

Prevention of Postcircumcision Meatal Stenosis

Ehab Jasim Mohammad* , Mohammad Maher Al Ani **,
Abdulsattar Jubair Ali***

ABSTRACT:

BACKGROUND:

Meatal stenosis is a condition that almost always is acquired after neonatal circumcision. Circumcision is one of the most common surgical operations throughout the world, and meatal stenosis is one its late complications. We evaluated the topical use of a lubricant jelly after circumcision in boys in order to reduce the risk of meatal stenosis.

OBJECTIVE:

To evaluate the use of lubricant in prevention of postcircumcision meatal stenosis and other complications.

MATERIALS AND METHODS:

From April 2010 to September 2012, 300 boys younger than 2 year old referred to AL-RAMADI TEACHING HOSPITAL IN ANBAR,IRAQ and my clinic, were involved in a randomized controlled trial. They were referred for circumcision. The parents in the study group were instructed to use petroleum jelly on the circumcision site after each diaper change for 6 months. In the control group, no topical medication was used. The children were followed up regularly and evaluated for meatal stenosis, bleeding, infection, and recovery time.

RESULTS:

Three hundred boys younger than 2 years old participated in the study.

None of the children in the lubricant group developed meatal stenosis, while 91 (60.6%) in the control group developed postcircumcision meatal stenosis ($P = 0.0000$) which is statistically highly significant. Infection of the circumcision site was observed in 2 (1.3%) and 14 (9.3%) children of the lubricant and control groups, respectively ($P = 0.0004$) which is statistically highly significant. Two boys (1.3%) in the lubricant group and 29 (19.3%) in the control group had postcircumcision bleeding ($P = 0.0007$) which is statistically highly significant.

Finally, the mean time of recovery in the lubricant group was 3.8 ± 1.2 days, while it was 6.9 ± 4.2 days in the control group ($P = 0.03$).

CONCLUSION:

Based on the findings of this study we can conclude that using petroleum jelly after circumcision is considerably effective for reducing postcircumcision meatal stenosis and other complications.

KEYWORDS: circumcision. meatal stenosis. lubrication. infection.

INTRODUCTION:

Circumcision dates back more than 6000 years ago with the oldest documented evidence thought to date to sixth dynasty (2345-2181 BC) tomb artwork in Egypt. Since that time different religions,

countries, and cultures have adopted various views on circumcision.⁽¹⁾ Many theories have been proposed to the etiology of circumcision, including as a religious sacrifice, rite of passage, aid to hygiene, a way to differentiate cultural groups, and a method to discourage

masturbation.⁽²⁾ Circumcision is also indicated in patients with infection, phimosis, or paraphimosis.⁽³⁾ Male circumcision means removing the foreskin that naturally covers the head of penis.⁽⁴⁾

This is a surgery that is widely carry out among Muslims and the Jewish.⁽⁵⁾

Circumcision is done by different people whether by practitioners in the medical field or by nonqualified regional people. Neglecting hygienic considerations and correct methods in circumcision can lead to dangerous early and late complications. Early complications include bleeding, infection, urinary retention, hematoma, ischemia, necrosis of the glans, and amputation of the penis, and late complications are meatal stenosis, excessive or not enough prepuce,

*Urologist in College of Medicine-AL-Anbar University.

** College of Medicine-AL-Anbar University.

*** Al-ramadi Teaching Hospital.

POSTCIRCUMCISION MEATAL STENOSIS

torsion of the penis, granuloma at circumcision site, circumcised hypospadias, etc.⁽⁶⁻⁹⁾

Meatal stenosis is an abnormal narrowing of the urethral meatus in men and is most commonly associated with circumcision.⁽¹⁰⁾

Meatal stenosis is a condition that occurs in children almost only after circumcision during infancy. It can be congenital, which occurs primarily in neonates with hypospadias, or acquired.

The normal urethral meatus is 10 French before 4 years of age, 12 French from 4 to 10 years of age, and 14 French after 10 years of age; this can be calibrated with a bougie à boule or sound.⁽²⁾

It is likely that the newly exposed tip of the penis (including the meatus) suffers mild injury as it rubs against a diaper or the child's own skin.

Over time, this chronic irritation can result in scarring and a narrowing of the meatus. It can also result from mild ischemia that occurs with circumcision.^(11,12)

There are several proposed causes of secondary meatal stenosis. One theory is that after disruption of the normal adhesions between the prepuce and glans and removal of the foreskin a significant inflammatory reaction occurs, resulting in a severe meatal inflammation and cicatrix formation. Other theories are frenular devascularization or chronic meatitis from diaper irritation of the exposed, unprotected meatus⁽¹²⁾. Balanitis xerotica obliterans (BXO) is another cause of meatal stenosis.

A relatively small percentage of children will develop symptomatic

meatal stenosis after neonatal circumcision.

Symptoms include⁽¹⁾ typical urinary stream deviation in an upward direction resulting from a meatal baffle or ventral web located at the inferior of the meatus,⁽²⁾ a narrow, high-velocity stream, and⁽³⁾ penile pain at the initiation of micturition.

Urinary tract imaging usually does not reveal any obstructive changes in the urinary tract without other urologic issues but may be indicated for associated UTI or urinary incontinence. Meatotomy or meatoplasty to treat secondary meatal stenosis can be performed in the office with the use of topical lidocaine and prilocaine (EMLA) or under general anesthesia by making a ventral incision long enough to create a normal meatal caliber. The suturing of the urethral mucosa to the glans with fine, rapidly absorbable sutures tends to reduce the risk of recurrence.⁽²⁾

Some authors have reported routine use of lubricants to the meatal area after circumcision.⁽¹³⁾

Given the good results of applying petroleum jelly to the meatal area for preventing the recurrence of stenosis after meatotomy,⁽¹¹⁾ and also its good effect in preventing soap-related chemical urethritis,⁽¹⁴⁾

After meatoplasty, topical application of corticosteroid cream may be effective in reducing the risk of recurrent meatal stenosis.⁽¹⁵⁾

we decided to perform a randomized controlled trial to evaluate postoperative lubrication of the circumcision site for prevention of meatal stenosis.

MATERIALS AND METHODS:

From April 2010 to September 2012, 300 boys younger than 2 year old referred to AL-RAMADI TEACHING HOSPITAL in ANBAR, IRAQ and my clinic, were involved in a randomized controlled trial. They were referred for circumcision.

Boys with hypospadias, chordee without hypospadias, dorsal hood deformity, webbed or hidden penis, micropenis, bleeding tendency, and infection were excluded.

The study design was approved by the local ethics committee.

The children were divided according to the simple random sampling method into 2 equal groups. Children in the first group underwent circumcision and used commercially available petroleum lubricant jelly for 6 postoperative months (lubricant group), while those in the control group did not use any topical medication after circumcision.

Children in both groups were evaluated for 6 months (every 2 weeks for first three months then monthly). The parents in both groups were instructed to consider hygienic principles.

In addition, parents in the lubricant group were instructed to apply the lubricant jelly to the glans and meatal area after each diaper change.

Diagnosis of meatal stenosis was made according to the history given by parents and direct observation of urinary caliber and meatus (loss of elliptical shape to a circular shape).

If the meatus is pinpoint, the boy voids with a forceful, fine stream that has a great casting distance. Some boys have a dorsally deflected stream or a prolonged voiding time. Dysuria, frequency, terminal hematuria, and incontinence are symptoms that may lead to discovery of

POSTCIRCUMCISION MEATAL STENOSIS

meatal stenosis but generally are not attributable to this abnormality. In other boys with meatal stenosis, deflection of the urinary stream is the only sign.

Also the recovery duration of the circumcision scar, infection, and bleeding of the circumcision site were assessed according to the history given by the parents and physical examination.

The collected data were analyzed using the SPSS software (Statistical Package for the Social Sciences, version 13.0, SPSS Inc, Chicago, Ill,USA). Comparisons between the two groups were done by the chi-square test, the Fisher exact test, and the t test, where appropriate. A *P* value less than 0.05 was considered statistically significant.

RESULTS:

Three hundred boys younger than 2 years old participated in the study.

The mean age was 8.7 ± 5.7 months (range, 8 days to 23 months) for the children in the lubricant group and 9.2 ± 8.1 months (range, 10

days to 23.5 months) for those in the control group (*P* = 0.67).

None of the children in the lubricant group developed meatal stenosis, while 91 (60.6%) in the control group developed postcircumcision meatal

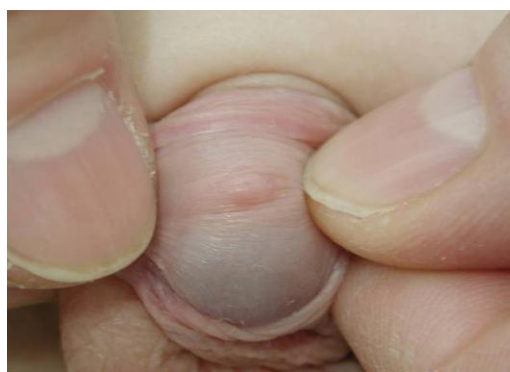
Stenosis (*P* = 0 .0000) which is statistically highly significant.

Infection of the circumcision site was observed in 2 (1.3%) and 14 (9.3%)

children of the lubricant and control groups, respectively (*P* = 0 .0004) which is statistically highly significant.

Two boys (1.3%) in the lubricant group and 29 (19.3%) in the control group had postcircumcision bleeding (*P* = 0 .0007) which is statistically highly significant.

Finally, the mean time of recovery in the lubricant group was 3.8 ± 1.2 days, while it was 6.9 ± 4.2 days in the control group (*P* = 0.03) as shown in table 1.



(A)



(B)

Figure. Meatal complications associated with circumcision. A, Meatal stenosis. B, Meatal baffle

Table 1:

	Lubricant group	Control group	P value
Meatal stenosis	0	60.6%	0.0000
Infection	1.3%	9.3%	0.0004
Bleeding	1.3%	19.3%	0.0007

DISCUSSION:

Circumcision is one of the most common surgical operations throughout the world, and meatal stenosis is one its late complications.

The incidence of meatal stenosis has been reported in 0.9% to 11% of the boys undergoing circumcision^(10,16,17).

However, higher rates may be seen in areas in which the procedure is done nonqualified regional people⁽¹⁶⁾.

The present study showed that using petroleum jelly after circumcision was considerably effective for reducing the frequency of postcircumcision meatal stenosis. We did not observe any case of meatal stenosis in children whose circumcision site was lubricated for 6 months, while with the operation of the same surgeon, 60.6% of the children in the control group developed stenosis.

There is similar study regarding the effect of lubricants for reducing postcircumcision meatal stenosis⁽¹⁸⁾.

We found less frequent cases of postcircumcision bleeding in boys with lubrication of the circumcision site when compared with the control group. Bleeding has been reported as the most common early complication after circumcision and its prevalence was reported between 1% and 23 %, depending on the experience and talent of the practitioner and the technique used.^(18,21) Our main goal was to prevent meatal stenosis, but lubrication was also effective in reducing the early episodes of bleeding. We also achieved good results regarding the infection in the circumcision site. Different statistical findings, ranging from 0.1% to 3.9%, have been reported in other studies for the prevalence of infection at the circumcision site.^(19,20,21) There were no similar studies to show the effect of lubrication on this kind of infection. Okeke reported application of bland petroleum jelly to the external urethral meatus in boys with chemical urethritis (ammonial meatitis) and yielded promising results.⁽¹⁴⁾

Lubrication might be effective in reducing inflammation of the procedure site, ammonial meatitis, and consequently, in reducing the rate of infection. Finally, as the patient's needs concerns, shortening the recovery period is an aim of postoperative care. With lubrication of the circumcision site, we reduced it from an average of 6.9 days to less than 4 days.

CONCLUSION:

Based on the findings in this randomized controlled study, we can conclude that using petroleum jelly after circumcision is considerably effective for reducing postcircumcision meatal stenosis and other complications.

REFERENCES:

1. Palmer JS, editor. An international view on circumcision. *Dialogues Pediatr Urol* 2009;4:1.
2. WEIN, Kavoussi, Novick Partin, Peters. "Campbell-Walsh Urology. 10th ed. 2012;131:35-39.
3. Jack W. McAninch, Tom F. Lue. "Smith and Tanagho's GENERAL UROLOGY". 18th ed. 2013;41:641.
4. Hirji H, Charlton R, Sarmah S. Male circumcision: a review of the evidence. *J Mens Health Gend*. 2005; 2:21-30.
5. Parigi GB. [Destiny of prepuce between Quran and DRG]. *Pediatr Med Chir*. 2003;25:96-100. Italian.
6. Muula AS, Prozesky HW, Mataya RH, Ikechebelu JI. Prevalence of complications of male circumcision in Anglophone Africa: a systematic review. *BMC Urol*. 2007;7:4.
7. Okeke LI, Asinobi AA, Ikuerowo OS. Epidemiology of complications of male circumcision in Ibadan, Nigeria. *BMC Urol*. 2006;6:21.
8. Demirseren ME, Gokrem S. Circumcision in unqualified hands: a significant risk of complication. *Plast Reconstr Surg*. 2004;113:1090-2.
9. Elder JS. Anomalies of the penis and urethra. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF, editors. *Nelson textbook of pediatrics*. 18th ed. Philadelphia: WB Saunders; 2007: 2255-56.
10. Van Howe RS. Incidence of meatal stenosis following neonatal circumcision in a primary care setting. *Clin Pediatr (Phila)*. 2006;45:49-54.
11. Angel CA. Meatal stenosis [monograph on the Internet]. eMedicine . Available from: <http://www.emedicine.com/PED/topic2356.htm>;2008.
12. Persad R, Sharma S, McTavish J, Imber C, Mouriquand PD. Clinical presentation and pathophysiology of meatal stenosis following circumcision. *Br J Urol*. 1995;75:91-3.
13. MayoClinic.com [homepage on the Internet]. Circumcision for baby boys: weighing the pros and cons Available from: <http://www.mayoclinic.com/health/circumcision/PR00040>;2008.
14. Okeke LI. Soap induced urethral pain in boys. *West Afr J Med*. 2004;23:48-9.
15. WEIN, Kavoussi, Novick Partin, Peters. "Campbell-Walsh Urology. 9th ed. 2007;126:37-49.
16. Yegane RA, Kheirollahi AR, Salehi NA, Bashashati M, Khoshdel JA, Ahmadi M. Late complications of circumcision in Iran. *Pediatr Surg Int*. 2006;22:442-45.
17. Stenram A, Malmfors G, Okmian L. Circumcision for phimosis--indications and results. *Acta Paediatr Scand*. 1986;75:321-23.
18. Hassan B, Manoochehr G, Seyed H. Lubrication of circumcision site for prevention of meatal stenosis in children. *Urology Journal* 2008;5.

POSTCIRCUMCISION MEATAL STENOSIS

19. Fesharakinia A, Ghafouri KH, Foadaldini M, Saadatjou SAR. Study of circumcision condition in Birjand city. *J Birjand Univ Med Sci.* 2006;12:45-49.
20. Dehghani V, Moein M, Mirshamsi MH. Prevalence of circumcision complications in boys under 2 years old. *J Yazd Shahid Sadooghi Univ Med Sci.* 2001;8:41-45.
21. Fanai S.A, Musaviani S.M, Mehrvarz S.H. Plastibble and conventional circumcision in infants. A randomized clinical trial. *J Rafsanjan Univ Med Sci.* 2003;2:68-73.