Male Urethral Stricture Disease:

Should We Be Performing More Urethroplasties for Cure?

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Disclosures:

• I have no financial conflicts of interest to disclose.
Voiding time \( t_{100} \) 79 s
Flow time \( t_Q \) 78 s
Time to max flow \( t_{Q_{\text{max.}}} \) 3 s
Max flow rate \( Q_{\text{max.}} \) 9.3 ml/s
Average flow rate \( Q_{\text{ave.}} \) 6.6 ml/s
Voiding volume \( V_{\text{comp.}} \) 518 ml
Post Void Residual \( V_{pvr} \) 278 ml
Scenario 1:
< 2 cm Bulbar Stricture
Next Step?
Direct Vision Internal Urethrotomy (DVIU)

Dilation  Urethroplasty
American Urological Association (AUA): Male Urethral Stricture Guidelines (2016)$^1$

• **Guideline Statement 7:**

Surgeons may offer urethral dilation, direct vision internal urethrotomy (DVIU), or urethroplasty for the initial treatment of a short (< 2 cm) bulbar urethral stricture.

*conditional recommendation; evidence strength grade C*
8 months later:
Recurrent Stricture
• Guideline Statement 11:
Surgeons should offer urethroplasty instead of repeated endoscopic management for recurrent anterior urethral strictures following failed dilation or direct vision internal urethrotomy (DVIU).

*moderate recommendation; evidence strength grade C*

• Guideline Statement 12:
Surgeons who do not perform urethroplasty should offer patients referral to surgeons with expertise.

*expert opinion*
Scenario 2:
≥ 2 cm Bulbar Stricture

- **Guideline Statement 16:**

  Surgeons should offer *urethroplasty* as the initial treatment for patients with long (≥ 2 cm) bulbar urethral strictures, given the low success rate of direct vision internal urethrotomy (DVIU) or dilation.  

  *moderate recommendation; evidence strength grade C*
Scenario 3:
Penile Urethral Stricture
Guideline Statement 15:
Surgeons should offer urethroplasty to patients with penile urethral strictures, because of the expected high recurrence rates with endoscopic treatments.

*moderate recommendation; evidence strength grade C*
Rationale:

- **Urethral dilation and DVIU** have similar long-term success in short strictures: 35-70%.\(^2\)-\(^4\)

- The success of endoscopic treatment depends on the location and length of the stricture.\(^5\)-\(^7\)
  - Highest success rates are found in \(< 1\) cm bulbar urethral strictures.
  - Lowest success rates are found in \(> 2\) cm strictures.

- **Urethroplasty** has a long-term success rate of 80-95%.\(^8\)-\(^10\)
Rationale:

• Urethral strictures previously treated with dilation or DVIU are unlikely to be successfully treated with another endoscopic procedure. The failure rate is > 80%.11,12

• Repeated endoscopic treatments may cause longer strictures, and may increase the complexity of subsequent urethroplasty.13

• Greater surgeon experience with urethroplasty is associated with better outcomes. Refer to a reconstructive urologist for urethroplasty.14,15
Rationale:

- **Penile urethral strictures** are more likely to be related to hypospadias, lichen sclerosus, or iatrogenic etiologies. Thus, they are unlikely to respond to dilation or DVIU.\(^3,4,7,11,16\)

- Given the low likelihood of success with endoscopic treatments, most patients with **penile urethral strictures** should be offered **urethroplasty at the time of diagnosis.**

- Penile urethral strictures are more likely to require tissue transfer or a staged approach for repair.\(^{17,18}\)
INTERNAL URETHROTOMY IN THE MANAGEMENT OF ANTERIOR
URETHRAL STRICTURES: LONG-TERM FOLLOWUP


ABSTRACT

Purpose: We evaluated the long-term results of internal urethrotomy for anterior urethral strictures.

Materials and Methods: Between 1975 and 1990, 224 patients underwent internal urethrotomy for anterior urethral strictures. Median followup was 98 months (range 60 to 216).

Results: The recurrence rate after 1 urethrotomy was 68% overall, and 58% for bulbar, 84% for penile and 89% for penile bulbar urethral strictures. Repeated urethrotomies did not improve the success rate. Prognostic characteristics of bulbar urethral strictures associated with good results included single or primary strictures, length shorter than 10 mm. and caliber wider than 15F. Preoperative infection and etiology of the strictures did not correlate with results. Multiple urethrotomies achieve only temporary improvement and can be compared to repeated dilations.

Conclusions: Alternative treatments should be considered for penile strictures and after failure of initial urethrotomy.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Bulbar Strictures</th>
<th>Penile and Penile Bulbar Strictures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Success/Total (%)</td>
<td>p Value</td>
</tr>
<tr>
<td><strong>Stricture caliber:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 15F</td>
<td>36/107 (34)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>More than 15F</td>
<td>24/35 (69)</td>
<td></td>
</tr>
<tr>
<td><strong>Stricture length (mm.):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 10</td>
<td>14/77 (18)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Less than 10</td>
<td>46/65 (71)</td>
<td></td>
</tr>
<tr>
<td><strong>No. strictures:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>55/110 (50)</td>
<td>0.001</td>
</tr>
<tr>
<td>Multiple</td>
<td>5/32 (16)</td>
<td></td>
</tr>
<tr>
<td><strong>Infection:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14/33 (42)</td>
<td>0.840</td>
</tr>
<tr>
<td>No</td>
<td>46/109 (42)</td>
<td></td>
</tr>
<tr>
<td><strong>Stricture presentation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>60/129 (47)</td>
<td>0.003</td>
</tr>
<tr>
<td>Recurrent</td>
<td>0/13 (0)</td>
<td></td>
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</tbody>
</table>
Repeat Transurethral Manipulation of Bulbar Urethral Strictures is Associated With Increased Stricture Complexity and Prolonged Disease Duration


**Purpose:** We examined the association of previous transurethral manipulation with stricture complexity and disease duration among men referred for bulbar urethral reconstruction.

**Materials and Methods:** We retrospectively reviewed the records of 340 consecutive urethroplasties performed by a single surgeon between July 2007 and October 2010. Only men treated with initial open surgery for bulbar strictures were included in analysis, thus excluding those with hypospadias, lichen sclerosus, pelvic radiation, prior urethroplasty, incomplete data, or pure penile or posterior urethral stenosis. Cases were divided into 2 groups based on the history of transurethral treatment for urethral stricture before urethroplasty, including group 1—0 or 1 and group 2—2 or greater treatments.

**Results:** Of 101 patients with bulbar urethral stricture and all data available 50 and 51 underwent 0 to 1 and 2 or greater previous transurethral treatments, respectively. Repeat transurethral manipulation was strongly associated with longer strictures and the need for complex reconstruction. Repeat transurethral manipulation of bulbar urethral strictures was also associated with an eightfold increase in disease duration between stricture diagnosis and curative urethroplasty.

**Conclusions:** Repeat transurethral manipulation of bulbar strictures is associated with increased stricture complexity and a marked delay to curative urethroplasty.
Negative impact of repeat transurethral stricture treatments overall and on urethral reconstruction

<table>
<thead>
<tr>
<th></th>
<th>No. Group 1 (%)</th>
<th>No. Group 2 (%)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension beyond bulbar urethra</td>
<td>2 (4)</td>
<td>12 (24)</td>
<td>0.005</td>
</tr>
<tr>
<td>Flap +/or graft</td>
<td>6 (12)</td>
<td>21 (41)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Synchronous stricture</td>
<td>2 (4)</td>
<td>5 (10)</td>
<td>0.436</td>
</tr>
<tr>
<td>Failed urethroplasty</td>
<td>1 (2)</td>
<td>6 (12)</td>
<td>0.110</td>
</tr>
<tr>
<td><strong>Reconstruction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excision + primary anastomosis</td>
<td>44 (88)</td>
<td>30 (59)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Substitution urethroplasty:</td>
<td>6 (12)</td>
<td>21 (41)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Buccal mucosal graft</td>
<td>4 (8)</td>
<td>16 (31)</td>
<td>0.005</td>
</tr>
<tr>
<td>Penile skin graft</td>
<td>1 (2)</td>
<td>1 (2)</td>
<td>1.0</td>
</tr>
<tr>
<td>Penile skin flap</td>
<td>1 (2)</td>
<td>6 (12)</td>
<td>0.110</td>
</tr>
<tr>
<td>Multiple techniques</td>
<td>1 (2)</td>
<td>6 (12)</td>
<td>0.110</td>
</tr>
<tr>
<td><strong>Time to Curative Urethroplasty (months)</strong></td>
<td>23 (range 1-380)</td>
<td>187 (range 6-559)</td>
<td>p&lt;0.001</td>
</tr>
</tbody>
</table>
Conclusions:

Per 2016 AUA Guidelines:

**< 2 cm Bulbar Urethral Strictures:**
• 1 attempt at dilation or DVIU
• refer to a Reconstructive Urologist for urethroplasty

**≥ 2 cm Bulbar Urethral Strictures,**
**All Penile Urethral Strictures,**
**All Recurrent Urethral Strictures:**
• refer to a Reconstructive Urologist for urethroplasty
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- Male Urinary Incontinence (artificial urinary sphincters)
- Urethral Strictures
- Bladder Neck Contractures
- Hypospadias Complications
- Male Urethral Diverticula
- Male Urethral Fistulae
- Gender-Affirming Surgery Complications
- Erectile Dysfunction (penile prostheses)
- Peyronie’s Disease
- Penoscrotal Webbing
- Buried Penis Repair
- Scrotal Reconstruction
- Genital Reconstruction


