

## Circumcision requirement in children with phimosis: immediately or elective?

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### Abstract

**Objective:** Phimosis is defined as unretractable prepuce and has two different clinical presentations; pathological (PaP) and physiological. Physiological phimosis (PhP) is a common condition in children that does not require treatment. In our study, we aimed to determine the actual requirement for circumcision in patients with phimosis who were recommended circumcision.

**Material and Methods:** Children who were offered circumcision due to phimosis between July 2019 and January 2020 and applied to the pediatric surgery and pediatric urology outpatient clinic were included in the study. They were evaluated in terms of referring physicians, genital examination findings and requirement for circumcision.

**Results:** Between the study dates, 199 patients applied for circumcision due to phimosis. 126 patients are under one year old, 73 patients are over one year old. PhP was present in 194 of the patients and PaP in 5 of them. While PaP is not detected in patients under one year of age, there are 5 patients with PaP over one year of age (2%). There was no requirement for urgent circumcision in any of the patients. Genital examination revealed incidentally undescended testicle in 3 patients and hydrocele in 12 children.

**Conclusion:** Male genital system examination and pathological findings are not well known by physicians. We think that there is a need for detailed training for physicians regarding PhP and childhood testicle pathologies.

**Key words:** Physiological phimosis, male circumcision, children

### Introduction

Phimosis is a condition in which the prepuce cannot be retracted over the glans penis (1). Prepuce, which is attached to the epithelium of glans penis in the antenatal period, starts to detach itself in the 24th antenatal week (2,3). This adhesion and detachment processes also continue through the newborn period. This adhesion is observed in 96% of newborns (3). The slow separation of the two epithelia is completed in 90% of children around the age of 3 with the erection of the penis and with the help of a physiological layer called smegma that is shed from prepuce and the epithelium of glans penis (2,3). Phimosis in infants, which is a completely physiological condition, may be perceived as an obstructive condition and misinterpreted as an indication for emergency circumcision. It is important to distinguish physiological phimosis (PhP), which is most commonly seen in this period, from pathological phimosis (PaP). The distal part of the prepuce is fibrotic during the retraction of the prepuce in PaP, whereas there is no fibrotic tissue in PhP (4).

Circumcision is a surgical procedure. There is an ongoing debate with regards to the circumcision performed in newborns and during the phallic period spanning the ages of three to six years where sexual development takes place. Meatal stenosis and cosmetic problems are the complications that may arise following circumcision in this period. These complications lead to recurrent surgical interventions. Therefore, establishing actual indications for circumcision are important in terms of preventing complications in this period. Additionally, suggesting a surgical intervention for a physiological condition proves stressful for the family. Identifying children with a need for emergency circumcision is important due to these two factors.

This study aims to determine the actual requirement for circumcision in children recommended emergency circumcision due to phimosis during normal follow-up examinations.



## Material and Methods

The study included children with the diagnosis of phimosis who were referred to the pediatric surgery and pediatric urology outpatient clinic between July 2019 and January 2020 for emergency circumcision and excluded children whose examination revealed anatomical problems in the penis.

The records of the children has been reviewed in terms of the type of the application to the hospital (voluntarily or referred by a physician), physical examination findings (penile and testicular evaluation, findings related to other organ systems) and indications for circumcision. The patients who were referred with a pre-diagnosis of urinary tract infection (UTI) and phimosis have been evaluated by urine culture and urinary system ultrasound.

## Results

Between the dates of the study, 199 patients applied to the outpatient clinic for circumcision due to phimosis. One hundred twenty six patients were younger than 1 year of age while 73 patients were older than 1 year of age. The mean age of the children was 10,02 months (27 days-4 years).

Twenty seven of these children were brought to the clinic by their families and acquaintances, 98 were referred by their family physicians and 74 were referred by their pediatricians for emergency circumcision due to phimosis.

One hundred ninety four patients had PhP while 5 had PaP (Figure 1 and 2). While PaP was not detected in patients under the age of 1 year, 5 patients were diagnosed with PaP in the group of the patients over 1 year of age (2%). Five children with PaP have been recommended to apply steroid-containing pomade (0.05% betamethasone 2x1) after sitting in a sit bath for 15 minutes. None of these patients required emergency circumcision. One patient with PaP has been elective circumcised as he did not respond to medical treatment.

Genital examination revealed scrotal pathology in 15 (7,5%) patients, incidentally. The identified pathologies were non-palpable testicle in one child and an undescended testicle located in inguinal canal in 2 children. These 3 patients have been operated due to the indication of the undescended testicle. 12 children showed hydrocele and were monitored closely. No surgery was required due to hydrocele during their follow-up period.

Smegma was defined as infection in 25 children and as calcification in 17 children, and the prepuce was retracted for cleaning in 15 children before they were referred to us. Following the diagnosis of balanitis, these children have been treated with sit bath and antibiotic pomade application.

No patient showed problems related to urine output and urine volume. Two patients reported urinary accumulation underneath the circumcised skin accompanied by ballooning. The children who complained of ballooning had PhP. There were no scars. Children with ballooning have been evaluated by urine analysis, urine culture and

urinary system ultrasound. Urine analysis and ultrasound results came out normal. Five children with PhP were referred to us with a pre-diagnosis of UTI. Three children who were diagnosed with urinary tract infection during the urine analysis and had findings such as bacteria and leukocyturia have been evaluated by urine culture and urinary system US. None of these children showed bacterial growth in urine culture. No pathological findings related to urinary system have been found in any of the children, which ruled out pre-diagnosis of UTI.

The families of the patients with PhP have been informed about phimosis and smegma. No additional treatments have been administered.



**Figure 1:** Physiologic Phimosis: distal part of the prepuce is healthy without fibrosis



**Figure 2:** Pathological phimosis: distal part of the prepuce is fibrotic

## Discussion

The separation of the prepuce and glans penis, which is seen in early antenatal period, continues after birth. This separation occurs only in 4% of infants in the newborn period and in 90% of them by the time they reach 3 years of age. (3). And phimosis can be seen at an approximate rate of 1% in the adolescence period (5).

PhP refers to the condition where the prepuce shows no scar tissues and cannot be retracted however can be opened like a flower if pulled by force (6). Prepuce may not always open like a flower in the case of PhP. Inability to retract the skin or the absence of scarring is sufficient to establish its diagnosis. In PhP, the distal part of the foreskin is healthy and the narrowed part is proximal to the prepuce. This is different from the PaP, which shows a white and fibrotic distal part when retracted gently and has a conical shape (4). In PaP, the preputial opening when the prepuce is retracted has a fibrotic structure. It is important to distinguish between these two types of phimosis, since the physiological one requires no interventions, while surgical intervention may be required for pathological phimosis. This distinction is not always drawn by the family physicians or pediatricians during the first examination of the children, hence circumcision is recommended to the children with phimosis and they are referred to the pediatric surgery or pediatric urology outpatient clinics.

This causes concern in parents due to the requirement for emergency circumcision. In addition, misinformation may lead to many children being circumcised under inadequate conditions and when it is not medically required. In our study, none of the 126 patients who were referred to us for circumcision under one year of age have been found to be requirement of emergency circumcision. Examination of these children revealed PhP. Sixty eight of the patients with phimosis over 1 year of age who were referred to us for circumcision have been reported to be PhP and 5 have been reported to be PaP. Five patients with PaP have been treated with sit bath and steroid pomade. In the study by Golubovic et al.(7), 19 of 20 children with pathological phimosis treated with steroids recovered. However, only 4 of 20 children treated with petroleum jelly recovered (7). Therefore, 0.05% betamethasone twice daily for 4 weeks was recommended for the medical treatment of PaP (7,8,9). In our study, recovery has been observed in 4 of 5 children with PaP. Only one child required circumcision as almost the whole prepuce was fibrotic, and glans penis and penile skin were oedematous. PaP incidence is 0.4 per 1000 men per year. This is much less common than PhP, which is commonly seen in young children and decreases with age (10). Based on this incidence, it is seen that the number of patients who are referred with the diagnosis of phimosis is very high. In our study, when full genital examination was performed, scrotal pathology revealed in 15(7,5%) patients, incidentally. Three patients had undescended testicles and 12 patients had hydrocele. Patients with undescended testicle underwent surgery, patients with hydrocele didn't need to surgery. A gentle retraction of the skin is important for diagnosis in phimosis examination. Especially in children younger than one year of age, forcible retraction of the prepuce may result in fissures and bleeding of the

prepuce, and these may turn into scarring and pathological phimosis later on (1). Therefore, retraction should not be performed in infants with PhP. This is sometimes a traditional behaviour and sometimes a wrong practice applied by physicians. This process is sometimes applied in a very traumatizing manner in order to remove the smegma. Smegma is misdiagnosed for an infection or calcification by physicians during an attempt for cleaning, who then recommend circumcision. The glands in the prepuce and glans penis produce secretions that help moisturize and defend against infections. Lysozyme in these secretions acts against harmful microorganisms (11,12). Smegma is seen when these secretions from the glans and prepuce accumulate in the epithelium. These are also known as prepuce pearls (1). Smegma, which is a completely physiological accumulation, is misinterpreted during physiological phimosis and traumatizing procedures are applied to remove it. Traumatizing procedures lead to fissures, haemorrhage, and scarring in the recovery period and also result in pathological phimosis.

Smegma was previously defined as infection in 25 children and calcification in 17 children in our study, and 15 prepuces were retracted for cleaning before patients were referred to our outpatient clinic for circumcision. Such an attempt to treat a physiological condition may cause infection and PaP, followed by an unnecessarily painful intervention for the child. In our study, patients who had developed balanitis and oedema due to the retraction of the prepuce did not develop PaP after sit bath and antibiotic pomade treatment. In addition, among the patients with phimosis, urinary tract infection could not be confirmed in any of the patients referred to us with UTI. None of these patients required circumcision.

In the study by Babu et al.(13), post-void residues of patients with PhP who developed ballooning underneath prepuce and of patients with physiological phimosis who did not develop ballooning were evaluated by uroflowmetry and ultrasonography, and no differences were found between them. As a result of this study, it can be said that there is no require for emergency circumcision based on urinary system findings in ballooning accompanying PhP. Similarly, in our study, urinary analyses and urinary ultrasounds of 2 patients who developed ballooning were normal. Emergency circumcision indication was not considered.

Interventions to smegma and PhP, which is a completely physiological condition, and circumcision recommendations suggest that there is a misinformation both within the society and amongst family physicians and pediatricians. Additionally, testicular pathologies not previously detected reveal inadequacies in full genital examination practices.

## Conclusion

PhP is a physiological condition that does not require circumcision. Physicians do not have a very good command of male genital system examinations and pathological findings. In-service trainings can be organized for physicians on PhP and childhood testicular pathologies.

**Conflict of interest statement:** The authors declare that there is no actual or potential conflict of interest.

**Author's contributions:** SS, EAK; Design of research, data collection and Patient examinations, and Surger SS\*; preparation of article and revisions

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