22nd Annual EAU Congress

March 21 - 24, 2007

Berlin – Germany
Which type of urethroplasty - a critical overview of results and complications
The surgical technique for the repair of penile urethral strictures is selected according to stricture etiology.
Etiology of penile urethral strictures in 404 patients

- Failed hypospadias repair 40%
- Lichen sclerosus 40%
- Trauma
- Instrumentation
- Catheter
- Infection
- Other causes

80% 20%

Barbagli 2006, unpublished data

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In patients with penile urethral strictures due to:

trauma, instrumentation, catheter, infection and other causes

penis is normal
One-stage urethroplasty using dartos fascial flap with skin island
Result

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McAninch

Center for Reconstructive Urethral Surgery
McAninch

Center for Reconstructive Urethral Surgery
McAninch

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Possible complications following flap urethroplasty:

- penile hematoma
- skin necrosis
- fistula
- penile-glans torsion
One-stage urethroplasty using dorsal inlay buccal mucosal graft

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Possible complications following graft urethroplasty

- infection
- meatal stenosis
- fistula
In patients with penile urethral strictures due to:

- failed hypospadias repair
- lichen sclerosus
- penis is abnormal

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Multi-stage urethroplasty using buccal mucosal graft

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First stage

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10-39% of patients showed contracture or scarring of the initial graft, requiring new grafting procedures.

These repeated surgical revisions might have a tremendous psychological impact on the patient.

Barbagli et al., Eur Urol, 2006
Second stage

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Possible complications following the second stage of urethroplasty

- fistula
- glans dehiscence
- meatal stenosis

30% of patients showed complications following the second stage of urethroplasty, requiring surgical revision

Barbagli et al., Eur Urol, 2006

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Patients with penile urethral stricture disease are treated with so many various surgical approaches that it is really impossible to evaluate and standardize the long-term outcome of all these techniques.

The literature dealing with this argument is still terribly confused and does not furnish reliable interpretation of the available data.
Which type of urethroplasty?
Anastomotic urethroplasty

- end-to-end anastomosis
- augmented roof-strip anastomosis

Substitution urethroplasty

- dorsal onlay graft urethroplasty
- ventral onlay graft urethroplasty

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Anastomotic or substitution urethroplasty?

<table>
<thead>
<tr>
<th>patients</th>
<th>type of repair</th>
<th>success</th>
<th>failure</th>
<th>complications *</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>end-to-end</td>
<td>26 (83%)</td>
<td>2 (70%)</td>
<td>18%</td>
</tr>
<tr>
<td>19</td>
<td>buccal graft</td>
<td>19 (100%)</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

* penile chordee or erectile dysfunction

Al-Qudah et al., J Urol, 2006
Which type of substitution urethroplasty?

ventral

? 

dorsal
## Dorsal onlay graft urethroplasty

### Published results

<table>
<thead>
<tr>
<th>Authors</th>
<th>Patients</th>
<th>Mean Follow-up</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbagli et al.</td>
<td>37</td>
<td>21</td>
<td>92%</td>
</tr>
<tr>
<td>J Urol 1998</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Iselin et al.</td>
<td>12</td>
<td>19</td>
<td>100%</td>
</tr>
<tr>
<td>J Urol 1999</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andrich et al.</td>
<td>42</td>
<td>60</td>
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</tr>
<tr>
<td>B J U Int 2001</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Barbagli et al.</td>
<td>45</td>
<td>71</td>
<td>73%</td>
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<tr>
<td>J Urol 2004</td>
<td></td>
<td></td>
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<tr>
<td>Delvecchio et al.</td>
<td>11</td>
<td>\</td>
<td>90%</td>
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<tr>
<td>J Urol 2004</td>
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<td></td>
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<tr>
<td>Barbagli et al.</td>
<td>17</td>
<td>42</td>
<td>85%</td>
</tr>
<tr>
<td>J Urol 2005</td>
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</table>

Center for Reconstructive Urethral Surgery
# Ventral onlay graft urethroplasty

## Published Results

<table>
<thead>
<tr>
<th>Authors</th>
<th>Patients</th>
<th>Mean Follow-up</th>
<th>Success Rate</th>
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</thead>
<tbody>
<tr>
<td>Kane et al.</td>
<td>53</td>
<td>25</td>
<td>94%</td>
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<tr>
<td><em>J Urol 2002</em></td>
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<td>Elliot et al.</td>
<td>60</td>
<td>47</td>
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<td><em>J Urol 2003</em></td>
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<td>Kellner et al.</td>
<td>18</td>
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<td><em>J Urol 2004</em></td>
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<td>42</td>
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<tr>
<td><em>J Urol 2005</em></td>
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</table>

Center for Reconstructive Urethral Surgery
Trauma/Reconstruction/Diversion

BULBAR URETHROPLASTY USING BUCCAL MUCOSA GRAFTS PLACED ON THE VENTRAL, DORSAL OR LATERAL SURFACE OF THE URETHRA: ARE RESULTS AFFECTED BY THE SURGICAL TECHNIQUE?

GUIDO BARBAGLI, ENZO PALMINTERI, GIORGIO GUAZZONI, FRANCESCO MONTORSI, DAMIANO TURINI AND MASSIMO LAZZERI*

From the Center for Urethral and Genitalia Reconstructive Surgery (GB, EP), Arcezo, San Raffaele-Vita-Salute Hospital and University (GG, FM), Milan, Department of Urology, Santa Chiara (DT), Florence and Department of Urology, Ospedale Fondazione San Raffaele Giglio (ML), Cefalu, Italy

J Urol 2005

Center for Reconstructive Urethral Surgery
Results

Ventral
83% success

Lateral
83% success

Dorsal
85% success

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Results

Anastomotic Fibrous Ring as Cause of Stricture Recurrence After Bulbar Onlay Graft Urethroplasty

Guido Barbagli, Giorgio Guazzoni, Enzo Palminteri and Massimo Lazzeri*
From the Center for Urethral and Genitalia Reconstructive Surgery (GB, EP), Arezzo, San Raffaele-Via-Salute Hospital and University (GG), Milan and Department of Urology, Santa Chiara Firenze (ML), Florence, Italy

J Urol 2006
Distal anastomotic ring
Proximal anastomotic ring
Distal and proximal anastomotic rings

Center for Reconstructive Urethral Surgery
<table>
<thead>
<tr>
<th>type of urethroplasty</th>
<th>substitute material</th>
<th>patients</th>
<th>success rate</th>
<th>type of failure</th>
<th>entire grafted area</th>
<th>anastomotic ring</th>
<th>ring site</th>
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<tbody>
<tr>
<td>dorsal onlay skin graft urethroplasty</td>
<td></td>
<td>45</td>
<td>73%</td>
<td>17%</td>
<td>8%</td>
<td>2 distal</td>
<td>2 proximal</td>
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<tr>
<td>buccal mucosa onlay graft urethroplasty</td>
<td></td>
<td>50</td>
<td>84%</td>
<td>6%</td>
<td>10%</td>
<td>2 distal</td>
<td>3 proximal</td>
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<td>augmented end-to-end urethroplasty with buccal mucosa</td>
<td></td>
<td>12</td>
<td>84%</td>
<td>8%</td>
<td>8%</td>
<td>1 proximal</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>107</td>
<td>80%</td>
<td>11%</td>
<td>9%</td>
<td>4 distal</td>
<td>6 proximal</td>
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</table>

Center for Reconstructive Urethral Surgery
## Prevalence of anastomotic rings following bulbar urethroplasty

<table>
<thead>
<tr>
<th>authors</th>
<th>patients</th>
<th>substitute material</th>
<th>success rate</th>
<th>rings</th>
<th>site</th>
<th>treatment</th>
<th>outcome</th>
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<tbody>
<tr>
<td>Iselin et al. J Urol 1999</td>
<td>29</td>
<td>skin (27) buccal mucosa (2)</td>
<td>97%</td>
<td>1</td>
<td>proximal</td>
<td>dilation</td>
<td>S</td>
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<tr>
<td>Guralnick et al. J Urol 2001</td>
<td>29</td>
<td>skin (26) buccal mucosa (3)</td>
<td>93%</td>
<td>2</td>
<td>distal (1) proximal (1)</td>
<td>dilation (1) urethrotomy (1)</td>
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<tr>
<td>Chapple et al. J Urol 2002</td>
<td>122</td>
<td>buccal mucosa and other</td>
<td>79%</td>
<td>12</td>
<td>\</td>
<td>dilation urethrotomy</td>
<td>S</td>
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<tr>
<td>Elliot et al. J Urol 2003</td>
<td>60</td>
<td>buccal mucosa</td>
<td>90%</td>
<td>4</td>
<td>distal</td>
<td>urethrotomy</td>
<td>S</td>
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<tr>
<td>Kellner et al. J Urol 2004</td>
<td>23</td>
<td>buccal mucosa</td>
<td>87%</td>
<td>3</td>
<td>distal</td>
<td>urethrotomy</td>
<td>S</td>
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<tr>
<td>Berglund et al. J Urol 2004</td>
<td>18</td>
<td>pedicled skin with buccal mucosa</td>
<td>94%</td>
<td>1</td>
<td>\</td>
<td>dilation</td>
<td>S</td>
</tr>
<tr>
<td>Abouassaly et al. J Urol 2005</td>
<td>100</td>
<td>buccal mucosa</td>
<td>92%</td>
<td>8</td>
<td>\</td>
<td>dilation (3) urethrotomy (2) none (3)</td>
<td>S</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>381</strong></td>
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<td><strong>87%</strong></td>
<td><strong>31</strong></td>
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<td><strong>31</strong></td>
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</tbody>
</table>

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Treatment of the anastomotic ring

Internal urethrotomy

Center for Reconstructive Urethral Surgery
Reconstructive surgery for urethral strictures is continually evolving and the superiority of one approach over another is not yet clearly defined.

The reconstructive urethral surgeon must be fully able in the use of different surgical techniques to deal with any condition of the urethra at the time of surgery.
Madonna del Parto - Piero della Francesca
Monterchi - Arezzo

Center for Reconstructive Urethral Surgery