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Case Report

Connective Tissue Graft with Coronally Advanced Flap for Complete Root Coverage in the Aesthetic Area: A Case Report

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Abstract

Introduction: Covering a gingival recession is one of the aims of periodontal plastic surgery. Coronally advanced flap in addition to connective tissue graft seems to be the gold standard technique for root coverage of single Miller class I/II gingival recession. The technique promotes satisfying and long term stable clinical outcomes.

Clinical case: A 25-year-old patient complained of sensitivity due to the exposure of the root of the maxillary right premolar. He had a thin periodontal biotype. Gingival recession was about 5 mm deep, and classified as Cairo's GRT1 / Miller's class II. We considered a coronally advanced flap in addition to a connective tissue graft. The patient shows a complete root coverage and a perfect aesthetic integration. The biotype became thick and the functional and aesthetic appearance of the patient's smile have been restored. Until 2 years of follow-up, gingival outcomes still stable.

Conclusion: The results of the clinical case are in agreement with those reported in the literature. CAF combined with CTG seems to be the gold standard for achieving a harmonious root coverage of class II of Miller gingival recession. Patient long term results are stable and satisfying. The only limitation is related to the morbidity of the technique. Nevertheless, this disadvantage could be overcome by prescribing medication.

Keywords: Aesthetics; Gingival Recession; Coronally Advanced Flap; Connective Tissue Graft; Root Coverage

Introduction

Covering a gingival recession (GR) is one of the aims of periodontal plastic surgery. The main indications of root coverage reported in literature are aesthetics, dental hypersensitivity and prevention of carious and non-carious cervical lesions [1]. In addition to this, having a good amount of keratinized tissue (KT) around the teeth seems to help maintaining periodontal stability [2].

The coronally advanced flap is the technique of choice for the treatment of isolated gingival recession [3]. However, this technique does not increase the width of KT, nor does it maintain long-term stability of results [4].

Meanwhile, connective tissue graft-based approaches demonstrate the strongest potential of achieving complete root coverage, with better aesthetic results [5]. The graft acts as a biologic filler, improving the adaptation and the stability of the flap to the root. As a result, the gingival biotype becomes thicker and the potential of a complete root coverage (RC) is higher [6].

Thus, coronally advanced flap (CAF) in addition to connective tissue graft(CTG) seems to be the gold standard technique for RC of single Miller class I/II GR. It promotes satisfying and long term stable clinical outcomes.

Case Presentation

A 25-year-old systemically healthy patient presented to the Department of Periodontology, Casablanca, Morocco. He complained of sensitivity due to the exposure of the root of the maxillary right premolar (tooth 14).

On clinical examination, oral hygiene was good and periodontal status was healthy. The patient had a thin periodontal biotype; periodontal probe was observed by transparency through gingival tissue after being insert into the sulcus [7].

GR on the concerned tooth was about 5 mm deep, wide, isolated, with no interdental attachment loss and diagnosed as Cairo's gingival recession type 1 (RT1) [8] (Figure 1).

Treatment options were explained to the patient. We considered a CAF in addition to a CTG because of its association with a higher probability of complete root coverage compared with other interventions. In addition, it allows to increase gingival thickness which is at the origin of long term gingival stability [5].

Figure 1: The maxillary first premolar (14) shows 5mm of gingival recession, classified as RT1 in Cairo's classification, equivalent to CL II in Miller's classification.

After oral disinfection, the surgical site was anesthetized. Using a 15C blade, two horizontal and two oblique incisions were made, resulting in a trapezoidal shaped flap (Figure 2).

Figure 2: Flap design: Two horizontal incisions, at 3 mm from the gingival collar to the adjacent teeth. Vertical incisions extended beyond the muco-gingival line to allow the elevation of a dissected flap in partial thickness, to create a periosteal bed for the graft.

The flap is elevated using a split–full–split approach in the coronal–apical direction: The surgical papillae are elevated split thickness. The soft tissue apical to the root exposure is elevated full thickness by inserting a small periosteal elevator into the sulcus to expose 3 mm of bone apical to the bone dehiscence. The lateral vertical incisions are elevated split thickness. Apical to the bone exposure flap, elevation continues split thickness. The elimination of muscle insertions from the flap allows its coronal advancement: the blade parallel to the bone allows a deep incision to detach the lip muscle from the periosteum. Then, with the blade parallel to the mucosa, a superficial incision made the passive displacement of the flap coronally possible, with minimal lip tension.

The anatomic papillae is de-epithelized in order to receive the surgical papillae of the coronally advanced flap [1,3,5].

The harvesting approach was the trap-door technique (Figure 3). It mainly achieves a healing by primary intention; the primary palatal flap is then sutured to the donor site after harvesting [3,5]. (Figure 4). This approach was initially considered the gold standard as it accompanied less postoperative morbidity.

Dimension of the graft was equal to the depth of bone dehiscence minus the preoperative height of KT apical to the recession defect. The thickness of the graft was <1 mm. The CTG was positioned coronally to the cemento-enamel junction. It was fixed by sutures to the underlying periosteum and to the lateral banks of the site. The flap is moved to the coronary position so as to completely cover the

Figure 3: Palatal harvesting approach: The trap-door technique.

Figure 4: Primary palatal flap sutured for healing by primary intention.

grafted connective tissue. The position must be passive, without tension. A coronal sling suture was done at the end. This attachment to the palatal cingulum allows a good adaptation of the flap to crown convexity and increases stability. For more security and stability in the coronary position, a periosteal suture was added [1,3,5]. (Figure 5).

Figure 5: Primary palatal flap sutured for healing by primary intention.

After the surgical procedure, analgesics were prescribed (Paracetamol 1.5 g per day). The use of 0.12% chlorhexidine was indicated for 7 days, as a mouth wash with no dilution. The patient received postoperative advice. During control, he did not report any postoperative pain.

The patient shows a complete RC and a perfect aesthetic integration (Figure 6). The biotype became thick and the functional and aesthetic appearance of the patient's smile have been restored.

Over time, the phenomenon of creeping attachment has occurred. This may explain the trend toward stability of the gingival margin.

Until 2 years of follow-up, gingival outcomes still stable.

Figure 6: Outcomes after 2 years of follow-up: The case shows complete root coverage, thick gingival biotype and good aesthetic integration. Results are stable at long term.

Discussion

Complete RC is the primary aim of GR treatment. In addition, clinician expect an improvement in clinical attachment level (CAL), in the keratinized tissue width (KTW), natural appearance of the tissues, and stability of the outcome on the long-term [9].

Many techniques are available for treatment of gingival recession. The adjunction of CTG to CAF is described as a gold standard, satisfying under certain conditions, the expectations of the clinician and the patient.

In this clinical case, CTG associated to CAF provided complete RC. We noted a thickening of the gingival biotype, as well as a good aesthetic integration with the periodontal environment. We responded to the aesthetic and functional expectation of the patient.

Our result is in agreement with a meta-analysis reporting that CAF+CTG is more effective in term of Complete root coverage, recession reduction and KT gain in recession type RT1 and RT2, compared to CAF alone [10]. Clinically, in multiple adjacent gingival recession (RT1), 69% of patients treated with CAF + CTG showed full RC of recession, while after CAF alone only 25% had complete coverage [4].

However, Cairo*., et al.* [4]. recommended the use of a connective graft when the gingival biotype is thin and the gingival thickness is ≤ 0,8mm. In this situation, CTG + CAF presents higher efficacy compared to CAF alone, and the probability of complete RC is then greater.

In addition to root coverage, CAF+CTG had better probability in keratinized tissue regeneration [11], it helps to gain more KTW compared to others technics [11,12]. Patients with thin gingival biotype showed a consistent thickening of 0.7mm and an increase in apico-coronal dimension of KT, the gingival biotype becomes thicker [4].

The graft would induce the formation of keratinized gingiva [6]. However, KT heigh increase after CAF can be explained by the genetic factor. It tends to return the coronal displacementof the muco-gingival line during surgery to its initial position [3].

Compared to other techniques, authors showed that CAF + CTG remains the gold standard in Miller's class I and II GR [9,12].

In terms of clinical outcomes and cost-to-benefit ratio, in single Miller class I/II GR with short- term follow-up (of at least 6 months), CAF + CTG is considered the best technique [12]. The ranking is followed by CAF + acellular dermal matrix grafts (ADMG), CAF + enamel matrix derivative (EMD), CAF + collagen matrix (CM), and CAF.

Concerning recession depth reduction, authors demonstrated evidence that at short-term CTG + CAF promoted additional gains to those achieved by guided tissue regeneration with resorbable membranes (GTR rm) + CAF [12].

Regarding clinical attachment level changes, CTG + CAF promoted additional gains compared to platelet-rich fibrin (PRF) + CAF [12].

Similarly, about the percentage of RC, CAF+CTG showed favourable results followed by CAF + acellular dermal matrix + platelet rich plasma [11].

In this present case, the technique allowed a long-term stability of outcomes. The patient is satisfied with the results, despite the low discomfort related to the graft site, which was overcome with analgesics.

Stability of results over time is considered as an important parameter in the choice of surgical procedure for RC [11]. The adjunction of CTG under CAF acts as a biological filler, enhancing clinical stability of gingival margin. It also allows a good adaptation of the flap on the root surface, limiting then shrinkage of gingival margin apically [4,6].

Rasperini., *et al.* [13]. evaluated the clinical results 9 years after the surgical treatment of single maxillary GR. They reported 70% of chance to gain and preserve complete RC over time through the use of CAF + CTG. An increase in KT was registered 9 years after the surgery; creeping attachment was about 0.009mm per year.

likewise, Bertl., *et al.* [9], assessed the long-term stability (≥5 years) of RC procedures. According to the result of this systematic review, CAF+CTG appears as the 'gold standard' in term of clinical parameters, for single Miller class I/II GR. On the long-term, the technique provides low residual recession depth (≤ 0.5 mm), high RC rate>80%, and complete RC in at least 2/3 of the patients.

According to the same study, after comparing the mean residual recession depth values after 6 or 12 months to the final outcome, CAF+CTG seems to be the only intervention for which a creeping attachment became apparent [9].

Discomfort associated or not to pain was the main adverse effect of the surgery. This condition, related to donor sites of CTG, occurred mainly within the first week after surgery and did not influence on RC outcomes [12].

Conclusion

The results of the clinical case are in agreement with those reported in the literature. CAF combined with CTG seems to be the gold standard for achieving an harmonious root coverage of class II of Miller gingival recession. Patient long term results are stable and satisfying. The only limitation is related to the morbidity of the technique. Nevertheless, this disadvantage could be overcome by prescribing medication.

Declaration of Interest

The authors declare that they have no conflict of interest.

Bibliography

1. Stefanini M., *et al*. "Decision making in root-coverage procedures for the esthetic outcome". *Periodontology 2000* 77.1 (2018): 54-64.

2. Goyal L., *et al*. "Free Gingival Graft as a Single Step Procedure for Treatment of Mandibular Miller Class I and II Recession Defects". *World Journal of Plastic Surgery* 8.1 (2019): 12-17.

3. Zucchelli G and Mounssif I. "Periodontal plastic surgery". *Periodontology 2000* 268.1 (2015): 333-368.

4. Cairo F., *et al*. "Clinical efficacy of coronally advanced flap with or without connective tissue graft for the treatment of multiple adjacent gingival recessions in the aesthetic area: a randomized controlled clinical trial". *Journal of Clinical Periodontology* 43.10 (2016): 849-856.

5. Cairo F. "Periodontal plastic surgery of gingival recessions at single and multiple teeth". *Periodontology 2000* 75.1 (2017): 296-316.

6. Zucchelli G., *et al*. "Autogenous soft tissue grafting for periodontal and peri-implant plastic surgical reconstruction". *Journal of Periodontology* 91.1 (2020): 9-16.

7. Cortellini P and Bissada NF. "Mucogingival conditions in the natural dentition: Narrative review, case definitions, and diagnostic considerations". *Journal of Periodontology* 89 (2018): S204-213.

8. Cairo F., *et al*. "The interproximal clinical attachment level to classify gingival recessions and predict root coverage outcomes: an explorative and reliability study". *Journal of Clinical Periodontology* 38.7 (2011): 661-666.

9. Bertl K., *et al*. "Root coverage stability: A systematic overview of controlled clinical trials with at least 5 years of follow-up". *Clinical and Experimental Dental Research* 7.5 (2021): 692-710.

10. Cairo F., *et al*. "Efficacy of periodontal plastic surgery procedures in the treatment of localized facial gingival recessions. A systematic review". *Journal of Clinical Periodontology* 41 (2014): S44-62.

11. Panda S., *et al*. "Stability of biomaterials used in adjunct to coronally advanced flap: A systematic review and network meta-analysis". *Clinical and Experimental Dental Research* 8.1 (2022): 421-438.

12. Chambrone L., *et al*. "Root coverage procedures for treating single and multiple recession-type defects: An updated Cochrane systematic review". *Journal of Periodontology* 90.12 (2019): 1399-1422.

13. Rasperini G., *et al*. "Predictor factors for long-term outcomes stability of coronally advanced flap with or without connective tissue graft in the treatment of single maxillary gingival recessions: 9 years results of a randomized controlled clinical trial". *Journal of Clinical Periodontology* 45.9 (2018): 1107-1117.