance organization. E. J. Schoen, C. J. Colby and T. T. To. *J Urol*, 175: 1111–1115, 2006. *J Urol*. 2006;176:2315–2316]
- [27] Anderson J, Wilson D, Templeton DJ, Grulich A, Carter R, Kaldor J. Cost-effectiveness of adult circumcision in a resource-rich setting for HIV prevention among men who have sex with men. *J Infect Dis*. 2009;200:1803–1812. doi: 10.1086/648472].
- [28] World Health Organization. CHOosing Interventions that are Cost Effective (WHOCHOICE) 2011. Retrieved from: <http://www.who.int/choice/en/>
- [29] Williams BG, Lloyd-Smith JO, Gouws E, Hankins C, Getz WM, Hargrove J, de Zoysa I, Dye C. The potential impact of male circumcision on HIV in Sub-Saharan Africa. *PLoS Med*. 2006;3(e262):1032–1040.
- [30] Gray RH, Li X, Kigozi G, Serwadda D, Nalugoda F, Watya S, Reynolds SJ, Wawer M. The impact of male circumcision on HIV incidence and cost per infection prevented: a stochastic simulation model from Rakai, Uganda. *AIDS*. 2007;21:845–850. doi: 10.1097/QAD.0b013e3280187544.]
- [31] Galárraga O, Colchero MA, Wamai RG, Bertozzi SM. HIV prevention cost-effectiveness: a systematic review. *BMC Public Health*. 2009;9(Suppl 1):S5.