Center for Reconstructive Urethral Surgery



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Training Course on

"Techniques in Reconstructive Urology"

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The use of oral mucosa for anterior urethroplasty



THE BRITISH JOURNAL OF SURGERY

A ONE-STAGE OPERATION FOR HYPOSPADIAS

BY GRAHAM HUMBY

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WITH A FOREWORD BY

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Humby G, Br J Surg 1941; 29: 84-92

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Oral mucosa





Oral mucosa







Negative aesthetic consequences

Unsatisfactory post-operative patient acceptance

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Two surgical teams work simultaneously



Two sets of surgical instruments





Oral mucosa

Urethroplasty





Appropriate mouth retractor with its own light





Only one assistant is needed to harvest the oral graft





Harvesting oral mucosal graft from the cheek



Surgical steps

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The patient is intubated through the nose, allowing the mouth to be completely free











Lidocaine HCL 1% with epinephrine (1:100,000)











4 cm





6 cm

Harvesting oral mucosal graft from the cheek



• Available in all patients

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- Two grafts, thick, long and large
- Donor site scar is concealed



• The procedure may require nasal intubation or special retractor

Morbidity of oral mucosa graft harvesting from a single cheek



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Barbagli G. et al, Eur Urol 2010; in press

Early complications in 350 patients

bleeding: 4.3%

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pain: none 49.2, slight 36%, moderate 13.7%, severe 1.1%

swelling: none 33.7%, slight 41.2%, moderate 24.6%, severe 0.5%

use of anti-inflammatory drugs for oral pain: 3.7%

Barbagli G. et al, Eur Urol 2010; in press

Early complications in 350 patients

58.6% patients were able to resume a normal diet within 3 days

31.4% patients were able to resume a normal diet within 6 days

10% patients were able to resume a normal diet within 10 days

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Barbagli G. et al, Eur Urol 2010; in press

Late complications in 350 patients

infection: 1.7%

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perioral numbress: for one week 73.4%, for one month 22.9%, for three months 3.7%

discomfort related to the tightness of suture closure: none 48%, slight 40.3%, moderate 10.9%, severe 0.8%

discomfort due to mouth scar: none 82.8%, slight 14.6%, moderate 2.6%, severe 0%

Barbagli G. et al, Eur Urol 2010; in press

Late complications in 350 patients

difficulty with mouth opening: none 98.3%, slight 1.4%, moderate 0.3%, severe 0%

difficulty smiling: none 99.7%, slight 0.3%, moderate 0%, severe 0%

dry mouth: none 97%, slight 2.6%, moderate 0.4%, severe 0%

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Barbagli G. et al, Eur Urol 2010; in press

Patient satisfaction

"Would you undergo oral mucosa graft harvesting using this technique again?"

Yes : 98% of patients

No : 2% of patients

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Barbagli G. et al, Eur Urol 2010; in press







Evaluation of the results



If you don't look for complications following surgery, you won't find complications !

V/a

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Harvesting oral mucosal graft from the tongue





Surgical steps





Wharton's duct



Lingual nerve

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Double grafts harvesting

Harvesting mucosal graft from the tongue



- Two grafts available in all patients
- Donor site scar is concealed
- The procedure is simple and quick and does not require nasal intubation or special retractor

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• The grafts are thin

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The tongue represents the best alternative to the cheek

***** Few reports in the literature

The use of oral mucosa in urethral surgery

Why?

• Its biological and histological characteristics

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- Due to its elasticity, it is adaptable for any kind of urethroplasty (one-stage or two-stage) (onlay or inlay)
- In the literature (years 1966-2006), **1.267 articles** on the use of oral mucosa for urethral reconstruction have been reported

The use of oral mucosa in urethral surgery

Why?



The patient does not want to be

considered an experimental

animal

Penile urethra

Basically, the surgical technique for the repair of penile urethral strictures is selected according to stricture etiology



Etiology of penile urethral strictures

Failed hypospadias repair

Lichen sclerosus

Trauma

Instrumentation

Catheter

Infection

Other cause

In penile urethral strictures due to:

- Trauma
- Instrumentation

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- Catheter
- Infection
- Other cause



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The penis is normal: one-stage repair

One-stage penile urethroplasty using Asopa's technique



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Asopa H.S. et al, Urology 2010; 58: 657-659

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Penile urethral stricture involving external urinary meatus or in the middle tract of the shaft

























One-stage penile graft urethroplasty using Asopa's technique



patients	type of repair	success
22	oral graft	81.8%
23	skin graft	78.3%

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Barbagli G. et al, BJU Int 2008; 102: 853-860

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In penile urethral strictures due to:



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Failed hypospadias repair

Lichen sclerosus



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The penis is abnormal: two-stage repair

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Two-stage urethroplasty using oral mucosal graft



First stage



Complications following the first stage of urethroplasty



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

Barbagli G. et al, Eur Urol 2006; 49: 887-895

Second stage









Second stage



Complications following the second stage of urethroplasty



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

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Barbagli G. et al, Eur Urol 2006; 49: 887-895

Penile urethroplasty: conclusions

* Two-stage penile urethroplasty using oral graft is not a simple procedure and requires great expertise to avoid a lot of traps

* Moreover, this two-stage procedure, also in the hands of the skilled surgeon, showed a high complication rate, either following the first stage or the second stage

Bulbar urethra

Basically, the surgical

technique for the repair of

bulbar urethral strictures

is selected according to the

stricture length



One-stage bulbar urethroplasty using oral mucosal graft



2 – 4 cm: augmented anastomotic repair



> 4 cm: substitution urethroplasty

Preparation of the patient



Simple lithotomy position

Preparation of the patient



Allen stirrups

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Preparation of the patient



Sequential inflatable compression sleeves

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2 - 4 cm bulbar urethral stricture





Augmented anastomotic repair















The urethra is transected at the stricture level





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The distal and proximal urethral ends are mobilized from the

corpora cavernosa





The distal and proximal urethral ends are fully spatuled along the dorsal surface

structive





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Two ml of fibrin glue are injected over the urethra




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The buccal mucosal graft is applied over the fibrin glue





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The distal and proximal urethral edges are sutured to the apices of the graft

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The distal urethra is pulled down and the proximal urethra is pulled up to cover the graft

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The distal and proximal urethral edges are sutured together along the midline as an end-to-end anastomosis





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Two ml of fibrin glue are injected over the urethra to prevent urinary leakage

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Sirlett

> 4 cm bulbar urethral stricture





Substitution urethroplasty



Substitution urethroplasty





Ventral onlay graft urethroplasty



















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Dorsal onlay graft urethroplasty



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Conclusions

- 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