

## CLINICAL CASE

# Treatment of Miller Class III Gingival Recessions with Tunnel Technique

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### ▪ INTRODUCTION

Gingival recessions are known to cause aesthetic and/or health-related problems for patients (AAP 1996). Although they are not a common reason for consultation in the dental office, their diagnosis and treatment can improve the aesthetics of a smile, reduce or eradicate tooth sensitivity and slow the progression of migration of the gingival margin, a phenomenon that can pose a risk for tooth survival.

The aetiology of gingival recession is considered multifactorial, and its origin can be divided into two main groups: predisposing factors, which are endogenous in nature and inherent to patients, and precipitating factors (triggers) which contribute to the development of recession (Hall 1977).

Among the predisposing factors, the most important include thin periodontal biotype, tooth malposition, crowding, bone dehiscences and insertion of braces which cause traction of the gingival margin, among others. In contrast, precipitating factors include gingival inflammation, traumatic brushing, gingival laceration, iatrogenesis, etc.

The treatment of this type of disease consists of a first phase, or conservative treatment, which is aimed at correcting the aetiological factors that caused the recession. If these factors are not eliminated, recession may recur despite treatment. The second phase, or surgical treatment, restores the gingival tissue that had retracted, covering the surface of the root and increasing the quantity and quality of the gingival tissue surrounding the tooth by a minimally invasive surgical technique.

### ▪ CLINICAL CASE REPORT

#### **Anamnesis**

43 year old woman.

Non-smoker with no relevant medical history.

Allergies not known.

Unaware of family history of periodontal disease.



**Dental Background**

Reports extraction of wisdom teeth, conservative dental and orthodontic treatments. No report of previous periodontal treatment, only annual dental cleanings.

**Reason for Consultation**

The patient visits the dental office to improve the aesthetics of her smile and reports localised sensitivity in canines.

**Extraoral Exploration**

No palpable lymph nodes or anatomical limitations.

Half smile with 2-3mm gingival exposure

**Intraoral Exploration**

After clinical examination, the presence of a thin biotype with asymmetrical margins and the presence of multiple recessions between 2 mm and 4 mm in the upper anterior region are observed. Cervical abfractions detected in 1.2, 1.3, 2.3, 2.4 and 4.4.

**Periodontal Examination**

The gum margin has an oedematous and reddish appearance, particularly in the posterior areas.

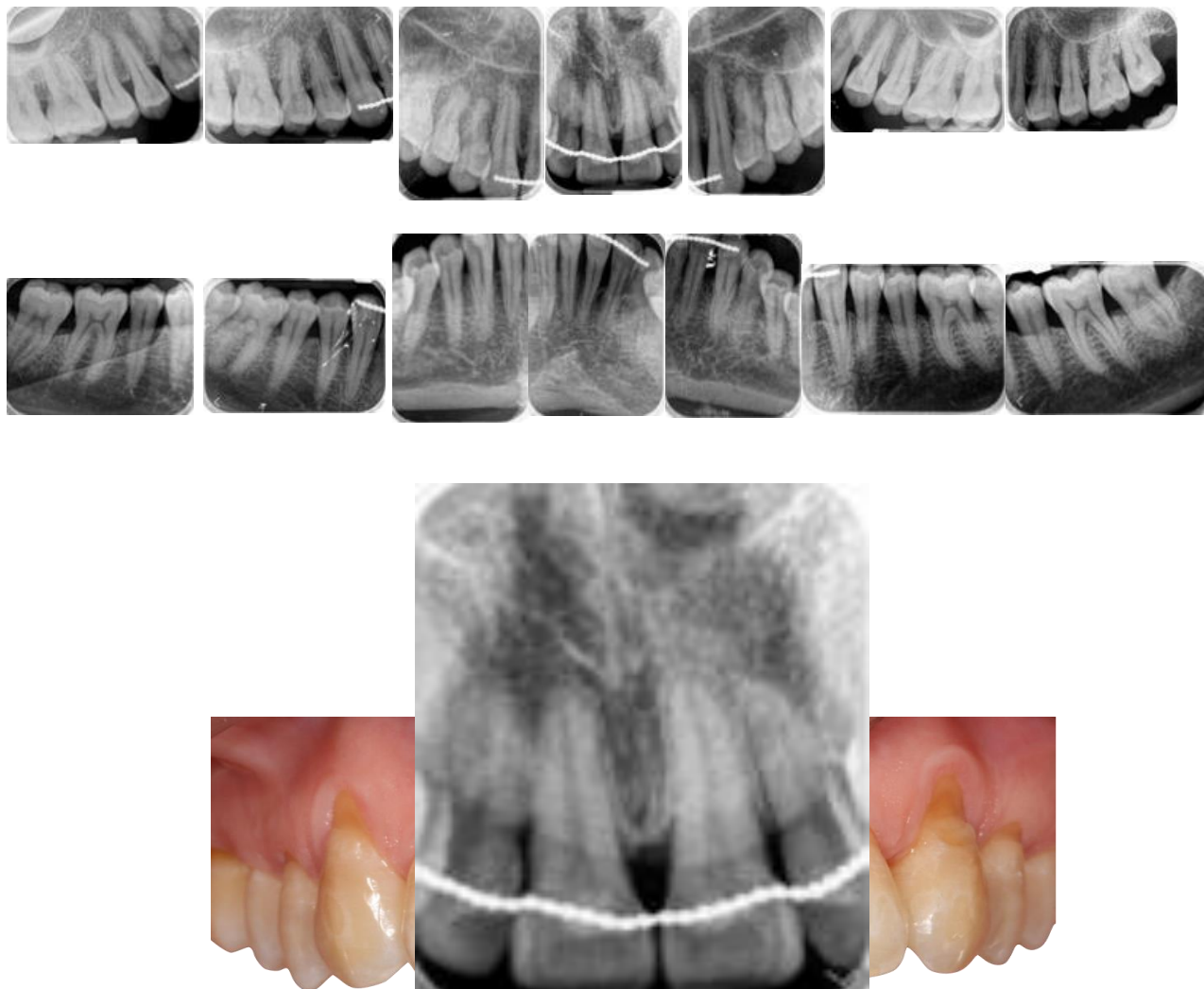
Absence of supragingival calculus, and only slight localised subgingival calculus.

Exploration of the periodontium revealed moderate localised 4-5 mm pockets in the posterior sextants and bleeding on probing.



### *Radiographic Examination*

Radiographically, we observed moderate generalized horizontal bone loss.



#### ▪ **DIAGNOSIS**

The patient was diagnosed with generalised moderate chronic periodontitis as per Armitage's Classification (WWP 1999). Miller class III recessions in the upper anterior region (Miller 1985). Central bruxism.

#### ▪ **TREATMENT PLAN**

##### Phase I (Hygiene phase)

- The patient receives oral hygiene instructions adapted to her situation. Her toothbrushing technique, which was too aggressive, is changed to Stillman's technique plus the use of interdental brushes with the proper diameter.
- Scaling and root planing is performed per quadrant.

##### Phase II (Surgical phase)

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- After re-evaluating the hygiene phase and after verifying the absence of periodontal activity, treatment of multiple recessions in the upper anterior region is performed.
- The recessions are classified as Miller class III recessions, as there is interproximal attachment loss. Because this is an aesthetic area and because there is attachment loss, it is decided to use less invasive surgery by performing a tunnel with a connective tissue graft and coronally advanced flap technique and to restore the abfraction of 2.3 with composite.

#### Phase III (Rehabilitation phase)

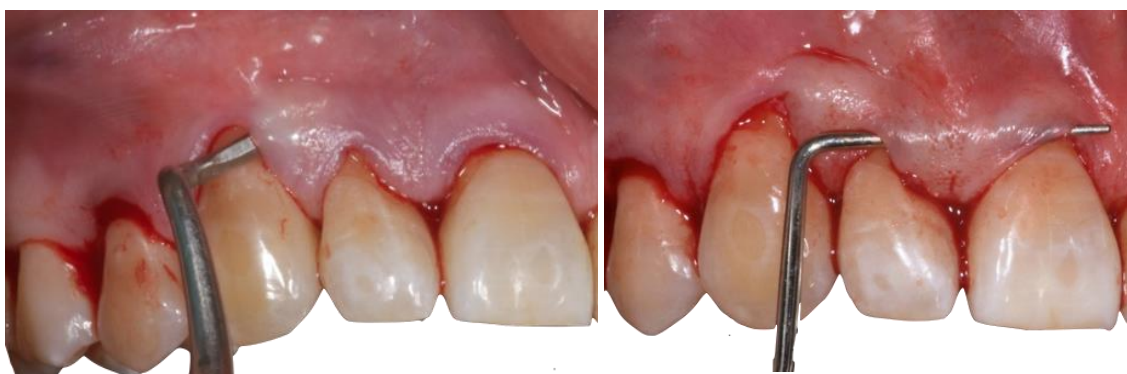
- Class V restoration in 2.3

#### Phase IV (Maintenance phase)

- Periodontal maintenance, monitoring and evaluation of brushing technique every 4 months

### Surgical technique

Intrasulcular cervical incisions were made up to the line angle of all teeth in the upper anterior region, detaching the base of the papilla without sectioning it with the help of tunnelling instruments.



All papillae were progressively connected to ensure complete corono-apical flap release.





A subepithelial connective tissue graft was then harvested from the palate and divided into two portions to be adapted only for the recessions corresponding to 1.3 and 2.3, as these were the sites with abfraction and absence of attached gingiva. The graft was inserted with the help of a stitch to provide manoeuvring stability within the recipient graft bed.



Lastly, suturing was performed using a 6/0 monofilament with suspended, coronally advanced stitches, anchored to the palatal orthodontic retainer.



The patient received instructions for post-operative care and analgesic and anti-inflammatory treatment plus rinsing with 0.12% Chlorhexidine and 0.05% Cetylpyridinium chloride (Perio-Aid® tratamiento) for 30 seconds, two times per day for 15 days. After suture removal at 2 weeks, the patient was instructed to continue with the Chlorhexidine rinse for two additional days and to start brushing the surgical site with a manual surgical brush (VITIS® cirugía). Monitoring was performed at one month, 3 months, 6 months and one year after surgery.

Follow-up after 18 months reveals tissue stability, completely covered recessions and aesthetic improvement of the patient's smile.



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Finally, the initial and 18 month control clinical pictures are shown.



#### ▪ *DISCUSSION*

Covering gingival recessions using a connective tissue graft and coronally advanced flap technique, is a predictable treatment in Miller class I and II recessions where no attachment loss is observed, and where this surgical technique can be considered the 'gold standard' (Rocuzzo 2002, Cairo 2008, Chambrone 2008, 2010). However, in situations where interproximal attachment loss already exists, Miller class III recessions, the predictability of obtaining complete root coverage is reduced.

The primary complications for obtaining complete coverage in Miller class III recessions include bone and soft interproximal tissue loss, an increase in the avascular root surface, greater root prominence and a reduced periosteal bed surface.

Given this situation, several authors have suggested different techniques to increase treatment success for this type of recessions. The Tunnel technique, described by Allen (Allen 1994) and modified by Zabalegui (Zabalegui 1999), was proposed for the treatment of multiple Miller class I and II recessions. This less invasive technique offers several advantages over conventional pedicle graft technique or bilaminar methods. Some advantages include minimal surgical trauma in the receiving area, greater nutrition of the graft by lateral vascularisation and from the papillae, increased aesthetics from maintaining the integrity of the papillae and no incisions, improved post-operative phase and greater acceptance of treatment by the patient.

More recently, a technique was proposed for treating multiple Miller class III recessions using the modified tunnel technique + connective tissue graft and the use of an enamel matrix protein derivative (EMD-Emdogain®). Although it was shown that EMD does not enhance root coverage, the tunnel technique together with connective tissue grafting and a coronally advanced suture anchored at the contact points has been shown to offer greater stability, making it a predictable technique for covering Miller class III recessions (Aroca 2010).

In conclusion, cervical lesions sometimes require a combined treatment, including both surgical and restorative methods. The choice of technique will be determined by the anatomical characteristics of each case.

Although complete root coverage of Miller class III recessions is less predictable, it seems that the tunnel technique combined with connective tissue grafting and coronally advanced suturing may offer more stability and aesthetics to the final clinical outcome.

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