

## **Role of Buccal Fat Flap in Managing Oral Submucosal Fibrosis**

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**A 24-year-old male diagnosed with advanced stage of oral submucosal fibrosis (OSMF) who did not benefit from repeated injections of intra lesion injections of triamcinolone is reported. The patient complained of severe burning sensation in the mouth with progressive decreased mouth opening over last few months. Clinically, mouth opening was reduced to one finger width. The patient underwent excision of the fibrotic bands in the faucial pillars with coverage of the defect with buccal fat flap to prevent refibrosis.**

**Postoperatively, patient's mouth opening improved to an acceptable level and was followed up for 9 months for recurrence of symptoms.**

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Oral submucous fibrosis (OSMF) is a slowly progressive disease of the oral cavity characterized by juxta epithelial fibrosis of the oral submucosa resulting in rigidity and eventual restriction of the mouth opening<sup>1,2</sup>. It manifests as intolerance to spicy hot food, burning sensation in the mouth, and decrease of gustatory sensation. Clinically, it presents as trismus, with stiffness of the oral mucosa. The condition is particularly associated with areca nut chewing and it could lead to malignancy. The management of oral submucous fibrosis could be medical and surgical<sup>3</sup>.

The treatment largely depends on the degree of clinical involvement, most patients presenting with moderate-to-severe disease. The medical management has been reviewed by Kerr et al which include injections of hyaluronidase and triamcinolone intralesionally in mild to moderate cases<sup>4</sup>. The surgical treatment is the method of choice in patients with marked limitation of mouth opening<sup>5</sup>.

Oral submucosal fibrosis (OSMF) is a complex irreversible pre-cancerous condition which has potential for malignant transformation at a rate of 7.6%<sup>2,6</sup>. Approximately 2.5 million people are affected worldwide with maximum concentration in Indian subcontinent, where betel nut chewing along with tobacco is a common practice. It is also prevalent in other parts of Asia and the Pacific Islands<sup>1,6</sup>.

The buccal mucosa is commonly involved, but any part of the oral cavity could be affected<sup>7</sup>. Betel nut mixture is a combination of areca nut, betel leaf and tobacco. The areca nut component

of betel quid plays a major role in the pathogenesis of OSMF. Arecoline is an active alkaloid found in betel nuts; it increases collagen production up to 150% by stimulating fibroblasts. According to Canniff et al, there is a dose dependent elevation of m-RNA with increased expression of cystatin C and non-glycosylated protein<sup>8,9</sup>. Arecoline has also been found to stimulate tissue inhibitors metalloproteinases 2 which leads to an increased synthesis of collagen and simultaneous decreased breakdown resulting in fibrosis<sup>4,10</sup>.

A genetic component is acknowledged in OSMF because of its occurrence in people without a history of betel nut-chewing or chili ingestion<sup>11,12</sup>. Its association is frequent in HLA-A10, HLA-B7 and HLA-DR3<sup>2</sup>. Cox et al reported a high frequency of mutations in the APC gene associated with lowly expressed wild type TP53 tumor suppressor gene and altered expression of retinoic acid receptor-beta causing increased risk of oral squamous cell carcinoma<sup>13</sup>.

Different surgical modalities have been described in the literature, to cover the raw areas after excision, ranging from split thickness skin grafting, nasolabial flaps, island flaps to tongue flaps. In extremely advanced cases of restricted mouth opening, temporalis myotomy, and even coronoidectomy have been done<sup>5</sup>. The buccal fat flap (BFF) is relatively recent used as a grafting source. The BFF has a good volume, easily accessible and has free mobility. It has been used to cover the defects in the oral area of the hard and soft palate and posterior maxilla after resecting oral tumors and in cases of oroantral fistulas after tooth extractions<sup>14,15</sup>.

The aim of this report is to present an advanced stage of oral submucosal fibrosis (OSMF) who did not benefit from repeated injections of intra lesion injections of triamcinolone.

## **THE CASE**

A 24-year-old male presented with chief complaints of decreased mouth opening associated with burning sensation in the mouth for one year. Patient gave history of chewing tobacco for the past two years. Oral inspection showed mucosal blanching on the hard and soft palate involving uvula and floor of mouth. Examination revealed bilateral palpable fibrotic bands in the buccal mucosa, oral commissure and retromolar areas.

The mouth opening was restricted to 1.5 cm only. The patient had received three doses of intralesional injections of triamcinolone during the previous 6 months without benefit. Intraoperatively, fibrotic bands were felt digitally. The incisions were carefully made horizontally along the buccal mucosa at the level of the occlusal plane to keep away from the Stensen's duct orifice, and were carried posteriorly to the pterygomandibular raphe up to the anterior faucial pillars. The fibrotic bands were bluntly dissected and then released. The defects created were opened further and the remaining restrictions, if any felt, were removed. The mouth was then opened widely to approximately 4 cm which is an acceptable range of mouth opening.

The buccal fat pad was teased out by extending the incision anteriorly and dissecting along the ascending ramus of the mandible and from lateral surface of buccinator muscle by gentle dissection. The pedicled buccal fat pad was secured in place, over the raw areas with simple interrupted 3/0 Vicryl sutures; the same procedure was repeated on the other side. Mouth opening exercises using Ferguson's mouth gag or disposable wooden spatulas were started 36

hours postoperatively. The patient was discharged on the third day with oral Augmentin and diclofenac for 5 days; he was instructed to use 7.5 mL of Chlorhexidine mouth rinse every 8 hours for 1 month. The patient was instructed to refrain from the tobacco chewing habit and was followed up monthly.

## DISCUSSION

Oral submucosal fibrosis is a chronic disease which could affect any part of the oral cavity, and could even involve the pharynx. It is mostly associated with juxta epithelial inflammatory reaction, and sometimes associated with blister formation, followed by fibrosis in the lamina propria. It eventually leads to stiffened oral mucosa causing trismus and difficulty in eating<sup>16</sup>.

Different modalities including medical and surgical or a combination of both have been tried by various researchers. The medical management includes intralesional injections of hyaluronidase and triamcinolone<sup>4</sup>. Results of treatment have met with variable success rates, mainly due to the fact that the disease is progressive in nature and its pathogenesis is not yet completely understood. Furthermore, there is no universally accepted protocol.

Buccal fat flap (BFP) is a supple lobulated mass easily accessible and freely mobile. Egyedi reported its use as a pedicled graft in cases of oroantral fistulas but it was Nader who recommended the use of BFP as a free graft to cover the defects created after intra oral excision of tumors<sup>17,18</sup>. The buccal fat pad is anatomically described as a main body with 4 attachments: buccal, pterygopalatine, and temporal components superficial and deep<sup>14,15</sup>.

The flap is easy to harvest, quick to perform and have few complications. It has been used as pedicled graft in a series of cases of facial augmentation<sup>8</sup>. The operation could be performed by one incision, affecting neither appearance nor function of the area<sup>19</sup>.

Split thickness skin graft could be used but it could lead to shrinkage contracture and rejection of the grafts<sup>4</sup>. Khanna et al reported high rate of rejected grafts in their series<sup>20</sup>.

Mehrotra et al analyzed different surgical modalities and found excellent results after the use of buccal flap compared to other surgical methods<sup>21</sup>.

In majority of the cases with advanced oral submucous fibrosis, buccal fat pad usually gets atrophied with the progression of disease. In our case, we found the harvested pedicled buccal fat pad adequate to cover the entire defect because the patient had a brief history of the disease.

The defect site was eventually replaced by stratified squamous epithelium, as observed in the follow-up.

## CONCLUSION

**Oral submucosal fibrosis is rare in the Middle East and treatment is challenging. Although one case was operated with BFP and brief follow-up showed good results postoperatively, it appears to be a promising method of treatment.**

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