Conventional fibrotomy and reconstruction with lateral thigh dermal fat pad in grade III oral submucous fibrosis patients: A case report and review of literature

ABSTRACT
Oral submucous fibrosis is a chronic debilitating premalignant condition with progressive stiffening of oral mucosa ultimately ending in trismus most commonly from substance abuse. The most common etiological factor is the consumption of areca nut. Patients usually report to us when the mouth opening is almost nil. Various grafts have been used in the reconstruction of buccal defects after fibrotomy, the most popular being the buccal fat pad. We present the case of a 34-year-old man presenting with the complaint of reduced mouth opening and burning sensation in the mouth for 8 months. The patient is a poor candidate for buccal fat grafting as the patient body type being ectomorphic. The patient had a stigma of scar in the abdomen; hence, the possibility of an abdominal fat graft was out of the equation. Therefore, dermal fat is was harvested from the lateral thigh and reconstructed into the defect. The patient had a favorable outcome with good healing. Further studies are required to assess the quality, microscopic features of the adipose tissue, and the fate of dermal fat from the anterolateral thigh region.

Keywords: Anterolateral, fat, fibrosis, oral submucous, reconstruction, thigh

INTRODUCTION
Oral submucous fibrosis (OSMF), a predominant premalignant condition, plagues the majority of the people in India due to substance abuse. In majority scenarios, treatment is sought only after the gradual cumulative fibrosis has reduced the mouth opening to almost nil and surgical correction offers a better outcome to medical management. The region of the lateral thigh defines a combined area of subcutaneous fat consisting of the lateral trochanteric area, the banana-form fold of the proximal posterior thigh, and the inferolateral buttock. Reconstruction with the buccal adipose tissue is always inferior when using an abdominal fat pad owing to physical properties, and studies have revealed better physical property of lateral thigh fat compared to abdominal fat due to the increased amount of abdominal stem cells in the lateral thigh fat compared to other areas of harvest.

CASE REPORT
A 34-year-old male patient reported to the Department of Oral and Maxillofacial Surgery, King George Medical University, with the complaint of difficulty in mouth opening and burning sensation in the mouth for 8 months. History revealed that the patient consumed gutka (betel quid, tobacco preparation made from crushed areca nut) in the number of
7–8 sachets per day. On inspection, no gross asymmetry was detected, but the patient had a sunken cheek. The patient also had reduced cheek-blowing capacity. On palpation, no submandibular or submental lymphadenopathy was present. The mandibular movements were restricted.

The inspections revealed pale blanched bilateral buccal mucosa, anterior upper and lower labial mucosa containing fibrous bands extending posteriorly up to the retromolar trigone, and faucial pillars. Uvula appears bud shaped. Mucosa gave a resemblance to marble stone. On palpation, all teeth are present except 35, 27, and 16 (Federation Dentaire Internationale tooth numbering system). Fully erupted third molars with interincisal opening of about 2 mm are seen [Figure 1]. Vertical bands are palpable over the bilateral buccal mucosa and retromolar trigone. Circular bands are palpable over the mandibular labial mucosa. The provisional diagnosis is based on clinical and functional findings of Haider et al. as stage III OSMF.[5] The patient was identified as a poor candidate for a buccal fat pad. An alternative abdominal graft has been suggested to the patient, but the patient was stigmatic of an abdominal scar, this was when we had stumbled upon the idea of a lateral thigh fat graft.

Surgical technique
Proper informed consent was obtained prior to surgery explaining the procedure, region of harvest, and complications. Surgical landmarks are commissure of the mouth, the buccal mucosa at the level of occlusion, and the soft palate. No 15 blade with a scalpel (#3) is used. Local anesthesia with 2% lignocaine was administered and bilateral inferior alveolar nerve block is given. A horizontal incision was placed with the reference line on the buccal mucosa approximately 7 mm below the Stenson’s duct. Anteriorly, the incision was divided into upper and lower limbs (“Y” shaped) at a point 1 cm from commissure to prevent the modiolus. Both the limbs are extended into the labial surface if mucosal fibrosis is extending into upper/lower lip mucosa. Posteriorly, the incision is extended into the pterygomandibular raphe till the soft palate. Gentle dissection with mosquito forceps was done. Manually fibrotic bands were severed with fingers. Care should be taken in the region of commissure with the incision. Usually, the incision is placed at a minimum distance of 5 mm to prevent a commissural tear. All the third molars are extracted to prevent impingement of fat graft. Intraoperative mouth opening was measured to be 36 mm.

Harvesting lateral thigh fat pad
The harvesting methods used are similar to those used for conventional anterolateral thigh–flap elevation[6] with the exception that only the adipofascial layer was elevated. The patient is placed in a supine position. Between the anterosuperior iliac spine and the superolateral border of the patella on the donor’s thigh, a line is drawn. A skin paddle (8 cm × 16 cm) was designed. Local anesthesia 2% lignocaine (1:100,000) is administered along the borders and also in the deep plane superficial to deep muscular fascia. The fat pad is harvested as an ellipse, with the long axis placed over the intermuscular septum between the long head of the biceps femoris and the vastus lateralis muscle [Figure 2].

The entire thigh is prepared and the median margin was incised first. Starting the dissection medially, an incision is made in the subfascial plane to isolate and make sure of the location of the perforators. Dissection is continued till the deep muscular fascia. Cutaneous perforators are identified and retracted. The fat pad is harvested superficially to the deep muscular fascia to about 1 cm thick. After harvesting the fat, the superficial skin was de-epithelialized. The harvested fat pad (124 g, equaling approximately 135cc) is preserved in saline water for a few minutes and ready to be reconstructed into the defect. Debulking of fat is done to fit into the defect.
size. The donor site is closed in layers with 3-0 Vicryl and skin suturing is done with 3-0 nylon.

Intraoral suturing is done with a 3-0 polyglactin-910 suture starting from the posterior aspect for better visualization. Ryle’s tube (#14) is inserted after suturing. A soframycin-soaked bactigras (0.5% w/w chlorhexidine) dressing is placed over the bilateral buccal vestibule without interfering with the occlusion. The patient was kept under intravenous antibiotics and analgesics for 1 week. No complications were reported after 1 week [Figure 3].

The patient was followed up for 3 months. Active physiotherapy was advised for 6 months with a Heister jaw stretcher. Interincisal mouth opening after 1 and 3 months was measured to be 33 mm and 35 mm, respectively. The graft healing and uptake is well-documented post 6 months [Figure 4].

**DISCUSSION**

OSMF is a debilitating, progressive chronic disorder with surgery being the mainstay of therapy[2] and medical management providing only supplemental relief. A variety of flaps and grafts have been described in the literature for the reconstruction of the buccal mucosa following the release of fibrous bands.

Superficial temporalis fascia pedicled flap, temporalis pedicled flap, or radial forearm flap in combination with a split-thickness skin graft are all considered. Fat tissue in the oral cavity is easily available and accessed. Although the buccal fat pad is most commonly used in the oral cavity, it lost its significance because of its fragility, and damage to the vascular pedicle during harvest may result in the loss of graft.[3] Abdominal fat grafting is usually considered as an alternative to buccal fat graft, but as the patient was hesitant for the same, the probability of lateral thigh graft was pondered upon. The lateral thigh flap is a large flap that can easily be obtained and no special positioning of the patient is required during its harvest as was observed by Pribaz et al.[4]

Ozkan et al. used a free anterolateral thigh flap for reconstruction of buccal defects in 24 patients, of which three patients were of submucous fibrosis. He concluded that the anterolateral thigh flap could be considered as the first choice flap for most buccal defects while also stressing the variability of vascular pedicle as a hindrance.[5] Using a free flap for reconstruction of OSMF patients is tedious considering the complexity of free flap harvest as well as the morbidity attributed to the procedure. Hence, the procedure of obtaining a fat graft from the anterolateral thigh for use in OSMF has been first performed by us.

The consequent criterion to be considered was the quality of the anterolateral thigh fat graft compared to the abdominal fat graft. Tsekouras et al. in their study comparing the viability and yield of adipose-derived stem cells from different donor areas concluded that compared to the abdomen, waist, and inner knee, the amount of adipose-derived stem cells was significantly predominant in the lateral thigh.[4] Adipose tissue is laden with mesenchymal stem cells which promote wound healing. Adipose stem cells are pluripotent stem cells with the ability to differentiate into different lineages and to secrete paracrine factors initiating the tissue regeneration process.[8]

Hence, sufficient adipose tissue can be harvested from the thigh for reconstructing into the buccal defect in which the superior properties are comparable to an abdominal fat pad. Further studies are needed to justify the comment including a comparison with current existing procedures to harvest fat from other regions like the abdomen. Complete healing

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**Figure 3: One week postoperative image**

**Figure 4: Six months postoperative image**
was noted at 45–60 days. No postoperative complications were recorded in the region of the donor and recipient sites.

CONCLUSION

Sufficient fat can be harvested from the lateral thigh comparable to the abdominal region. No major anatomical structures were encountered while harvesting the fat graft. The abdominal incision is a stigma for some of the Indian population patients which is true in this case, so as an alternative lateral thigh dermal fat grafting can be considered because of quality and quantity comparable or superior to the abdominal fat pad. More long-term study is needed for a better understanding of the lateral dermal fat graft for use in OSMF.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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