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Original article

Management of panurethral strictures



S. Kulkarni, P. Joshi*, S. Surana, A. Hamouda

Kulkarni Reconstructive Urology Center, India

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KEYWORDS

Urethra;
Pan-urethral;
Full-length;
Stricture;
One-stage;
Complex

Abstract

Introduction: Pan-urethral stricture, involving the penile and bulbar urethra, is a common urological problem on the South Asian subcontinent. It represents a particularly difficult challenge to manage and there is a relative paucity of literature on the subject. In India, Lichen Sclerosus (LS) is the most common cause of pan-urethral stricture, followed by iatrogenic causes. 2 stage surgery is not scientific in lichen sclerosus as this is a disease of genital skin. We present our experience of pan-urethral stricture repair using a single-stage, one-sided dissection, dorsal onlay repair with oral mucosa graft.

Subjects and methods: We retrospectively reviewed the records of 318 consecutive men undergoing management of pan-urethral stricture from June 1995 to December 2014. The median age was 44.6 years and the mean stricture length 14 cm. The median follow-up was 59 months. The strictures were approached through a perineal incision, limiting dissection to only one side of the urethra. The penis was invaginated to provide access to the entire length of anterior urethra in a single-stage, and two oral mucosal grafts were dorsally placed.

Results: The outcome was considered a success if the patient needed no further instrumentation, including dilation or urethrotomy. The overall success rate was 84.90%, with a success rate of 89.39% in primary urethroplasty, and 57.85% in patients who had previous failed urethroplasty. Most recurrent strictures occurred at the proximal end of the graft.

Conclusions: Repair of pan-urethral stricture in a single-stage, with one-sided dissection and dorsal onlay of oral mucosa, is a minimally invasive technique that is simple, fast, safe, effective and reproducible in the hand of any surgeon.

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Introduction

Panurethral stricture disease is a process that encompasses the full length of the urethra from meatus to the proximal bulbar urethra. The incidence of panurethral strictures continues to rise, particularly in Indian and Asian countries, where the primary etiology is lichen

* Corresponding author.

E-mail address: drpankajmjoshi@gmail.com (P. Joshi).

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sclerosis. Prevalence of iatrogenic strictures has also increased, as endoscopic instrumentation of the urethra may result in iatrogenic panurethral strictures.

Currently, there is a paucity of evidence supporting specific management options for panurethral stricture disease. Previous reports suggest the use of staged Johansson's Urethroplasty, with the use of either local flaps or buccal mucosal grafts to repair complex strictures. In this paper, we would like to present our technique of single stage buccal mucosa graft urethroplasty for the management of panurethral disease.

Subjects and methods

Institutional research ethics board approval was obtained for this study. A retrospective review was performed of 318 consecutive patients undergoing urethroplasty for panurethral stricture disease from June 1995 to December 2014. All urethroplasties were performed by one reconstructive urologist in a Specialized Urethroplasty Center.

Inclusion criteria included patients with panurethral stricture disease, who were deemed medically fit for surgery. We included patients who presented for primary consultation as well as those patients with previous failed repair. Exclusion criteria included patients with malignant urethral lesions, patients who were unwilling or unable to undergo surgery, or incomplete patient records.

Preoperative patient evaluation included: clinical history, physical examination, urine culture, uroflowmetry, residual urine measurement, retrograde and voiding urethrography and urethroscopy using a 4.5 or 6 Fr. ureteroscope (Fig. 1).

The primary outcome measure of this study was success of surgery, defined as freedom of postoperative instrumentation or dilatation.

Surgical technique

All patients were treated using the one-stage OMG urethroplasty through a perineal incision previously described by Kulkarni et al. [1–3].

The patient is first either orally or nasally intubated. The patient is placed in simple lithotomy position, with heels carefully placed in Yellofin® stirrups (Allen Medical Systems, Acton, MA; USA) with care taken to minimize pressure on the calves to avoid peroneal nerve injury. The suprapubic, scrotal and perineal skin is shaved, disinfected using chlorhexidine, and draped.

Two teams work simultaneously at the donor and recipient site, with separate sets of instruments. The oral mucosa is harvested from both cheeks as described by Barbagli et al. [4].

Preoperatively, urethroscopy is performed using a 4.5 or 6 Fr. Semi-rigid Ureteroscope. Methylene blue is injected into the urethra and a midline perineal incision is made. The bulbar urethra is dissected along the left lateral border from the corpora cavernosa to the bulb. The bulbospongiosus muscle and central tendon of the perineum are left intact ventrally. The bulbospongiosus muscle has 2 distinct parts. The lower two-thirds of the muscle wraps around the urethra and is necessary for effective ejaculation and expression of urine. The

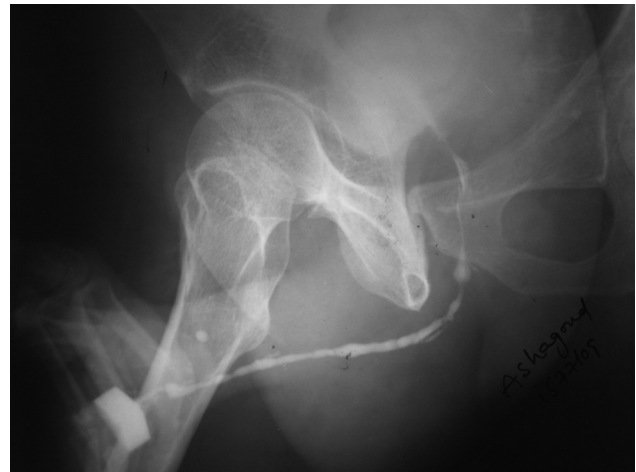


Figure 1 Urethrogram in a patient with pan-urethral stricture.

upper 1/3 of the bulbospongiosus muscle is invested more laterally and wraps around the corpora, where it becomes the bulbocavernosus muscle. Incising this aponeurosis laterally provides adequate visualization and access to the dorsal urethra without necessitating a midline incision (Fig. 2a).

The urethra is then mobilized across the midline to the contralateral attachment to the corpora cavernosa, which is left in tact. This helps to preserve the neurovascular supply to the urethra.

The penis is then invaginated into the perineum (Fig. 2b). This can be accomplished by applying steady pressure on the penis from above while sharply incising the thin fascia over the urethra. This should be continued to the glans to allow full mobilization of the urethra.

Mobilization of the urethra off the corpora cavernosa is continued from proximal to distal, ending at the coronal sulcus (Fig. 3). Once mobilization is complete, the dorsal aspect of the urethra is exposed and opened longitudinally (Fig. 4). An additional wide dorsal meatotomy may be performed externally (Fig. 5).

The OMG are then passed into the field. The first is sutured to the dorsal apex of the meatus (Fig. 6), and then passed through to the penile urethra fixed to the corpora cavernosa over the midline. The second graft is applied to the corpora cavernosa opposing the bulbar urethra. The grafts are 1.5 cm in width, and are spread and fixed to the corpora with quilting sutures (Fig. 7).

Continuous upward traction is applied to the inverted penis to mimic stretched penile length. Grafts are placed dorsally while the penis is on stretch. This ensures adequate length of graft to prevent chordee during erection.

Once quilting of the graft is completed, the OMG margin is sutured to the urethral plate. A 14 Fr silicone urethral catheter is inserted. The urethra is rotated back to its original position and a continuous 4–0 polyglactin suture is used to approximate the urethral margin to the OMG and the corpora cavernosa on the left (Fig. 8). The separated ends of the bulbocavernosus muscle are reapproximated. At the end of the procedure, the graft is completely covered by the urethra and bulbospongiosus muscle. A 3-layer closure of perineal fat, Colles' fascia, and skin is completed in a running fashion.

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