ABSTRACT

Objectives: Circumcision is the most commonly performed surgical procedure in the world. In this study, we determined the frequency of additional surgical pathologies in patients presenting for non-medical circumcision.

Material and Method: Children presenting to a secondary healthcare facility between June 2013 - June 2014 for non-medical circumcision were included in this study. Patients’ ages, presenting at outpatient clinics were noted together with the results of physical examinations.

Results: A total of 2088 children presented for non-medical circumcision. Their average age was 5.2 years. 56.3% of patients presented to the Pediatric Surgery outpatient clinic, 25.3% presented to the Urology outpatient clinic and 18.3% presented to the General Surgery outpatient clinic. Additional surgical pathologies were noted in 3.9% of patients and these were: phimosis (n=36), inguinal hernia/hydrocele (n=12), buried penis (n=10), undescended testis (n=9), retractile testis (n=5), hypospadias (n=3), megameatus (n=2), umbilical hernia (n=2) and varicocele (n=2). The surgical plans for 37 (1.8%) patients changed due to the findings at examination.

Conclusion: Changes in surgical plans were required for 1.8% of patients. It is therefore important that all patients, including those presenting with a request for circumcision, have a detailed physical examination.

Keywords: Circumcision, Physical examination, Incidence

Introduction

With its origins dating back several thousand centuries, male circumcision is the most commonly performed surgical procedure throughout the world. It is reported that 1 in 3 to 1 in 6 males are circumcised due to medical or cultural/religious reasons [1,2]. A policy statement published by The American Academy of Pediatrics [3] in 2012 reported the benefits of circumcision to be reduction in the risk of urinary tract infections in infants and subsequent reduction in the risk of HIV transmission and the likelihood of male-to-female transmission of HIV.

In the United States, the procedure is usually performed in the hospital or ambulatory setting during the neonatal period. The goal of the study was to determine the frequency of additional surgical pathologies in patients presenting for non-medical circumcision.
in the risk of heterosexual acquisition of HIV and other sexually transmitted diseases. The statement also noted that the health benefits of elective circumcision outweigh the risks of the procedure itself. Opponents of circumcision put forward substantial complication rates and reduced penile sensation [1].

Medical professionals can be under great pressure when dealing with circumcision requests. This is especially the case in countries where nearly all boys are circumcised for religious or cultural reasons. This may lead to missed diagnosis of other pathologies, including surgical pathologies that may require the child to undergo another general anesthesia.

In this study, we evaluated the presence of additional surgical pathologies in children presenting for circumcision and calculated the incidence of these pathologies in the study population.

Patients and Method
This retrospective study was conducted at a secondary health care institution in Istanbul, Turkey. The medical files of children (0-18 years) presenting for circumcision between June 2013 and June 2014 were reviewed. Patients’ ages, presenting at outpatient clinics (General Surgery, Pediatric Surgery, Urology) were noted together with the results of clinical examination findings. When medical files were reviewed, patients who have applied to the outpatient clinic for a different pathology other than circumcision, were excluded from this study.

Data is presented using descriptive statistics that were calculated using Google Sheets (Google Inc, Ann Arbor, MI 48105, USA).

Results
During the aforementioned time period, 2088 children presented for medical or cultural/religious circumcision. The average age of children was 5.2 years. While 56.3% of these patients presented to the Pediatric Surgery clinic, 25.3% presented to the Urology and 18.3% presented to the General Surgery clinics. Physical examination revealed surgical pathologies in 3.9% (n=81) patients. These pathologies were pathological phimosis in 44.4% (n=36), inguinal hernia or communicating hydrocele in 14.8% (n=12), buried penis in 12.3% (n=10), undescended testis in 11.1% (n=9), retractile testis in 6.2% (n=5), hypospadias in 3.7% (n=3), megameatus in 2.5% (n=2), umbilical hernia in 2.5% (n=2) and varicocele in 2.5% (n=2) patients. The incidence of these pathologies in this study are shown in Table I. One patient with varicocele had surgical treatment indication and both patients with umbilical hernia were <2 years of age, requiring further follow-up but not surgical treatment. With these findings, the surgical plans for 37 (1.8%) patients changed and further follow-up was required for 12 (0.6%) patients.

Table I. Incidence of surgical pathologies in patients applying to a secondary medical institution for non-medical circumcision

<table>
<thead>
<tr>
<th>Pathology</th>
<th>(n)</th>
<th>Incidence in Population (per thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inguinal hernia / Communicating hydrocele</td>
<td>12</td>
<td>5.7</td>
</tr>
<tr>
<td>Buried Penis</td>
<td>10</td>
<td>4.8</td>
</tr>
<tr>
<td>Undescended testicle</td>
<td>9</td>
<td>4.3</td>
</tr>
<tr>
<td>Hypospadias</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Megameatus</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Umbilical Hernia</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Varicocele</td>
<td>2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Discussion
Worldwide, circumcision for medical or cultural/religious reasons is reported to be performed in one of 6 to one of 3 children [1,2]. This rate is much higher in the Muslim or Jewish populations. In many countries, circumcisions are performed by medical professionals, and the high number of circumcision requests can lead to pressure on these professionals and their institutions.

Medical indications for circumcision include phimosis, paraphimosis, balanoposthitis and balanitis. Absolute indications of circumcision are recurrent balanoposthitis and phimosis secondary to balanitis xerotica obliterans. These pathologies occur in 1% and 1.5% of boys respectively [4]. In this study, we included all children who presented for circumcision. Forty-four children were found to have pathological phimosis, representing 2.1% of the population, slightly higher than that reported in literature [4].

This study found that 37 (1.8%) patients had pathologies that would have required another general anesthesia and surgery, had they not been diagnosed during the physician visit for circumcision. These pathologies were inguinal hernia or communicating hydrocele in 12, buried penis in
10, undescended testis in 9, hypospadias in 3, megameatus in 2, and varicocele in 2 patients. One patient with varicocele did not have indication for surgical intervention.

The incidence of inguinal hernia is reported to be 0.8 - 4.4% in the general pediatric population [5]. The incidence varies according to gender and age and is reported to be 3% - 5% in term neonates [6]. Boys are up to 10 times more likely to have an inguinal hernia when compared to girls [5]. In this study, that included only males, the incidence of inguinal hernia was found to be 5.7%.

Buried penis is defined as the condition of the penile shaft being buried below the surface of the prepubic skin. Matsuo et al., reported its incidence to be as high as 3.7% in Japanese newborn male patients with this incidence decreasing to 0.3% at 4-5 years of age [7]. To our knowledge, there is no other study reporting the incidence of buried penis in the pediatric population. This study found the incidence of buried penis to be 0.48% in children with an average age of 5.2 years, much similar to the findings of Matsuo et al [7].

This study found the incidence of undescended testicle to be 0.43%. Literature reports this rate to be between 1 - 1.6% at 1 year of age, decreasing as age increases [8,9]. This study group consisted of older boys which explained the finding of a low rate.

Hypospadias is seen in approximately 3-4 of 1000 live births [10]. This study found its incidence to be 0.14%. This is most likely due to this pathology being diagnosed and treated at much younger ages. The undiagnosed cases at higher ages are very rare. Megameatus is reported to make up 5% of hypospadias patients. Once again, the low incidence of under 1% is most probably due to undiagnosed cases at older ages being rare.

Umbilical hernias are seen in up to 10-30% of children, effecting boys equally as girls, with most spontaneously resolving by 3 years of age. This study found umbilical hernias in less than 1%. This can be attributed to the high average age of the study population.

Varicoceles are rarely seen in children under 10 years of age with its incidence rising to 15% in adult men [11]. This study also found very low incidence of varicocele in the pediatric population.

This study found that 3.9% of patients presenting for circumcision had surgical pathologies and 1.8% of patients would require a change in the surgical plan. Had these children been undiagnosed, they would have required additional surgery under general anesthesia at a later date. The previous studies have evaluated genital abnormalities in children presenting for traditional circumcision. Yesildag et al [12] evaluated 944 boys with an average age of 6.5 years, admitted for circumcision between July 2009 and January 2015, and found 9% to have a penile anomaly. In a group of 1695 children with an average age of 7.9 years, due to undergo circumcision, Turk et al [13] found genital anomalies in 3.4% of patients. In both of these studies, the authors did not report any pathological findings of other systems. In this context, this study is the first to report concurrent surgical pathologies of all systems in children due to undergo circumcision.

There is no consensus on the best age for non-medical circumcisions. The average age of patients presenting for circumcision in this study is 5.2 years. In separate studies on the same population, the average age of presentation for non-medical circumcision was found to be 6.5 years by Yesildag et al [12] and 7.9 years by Turk et al [13]. There are two considerations when discussing the best time for circumcision; “medically” and the “ethical dilemma of letting the child or adult decide on their own wishes” for circumcision. It is suggested that circumcision for nonmedical reasons be postponed during the “phallic period” (2 - 6 years old). Awareness of the phallic structures and gender identity develops and it is reported that circumcision during this period may affect the psychological status of the child and eventually cause psychological and behavioral disturbances [14]. Several studies have reported the negative physiological consequences of circumcision during this period [15–17]. On the other hand, there are also reports to the contrary [18]. Further studies with a higher level of evidence are required for the determination of the best time for circumcision. The average age of presentation of patients for circumcision in this study was during the phallic phase.

This study has several limitations, the most important being its retrospective design. Physical examination findings were not therefore standardized. It is possible that some children presenting for circumcision had further missed diagnoses. All calculations of incidence were made using patients that presented for circumcision. Although, nearly all males in the general population of this study group underwent circumcision, it was not possible to completely generalize the study group to the general population. In any case, the large number of subjects makes the findings of value.

Circumcision is the most common surgical procedure performed throughout the world. Haste during the pre-circumcision examination of these children can lead to missed diagnoses of pathologies that would require a further
general anesthesia in the future. This study found that, such pathologies are present in two of every 100 children presenting to outpatient clinics for circumcision. Care must be taken to identify these pathologies in children presenting for circumcision.

References