Canadian Urologic Association
Urethral Stricture Guideline

Keith Rourke, Greg Bailly, Tim Davies, Ron Kodama, Nancy Santesso, Blayne Welk, Philippe Violette

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Disclosures

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Why a urethral stricture guideline?

• Costly disease (>200 million)
• Relatively common (0.6%) and likely increasing
• Frequently associated with complications (~40%)
• Reduced patient quality of life
Signs and symptoms

• LUTS >90%
• Genitourinary pain (dysuria, suprapubic, genital) – 23%
• Urinary tract infection (UTI) – 20%
• Gross hematuria – 11%
• Elevated post-void residual urine
• Ejaculatory dysfunction
• Incontinence
Stricture-related complications

- Occurs in ~40% of patients
- Acute urinary retention (32.6%)
- Difficult urinary catheterization (16.0%)
- Upper tract dysfunction (3.1%)
- Urethral abscess/urosepsis (5.0%)
- Urethral cancer (<1%)
Initial assessment

- History & physical examination
- Urinalysis, Urine C&S
- Optional: Patient-reported measures (IPSS, IIEF, SHIM, etc.)
- Optional: Uroflowmetry
- Optional: Post-void residual (ultrasound) assessment
Diagnostic investigations

- Cystoscopy
- Retrograde urethrogram (RUG)
- Voiding cystourethrogram (VCUG)
- Sonourethrogram (SUG)
- MR urethrogram (MRU)
PICO question 1

Should men with suspected urethral stricture undergo cystoscopy as the most accurate method to diagnose a clinically significant urethral stricture?

P - Men with suspected urethral stricture
I - Cystoscopy
C - Urethrogram or other
O - Diagnosis of urethral stricture
O - Urine infection, pain or patient comfort
PICO 1: Recommendations

- We suggest using **cystoscopy** rather than urethrography for the **initial** diagnosis of suspected stricture
  
  *Conditional recommendation, low certainty in evidence of effects*

- We suggest performing retrograde urethrography to further **stage** a urethral stricture or referral to a centre of expertise in reconstructive urology, when a **recurrent stricture** is suspected
  
  *Conditional recommendation, low certainty in evidence of effects*
Diagnosis vs. staging

Diagnosis (cystoscopy) vs. Staging (RUG +/- VCUG)

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PICO 1: Recommendations

• We suggest **against** using magnetic resonance urethrography for routine initial diagnosis of suspected stricture
  *Conditional recommendation, low certainty in evidence of effects*

• **Best reserved for select cases:**
  – Complex trauma (PFUI, Straddle)
  – Suspected malignancy
  – Radiotherapy induced urethral stenosis
  – Associated rectourethral fistula
PICO 1: Justification

- Cystoscopy is **widely available** in most clinical settings, and requires **fewer resources** (such as costs, equipment and training) than urethrography or MRU
- The use of urethrography or MRU at initial diagnosis may lead to greater numbers of **missed cases of urethral stricture** (2–4 more per 100 men) and **unnecessary treatment** (0–6 more per 100 men) than when performing cystoscopy
PICO question 2

Should men with the **INITIAL** diagnosis of urethral stricture undergo endoscopic treatment compared to urethroplasty?

P - Men with (undifferentiated) initial diagnosis of stricture
I - Endoscopic management (dilation or DVIU)
C - Urethroplasty
O - Stricture recurrence and risk of complications
PICO 2: Clinically important outcomes

- Improvement in LUTS
- Health-related QOL
- Need for further procedures
- Complications (stricture and procedure related)
- Sexual dysfunction
- Genitourinary pain
PICO 2: Recommendation

- We suggest providing endoscopic management rather than urethroplasty for the INITIAL treatment of urethral stricture

*Conditional recommendation, very low certainty evidence in effects*

- Endoscopic management includes either DVIU or dilation
- This recommendation applies to men with undifferentiated urethral stricture
- But does not apply to trauma-related urethral injuries, penile urethral strictures (hypospadias, lichen sclerosus) or suspected urethral malignancy
PICO 2: Outcomes

Urethral dilation and DVIU have equivalent clinical efficacy

A: Dilation
B: DVIU

PICO 2: Justifications

• The **benefits** of urethroplasty may be moderately greater than with endoscopic management
  – 15% recurrence versus 30%, respectively
• But there may be an **increase (4% more) in complications** with urethroplasty than with endoscopic management
• The initial costs of urethroplasty may be moderately greater than endoscopic management
PICO 2: Justifications

- **Equity**: Urethroplasty is less widely available than endoscopic management and urethroplasty requires additional training.
- **Patient values and preferences**: Most men will likely prefer not to wait for a referral for treatment, and therefore urethroplasty will probably be less acceptable than endoscopic management.
PICO 2: Urethroplasty as initial treatment

- May be appropriate for strictures at higher risk of recurrence:
  - Penile urethral strictures (hypospadias, lichen sclerosus)
  - Acute trauma
  - Complete obliteration
  - Longer strictures
Example: Stricture length

DVIU/dilation has poor efficacy in longer strictures

A: <2cm  
B: 2-4cm  
C: >4cm

FIG. 3. Life table analysis of association between stricture length and recurrence after dilation or urethrotomy.

PICO question 3

Should men with **RECURRENT** urethral stricture undergo urethroplasty as compared to endoscopic management as the best treatment option?

P - Men with recurrent urethral stricture
I - Urethroplasty
C - Endoscopic treatment (Either dilation or DVIU)
O - Stricture recurrence and risk of complications
PICO 3: Recommendation

• We suggest performing urethroplasty rather than endoscopic management (DVIU or dilation) for the treatment of recurrent strictures

• *Conditional recommendation, very low certainty in evidence of effects*
PICO 3: Justifications

- The **benefits** of urethroplasty may be moderately greater than endoscopic management with approximately 20% recurrence vs. 50%, respectively.
- There may also be a **reduction in complications** (5% fewer) in complications with urethroplasty than with endoscopic management.
- The initial **cost** of urethroplasty may be moderately greater but with stricture recurrence urethroplasty is more cost-effective.
PICO 3: Justifications

- **Equity:** Urethroplasty is less widely available than endoscopic management, and urethroplasty requires additional training.
- **Patient Preference:** Most men who have multiple recurrences may prefer urethroplasty, however, preferences may be variable.
PICO 3: Patient preference

• Most men who have poor quality of life due to recurrent stricture will likely choose urethroplasty

• Men who are frail with multiple comorbidities, who want to avoid an in-hospital operative procedure, scheduling, timing or hospital stay, may choose DVIU or dilation for a recurrent stricture

• A shared decision-making model will help to understand patients' values and preferences
PICO 3: Repeat endoscopic treatment

• Unlikely to be successful
• May increase stricture complexity
• May be appropriate for:
  – Poor urethroplasty candidates (comorbidities, patient preference, etc.)
  – Select short (<2 cm) bulbar strictures with “durable” prior response
Urethroplasty

• Bulbar strictures
  – Anastomotic for short (<2 cm) strictures
  – Substitution urethroplasty for longer
  – Buccal mucosa is the preferred tissue
  – Onlay not tubularization

• Penile strictures
  – Typically requires tissue transfer
Pelvic fracture urethral injury (PFUI)

- Managed acutely with either SPC or aligning catheter
  - SPC alone is safe and reliable
  - Endoscopic alignment is generally safe and may reduce or shorten urethral stenosis length
- Ideal timing of reconstruction is not known
  - Allow time for orthopedic injuries to heal
  - Approximately ~3months

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PFUI cont’d

Preoperative assessment with combined urethrogram, cystogram, and cystoscopy

Rourke, 2020
PFUI cont’d

• **Should be treated with delayed urethroplasty**
  – ~95% can be approached with single-stage perineal operation
  – 80–90% long-term success rate

• **Not with delayed endoscopic procedures**
  – Poor outcomes
  – Delays and complicates definitive treatment
  – Significant associated risks (i.e., “cut to the rectum”)
Straddle injury

• Poor outcomes with immediate repair
  – Extensive soft-tissue injury
• Suprapubic diversion (x 3 months)
• Delayed urethroplasty
  – Excision & primary anastomosis
  – Rarely buccal mucosa graft onlay urethroplasty
Hypospadias-associated urethral strictures (HAUS)

- Common complication of hypospadias
- Frequently associated with:
  - Urethrocutaneous fistula
  - Chordee
  - UTI/hair bearing urethra
  - Lack of skin/spongiosum
- Unlikely to respond to endoscopic treatments
- Urethroplasty recommended but often requires several surgeries and multiple techniques
  - Not for “dabblers” in urethral surgery
Bladder neck contracture

- Occurs after TURP (i.e., not radical prostatectomy)
- Incidence ~5%
- Likely to respond to endoscopic treatments
  - Urethral dilation
  - Cold knife incision
  - Hot-knife incision
  - Holmium laser incision
- Y-V plasty of bladder neck for recalcitrant cases

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Vesicourethral anastomotic stenosis (VUAS)

- Occurs after radical prostatectomy ~5% (0.4–32%)
- Frequently associated with RT and Incontinence
- Generally amenable to endoscopic treatment (>90%)
  - May require multiple endoscopic treatments (1–3)
  - Possible role of intralesional agents (Mitomycin C)

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• **Reconstruction:**
  – After 3 failed endoscopic attempts
  – Or vesicourethral obliteration
  – Subsequent incontinence treatment

• **Urinary diversion:**
  – Small bladder capacity (<200 ml)
  – Extensive necrosis/cavitation
  – Osteomyelitis
  – Prostato-symphysial fistulae
Radiation stenoses/strictures

- Incidence 3–8%
- Insidious onset (>5 years after treatment)
- Infrequently an isolated entity
- Refractory to endoscopic treatments
- Reconstruction is generally successful (but)
  - Less return to “normal” voiding function
  - Risk of ED and Incontinence (especially if prior TURP)
- Urinary diversion can often be avoided

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Lichen sclerosus (aka BXO)

- A chronic inflammatory, lymphocyte mediated skin disease with a predilection for the anogenital area
- **Symptoms:** Leucoderma, itching, penile pain, phimosis
- **Initial treatment:**
  - Clobetasol bid (0.05%) x 8–12 weeks most commonly used
  - 40–90% improvement in cutaneous manifestations
- ~2–8% lifetime risk of malignancy (SCC)
  - Mean time to diagnosis of penile cancer 12 years
  - Needs followup
Lichen sclerosus strictures

- Urethral involvement in 20-30% of patients with LS
- Insidious and progressive
  - May involve long segments of urethra
- Dense fibrosis and inflammation
- LS strictures are a challenge
- Perineal urethrostomy can be a good option
- Do not use skin (grafts/flaps) for Lichen sclerosus strictures