

# Is it Possible to Perform Hypospadias Surgery in Circumcised Children?

Gökhan Temiz,<sup>1</sup> Gaye Taylan Filinte,<sup>1</sup> Emre Güvercin,<sup>2</sup>  
Kaan Gideroğlu,<sup>1</sup> Murat Sarıcı,<sup>1</sup> Mithat Akan<sup>3</sup>

<sup>1</sup>Department of Plastic Surgery,  
University of Health Sciences,  
Kartal Dr. Lütfi Kırdar Training and  
Research Hospital, İstanbul, Turkey

<sup>2</sup>Department of Plastic Surgery,  
Beykoz State Hospital,  
İstanbul, Turkey

<sup>3</sup>Consultant Surgeon,  
İstanbul, Turkey

Submitted: 04.08.2016  
Accepted: 14.12.2016

Correspondence: Emre Güvercin,  
Fındıklı Mah., Hancıoğlu Cad.,  
No: 7/9, 34890 Maltepe,  
İstanbul, Turkey  
E-mail: emree\_16@yahoo.com



**Keywords:** Circumcision;  
hypospadias;  
fistula formation.

## ABSTRACT

**Objective:** The practice of circumcision is frequently performed in hospital environment by surgeons in recent years. However hypospadias may be misdiagnosed when circumcision is performed by unqualified individuals. In this study, we aimed to determine the safety of hypospadias surgery and to investigate clinical outcomes in these patients.

**Methods:** Nine patients with distal hypospadias without chordee were included in the study. Insufficient amount of foreskin was detected in all patients because of previous circumcision. All cases underwent hypospadias repair with TIPU method. Tubularized urethra was surrounded with dartos fascia elevated from distal penile skin. Urethral catheters were applied for 10–14 days in all cases.

**Results:** Nine patients with mean age of  $6.4 \pm 1.80$  (4–8) years were followed for a average period of 17.5 (12–24) months. During the early postoperative period, wound dehiscence was observed in skin flaps of three patients (33%). Fistula formation was determined in two patients (22%). Meatal stenosis was observed in 5 patients, but was not clinically significant after 1 year of follow-up.

**Conclusion:** The most common problems encountered in these patients are insufficient dartos fascia and circulation problem in elevated skin flaps which often result in fistula formation. There are two points to be considered for hypospadias operations in these patients: closure of new urethra with surrounding fascia and elevation of skin flaps smoothly without impairing circulation, and subsequent suturing.

## INTRODUCTION

In cases with hypospadias especially in recent years preservation of foreskin during surgery, and performing circumcisions in hospitals are becoming popular among society. Still in our country unnoticed circumcised cases with hypospadias are still encountered. Because of waste of such a valuable foreskin during circumcisions, the size of dartos flap can become inadequate for defect closure, and also blood perfusion of skin flaps can be impaired.<sup>[1]</sup> In our study, we analyzed the results of surgical treatment of the previously circumcised patients with hypospadias, and applicability of safe surgery together with its complications.

## MATERIAL AND METHODS

The files of 9 hypospadias patients without chordee who had been circumcised by a health officer or a person termed as circumciser were analyzed after local ethical committee approval. In all patients the size of the foreskin was not adequate for hypospadias repair because of previously experienced circumcision (Figure 1). Chordee was not detected in all patients. All patients underwent hypospadias repair under general anesthesia using TIPU (Tubularized Incised Plate Urethroplasty). Surgery was initiated with urethral catheterization, and application of penile tourniquet. Glans was filled with physiologic saline to investigate the presence of chordee. Flaps to be

used for TIPU procedure were delineated, and appropriate urethral flaps were elevated. To prevent formation of meatal stenosis to the distal of the flap, a triangular flap was added to the elevated flap (Figure 2). Urethral flaps were sutured around the urethral catheter, and meatus was advanced more distally. Skin flaps were elevated to reach subcutaneous fascia, and a subcutaneous flap near the incision site was harvested (Figure 3). Newly constructed tube was covered with this fascia, and fixed from at least 4 points with absorbable sutures. Glandular flaps were elevated to complete rotation. Skin flaps were sutured to



**Figure 1.** Preputium. Usually foreskin is not adequate for hypospadias repair in these patients.



**Figure 2.** Elevation of triangular flap for preventing meatal stenosis.



**Figure 3.** Closure of skin flaps.

each other so as to cover the exposed fascia flap. Tourniquet was opened, and for nearly 5 minutes hemostatic control was achieved by manual compression. Urethral catheters were kept *in situ* for nearly 7 days. Following removal of urethral catheters, stents were prepared from feeding tubes, and their use especially before urination was encouraged. Urethral catheters were left *in situ* for 10–14 days, and use of stents after removal of the urethral catheter was encouraged.

## RESULTS

Nine patients with a mean age of  $6.4 \pm 1.8$  (range, 4–8) years were followed up for an average period of 17.5 (12–24) months. Problematic healing of skin flaps were observed in 3 (27%) patients during early postoperative period. Fistulas were formed in 2 (18%) patients. Other patients recovered without any complication (Figure 2). Within the first postoperative year in 5 of 9 patients, meatal stenosis was detected. However within the second postoperative year clinically symptomatic meatal stenosis was not observed.

## DISCUSSION

Hypospadias is a congenital malformation which causes functional, and cosmetic deformities with an incidence of 3.2 per 1000 live male births. Deformity is localized on the ventral aspect of the penis, and urethral meatus opens more proximal to its normal position on glanular penis, namely it is situated at midpoint between glans and anus.<sup>[2]</sup> Nowadays alternatives of hypospadias repair include urethral advancement (Mathieu), MAGPI (Meatal Advancement and Glanuloplasty), and tubularization (Tubularized Incised Plate Urethroplasty).<sup>[1,2]</sup> The aim of all these techniques is advancement of urethra up to the tip of the glans, achievement of straight penile erection without curvature, cosmetically acceptable appearance and decreased complication rates. Among these techniques, tubularized incised plate urethroplasty described by Snodgrass is being widely used.<sup>[3–5]</sup>

In hypospadias surgery which requires meticulous dissection, and suture techniques within a narrow surgical field, fistulas which are seen during early postoperative period may generally due to technical errors, and suture materials. The most important early postoperative complication is partial or total necrosis of the skin covering the defect on the ventral aspect of the penis because of development of hematoma or infection.<sup>[1,6]</sup>

Superposition of neourethra, and skin suture lines, necrotic flap contours, infections developing on suture lines, and strained skin lines have been held responsible for most frequently encountered complication of fistula formation.

Meticulous surgical technique has been recommended to prevent formation of hematoma, and urinary diversion, prolonged urethral catheterization, and attentive perineal hygiene are advised to avoid development of infection.<sup>[7]</sup>

Prevention of superposition of suture lines, and interposition of a vascularized tissue between neourethra, and skin flaps to prevent this complication have been underlined by many authors. To this end, most frequently dartos fascia with its dorsal extension from foreskin is used. In addition, flaps prepared from tunica vaginalis, and deepithelized skin flaps can be used. Besides use of preputial skin provides smoother, and relaxed cutaneous structure.<sup>[7-13]</sup>

The inner part of the foreskin which covers the glans, and contains vascularized fascial layers within is an extremely specialized tissue for penile surgery.<sup>[13]</sup> Using these preputial tissues, vascularized island skin flaps, and vascularized fascial flaps can be prepared, and these flaps may be used for various purposes. Circumcision procedure poses additional difficulties for hypospadias surgery, and increases complication rates because of excision of the foreskin during circumcision.<sup>[13-15]</sup> Besides, in circumcised patients flaps to be used for hypospadias surgery are elevated from previously processed scarred areas which constitutes a risk for the blood perfusion of the flap. Because of all these factors circumcised cases with hypospadias carry risk especially for fistulous complications. Therefore multilayered closure is especially important in these cases.<sup>[16,17]</sup> Vascularized tissue was interposed between Dartos fascia flap elevated from lateral to the skin flap, and suture lines in order to decrease rates of fistula formation.

In patients with insufficient foreskin most frequently encountered problems include inadequate size of Dartos fascia, and circulatory impairment in skin flaps elevated from scarred area. As a result of all these factors, problematic healing frequently results in fistula formation.<sup>[18]</sup> These issues should be told to the family, and the family should be prepared for reoperations. Many methods are available for cases with hypospadias, and a single method which can be applied for all cases can not be suggested.<sup>[1,2]</sup> TIPU technique can be safely applied in these patients. When hypospadias surgery is performed in circumcised children a few issues should be attentively considered: newly constructed urethra should be covered with surrounding penile fascia, prompt excision of ecchymotic area noticed during operation taking care not to impair the blood circulation of the flap, and then suturation should be performed. Besides full-thickness, and long urethral skin flaps should be elevated, urethral catheter should be held *in situ* for a long time, following removal of the catheter to minimize fistula formation.

#### Authorship contributions

Concept: G.T., G.T.F., E.G.; Design: G.T., G.T.F., E.G.; Data collection &/or processing: G.T., G.T.F., E.G.; Analysis and/

or interpretation: G.T., G.T.F., K.G., M.S., M.A.; Literature search: G.T. Writing: G.T., G.T.F., E.G., K.G.; Critical review: G.T., G.T.F., K.G., M.S., M.A.

#### Conflict of interest

None declared.

## REFERENCES

1. Baran CN, Tiftikcioglu YO, Ozdemir R, Baran NK. What is new in the treatment of hypospadias? *Plast Reconstr Surg* 2004;114:743-2.
2. Filinte GT, Akan M, Temiz G, Aycicek Cardak GN, Gonullu E. Applications of triangular glanular flap in hypospadias repairs for different purposes. *J Plast Surg Hand Surg* 2014;48:34-7. [\[CrossRef\]](#)
3. Başat SO, Özkaya Ö, Filinte G, Akan M, Üşçetin İ. Medial based distal triangular glanular flap: an alternative procedure to prevent the meatal stenosis in hypospadias repairs. *Türk Plastik, Rekonstrüktif ve Estetik Cerrahi Dergisi* 2013;21:14-9.
4. Borer JG, Bauer SB, Peters CA, Diamond DA, Atala A, Cilento BG, et al. Tubularized incised plate urethroplasty: expanded use in primary and repeat surgery for hypospadias. *J Urol* 2001;165:581-5.
5. Oswald J, Körner I, Riccabona M. Comparison of the perimeatal-based flap (Mathieu) and the tubularized incised-plate urethroplasty (Snodgrass) in primary distal hypospadias. *BJU Int* 2000;85:725-7.
6. Retik AB, Borer JG. Primary and reoperative hypospadias repair with the Snodgrass technique. *World J Urol* 1998;16:186-91. [\[CrossRef\]](#)
7. Gürdal M, Karaman M, Kanberoglu H, Kireççi S. Tunica vaginalis reinforcement flap in reoperative Snodgrass procedure. *Pediatr Surg Int* 2003;19:649-51. [\[CrossRef\]](#)
8. Belman AB. De-epithelialized skin flap coverage in hypospadias repair. *J Urol* 1988;140(5 Pt 2):1273-6.
9. Retik AB, Mandell J, Bauer SB, Atala A. Meatal based hypospadias repair with the use of a dorsal subcutaneous flap to prevent urethrocutaneous fistula. *J Urol* 1994;152:1229-31.
10. Smith D. A de-epithelialized overlap, flap technique in the repair of hypospadias. *Br J Plast Surg* 1973;26:106-8. [\[CrossRef\]](#)
11. Snow BW. Use of tunica vaginalis to prevent fistulas in hypospadias surgery. *J Urol* 1986;136:861-3.
12. Snow BW, Cartwright PC, Unger K. Tunica vaginalis blanket wrap to prevent urethrocutaneous fistula: an 8-year experience. *J Urol* 1995;153:472-3. [\[CrossRef\]](#)
13. Liang W, Ji C, Chen Y, Zhang G, Zhang J, Yao Y, et al. Surgical Repair of Mid-shaft Hypospadias Using a Transverse Preputial Island Flap and Pedicled Dartos Flap Around Urethral Orifice. *Aesthetic Plast Surg* 2016;40:535-9. [\[CrossRef\]](#)
14. Chen C, Yang TQ, Chen JB, Sun N, Zhang WP. The Effect of Staged Transverse Preputial Island Flap Urethroplasty for Proximal Hypospadias with Severe Chordee. *J Urol* 2016;196:1536-40. [\[CrossRef\]](#)
15. Chen Y, Zhang J, Ji C, Liang W, Pan S, Wu B. Modification of the Koyanagi Technique for the Single-Stage Repair of Proximal Hypospadias. *Ann Plast Surg* 2016;76:693-6. [\[CrossRef\]](#)
16. Hardwicke JT, Bechar JA, Hodson J, Osmani O, Park AJ. Fistula after single-stage primary hypospadias repair - A systematic review of the literature. *J Plast Reconstr Aesthet Surg* 2015;68:1647-55. [\[CrossRef\]](#)
17. Retik AB, Keating M, Mandell J. Complications of hypospadias repair. *Urol Clin North Am* 1988;15:223-36.

18. Güvercin E, Temiz G, Çakmakoglu Ç, Yeşiloğlu N, Faydacı G, Filinte GT, et al. Detection of Meatal Stenosis with Uroflowmetry in Cases of Distal Hypospadias that are Operated with the TIPU Technique. *Türk J Plast Surg* 2016;24:67–9. [CrossRef]

### Sünnet Olmuş Çocuklarda Hipospadias Ameliyatları Yapılabilir Mi?

**Amaç:** Son yıllarda sünnet uygulamalarının sıklıkla hastane ortamında ve cerrahlar tarafından yapılması yaygınlaşmıştır. Bununla birlikte özellikle ehil olmayan kişilerce uygulanan sünnetlerde hipospadias tanısı atlanabilmektedir. Çalışmamızda bu hastalarda hipospadias cerrahisinin güvenilirliğinin belirlenmesi ve klinik sonuçları araştırıldı.

**Gereç ve Yöntem:** Daha önce sünnet uygulanmış kordisiz distal hipospadiaslı dokuz hasta çalışmaya dahil edildi. Tüm hastalarda geçirilmiş sünnete bağlı yeterli miktarda prepisyum olmadığı görüldü. Tüm olgularda TIPU yöntemi ile hipospadias onarımı uygulandı. Tübularize edilen üretranın çevresi distal penis cildinden kaldırılan dartos fasyası ile kapatıldı. Tüm olgularda 10–14 gün arasında sonda uygulandı.

**Bulgular:** Ortalama yaşları  $6.4 \pm 1.8$  (4–8) olan dokuz hasta ortalama 17.5 (12–24) ay takip edildi. Dokuz hastanın üçünde (%33) erken ameliyat sonrası dönemde cilt fleplerinde iyileşme problemi gözlemlendi. Bu hastaların ikisinde (%22) fistül oluşumu tespit edildi. Diğer hastalar sorunsuz iyileşti. Takipte meatal stenoz ilk bir yılda dokuz hastanın beşinde saptanırken bir yıl sonraki takiplerde klinik bulgu veren meatal stenoz gözlenmedi.

**Sonuç:** Sünnet derisi yetersiz olan hastalarda karşılaşılan en sık sorun yetersiz dartos fasyası ve skarlı alanda kaldırılan cilt fleplerinde dolaşım bozukluğu görülmesidir, bu problemler sıklıkla fistül ile sonuçlanır. Sünnet geçirmiş çocuklarda hipospadias operasyonu yapılırken dikkat edilmesi gereken iki nokta vardır; neoüretranın çevre penil fasya flebi ile kapatılması, penil cilt fleplerinin dolaşımının bozulmayacak şekilde kaldırılması ve sütürasyonun bundan sonra yapılmasıdır.

**Anahtar Sözcükler:** Fistül gelişimi; hipospadias; sünnet.