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A Case of Idiopathic Pediatric Urethral Stricture Managed with Modified Buccal Mucosa Graft Urethroplasty: A Case Report

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ABSTRACT

Pediatric urethral narrowing or idiopathic etiology of a stricture is difficult to suspect in the absence of classic obstructive lower urinary tract symptoms. It is still unclear whether it should be defined as congenital stricture because of an absence of a clear-cut traumatic history; one cannot rule out unnoticed trauma in walking kids. We present a similar case in a child, managed with a modified conventional graft urethroplasty technique.

INTRODUCTION

Pediatric urethral narrowing or idiopathic stricture etiology is difficult to suspect in the absence of classic obstructive lower urinary tract symptoms. It is still unclear whether it should be defined as congenital stricture, which is defined as a short-length stricture without inflammatory or traumatic etiology [1]. We present a similar case in a child and its subsequent management.

CASE REPORT

A 10-year-old boy presented to our tertiary care center with a history of recurrent urinary tract infection since birth. There were multiple febrile episodes with repeated episodes of acute pyelonephritis. Ultrasonography revealed a thickened bladder with normal capacity and significant post-void residue. Uroflowmetry was low (Qmax: 7.5 mL/sec), and the urethra only allowed a 5 Fr catheter; therefore, for better drainage, a suprapubic cystostomy (SPC) was performed. The examination revealed a normal meatus and a supple urethra. There was no abnormality present upon neurological examination. A retrograde urethrogram showed a 3 cm long stricture in the distal pendulous urethra (Figure 1).

Operative Procedure

Upon surgical exploration, the plate of the urethra was very narrow (3 mm wide) with thinned spongiosa without any evidence of fibrosis, as seen in classic strictures. We performed dorsal and lateral operations of the sagittal onlay buccal mucosa graft (BMG). After penile degloving, the urethra was lifted dorsally (Figure 2a); the spongiosal tissue was extremely thin and underdeveloped in the narrow segment. An incision opened the meatus, displaying the submeatal area (Figure 2b). Since the plate and urethra were both narrow, BMG was performed dorsally over the corporal body and laterally over the sagittal plane (Figure 2c). The urethra was covered with a layer of dartos fascia (Figure 2d). The meatus was refashioned (Figure 2e), with ventral closure of the glans wings. A 14 Fr silicone catheter was left in situ.

One strip of buccal graft was used to augment the urethral plate and another buccal graft was used to complete the urethral circumference with the native urethra. As a result, final lumen was formed by BMG on the dorsal side and laterally with the native plate and urethra, which formed the rest of circumference (Figure 2f). The urethra was covered with a second layer of dartos fascia and a third layer of skin.

A periurethral catheter was removed after 3 weeks and SPC was removed another week later. The patient responded successfully to the reconstructive urethroplasty procedure. With

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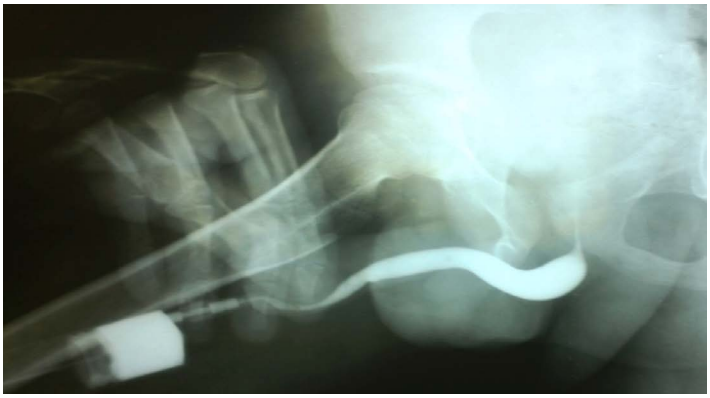
Figure 1. A retrograde urethrogram.



13 months of follow-up, the patient is voiding well with peak flow at 26 mL/sec without residue, and a urethroscopy showed a wide urethral lumen. (Figure 3).

DISCUSSION

Although most urethral strictures in males are posttraumatic, there are rare reports of congenital urethral strictures of the bulbous urethra in neonates and older children [2]. These might be secondary to canalization failure of the cloacal membrane during fetal development or due to poor corpora spongiosa development [2,3]. Patients usually present with urinary tract infections. Older children might have diurnal enuresis. Vesicoureteral reflux can be seen in up to 53% of patients [3]. This could be the reason for upper tract symptoms. Generally, clinical evidence of traumatic and inflamed strictures with spongiofibrosis show upon urethral exploration, an absence of which may indicate congenital etiology along with poorly developed spongiosal tissue.

If detected late, congenital stricture can lead to serious irreversible renal function due to vesicoureteral reflux, and, in the case of decompensation of the detrusor, lower urinary tract dysfunction. A urodynamic study would have completed the evaluation of lower urinary tract dysfunction. However, urodynamic study was not performed in this case as stricture was obvious on the retrograde urethrogram and we did not suspect any dysfunction. We believe that on the urodynamic evaluation any dysfunction in the presence of mechanical obstruction (like a stricture) will be masked and can be revealed only after treating any mechanical obstruction. Luckily, in this case, a postoperative evaluation revealed good flow and complete bladder emptying.

In our case, a thin urethral plate ruled out tubularized incised plate urethroplasty [4]. Other options could have included

Figure 2. Multiple operative steps.

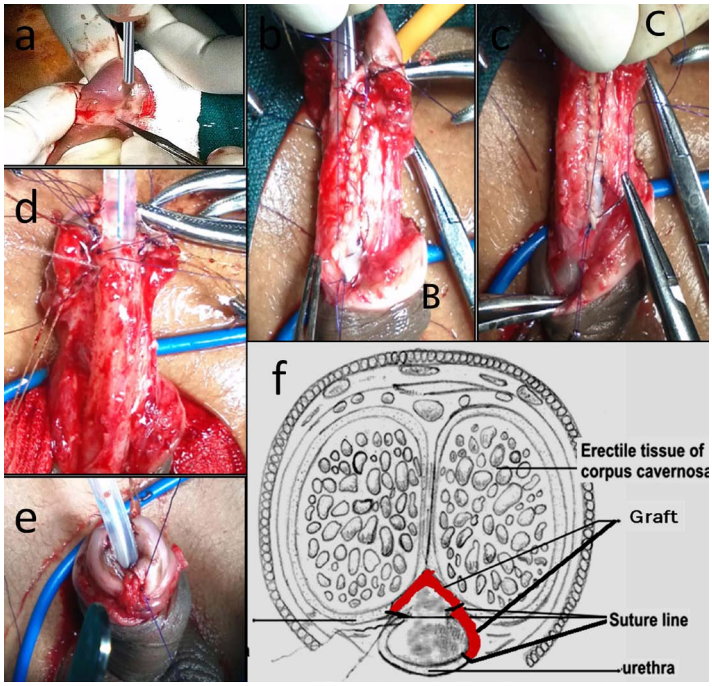
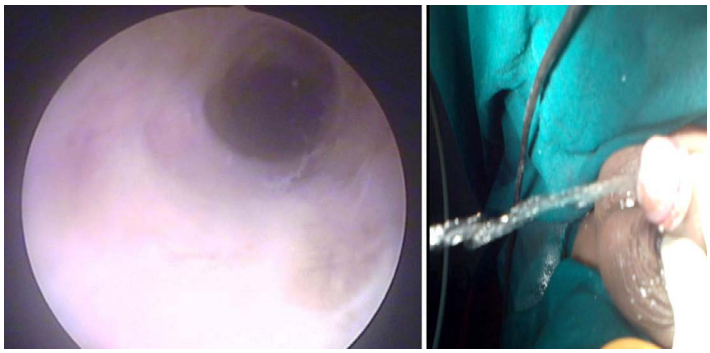


Figure 3. Postoperative urethroscopy and good stream.



onlay flap techniques used for hypospadias cases. Our previous experience with flap procedures has not been very good as it is not performed very often, hence we chose to modify conventional dorsal onlay BMG urethroplasty. The efficacy of ventral graft urethroplasty has been shown to be equivalent to dorsal grafts [5]; therefore, in our technique, we combined dorsal and ventral graft urethroplasty, as this patient had a narrow urethra, which made ventral forming of a complete lumen a challenge.

In earlier reports [6-8], ventral onlay was thought to be inferior to dorsal onlay because a lack of supporting tissue would lead to poor graft uptake and an increased chance of sacculation and diverticulae formation. Later reviews [9,10] have shown equivalent results with dorsal and ventral onlay grafts. We combined the principle of dorsal and lateral BMG urethroplasty in our case, showing encouraging results.

CONCLUSION

Pediatric anterior urethral stricture without any predisposing factor is relatively uncommon. Timely recognition and correction is required to prevent long-term sequelae. Our case responded well to modified buccal graft urethroplasty, and we eagerly await the long-term results.

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