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MINI REVIEW

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Periodontal Plastic Surgery

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Abstract

Periodontal Plastic Surgery comprises a limited number of surgical procedures which focus on the establishment of normal morphology and architecture of periodontal tissues in order to achieve aesthetical, biological and functional outcomes. The main surgical techniques concern the correction of morphology, position and amount of gingiva and in some cases the reconstruction and augmentation of alveolar ridge. Those surgical procedures include the treatment of gingival recession, surgical crown lengthening, augmentation of the width of attached gingiva and,the vertical or horizontal augmentation of alveolar ridge. Each surgical technique is followed by determined indications, contra-indications, advantages, disadvantages and, predictability.

Keywords: *periodontal plastic surgery; periodontal tissues; adults*

Augmentation of the width of attached gingiva

Surgical procedures which have been performed for the augmentation of the width of attached gingiva include free gingival grafts [1,2],subepithelial connective tissue grafts [3,4] and acellular dermal matrix allografts [5]. The above mentioned techniques, nowadays, are used for gingival recession treatment.

Disadvantages of the width attached gingiva augmentation techniques are the second surgery for receiving the graft and, in the case of a free gingival graft the healing by secondary intention which can lead to pain, bleeding and inconvenience to the patient. In addition, the free gingival graft is at a disadvantage compared to the subepithelial connective tissue graft due to decreased perfusion and its aesthetic/ chromatic imbalance and texture compared to the adjacent mucosa. It is possible to be required a gingivoplasty surgery in the free gingival graft location because of its bulky and unsightly appearance [6,7].

Gingival recession treatment

The most common surgical techniques which are used for gingival recession treatment include several flaps, such as coronally repositioned flap, laterally repositioned flap and its classification such as the double papillae technique, oblique rotated flap, rotated and transpositional flap, and the semilunar repositioned flap, whereas are also used free gingival grafts, subepithelial connective tissue grafts, allografts from acellular dermal matrix and the combination of those flaps with absorbable or non- absorbable membranes, a procedure that is known as guided tissue regeneration (GTR). Other surgical techniques include the combination of free gingival graft or subepithelial connective tissue graft with a coronally repositioned flap [6,7].

The coronally repositioned flap technique [8,9] is used to treat Miller class I and II recessionswith a rate of complete coverage of the root 24-95% [10,11]. This technique is effective in cases that exist a sufficient width (3 mm) and thickness (1-1.5 mm) of attached gingiva [12].

The laterally repositioned flap technique is applied in cases where there is not sufficient width of attached gingiva apically but exists around the adjacent teeth [13]. After performing that technique the rate of complete root coverage has been estimated to be 40-50% [14-16]. That observation has led to the limitation of choice of that technique [7].

The use of free gingival grafts for treating of gingival recession has shown a complete coverage rate of 0-90% of the cases [17-20]. The efficacy of that technique is increased when, after the placement of the free gingival graft for increasing the width of attached gingiva and the healing of the area, in a second time a coronally repositioned flap is going to be performed [16,21,22].

The technique of the subepithelial connective tissue graft is characterized by a better chromatic appearance, absence of healing by secondary intention in the palate and therefore less discomfort for the patient. Its combination with a coronally repositioned flap results in complete root coverage of 62-89% of the cases [23-25].

GTR technique leads to a good aesthetic appearance without the need for a second surgery while promotes a real regeneration of the periodontal tissues. It is applied to 5.00 mm depth recessions, while in cases of recessions less than 5.00 mm the mentioned procedures are used [26].

A disadvantage of that technique is the difficulty of applying to mandibular teeth due to lack of tissue width, difficulty in handling, muscle tendencies of the location and, the risk of failure in case of membrane dissection. The success rate of the surgical techniques for recession treatment depends on the anatomy of the area. In class I and II recessions by Miller, it is possible the complete root coverage, while in class III lesions only partial root coverage can be achieved and in IV class lesions is not possible the root coverage [27].

Alveolar ridge augmentation

The surgical techniques which are performed for alveolar ridge augmentation focus on the reconstruction of the aesthetic and anatomic shape of the maxillary posterior teeth in patients with a high smile line who are candidates to be treated with a conservative fixed prosthesis or implant replacement [28] and, are the following:

a. only grafts which are used for the augmentation of the amount of soft tissues in class II lesions by Seibert classification which concern vertical alveolar ridge absorption [29,30],

b. interpositioned grafts which contain epithelium and connective tissue and are used in class I lesions by Seibert classification which concern horizontal alveolar ridge absorption and class II lesions [31-33],

c. subepithelial connective tissue grafts which are indicated for classes I-III lesions by Seibert classification [34-36], d. combinations of the above mentioned surgical techniques [37].

In the International literature, a large amount of similar studies have been carried out, however studies which have compared the outcomes of the common periodontal surgical procedures have not been carried out . Consequently, the choice of the proper surgical technique has to be based on several parameters such as the location and extension of the lesion, the classification by Seibert [38], the amount of tissues at the donor position, the aesthetic parameter of color at the position which will receive the graft and the design of the treatment which has suggested for the patient after the surgical procedure, a conservative fixed prosthesis or implant replacement.

Conclusion

The variety of periodontal tissue lesions requires a wide treatment spectrum of surgical techniques, whereas the choice of the proper technique must be based on scientific evidences, such as indications, contra-indications, advantages, disadvantages, predictability and experience and surgical skills of the surgeon. Those parameters are essential for an acceptable aesthetical, biological and functional outcome.

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