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MUCOGINGIVAL CONSIDERATION IN ORTHODONTICS-A REVIEW

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ABSTRACT:
The periodontium plays a major role in Orthodontic tooth movement. Periodontal problems contribute to the development of malocclusion in a substantial number of adult orthodontic patients and certain malocclusion can be avoided by treating the periodontium at the appropriate time .There are strong inter-relationship exists between orthodontist and periodontist. This review article gives an overview of the various mucogingival considerations in orthodontics

KEYWORDS :Mucogingival ,frenum ,ortho-perio inter relationship

1. INTRODUCTION:

The periodontal tissues should maintain around the cervical area of the tooth with maximum stability during orthodontic tooth movement. To allow appliances (functional or orthopaedic) to deliver orthodontic treatment without gingival recession and attachment loss an adequate amount of healthy attached gingiva is mandatory.

Animal studies and lab studies have established that more pronounced, clinically recognizable inflammation occurs in regions where there is lack of attached gingiva than in areas with a wider zone of attached gingiva . Histologically, the teeth lacking gingiva were thinner in the buccolingual dimension than were those with a wide zone of attached gingiva; however, investigators reported that inflammatory cell infiltrates and its apical extrusion (degree of inflammation) were similar.[1,2]

The thickness of the gingival tissue on the pressure side becomes important, as teeth are moved labially and tension is created on the marginal tissue [3]

There were no signs of inflammation, when the incisors were bodily moved labially. Incisors showed no loss of connective tissue attachment with apical displacement of gingival margin. But loss of connective tissue attachment occurred, when inflammation was present.[1]
Gingival inflammation cannot be avoided during orthodontic treatment, and bodily facial movement can predispose the patient to gingival recession; In such cases even a gingival graft may be used to prevent this.

But these soft tissue grafts which are used for gingival augmentation should be performed before the occurrence of recession. This recession preventing technique is safe but success rate is questionable.
However, many authors suggest that with growing children, a wait-and-see attitude is acceptable because many ways of treating recession is available. Labial root loss and recession is hard to correct in young individuals cause its progressive therefore its mandatory to prevent bone loss and plan a treatment protocol accordingly. For this reason, animal studies and clinical judgement suggest that ,support the need to create a thicker gingiva that can withstand the inflammatory insult even before the commencement of treatment is better during tooth movement. Compared to a normal or think tissue , a thin and delicate tissue is more prone to recession.

; Before orthodontic movement is begun, orthodontist should evaluate differences in alveolar housing and If a minimal zone of attached gingiva or thin tissue exists, particularly on abutment teeth, in order to control inflammation, a soft tissue graft that enhances the soft tissue around the tooth may be used. With regard to alveolar housing it should be noted that a thin, soft tissue is associated with a thin labiolingual osseous support is not true always. All combinations are seen, such as thick, soft tissue with a thin labial plate of bone. To change the labial osseous thickness(especially the thin type) that is characteristic of the individual patient is difficult; however, to improve the soft tissue with a soft tissue graft is not difficult or traumatic. Obviously, the decision concerning prophylactic periodontal procedures must be made with consideration, among other things, for growth and development, tooth position, type and direction of anticipated tooth movement, oral physiotherapy, integrity of the mucogingival junction, tissue type, inflammation, muscle pull, frenum attachment, mucogingival and osseous defects, anticipated tissue changes, and profile considerations. Critically analysing the periodontium before orthodontic treatment commences can, minimize, prevent or at least avoid aggravation of an existing periodontal condition
.Conditions which frequently involves periodontal management due to mucogingival considerations' are mandibula and maxillary midline frenum , gingival hyperplasia, mouth breathing and gingival esthetical correction.

2. MANDIBULAR MIDLINE FRENUM:

A negative impact on sucking, feeding and speech production can be associated with abnormal attachment of mandibular labial frenum attachment[4] ectopic eruption of the mandibular incisors can occur due the frenum extending into the anterior alveolus.4 When a frenum is associated with a mucogingival problem, it most often relates to an Inadequate zone of attached gingiva.
It is considered obsolete, to treat mucogingival problems with just frenectomy. The high frenum insertion contributes to movement of the marginal gingiva where the keratinized tissue has been lost or detached or where mechanical trauma exists. The lower incisor anterior region is more prone to such problems.

3. MAXILLARY MIDLINE FRENUM:

Maxillary labial frenum is considered to most common cause of midline diastema. Many believe that this frenum prevents mesial migration of the maxillary central incisors and that it should be removed before orthodontic therapy is begun. Others have suggested that removal of the frenum allows the space to be closed more easily orthodontically.[5]

However, the clinician must remember that a physiologic normal spacing is present between the maxillary central incisors due to the ugly ducking stage until the maxillary canines erupt in the adolescent dentition. A scar tissue which is formed after the frenectomy procedure might prevent the tooth movement.
To facilitate space closure, regain space at the midline, and prevent ectopic eruption of the lateral incisors or canines a frenectomy is recommended when the midline diastemas are large(6-8mm).Care should be taken performing such early interceptive treatments as the require additional mechanotherapy's ,several stages of treatment with constant orthodontic supervision.

A radiographic appearance of a U- or V-shaped bone on the interproximal area between the maxillary central incisors is a diagnostic key to the certain types of midline diastema midline diastema [6]In such type

of cases even with a very good orthodontic treatment(i.e. with no muscular habits, no tooth size discrepancies occlusal discrepancies', with ideal overjet ,overbite and axial inclination) relapse might follow in cases of a radiograph showing a matured suture and a firm teeth even before orthodontic treatment. In such a case patient should be educated and informed about the indefinite bonding and fixed retention of fixed corrected midline diastema after orthodontic treatment.

.Until the labial frenum prevents space closure and becomes traumatized during treatment ,frenectomy can be generally planned after orthodontic treatment. Removal may be indicated after treatment to change irreversible hyperplastic tissue to normal gingival form and to enhance posttreatment stability. This is very essential on incisors during early treatment problems.

4. GINGIVAL HYPERPLASIA:

Due to a number of appliances such as the brackets and wires in the oral cavity during orthodontic treatment ,mild amount of gingival hyperplasia is unavoidable.[7] These might usually resolve by itself when patients follow a good oral hygiene practise or when scaling and curettage is done is certain moderate to severe cases. Occasionally gingival hyperplasia becomes so severe that it acts as a hinderance to orthodontic tooth movement ,in such cases they are surgically removed .. When the hyperplasia is not very severe ,the hyperplasia might subside in 48 hours after the removal of the appliance[8].

5. GINGIVAL RETENSION AND ESTHETIC CORRECTION:

When adults have altered passive eruption, the gingival tissue fails to follow the tooth and recede ,therefore they think they have short clinical crowns. These patients who have a thicker alveolar bone in the buccal region and these have to be done with minor osteoplasty procedures. The orthodontists in such situations might suggest the periodontists to achieve the normal 1.5mm relationship between the cementoenamel junction and osseous crest, as this will prevent the tissue relapsing incisally during healing. On the labial aspect of anterior teeth which have thin gingival tissues gingival reflection procedures and internal bevel gingivectomy should not be done

In case of a bell shaped anterior teeth , the gingival tissue reflect should only be done in the palatal or lingual aspect and the interdental tissues should be spared as they lack the ability to heal back and fill in the contact points between the teeth ,giving a un esthetic black triangle appearance ,and these become very disturbing to the patients.
In some instances after the completion of orthodontic treatment, in order to promote stability and achieve optimal gingival aesthetics and gingival topography ,relieving of local exaggerating factors by scaling, gingival reflections or gingivectomy by internal bevel incisions might be performed

6. FIBEROTOMY:

Post orthodontic stability is an essential goal of orthodontic treatment and fibrotomy has helped this .Fiberotomy[9,10] should be done after any pre orthodontically ,that is before the removal of the fixed appliance. They are usually done for rotated anteriors ,especially patients with class 2 dev 2 who usually presents with rotated or retroclined anteriors .In such scenarios ,the rotated teeth is over corrected and before the debonding fibrotomy is performed and 1 week after the surgery the appliance is debonded and impressions are taken for retainers. This prevents the labiolingual relapse and enhances alignment.

7. MOUTH BREATHING:

Mouth breathers undergoing orthodontic treatment usually face higher insult to the periodontium in the anterior region. The maxillary and mandibular anterior regions of mouth breathers are exposed to "drying effect" and therefore become susceptible to erythematous and enlarged labiolingual enlargement. A demarcation line is usually visible in patients with short upper lip ,where the lip contacts the labial tissue .Cracked and dry lips are also classical clinical findings of mouth breathers. Although orthodontic retraction of anterior segments may help provide a better lip seal, extraoral appliances and lip bumpers exacerbate the

problem and even may cause mouth breathing in a normal patient. A patient who shows symptoms of an inability to breathe properly (tongue posture; enlarged adenoid tissue; narrow, high palatal vault; allergies) should be referred for evaluation for nasal obstruction and adenoid tissue. Although the plaque index is not significantly higher in mouth breathers, an increase in the gingival index has been reported. By scaling and curettage before the placement of fixed appliance these type of inflammation can be minimized.

8. CONCLUSION:

The periodontium of any patient irrespective of the age who undergoes treatment is .So, we conclude by suggesting that the maintenance of healthy periodontal tissues throughout active orthodontic treatment and not worsening the exisiting periodontium during orthodontic treatment is mandatory .

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