Root coverage with connective tissue graft. Case reports

Copertura radicolare con innesto connettivale. Casi clinici


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ABSTRACT

OBJECTIVES. The aim of this study was to report two clinical cases of root coverage.

MATERIALS AND METHODS. A connective tissue graft associated with two different flaps, one coronally positioned, and the other laterally positioned, was used for the treatment of two gingival recessions Class I and III, respectively.

RESULTS AND CONCLUSIONS. The surgical techniques here described showed good results in root coverage and gain in keratinized tissue, with complete coverage in Class I recession and partial coverage in Class III recession. Periodontal plastic surgery for root coverage can make use of various techniques, with an emphasis on the graft tissue procedure, yielding excellent results in Class I and II recessions, albeit less predictable and with only partial coverage in Class III. Moreover, such technique allows for a gain in the keratinized tissue level.

KEY WORDS

Gingival recession
Connective tissue
Root coverage
Periodontal therapy
Aesthetics

RIASSUNTO

OBIETTIVI. Obiettivo del presente lavoro è descrivere due casi clinici di copertura radicolare.

MATERIALI E METODI. È stato utilizzato un innesto di tessuto connettivo associato a due lembi diversi, uno posizionato coronalmente e uno lateralmente, per il trattamento di recessioni gengivali rispettivamente di Classe I e III.

RISULTATI E CONCLUSIONI. Le tecniche chirurgiche descritte hanno mostrato buoni risultati nella copertura radicolare e nel guadagno in tessuto che ratinizzato, con una copertura completa nel caso di recessione di Classe I e una
La chirurgia plastica parodontale per la copertura radicolare può avvalersi di varie tecniche; in particolare quella con innesto di tessuto permette di ottenere ottimi risultati nelle recessioni di Classe I e II, mentre è meno prevedibile nella Classe III con una copertura soltanto parziale. Presenta inoltre la possibilità di aumentare il tessuto cheratinizzato.

**PAROLE CHIAVE**
- Recessione gengivale
- Tessuto connettivo
- Copertura radicolare
- Terapia parodontale
- Estetica

1. **INTRODUCTION**

The main function of the periodontium is to insert the tooth into jaw bone and maintenance of the masticatory mucosa integrity of the oral cavity. The attachment loss caused by periodontal disease is clinically represented by the periodontal pocket and gingival recession, which is defined as the condition where the ginvial margin is positioned apical to the cementum enamel junction and root surface is in contact with the oral environment [1], exposing the cementum that degenerates, beyond the aesthetic compromising, may result in abrasions, caries and root surface hypersensitivity. The recession is a very common clinical condition, and according to some authors [2], the lower incisors were the teeth that showed higher frequency of recessions and that 89% of the subjects above 20 years had at least one area with ginvival recession.

The gingival recession may be localized or generalized, a result of bacterial action combined with predisposing factors, including thin cortical bone, thin periodontal biotype, fenestration and dehiscence bone and traction of brakes, and triggering factors, especially the traumatic brushing, orthodontic movements in buccal or lingual direction, occlusal trauma and invasion of the biologic width. Gingival recessions are classified as Classes I and II, without loss of interproximal bone and gingival tissue, Class III where the interproximal bone loss occurs from mild to moderate form, with or without absence of keratinized tissue, and Class IV, with a severe proximal bone loss [3]. Generally, the prognosis for Classes I and II is excellent, while for Classes III or IV only partial coverage may be desired. The Class IV provides a very poor prognosis with current techniques.

The aesthetic patient’s expectations, with or without dentin hypersensitivity, increased demand for the treatment of gingival recession, and thus root coverage becomes an important part of periodontal therapy [4]. The success of aesthetic treatment is based on the use of periodontal plastic surgery techniques as with coronally advanced flaps (CAF) or laterally positioned (LPF) isolated or associated with subepithelial connective tissue graft (CTG), acellular dermal matrix (ADM), enamel matrix derivative (EMD) and guided tissue regeneration (GTR) [5]. Furthermore, it is possible the use of microsurgery comprising minimally traumatic techniques and highly predictable prognosis. The variable most often used to evaluate these treatments has been the amount of root coverage achieved, expressed as the difference between the measurements of attachment loss at baseline and final data, and the percentage of complete root coverage [3]. The CTG associated with CAF is the procedure of choice to show more predictable results due to the dual blood supply from both the flap and periosteum from the surgical site around the recession, plus the closest adjacent tissues color [4]. The CTG may be obtained from the palate or the tuberosity and can be removed by techniques such as the “trap-door” and the parallel incisions [6]. It shows effective results to cover recessions Class I and II [4,7], and in Class III recessions the coverage could only be partial [8].

The use of LPF, also associated with connective tissue graft, is another option for root coverage, showing good results with full coverage in Class I and II recessions in 62.5% of cases [9]. However it is essential to evaluate the periodontal condition of the area adjacent the recession to avoid damage to it that must have a larger and thickened strip of keratinized tissue to as to preserve at least a small range in the tooth donor [10]. A study comparing the efficacy of coronary advanced flap and the laterally positioned flap in Class I recessions, showed similar results between the two techniques for the root coverage [11]. CAF is the best flap design for root coverage with the ability to maintain an adequate blood supply to the gingival margin [7].

Graft using ADM associated with CAF have the advantage of avoiding the surgical donor area of the palate [4], with...
similar results in root coverage in Class I and II recessions compared to the CTG + CAF [7,12].

The use of EMD and GTR for root coverage associated with flaps has been increased in recent years [4], also with similar results to the use of the CTG regarding coverage, although another study showed greater gains in keratinized tissue using CTG compared to the use of EMD [13].

The aim of this study was to report two clinical cases, one using the CAF and the other with LPF, both associated with connective tissue graft, aiming the root coverage.

2. CASE REPORT

2.1 CASE 1

A female patient, 28 years old, non smoker and without major systemic changes, presenting multiple recessions, increased by orthodontic therapy with aesthetic complaints and dentin hypersensitivity on the vestibular face of the right upper canine, with Miller Class I recession (fig. 1). Scaling and root planning was performed by Gracey curette 5-6 (Hu-Friedy), without root surface conditioning.

After a sulcular incision a partial thickness flap extended from the mesial surface of tooth 12 to the distal of tooth 15 was done, without vertical releasing incisions. The CTG was obtained from the palate, through the trap-door technique. The tooth 14 was extracted for orthodontic reasons.

The CTG was fixed in periosteum with 5-0 Vicryl suture (fig. 2) and the CAF sutures were made with Vicryl 5-0 and 4-0 silk sutures, maintained for 10 days (fig. 3). Postoperative cares included mouth rinses from chlorhexidine 0.12% and prescription of analgesics and anti-inflammatory.

Figure 4 shows the result after 120 days, with complete root coverage on the vestibular face of tooth 13 with improvement.

Fig. 1 Case 1: preoperative view

Fig. 2 Case 1: connective tissue graft fixed

Fig. 3 Case 1: immediate postoperative

Fig. 4 Case 1: after 120 days
in gingival aesthetic appearance and alignment, as well as reducing dentin hypersensitivity.

2.2 CASE 2
A female patient, 47 years old, non-smoker and without systemic changes, presenting Miller Class III recession in the mesiobuccal root of the maxillary right first molar, probably aggravated by its extrusion due to the absence of the antagonist (fig. 5). Scaling and root planning was performed by Gracey curette 7-8 (Hu-Friedy), without root surface conditioning.

The CTG was obtained from the palate, through the trap-door technique, associated with a partial thickness flap displaced laterally from the buccal area of the maxillary second molar (fig. 6). The graft's sutures were made with 5-0 Vicryl suture and the LPF sutures with the Vicryl 5-0 and 4-0 silk sutures, kept for 12 days (fig. 7). Postoperative cares included mouth rinses from chlorhexidine 0.12% and prescription of analgesics and anti-inflammatory.

Figure 8 shows the result after 180 days obtained partial root coverage of mesiobuccal root of maxillary first molar and gain in keratinized tissue.

It was obtained term risk protection and confidentiality of data regarding the patients.

3. DISCUSSION
Gingival recessions are very common clinical conditions in the general population [2] and the main aims of the therapy are to improve their aesthetics, increased width of keratinized tissue and reduce hypersensitivity [6,11].

The etiology is very diverse and it is related with predisposing and triggering factors [3], and these two reported cases showed very evident triggering factors, the first occurrence of recession after...
orthodontic therapy and second occlusal trauma due to extrusion tooth.

Several surgical techniques have been used to obtain the goals of recession’s therapy including flaps associated or not to CTG, free gingival grafts, GTR, ADM and EMD, with all showing positive results in root coverage and increased keratinized tissue [4,13]. Nevertheless, the use of subepithelial connective graft associated with coronally positioned flap has been very reliable and with the high success rates for root coverage in Miller Class I and II recessions [4,7], with a surgical technique of choice in case 1. The case 1 showed a localized Class I recession, which the treatment option was the CAF + CTG and the coverage was complete. The use of CTG under the flaps has shown greater gains in keratinized tissue compared with EMD or ADM [7,14]. The two reported cases showed changes in keratinized tissue, with a clear increase of the same, which is an important factor to improve the hygiene of the area. The LPF can be indicated when there is an adequate range of keratinized tissue at the adjacent area of the recession to prevent damage to the donor site [9]. It was observed in the selection of the technique for clinical case 2, showing large range in keratinized tissue the adjacent teeth recession. Another factor that enforced this statement was the fact that it is a long Class III recession, where there would be no possibility to use of the CAF. In recessions Class III the results are less predictable with only partial coverage [8,10], observed in this case.

The root treatment, in these two reported cases, was only mechanic without any chemical treatment. The efficacy of chemical root modifiers is extremely controversial, with some authors said that this procedure improves the adhesion of the clot [15] or promotes new connective tissue attachment and others showing no additional effect to the mechanical preparation [14]. The two flaps associated with CTG were effective in the treatment of gingival recession both for root coverage as to increase the keratinized tissue. For these results are realized is fundamental the correction of the etiologic factors, selection of the adequate surgical technique and training.

4. CONCLUSIONS

The surgical techniques described showed good results in root coverage and gain in keratinized tissue.

CONFLICT OF INTERESTS

The authors have no conflict of interest to disclose.

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