Surgical solutions to periodontal complications of orthodontic therapy

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Collaboration of various specialists has become essential in pediatric dental practice. In orthodontics, this collaboration is completely necessary when the patient presents periodontal problems. Even in healthy patients, who do not suffer from periodontal disease, periodontal complications may occur during treatment with fixed appliances. Two cases of young patients, in which periodontal procedures were used to complement the results of orthodontic treatment are presented.

INTRODUCTION

Every day it is more difficult to practice pediatric dentistry in an isolated manner, since many cases require the collaboration of various specialists.

The influx of patients to orthodontist’s offices is obliging these specialists to familiarize themselves with periodontal problems. The carrying out of an orthodontic movement puts us in a risky situation if the thickness of bone is insufficient and if there exists a lack of attached gingiva, especially in patients who display an accumulation of plaque or poor brushing techniques.1,2

Gingival recession (partial exposure of the dental root occasioned by the apical migration of the gingival margin) is one of the most common periodontal complications of orthodontic treatment, causing esthetic and dental sensitivity problems.3

In narrow, isolated denudation with adequate attached gingiva in the neighboring areas, the laterally sliding flap can solve the problem which orthodontic treatment initiated.4

On the other hand, fixed orthodontic appliances provoke local irritation, which can set off a chronic inflammatory gingival increase in patients with poor hygiene or who show a habit of oral respiration.

If at the beginning the swelling occurs around the affected teeth, with time it can go as far as covering the crowns, making orthodontic treatment considerably more difficult.4

This article presents two cases in which periodontal procedures were used to complement the results of orthodontic treatment.

CASE 1

After having undergone orthodontic treatment, a 16-year-old female shows gingival recession at the left lower central incisor, being the chief complaint of the patient root sensitivity and esthetic problems. Having a narrow and isolated denudation with a sufficient band of neighboring attached gingiva, having no significant periodontal pockets and having a good interproximal underlying bone, the decision was taken to put a laterally sliding flap into effect.

The recipient bed was prepared by carrying out scaling and root planing and a v-shaped incision of the gingival margin with a no. 15 blade scalpel. Measuring the width of denudation horizontally, the size of the donor site needed to be 1.5 times the size of the area to be covered.

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Figure 1. Gingival recession of lower central incisor.
The donor site was prepared by creating a flap of partial thickness in the first half of the surgical site. A flap of total thickness in the second half of the surgical site, so that if any area remained exposed, this would end up covered by means of periostium. The suture was removed after 10 days. One month after surgery, root coverage was complete and esthetic improvement had been achieved.

**CASE 2**

A 12 year-old girl displayed significant gingival growth a few months after having begun orthodontic treatment. It is decided to do a gingivoplasty since the patient has suprabone pockets, an adequate attached gingiva, and does not display infra-alveolar packets.

With Krane-Caplan tweezers, the base of the gingival pocket is indicated, leaving an area of bloody spots.
With the Kirkland scalpel, an external bevel incision is done, Imm apically from the bloody spots, and with the Orban scalpel the papillae incisions are made.

After removing the gingival pad, the scaling and planing of the teeth is done, the gingival architecture is remodeled with a round diamond burr and the gingival edge is regulated with gingivoplasty scissors.

After 20 days, the gingiva has a much healthier appearance and it is possible to continue with orthodontic treatment.

**DISCUSSION**

The occurrence of gingival denudation during orthodontic treatment varies between 1 and 3% and, with its occurrence, the possibility of the orthodontist having to change his treatment plan.

Whilst some authors believe that the excessive pronation of mandibular incisors is a determinant factor in this denudation, others believe precisely the contrary.

There exist various periodontal techniques for the treatment of gingival denudation, one of them being the laterally sliding flap introduced by Grupe and Warren.

Nowadays, its use is limited due to the fact that the surgical technique is difficult since there exists the risk that an iatrogenic denudation will be caused in the donor site. However, in case no. 1, this recession did not take place and the esthetic result was good. Possibly, this result was achieved because the characteristics of the case (narrow denudation and affecting only a single tooth, suitable neighboring attached gingiva and no presentation of periodontal pockets) were the ideal for carrying out this treatment.

In other cases of orthodontic patients in which gingival denudation affects more than one tooth and the attached gingiva in the neighboring areas is not adequate, other techniques such as those introduced by Miller or Langer and Langer must be used. Cases of orthodontic patients treated with these other techniques have been published by several other clinicians.
With respect to gingival inflammation, the major etiological factor in the initiation and progression of inflammatory periodontal disease is bacterial plaque and fixed orthodontic appliances, which can alter the pathogenicity and quantities of the existing plaque. This potentially increasing the adverse effects on the periodontum, which obliges the orthodontist to increase his attention to hygiene, something in which, in some way we committed some errors during the treatment of case number 2.

Although on occasions it is necessary to remove fixed orthodontic appliances to cure gingival inflammation, in case no.2 it was possible to continue treatment while carrying out a gingivoplasty. It was not necessary to resort to other techniques because the attached gingiva was adequate.

CONCLUSIONS
1) Orthodontic treatment should not be done without having previously achieved good conditions of hygiene.
2) Gingival recession occurs in some patients during orthodontic treatment. The technique of the laterally sliding flap is indicated when the recession is narrow, affects only one tooth and there exists an adequate band of attached gingiva in the neighboring area.
3) In orthodontic patients with a significant gingival growth, the gingivoplasty is indicated whenever the attached gingiva is adequate and there are no infra-alveolar pockets.
REFERENCES