

OPTIMAL TREATMENT IN RECURRENT URETHRAL STRICTURES

ADRIAN HAȘEGAN¹

¹“Lucian Blaga” University of Sibiu

Keywords: urethral stricture, buccal mucosa graft, urethroplasty

Abstract: The objective of this paper is to discuss about the advantages and disadvantages of buccal mucosa as biological material of substitution in urethral plasty through the experience of the Urology Clinic of Sibiu. We conducted a clinical trial on a clinical series of 41 patients who were diagnosed with recurrent urethral strictures in 2009-2013 and operated using buccal mucosa for urethral lumen augmentation. Urethral strictures were evaluated in terms of etiology, topography and length. Harvesting buccal mucosa was performed in 38 patients at the vestibular level and, at lingual level in 3 patients. Urethroplasty with dorsal onlay graft was performed in 23 cases, ventral onlay graft in 9 cases, dorsal inlay graft urethroplasty in 6 patients and tubularization in 3 patients (7.32 %). The mean duration of follow-up of patients was 7.2 months. The research has shown that buccal mucosa graft is the golden standard in urethral reconstruction with remarkable biological, histological and mechanical properties. Buccal mucosa graft urethroplasty requires a well-trained surgical team with multidisciplinary skills. The accomplishment of urethroplasty with two teams halves the secondary operating time and the complications related to anesthesia. The surgical technique suitable for the type of urethral stricture is an essential requirement in order to achieve a functional and esthetic result.

Cuvinte cheie: strictură uretrală, greșă de mucoasă bucală, uretroplastie

Rezumat: Obiectivul acestei lucrări este de a aduce în discuție avantajele și dezavantajele mucoasei bucale ca material biologic de substituție în plastiile uretrale prin prisma experienței Clinicii de Urologie Sibiu. Am efectuat un studiu clinic pe o serie clinică de 41 pacienți care au fost diagnosticați cu stricturi uretrale recidivate în perioada 2009-2013 și operați folosind mucoasă bucală pentru augmentarea lumenului uretral. Stricturile uretrale au fost evaluate din punct de vedere etiologic, topografic și al lungimii. Recoltarea mucoasei bucale s-a efectuat de la nivel vestibular la 38 pacienți și de la nivel lingual la 3 pacienți. Uretroplastia s-a efectuat în manieră dorsal onlay graft în 23 cazuri, ventral onlay graft în 9 cazuri, dorsal inlay graft la 6 pacienți și tubularizare la 3 pacienți (7,32%). Durata medie de urmărire a pacienților a fost de 7,2 luni. Cercetarea a demonstrat că greșa de mucoasă bucală este golden standard în reconstrucția uretrală, cu proprietăți biologice, histologice și mecanice remarcabile. Uretroplastia cu greșă de mucoasă bucală necesită o echipă operatorie bine antrenată, cu abilități multidisciplinare. Efectuarea uretroplastiei cu două echipe înjumătățește timpul operator, secundar și complicațiile legate de anestezie. Tehnica chirurgicală adecvată tipului de strictură uretrală este o cerință esențială pentru obținerea unui rezultat funcțional și estetic bun.

INTRODUCTION

Urethral stricture is a complicated disease, a therapeutic challenge, which is still drawing attention due to its incidence and consequences. Following reconstruction of the urethra, urethroplasty requires efficient derivation and meticulous technique. To obtain a quality neourethra without further changes and reinterventions, we must first avoid any inaccuracy or approximation in its execution.(1)

Plastic reconstruction has been long tested, using many techniques that have been perfected over time. More recently, buccal mucosa graft gained the status of standard surgical approach in urethral strictures.(2)

Buccal mucosa graft was first described by Humby in 1941. It has become an ideal substitute due to its easiness in harvesting, surgical characteristics, lack of hair, compatibility to a wet environment and survival.(3)

There is controversy as to whether buccal mucosa graft should be placed dorsally or ventrally. On the penile urethra, most experts would place the graft on the dorsal side

and on the bulbar one, they would place it ventrally or dorsally-ventrally even laterally, depending on the clinical situation. Multiple studies have shown that both dorsal and ventral buccal mucosa graft have good blood supply and mechanical support.

PURPOSE

The objective of this paper is to bring into discussion the advantages and disadvantages of buccal mucosa as biological substitution material in urethral plasty through the experience of the Urology Clinic of Sibiu.

METHODS

We conducted a clinical trial on a clinical series of 41 patients who were diagnosed with recurrent urethral strictures in 2009-2013 and operated using buccal mucosa for urethral lumen augmentation. Urethral strictures were evaluated in terms of etiology, topography and length.

The study group were aged between 29 and 68 years old. In most cases, patients with urethral stricture presented

¹Corresponding author: Adrian Hașegan, Str. Lucian Blaga, Nr. 2A, Sibiu, România, E-mail: adihasegan@yahoo.com, Tel: +40745 381064
Article received on 20.02.2014 and accepted for publication on 14.05.2014
ACTA MEDICA TRANSILVANICA June 2014;2(2):259-261

CLINICAL ASPECTS

symptoms of lower urinary tract, symptoms of hesitancy, interrupted urinary flow, decreased urine stream pressure, incomplete emptying of the bladder, nocturia, alguria or acute urinary retention.

The diagnosis was based on the clinical examination, uroflowmetry, retrograde and voiding urethrogram, exploratory urethral catheterization, urinary tract ultrasonography and urethrocystoscopy.

Postoperative results were assessed clinically (patient satisfaction) and through uroflowmetry, retrograde and voiding urethrogram and urethrocystoscopy.

RESULTS

We identified 17 patients (43.46%) who presented post-traumatic strictures, 19 patients (46.34%) with postinflammatory strictures including lichen planus and 5 patients (12.19%) with strictures due to the surgical postcorrection of hypospadias. The average length of the urethral stricture segment was of 4.2 cm.

The location of the stricture was on the anterior penile urethra in 14 cases (34.14%) and on the posterior bulbar urethra in 27 patients (65.86%).

Buccal mucosa harvesting was conducted at vestibular level in 38 patients (92.68%) and, at lingual level in 3 (7.32%).

Urethroplasty was performed in dorsal onlay graft manner in 23 cases (56.1%), ventral onlay graft in 9 cases (21.95%), dorsal inlay graft in 6 patients (14.63%) and tubularization in 3 patients (7.32%).

Patients follow-up was 7,2 months.

Functional and aesthetical good results were obtained in 34 patients (90.3%), consisting of easy urinations and urinary stream preserved during the follow-up period of time.

Immediate complications were represented by wound dehiscence in 3 cases (7.3%) and urinary fistula occurred in 1 patient (2.4%). Late complications were represented by strictures at proximal or distal anastomosis level occurred in 7 patients (17.1%) who required urethral dilation or internal optical urethrotomy.

DISCUSSIONS

The treatment of urethral strictures includes numerous surgical techniques. The urologist must be familiar with all of these techniques in order to cope with any urethral strictures.(4)

Substitution urethroplasty is the surgical procedure, which, in order to solve the urethral strictures, uses the tissue transfer. These tissues can benefit from vascular pedicle and support tissue of the donor area (flaps or flap sites) or without vascular connections with the donor area (graft).(5)

Buccal mucosa graft is applied in the case of penile bulbar urethral stricture, or in the case of strictures longer than 2 cm, regardless of location.(6)

Buccal mucosa graft was imposed due to the advantages it presents: dense vascular network, large number of epithelial layers, better adaptation to the wet environment and increased resistance, both mechanical and regarding the infections.(7) Buccal mucosa graft has a thick epithelium rich in elastin, which makes it durable and easy to handle. Lamina propria is thin compared to that of the bladder mucosa and skin, facilitating unification and neovascularisation.(8)

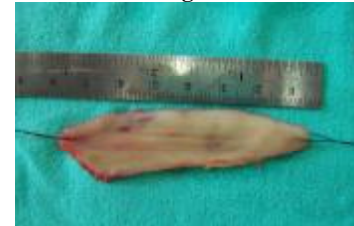
Graft harvesting can be done at jugal, vestibular or lingual level, depending on the length and location of the urethral defect.

Vestibular level graft (figure no. 1) has the advantage that it is thick, it can be harvested on a considerable length (7cm / 2 cm) (figure no. 2) and allows the closure per primam of the resulted defect.(9)

Figure no. 1. Vestibular level graft



Figure no. 2. Assessment of length of vestibular level graft



Jugal graft has about the same quality, but it does not allow the closure of the per primam defect, getting epithelialized secondarily. Postoperative pain syndrome is more pronounced, therefore this type of graft has been renounced at.(9) Lingual graft is thinner and we use it when the urethral defect is longer and the jugal graft does not allow covering the defect. Buccal mucosa harvesting was mostly accomplished from the vestibular level at 1 cm down from the Stenon duct papilla (which is at the level of the upper molars 2 and 3) and after 1% lidocaine infiltration with epinephrine 1/250 000.(10) Once harvested, it is cleaned of fibrous tissue until the surface remains smooth and glossy. Mucosal defect remained is closed through continuous suture with 4-0 absorbable poliglactin thread (figure no. 1).

Buccal mucosa urethroplasty in a single operating time requires the participation of two surgical teams: the first team effectively performing urethroplasty and the second harvesting the buccal mucosa. Thus, the operating time decreases by half: from 190 minutes to 80 minutes.

General anesthesia is made through oro-tracheal intubation (AG-IOT) or nasally. Patient position is variable depending on the location of stricture: supine for penile urethral strictures and in lithotomy position for bulbar urethral and penoscrotal angle strictures.

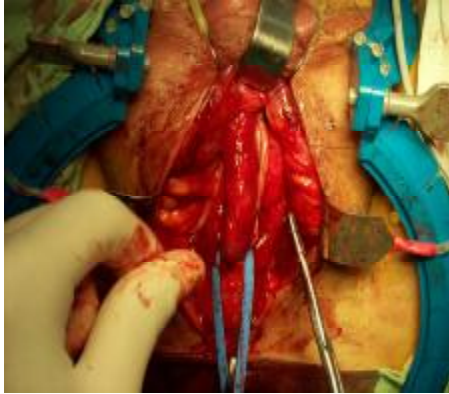
The median perineal incision is performed, cutting the bulbourethral muscle, with the dissection of the urethra and its lift on a lasso (figure no. 3), incision in the urethra stricture and stricture length measurement, placing the buccal mucosa graft with anastomosis on the Foley's probe with absorbable threads and final suture in anatomical layers (figure no. 4).

Figure no. 3. Buccal mucosa urethroplasty



CLINICAL ASPECTS

Figure no. 4. Placing the buccal mucosa graft



Foley's probe is left in place for 3 weeks.

Postoperatively, for the patient's comfort and pain control, ice packs at vestibular and perineal level can be applied. Chlorhexidine mouth rinse is to be used 4 times per day after meals. Food can be resumed immediately after surgery with liquids, then resume the regular diet. Antibiotic prophylaxis is carried out until urethra-bladder probe ablation in combination with NSAIDs.

Postoperative follow-up consists of examining the patient in order to capture any obstructive symptoms objectified by uroflowmetry and ultrasound measurement of the postmicticidal residue.

CONCLUSIONS

1. Buccal mucosa graft is the golden standard in urethral reconstruction with remarkable biological, histological and mechanical properties.
2. Buccal mucosa graft urethroplasty requires a well-trained surgical team with multidisciplinary skills.
3. Performing urethroplasty with two teams halves the secondary operating time and the complications related to anesthesia.
4. The surgical technique suitable for the type of urethral stricture is an essential requirement in order to achieve a functional and esthetic result.

REFERENCES

1. Andrich DE, Mundy AR. What is the best technique for urethroplasty? *Eur Urol* 2008;54:1031-41.
2. Andrich DE, Mundy AR. Outcome of different management options for full-length anterior urethral strictures. *J Urol* 2009;181:13.
3. Fichtner J, Filipas D, Fisch M, Hohenfellner R, Thuroff JW. Long-term outcome of ventral buccal mucosa onlay graft urethroplasty for urethral stricture repair. *Urology*. 2004;64:648-50.
4. Barbagli G, Palminteri E, Rizzo M. Dorsal onlay graft urethroplasty using penile skin or buccal mucosa in adult bulbourethral strictures. *J Urol* 1998;160:1307-9.
5. Pansadoro V, Emiliozzi P, Gaffi M, Scarpone P. Buccal mucosa urethroplasty for the treatment of bulbar urethral strictures. *J Urol* 1999;161:1501-3.
6. Andrich DE, Leach CJ, Mundy AR. The Barbagli procedure gives the best results for patch urethroplasty of the bulbar urethra. *BJU Int* 2001;88:385-9.
7. Hosseini J, Soltanzadeh K. A comparative study of long-term results of Buccal Mucosal Graft and Penile Skin Flap techniques in the management of diffuse anterior urethral strictures: first report in Iran. *Urol J* 2004;1:94-8.

8. Peterson AC, Webster GD. Management of urethral stricture disease: developing options for surgical intervention. *BJU Int* 2004;94:971-6.
9. Markiewicz MR, Lukose MA, Margarone JE, 3rd, Barbagli G, Miller KS, Chuang SK. The oral mucosa graft: a systematic review. *J Urol* 2007;178:387-94.
10. Mehrsai A, Djaladat H, Salem S, Jahangiri R, Pourmand G. Outcome of buccal mucosal graft urethroplasty for long and repeated stricture repair. *Urology* 2007;69:17-21;discussion.