Acquired Male Urethral Diverticula: Presentation, Diagnosis and Management

Nadya M. Cinman, Jack W. McAninch,* Allison S. Glass, Uwais B. Zaid and Benjamin N. Breyer

From the Department of Urology, University of California-San Francisco, San Francisco, California

Abbreviations and Acronyms

CIC = clean intermittent catheterization

UD = urethral diverticulum

UTI = urinary tract infection

VCUG = voiding cystourethrography

Submitted for publication March 2, 2012.

Study received university review board approval.

* Correspondence: Department of Urology, University of California-San Francisco, San Francisco General Hospital, 1001 Potrero Ave., Suite 3A20, San Francisco, California 94117 (telephone: 415-206-8805; FAX: 415-206-5153; e-mail: jmcaninch@urology.ucsf.edu).

Purpose: We describe the etiology, presentation, treatment and outcomes of men diagnosed with an acquired urethral diverticulum.

Materials and Methods: We retrospectively analyzed the records of men with an acquired urethral diverticulum in an 11-year period (2000 to 2011) at a tertiary care reconstructive practice. Patient demographics, history, presentation, anatomical details such as diverticulum size and location, management and outcomes were recorded. Technical success was defined as unobstructed urination without urinary tract infection.

Results: A total of 22 men with an acquired urethral diverticulum were included in analysis. Median age at presentation was 48.5 years (range 18 to 86). Most commonly, patients presented with recurrent urinary tract infection, urinary dribbling, incontinence or a weak urinary stream. Of the 22 men 12 (54.5%) underwent urethral diverticulectomy and urethroplasty, 3 (13.5%) underwent ileal conduit urinary diversion and 7 (32%) were treated nonoperatively. Select cases were managed conservatively when the urethral diverticulum was confirmed in a nonobstructed urethra, it was small or asymptomatic and it could be manually emptied after voiding. At a mean followup of 2.3 years there was a 91% urethral diverticulum recurrence-free rate.

Conclusions: Acquired male urethral diverticula are rare but should be considered when there is recurrent urinary tract infection, obstructive voiding symptoms, a history of hypospadias, urethral stricture or trauma, or prolonged urethral catheterization. Treatment options may include surgical excision of the urethral diverticulum or urinary diversion. Some patients may be adequately treated nonoperatively with post-void manual decompression.

Key Words: urethra, diverticulum, etiology, male, reconstructive surgical procedures

A UD is a saccular dilatation extending from and contiguous with the true urethral lumen. The communication between the UD and the true urethral lumen may have a narrow or a wide neck. Consequences of a UD in a male are often related to inadequate UD drainage, the UD as a nidus for urinary stasis, recurrent UTIs, stone formation, increasing UD size, urinary leakage, incontinence or a palpable penoscrotal mass.[1] While UDs are more common in women secondary to poor anatomical support of the urethra, it is a rare finding in men.[2] The literature related to male UD involves case reports or small patient series. To our knowledge there is no estimated prevalence of male UD in the literature.

0022-5347/12/1884-1204/0
THE JOURNAL OF UROLOGY®

http://dx.doi.org/10.1016/j.juro.2012.06.036
Vol. 188, 1204-1208, October 2012
Printed in U.S.A.

While 67% to 90% of UDs are acquired, up to a third may be congenital.[3] Congenital UDs are lined by epithelium with full-thickness involvement of the urethral wall. In contrast, acquired UDs are lined by epithelium and granulation tissue, and the UD wall lacks smooth muscle fibers.[4]

Acquired UDs often result from stricture, infection or trauma.[5] Surgical implants can erode into the urethral lumen, resulting in obstruction and infection, and potentially leading to a UD. A UD can also result from an indwelling urethral catheter[6] or previous surgery. UDs can develop after surgical treatment of hypospadias or urethral stricture, artificial urinary sphincter insertion and transurethral prostate or bladder procedures.

We present our experience with male UDs. Although it is a rare entity, we seek to heighten clinical suspicion of a UD in men who have had recurrent UTIs or obstructive voiding symptoms, or underwent prior urethral injury or surgery.

MATERIALS AND METHODS

A total of 22 men with an acquired UD were evaluated at a reconstructive practice at our institution from 2000 through 2011. University institutional review board approval was obtained before retrospectively reviewing the charts of male patients diagnosed with a UD. Analyzed variables included age at diagnosis, medical, surgical and urological history, presenting symptoms, voiding status, UD etiology and characteristics, diagnostic procedure and surgical notes, complications and followup.

Patients were initially evaluated with history and physical examination, followed by radiographic studies, including retrograde urethrography and VCUG (part *A* of sole figure). Some patients were also evaluated with cystourethroscopy and/or urodynamics. Patients brought to the operating room for urethral diverticulectomy underwent urethral ultrasonography intraoperatively to help determine the surgical approach (part *B* of sole figure). This included the identification of UD location, volume and neck size.

Success for patients following a regimen of post-void manual decompression was defined by absent UTI and urinary symptoms. Success for patients treated with urethral diverticulectomy was defined as unobstructed urination without UD recurrence or UTI.

Presenting symptoms and UD etiology in 22 patients

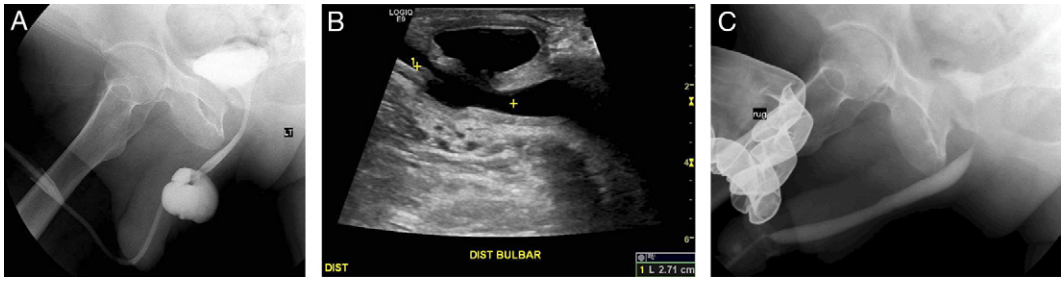
	No. Pts (%)
*Symptom**	
Post-void dribbling/urinary incontinence	8 (36)
Recurrent UTI	7 (32)
Weak stream	6 (27)
Penoscrotal mass	5 (23)
Incomplete emptying	3 (14)
Urethral stricture	3 (14)
Urethrocutaneous fistula	2 (9)
Urethral calculus	1 (4)
*Etiology**	
Previous urological surgery	19 (86)
Urethral stricture:	8 (36)
Urethroplasty	5 (23)
Direct vision internal urethrotomy for stricture disease	3 (14)
Hypospadias repair	6 (27)
Hypospadias repair + subsequent urethrocutaneous fistula repair	2 (9)
Surgical implant associated urethral erosion:	4 (18)
Artificial urinary sphincter placement	3 (14)
Neourethral + testicular prostheses	1 (4)
Prostate/bladder tumor transurethral resection	3 (14)
Blunt urethral trauma	3 (14)
Prostate radiation	2 (9)
Prolonged catheterization	1 (4)

* Patients may have had more than 1 symptom or etiology.

RESULTS

Clinical Presentation and Diagnosis

Our study included 22 patients with a median age of 48.5 years (range 18 to 86) at presentation who had an acquired male UD. Presentation included urinary dribbling or incontinence in 8 of 22 patients (36%), recurrent UTIs in 7 (32%), a weak stream in 6 (27%) and a penoscrotal mass in 5 (23%). Other clinical indications that led to the diagnosis of a UD included urinary retention, urethral stricture, urethrocutaneous fistula and inability to catheterize (see table).



Preoperative, intraoperative and postoperative imaging of 1 patient with distal bulbar UD. *A*, preoperative VCUG. *B*, intraoperative urethral ultrasound using 7.5 MHz probe before UD excision and primary anastomosis. *C*, postoperative VCUG reveals absence of UD without urethral stenosis or extravasation.