Case Report

Gingival Recession in a Case of Anterior Crossbite with Angle Class I Relationship

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ABSTRACT: Anterior crossbite is one of the most common orthodontic problems encountered during the dental eruption. Usually, the anomaly becomes evident during mixed dentition, as a result of the disharmony between the dental, skeletal and functional components of the orthognathic system. As complications, the presence of the anterior dental cross bite can lead to the thinning of the vestibular alveolar process of the lower incisors and gingival recession. Periodontal changes could recede spontaneously if orthodontic treatment is applied early, in the presence of good oral hygiene. In this case, gingival recession decreased, but not completely receded after orthodontic treatment, although the patient had a good oral hygiene.

KEYWORDS: *Cross bite, gingival recession.*

Introduction

Anterior crossbite is one of the most common orthodontic problems encountered during the denta eruption. The reported incidence in the literature for simple anterior crossbite is between 4-5% [1,2], and 26,7% [3].

Usually, the anomaly becomes evident during mixed dentition, as a result of the existing disharmony between the dental, skeletal and functional components of the child's orthognathic system [4].

There are three main types of anterior cross bite: dento-alveolar, functional and skeletal [5].

Patients with an Angle Class I relationship and anterior dental crossbite will present a normal anterior-posterior skeletal relationship with mandibular closure into a superposition of centric occlusion and centric relation [6].

As complications, the presence of the anterior dental cross bite can lead to the appearance of abrasion facets in the incisal region of the upper incisors, to the thinning of the vestibular alveolar process of the lower incisors and/or gingival recession (GR) [3,7].

Periodontal pathology occurs early [8] and due to the permanent occlusal trauma to which the lower incisors are subjected, they can also present dental mobility [7].

After Motohiro Tanaka et al. 2010, periodontal changes recede spontaneously if orthodontic treatment is applied early, in the presence of good oral hygiene [9].

In the case of the patient presented below, gingival recession decreased, but not completely receded after orthodontic treatment, although the patient had a good oral hygiene.

Case presentation

Figure 1. Intraoral aspect at presentation.

A 10-year-old female patient addressed the orthodontic service of University of Medicine and Pharmacy of Craiova for a specialized treatment accusing the unsightly appearance present in the smile and speech.

The written informed consent of the tutors for publication was obtained.

Exo-oral examination revealed the presence of a facial harmony, with an increase in the transverse diameter of the face, a slightly convex profile and a discreetly reduced lower segment of the face.

The intraoral examination (Figure 1) showed that the patient has crowding of the maxillary and mandibular incisors due to macrodentition

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and on this background of the lack of space for dental alignment, a cross bite between central incisors (IC) 2.1 and 3.1.

On the vestibular face of 3.1 there is a GR of 4mm. Oral hygiene was evaluated as good, 11,3%, through the O' Leary Plaque Index.

Based on clinical examination, photographs, plaster study casts, panoramic radiograph and lateral cephalogram, we established that the patient has a class I molar relationship and sagittal skeletal neutral relationships between the maxilla and mandible.

The orthodontic device employed was a removable appliance with expansion screws, vestibular springs, the upper one being provided with an auxiliary spring in S for the vestibularization of 2.1 and anchored on gutters, and the lower one anchored on Stahl crochets.

The main objectives were: unblocking the occlusion, obtaining space for the alignment of the front teeth, performing the joint jump and ensuring a sufficiently high degree of incisors overlap, as a natural contention factor.

After 1 year, the cross bite was corrected, but periodontally, we noticed the persistence of the GR even if it was reduced by 2mm in the presence of a good oral hygiene (Figure 2)

Figure 2. Intraoral aspect after 1 year.

Discussions

Ngom and coll. (2006) found that the correlation between anterior crossbite and GR could be explained by primary occlusal trauma [8].

The tooth or teeth in crossbite are in premature contact in centric relation and at the end of closing phase during mastication. The occlusal charge in that case are not adequately distributed. The correlation between anterior cross-bite and gingival retractions is supported by numerous other studies [10,11,12,13].

The explanation would be that in the apical part of the alveolar ridge, in the area of the lower incisors, the vestibular bone has the smallest thickness [11].

There are studies reporting a significant relationship between crossbite and Plaque Index and Gingival Index that is why it is important to maintain good oral hygiene [14,15].

Correction of the frontal reverse bite requires a vestibulo-version of the upper Incisor and a linguo-compensatory version of the lower one, to establish a psalidodont occlusion, and in the conditions of the existence of a thin periodontium, can lead to bone denudation. Under conditions of normal periodontium and good oral hygiene, superior Incisor vestibularization to correct the reverse occlusion appears to be harmless to the periodontal condition of the patient [16].

Moreover, the physiological transmission in the axis of the occlusal forces should be followed by the improvement of the periodontal architecture, so by the disappearance of the gingival retractions on the vestibular face of the lower incisors in reverse bite. Studying the ratio between the length of the adjacent IC clinical crowns, one in reverse gear and the other in neutral position it was found that after the completion of orthodontic treatment there is an improvement in this difference in size, higher than 1,5mm, compared to the pre-treatment situation, due to a combination of the apical movement of the gingival margin of the IC in a neutral ratio (0.9±0.8mm) and the coronary movement of the marginal gum of the IC in reverse bite (0.2±0.6mm) [17].

And the vertical growth of the alveolar bone in the frontal mandibular area can also contribute to the uniformity of the level at which the gingival margin of the two lower central incisors is positioned [18].

Obtaining a good orthodontic therapeutic result in this clinical situation is conditioned by several factors: to be in the presence of a Class I malocclusion (the cross bite to be dental); create enough space to reposition the teeth; maintain a sufficient degree of post-treatment frontal overlap; and at the end of the treatment there should be a normal apical position of the two teeth in reverse bite [19,20].

In the case that we presented in view to correct the anterior dental cross bite and implicitly to obtain an improvement of the periodontal situation, we chose to use a mobilizable device, aware that in order to be therapeutically successful we must rely on good collaboration from the patient [21,22] and that there is the possibility of another stage of orthodontic treatment in permanent dentition. Throughout the treatment we tried and

succeeded together with the patient and parents to control another factor that we find in the etiology of gingival retraction: the level of bacterial plaque. Despite the success of orthodontic treatment and the maintenance of good plaque control, the gingival recession has not been completely corrected.

Because the gingival retraction only decreased and did not completely receded, we decided to periodontal supervise the patient through maintenance and support the result sessions and perform a surgical intervention after the end of the permanent tooth eruption [18].

Conclusion

Early treatment of the cross bite can help to restore the centric relationship and the physiological transmission of occlusal forces in the axis.

This is not always followed by the spontaneous retrocession of periodontal changes generated by the presence of the reverse bite, even in the situation of a good control of the biofilm, and requires interdisciplinary collaboration to solve the case.

Conflict of interests

None to declare.

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