Male Urethral Stricture: American Urological Association Guideline

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Abbreviations and Acronyms

DVIU = direct visual internal urethrotomy

LS = lichen sclerosis

PFUI = pelvic fracture urethral injury

PVR = post-void residual

RUG = retrograde urethrogram

SP = suprapubic

UTI = urinary tract infection

VCUG = voiding cystourethrogram

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The complete guideline is available at http://www.auanet.org/education/guidelines/male-urethral-stricture.cfm.

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Purpose: The purpose of this Guideline is to provide a clinical framework for the diagnosis and treatment of male urethral stricture.

Materials and Methods: A systematic review of the literature using the Pubmed, Embase, and Cochrane databases (search dates 1/1/1990 to 12/1/2015) was conducted to identify peer-reviewed publications relevant to the diagnosis and treatment of urethral stricture. The review yielded an evidence base of 250 articles after application of inclusion/exclusion criteria. These publications were used to create the Guideline statements. Evidence-based statements of Strong, Moderate, or Conditional Recommendation were developed based on benefits and risks/burdens to patients. Additional guidance is provided as Clinical Principles and Expert Opinion when insufficient evidence existed.

Results: The Panel identified the most common scenarios seen in clinical practice related to the treatment of urethral strictures. Guideline statements were developed to aid the clinician in optimal evaluation, treatment, and follow-up of patients presenting with urethral strictures.

Conclusions: Successful treatment of male urethral stricture requires selection of the appropriate endoscopic or surgical procedure based on anatomic location, length of stricture, and prior interventions. Routine use of imaging to assess stricture characteristics will be required to apply evidence based recommendations, which must be applied with consideration of patient preferences and personal goals. As scientific knowledge relevant to urethral stricture evolves and improves, the strategies presented here will be amended to remain consistent with the highest standards of clinical care.

Key Words: urethral stricture, urethra, penis

PURPOSE

Urologists must be familiar with the evaluation and diagnostic tests for urethral stricture as well as endoscopic and open surgical treatments. This Guideline provides evidence-based guidance to clinicians and patients regarding how to recognize symptoms and signs of a urethral stricture, carry out appropriate testing to determine the location and severity of the stricture, and recommend the best options for treatment and follow-up. The most effective approach for a particular patient is best determined by the individual clinician and patient in the context of that patient's history, values, and goals for treatment.

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METHODOLOGY

The quality of individual studies that were either randomized controlled trials or clinical controlled trials was assessed using the Cochrane Risk of Bias tool.[1] Observational cohort studies with a comparison of interest were evaluated with the Drug Effectiveness Review Project instrument.[2] Conventional diagnostic cohort studies, diagnostic case-control studies, or diagnostic case series that presented data on diagnostic test characteristics were evaluated using the QUADAS 2 tool, which evaluates the quality of diagnostic accuracy studies.[3]

The AUA categorizes body of evidence strength as Grade A, B, or C based on both individual study quality and consideration of study design, consistency of findings across studies, adequacy of sample sizes, and generalizability of samples, settings, and treatments for the purposes of the Guideline.[4]

Evidence-based statements are provided as *Strong, Moderate*, and *Conditional Recommendations* with additional statements provided in the form of *Clinical Principles* or *Expert Opinion*.

BACKGROUND

A urethral stricture is any abnormal narrowing of the anterior and posterior urethra. The anterior urethra, which runs from the bulbar urethra to the meatus, is surrounded by the corpus spongiosum and thus anterior urethral strictures are associated with varying degrees of spongiofibrosis.

EPIDEMIOLOGY

In developed countries, the most common etiology of urethral stricture is idiopathic, followed by iatrogenic. Late failure of hypospadias surgery and stricture resultant from endoscopic manipulation (e.g. transurethral resection) are common iatrogenic reasons. In comparison, trauma is the most common cause in developing countries, reflecting higher rates of road traffic injuries, less developed trauma systems, inadequate roadway systems and conceivably socioeconomic factors.[5]

EVALUATION

Presentation

Patients with urethral stricture most commonly present with decreased urinary stream and incomplete bladder emptying but other signs and symptoms include urinary tract infection (UTI), epididymitis, rising post-void residual (PVR) urine volume or decreased force of ejaculation.[6] Additionally, patients may present with urinary spraying or dysuria. Rare sequelae of untreated stricture may include bladder calculi, urethral abscess, urethral carcinoma, and chronic kidney injury from obstructive uropathy.

Diagnosis

In the initial evaluation of patients suspected of having a urethral stricture, a combination of patient reported outcome measures to assess symptoms, uroflowmetry to determine severity of obstruction, and ultrasound PVR volume to identify urinary retention, may be used. In patients in whom urethral stricture is suspected, stricture must be diagnosed by urethro-cystostoscopy, retrograde urethrogram (RUG)/ voiding cystourethrogram (VCUG) or even by the passage of a urethral catheter. Once urethral stricture is confirmed, delineation of stricture length and location is required, usually by RUG, augmented by VCUG or antegrade cystoscopy through a suprapubic (SP) tube site, if present.

Patient Selection

Patient selection and proper choice of surgical procedure are paramount to maximize the chance of successful outcome in the treatment of urethral stricture. The main factors to consider in decision making include stricture etiology, location, and severity; prior treatment; comorbidity; presence of lichen sclerosus (LS); and patient preference.

OPERATIVE CONSIDERATIONS

Before proceeding with surgical management of a urethral stricture, the physician should provide an appropriate antibiotic to reduce surgical site infections. Preoperative urine cultures are recommended to guide antibiotic choice, and active UTIs must be treated before urethral stricture intervention. Prophylactic antibiotic choice and duration should follow the AUA Best Practice Policy Statement.[7]

Postoperative Care

A urinary catheter should be placed following urethral stricture intervention to divert urine from the site of intervention and prevent urinary extravasation. Either urethral catheter or SP cystostomy is a viable option; a urethral catheter is thought to be optimal. Urethral dilation and direct visual internal urethrotomy (DVIU) require only a short period of catheterization. RUG or VCUG is typically performed two to three weeks following open urethral reconstruction to assess for complete urethral healing.

Complications

Erectile dysfunction as measured by the International Index of Erectile Function (IIEF) may occur transiently after urethroplasty with resolution of nearly all reported symptoms approximately six months postoperatively.[8] Ejaculatory dysfunction manifested as pooling of semen, decreased ejaculatory force, ejaculatory discomfort, and decreased