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Madrid – Spain
Urethral stricture surgery - tips and tricks

Surgery of the bulbar urethra
Harvesting the graft from the tongue
Anatomy of the tongue
Harvesting of lingual mucosal graft was first described by Italian Authors

The Tongue as an Alternative Donor Site for Graft Urethroplasty: A Pilot Study

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Purpose: Urethroplasty with a buccal mucosal graft provides excellent clinical results but it may also cause oral complications in some cases. The mucosa covering the lateral and under surface of the tongue is identical in structure with that lining the rest of the oral cavity. We evaluated LMGs for urethroplasty.

Materials and Methods: From January 2001 to September 2004, 8 men 34 to 65 years old (mean age 46.1) with urethral strictures 1.5 to 4.5 cm long were selected for 1-stage dorsal onlay urethroplasty. The site of the harvest graft was the lateral mucosal lining of the tongue. Postoperatively all patients were followed with urethrography, uroflowmetry, cystourethrography and flexible urethroscopy after 3 and 12 months. Successful reconstruction criteria were peak flow rate greater than 15 ml per second and no need for postoperative urethral dilation.

Results: Median followup was 18 months (mean 22.1, range 3 to 47). Seven cases were successful. One patient had a partial urethral stricture. In successful cases cystourethrography revealed no significant graft contractures or sauculations and at flexible urethroscopy LMG was almost indistinguishable from native urethra. There were no pain, esthetic or functional complications at the donor site.

Conclusions: Harvesting the LMG is feasible and easy to perform. Compared with the buccal mucosal graft the LMG seems to be associated with less postoperative pain and a minor risk of donor site complications. These preliminary functional and esthetic data are satisfactory.
The site of the harvest graft was the lateral mucosal lining of the tongue.

The length of the grafts were 3 to 7 cm (mean 3.3 cm) with a width of 1.5 cm.

Simonato et al, J Urol, 2006; 175: 589-592
Mouth opener is put into place

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The ventral surface of the tongue is exposed
The opening of the Wharton’s duct is identified
The site of the lingual nerve is identified.
The graft is measured and marked

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The graft edges are incised
The graft is removed
The graft bed is examined for bleeding
The donor site is closed with interrupted sutures
Graft defatting is necessary to remove the underlying fibrovascular tissues

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The graft is 4 cm long and 2.5 cm wide.
We would like to thank doctor Pier Guido Ciabatti, Head of the Department of Otorhinolaryngology at San Donato Hospital (Arezzo – Italy) for harvesting the graft.
The use of lingual graft for adult anterior urethroplasty

Patient population

• 10 patients (average age 41 years)

• 5 penile urethral strictures (dorsal inlay) and 5 bulbar urethral strictures (3 dorsal inlay) (2 ventral onlay)

• Graft harvesting was performed by the oral surgeon in 5 cases and by the young urologist in training in 5 cases

• In 2 patients, 2 grafts from the tongue were harvested
Follow-up criteria

- During the hospital stay, the oral surgeon and the urologist visited the patient 2 times a day.
- The patient was requested to return to the hospital weekly for 1 month, and monthly for 4 months for a follow-up visit.

- All patients were investigated by the oral surgeon to determine salivatory activity and the presence of disturbances in food tasting, kissing, speaking, swallowing and other problems.
The use of lingual graft for adult anterior urethroplasty

Results

• No patient developed early or late post-operative complications on the harvest site

• No difference was observed in patients in whom the harvesting was performed by the oral surgeon compared to patients in whom the procedure was performed by the urologist

• No difference was observed in patients who underwent single (8 cases) or double (2 cases) graft harvesting from the tongue
The use of lingual graft for adult anterior urethroplasty

Results

• The series of patients we present here is so small and with so short a follow-up (mean 5 months) that it is not possible to draw any definitive conclusion on the long-term results of urethroplasty using lingual graft compared to buccal mucosa graft.
The use of lingual graft for adult anterior urethroplasty

Conclusions

• The surgical technique for harvesting a graft from the tongue is simple and safe in the hands of the young urologist as well.

• The LMG is more similar to a graft harvested from the lip than the BMG.

• The tongue represents an alternative donor site to the lip in adult patients requiring a small and thin graft for urethroplasty.

• The cheek is still an irreplaceable donor site for any kind of urethroplasty when an abundant and resistant substitute graft material is required.

• Some patients, who had undergone BMG urethroplasty, showed stricture recurrence requiring additional graft harvesting. In these cases, the urologist should consider the tongue an alternative donor site to the lip.

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Harvesting sites in the mouth

Right cheek

Left cheek

Lip

Tongue

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<table>
<thead>
<tr>
<th></th>
<th>Dimensions</th>
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<tbody>
<tr>
<td>right cheek</td>
<td>5 x 2.5 cm</td>
</tr>
<tr>
<td>left cheek</td>
<td>5 x 2.5 cm</td>
</tr>
<tr>
<td>lip</td>
<td>4 x 1.5 cm</td>
</tr>
<tr>
<td>tongue</td>
<td>4 x 2.5 cm</td>
</tr>
</tbody>
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**22 cm x 2.5 cm**

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A new muscle and nerve sparing bulbar urethroplasty
Substitution urethroplasty

- post-voiding dribbling
- semen sequestration in the urethral bulb
End-to-end anastomosis

Substitution urethroplasty

- post-voiding dribbling
- loss of ejaculation
- semen sequestration in the urethral bulb
In our experience, out of 60 patients who underwent end-to-end anastomosis:

- 12 (20%) showed decreased ejaculation force
- 2 (3.3%) showed ejaculation was possible only by manually compressing the perineum at the level of the urethral bulb

Barbagli G. et al, J Urol December 2007; in press
In our experience, the patient who underwent substitution onlay graft urethroplasty showed the same incidence of:

- post-voiding dribbling
- decreased ejaculation force or loss of ejaculation
- partial semen sequestration in the urethral bulb

Barbagli G. et al, study currently underway

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Why?
Rhythmic contractions of the bulbo-spongiosum muscles and other perineal muscles expel semen from the urethra and have an important role in expelling urine, avoiding urine sequestration in the large urethral bulb.

Yang and Bradley, BJU International 2000; 85:857-863
During bulbar urethroplasty, damage to the bulbo-spongiosum muscle and to the perineal nerves may play a role in determining loss of efficient urethral contraction, causing difficulties in expelling semen and urine, and temporary or permanent sexual dysfunction.
Loss of efficient contraction of the bulbo-spongiosum muscles and corpus spongiosum

- decreased force of the ejaculation jet
- loss of the ejaculation jet
- semen sequestration
- infertility
- urine sequestration in the urethral bulb
- post-voiding dribbling
A new muscle and nerve sparing dorsal onlay graft bulbar urethroplasty
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A new muscle and nerve sparing ventral onlay graft bulbar urethroplasty
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Conclusions

Preservation of the bulbo-spongiosum muscle and perineal nerve should represent a slight but significant step toward perfecting the surgical technique of bulbar urethroplasty, using a minimally invasive approach.
Conclusions

Longer follow-up on a larger series of patients is necessary to confirm our preliminary satisfactory results, showing that preservation of muscle and nerve avoid the occurrence of post operative complications such as:

- Post-voiding dribbling
- Loss of ejaculation
- Partial urine and semen sequestration in the urethral bulb

We are currently working on gathering data.
Next month, this lecture will be fully available on our website

Thank you!