Custom Made Protective Appliance for Oral Submucous Fibrosis

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Abstract Oral submucous fibrosis is a chronic, debilitating disease characterized by gradually increasing fibrosis of oral cavity and pharynx, mainly the buccal mucosa, resulting in trismus. Various flaps have been used to reconstruct the surgical defects following excision of fibrous bands. It is inevitable to prevent these flaps from trauma by occlusion. The main objective of the authors is to introduce a technical innovation used to protect the flaps in the post-operative period. Here, we propose an easy and economical method to protect the flaps.

Keywords Oral submucous fibrosis · Appliance · Necrosis · Flap trauma

Oral submucous fibrosis (OSMF) is an insidious, chronic, disabling disease of obscure aetiology that affects the entire oral cavity, sometimes the pharynx, and rarely the larynx [1]. Since ancient era of Shushruta, OSMF has been reported in Indian population as “Vidari”. It was first described by Schwartz in 1952 and by Joshi in modern India [1].

Surgical modality of treatment of severe OSMF is fibrotomy and reconstruction with suitable flap. Local reconstruction may be accomplished with skin grafts [2], flaps like extended nasolabial [1], temporalis [2], pedicled buccal fat pad [3], tongue or radial forearm [4].

Trauma from occlusion is one of the major threats for reconstructive options, accounting for necrosis and subsequent failure of flaps. The problem of flap chewing needs to be addressed eminently, especially in the posterior region of oral cavity since, flap approximates the occluding teeth (Fig. 1). Borle et al. [1] suggested use of soft TMJ trainer in oral cavity for 10 days, to prevent occlusal trauma (Fig. 2). We have observed complete or partial failure of some flaps, due to prolonged chewing because TMJ trainer was found to be inadequate in posterior extent, culminating in traumatic injury to the flap.

Other modalities which can be used to prevent this complication are:

Fig. 1 Traumatic injury to flap in molar region

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- 1 Transbuccal suturing.
- 2 Gauze piece application between flap and teeth, etc.

Above mentioned modalities create space between teeth and flap, but have disadvantages like inability to speak, chew, drooling of saliva or unnecessary scar.

Through this article we present an appliance (Borle's appliance) fabricated to avoid such trauma to the flap, preventing chances of failure, along with ability to speak and chew.

Intra-operatively upper and lower impressions are made, which can also be taken pre operatively by techniques described by Dagar et al. [5]. Acrylic palatal plate with stainless-steel modified Adam's clasp is fabricated with buccal flanges extending bilaterally covering the buccal aspect of upper and lower posterior teeth (Fig. 3).

Fig. 2 Inadequate cover by soft TMJ trainer in molar region

Fig. 3 Borle's appliance in situ

Fig. 4 Healthy, contoured flap on 10th post-operative day

Appliance is inserted in patient's mouth after 24 h of surgery. By 10th post-operative day, appliance is discontinued, revealing no signs of trauma from occlusion (Fig. 4), whereas it was found that patients wearing any other prefabricated appliances, had indentations on the flap in the molar region.

Advantages of Borle's appliance:

- 1 It is a custom made appliance with good retention and stability.
- 2 Buccal flanges have adequate durability and strength to separate the flaps.
- 3 It adapts the flap to contour of cheek.
- 4 It is made of a material which is readily available, and requires minimal technical skills for fabrication.
- 5 Active or passive mouth opening exercises can be carried out.
- 6 Oral seal is achieved easily.
- 7 Maintenance is easy and can be done by the patient regularly.
- 8 It is cost-effective.

We suggest that placing barrier between the flap and posterior teeth, after performing fibrotomy in OSMF cases, is a preferred method of preventing flap necrosis. Borle's appliance is a comparatively better method of doing so. This article provides basis of prospective studies and initiates thought for salvaging intra oral flap necrosis.

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