

Treatment of multiple gingival recessions by MCAF technique

combined with the use of a three-dimensional collagen matrix of equine origin: a case report with 1-year follow-up

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Introduction

Gingival recession is defined as the migration of the gingival margin apically to the cemento-enamel junction (CEJ)¹. The etiology of gingival recession is multifactorial and involves both morphological and functional factors. Morphological variables include bony anatomy (fenestrations, dehiscences), tooth size, shape, and position, and finally soft tissues such as the gingiva, mucosa, and muscles². Functional variables include plaque accumulation, brushing trauma, and causes of iatrogenic origin² (incongruous restorations). Gingival recession is a noxa found in approximately 88% of adults older than 65 years and in 50% of adults aged 18-64 years³. Gingival recessions are further complicated by the possible presence of non-carious cervical lesions (NCCLs), which result in deeper gingival recession and reduce the likelihood of achieving complete root coverage (CRC)⁴⁻⁵. The initial therapeutic approach to gingival recession should aim to eliminate modifiable etiologic factors that promote its development (brushing trauma, plaque accumulation). Subsequently, with surgery, it is possible to achieve root coverage and restore the patient's esthetics. The choice of the technique rely on an accurate diagnosis of the defect and its classification, which is based on well-defined clinical parameters⁶. Among the most widely used techniques for single recessions is the Coronally Advanced Flap (CAF)⁷ technique. This latter was later modified into the Multiple Coronally Advanced Flap (MCAF) for the treatment of multiple recessions⁸. The CAF technique combined with connective grafting has been shown to provide better results in terms of aesthetics and root coverage than CAF alone⁹. Connective graft is typically harvested from the palate at the molar-premolar area ipsilateral to the graft site. However, this procedure is invasive for the patient, prolongs the surgery time and increases the morbidity of the surgery. In addition, the mucosa of the palate must be at least 2.5 mm thick to provide sufficient connective tissue (0.8-1.2 mm) to be used as a connective graft¹⁰. In the case of multiple recessions, the amount of autologous connective tissue is

often not sufficient to proceed in a single surgical solution. For all these reasons, the use of connective substitutes, including collagen matrices of equine origin, has become widespread^{11, 12}. Collagen acts as a chemotactic factor for fibroblasts and as a hemostatic by favoring and stabilize clotting¹³. The use of these collagen matrices is also becoming more widespread in cases of multiple recessions. In this case report, surgical resolution of multiple type I gingival recessions in the presence of NCCLs is presented.

Case report

The case involved a 38-year-old male patient, nonsmoker, not suffering from periodontitis, who presented to the office for the resolution of a gingival recession involving element 23, previously treated with composite material (Fig. 1). Clinical examination showed multiple recessions in the 4 quadrants associated with non-carious cervical lesions (NC-

CLs). In particular, type I gingival recessions were present at elements 21-25 (Fig. 2). The gingivae were characterized by a thin phenotype. After conservative treatment of the NCCLs performed in the week prior to the surgery, the CEJ at site 21-25 was restored. In agreement with the patient, it was agreed to treat the type I gingival recessions of elements 23-25 with a mucogingival surgery procedure that combined the MCAF coronal placement flap technique and the grafting of a three-dimensional collagen matrix of equine origin (XC COLLAGEN Xenomatrix, Bioteck Spa). The site of the recessions had a sufficient band of adherent gingiva (2 mm) that allowed the collagen matrix to be used. The surgical area was anesthetized using articaine hydrochloride 40 mg + 10 µg/ml adrenaline (Citocartin, Molteni Dental s.r.l.). The surgery for root coverage was performed using the MCAF technique by identifying the canine as the center of rotation of the flap (Fig. 3). After

making the primary incisions, the flap was elevated and mobilized using a mixed technique: partial thickness at the papillae to the height of the apical margin of the recessions, full thickness until the muco-gingival line was reached, and finally partial thickness apically to the muco-gingival line for mobilization in the apical direction of the flap (Fig. 4). The recipient site was treated by mechanical root smoothing of the portion of the root exposed in the oral cavity by recession and disepithelialization of the anatomic pa-

pillae. Next, the three-dimensional collagen matrix was shaped to cover exposed roots 23 to 25 and stabilized in place with sutures at the base of the anatomic papillae (Fig. 5). The collagen matrix, once placed dry at the recipient site so as to facilitate suturing, adhered naturally to the tissues. The matrix was sutured without tension with detached stitches, at the base of the anatomical papillae, with a Polyglactine 6-0 needle 3/8 Reverse - cut Surgicryl thread

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Fig. 1 - Initial clinical examination: note the presence of multiple recessions in the 4 quadrants.



Fig. 2 - Location of recessions to undergo MCAF surgery: elements 21-25 with presence of NCCLs.



Fig. 3 - Detail of the primary incisions made to define the coronal limits of the flap and establish the canine as the center of rotation.

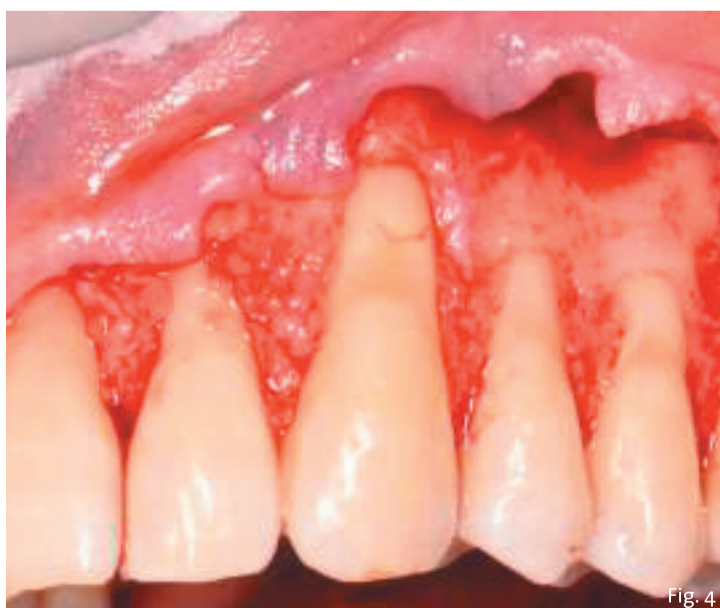


Fig. 4 - Detail of the flap obtained by detachment from the underlying planes using a mixed-thickness technique (partial-total-partial).



Fig. 5 - Apposition of the three-dimensional collagen matrix of equine origin, fixed with detached points at the base of the anatomical papillae, imbibed with blood to achieve root coverage of elements 23-25.

(SMI AG Steinberg 8 - 4780 ST.VITH) (Fig. 6). Once the collagen matrix was soaked in blood, the flap was placed apically with sutures suspended at the base of the papillae, using a Polyglactine 6-0 needle 3/8 Reverse - cut Surgicryl thread (SMI AG Steinberg

8 - 4780 ST.VITH). After surgery, the patient followed home therapy of amoxicillin ac. clavulanicum 875/125 mg: one tablet every 12 hours for 6 days. In addition, Ibuprofen 600 mg: one tablet every 12 hours the first 2 days; thereafter therapy to be continued un-

til painful symptoms persisted. At the level of the operated site, washes with 10 ml Chlorhexidine 0.12% for 30 s were prescribed. At the level of oral hygiene, tooth brushing in the second quadrant was interdicted for the first 14 days. For the next 14 days, tooth

brushing was prescribed only at the crown with a soft toothbrush and small brush-head. Sutures were removed at 2 weeks after surgery. Control images at 1 month and 1 year demonstrated how the MCAF technique with the inter-

position of the three-dimensional collagen matrix of equine origin (XC COLLAGEN Xenomatrix, Bioteck Spa) is able to guarantee a stable result in terms of root coverage (Figs. 7-10b).



Fig.6 - The flap is placed coronally and fixed in place with suspended stitches.



Fig.7 - Healing check at 1 month shows good graft integration and still incomplete papillae maturation.



Fig.8 - Healing check at 1 year: the treated site shows no color and thickness disharmony at the oral mucosa.



Fig. 9a



Fig. 9b

Fig.9a, 9b - Detail of healing at 23. Above, the initial situation with composite coverage. Below, 1 year after root cover restoration surgery.

Discussion and conclusion

Multiple gingival recessions are treated with different types of surgery, of which one of the most widely used is MCAF⁸. Although there is evidence in the literature of treatment of multiple recessions by MCAF^{8,9,14}, less common are studies showing resolution of combined defects, i.e., multiple recessions in the presence of NCCLs¹⁵ and thin phenotype. In fact, the literature shows that the presence of non-carious cervical lesions concomitant with gingival

recessions may be associated with an increased probability of root coverage failure¹⁶. The present case report shows the good outcome of a combined approach, in which NCCLs are initially treated (one week prior to surgery) and then continued with the MCAF technique combined with the use of a three-dimensional collagen matrix. The equine-derived three-dimensional collagen matrix made it possible to avoid palate harvesting and reduce surgical time. This made it possible to reduce patient discomfort and to

operate on each gingival recession with one surgery. The results show proper thickening of keratinized tissue that is maintained over time (Figs. 10a, 10b). Tissue integration not only ensures the stability of the surgical result over time but also promotes satisfactory aesthetics, free of disharmony due to excessive thickness of the grafted parts (as can occur with the use of connective taken from the palate)⁸ and at the same time excellent aesthetics given the absence of mucosal discoloration (Figs. 10a, 10b).

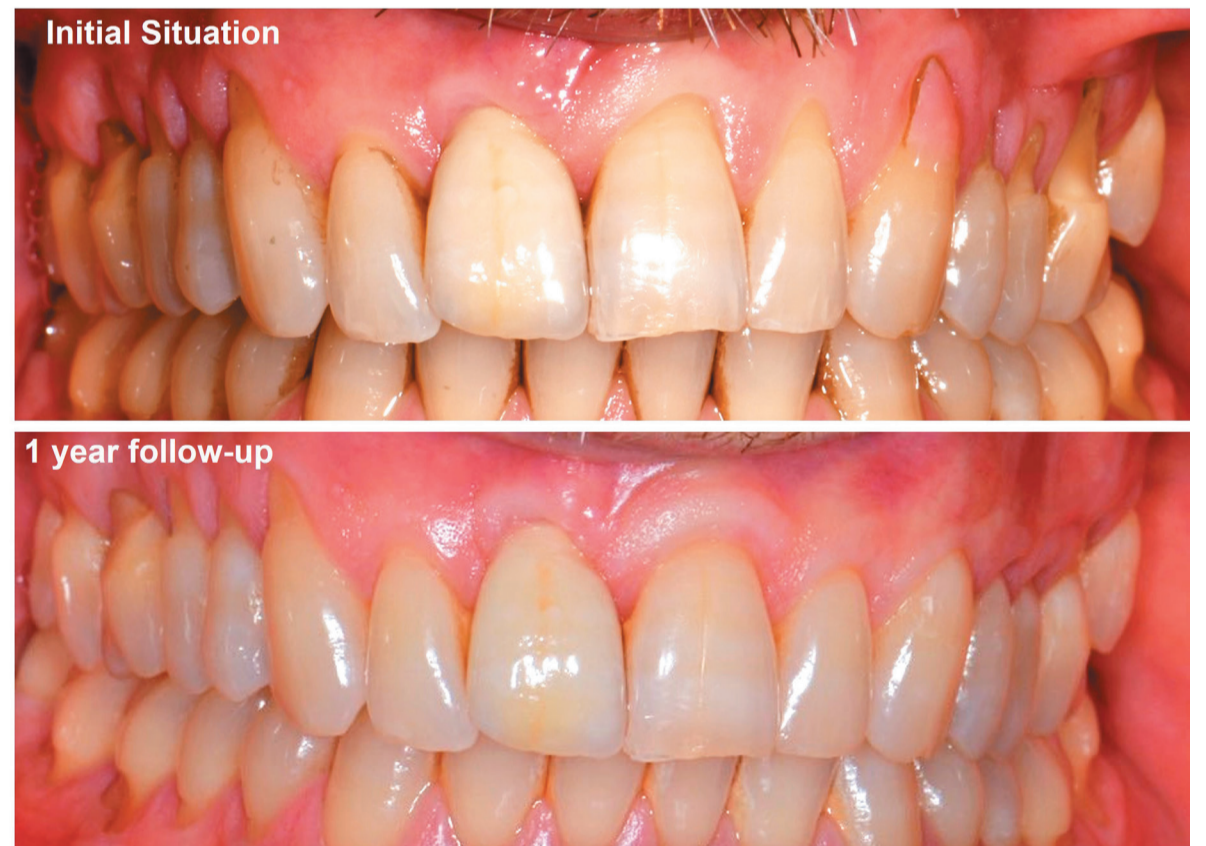


Fig.10a, 10b - Comparison of the initial gingival recession situation in the second quadrant and at 1-year follow-up. Note the soft tissue thickening and the excellent root coverage achieved.

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