TO CLOSE OR NOT TO CLOSE? DONOR SITE MORBIDITY AFTER 
BUCCAL MUCOSAL GRAFT HARVESTING

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ABSTRACT

Urethral Stricture disease is a chronic debilitating disease. Various tissues have been used as Replacement/substitution for Urethra. Amongst these tissues Buccal mucosa is a good substitute for urethral reconstruction. Buccal Mucosa is easy to harvest due to easy access and gives a concealed scar after harvesting. The use of Buccal Mucosa for urethral surgery and its success is attributable to the biologic property of the Buccal Mucosa. However there are few complications of Buccal mucosa graft (BMG) harvesting at the donor site like bleeding, oral swelling, oral numbness, difficulty in mouth opening. Various authors claim different results as far as the donor site morbidity is concerned depending on whether the donor site is closed or Not. Here in we present our Prospective study of donor site morbidity with both primary closing and left open site.

KEYWORDS: Urethral stricture, Urethroplasty, Augementation/ Substitution, Buccal Mucosa, Donor site, Complications.

INTRODUCTION

Urethral strictures are difficult to manage. Some treatment modalities for urethral strictures are fraught with high patient morbidity and stricture recurrence rates. Reconstructive Surgeons have used many tissues as free graft such as posterior auricular skin, full thickness hairless abdominal wall skin and bladder mucosa, the overwhelming majority of cases are most easily treated with buccal grafts. Buccal mucosa graft (BMG) was first described for urethral reconstruction by Humby. Buccal Mucosa can be placed dorsally or ventrally. In the penile urethra, most experts would place it dorsally. In the bulbar urethra, many experts place it ventrally, or mix ventral, dorsal and even lateral placement as the clinical situation...
warrants. The success rate for dorsal onlay is reported between 85 and 100%.\[^{2-6}\] Ventral-onlay BMG graft placement have shown comparable success rates of 84 to 100%.\[^{7-10}\] However Opinion varies greatly when managing the buccinator fossa after graft harvest. The main question is to close the harvest site or not. Wood et al. reported that closure of the harvest site was associated with worse pain and suggested that this may be improved by not closing.\[^{12}\] Although Dublin et al.\[^{13}\] reported that patients did well with closure of the mouth, but 16% and 32% had long-term complaints of numbness and mouth tightness respectively.\[^{14-19}\] Overall, the inner cheek harvest site for BMG regardless of management appears to heal without complications.

**MATERIALS AND METHODS**

This was a prospective study of 69 patients who underwent Buccal Mucosal Graft Urethroplasty in our department between Sept 2013 to March 2017. The graft was harvested from either single or both cheeks depending on the length required. The graft was harvested with a length of 4 to 6 cm and width of 2 to 2.5 cm. The graft harvest site was either left open or closed with 3-0 chromic catgut Interrupted sutures.

The patient’s clinical history was noted along with the etiology of stricture. The location and length of stricture were examined to define the requirement of graft from single cheek or both cheek. The decision to leave the graft site open or close was based on surgeons preference.

**Procedure.** The patient was started with chlorhexidine mouthwash 3 days prior to surgery and continued at least 3 days post-operatively. Prophylactic injectable antibiotic was given just before the surgery and continued for 2 days post-operatively, changed over to oral form on post-op day 3 & continued till Urethral catheter removal. Patient was operated under General Anaesthesia with Nasotracheal Intubation and in Lithotomy position. Two teams operated simultaneously where one team harvested and prepared the buccal mucosal graft and the other team exposed the urethra for augmentation. Inner cheek was painted with 5% povidone-iodine. Stay sutures were placed on the edge of the cheek and buccal mucosa kept stretched. One stay suture was placed on the tongue to retract it away from the operating site. Stensen’s duct opening was identified and the desired graft size measured and marked 1 cm away from the duct. 1% Lidocaine with epinephrine (1:100 000) was injected along the edges of the marked graft for hemostasis. The graft was dissected free leaving the Buccinator muscle underneath intact. The donor site was examined for bleeding. For closure of donor site 2 stitches were taken first at the apices to reduce wound size. The donor site was closed
with 3-0 chromic catgut interrupted sutures. When required, graft was harvested from the other cheek using the same technique. The graft was defatted.

**Post Op Care** Clear liquids on the 1st post-operative day. Soft diet on 2nd post-operative day. Regular diet the day after.

The outcomes were assessed by a questionnaire given to the patients prepared in their own language(Annexure I).

**RESULTS**

**Early Complications**

1. **Bleeding**
From the Donor site within 72hrs after surgery was noted in 12(17%) of the 69 cases. None of them required surgical intervention. 3 (7.1%) from the donor site closed group. 9 (33.3%) from donor site open group (p-value is 0.005).

2. **Pain**
Most patients had mild-moderate pain 59(85.5%) in the immediate post-op period. 20 were from the donor site open group & 39 from the donor site closed group 10(14.4%) patients had severe pain 7 were from the donor site open group and 3 from the donor site closed group. (p-value is 0.030).

3. **Oral Swelling**
Majority patients showed mild-moderate 52(75.3%) oral swelling. Severe 17(24.6%) oral swelling was noted in: 11(40%) of 27 cases of the donor site open group. 6(14%) of 42 from the donor site closed group. (p-value is 0.012).

4. **Time to resume normal diet**
58(84%) of 69 patients were able to resume a normal diet by 2 days. 9(33.3%) of 27 from the donor site open group & 2(4.7%) of 42 from the donor site closed group took more than 2 days to resume a normal diet. (p-value is 0.0015).

5. **Analgesic Requirement**
9(33.3%) of the 27 patients from the donor site open group required higher analgesics while only 4(9.5%) of the 42 from the donor site closed group. (p-value is 0.013).
6. Oral Infection
Infection in the oral cavity was not seen in any of the patients.

Late Complications
7. Donor Site Scar
Poor donor site scar was noted in: 3(11.1%) of 27 from the donor site open group and 1(2%) of 42 from the donor site closed group. (p-value is 0.129).

8. Difficulty in Mouth Opening
Difficulty while opening mouth was noted by – 5(18%) of 27 from donor site open group 3(7.1%) of 42 from the donor site closed group. (p-value is 0.149).

9. Change in oral sensation
Change in oral sensation was noted by: 12(44.4%) of 27 from donor site open group. 8(19%) of 42 from the donor site closed group. (p-value is 0.023).

10. Problem in Smiling
Problem in smiling was noted by: 8(29.6%) of 27 patients from the donor site open group. 8(19%) of 42 patients from the donor site closed group. (p-value is 0.30).

Fig 1. Marking graft to be taken on the Buccal Mucosa.
Fig 2. Graft Harvesting Of the muscle in Progress.

Fig 3. Donor Site showing Good Hemostasis.

Fig 4. Donor Site- Closed.
Graph 1. Bleeding from the donor Site.

Graph 2. Post-Op Pain.

Graph 3. Oral Swelling.
Graph 4. Oral Numbness.

Graph 5. Oral Infection.

Graph 6. Donor Site Scar.
Graph 7. Difficulty in Mouth Opening.

Graph 8. Change in Oral Sensation.

Graph 9. Problem In smiling.
DISCUSSION
In our study we noted that the early complications like bleeding from the donor site, postoperative pain, analgesic requirement were higher in the group where donor site was left open. Also oral swelling was more in those where the donor site was left open. The postoperative long term complications like changes in oral sensitivity, oral numbness and problem smiling were more common in the group where graft site was left open. Late complications like scarring was noted in few of those in whom the donor site was left open. In our study we found that the early and late post operative complications are lesser in those with the graft site closed when compared to those with graft site open.

CONCLUSIONS
Buccal mucosa graft harvesting with closure of wound is a safe procedure.

Long term morbidity at the donor site is lesser in patients with the donor site closed after harvesting in single as well as both cheek grafts.

Annexure I- Questionnaire
Five questions for early complications (taken in the first week of surgery) and Six questions for late complications (taken 1 month after surgery).

1. Did you suffer from bleeding at the donor site after surgery?
   Yes                                                        No

2. How was pain at the donor site after surgery(VAS)?
   0-6 (Mild to Moderate)                  7-10 (Severe)

3. How was the oral swelling in the first few days following surgery?
   Mild to Moderate                       Severe

4. When did you resume a normal diet after surgery?
   Within 2 days                    After 2 days

5. How was your pain killer requirement during the first few days after surgery?
   Normal                                   Higher

6. How long did the oral numbness last following surgery?
   <1 week                                >1 week

7. How was the scar at the donor site following surgery?
   Good                                         Poor

8. Did you have any oral infection after surgery?
   Yes                                                        No
9. Did you have any difficulty in mouth opening following surgery?
   Yes  
   No

10. Did you have any change in Oral sensitivity following surgery?
    Yes  
    No

11. Did you have any problem Smiling following surgery?
    Yes  
    No

REFERENCES