

Periodontal Plastic Surgery in the Management of Multiple Gingival Recessions: Two Therapeutic Approaches.

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Abstract:- Aim: The aim of this case report study was to describe two different surgical techniques for treating multiple gingival recessions.

Background: Multiple recessions are of concern to patients for a number of reasons: aesthetic problems, hypersensitivity, and carious or non-carious cervical lesions. However, their treatment represents a challenge in periodontal plastic surgery with difficulties added to those encountered in the management of single recessions such as the extension of the avascular surface, different depths of recessions or the position of the teeth concerned on the arch. Many techniques have been described to cover these recessions.

Case description: A patient with multiple recessions of type 1 according to the Cairo classification (RT1) in the maxillary arch was treated with two different techniques of periodontal plastic surgery. On the right side, a lateral sliding flap from the edentulous ridge on the former site of the 2nd premolar was performed without the addition of a connective tissue graft. For the left side, a modified coronally advanced flap with a connective tissue graft was performed. For the right hemi-arch, a partial root coverage of 90% for the canine and the first premolar. As for the modified coronally advanced flap with a connective tissue graft, partial coverage for all the teeth concerned by the flap varied between 50 and 90%. These coverages remained stable during the 1-month and 6-month follow-up appointments.

Conclusion: The different techniques of periodontal plastic surgery have shown their effectiveness in the treatment of multiple recessions and especially with the introduction of the technical modifications of the coronally advanced flap by Zucchelli and by the addition of a connective tissue graft.

Keywords:- Multiple Gingival Recessions, Root Coverage, Surgical Flaps, Dental Esthetics.

I. INTRODUCTION

Gingival recessions are defined as an apical migration of the marginal gingiva from the amelo-cementary junction resulting in an exposure of the root surface. [1] These lesions affect both subjects with poor oral hygiene and those with good hygiene. They can affect several teeth in the same arch

simultaneously or manifest as a lesion localized to a single tooth. They can be a concern for patients for a number of reasons. In addition to root hypersensitivity and cervical lesions, aesthetic considerations may also come into play, especially in patients with a high smile line. [2]

However, multiple recessions are even more difficult defects to manage, as the surgical site is larger and more anatomical variations may be present (prominent roots, shallow vestibules, malpositioned teeth, etc.).

In these cases, the goal of periodontal plastic surgery is to achieve complete root coverage and optimal esthetics with perfect integration of the overlying tissues.

Several specific surgical procedures have been proposed to treat this type of lesion, including coronally advanced flaps, laterally positioned flaps, free gingival grafts, combination of flaps and connective tissue grafts or acellular dermal matrices.

II. MATERIAL AND METHODS

A. Description

A 48 years old female patient, non smoker and in good general health consulted our periodontology department at the Dental University clinic of Monastir complaining of multiple recessions on the maxillary arch causing an aesthetic prejudice badly perceived by this patient. (fig1)

The good oral hygiene and the non-carious cervical lesions suggest that the recessions are of traumatic origin associated with anatomical predisposing factors (fine gingival typology) and dental malposition.

All recessions are of type 1 according to the Cairo classification, i.e. without loss of interproximal attachment. They involved both hemi-arcades and extended from the first molar to the canine on the right side and from the first molar to the lateral incisor on the left side.

The patient was treated with different techniques on each side. She received a laterally displaced flap from the edentulous ridge at the former site of the second premolar without the addition of a connective tissue graft (Fig2). The choice of this technique was due to the absence of keratinized tissue apical to the recessions and their presence in abundance at the level of the edentulous crest with a good thickness. On the left side, a

coronally advanced flap using the Zucchelli technique with a connective tissue graft was performed (Fig5). [3]

Prior to surgical treatment, initial therapy was performed (complete scaling, teaching of a more appropriate brushing technique, prescription of a less traumatic toothbrush and an antiseptic mouthwash with Chlorhexidine). Once all etiological factors were controlled, and after ensuring the absence of inflammation during the re-evaluation phase, surgical treatment could be initiated.



Fig 1:Initial situation Initial situation : a) appearance of the smile ; b) right hemi-arcade; c) left hemi-arcade.

B. Surgical protocol:

Lateral sliding flap: After a local para-apical anesthesia (lidocaine 2% with vasoconstrictor), the edges of the most mesial recession were prepared with a 15 scalpel blades:

- An external bevel gingivectomy around the recession, extending to the alveolar mucosa, on the side opposite the donor site was performed to expose the connective tissue.
- An internal bevel incision joining the first incision was made on the side of the donor site.

The incision pattern was continued at the level of the interdental papilla with a horizontal incision, an intrasulcular incision at the level of the first premolar and then a crestal incision. The horizontal and crestal incisions were made at the

After 6 months.

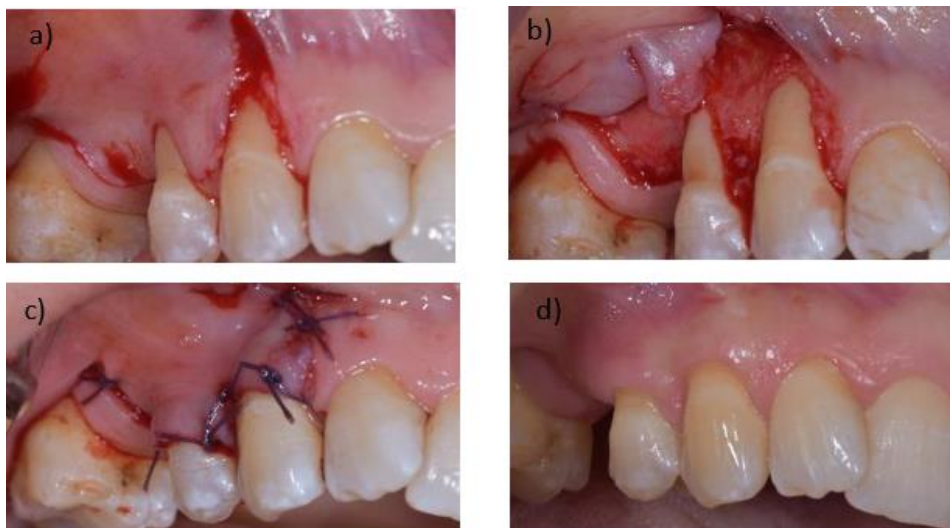


Fig 2: Lateral sliding flap: a) bevel incisions + horizontal interdental incisions + crestal incisions ; b) partial thickness dissection of the flap; c) sutures; d) healing after 6 months.

same level as the amelo-cementary junctions of the two teeth affected by the recessions.

The vertical releasing incision extends beyond the muco-gingival junction. From this point on, it becomes oblique and takes the direction of the recessions to be covered.

A partial thickness dissection of the flap was performed at the level of the keratinized tissues followed by a dissection in the alveolar mucosa in order to liberate the flap and allow it to be moved without tension.

A vicryl 4.0 absorbable sutures was used to suture the flap in its final position by suspended sutures and interrupted "o" sutures after ensuring its passivity.

A paracetamol-based analgesic and an antiseptic 0.12% chlorexidine mouthwash were prescribed. The sutures were removed after one week.

Modified coronally advanced flap: As with the lateral sliding flap, local para-apical anesthesia (lidocaine 2% with vasoconstrictors) was performed beforehand.

The canine was selected as the central recession. The height of the recession was measured for this tooth and then transferred from the tops of the interdental papillae distal and mesial to the canine by adding 1mm.

For the posterior recessions, the same measurements were made for each tooth but were only transferred distal to the recessions.

The incision tracing was performed with a 15c scalpel blades and includes the intrasulcular incisions continued at the level of the papillae by oblique incisions going from the most sloping point of the marginal gingiva of the teeth to the most apical point of the previously reported measurement (fig 3). This line will determine the surgical papillae that will subsequently cover the anatomical papillae. [3]

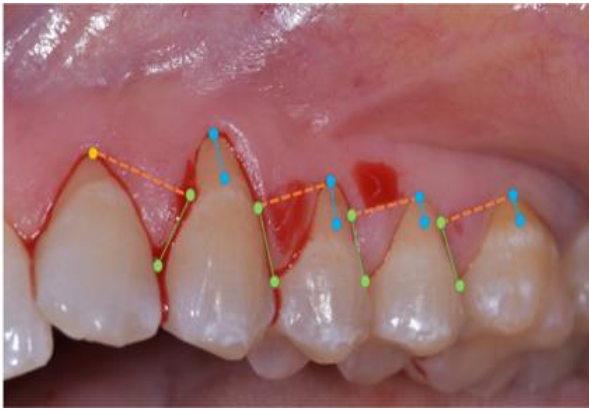


Fig 3: Incision pattern: Blue line: Gingival recession depth; Green line: Depth of Gingival recession reported from the top of the papilla; interrupted orange line: Interdigital submarginal incisions.

The flap was released using the split-full-split thickness technique: The surgical papillae were dissected in partial thickness from the oblique incisions. The marginal gingiva apical to the recessions was raised in full thickness until 3mm of the bone surface was exposed apically to the dehiscence. Subsequently, partial-thickness dissection was repeated at the alveolar mucosa apically to the full-thickness portion of the flap (Fig4). The exposed root surface was treated mechanically.

The anatomic papillae were then de-epithelialized and the flap passively tried in its final position.

A free gingival graft was harvested from the palate and de-epithelialized. It was then sutured with a vicryl 4.0 absorbable sutures at the level of the anatomical papillae by interrupted "o" sutures. Finally, the flap was sutured with sling sutures around the teeth. A paracetamol-based analgesic and an antiseptic 0.12% chlorexidine mouthwash were prescribed. The sutures were removed after ten days.

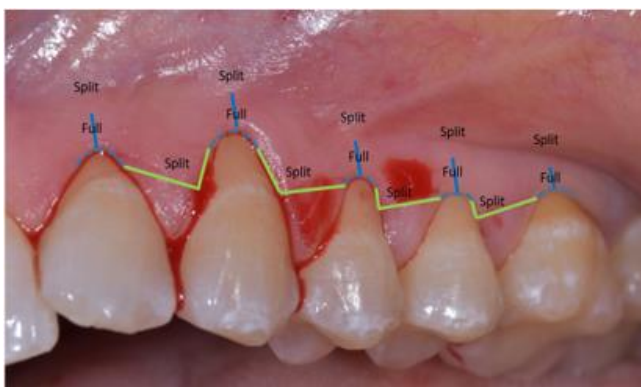


Fig 4: Flap design

III. RESULTS

The healing process was uneventful. The patient reported minimal pain at the donor site for the first two days after the connective tissue graft. But no signs of necrosis or hemorrhage were observed at this site.

For the right hemi-arcade, i.e., the one that benefited from a lateral sliding flap, healing was satisfactory on the day the sutures were removed, with 90% partial coverage for the canine and first premolar. The healing of the donor site was satisfactory

This coverage remained stable over time during the 1-month and 6-month follow-up appointments. The patient was satisfied with the results.

With regard to the modified coronally advanced flap associated with a connective tissue graft, healing was satisfactory at the first follow-up appointment at one week with a partial coverage for all the teeth affected by the flap varying between 50 and 90%. This coverage also remained stable over time during the 1-month and 8-month follow-up appointments, with a progressive harmonization of the graft edges with the surrounding tissues and a homogenization of the color.

In addition to the coverage, a thickening of the keratinized tissue could be observed.

As for the right hemi-arcade, the patient was satisfied with the results.

IV. DISCUSSION

Several surgical procedures have been described in the literature to correct mucogingival problems and improve the aesthetics of the patient's smile.

The coronally advanced flap is a suitable technique in cases where there is still gingiva adherent apically to the defect. Bernimoulin described this technique in 1975 for the treatment of multiple recessions. He performed a free gingival augmentation graft followed by a coronally advanced flap after 3 months. Complete coverage was obtained in 43% of sites at one year follow-up. [4]

However, this technique requires vertical releasing incision, which impedes blood supply and early healing. Zucchelli et al. then made an important modification for the coronally advanced flap in the treatment of multiple recessions by eliminating the releasing incisions. [3]

The same authors published a randomized controlled trial in 2009 in which they studied the clinical and esthetic results of the coronally advanced flap with or without releasing incisions. The study demonstrated the effectiveness of both techniques in root coverage and clinical attachment gain. However, the coronally advanced flap showed a greater number of sites with complete root coverage, a greater increase in keratinized tissue, fewer postoperative complications, and a superior esthetic result than the coronally advanced flap with releasing incisions. [5]

These authors also published another randomized clinical trial in 2014 to compare the short- and long-term root coverage and short- and long-term esthetic results of the coronally advanced flap alone or in combination with a connective tissue graft for the treatment of multiple gingival recessions. No statistically significant difference was demonstrated between the two groups in terms of reduction in recession depth and complete root coverage at 6 months and 1 year. At 5 years, the reduction in recession and the probability of complete root coverage were statistically superior for the coronally advanced flap combined with a connective tissue graft. Similarly, a greater increase in keratinized tissue and a better aesthetic assessment of the gingival contour by an independent periodontist were observed in the group. [6]

The results of this study are consistent with the 2010 study by Pini Prato et al. The latter study also compared the coronally advanced flap with and without a connective tissue graft. No difference in the number of sites with complete root coverage could be demonstrated at the first 6 months. At the 5-year follow-up, sites treated with a connective tissue graft had a higher percentage of sites with complete root coverage. Apical migration of the marginal gingiva could be noticed in the sites treated with the coronally advanced flap alone, whereas coronal migration was observed in the sites treated with the coronally advanced flap combined with a connective tissue graft. [7]

A systematic review investigating the predictability of different surgical techniques for root coverage of multiple recessions was published in 2012 by Hofmänner et al. and reported that the coronally advanced flap and the zuchelli modified coronally advanced flap with or without a connective

tissue graft are predictable techniques for the coverage of Miller class I and II multiple recessions with greater stability over a 5-year period for the zuchelli technique. The connective tissue graft appears to improve its long-term stability and show better results in combination with the different techniques than absorbable membranes, PRFs, and allogeneic dermal matrices. [8] The 2014 meta-analysis by Graziani et al. also confirms these results. [9]

The tunnel technique has been described in the literature as an alternative for covering multiple recessions. [10,11] The principle of this technique is summarized by intrasulcal incisions and a partial-thickness flap extending beyond the mucogingival junction, leaving the interdental papillae intact, followed by insertion of a connective tissue graft. [2]

A systematic review by Bherwani et al. in 2014 compared the tunnel technique with the Zucchelli modified coronally advanced flap. A statistically significant root coverage rate was obtained for both groups, and the proportion of defects with complete coverage was also statistically significant in both groups. [12]

The lateral sliding flap represents the ideal solution in cases where there is no gingiva attached apically to the defect. This technique was adapted by Hattler et al. in 1967 for the treatment of multiple recessions. [13] The combination of this multipapillary flap with a connective tissue graft was proposed 20 years later by Nelson et al. [14] This technique requires healthy and voluminous interdental papillae. To date, there is insufficient evidence on the predictability of the lateral sliding flap in the treatment of multiple recessions.

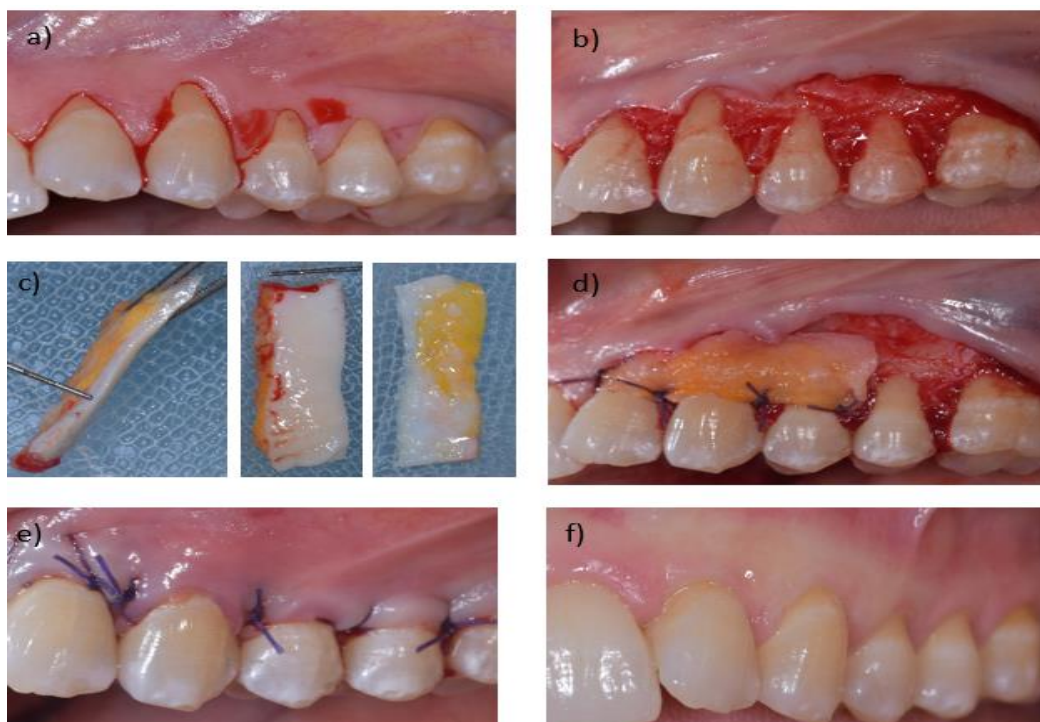


Fig 5: Modified coronally advanced flap: a) Intrasulcular + interdental submarginal incisions; b) Split-full-split thickness flap release ; c) free gingival graft; d) sutures of the deepithelialized graft; e) sutures of the flap; f) healing after 8 months.

V. CONCLUSION

Improving smile aesthetics or function becomes the primary goal of root coverage procedures. In the case of multiple gingival recessions and in order to minimize the number of surgeries and to optimize the aesthetic results, all defects must be treated simultaneously.

The various techniques of periodontal plastic surgery have proven to be effective in the treatment of this type of lesion, especially with the introduction of the modified coronally advanced flap technique and the addition of connective tissue grafts.

However, there is very little data regarding the treatment of multiple recession defects and the comparison of the different surgical protocols proposed with a long-term follow-up of more than 5 years.

Long-term follow-up studies must be conducted to prove their stability over periods longer than 5 years.

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