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Case Report

Female Urethral Stricture Diseases: Labial Flap Urethroplasty

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Introduction

Female Urethral Stricture (FUS) disease is a rare and challenging disease in the diagnosis and treatment; it has been reported between 1-4.9% [1]. The presentation varies including obstructive urinary symptoms; with weak flow, straining, and feeling of incomplete void as well as increased urinary frequency and dysuria that might leads to recurrent urinary tract infection [2]. Proper history, physical examination, with functional and anatomical studies is important in assessing females with lower urinary tract symptoms, and voiding dysfunction to minimize the potential for misdiagnosis.

The most common etiologies are traumatic injury, iatrogenic injury, infection, and malignancy and radiation resulting in periurethral fibrosis. Different treatment options are available including, but not limited to observation, urethral dilation, Direct Vision Internal Urethotomy (DIVU), and urethroplasty. Although there is sparse long-term data on repeated urethral dilation and DVIU they can be of limited use in true female urethral stricture possible like in male urethral stricture disease. This treatment especially if repeated can lead to subsequent fibrosis due to bleeding and extravasation [3]. The surgical option is the best available treatment in the form of meatoplasty / meatoplasty for distal urethral stricture or meatal stenosis and flap or graft for mid and proximal urethral stricture. Meatotomy is discouraged in females as it leads to urinary stream spraying. Several reconstructive techniques for the management of more extensive FUS have been described to date in literatures as various small case series. Here we present this case where we used labial flap urethroplasty as the primary method to treat a dense mid urethral stricture due to a complicated normal vaginal delivery.

Case Presentation

History and physical examination

Patient is a 33 female who presented to the clinic for evaluation of obstructive urinary symptoms since 2008, following a complicated normal vaginal delivery. Patient is gravida 3 para 3, with a history of obstructed labor complication and vacuum assisted delivery.

She had a history of recurrent episodes of urinary retention, weak stream, and recurrent UTIs, 7-8 per year. The patient reported almost always having, weak stream, difficulty emptying, needing to strain to void, and an incomplete sense of emptying. The patient also reported difficulty with insertion of catheter. The patient has been treated at another facility prior, since 2009, by frequent urethral dilations and cystoscopies every 3-6 months. The patient stated that her urination improved after each dilation, but her symptoms would recur after 2-4 months. She denied any neurological diseases, no gross abnormalities noted, and has normal bowel movements

The patient had tried tamsulosin, pelvic floor muscle therapy and Botulinum Toxin (BTX) injections into the pelvic floor muscles, with minimal to no improvement.

The vital signs are within normal limits upon the physical examination; the patient weighed 52 kg and has a body mass index of 22. The physical exam, including the bimanual examination was normal, no pelvic organ prolapse or urinary incontinence. There was normal and adequate labial tissue, and normal vaginal epithelium. Stress cough test was negative.

The flexible cystoscopy (16 Fr) showed normal distal urethra (was able to advance it only 2 cm), there was narrowing that could not pass the flexible cystoscopy into the bladder.

Fluorurodynamic Study (FUDS) showed normal compliance bladder with cystometric capacity of 400 mL, and no Detrusor Overactivity (DO). It showed an obstructive voiding pattern, where patient voided with a detrusor pressure greater than 70 cm of H2O and a maximum flow rate less than 12 mL/s. The Bladder Outlet Obstruction Index was (BOOI) greater than 45. The Voiding Cystourethrogram (VCUG) demonstrated a mid-urethral stricture with clear narrowing (Figure 1).

The patient opted for definitive repair surgery in the form of urethroplasty.

Surgical procedure

Under general anesthesia, the patient was placed in the dorsal lithotomy position. Standard cleaning and draping of the surgical field were done first with strict aseptic measures. The anus was isolated and covered with antiseptic dressing from the surgical field. A

Figure 1: Foururodynamic; showing obstructing pattern (A), VCUG, demonstrated mid-urethral stricture (B).

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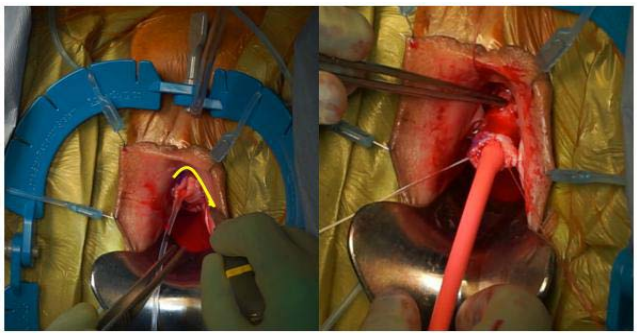

Figure 2: A: Supra -meatal incision. B: Mobilization of the urethra.

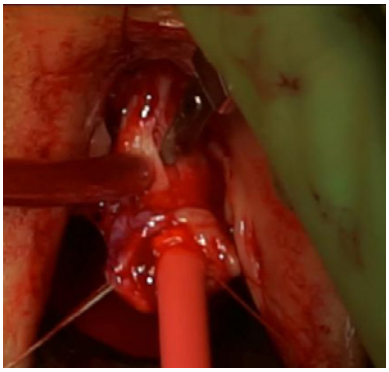

Figure 3: Full-thickness urethrotomy.

weighed speculum was placed in the posterior vagina, and a Lone Star retractor was placed and the vaginal epithelium was retracted. An 8fr feeding tube was introduced to the bladder to drain; the tube was met with resistance at mid urethra. An inverted U-shaped suprameatal incision (Figure 2A) was made after infiltration with local anesthetic. Dissection was carried out dorsally and laterally. Special attention was paid to stay away from the clitorial corporal bodies. Partial dissection of the pubourethral ligaments was performed to achieve urethral mobility (Figure 2B). A full-thickness urethrotomy is then made over the stricture dorsally at 12' 0 clock position with a surgical blade and then extended with scissors up to proximal and distal healthy area which extend up to urethral meatus for a total of 3 cm (Figure 3). An 18 Fr Foley's catheter is inserted into the urethral meatus. Urethral calibration revealed no proximal urethral stricture.

Local anesthesia was injected in submucosal plane in left labia minora and lateral vaginal wall and full-thickness rotational labial-vaginal flap (3 × 1 cm) is harvested (Figure 4). The 18 Fr silastic catheter is placed into the urethra over which the rotational flap sutured to edges of the incision.

3-0 Vicryl sutures were used to approximate the flap to the urethral urothelium proximally and along the left of the flap, overlying the pedicile. Interrupted 5-0 PDS were used to attach the remainder of the flap radially, along the circumference of the flap. The vaginal epithelium was closed in an interrupted fashion with 3-0 Vicryl sutures. Metronidazole creamed and vaginal packing was placed.

The patient tolerated all aspects of the procedure without complications. Postoperatively, the patient stayed 2 nights and

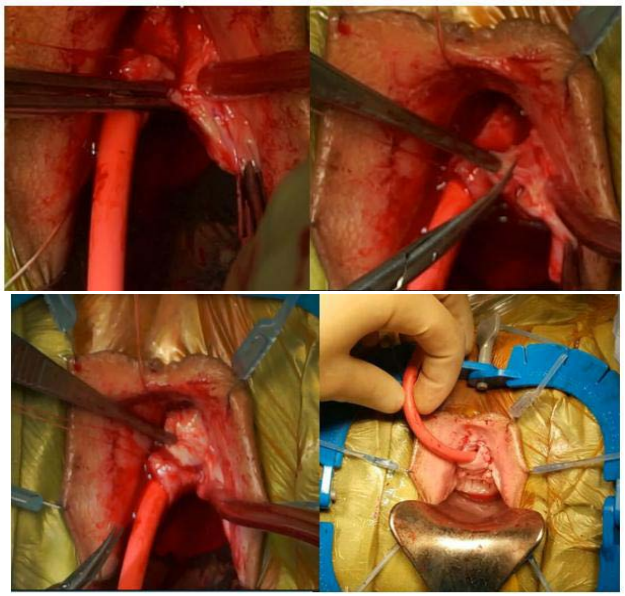

Figure 4: Labia minora and lateral vaginal wall and full-thickness rotational labial-vaginal flap (3 × 1 cm).

the catheter was taken out in 2 weeks. Normal micturition was obtained, and cystourethrography after 4 weeks showed a good urethral outline, without any significant residual urine. Our standard follow-up includes 3 months and 6 months assessment of urinary symptoms using validated storage and obstructive urinary symptoms questionnaires like American Urological Association; AUA-7 symptoms score, uroflowmetry, bladder scan and once weekly self-calibration for 3 months post-operatively. Currently the patient is followed-up for minimum of 2 years. She had one episodes of urinary tract infection. The patient also had transient urgency and urgency urinary incontinence in the first 3 months after surgery that had well controlled with low dose anticholinergic medications. She continues to do well with good stream and no urethral dilatations.

Discussion

Labial flap urethroplasty is a one of surgical procedure used for the treatment of female urethral stricture disease. Labial flap can be used depend on the local tissue availability.

Tanello et al. reported the use of a pedicle flap from the labia minora for the repair of female urethral strictures in two patients [4]. And Falandry el al [5]. Such flaps can be used for complete urethral reconstruction, augmented patch, an inlay in urethral stricture. The success of labial flaps range from 82-100% at 24 months follow up.

The management of urethral stricture with rotational labial flap to obtain wider caliber is highly successful procedure. This case of labial flap urethroplasty showed a significant decrease in urinary symptoms and increased effectiveness of urination for the patient. Labial flap urethroplasty is feasible and good option for the management of young female with urethral stricture disease.

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