POINT OF TECHNIQUE

Sutureless membranous urethroplasty

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Indications

A technique is described for the repair of membranous urethral distraction defects, following the fracture of the pelvis in the male, which is suitable for areas of the world where facilities for blood transfusion and expertise in urethral reconstruction are limited.

Method

With the patient in the lithotomy position under spinal anaesthesia the perineum is infiltrated with 50 ml of adrenaline solution 1:200,000. Either a mid-line or an inverted Y incision is made in the perineum and the bulbospongiosus muscle divided in the midline and retracted. The urethra is mobilized proximally to the point where it is obliterated by dense scar tissue, where it is divided (Fig. 1). This dissection is aided by a sound in the distal urethra. To assess the length of the intact proximal urethra, a 20 Ch Chotton sound is passed through the internal meatus until it meets the obstruction. The urethral length is measured on the sound (Fig. 2). An alternative way to measure the length of the intact posterior urethra is with a Foley catheter passed up from below at a later stage of the operation, thus avoiding a formal cystotomy. This technique was employed in cases 6 and 7 (see Table 1).

A 16 Ch Foley catheter is passed via the external meatus to emerge through the cut urethra in the perineum, and the balloon inflated. The urethra is sutured to the catheter with four interrupted catgut sutures so that the distance from the cut urethral end to the balloon is the same as the length of the proximal urethra. Care is taken not to puncture the channel for filling the balloon. One or more small side holes are fashioned in the catheter between the balloon and the attached urethra to allow drainage of blood or exudate (Fig. 3).

A 12 Ch sound with sharpened tip is passed carefully down through the bladder neck to the distal end of the proximal urethra and then forced through the scar tissue to emerge in the perineum (Fig. 3). An infant-feeding tube is pushed onto the sharp point and the sharpened sound withdrawn so that the fine plastic tube passes from the perineum through the scar, along the posterior urethra and out through the abdominal wall. A 24 Ch plastic tube is then passed down the posterior urethra as far as possible (Fig. 4). With a diathermy needle point or cutting resectoscope loop, using the fine plastic tube as a guide, scar tissue is resected from the perineum up to the plastic tube in the posterior urethra to make a channel about 1.5 cm in diameter through the scar tissue (Fig. 5). The wide plastic tube and infant-feeding tube are withdrawn.

The balloon of the Foley catheter is deflated and the catheter with attached distal urethra passed up through the resected channel. The balloon is inflated in the bladder, thus aligning the two ends of the urethra. In case 3 (see Table 1) the mobilized bulbous urethra was short. It was routed superiorly to the left corpus cavernosum to reach the prostatic urethra without tension. A suprapubic catheter is inserted and the wounds closed (Fig. 6).

The bladder is drained via the urethral catheter and the suprapubic catheter spigotted, to be used only if the urethral catheter becomes blocked.

After 6 weeks, the bladder is filled with saline and an attempt made to pass the urethral catheter further into the bladder. If this is successful, then the catgut sutures holding the urethra to the catheter have dissolved and the urethral catheter can then be removed. The patient is taught intermittent self-catheterization to lessen the risk of re-sterosis and the suprapubic catheter removed when micturition is satisfactory.

Comparison with other methods

The Badenoch 'pull through' operation described in 1950 has some features in common with the operation described here [1]. However, Badenoch dilated rather than excised scar tissue and pulled the bulbous urethra up into the prostatic urethra with a catheter anchored...
to the abdominal wall. His operation was superseded by sutured urethroplasties, e.g. scrotal inlays [2] and scrotal flaps [3]. These gave excellent initial results but suffered the complication of incorporating 'dry' hair-bearing skin into the urethra [4]. Accurate spatulated bulbo-prostatic anastomosis under optimal conditions and in experienced hands gives excellent results [5].

Internal urethrotomy followed by prolonged catheter drainage and intermittent self-catheterization has been advocated [6,7] but the operation is not without risk of rectal injury (see case 2) and there is a high incidence of re-stenosis.

Advantages and disadvantages

We have performed this operation on seven patients (see Table 1); it was easy technically and blood loss was minimal. It is within the capability of any competent general surgeon and avoids the use of skin to reconstruct the urethra. A disadvantage is that the anastomosis is transverse rather than oblique and the risk of re-stenosis may be higher than with a spatulated sutured anastomosis. No patient in the present series was incontinent after surgery.

Difficulties and complications

Three of the seven patients in this series required endoscopic procedures before satisfactory voiding was established (see Table 1). This would probably have been avoided in cases 2 and 6 if the catheter had been allowed to remain in situ for the recommended period. The incidence of late stenosis at the site of anastomosis is unknown, but to minimize this risk we recommend intermittent self-catheterization daily for 2 weeks, then weekly for at least 6 months.
### Table 1

<table>
<thead>
<tr>
<th>Case</th>
<th>Time between injury and urethroplasty</th>
<th>Previous operations</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4 months</td>
<td>None</td>
<td>Voiding with full control tissue. Flap removed from anastomosis site.</td>
</tr>
<tr>
<td>2</td>
<td>4 years</td>
<td>6 urethrotonies (2 rectal injuries)</td>
<td>Forceful catheter removal. No voiding. Short stricture divided endoscopically at 3 months. Voiding with full control</td>
</tr>
<tr>
<td>3</td>
<td>?</td>
<td>1 urethrotony 2 dilatations</td>
<td>Voiding with full control</td>
</tr>
<tr>
<td>4</td>
<td>3 years</td>
<td>3 urethrotonies</td>
<td>Voiding with full control</td>
</tr>
<tr>
<td>5</td>
<td>6 months</td>
<td>2 urethrotonies 1 pulling of catheter through perineal urethrotony</td>
<td>Voiding with full control</td>
</tr>
<tr>
<td>6</td>
<td>4 years</td>
<td>None</td>
<td>Catheter fell out after 5 days. Urethrotony at 4 weeks. Voiding with full control</td>
</tr>
<tr>
<td>7</td>
<td>1.5 years</td>
<td>None</td>
<td>Voiding with full control</td>
</tr>
</tbody>
</table>

### References


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