

## Urogenital Anomalies Identified on Examination of Pediatric Patients Before Circumcision

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### Abstract

**Objective:** Circumcision is included in European urology guidelines as a treatment choice only for severe phimosis, while it is a procedure routinely performed for socio-cultural reasons in many different countries. Parents bring their children to urology clinics requesting circumcision. Before circumcision, it is very important to perform full urogenital examination because many urogenital anomalies that require treatment may be identified so. In this study, we aimed to determine the urogenital anomalies identified in children before circumcision.

**Material and Method:** This study retrospectively investigated findings of 190 pediatric cases attending our urology for circumcision between September 2015 and September 2021. Each child had standard examinations of penis, urethra, testis and scrotum. The presence and laterality of undescended testis, presence and laterality of retractile testis, presence and degree of phimosis, presence and localization of hypospadias, presence and degree of buried penis, presence direction, and angle of penis chordee-curvedness, presence of penoscrotal web, presence and laterality of hydrocele, presence of urethral stenosis, and presence of urethral duplication were recorded. Complete phimosis was noted when the foreskin could not be retracted or when less than half of the glans penis could be seen when retracted; partial phimosis was noted when more than half of the glans penis could be seen but not the whole penis; and no phimosis was noted when the foreskin could be easily retracted without difficulty and the glans penis could be seen completely. When grading the buried penis, fully and partially buried penis were recorded.

**Results:** In our study assessing the examination findings of 190 pediatric cases attending our urology clinic for circumcision between September 2015 and September 2021, a total of 127 children had urogenital anomalies (66%). Buried penis (46 cases, 24%) was the most frequently encountered urogenital anomaly. Undescended testis was the second most common (19 cases, 10%), while retractile testis (15 cases, 7%) was the third most common anomaly. Accordingly, phimosis was identified in 11 cases, penile curvature in 6 cases, hypospadias in 3 cases, hydrocele in 3 cases, penoscrotal web in 1 case and urethral meatus duplication in 1 case.

**Conclusion:** Circumcision is performed for both medical reasons and socio-cultural reasons in many countries. However, these patients may have serious urogenital anomalies. Careful physical examination is very important for patients attending for circumcision.

**Key Words:** Circumcision, Genital anomaly, Urogenital anomaly, Pediatric patient

### Sünnet için Başvuran Çocuk Hastalarda Muayenede Saptanan Ürogenital Anomaliler

#### Özet

**Amaç:** Sünnet Türkiye'de ve birçok ülkede sosyo-kültürel nedenlerle rutin olarak uygulanan bir işlemdir. Ebeveynler çocuklarını üroloji kliniklerine sünnet talebiyle getirmektedirler. Bu çocukların tam bir ürogenital muayeneden geçmesi çok önemlidir çünkü bu muayene ile tedavi gerektiren birçok ürogenital anomali tespit edilebilir. Bu çalışmada sünnet için kliniğimize getirilen çocuklarda saptanan ürogenital anomalileri belirlemeyi amaçladık.

**Materyal ve Metot:** Bu çalışmada Eylül 2015-Eylül 2021 tarihleri arasında üroloji kliniğimize sünnet için başvuran 190 çocuk olgunun muayene bulguları retrospektif olarak incelendi. Her çocuğun standart penis, üretra, testis ve skrotum muayeneleri yapıldı. İnmemiş testis varlığı ve lateralitesi, rekraktıl testis varlığı ve lateralitesi, fimosis varlığı ve derecesi, hipospadias varlığı ve lokalizasyonu, gömülü penis varlığı ve derecesi, penis kordi-eğriliğinin varlığı ve açısı, penoskrotal web varlığı, hidrosel varlığı ve lateralitesi, üretral stenoz varlığı ve üretral duplikasyon varlığı araştırıldı. Sünnet derisi geri çekilemediğinde veya geri çekildiğinde penis başının yarısından daha azı görülebildiğinde tam fimozis; penis başının yarısından fazlası görülüp penisin tamamı görülemiyorsa parsiyel fimozis; sünnet derisi zorlanmadan kolayca geri çekilebildiğinde ve glans penis tam görüldüğünde fimozis olmadığı kaydedildi. Gömük penis derecelendirilirken, tam ve kısmi gömülü penis kaydedildi.

**Bulgular:** Eylül 2015-Eylül 2021 tarihleri arasında Ordu Üniversitesi Eğitim ve Araştırma Hastanesi üroloji kliniğine sünnet için başvuran 190 çocuk olgunun muayene bulgularının değerlendirildiği çalışmamızda toplam 127 çocukta ürogenital anomali saptandı (%66). Gömük penis (46 olgu, %24) en sık karşılaşılan ürogenital anomaliydi. İnmemiş testis ikinci sıklıkta (19 olgu, %10), rekraktıl testis (15 olgu, %7) üçüncü sıklıkta anomaliydi. Bunları takiben 11 olguda fimozis, 6 olguda penil eğrilik, 3 olguda hipospadias, 3 olguda hidrosel, 1 olguda penoskrotal web ve 1 olguda üretral meatus duplikasyonu saptandı.

**Sonuç:** Sünnet, Türkiye'de olduğu gibi birçok ülkede hem tıbbi hem de sosyo-kültürel nedenlerle yapılan küçük cerrahi bir uygulamadır. Ancak çalışmamızın da ortaya koyduğu gibi bu nedenle başvuran hastalarda ciddi oranlarda ürogenital anomalilerle karşılaşmaktadır. Bu hastalarda dikkatli fizik muayene çok önemlidir.

**Anahtar kelimeler:** Sünnet, Genital anomali, Ürogenital anomali, Çocuk hasta

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## INTRODUCTION

Male circumcision (MC) is the partial or full surgical removal of the foreskin covering the penis (prepuce) (1). The history of MC dates back to ancient times. Circumcised children are encountered among Egyptian mummies dated to 6000 years ago (2). MC is mandatory for Jews and must be performed on the eighth day of life (3). MC is mandatory in Islam and generally the choice is to perform it on the seventh day of life (4). MC is a procedure performed for religious, socio-cultural and medical reasons in many different countries. The European Association of Urology Pediatric Urology guidelines mention secondary phimosis as the only definite indication for MC. Additionally, primary phimosis with recurrent urinary tract infections (UTIs) in patients with urogenital anomalies, recurrent balanoposthitis are mentioned as MC indications (5-7). Whether the reason is definite surgical indication or socio-cultural, it is probable that urologists around the world

encounter children attending clinics for examination before MC. It is very important to perform full urogenital examination for children during this type of circumcision appointment. This examination may identify many urogenital anomalies requiring treatment. In this study, we aimed to determine the urogenital anomalies identified in children brought to our clinic for MC.

## MATERIALS AND METHODS

Our study obtained local ethics committee permission (No: 26/2022). Within the scope of the study, the examination findings of 190 pediatric cases attending the urology clinic of Ordu University Education and Research Hospital for circumcision between September 2015 and September 2021 were retrospectively investigated. The study included male children with standard penis, urethra, testis and scrotum examinations performed. Children attending due to primary urologic pathologies (e.g., undescended testis, inguinal hernia, hydrocele) and with MC performed along with surgical correction of the basic pathology were not included in the study. Standard examination of children brought to the clinic only for MC researched the presence and laterality of

undescended testis, presence and laterality of retractile testis, presence and degree of phimosis, presence and localization of hypospadias, presence and degree of buried penis, presence, direction, and angle of penile chordee-curvature, presence of penoscrotal web, presence and laterality of hydrocele, presence of urethral stenosis, and presence of duplication in urethral meatus. Results were recorded. Buried penis classification determined as complete buried penis if the glans penis tissue is not palpable at the level of the symphysis pubis. If penile glandular tissue was palpable at the level of symphysis pubis it called partial buried penis. When rating phimosis, full phimosis was considered when the prepuce could not be retracted or less than half of the glans penis could be seen when retracted; partial phimosis was considered with more than half of the glans penis was observed when the prepuce was retracted, but the full glans could not be seen; and no phimosis was considered when the prepuce skin could be easily retracted without force and the full glans penis was observed. When rating buried penis, full and partial buried penis were recorded.

In the study, the rate of cases with urogenital anomalies among total cases was identified. As the study variables were categoric, assessment was performed with frequency analysis. Frequencies were calculated as definite (n) and

percentage (%). Chi-square test performed to determine frequency changes between groups and p values less than 0.05 considered as statistically significant. SPSS 22 program (IBM software, Pointe Claire, Quebec, Canada) used for statistical analysis.

## RESULTS

In our study assessing the examination findings of 190 pediatric cases attending the Ordu University Education and Research Hospital urology clinic for circumcision between September 2015 and September 2021, urogenital anomalies were identified in a total of 127 children (66%).

Buried penis (46 cases, 24%) was the most frequently encountered urogenital anomaly. Undescended testis was the second most common (19 cases, 10%), while retractile testis (15 cases, 7%) was the third most common anomaly. Following these, phimosis was identified in 11 cases (5%), penile curvature in 6 cases (3%), hypospadias in 3 cases (1%), hydrocele in 3 cases (1%), penoscrotal web in 1 case (0.5%) and duplication of the ureteral meatus in 1 case (0.5%).

There were no statistically significant differences between sides of undescended testis, retractile testis and hydrocele cases (p values are given in the table). Additionally, there were no statistically significant difference between complete and partial phimosis cases. But the

frequency of partially buried penis is statistically significantly higher than the frequency of fully buried penis (p=0.008).

Results are summarized in Tables 1 and 2.

**Table 1.** Scrotal and testicular pathologies identified on physical examination

	Right	Left	Bilateral	Total	p*
<b>Undescended testis</b>	7 (3%)	3 (1%)	9 (4%)	19 (10%)	0.229
<b>Retractile testis</b>	8 (4%)	4 (2%)	3 (1%)	15 (7%)	0.247
<b>Hydrocele</b>	-	2 (1%)	1 (0.5%)	3 (1%)	0.564

\*: Chi-square test

**Table 2.** Penile and prepuce pathologies identified during physical examination

	Full	Partial	Total	p*
<b>Phimosis</b>	5 (3%)	6 (3%)	11 (6%)	0.763
<b>Buried penis</b>	14 (7%)	32 (16%)	46 (24%)	0.008

\*: Chi-square test

## DISCUSSION

Male circumcision is one of the oldest surgical procedures. It is performed in many countries for religious and socio-cultural reasons. However, many clinical pathologies lead to MC indications. The leading cause among these pathologies is phimosis. However, the presence of phimosis should be divided into primary (physiologic) phimosis and secondary (pathologic) phimosis. For children attending with phimosis, the definite indication for MC should be secondary (pathologic) phimosis (5-7). In primary (physiologic) phimosis, there are indications for MC for cases resistant to medical

treatment, with recurrent balanoposthitis, and recurrent urinary infections accompanying urinary tract anomalies (5-7). The European urology guidelines recommend that MC be performed in clinics that abide by protocols related to hygiene, special equipment, pain protocols and follow-up and that can manage complications (8). Abiding by this situation has critical importance in terms of pediatric health. Additionally, it is very important that MC be planned and performed by qualified clinicians after performing appropriate urogenital examination. This is because correction operations in children for anomalies like hypospadias, epispadias, penile chordee, buried penis and micropenis may require use of the foreskin (prepuce tissue) (7,9). Urogenital examinations performed in appropriate environments by qualified clinicians may identify pathologies requiring preservation of the prepuce, and prevent inappropriate MC. With routine urogenital examination before MC, accompanying comorbid pathologies like undescended testis, retractile testis, hydrocele, and inguinal hernia may be identified in children brought to the clinic by parents for circumcision, and follow-up and treatment may be planned. Unfortunately in developing countries, it is a frequently encountered situation that MC is performed by unsuitable people in inappropriate conditions. This situation may cause difficulties

due to inability to identify comorbid pathologies and for repair of pathologies that require the foreskin to be used. Benli et al. (10) documented that the majority of MC were performed in inappropriate environments by people without clinical competence in a study analyzing 501 cases. Similarly, Geçit et al. (11) retrospectively investigated 62 pediatric patients attending with complications after MC and found increased complication rates related to MC performed by uneducated people in inappropriate environments. The common outcome of both studies indicates that serious complications may develop linked to MC performed by unqualified people in inappropriate conditions, while many additional pathologies cannot be identified due to not performing examination before MC causing delays in diagnosis and treatment. The results obtained from our study planned from this perspective found urogenital anomalies were identified in 127 male children (66%) out of 190 brought to our clinic by parents requesting MC. According to our information, there is no other study in the literature performing a similar assessment and documenting statistical data. In our study, 24% of cases (46 cases) had buried penis identified. Matsuo et al. (12) identified the rate of buried penis in Japanese children as 3.7% in the only study in the literature about buried penis incidence. Compared with our results, there appears to be a serious difference in incidence.

The reason for this may be that objective metric measurements were not used in our data based on physical examination and we may not have been able to clearly differentiate buried penis from similar pathologies like micropenis. This is an important limitation in terms of our study. The anomaly identified with second highest frequency in our study was undescended testis at 10% (19 cases). Undescended testis is identified at rates of 1-4.6% of term births and 1.1-40% rates for preterm infants (13). In our study, 47% of cases with undescended testis were bilateral. In the literature, we see that nearly 30% of undescended testis cases have bilateral undescended testis identified at diagnosis (14). In terms of undescended testis, the results of our study appear not compatible with the literature. Because our results showed there is no difference between side of the undescended testes, but in the literature it is obvious that right undescended testis is more frequently seen than left. In our study, the rate for retractile testis was 7%. In the literature, the retractile testis incidence was reported to be 2-45% according to the study by Stec et al. (15). However, as both the cause of descending testis and the differentiation between undescended testis and retractile testis cannot be performed with definite boundaries, incidence data may not be reliable. The retractile testis rate identified in our study appears to be compatible with the literature. As undescended testicle cases,

there is no difference between side of the retractile testes. Our data is insufficient to detect statistical significance of these pathologies. This is the main limitation of our study. But in buried penis, we found statistical significance between complete buried penis and partial buried penis cases. We think that superior number of buried penis cases revealed this significance. In addition, we think that the most important contribution of our study is the earlier detection of urogenital anomalies, because despite of many other countries where MC is performed only therapeutic purposes, in our society MC is performed for cultural and religious purposes also.

## CONCLUSION

In conclusion, apart from these frequently identified anomalies, many pathologies like penile chordee, penoscrotal web, hypospadias, hydrocele, and urethral meatus anomalies may be treated after identification during urogenital examination performed systematically in appropriate conditions before MC. For this reason, MC should be performed after full and systematic urogenital examination assessing the child before the procedure by qualified clinicians in centers providing appropriate conditions.

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**Ethics Committee Approval:** Prior to the study, the approval of Ordu University Clinical

Research Ethics Committee' numbered 26/2022 and dated 11/02/2024 was obtained.

**Author Contributions:** Conception - Abdullah Cirakoglu, Mevlut Keles; Design - Mevlut Keles; Supervision - Erdal Benli; Data Collection and/or Processing - Mevlut Keles, Ibrahim Yazici; Analysis and/or Interpretation - Ahmet Yuce, Nurullah Kadim; Literature Search - Mevlut Keles, Erdal Benli; Writing - Mevlut Keles; Critical Review - Abdullah Cirakoglu, Erdal Benli

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