

Original Research Article

Association of Labial and Buccal Frenal Attachment with Gingival Recession – A Clinical Perspective

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Abstract: Frenal attachments are thin folds of mucous membrane with enclosed muscle fibers that attach the lips to the alveolar mucosa and underlying periosteum. Most often, during the oral examination of the patient the dentist gives very little importance to the frenum. The frena may jeopardize the gingival health when they are attached too closely to the gingival margin, either due to interference in the plaque control or due to a muscle pull. From the periodontal point of view, however, the evaluation of the frenum-periodontium interrelations would seem to be worthwhile. This study was aimed to record the different types of labial and buccal frenal attachments in different age groups and gender in both maxillary and mandibular arches. Gingival recession was found to be least with papilla penetrating type. Buccal recession was found to be higher than labial recession the correlation of occurrence of gingival recession and frenum type revealed significant correlation [R- 0.148; P - < 0.001].

Keywords: buccal frenum, labial frenum, maxilla, mandible, gingival recession periodontium

INTRODUCTION

Gingival recession, often called tooth root exposure, is a common clinical finding in adults. It is defined as the denudation of the tooth root surface due to the apical movement of the gingiva [1]. There has been some controversy in the dental profession whether root exposure is pathologic [2], physiologic [3] or a combination of both [4]. It is important to the clinician since it may be a causative factor in pulpal hyperemia, root caries susceptibility due to the exposed root area, and may create open areas interproximally which act as food traps.

The etiology of gingival recession is multifactorial [5]. The most frequent triggering factors are: local trauma such as vigorous tooth-brushing, aberrant frenal attachments, tobacco chewing, orthodontic movement of teeth to a position outside the labial or lingual alveolar plate and local gingival inflammation. A simple fold of mucous membrane if found abnormal in size and location, interferes with oral hygiene and interferes with interdisciplinary treatment approaches and more importantly becomes unaesthetic. From the periodontal point of view, however, the evaluation of the frenum-periodontium interrelations would seem to be worthwhile [4]. Medline search revealed only few articles pertaining to the keywords, buccal frenum, labial frenum, maxilla, mandible, periodontium. The objective of the study was to assess the association of

different types of frenal attachments with gingival recession.

MATERIAL AND METHODS

399 individuals aged 15 to 40 years of both the sexes were examined. The patients were selected from the outpatient department of Periodontics, College of Dental Sciences, and Davangere in accordance with the ethical guidelines of Institutional Review Board and Rajiv Gandhi University of Health Sciences, Karnataka, India. The survey was conducted for 6 months. Subjects with clinically healthy periodontal status were included. Subjects with systemic diseases, subjects who exhibited congenital anomalies, syndromes, any type of trauma or surgery in the maxillary anterior region, habits, smokers, pregnant and lactating mothers, orthodontic movement of teeth to a position outside the labial or lingual alveolar plate, physical impediments, dental anomalies and/or dental/skeletal disharmonies were excluded. Sample size was 374.63 using $n = z^2 pq / l^2$. Single trained examiner recorded the data.

Procedure

Types of frenal attachments were assessed according to the placek classification [6].

1. Mucosal attachment
2. Gingival attachment
3. Papillary attachment
4. Papilla penetrating attachment

Gingival recession was expressed as present or absent depending on CEJ exposure clinically. The data obtained was subjected to statistical analysis using chi square test with significant level set at ≤ 0.05 .

RESULTS

Gingival recession was found to be maximum with maxillary labial gingival type (17.5%) and least with mucosal type (2.45%) of frenum while in

mandible; labial papillary type (71.5%) showed maximum percentage with papilla penetrating (1.5%) type showing the least. The maxillary buccal frenum of both gingival (47.6%) and mucosal (35%) had gingival recession. The mandibular buccal frenum of both gingival (51.5%) and mucosal (36.1%) had gingival recession. The correlation of occurrence of gingival recession and frenum type revealed significant correlation ($R = 0.148$; $P < 0.001$). (Table 1)

Table-1: Association of recession with different type's frenum

SNO	Maxillary labial	Mandibular labial	Maxillary buccal	Mandibular buccal
1	5 2.45%	25 10.8%	118 35%	121 36.1%
2	2 17.5%	65 49.5%	30 47.6%	33 51.5%
3	3 10%	20 71.5%	0	0
4	1 2.5%	1 1.5%	0	0

Correlation coefficient $R = 0.148$; $P = 0.05$ [significant S]

Table-2: Studies on gingival recession and frenum

V Dodwad	Conducted a study in 2001 on 1200 individuals aged 15 to 24 years to find the association of gingival recession with different types of frenal attachments. She reported that gingival recession was found to be maximum with mucosal type (80.5%) of frenum followed by gingival [18%] and papillary type (1.5%) [7].
Walter Gorman	reported that gingival recession occurred most often on the maxillary (56 percent), cuspid and bicuspid (56 percent), facial (97 percent) tooth surfaces [1]
Stoner and Mazdyasna	Reported similar findings stating that gingival recession had been caused by anatomical features of soft tissue eg. High frenum attachment associated with narrow band of attached gingiva which might cause excessive tension on the marginal tissue [8].
Kitchin	, observed that tooth root exposure occurred more frequently on maxillary canine and premolar teeth [9].

DISCUSSION

The influence of frenal type and gingival recession occurrence is important clinically as the unaesthetic root exposure caused by gingival and papillary frenal type needs to be eliminated at early stages of gingival recession detection to prevent further unaesthetic root exposure. Gingival type of frenum in maxilla and papillary type of frenum in mandible were found to be most associated with gingival recession. The recording of oral hygiene, habits, width of attached gingiva and vestibular depth allows the clinician to identify the exact cause of gingival recession. Frenum alone or in combination with the above factors would be responsible for gingival recession to occur. The clinician plays a vital role in dissecting the cause of recession prior to frenal removal. Blind attempt to remove frenum will deprive the frenal functions.

Gingival recession was found to be maximum with maxillary labial gingival type (17.5%) and least with mucosal frenal type (2.45%) while in mandible, labial papillary type of frenum showed maximum percentage (71.5%) with papilla penetrating (1.5%)

type showing the least. Buccal recession was found to be higher than labial recession .The maxillary buccal frenum of both gingival (47.6%) and mucosal (35%) had gingival recession. The mandibular buccal frenum of both gingival (51.5%) and mucosal (36.1%) had gingival recession. Correlation analysis revealed that, as the level of attachment of frenum extends coronally gingival recession is found to be high in papillary type of frenum and least in papilla penetrating type (mandible) (Table 1). Studies done on gingival recession and frenum are presented in table 2 [1, 7-9].

The absence of gingival recession in papilla penetrating type can be explained as follows.

The less injurious effect of papillary penetrating labial frenum attachment can be explained at least in two different ways. The papillary penetrating labial frenum attachment passing through the midline interdental papilla is partly getting lost in the attached gingiva and partly is anchored in the palate. Vestibular deflecting forces are thus blocked or modified to a considerable extent. Then the papillary type of the

labial frenum attachment ought to be considered as a pathological deviation or as a potentially pathogenetical factor. In the case of the lower labial frenum all other types of its attachment should also be considered in such a way except for the mucosal type. The resulting vector of the pull as to the force and direction in the upper labial frenum attachment does not manifest itself so injuriously as in the lower labial frenum attachment [6].

CONCLUSION

The frenum as an anatomical entity plays an important role in expression of various signs of gingival recession and diastema along with functional and esthetic compromise. It has a multidisciplinary importance to periodontist, orthodontist and conservative dentist as of now there exist two classifications of frenal attachment types by Placek *et al.*; and morphotypes by Sewerin. There is a need to present a modified classification which considers the combination of both placek and sewerin that will be of clinical importance to decide the treatment measures [10]. (Unpublished data)

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