

## Case Report

### Interdisciplinary approach for closure and prevention of relapse in a case of Maxillary Midline Diastema- A Case Report

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#### Abstract

Periodontal therapy may help in diagnosis and treatment planning of orthodontic cases and facilitate orthodontic therapy. Orthodontics and Periodontics are inter-related and resolve problems encountered in a variety of situations. In our case Frenectomy was performed for correction of maxillary midline diastema during the course of orthodontic treatment. After completion of orthodontic treatment, relapse was observed inspite of the fact that the patient complied by wearing a removable retainer for a period of six months . Circumferential Supracrestal Fiberotomy (CSF) was done for preventing relapse and facilitating permanent closure for function and aesthetics leading to desired results.

**Key words:** Frenectomy, Midline diastema, Supracrestal Fiberotomy.

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#### Introduction

Spacing between the anterior teeth is the common aesthetic problem. The upper central incisor teeth may be protruded due to a number of reasons e.g hyper active tongue, hypotonic peri-oral musculature, discrepancies between tooth size and dental arch length and abnormal large frenum, or ectopic tooth eruption.<sup>1</sup>In the following case, treatment modality for midline diastema covered removal of the underlying etiology, a papilla penetrating frenum in this instance. Hence a frenectomy was performed to allow closure of the midline diastema by orthodontic therapy. The

circumferential supracrestal fiberotomy required for alleviating relapse after the complete closure of the maxillary midline diastema.

#### Case Report

A 21 year old patient was referred to the Department of Periodontics, Krishna Dental College, GZB for the correction of abnormal high frenum. The patient was undergoing orthodontic treatment for correction of maxillary midline diastema. On clinical examination a thick maxillary labial frenum was observed, having a major influence on

the midline diastema. A blanching test was performed for observing the location of the alveolar attachment. Patient's medical history did not reveal any systemic disease. An informed written consent was taken and a frenectomy was planned. After

administering the local anaesthesia the attachment of frenum to the gingiva and periosteum is severed with the help of using 11 no. bard parker blade. After suturing patient was recalled after 1 week.



**Figure:** 1) Pre-operative clinical picture of the patient showing the midline diastema; 2) Occlusal view showing the midline diastema with aberrant frenum attachment; 3) Post-operative clinical picture showing the diastema closure; 4) Post-operative picture of occlusal view showing closure of the diastema.

The patient was followed up for a period of one year during orthodontic treatment for maintenance of periodontal health.

A remarkable improvement was observed after fixed orthodontic therapy followed by a retention period of six months by a removable retainer.

A relapse was observed by the patient and on follow up visits a decision to perform a Circumferential Supracrestal Fiberotomy was taken. CSF procedure consists of inserting a scalpel (b.p. no.15) into the gingival sulcus and severing the epithelial attachment surrounding the maxillary central incisor. The blade also transects the transseptal fiber interdentally by entering the periodontal ligament space. No periodontal dressing was required and the patient was recalled after one week. Patient's feedback was taken and a marked improvement was noticed with regard to prevention of relapse.



**Figure 5:** Post-operative radiograph showing the closure of diastema

## Discussion

Effective treatment of diastema requires accurate diagnosis and an intervention based on relevance of its specific etiology. Cooperation in both orthodontic and periodontic disciplines may help in solving various periodontal abnormalities encountered before, during and after orthodontic treatment. Abnormal frenal attachment may require removal either before orthodontic treatment or at the end of active treatment. Since most maxillary midline diastemas recur after the treatment, permanent retention is needed in most cases. In this patient, after frenectomy was performed, the incidence of relapse required a permanent retention by means of a fixed retainer or in combination with a short surgical procedure as reported in various studies<sup>2</sup>. Inability to provide retainers lead to a tendency for the teeth to return towards their initial position. The etiology of relapse is not fully understood, but relates to a number of factors, including periodontal and occlusal factors, soft tissue pressure and growth.<sup>3</sup> Specific periodontal surgical procedures may be used to improve the orthodontic tooth movement to stabilize the results and enhance the aesthetics. Histologic evidence suggests that frenectomy may cause scar tissue thereby leading to prevention of orthodontic space closure.<sup>4</sup> Surgical treatment can be attributed to the fact that two soft tissue periodontal entities may influence the stability; the principal fibers of periodontal ligament and supra-alveolar fibers. Transseptal fibers stretch elastically during orthodontic treatment and tend to pull the teeth back towards their original position. The supra-alveolar fibers are non-elastic by nature and more stable with a slower rate of turnover (Campbell et al 1970)<sup>5</sup>. These fibers do not adapt to new tooth positions and are in part responsible for relapse as observed in our case. CSF recommended by Campbell and

associates in median diastemas (not only transect free gingival fibers but also transseptal ones) and Edward<sup>6</sup> reported a simple effective surgical technique to alleviate the influence of the supracrestal fibers on rotational relapse, according to him rotational movements are brought about by stretching of collagen fibres.<sup>7</sup> In our case a removable retainer was not the treatment of choice because tooth movements occur as the appliance is removed. Based on these observations a decision was made to perform circumferential supracrestal fiberotomy procedure which leads to a marked improvement as observed by a six month follow up visit.

## Conclusion

In the presented case frenectomy was instrumental in closure of maxillary midline diastema. This case highlights the use of Circumferential Supracrestal Fiberotomy procedure in preventing relapse after the completion of orthodontic treatment. Also a multidisciplinary and coordinated approach would lead to desired results for both the practitioners and the patient.

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