

Buccal Versus Lingual Mucosa Graft in Anterior Urethroplasty: A Prospective Comparison of Surgical Outcome and Donor Site Morbidity

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Abbreviations and Acronyms

2y-FFS = 2-year failure-free survival
BMG = buccal mucosa graft
D3 = day 3
LMG = lingual mucosa graft
M6 = month 6
NRS = numeric rating scale
Q_{max} = maximum urinary flow
W2 = week 2

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Purpose: We prospectively compared buccal mucosa graft and lingual mucosa graft urethroplasty with respect to donor site morbidity and urethroplasty outcome.

Materials and Methods: Patients treated with buccal mucosa graft (29) or lingual mucosa graft (29) urethroplasty were included in the study. Oral pain and morbidity were assessed using the numeric rating scale (scale 0 to 10) as well as an in-home questionnaire administered 3 days, 2 weeks and 6 months postoperatively.

Results: After a mean (\pm SD) followup of 30 (\pm 13) months successful urethroplasty was achieved in 24 (82.8%) and 26 (89.7%) patients treated with buccal mucosa graft and lingual mucosa graft, respectively ($p=0.306$). Median numeric rating scale after 3 days, 2 weeks and 6 months was 4, 2 and 0 for buccal mucosa graft and 6, 3 and 0 for lingual mucosa graft, respectively, with no statistical differences between the groups. At day 3 significantly more patients in the lingual mucosa graft group had severe difficulties with eating and drinking (62.1% vs 24.1%, $p=0.004$) and speaking (93.1% vs 55.2%, $p=0.001$), and had dysgeusia (48.3% vs 13.8%, $p=0.01$). Two weeks postoperatively speech impairment was still more frequent with lingual mucosa graft (55.2% vs 13.8%, $p=0.002$), whereas oral tightness was more frequent with buccal mucosa graft (41.4% vs 6.9%, $p=0.005$). After 6 months 44.8% and 31% of patients treated with buccal mucosa graft and lingual mucosa graft, respectively, still reported sensitivity disorders ($p=0.279$).

Conclusions: The success of urethroplasty with lingual and buccal mucosa grafts was similar. Oral pain was not different after both grafts. In the early postoperative period there were differences in oral morbidity between buccal and lingual mucosa grafts. Long-term oral morbidity was not infrequent with both grafts.

Key Words: urethral stricture, morbidity, mouth mucosa

GRAFT urethroplasty is an established treatment option for strictures at the penile urethra and bulbar urethra not amenable to anastomotic repair.^{1,2} Currently buccal mucosa graft is

generally accepted as the graft of choice.^{1,3} Although BMG is easy to harvest, early and late donor site complications (local pain, sensitivity disorders, oral tightness, salivary

changes) have been reported.^{4–7} The use of lower labial lip mucosa is not recommended as it is associated with more sensitivity disorders and the risk of unaesthetic inversion of the lower lip.^{6,7} The lateral and ventral surface of the tongue mucosa has histological features identical to the rest of the oral cavity. With the hope of reducing donor site morbidity Simonato et al first described the use of a lingual mucosa graft in urethroplasty.⁸ Initial series reported less local morbidity compared to BMG but these series lacked a comparison with BMG.^{8–10} In this study we tested the hypothesis that LMG is associated with less local morbidity than BMG. In addition, the surgical outcomes of the grafts were tested and compared.

MATERIALS AND METHODS

Patient Selection and Protocol

Male patients treated with BMG or LMG urethroplasty at a single center were invited to participate and provide written informed consent. Exclusion criteria were 1) nonnative Dutch or French speaking patients, 2) previous oral mucosa graft harvesting and 3) combination of oral mucosa graft urethroplasty with another type of urethroplasty. All patients were preoperatively evaluated by history taking, physical examination, uroflowmetry and urethrography. Relevant patient information and surgical details were prospectively recorded in a database. The choice between BMG and LMG was made on an alternate basis (without formal randomization), except for 1 case with buccal leukoplakia and 1 case with a short tongue frenulum for which LMG and BMG, respectively, were chosen.

At postoperative day 3 pain at the oral cavity was assessed by the numeric rating scale (0—no pain to 10—worst possible pain) and by the need for analgesia for oral pain. Oral morbidity was further assessed by an in-home questionnaire assessing drinking and eating problems (“no problem,” “slightly difficult,” “very difficult,” “impossible”), and by dichotomous questions (yes/no) evaluating speech impairment, sensitivity disorders and dysgeusia. Two weeks and 6 months postoperatively oral pain was assessed by NRS, and oral morbidity was assessed by dichotomous questions on problems with drinking, eating soft and solid food, on oral tightness, sensitivity disorders, salivary changes, speech impairment and dysgeusia (see supplementary Appendix, <http://jurology.com/>). Patients were followed by clinical examination, uroflowmetry and, if indicated, by urethrography and urethroscopy. Failure was defined as stricture recurrence or fistula with the need for further urethral manipulation.

Patients were only included in further analysis if they filled in the questionnaire at all 3 points. Finally 58 patients who could be included in the study were further grouped into BMG (29) or LMG (29), and compared for surgical outcome and differences in oral morbidity (fig. 1). The study was approved by the local ethics committee (EC/UZG 2008/234).

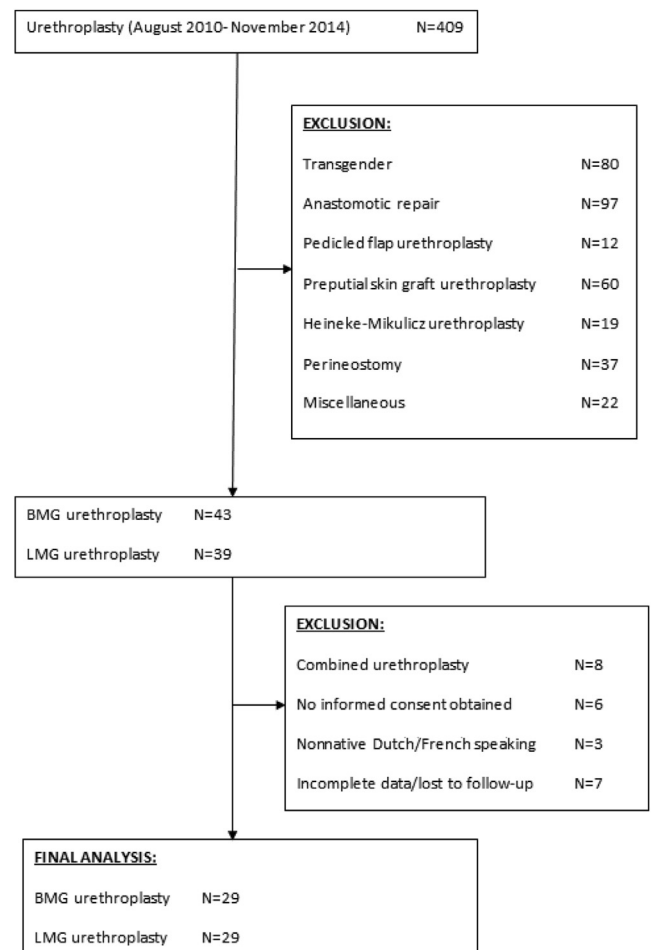


Figure 1. Flow chart of patient selection

Surgical Technique and Postoperative Care

An extensive surgical description is beyond the scope of this article and can be found in a previous publication.¹¹ In the case of 2-stage urethroplasty (9, 15.5%) the graft was used during the first stage. In all cases of urethroplasty for penile (41, 70.7%) and penobulbar (3, 5.2%) strictures, the graft was positioned at the dorsal aspect of the urethra. This was done using the ventral sagittal approach (Asopa’s technique) in all but 1 case, which was treated with the dorsolateral approach (Kulkarni’s technique). The cases of bulbar urethroplasty (14, 24.1%) were treated with the ventral onlay technique, except for 1 case in which the dorsal onlay technique (Barbagli’s technique) was used. The urethral stricture was opened and graft length was tailored to the length of the opened urethra. The graft width was dictated by the augmentation of the narrowed urethra needed to allow easy passage of a 20Fr catheter. Nasal intubation and a mouth retractor ensured access to the oral cavity. BMG was harvested at the inner cheek(s) but the lower lip was avoided in all cases. The orifice of the Stenon duct was identified and avoided during graft harvesting (fig. 2, A). LMG was harvested at the ventrolateral aspect of the tongue with avoidance of the orifice of the Wharton duct (fig. 2, B).

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