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Incidence of meatal stenosis after circumcision by heat cautery device during early infancy in Erbil/ Iraq

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Abstract

Background: Meatal stenosis is one of the late and potential complications of male circumcision in children who underwent circumcision in early infancy by a heat cautery.
Objective: To estimate the incidence of Meatal Stenosis (MS) in children who undergone circumcision in early infancy by a heat cautery which had been done by a medical sub staff in our locality (Erbil).
Patients and Methods: From September 2020 to May 2021, 113 children were examined in urology outpatient departments at Rizgary Teaching Hospital/ Erbil after a referral from primary health centers by general practitioners for evaluation of genitourinary symptoms. All children included in the study were circumcised during the early infancy period by heat cautery devices by medical sub-staffs. The examination included a focused genital system examination focusing on meatus opening and detail history has been taken from their parents.
Results: Within Eight Months, we evaluate 113 children (13 children Excluded) in the urology outpatient department in Rizgary Teaching Hospital/ Erbil City, 55% having stenosis of urethral meatus after circumcision by heat cautery, and it was most common in group B (6-12 years of age) 34% and 21% in group A (3-6 years of age) and can explain this either that most of the children represented Group B or might be due to neglecting by their families.
Conclusion: Circumcision in early infancy using a heat cautery device may lead to meatal stenosis in children. In our study, the incidence of meatal stenosis was surprisingly high (55%) compared to other research, and this can be explained by the fact that non-qualified personnel is engaging in this surgical procedure or medical sub staffs with inexperienced medical knowledge and no training course are indulging in this surgery to gain quick money.
Keywords: Penis, Circumcision, Meatal Stenosis, Erbil

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Introduction

Circumcision remains a particular situation within the daily urological practice, predominately carried out by non-urologists, mostly medical sub-staff. It conventionally attempts as a mark of spiritual value or for health well-being like better cleanliness of penis or decreases infection risk [1] [2].

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Circumcision, like other operative interventions, has intra-operative and post-operative complications with an opportunity varied from one to fifteen% [3] [4].

Too much awareness has been concentrated on immediate complications after the circumcision of neonates. Many of these boys who are circumcised undergo problems that become clear after a while when the scars become healed. Stenosis of the urethral meatus could also be the only common complication after circumcision [5] [11].

In 1881, Mastin observed that meatal narrowing was so frequent in Jews after circumcision that meatotomy was mentioned as their 2nd circumcision [12].

Despite universal identification as existing almost exclusively in males circumcised, stenosis of urethral meatus may be a sequela of circumcision earned the slightest mention within two most up-to-date task force reports on circumcision of neonates issued by the American Academy of Pediatrics [13] [14].

Heat cautery instrument is the most familiar regional method applied for non-therapeutic circumcision in our culture because it is straightforward, low-cost, easy to find, learn and perform, and may be used to cut foreskin and as a hemostatic tool. Heat cautery instrument is traditionally named (Kawai). A redesigned device locally constructed with a pointy metallic filament at its end converts electric potency to heat the filament used as cutting surgical diathermy [15] Figure (1).

Figure (1)

Meatal stenosis is one of the late and potential complications of male circumcision that happens in 5—20% of boys circumcised during infancy or childhood [16] [17].

Meatal stenosis is a narrowing of the opening of the urethra at the external meatus, anatomically defined as a meatal diameter less than 5 French and clinically described as a distortion of meatus appearance and site from oval appearance, extends from tip of glans downward to frenulum to narrow pinpoint appearance, situated at the end of the glans penis, which is currently trusted diagnostic tools [18,19], Figure (2).

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Figure (2)

Patients and Methods

Study protocol

From September 2020 to May 2021, 113 children were examined in urology outpatient departments at Rizgary Teaching Hospital/ Erbil after a referral from primary health centers by general practitioners for evaluation of genitourinary symptoms. All children included in the study were circumcised during the early infancy period by heat cautery device by medical sub-staffs. The examination included a focused genital system examination with a focus on the meatus opening.

Study design: All children (113) were examined by urologist in urology outpatient department in Rizgary Teaching Hospital, all were referred by general practitioners. Focused genitourinary System examination with focusing on meatus opening had been done. Thirteen children were excluded from the study because they had hypospadias. This point needs more focus by the urologists and health directorates because they have hypospadias and have been circumcised, which is contraindicated. Different age groups were studied in our study from 3 to 12 years of age and have been categorized to group A as (3 to six years of age) and B as (6 to twelve years of age) as shown in Table (1). History has been taken from their parents, and the main complaint has been recognized and deployed in Table (2). Results of finding meatal stenosis, which was an oval-shaped meatus of less than 5 Fr diameter as a generally accepted tool for diagnosing meatal stenosis, were applied and deployed on (Table 3). Results of urine examination and ultrasound findings are shown in Table (4 & 5).

Statistical Analysis

The data analysis was performed using descriptive statistics, including frequency, and frequency percentage. Comparisons were made using Chi x2 test using standard equations. The results were reported with $p \leq 0.05$ or $p \leq 0.01$ as the accepted level of significance accordingly.

Results

Within Eight Months, we evaluate 113 children (13 children Excluded) in the urology outpatient department in Rizgary Teaching Hospital/ Erbil City, 55% having stenosis of urethral meatus after circumcision by heat cautery, and it had been commonest in group B (6-12 years of age) 34% and 21% in group A (3-6 years of age) and this is often can be explained either that most of the children represented group B or might be due to neglecting by their families

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Table (1): Age distribution according to their ages

Age group	No. children	% of children
Group A (3-6 years)	38	38%
Group B (6-12 years)	62	62%

Children's presentation's symptoms or signs recognized by their families or complaints from children who were old enough to express their problem have been identified and put on Table (2).

Table (2): Chief complaints or presenting symptoms

Symptoms or complains	No of children	% of children
Day time Frequency	26	26%
Dysuria	19	19%
Nighttime frequency	11	11%
Pressure during urination	18	18%
Enuresis	3	3%
Weak stream urination	23	23%

The number of children with meatal stenosis after a thorough inspection of the meatus and their percentage is put in Table (3) as follows **:**

Table (3): Number and percentage of children with meatal stenosis after circumcision by cautery device

Age groups	Children with meatal stenosis	% with meatal stenosis
Group A (3-6years)	21	21%
Group B (6-12years)	34	34%
Total	55	55%

Table (4): Showed results of urine examination in both age groups

Findings	Number of children	Percentage of children
Normal	47	47%
Pus cells	21	21%
Bacteria	3	3%
Hematuria	18	18%
Different types of crystals	11	11%

Table (5): Ultrasound findings are shown for both age groups

Ultrasound findings	Number of children	Percentage of children
Normal	44	44%
Bladder wall thickening more than 3 mm	31	31%
hyrdonephrosis	2	2%
PVRU more than 50 cc	23	23%

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Discussion

The published works of the literature revealed a broad range in the incidence of meatal stenosis after neonatal or early infancy circumcision, which may extend from 0.9% to twenty-three %. They could be higher in a region where circumcision is carried outside health institutes by inexperienced persons applying regional methods for circumcision [3] [11] [12].

On the contrary, a Meta-analysis Research published by Morris et al. reveal statistics on meatal stenosis after circumcision at any age group and didn't consider prolonged follow-up window in his systemic review, come to an end that the risk of meatal stenosis was less than 1% after the circumcision was low [20].

In our study, the results of meatal stenosis after circumcision by heat cautery were shocking 55%; this exceeded all other study results. And this can be explained by the fact that non-qualified personnel are engaging in this surgical procedure or medical sub-staffs with inexperienced medical knowledge and no training course are indulging in this surgery to gain quick money. The correlation between heat cautery and meatal stenosis is illuminated by the influence of increased temperature on tissue; heat-cautery raises the possibility for more tissue response and leads to electrical damage to the frenular artery that will induce meatal stenosis [21].

The symptoms of meatal stenosis vary in our study, with the daytime frequency being the most common 25%, followed by weak stream urination 23%, dysuria 19%, and pressure during urination 18%.

Regarding urine examination, most of the patients(47%) have normal findings in urine examination, but 21% have pyuria, 18% have microscopic hematuria and 3% have bacteriuria.

Regarding ultrasound examination in our study, 31% of the patients had bladder wall thickening (more than 3 mm), 23% had high post voiding residuals of urine, and 2% have bilateral hydroureteronephrosis.

This study is the first study to be done in our locality, and the limitation of this study is that it is retrospective, and maybe the limited number of patients included in the study.

Conclusions

Circumcision in early infancy using a heat cautery device may lead to meatal stenosis in children. In our study, the incidence of meatal stenosis was surprisingly high (55%) compared to other research, and this can be explained by the fact that non-qualified personnel is engaging in this surgical procedure or medical sub staffs with inexperienced medical knowledge and no training course are indulging in this surgery to gain quick money.

Recommendations

The health management system should observe, control, and limit who will do circumcision, and non-qualified personnel should be abandoned.

Source of funding: This research was funded by ourselves and there is no other funding cover this study or manuscript preparation and publication.

Ethical clearance: This study was approved by the Ethics Committee of College of Medicine/ Hawler Medical University, Erbil/Iraq. The parental endorsements in oral form were acquired for their children to be enrolled in the study. The parents and patients were informed about the study's

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objectives, and they could withdraw thereof if they wished so to do.

Conflict of interest: Nill

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الاصابة بتضيق نهاية الاحليل بعد الختان بجهاز الكي الحراري خلال الطفولة المبكرة في أربيل/العراق

د.نهاد رفعت جواد[1]

الملخص

خلفية الدراسة: تضيق نهاية الاحليل هو احدى المضاعفات المتأخرة والمحتملة الحدوث عند الاطفال الذين خضعوا للختان في سن الطفولة المبكرة بواسطة الكي الحراري.

اهداف الدراسة: لتقدير معدل حدوث تضيق نهاية الاحليل لدى الأطفال الذين خضعوا للختان في سن الرضاعة المبكرة بواسطة الكي الحراري الذي تم إجراؤه بواسطة طاقم طبي فرعي(مساعد طبي) في منطقتنا (أربيل).

المرضى والطرائق:من سبتمبر ٢٠٢٠ إلى مايو ٢٠٢١ ، تم فحص ١١٣ طفلاً في العيادات الخارجية لقسم المسالك البولية في مستشفى رزكاري التعليمي / أربيل بعد إحالة من مراكز الصحة الأولية من قبل الممارسين العامين لتقييم أعراض الجهاز البولي التناسلي. تم ختان جميع الأطفال المشمولين في الدراسة خلال فترة الرضاعة المبكرة بجهاز الكي الحراري من قبل الطاقم الطبي الفرعي. تضمن الفحص فحص الجهاز التناسلي المركز مع التركيز على فتحة نهاية الاحليل والتفاصيل المأخوذة من والديهم.

النتائج: في غضون ثمانية أشهر ، قمنا بتقييم ١١٣ طفلاً (١٣ طفلًا مستبعدين) في قسم المسالك البولية في مستشفى رزكاري التعليمي / مدينة أربيل ، ٥٥٪ يعانون من تضيق في نهاية الاحليل بعد الختان بواسطة الكي الحراري ، وكان أكثر شيوعًا في المجموعة ب (٦ - ١٢ سنة) ٣٤٪ و ٢١٪ في المجموعة أ (٣ - ٦ سنوات من العمر)ويمكن أن يفسر ذلك إما أن معظم الأطفال يمثلون المجموعة ب أو قد يكون بسبب إهمال عائلاتهم .

الاستنتاجات: قد يؤدي الختان في الطفولة المبكرة باستخدام جهاز الكي الحراري إلى تضيق نهاية الاحليل عند الأطفال. في دراستنا، كان معدل حدوث تضيق مرتفعًا بشكل مدهش (٥٥٪) مقارنة بالبحوث الأخرى، ويمكن تفسير ذلك من خلال حقيقة أن الأفراد غير المؤهلين يشاركون في هذا الإجراء الجراحي أو الموظفين الفرعيين الطبيين الذين لديهم معرفة طبية عديمة الخبرة وليس لديهم دورة تدريبية في هذه الجراحة لغرض كسب المال السريع.

الكلمات المفتاحية: القضيب ، الختان ، تضيق نهاية الاحليل ، أربيل

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