

Spontaneous improvement of gingival recession after correction of tooth positioning

Andre Wilson Machado,^a Matthew MacGinnis,^b Lucio Damis,^c and Won Moon^d

Salvador, Bahia, Brazil, and Los Angeles, Calif

A 30-year-old woman sought treatment for malpositioned mandibular incisors; the roots were positioned outside the alveolar bone, related to severe localized gingival recession. She had been previously treated orthodontically and subsequently underwent 2 gingival grafts. The new treatment included torquing the roots back within the alveolar bone and referral to a periodontist for a gingival graft. In this clinical report, the possible spontaneous improvement of gingival recession is discussed. A hypothesis described in the literature is called the “creeping attachment” phenomenon. The literature includes conflicting reports about the cause-and-effect relationship between orthodontics and gingival recession. This clinical example reports spontaneous improvement of gingival recession after correction of tooth positioning in the alveolar bone. A gingival graft can be performed after adequate root positioning in the alveolar bone housing, thus increasing the chance of achieving more favorable results. (*Am J Orthod Dentofacial Orthop* 2014;145:828-35)

The relationship between orthodontics and gingival recession is controversial, and conclusive evidenced-based research is still lacking in the literature. Numerous factors play roles in the development of gingival recession, and the etiology is often multifactorial.¹ The available scientific literature presents varying points of view on the relationship between orthodontics and gingival recession. Some recent studies have found no cause-and-effect relationship; thus, one cannot determine whether gingival recession is a consequence of orthodontic treatment.²⁻⁴ On the other hand, a recent article evaluated patients with gingival recession and found that teeth that are out of their bony housing are more likely to have this problem.⁵ Although there is research addressing this topic, few case reports show the consequences or sequelae of orthodontics and gingival recession.

Another controversial issue in the literature is whether it is possible to have spontaneous improvement

in gingival recession after orthodontic movement. This phenomenon has been demonstrated in the literature related to growing patients; the evidence for adult patients is scarce.⁶⁻⁸

The aim of this article is to present a clinical example of a 30-year-old woman who was referred to the orthodontic clinic at Salvador, Brazil, for treatment of malpositioned mandibular incisors related to severe localized gingival recession. The patient had insufficient labiolingual positioning of the mandibular anterior roots in the alveolar bone and inadequate control of torque. Our treatment consisted of torquing the root lingually within the alveolar bone and subsequent referral to a periodontist for a gingival graft. We also discuss the spontaneous improvement of gingival recession and the associated hypothesis described in the literature called the “creeping attachment” phenomenon.⁹

CASE REPORT

The patient was a 30-year-old woman with no notable medical history, no use of medications or tobacco, and good oral hygiene. Her chief complaint was her fear of losing her mandibular right central incisor because of severe gingival recession and mobility. She previously underwent 3 years of treatment with another orthodontist and 2 consecutive gingival grafts that yielded unsatisfactory results. Informed consent was obtained, and the patient was aware that loss of the mandibular right central incisor was a possibility.

The retreatment intraoral photographs showed a Class I malocclusion with an adequate posterior

^aAssociate professor, Section of Orthodontics, Dental School, Federal University of Bahia, Salvador, Bahia, Brazil.

^bResident, Section of Orthodontics, University of California, Los Angeles, Calif.

^cProfessor, Section of Periodontics, Technology and Science Dental School, Salvador, Bahia, Brazil.

^dProgram director, Section of Orthodontics, University of California, Los Angeles, Calif.

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Address correspondence to: Andre Wilson Machado, Av. Araujo Pinho, 62, 7 Andar, Canela, Salvador/Bahia - Brazil, CEP. 40.110-150; e-mail, awmachado@gmail.com.

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relationship, good arch form, satisfactory overjet and overbite relationships, and no midline discrepancies. The mandibular arch had minor crowding. Her mandibular right central incisor root was severely torqued labially and displayed 4 mm of gingival recession and moderate tooth mobility (Figs 1 and 2). According to Miller's classification¹⁰ of gingival recession, her mandibular right central incisor was described as Class II, with the marginal recession extending to or beyond the mucogingival junction with no loss of interdental bone or soft tissue. Additionally, the mandibular right central incisor had excessive lingual root torque. The patient had a bonded mandibular lingual retainer, with an excessive amount of adhesive.

The panoramic radiograph showed that all teeth were present, the sinuses appeared to be within normal limits, and there was no intraosseous or periapical pathology. The periapical radiographs displayed a slight bone loss at the alveolar crests between the mandibular incisors (Fig 3).

The overall goal of treatment was to correct the torque of the mandibular central incisors and obtain adequate labiolingual and mesiodistal root positions within the alveolar bone. Functionally, the aim was to maintain the posterior occlusion and focus attention on the mandibular dentition. Once the roots were aligned within the alveolar bone, the patient would be referred to a periodontist for a gingival graft.

Before the orthodontic treatment, the lingual mandibular fixed retention was removed, and the patient was referred to the periodontist for a thorough evaluation. After the periodontal assessment, fixed conventional 0.022 × 0.025-in slot edgewise appliances were placed in the mandibular arch. Initially, the mandibular right lateral and left central incisors were excluded to increase the interbracket distance and allow for gentler forces during torque expression. An initial 0.016-in nickel-titanium archwire was placed for leveling and aligning. Next, a 0.019 × 0.025-in rectangular stainless steel archwire was placed passively with consistent lingual root torque in the mandibular left central incisor (Fig 4). The lingual root torque was added progressively for 4 months. At this stage, the gingiva of the mandibular right central incisor showed early signs of spontaneous gingival improvement. Appliances were then placed on the remaining mandibular incisors; for these teeth, specifically the left central incisor, labial root torque was placed, while the right central incisor root was continuously torqued lingually (Fig 5). After 7 months, the spontaneous gingival recession

improvement continued as the right central incisor root achieved a satisfactory position (Fig 6).

Although the gingival status after the orthodontic movement improved significantly, we kept the decision to proceed with the gingival graft for 4 reasons.

1. With the connective tissue graft, we increased the amount of keratinized gingiva; this improved the quality and quantity of the periodontal tissues and allowed for the graft to facilitate biofilm control and make brushing more comfortable.^{11,12}
2. According to the photos before the graft (Fig 6), the gingival recession after treatment improved, but there was still a small root exposure. Thus, with the root exposed to the oral environment, the tooth was more prone to erosion, abrasion, root caries, and hypersensitivity.¹³
3. According to the patient's chief complaint, she wished for the best approach that would allow for the combination of optimal function and esthetics. Although the gingival recession was not located in the esthetic zone, the patient was concerned about it.
4. The use of Emdogain (Straumann, Andover, Mass), a biological product made up of a unique group of active proteins, naturally and predictably regenerates lost tooth attachment. The use of this product in graft surgical techniques aims to regenerate periodontal tissues such as cementum, periodontal ligament, and alveolar bone in recession defects, as shown previously.¹⁴

Therefore, before debonding, the patient was referred to a periodontist for a gingival graft. The surgical technique was performed with a coronal flap associated with a connective tissue graft harvested from the palate and sutured over the root. The flap was coronally positioned to cover the connective tissue graft and sutured (Fig 7). A bonded 3-3 fixed retainer was delivered after treatment. Orthodontic treatment time was 16 months.

The postorthodontic intraoral photographs show maintenance of overbite, overjet, and posterior occlusion, and improvement in the crown and root positions of the 2 main malpositioned mandibular incisors. Although the patient showed some spontaneous gingival recession improvement throughout treatment, the results after the gingival graft displayed nicely contoured gingiva around the mandibular incisors and an acceptable esthetic result with no signs of tooth mobility (Fig 8).

The final panoramic and periapical radiographs showed favorable root parallelism with no signs of root resorption or bone loss near the mandibular incisors (Fig 9).

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