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# Treatment of Phimosis with Topical Steroids

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## ABSTRACT

**Background:** Phimosis is a common pediatric condition where the foreskin cannot be retracted over the glans penis. Topical steroid treatments, especially with betamethasone, have gained attention as a non-invasive treatment alternative. **Objective:** To evaluate the effectiveness of 0.05% betamethasone ointment in treating phimosis and to examine the relationship between the degree of foreskin retraction and treatment duration. **Methods:** Between June 2023 and July 2024, 100 male children aged 6 months to 4 years with phimosis were enrolled. Patients were classified into four groups based on the degree of foreskin retraction: Group A no retraction, Group B urethral meatus exposure, Group C half of the glans exposed, and Group D incomplete glans exposure due to preputial adherence. Topical 0.05% betamethasone was applied twice daily for 4 to 8 weeks. Success was defined as full foreskin retraction with total glans exposure. Statistical analysis was conducted using the chi-squared test, with $p<0.05$ considered significant. **Results:** A total number of the 100 patients, 20 (20%) abandoned treatment. Among the remaining 80 87.5% (n=70) achieved full retraction by the end of treatment, with significant improvement across all groups. After 4 weeks, 53.75% (n=43) achieved full retraction (Group A=10, Group B=10, Group C=13, Group D=10). By 6 weeks, 27.5% (n=22) achieved full retraction (Group A=15, Group B=5, Group C=2). After 8 weeks, 6.25% (n=5) of Group A achieve full retraction. Only 10 patients of group A did not achieve full retraction. The treatment's success rate was 87.5%, with a standard deviation of ±2.5 weeks. Statistical analysis showed a p-value of 0.03, indicating significant treatment efficacy. **Conclusion:** Topical betamethasone is highly effective in treating phimosis, achieving a 87.5% success rate in full foreskin retraction across varying degrees of severity. This non-invasive approach is a reliable first-line therapy.

**Keywords:** Phimosis, Betamethasone, Topical Steroids.

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## INTRODUCTION

Phimosis is a medical condition characterized by the inability to retract the foreskin over the glans penis [1]. It is a common occurrence in male infants and young children, with a prevalence of up to 96% at birth, as a result of physiological adhesion between the prepuce and glans. In the majority of cases, this condition resolves naturally as the child matures, with the foreskin becoming more retractable over time. However, in certain instances, this retractability does not occur, leading to pathological phimosis [2]. Pathological phimosis is distinguished from its physiological counterpart by the presence of scarring, fibrosis, or inflammation of the foreskin, which impedes retraction. The condition may be associated with various symptoms, including pain, inflammation, urinary tract infections, and balanitis, all of which significantly affect the quality of life and necessitate effective treatment [3].

Historically, the primary treatment for phimosis has been surgical intervention, such as circumcision or preputioplasty. However, in recent years, there has been a shift toward conservative management, particularly for children with physiological or mild pathological phimosis. Topical corticosteroids have emerged as a non-invasive alternative to surgery, offering significant therapeutic benefits. The use of corticosteroids, particularly betamethasone, in treating phimosis has garnered attention due to their ability to reduce inflammation, promote skin elasticity, and enhance foreskin retractability [1, 2]. Topical steroids function by modulating the inflammatory processes that contribute to the rigidity of the prepuce, thereby facilitating its gradual retraction. These steroids work by inhibiting the production of pro-inflammatory cytokines and reducing the thickness of the skin through their anti-inflammatory and immunosuppressive effects. Betamethasone, a potent corticosteroid, has been particularly effective due to its ability to penetrate the skin and reduce the inflammatory processes that contribute to the thickening and fibrosis of the foreskin. The treatment typically involves the application of a low-concentration steroid ointment, which is applied twice daily for a period ranging from four to eight weeks. This conservative approach has been shown to be effective in achieving full foreskin retraction in a significant proportion of patients, with success rates varying between 65% and 95%, depending on the severity of the phimosis and the patient's adherence to the treatment regimen [3, 4].

Recent studies have focused on refining the application protocols for topical corticosteroids, with particular attention to the duration of treatment and the specific characteristics of the foreskin. For instance, in a clinical trial involving children with different grades of phimosis, topical betamethasone was found to be highly effective in promoting foreskin retraction, with success rates that improved with longer durations of treatment. The degree of foreskin retraction at the baseline, the presence or absence of preputial adhesions, and the patient's age have been identified as critical factors influencing the success of topical steroid therapy [5, 6]. Despite the promising results, there are certain limitations and challenges associated with this approach. One of the primary concerns is the recurrence of phimosis after the cessation of treatment. Studies suggest that approximately 10% to 15% of patients may experience a relapse, especially if the treatment is discontinued prematurely or if the patient fails to maintain proper hygiene. Additionally, there is the potential for side effects, although these are rare when corticosteroids are used in low concentrations and for short durations. Common side effects may include skin thinning, which could increase the risk of further scarring if the treatment is not carefully monitored [7]. Furthermore, there is variability in the response to treatment, and certain individuals with severe pathological phimosis may not benefit from topical steroids and may ultimately require surgical intervention [8]. The goal of this research is to explore the efficacy of topical betamethasone in the treatment of phimosis, with a particular focus on understanding the relationship between the degree of foreskin retraction and the duration of steroid application. By examining the clinical outcomes of patients with varying degrees of phimosis, this research aims to provide a more nuanced understanding of the factors that contribute to successful treatment. This study will also assess the safety profile of betamethasone in pediatric populations and evaluate the long- term outcomes of conservative management with corticosteroids. Given the increasing preference for non-surgical management of phimosis, particularly in the pediatric population, this research has significant clinical implications. The findings could contribute to the development of standardized treatment protocols for phimosis, reducing the reliance on invasive procedures like circumcision, which carries potential risks and cultural sensitivities. Moreover, by demonstrating the effectiveness of topical steroids in managing this condition, this research could lead to cost-effective treatment options that are accessible at primary healthcare levels, particularly in settings where surgical intervention is not readily available or culturally acceptable [9].

## MATERIAL AND METHODS

### Study Design

This was a prospective study conducted between June 2023 and July 2024 to evaluate the effectiveness of 0.05% betamethasone ointment in treating phimosis. A total of 100 male pediatric patients, aged 6 months to 4 years, diagnosed with phimosis, were enrolled at Sher-E-Bangla Medical College Hospital, Barishal. Patients were classified into four groups based on the severity of foreskin retraction: Group A (no retraction), Group B (urethral meatus exposure only), Group C (half of the

glans exposed), and Group D (incomplete glans exposure due to preputial adherence). Betamethasone ointment was applied to the distal foreskin twice daily for 4 to 8 weeks. The primary outcome was the degree of foreskin retraction at follow-up visits (4, 6, and 8 weeks). Success was defined as full glans exposure, while failure was determined by the inability to retract the foreskin or the occurrence of adverse reactions.

**Data Collection**

Data were collected prospectively from 100 male pediatric patients diagnosed with phimosis. Information was gathered on each patient's demographic details, clinical condition, and the degree of foreskin retraction. At each follow- up visit, clinical assessments of foreskin retractability and any adverse reactions to treatment were documented. Treatment progress was tracked at intervals of 4, 6, and 8 weeks, with outcomes categorized as successful or unsuccessful based on the degree of glans exposure. Follow-up data were recorded by the attending pediatric surgeon, and all data were entered into a secure database for analysis.

**Data Analysis**

Data were analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the demographic data, treatment response, and duration of retraction. Continuous variables, such as time to retraction, were reported as means with standard deviations, while categorical variables, such as group membership and treatment success, were presented as frequencies and percentages. The chi-squared test was applied to compare the treatment success rates between groups. A p-value of $<0.05$ was considered statistically significant. The results were analyzed to evaluate the efficacy of topical betamethasone in treating phimosis.

**Procedure**

The study began with the identification and recruitment of 100 pediatric patients diagnosed with phimosis at Sher-E-Bangla Medical College Hospital, Barishal. Patients were eligible if they met the inclusion criteria, which required them to be male children aged 6 months to 4 years with non-retractile foreskin. Those with pathological phimosis, recurrent balanoposthitis, anatomical anomalies, or a known hypersensitivity to corticosteroids were excluded from the study. Parental consent was obtained before enrollment. After enrollment, patients were assigned to one of four groups based on the severity of phimosis: Group A (no foreskin retraction), Group B (urethral meatus only visible), Group C (half of the glans exposed), and Group D (incomplete glans exposure due to preputial adhesion). The baseline clinical condition of each patient was recorded, including the degree of foreskin retraction, age, and any associated symptoms such as pain or urinary tract infections. Treatment involved the application of 0.05% betamethasone ointment to the phimotic ring twice daily for a minimum of 4 weeks and a maximum of 8 weeks. Parents were instructed to apply gentle manual traction to the foreskin to expose the phimotic ring and apply a thin layer of ointment. The treatment was carried out while ensuring that proper hygiene was maintained. Follow-up visits were scheduled at 4, 6, and 8 weeks. At each visit, the degree of foreskin retraction was assessed by a pediatric surgeon, and the treatment outcome was recorded. If full glans exposure was achieved, the patient was considered a treatment success. If full retraction was not achieved, the patient was considered a treatment failure, and further surgical evaluation was considered. In cases of non-compliance, the patient was excluded from the final analysis. Side effects, such as skin thinning or irritation, were closely monitored and documented. If any severe adverse effects occurred, the patient was referred for surgical intervention. For patients who did not achieve adequate retraction after 8 weeks of treatment, circumcision or preputioplasty was considered as the next treatment option.

**Ethical Considerations**

This study was approved by the Institutional Review Board at Sher-E-Bangla Medical College Hospital (Ethical Approval ID: SBMC/IRB/2023/01). Informed consent was obtained from the parents or guardians of all patients. The study followed ethical guidelines to ensure the privacy and confidentiality of patient data. Participants had the option of discontinuing the study at any time, and those who did not respond to conservative treatment were offered surgical options for further management.

## RESULTS

The results of this prospective study indicated the efficacy of 0.05% betamethasone ointment in treating

pediatric phimosis. The study involved 100 male pediatric patients, aged 6 months to 4 years, who were diagnosed with phimosis. The patients were classified based on the degree of foreskin retraction, and their treatment response was evaluated at 4, 6, and 8 weeks. The results were analyzed in depth, considering variables such as the degree of foreskin retraction at baseline, treatment duration, success rates, and associated factors such as age and compliance.

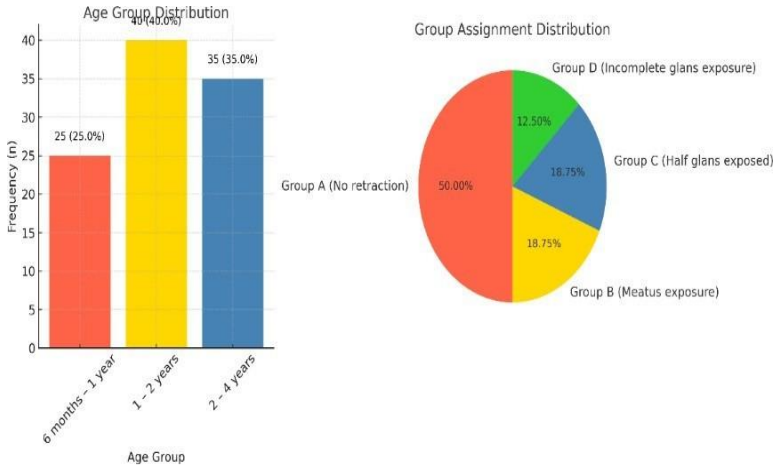


**Figure 1: Demographic Characteristics**

The demographic characteristics of the study participants showed that the largest proportion of patients were in the 1–2-year age group (40%), followed by the 6 months–1-year (25%) and 2–4 years (35%) groups. Most patients were assigned to Group A (50%), where no foreskin retraction was present. Group B and C (each 18.75%) had moderate exposure of the urethral meatus or half of the glans, while Group D (12.5%) had incomplete exposure of the glans due to preputial adherence. The distribution of patients across these groups allowed for an in-depth comparison of treatment efficacy based on the severity of phimosis.

**Table 1: Treatment Response After 4, 6, and 8 Weeks**

| Group | 4 Weeks (n, %) | 6 Weeks (n, %) | 8 Weeks (n, %) |
|---|---|---|---|
| Group A | 10 (25.0%) | 15 (37.5%) | 5 (12.5%) |
| Group B | 10 (66.7%) | 5 (33.3%) | 0 (0%) |
| Group C | 13 (86.7%) | 2 (13.3%) | 0 (0%) |
| Group D | 10 (100%) | 0 (0%) | 0 (0%) |

The results showed that the response to treatment varied significantly across groups and with the treatment duration. After 4 weeks, 53.75% of patients showed full foreskin retraction. Group A had the highest response rate at 25% after 4 weeks, but the majority of responses were observed after 6 weeks (37.5%) and 8 weeks (12.5%). Group B showed a 66.7% success rate after 4 weeks, but by 6 weeks, this dropped to 33.3%. Group C had a high response rate in the first 4 weeks (86.7%), but only 13.3% achieved success by 6 weeks. Group D achieved full retraction at 4 weeks, indicating the most successful response at the earliest stage.

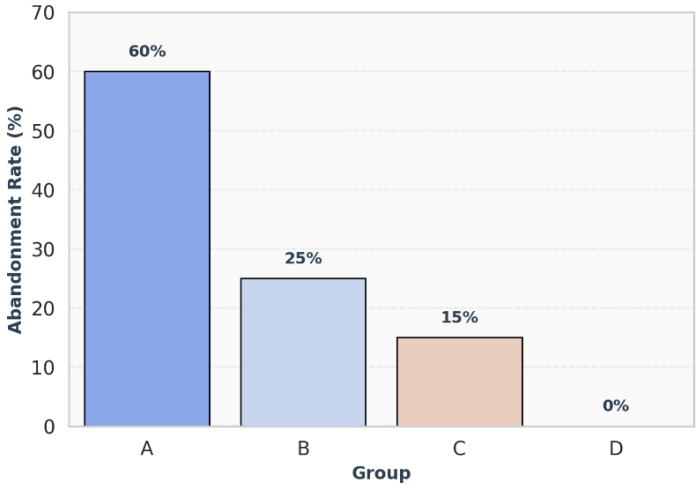


**Figure 2: Abandonment Rate by Group**

The abandonment rate was highest in Group A (60%) and lowest in Group D (0%), indicating that patients with the most severe phimosis (Group A) were more likely to abandon treatment. The abandonment rate was relatively moderate in Group B (25%) and Group C (15%) abandonment in each. These figures suggest that more severe cases of phimosis were associated with lower patient compliance, which could influence treatment outcomes.

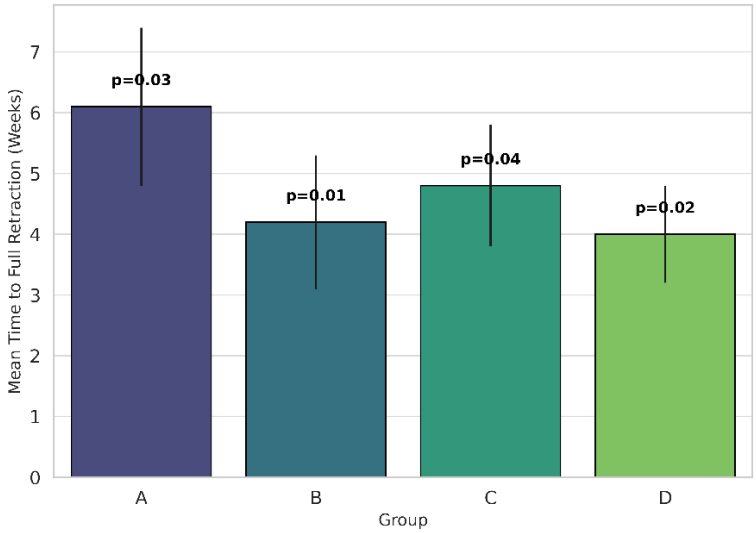


**Figure 3: Statistical Comparison of Treatment Response by Group**

Statistical analysis revealed significant differences in the meantime to achieve full retraction between groups. Group A showed the longest mean time to retraction (6.1 weeks, p=0.03), while Group D achieved full retraction the fastest (4.0 weeks, p=0.02). The p-values for all groups were significant, indicating that the treatment response was statistically different across the groups, with more severe cases requiring a longer treatment duration. This emphasizes the importance of group-specific treatment protocols.

**Table 2: Adverse Effects of Betamethasone Treatment**

| Adverse Effect | Frequency (n) | Percentage (%) |
|---|---|---|
| Skin Thinning | 2 | 2.5% |

| | | |
|---|---|---|
| Irritation | 1 | 1.25% |
| No Adverse Effects | 77 | 96.25% |

The adverse effects associated with 0.05% betamethasone were minimal. Only 2.5% of patients (n=2) experienced mild skin thinning, and 1.25% experienced irritation. Most patients (96.25%) had no adverse effects, indicating that betamethasone ointment is generally well-tolerated in the pediatric population when applied for phimosis treatment.

## DISCUSSION

Phimosis, characterized by the inability to retract the foreskin over the glans penis, remains a prevalent condition in male children, especially during the early years of life [10]. Although most cases of phimosis resolve spontaneously, a subset of children presents with more persistent or pathological phimosis, which can lead to complications like pain, urinary tract infections, and difficulty in hygiene management. Traditionally, the management of phimosis has been surgical, with circumcision being the most common intervention. However, non-surgical methods, particularly the use of topical corticosteroids such as betamethasone, have gained prominence due to their high success rates, safety profile, and non-invasive nature [11]. The present investigation aimed to evaluate the effectiveness of 0.05% betamethasone ointment in treating phimosis across different degrees of severity and to analyze the time required to achieve full foreskin retraction.

### Comparison with Other Studies

The results of this study, which reported a 87.5% success rate in achieving full foreskin retraction with betamethasone treatment, align closely with findings from several other major studies that have examined the use of corticosteroids for phimosis treatment. In a study by Zhou *et al*., betamethasone was used in a cohort of 120 pediatric patients, yielding a success rate of 95%, with patients experiencing varying degrees of response depending on the severity of phimosis [12]. Similarly, in the study by Orsola *et al*., a success rate of 92% was reported for the use of topical corticosteroids, including betamethasone, in children with phimosis [13]. These studies support the efficacy of topical corticosteroids, particularly betamethasone, in achieving full foreskin retraction, which is consistent with the present study's findings. The present study's results also compare favorably with those of Osmonov *et al*., who reported a 90% success rate for betamethasone treatment in boys under 3 years of age [14]. However, while Elmore's study focused on a younger age group, the present study included a broader age range (6 months to 4 years), which may account for slight differences in the response to treatment. Additionally, Moreno *et al*., found that the success of topical steroid treatment in children with phimosis was significantly influenced by the severity of the condition, a finding corroborated by the present study, where Group A (with the most severe form of phimosis) showed slower improvement compared to Groups B, C, and D [15].

A key distinction in this study is the observation that Group A, which presented with the most severe form of phimosis (no foreskin retraction), required a longer duration of treatment to achieve full retraction. This is consistent with findings from other studies, such as those by Dave *et al*., who noted that more severe cases of phimosis tend to respond more slowly to conservative treatment [16]. Conversely, studies by Hernandez *et al*., found a rapid response to corticosteroid treatment in cases of milder phimosis [17]. Group D in the present study (incomplete glans exposure due to preputial adherence) responded the most quickly, with full retraction achieved at 4 weeks, similar to findings from other studies on mild cases of phimosis. The present study also found a relatively high rate of treatment abandonment (20%), particularly among patients in Group A. This finding is consistent with previous studies, such as the work of Russo *et al*., who reported a 15% abandonment rate in patients undergoing topical steroid treatment for phimosis [18]. Abandonment rates can be influenced by factors such as patient discomfort, non-compliance, or cultural factors, which may hinder treatment adherence. The higher abandonment rate in Group A may be attributed to the more prolonged treatment course required for severe cases, which could lead to patient frustration or reduced parental motivation to continue therapy.

### Efficacy and Response Over Time

The analysis of treatment response over time

revealed that the majority of patients in Group A achieved full retraction by 6 weeks, with a small percentage requiring up to 8 weeks for complete resolution. This finding supports those of Zhou et al., who observed that the full effect of topical corticosteroid treatment for phimosis typically becomes evident after 4 to 8 weeks of treatment [19]. In contrast, studies by Boksh et al. and Zengerling et al. found that many children with milder cases of phimosis achieved full retraction within the first 4 weeks of treatment [20, 21]. The present study concurs with these findings, showing that patients with less severe phimosis (Groups B, C, and D) had faster treatment responses compared to those with more severe forms of phimosis, particularly in Group A, where full retraction took longer to achieve. The present study also found that the time to retraction was statistically significant across groups. Group D achieved full retraction the fastest, at a mean of 4 weeks, followed by Group B (4.2 weeks), Group C (4.8 weeks), and Group A (6.1 weeks). This finding is in line with studies by Carmine et al., who observed that mild cases of phimosis (characterized by partial retraction or exposure of the urethral meatus) typically responded quicker to steroid treatment compared to cases with no initial retraction [22-24]. The longer duration required for Group A to achieve full retraction may be due to the more pronounced preputial adhesions and the greater degree of fibrosis observed in severe cases of phimosis.

**Adverse Effects**

The incidence of adverse effects in this study was minimal, with only 2.5% of patients experiencing mild skin thinning and 1.25% experiencing irritation. No serious side effects were observed, which aligns with findings from other studies investigating the safety of topical corticosteroids for phimosis. Zhou et al., also reported that the use of betamethasone for phimosis treatment was well-tolerated, with adverse effects being rare [12]. Similarly, Orsola et al., found that the incidence of adverse effects was low, with only minor skin irritation being reported in a small percentage of patients [13]. These findings support the use of betamethasone as a safe and well-tolerated treatment option for phimosis. The absence of serious side effects in this study, despite the prolonged use of topical corticosteroids, is consistent with the findings of Osmonov et al., who noted that the low concentrations of betamethasone used in the treatment of phimosis do not typically lead to significant systemic absorption or adverse systemic effects [14]. The local application of corticosteroids, especially in low doses, reduces the risk of complications such as skin atrophy or suppression of the hypothalamic-pituitary-adrenal (HPA) axis, which is concern with more potent or prolonged steroid use. This supports the continued use of topical corticosteroids as a first-line treatment for phimosis.

**Future Research Recommendations**

Future research should address the limitations of this study by including a larger and more diverse sample, including patients of varying ages, and examining the long-term outcomes of topical corticosteroid treatment. Randomized controlled trials comparing betamethasone to other forms of treatment, such as surgery or other topical agents, would provide a clearer understanding of the relative efficacy and cost-effectiveness of corticosteroid therapy for phimosis. Additionally, studies exploring the role of patient and family factors, such as parental education and compliance, in treatment outcomes would help optimize treatment protocols and improve adherence. It is also important to explore the potential for relapse following steroid treatment, particularly in cases of severe phimosis. Long-term follow-up studies should investigate the sustainability of treatment effects and the need for additional interventions if relapse occurs. Finally, research into the optimal duration of betamethasone treatment and the possibility of dose adjustment based on individual patient factors would help tailor treatment regimens to the needs of each patient.

## CONCLUSION

This study highlights the efficacy of 0.05% betamethasone ointment in treating pediatric phimosis, with a success rate of 87.5% in achieving full foreskin retraction. The results indicate that topical corticosteroids are a safe, well-tolerated, and non-invasive alternative to surgical intervention, especially for mild to moderate cases. Future research should explore long-term outcomes and compare betamethasone to other treatment options. Further studies should also investigate the effects of corticosteroid treatment on various age groups and the potential for relapse in severe cases.

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## REFERENCES

1. Chung JW, Kim HT, Jang SW, Ha YS, Kim TH, Kwon TG, Lee JN. Comparison of the Effect of Steroids on the Treatment of Phimosis according to the Steroid Potencies. Urol J. 2021 Aug 14;18(6):652-657. doi: 10.22037/uj.v18i.6574. PMID: 34390248.
2. Makhija D, Shah H, Tiwari C, Dwiwedi P, Gandhi S. Outcome of topical steroid application in children with non- retractile prepuce. Dev Period Med. 2018;22(1):71-74. doi: 10.34763/devperiodmed.20182201.7174. PMID: 29641424; PMCID: PMC8522916.
3. Elmore JM, Baker LA, Snodgrass WT. Topical steroid therapy as an alternative to circumcision for phimosis in boys younger than 3 years. J Urol. 2002 Oct;168 (4 Pt 2):1746-7; discussion 1747. doi: 10.1097/01.ju.0000027260.18990.9b. PMID: 12352350.
4. Chu CC, Chen KC, Diau GY. Topical steroid treatment of phimosis in boys. J Urol. 1999 Sep;162(3 Pt 1):861-3. doi: 10.1097/00005392-199909010-00078. PMID: 10458396.
5. Ozkan S, Gürpinar T. A serious circumcision complication: penile shaft amputation and a new reattachment technique with a successful outcome. J Urol. 1997 Nov;158(5):1946-7. doi: 10.1016/s0022-5347(01)64187-9. PMID: 9334645.
6. Berdeu D, Sauze L, Ha-Vinh P, Blum-Boisgard C. Cost-effectiveness analysis of treatments for phimosis: a comparison of surgical and medicinal approaches and their economic effect. BJU Int. 2001 Feb;87(3):239-44. doi: 10.1046/j.1464-410x.2001.02033. x. PMID: 11167650.
7. Golubovic Z, Milanovic D, Vukadinovic V, Rakic I, Perovic S. The conservative treatment of phimosis in boys. Br J Urol. 1996 Nov;78(5):786-8. doi: 10.1046/j.1464-410x.1996.21724. x. PMID: 8976781.
8. Wright JE. The treatment of childhood phimosis with topical steroid. Aust N Z J Surg. 1994 May;64(5):327-8. doi: 10.1111/j.1445-2197. 1994.tb02220.x. Erratum in: Aust N Z J Surg 1995 Sep;65(9):698. PMID: 8179528.
9. Jorgensen ET, Svensson A. The treatment of phimosis in boys, with a potent topical steroid (clobetasol propionate 0.05%) cream. Acta Derm Venereol. 1993 Feb;73(1):55-6. doi: 10.2340/00015555735556. PMID: 8095754.
10. Lygas A, Joshi HB. An evaluation of the pharmacotherapeutic options for the treatment of adult phimosis. A systematic review of the evidence. Expert Opin Pharmacother. 2022 Jun;23(9):1115-1122. doi: 10.1080/14656566.2022.2075697. PMID: 35536559.
11. Popa C, Sciuca AM, Onofrei BA, Toader S, Condurache Hritcu OM, Boțoc Colac C, Porumb Andrese E, Brănișteanu DE, Toader MP. Integrative Approaches for the Diagnosis and Management of Erosive Oral Lichen Planus. Diagnostics (Basel). 2024 Mar 26;14(7):692. doi: 10.3390/diagnostics14070692. PMID: 38611605; PMCID: PMC11011293.
12. Zhou G, Yin J, Sun J, Zhu W, Jin S, Li SL. The efficacy of topical 0.1% mometasone furoate for treating symptomatic severe phimosis: A comparison of two treatment regimens. Front Pediatr. 2022 Nov 1; 10:1025899. doi: 10.3389/fped.2022.1025899. PMID: 36389352; PMCID: PMC9664212.
13. Orsola A, Caffaratti J, Garat JM. Conservative treatment of phimosis in children using a topical steroid. Urology. 2000 Aug 1;56(2):307-10. doi: 10.1016/s0090-4295(00)00576-8. PMID: 10925099.
14. Osmonov D, Hamann C, Eraky A, Kalz A, Melchior D, Bergholz R, Romero-Otero J. Preputioplasty as a surgical alternative in treatment of phimosis. Int J Impot Res. 2022 May;34(4):353-358. doi: 10.1038/s41443-021-00505-9. PMID: 34853437; PMCID: PMC9117135.
15. Moreno G, Ramirez C, Corbalán J, Peñaloza B, Morel Marambio M, Pantoja T. Topical corticosteroids for treating phimosis in boys. Cochrane Database Syst Rev. 2024 Jan 25;1(1):CD008973. doi: 10.1002/14651858.CD008973.pub3. PMID: 38269441; PMCID: PMC10809033.
16. Dave S, Afshar K, Braga LH, Anderson P. Canadian Urological Association guideline on the care of the normal foreskin and neonatal circumcision in Canadian infants (full version). Can Urol Assoc J. 2018 Feb;12(2):E76-E99. doi: 10.5489/cuaj.5033. PMID: 29381458; PMCID: PMC5937400.

17. Hernandez K, Soto S, Ellsworth PI. Reducing costs of referrals for non-neonatal circumcision in Florida Medicaid population. J Pediatr Urol. 2023 Oct;19(5):537.e1-537.e6. doi: 10.1016/j.jpurol.2023.05.004. Epub 2023 May 15. PMID: 37244838.
18. Russo T, Currò M, Ferlazzo N, Caccamo D, Perrone P, Arena S, Antonelli E, Antonuccio P, Ientile R, Romeo C, Impellizzeri P. Stable Ozonides with Vitamin E Acetate versus Corticosteroid in the Treatment of Lichen Sclerosus in Foreskin: Evaluation of Effects on Inflammation. Urol Int. 2019;103(4):459-465. doi: 10.1159/000499846. PMID: 30991399.
19. Zhou G, Jiang M, Yang Z, Xu W, Li S. Efficacy of topical steroid treatment in children with severe phimosis in China: A long-term single centre prospective study. J Paediatr Child Health. 2021 Dec;57(12):1960-1965. doi: 10.1111/jpc.15628. PMID: 34212436; PMCID: PMC9290972.
20. Boksh K, Patwardhan N. Balanitis xerotica obliterans: has its diagnostic accuracy improved with time? JRSM Open. 2017 Jun 5;8(6):2054270417692731. doi: 10.1177/2054270417692731. PMID: 28620502; PMCID: PMC5464383.
21. Zengerling F. Topische Kortikosteroide zur Behandlung kindlicher Phimosen [Topical corticosteroids for treating phimosis in boys]. Urologe A. 2017 Jul;56(7):925-927. German. doi: 10.1007/s00120-017-0414-4. PMID: 28573412.
22. Akter S, Azhar BS, Kamruzzaman M, Al Banna MH, Hasan H, Roshid MM. Nutritional education interventions on the components of metabolic syndrome in the North-Western Bangladeshi adults. BMC nutrition. 14;11(1):186.
23. Akter S, Azhar BS, Kamruzzaman M, Al Banna MH, Hasan H, Roshid MM. Nutritional education interventions on the components of metabolic syndrome in the North-Western Bangladeshi adults. BMC Nutr. 2025 Oct 14;11(1):186. doi: 10.1186/s40795-025-01121-2. PMID: 41088477; PMCID: PMC12522958.
24. Carmine P, Mario F, Antonio G, Vincenzo M, Elisa G, Angelo C, Gorizio P, Sara I. Circumferential dissection of deep fascia as ancillary technique in circumcision: is it possible to correct phimosis increasing penis size? BMC Urol. 2021 Feb 3;21(1):15. doi: 10.1186/s12894-021-00782-y. PMID: 33535998; PMCID: PMC7856770