

Outcome of Graft Urethroplasty for Mid and Posterior Hypospadias

ATEF M. ABDEL-LATIF, M.D.*; YOUSSEF SALEH, M.D.** and ALAA ELMOGAZY, M.D.***

The Departments of Urology, Plastic & Reconstructive Surgery**, Assiut University and Plastic & Reconstructive Surgery***, Elmania University.*

ABSTRACT

Purpose: The aim of this study is to evaluate the outcome of onlay preputial graft in mid and posterior hypospadias.

Methods: This prospective study was conducted on 22 patients with proximal hypospadias. The study was carried out in urology and plastic surgery department in Assiut University Hospital in a period from January 2005 to March 2007. All patients were managed with onlay preputial graft urethroplasty. Follow-up period ranged from 12-18 months.

Results: Age ranged from 6 to 84 months (mean 21.7 months). Penile degloving was sufficient to correct the penile curvature in 7 cases, however dorsal plication was needed in the remaining 15 cases. All patients were managed with preputial graft urethroplasty in an onlay fashion. Graft length ranged from 19mm to 40mm (mean 21.9mm). Operative time was 123 to 182 minutes (mean 131 minutes). Urethral catheter was left indwelling for 7 days. Urethrocutaneous fistula developed in 7/22 (31.8%) patients that required simple repair after 6 months.

Conclusions: Graft urethroplasty is a good choice for repair of mid and posterior 1 hypospadias.

INTRODUCTION

Hypospadias is a congenital anomaly in which the urethral meatus opens ventrally proximal to the tip of the glans penis [1]. Most estimates of prevalence of hypospadias range up to a maximum of 3 per 1,000 births [2]. The challenges of hypospadias surgery have promoted the development of various surgical procedures. Many attempts have been made to identify tissues that may serve as adequate urethral substitutes like grafts or flaps [3].

The aim of this study is to evaluate the outcome of onlay preputial graft in mid and posterior hypospadias.

PATIENTS AND METHODS

This prospective study was conducted upon 22 patients with mid and posterior 1 hypospadias whose were admitted in both Urology and Plastic

Surgery Departments, in Assiut University Hospital in the period from January 2005 to March 2007. The procedure was performed under general anesthesia with caudal analgesia. Age ranged from 6 to 84 months (mean 21.7 months). Of the 22 patients, 10 had mid-penile meatus, 8 had proximal penile and 4 with penoscrotal meatus. All patients were uncircumcised. Penile degloving was sufficient to correct the penile curvature in 7 cases, however dorsal plication was needed in the remaining 15 cases. All patients were managed with preputial graft urethroplasty in an onlay fashion.

Surgical techniques:

A 5-0 vicryl traction suture was placed into the tip of the glans penis (Fig. 1). A circumferential incision was made in the inner leaf of prepuce 1.5cm proximal to the corona and carried on the ventrum of the penis on either side of the urethral plate and then proximal to the urethral meatus. Penile degloving was sufficient to correct the penile curvature in 7 cases, however dorsal plication (as described by Baskin et al.) [4] was needed in the remaining 15 cases an onlay graft from the inner leaf of the prepuce was harvested (Fig. 1). It was tailored and defatted without meshing (Fig. 2). The graft was sutured to the dorsal urethral plate over a silicone catheter using running 7-0 Vicryl suture material (Fig. 3). The glans wings were closed with interrupted horizontal mattress sutures of 6-0 Vicryl. The divergent corpus spongiosum is closed over the neourethra with running 6-0 Vicryl suture material (Y to I wrap). The glanular epithelium and the inner leaf of the prepuce were reapproximated with interrupted 7-0 Vicryl suture material. Lastly the hooded prepuce was resected and skin closure was accomplished with interrupted 5-0 chromic catgut the urinary silicone catheter was left from 7 days. A light compressing dressing was applied. First generation cephalosporins were continued postoperatively till catheter removal. All our cases were photographed in the operating

room (after induction of anesthesia and just before surgery) and at 6 weeks during postoperative follow-up. Follow-up period ranged from 12-18 months. Follow-up included clinical evaluation to assess presence of urethrocuteaneous fistula, disruption of repair, shape of meatus, residual curvature; functional evaluation in form of abnormal urinary stream.

RESULTS

Graft length ranged from 1.9 to 40mm (mean 21.9mm). Operative time was 123 to 182 minutes (mean 131 minutes). No intra-operative complica-

tions were encountered. No recorded cases of repair disruption in our series. Urethrocuteaneous fistula developed in 7 patients (31.8%) 3 patients with penoscrotal hypospadias, 2 with mid-penile hypospadias and 2 proximal penile cases. The urethrocuteaneous fistulae were located at penoscrotal junction in 2, mid-penile in 2 and coronal in 3. All required simple repair after 6 months. Urethral stricture or diverticulum formation was not encountered in any of our patients. Orthoplasty with orthotopic urethral meatus was achieved in all the cases. Satisfactory urinary stream was recorded in all cases.

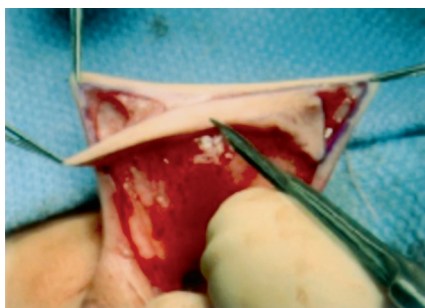


Fig. (1): Preputial graft harvest.



Fig. (2): Graft defatting and tailoring.

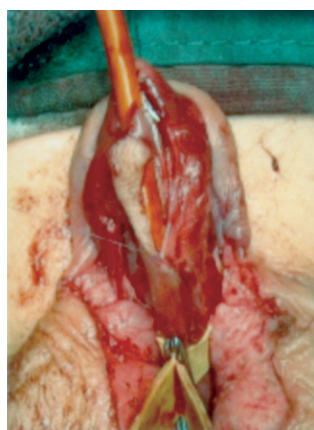


Fig. (3): Preputial graft suturing in an onlay fashion.



Picture (1): Preoperative penoscrotal hypospadias with severe curvature.



Picture (2): Post operative after repair by onlay preputial graft urethroplasty.

DISCUSSION

Hypospadias which affects 1 in 300 live births requires surgical intervention to be corrected [5]. This correction entails a wide variety of techniques, maneuvers and skills.

None of such procedures is suitable in every situation. Application of flap for repair may be affected by the paucity of local tissues and dissection that should maintain the blood supply [3]. On

the other hand, grafts are not affected by the previously mentioned situations that restrict the use of flaps. Grafts can be harvested from local genital tissues (preputial or penile skin) as well as distant extra-genital areas (post auricular skin or buccal mucosa). However, extra-genital grafts are essentially applied in a staged manner and are associated with donor site morbidities [6].

Duckett believed that flap repair has an advantage over grafts since the normal blood supply to

the tissue is thought to be intact. Meanwhile, some authors did not confirm these advantage and reported results with grafts comparable to those with flap repair [7,8]. Placing a thin graft on the urethra produces less tissue bulk than a flap and there is no torsion of the repair [9]. This is matched with our results in the present study.

In our 22 hypospadias repairs, all cases were managed in a single stage with onlay preputial graft with its paramedian suture lines. This avoids the midline ventral suturing that can come in apposition with the midline glanular suturing to reduce the incidence of urethrocutaneous fistula. Urethrocutaneous fistula occurred in 7 (31.8%) patients. These results are comparable with other studies of preputial onlay graft hypospadias repair [8,9,10].

Conclusions:

The repair of hypospadias is associated with significant complication rate. Most complications are minor and easily repaired. Graft urethroplasty is a good choice for repair of mid and posterior hypospadias.

REFERENCES

- 1- McAninch J.W.: Disorders of the penis and male urethra, Smith's general urology (15th ed.), Tanagho E.A. and McAninch J.W. (eds.), New York: Lange Medical Books/McGraw-Hill, Ch. 40, p 612-18, 2004.
- 2- Dolk H.: Eurocat: 25 years of European surveillance of congenital anomalies. Arch. Dis. Child Fetal Neonatal Ed., 90 (5): F355-8, 2005.
- 3- Gordan J.H.: Principles of tissue transfer techniques in urethral reconstruction. Urol. Clin. N. Am., 29: 267-75, 2002.
- 4- Baskin L.S. and Duckett J.W.: Dorsal tunica albuginea plication for hypospadias curvature. J. Urol., 151: 1668, 1994.
- 5- Choi J., Cooper K.L., Hensle T.W., et al.: Incidence and surgical repair rates of hypospadias in New York state. Urology, 57 (1): 151-3, 2001.
- 6- Weinberg G., Williot P.E. and Leonard M.P.: The utility of buccal mucosa graft in salvage urethroplasty. Can J. Urol., 9 (5): 1641-5, 2002.
- 7- Kaplan G.W.: Repair of proximal hypospadias using a preputial free graft for neourethral construction and a preputial pedicle flap for ventral skin coverage. J. Urol., 140: 1270, 1988.
- 8- Rober P.E., Perlmutter A.D. and Reitelman C.: Experience with 81, 1-stage hypospadias/chordee repairs with free graft urethroplasties. J. Urol., 144: 526, 1990.
- 9- Powell C.R., Mcaleer I., Alagiri M. and Kaplan G.W.: Comparison of flaps versus grafts in proximal hypospadias surgery. J. Urol., 163: 1286, 2000.
- 10- Vyas P.R., Roth D.R. and Perlmutter A.D.: Experience with free grafts in urethral reconstruction. J. Urol., 137: 471, 1987.