

# Comparison of Various Surgical Procedures used for Treatment of Oral Submucous Fibrosis

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## ABSTRACT

**Introduction:** Oral submucous fibrosis (OSMF) was first described by SCHWARTZ in 1952 and PINDBORG et al. They estimated there are no fewer than 2,500,000 cases of OSMF in India. OSMF is a collagen disorder commonly seen in the Indian subcontinent. OSMF is of multi factorial origin with high incidence of the disease in association with consumption of the arecanut, arecoline, chillies, tobacco. This study was undertaken to assess the feasibility of various surgical procedures employed to correct the OSMF and results were compared under following headings: Postoperative mouth opening(incisor and molar region), pain, swelling, infection and relapse.

**Material and methods:** This study comprised of 74 patients suffering from OSMF, out of these 74 patients, 34 patients underwent surgery. Out of these 34, 28 cases were followed upto 6 months and 6 cases were followed upto 3 months only. Patients followed upto 6 months are discussed in this study. These patients were divided into 3 groups on the basis of surgical techniques employed to them.

**Results:** Highest inter incisor mouth opening was seen in the group II subjects at 6 months ( $17.70 \pm 3.74$ ) while least opening was seen in group III at the same interval ( $5.50 \pm 9.80$ ) similar findings were seen for the inter-molar mouth opening where group III showed the least mouth opening at 6 months. The final results for the success and relapse of the treatments showed that group I and II had full recovery while in group III only 5 patients could be treated completely while 3 showed relapse.

**Conclusion:** Buccal fat pad grafting was a suitable alternative to tongue flap grafting, and had the advantage of being versatile; simple surgical technique, that can be performed in almost any patient, with acceptable stability in post operative mouth opening.

**Keywords:** Oral submucous fibrosis, Tongue flap, Buccal pad fat, Temporalis muscle flap

## INTRODUCTION

Oral submucous fibrosis (OSMF) is an insidious chronic disease affecting various part of the oral cavity quite often extend to pharynx, characterized by formation of vesicles along with juxta-epithelial inflammatory reaction and fibroelastic changes in lamina propria with atrophy leading to stiffness of oral mucosa, formation of fibrotic bands in cheek leading to trismus, burning sensation of oral mucosa and inability to eat hot and spicy food. This condition was first described by SCHWARTZ in 1952 and PINDBORG et al.<sup>1</sup> They estimated there are no fewer than 2,500,000 cases of OSMF in india. OSMF can occur in any decade but is commonly seen at 20-40 years of age. Various studies have suggested a multi factorial origin with high incidence of the disease in association with consumption of the arecanut.<sup>1-4</sup> Other factors reported are arecoline, chillies, tobacco<sup>5</sup>, nutritional deficiency (WAHI et al)<sup>6</sup> etc. PINDGORG reported that incidence of malignant changes in patients with OSMF range from 3-6%.<sup>7</sup>

## MATERIAL AND METHODS

This study comprises of 74 patients suffering from oral submucous fibrosis who attended the outpatients Department of Oral Medicene and Radiology Government Dental College and Hospital, Srinagar. All the patients were thoroughly examined and findings were recorded in a standardized format. Out of these 74 patients, 34 patients underwent surgery. Out of these 34 cases, 28 cases were followed up to 6 months and 6 cases were followed upto 3 months only. Patients for surgery were selected irrespective of age, sex, religion or socioeconomic status on the basis of following criteria: 1) Decreased mouth opening 2) Palpable fibrous bands in buccal mucosa 3) Blanched mucosa (Soft palate, buccal, labial, retromolar) 4) Reduced elasticity of mucosa 5) Burning sensation of the oral mucosa 6) Restricted tongue movements 7) Acceptance for surgery. Irrespective of the treatment modality opted, all these patients were thoroughly counseled to quit all deleterious habits. These patients were then divided into 3 groups based on surgical procedures performed on them. Group I comprised patients who underwent sectioning of fibrous bands in buccal mucosa followed by harvesting and transposition of buccal pad of fat into the mucosal defect (10 cases). Group II included those patients who underwent sectioning of fibrous bands in buccal mucosa followed by transposition of tongue flap graft into the mucosal defect(10 cases). Group III included patients who underwent sectioning of fibrous bands in the buccal mucosa, followed by transposition of temporalis muscle flap graft into the mucosal defect (8cases). Tongue flap and temporalis flap transposition was done under GA. Buccal pad of fat flap was used under LA/GA. In group II and III on the opposite side B.F.P was transposed. Under local or general anesthesia, the fibrous bands in buccal mucosa were palpated and incised with number 15, Bard Parker knife, along the occlusal line starting from the angle of mouth-extending posteriorly upto the retromolar region, bilaterally. The incision was carried down deep to the connective tissue, followed by a blunt dissection. Furgusson mouth gag, was then applied to achieve maximum inter incisal opening. Haemostasis was achieved by packing the defect with sterile gauze or by ligation of bleeding vessels or both. Suitable graft or dressing material

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**How to cite this article:** Aasim Farooq Shah, Irfan Ashraf Baba. Comparison of various surgical procedures used for treatment of oral submucous fibrosis. International Journal of Contemporary Medical Research 2016;3(10):3086-3088.

|                         | Group-I<br>Mean ± SD |              | Group-II<br>Mean ± SD |              | Group-III<br>Mean ± SD |              |
|-------------------------|----------------------|--------------|-----------------------|--------------|------------------------|--------------|
|                         | Inter incisor        | Inter-molar  | Inter incisor         | Inter-molar  | Inter incisor          | Inter-molar  |
| Immediate Postoperative | -2.10 ± 8.10         | -1.10 ± 6.30 | 0.50 ± 2.37           | 0.80 ± 2.04  | -4.50 ± 4.90           | -3.38 ± 4.44 |
| Ist week                | -0.40 7.66           | 0.20 ± 6.27  | 2.20 ± 2.68           | 2.20 ± 2.66  | -4.00 ± 5.39           | -2.50 ± 4.87 |
| IV week                 | 4.30 5.70            | 4.60 ± 4.81  | 8.10 ± 3.31           | 7.70 ± 3.02  | -1.13 ± 5.36           | -0.63 ± 5.07 |
| VIII week               | 6.80 6.55            | 6.50 ± 4.97  | 10.60 ± 3.75          | 10.50 ± 3.72 | 1.00 ± 6.59            | 0.88 ± 6.10  |
| 6 months                | 13.40 4.22           | 12.70 ± 6.02 | 17.70 ± 3.74          | 17.40 ± 3.60 | 5.50 ± 9.80            | 6.00 ± 8.86  |

**Table-1:** Change in inter incisor and inter-molar mouth opening at different time interval in various groups.

|           | Group-I<br>Mean ± SD |             | Group-II<br>Mean ± SD |             | Group-III<br>Mean ± SD |           |
|-----------|----------------------|-------------|-----------------------|-------------|------------------------|-----------|
|           | Pain                 | Swelling    | Pain                  | Swelling    | Pain                   | Swelling  |
| Ist week  | 0.20 ± 0.42          | 0.70 ± 0.48 | 0.50 ± 0.53           | 0.50 ± 0.53 | 0.63 0.54              | 0.75 0.46 |
| IV week   | 1.10 ± 0.57          | 1.20 ± 0.63 | 0.90 0.32             | 1.40 0.52   | 1.50 0.53              | 1.50 0.76 |
| VIII week | 1.20 ± 0.42          | 1.40 ± 0.52 | 1.90 ± 0.32           | 1.50 0.53   | 2.00 0.00              | 1.75 0.46 |
| 6 months  | 1.20 ± 0.42          | 1.40 ± 0.52 | 1.90 0.32             | 1.50 0.53   | 2.00 0.00              | 1.75 0.43 |

**Table-2:** Change in pain and swelling reduction at different time intervals in various groups at different time intervals.

|           | Group-I<br>Mean ± SD | Group-II<br>Mean ± SD | Group-III<br>Mean ± SD |
|-----------|----------------------|-----------------------|------------------------|
| Ist week  | 0.20 0.42            | 0.20 ± 0.42           | 0.12 ± 0.35            |
| IV week   | 0.20 ± 0.42          | 0.40 ± 0.53           | 0.38 ± 0.53            |
| VIII week | 0.20 ± 0.42          | 0.40 ± 0.53           | 0.50 ± 0.53            |
| 6 months  | 0.20 ± 0.42          | 0.40 ± 0.53           | 0.53 ± 0.53            |

**Table-3:** Change in infection reduction at different time interval in various groups

was then placed over the mucosal defect. Mouth opening was measured in mm, in postoperative phases, followed by 1 week, 4th week, 8th week till 6 months.

Certain criteria were set which included Age, Consumption of Betel Nut. Patients who were underwent surgery were assessed on following additional criteria. Post-operative mouth opening in mm. (Incisor and molar region), Pain (0, 1, 2, 3), Swelling (0, 1, 2, 3), Infection (0, 1, 2, 3) and Relapse. Pain 0=No pain, 1=Mild pain, 2=Moderate pain, 3= Severe pain. Swelling 0= No Swelling, 1= Mid Swelling, 2= Moderate Swelling, 3= Severe Swelling. Infection 0=No infection, 1=Tender swelling with raised temperature locally, 2= Expression of pus on pressure locally, 3= Spontaneous pus discharge/graft failure.

**STATISTICAL ANALYSIS**

The recordings were compiled and data were entered into an Excel Sheet database (MS Office Excel 2000; Microsoft Corporation, Redmond, WA, USA). The Data was analyzed descriptively using Minitab 16.1.1 version of statistical software.

**RESULTS**

The results showed that out of the 28 patients group I comprised of 10, group II consisted of 10 and group III included 8 subjects with 2 females in group II and 1 female in group III. All the subjects were areca nut chewers. Table 1 shows the change in inter incisor mouth opening and inter-molar mouth opening at different time interval in various groups. Highest inter incisor mouth opening was seen in the group II subjects at 6 months (17.70 ± 3.74) while least opening was seen in group III at the same interval (5.50 ± 9.80 ) similar findings were seen for the inter-molar mouth opening where group III showed the least mouth opening at 6 months (Table-1).

Table 2 shows the change of pain intensity and change in swelling reduction at different time interval in various groups. Table 3 shows the change in infection reduction at different time interval in various groups. The final results for the success and relapse of the treatments showed that group I and II had full recovery while in group III only 5 patients could be treated completely while 3 showed relapse.

**DISCUSSION**

This study was undertaken to assess the feasibility of various surgical procedures employed to correct oral submucous fibrosis. In this study oral submucous fibrosis was seen to be most prevalent in the age group of 20-30 years, followed by age group of 30-40 years with the mean age being 31.72. This finding was supported by the observations of Desa.<sup>8</sup> But it was not consistent with the findings of Shankarnaraynan.<sup>9</sup> Incidence in relation to chewing of Areca nut was substantiated in our study with 100% of our cases giving history of areca nut chewing in one form or the other. This was in close relation with the findings of Khanna and Andrade.<sup>10</sup> Our study showed that there was no sex wise significant difference in various groups. This was not in accordance with the findings of some previous studies. According to our study mouth opening was maximum in group II at 6 months then in group I and minimum in group III. In Group I, mouth opening at was decreased at immediate post operative day and at first week. The reason may be attributed to trismus and infection after surgery. But stable mouth opening in this group was achieved at six months. This was in close relation with the findings of Pradhan et al.<sup>11</sup> No pain and swelling was seen after fourth week and infection was seen in two patients at immediate post operative day. After that no infection was seen. Our study showed that buccal fat pad was a readily accessible mass of adipose tissue in the oral and maxillofacial region and its use as pedicled graft had been shown to be easy, well tolerated and an uncomplicated technique. Our findings were in contrast with the findings of Tideman & Samman.<sup>12</sup> In our study in group II, maximum stable mouth opening was achieved at six months. Our findings showed good results with no case of relapse with the use of tongue flap graft. Lateral tongue flap used by Vaughan et al also gave good results.<sup>13</sup> In this group there was no pain and swelling after fourth week, there was no

infection after first week in this group; complications have been generally associated with the local wound problems, such as localized infection. This was in close relation with the findings of Guerrerosantos.<sup>14</sup> Our finding showed that tongue flap was an excellent source of mucosal lining for reconstruction in oral cavity in respect of excellent mouth opening and without any complications. Minimum mouth opening was achieved in our study in Group III. Three cases of relapse were present in this group. However, graft failure was not seen in these relapse cases. The cause of reduced mouth opening may be the development of fibrosis in the retro molar area. In this group no pain, swelling and infection was seen after fourth week. Our study showed tongue flap (Group II) gave the best results in respect of increased mouth opening without any complication. Buccal-fat pad grafting (Group I) also achieved stable mouth opening but less than that of Group II patients. It was also found to be an uncomplicated technique. Temporalis muscle flap grafting (Group III) resulted in minimum mouth opening with relapse in three cases.

## CONCLUSION

The following conclusions were drawn from the study: Oral submucous fibrosis was most prevalent in the age group of 20-30 yrs. All the patients with submucous fibrosis were habituated to the use of areca nut. There was no sex wise significant difference in various groups. Tongue flap grafting provided most stable post-operative mouth opening, without any complication. Buccal fat pad grafting was a suitable alternative to tongue flap grafting, and had the advantage of being versatile; simple surgical technique, that can be performed in almost any patient, with acceptable stability in post-operative mouth opening. Temporalis muscle flap grafting resulted in poor stability in post-operative mouth opening with relapse in some cases. Active Physiotherapy should be encouraged in patients after surgery on long term basis to achieve good postoperative results.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 17-09-2016; **Published online:** 30-10-2016