Treatment of Gingival Recessions on Mandibular Anterior Teeth

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***Abstract*—Aim: The aim of this case report was to describe and discuss two different surgical techniques for the treatment of mandibular gingival recessions.**

Background: Although mandibular teeth have a significantly higher prevalence of gingival recession than maxillary teeth, there is lack of evidence on the treatments of recessions on mandibular incisors. Various surgical strategies have been proposed for the correction of mandibular gingival recessions including free gingival graft or subepithelial connective tissue grafts in conjunction with various types of flaps.

Case description:

Case 1: a patient with RT1 gingival recession on the mandibular canine was treated with a laterally closed tunnel (LCT) and a connective tissue graft (CTG) obtained from a de-epithelized palatal graft. Complete root coverage (CRC) and excellent esthetic result have been noted.

Case 2: A patient with RT2 gingival recession on the mandibular incisors was treated with a Free gingival graft (FGG) obtained from the palatal side. Complete root coverage CRC has been noted a poor color matching with the surrounding soft tissues.

Conclusion: Treatment with CTG in the treatment of RT1 or RT2 gingival recession located in Mandibular Anterior Teeth provide better results in terms of root coverage and esthetic outcome than FGG.

Keywords*— *root coverage, Free gingival graft, connective tissue graft , gingival recession, esthetic outcome.

I. INTRODUCTION

Gingival recession is defined as the apical shift of the gingival margin with respect to the cemento-enamel junction (CEJ); it is associated with attachment loss and with exposure of the root surface to the oral environment[1]
The AAP-EFP World Workshop 2017 concluded that the etiology of gingival recession remains unclear[1] . Nevertheless, several predisposing factors have been suggested. Accumulation of dental plaque biofilm and traumatic tooth brushing have been considered as the most important etiologic factors[2–4]. Absence of attached gingiva, high frenum attachment, thin periodontal and reduced thickness of the alveolar bone has also been suggested as a predisposing factor of gingival recession[1].
Probably due to poor mucogingival conditions that often are reported in the lower incisor area (i.e. lack of keratinized tissue, presence of frenal attachment, muscle pull and shallow fornix), mandibular teeth have a significantly higher prevalence of gingival recession than maxillary teeth, with mandibular incisors being the most frequently affected location (43.0%) [4].This pattern of frequency was confirmed also for orthodontically treated subjects: during and after orthodontic therapy, mandibular incisors seem to be the most vulnerable to the development of gingival recessions[5]
While there is lack of evidence on the treatments of recessions on mandibular incisors, most studies up to now have explored the treatment of moderate RT1 and RT2 recession defects and have reported the management of such defects mainly on maxillary premolars, canines and incisors[6,7]
Various surgical strategies have been proposed for the correction of mandibular gingival recessions including the use of fully or partially epithelialized free gingival graft or subepithelial connective tissue grafts in conjunction with various types of flaps (envelope, coronally or laterally positioned flap, double pedicle flap, tunnelling flap alone or in combined with laterally positioned pedicle flap[8]
This paper presents a two-cases of RT1 and RT2[1] gingival recessions which were treated by two different approaches. The first case was treated by a free gingival graft and the second by a Laterally closed tunnel. The aim was to compare the results in terms of complete root coverage and esthetic outcome.

II. MATERIAL AND METHODS

Case n1:

A patient aged 21-year-old female was addressed from her orthodontist before starting her orthodontic treatment to our periodontology department at the Dental University clinic of Monastir for the treatment of an isolated mandibular RT1 recession. The patient was nonsmoker and, systemically and periodontally healthy. Professional tooth cleaning and oral hygiene instructions were provided.
A periodontal examination was performed, including assessment of probing depth (PD), clinical attachment levels (CAL), full-mouth bleeding and plaque scores. Intraoral examination revealed RT1 isolated gingival recession on the lower left canine 33 with no bleeding on probing (BOP), 2mm of keratinized gingiva apical to the recession and no abnormal PD.

The initial treatment involved oral hygiene instructions and supragingival and subgingival scaling followed by root planning. After the periodontal treatment, the patient exhibited good plaque control and healthy gingival tissues.
The recession was then treated with a Laterally Closed Tunnel (LCT) associated with a connective tissue graft (CTG).
After local anesthesia, root planning of the exposed root surface was performed with Gracey curettes. An intrasulcular incisions was made using 15C blade and a mucoperiosteal tunnel (pouch) was prepared. The pouch was then mobilized apically beyond the mucogingival line and extended mesially and distally from the recession defect.
Muscles and collagen fibers inserting apically and laterally at the inner surface of the pouch were released using 15C blades and Gracey curettes until tension-free mesial and distal displacement of the pouch margins was obtained and as result the margins of the pouch could be approximated without tension mesially and distally to cover completely the exposed root surface.
A free (epithelialized) gingival graft was harvested from palatal side. The graft was de-epithelialized with a 15C blade.
Using a mattress suture, the connective tissue graft was fixed mesially and distally at the inner aspect of the pouch. Finally, the margins were pulled together over the graft and sutured with interrupted sutured to accomplish tension free complete coverage of the graft as well as the denuded root surface.
The patient was not allowed to brush the surgical sites for 14 days postoperatively and resumed tooth brushing 14 days after the surgery. The sutures were removed 14 days after surgery days postoperatively.
CRC has been noted with a great esthetic outcome and the results remains stable after 2months.

Figure 1: pre-operative situation: RT1 gingival recession located on 33

Figure 2: mucoperiosteal tunnel preparation: the tunnel was mobilized mesially, distally and apically

Figure 3: connective tissue graft

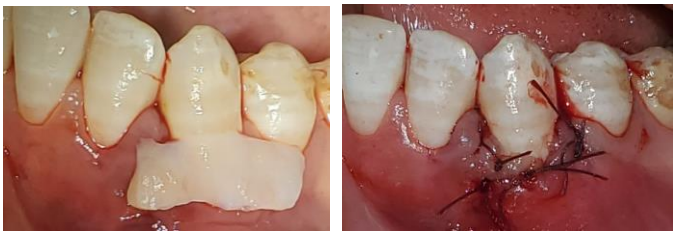

Figure 4: connective tissue graft fixation and sutures

Figure 5: suture removal after 14 days

Figure 6: healing after 2 months

Case n2:

A 24-year-old female patient, nonsmoker and in good general health consulted our periodontology department at the Dental University clinic of Monastir complaining of dental sensibility. A periodontal examination was performed

including assessment of probing depth (PD), clinical attachment levels (CAL), full-mouth bleeding and plaque scores. Intraoral examination revealed RT2 gingival recession on the two mandibular centrals incisors, bacterial plaque, bleeding on probing (BOP), absence of sufficient keratinized gingiva and no abnormal PD.

The initial treatment involved oral hygiene instructions and supragingival and subgingival scaling followed by root planning. After the periodontal treatment, the patient exhibited good plaque control and healthy gingival tissues.

The recession was treated with a Free Gingival Graft (FGG).

After local anesthesia, root planning of the exposed root surface was performed with Gracey curettes. The surgical procedure was made by creation of a partial-thickness flap using a 15C blade. The gingival tissue graft was obtained from the palatal side. The autogenous graft was sutured on the receptor site (4-0 silk suture) for an adequate graft adaptation. The patient was not allowed to brush the surgical sites for 14 days postoperatively and resumed tooth brushing 14 days after the surgery. The sutures were removed 14 days after surgery days postoperatively. Two months after surgery, a large increase of keratinized gingiva width was observed around the central incisor and complete root coverage was achieved on the buccal root but poor esthetic outcome has been reported. No color matching has been noted with the soft tissue surrounding the grafted tissue.

Figure 7: pre-operative situation: RT2 gingival recession located on lower incisors

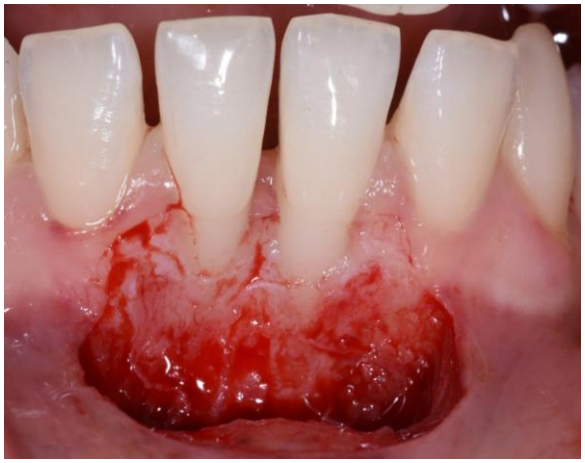

Figure 8: preparation of the receptor site

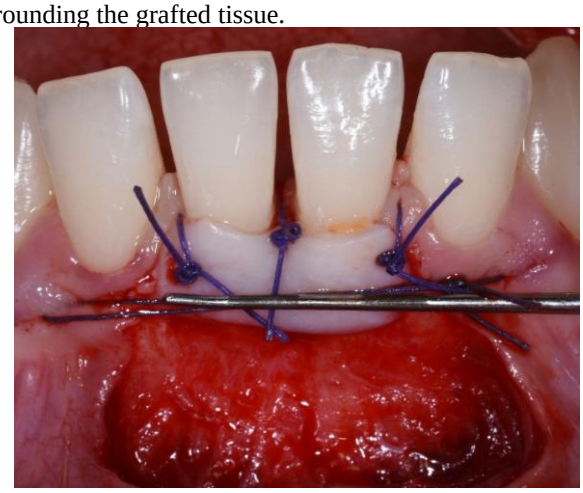

Figure 10: graft suture

Figure 11: healing after 2 months

III. Discussion

Although mandibular incisors seem to be the most vulnerable to the development of gingival recessions[4], limited data are available in the literature about predictability of plastic periodontal surgeries in mandibular gingival recessions.

A systematic and metanalysis review discussed the effectiveness of different mucogingival approaches for the treatment of gingival recessions on mandibular anterior teeth. This metanalysis showed that the Tunnel and the laterally positioned flap both in combination with CTG are associated with higher values of mean root coverage, complete root coverage and gain in keratinized tissue width. Free gingival

graft showed more limited results. These findings support the use of connective tissue graft for the treatment of gingival recessions in the mandibular anterior sextant, rather than FGG[8].

Despite that, free gingival graft (FGG) is the technique most frequently proposed in literature for the treatment of these defects. It provides improvements in the recession depth and increase in keratinized tissue height and width[9,10]. However, due to the unsatisfactory chromatic and texture tissue integration and the apical disalignment of the alveolar mucosa, root coverage results of the FGG from an esthetic point of view and color match are poor. FGG in the study made by Cairo and al showed the lowest root coverage esthetic score (RES) compared to other root coverage procedure such as the coronally advanced flap (CAF) alone or combined with a graft (CAF+CTG)[11].

The CAF reported better outcomes compared to the FGG, not only in an esthetic point of view, but even in terms of root coverage. All the meta-analytic comparing FGG with CAF[7,12,13] indicated that the potential of the CAF for recession reduction and complete root coverage is superior to the potential of FGG even though FGG is a passive graft that entails minimal mobilization of the mucogingival junction (MGJ) and is not influenced by muscular tractions or mucosal movements. However, it should be emphasized that the studies were mostly concerning treatment of gingival recessions located at upper jaw. ,Based on the systematic review made by Zucchelli and al, tooth location plays a significant role on root coverage outcomes. Nevertheless, no significant differences were found between maxillary and mandibular dentition[14].

Therefore, a randomized controlled clinical study evaluated the effectiveness of CAF+CTG in the treatment of isolated Miller Class I and II gingival recessions at mandibular incisors The aim of the study was to compare clinical and esthetic outcome of the CAF+CTG applied to deep single type gingival recession affecting the mandibular incisor with or without removal of labial submucosal tissue (LST). Better results had been removed due to the additional removal of the LST. Thus, to achieve a complete root coverage when applying a CAF at the mandibular incisors, tension free mobilization of the soft tissues surrounding the recessions by removing the LST is essential[15].

In the other hand, Sculean and al pointed also the importance of tension free mobilization of the soft tissue surrounding the recession. They evaluated the treatment of deep recession at mandibular incisors by the laterally closed tunnel (LCT). The results indicate that LCT represent a predictable approach for the treatment of deep isolated mandibular class I, II and III gingival recession[16].

VI. Conclusion

One of the keys to achieve complete root coverage is the tension free mobilization. Even though, FGG is a passive graft that entails minimal mobilization of the mucogingival junction, treatment with CTG in conjunction with various types of flaps of gingival recessions located in Mandibular Anterior teeth provide better results in terms of root coverage and esthetic outcome than FGG.

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