African Journal of Urology (2016) **22**, 18–23

African Journal of Urology

Official journal of the Pan African Urological Surgeon's Association
web page of the journal

www.ees.elsevier.com/afju
www.sciencedirect.com

Review

How to harvest buccal mucosa from the cheek

G. Barbagli[a], **S. Balò**[a], **S. Sansalone**[b], **M. Lazzeri**[c,*]

[a] *Centro Chirurgico Toscano, Arezzo, Italy*
[b] *Department of Experimental Medicine and Surgery, University of Tor Vergata, Rome, Italy*
[c] *Department of Urology, Istituto Clinico Humanitas IRCCS, Clinical and Research Hospital, Rozzano, Italy*

Received 28 September 2015; accepted 28 September 2015
Available online 2 December 2015

KEYWORDS
Buccal mucosa;
Cheek;
Surgical technique;
Urethroplasty;
Complications

Abstract
The paper provides the reader with the step by step of our current technique of harvesting buccal mucosa from the cheek. We describe how to prepare the patients, the use of the Kilner-Doughty mouth retractor, the Stensen duct identification, the size and the shape of the graft. We discuss how to repair the donor site and how to manage the graft for urethral implantation. Finally the paper presents the preoperative patient evaluation, postoperative course and complications.

Introduction

The use of buccal mucosa as a substitute material in surgery dates back to 1873, when Stellwag von Carion, an ophthalmologist from Vienna, Austria, used mucosa from the lip to treat conjunctival defects, with further ophthalmologic applications following in 1880 [1]. In 1894, Sapezhko, a surgeon from Kiev, Ukraine, was the first to fully describe the use of buccal mucosa from the lip and mouth, in 4 patients requiring urethral surgery for different urethral stricture diseases [2,3]. In 1902, Tyrmos, a surgeon from Odessa, Ukraine, also reported the use of buccal mucosa in 2 patients requiring urethroplasty [2,3]. Among western countries, the first use of buccal mucosa from the lip was reported many years later in 1941 by Humby from London, to repair a urethral fistula after a failed hypospadias repair in an 8-year-old child [4]. Starting in 1992, the use of buccal mucosa from the lip to repair primary and failed hypospadias in paediatric cases emerged in the literature [5,6]. In 1993, El-Kasaby et al. from Cairo, Egypt, first described the use of buccal mucosa from the lip to repair penile and bulbar strictures in adult patients [7].

Early on, from 1894 to 1995, the lip was reported as the preferred site for harvesting buccal mucosa [1–7]. In 1996, Morey and McAninch suggested a new technique for harvesting buccal mucosa from the cheek in order to minimize the risk of scarring and lip deviation or retraction [8]. These authors introduced a relevant innovation in the cheek harvesting technique: the use of a special mucosa stretcher and a 2-team approach in which 1 team harvests the graft from the mouth, while the urethral team simultaneously exposes the stricture [8]. The use of 2 teams decreases operative time and prevents wound cross contamination [8]. We began using the technique described

* Corresponding author.
E-mail address: massimo.lazzeri@humanitas.it (M. Lazzeri).
Peer review under responsibility of Pan African Urological Surgeons' Association.

http://dx.doi.org/10.1016/j.afju.2015.09.001

by Morey and McAninch in 1996 and we recently reported on early and late complications as well as patient satisfaction in a series of 553 patients treated with this technique [9]. Buccal mucosa is now recognized as the gold standard material for urethral reconstruction, particularly due to its special biological properties [10–12].

We describe here, step by step, our current technique of harvesting buccal mucosa from the cheek, including the preoperative patient evaluation, postoperative course and complications. The aim of this study is to make this safe technique easily reproducible in the hands of any surgeon.

Subjects and methods

Pre-operative evaluation and preparation of patient

Before planning to harvest the buccal mucosa from the cheek the patient should be fully evaluated to check the extension of the mouth opening, the size of available tissue on both cheeks and the presence of scars due to chronic cheek biting or previous surgeries. The following groups of patients are not ideal candidates for oral mucosa cheek harvesting:

- Patients who chew areca nut products (betel quid, pan masala, gutka, mainpuri, mawa, kaini) may develop oral submucosa fibrosis a disease characterized by a severe progressive fibrosis of the oral cavity resulting in dysphagia and a reduced ability to open the mouth [13].
- Patients who chew tobacco (Fig. 1).
- Patients who currently have an infectious disease affecting the mouth (candida, lichen, varicella-virus, herpes-virus and other).
- Patients who have had previous surgery in the mandibular arch prohibiting a wide opening of the mouth.
- Patients who play wind instruments.
- Patients working as speakers.

In patients who have undergone previous graft harvests from the cheek, harvesting a new graft is possible although a little more difficult due to the fibrosis and the fact that the graft will need to be smaller than the previous one. The patient and the anaesthetist should be notified prior to surgery when bilateral buccal mucosa graft harvesting is planned. Three days prior to surgery, the patient should begin using chlorhexidine mouthwash for oral cleansing twice a day. The day before surgery the patient receives intravenous prophylactic antibiotics.

Figure 1 Oral mucosa in a patient who chews tobacco.

Instruments for buccal mucosa graft harvesting

In the operating room, the patient is draped in 2 separated parts, and 2 surgical teams work simultaneously. Each team has its own set of surgical instruments, including suction and cautery.

The following instruments are suggested for easier graft harvesting from the cheek:

- A Kilner-Doughty mouth retractor (Fig. 2). This retractor, available in any oral surgery department provides a wide and safe mouth opening due its large tongue depressor. In toothless patients the hooks of the retractor may damage the gums and should therefore be protected by a small piece of gauze. Using this retractor only one assistant is necessary to harvest the graft.
- A 10-ml syringe with 10 ml solution with bupivacaine HCL 2.5 mg/ml and epinephrine acid tartrate 0.0091 mg (0.005 mg epinephrine).
- Bipolar electrocautery.
- 5-zero polyglactin sutures (or similar).

Preparation of patient for surgery

The patient is placed is a standard supine position for penile urethroplasty and in a simple lithotomy position for bulbar urethroplasty, with the calves placed in Allen stirrups with sequential inflatable compression sleeves and the lower extremities suspended by placement of the patient's feet within the stirrup boots. The patient is draped in two separated parts so that two surgical teams can work simultaneously. Each team has its own set of surgical instruments. One team harvests and prepares the oral graft, while the second team exposes the urethra.

The patient is intubated through the nose, allowing the mouth to be completely free. Nasal intubation is not mandatory but presents the following advantages:

- The nasal tube is smaller and softer than the oro-tracheal tube and thus more comfortable for the patient.
- Nasal intubation is more useful in patients with a small mouth or a limited mouth opening.
- Nasal intubation is more useful at the beginning of our learning curve.
- Nasal intubation is more useful in patients requiring double graft harvestings.

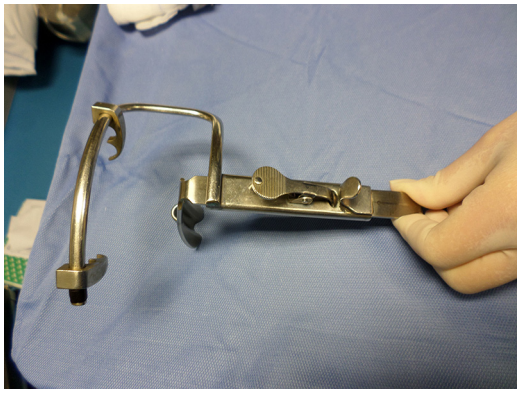

Figure 2 The Kilner-Doughty mouth retractor, with two hooks for the teeth and a tongue depressor.