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## **Interdisciplinary Periodontics-Prosthodontics management of Miller Class III gingival recessions and lack of keratinized gingiva: A case report**

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#### **Abstract**

The absence of keratinized gingiva in areas that will be rehabilitated by a removable partial denture can cause damage to the gingival tissue as gingival recession, that is why it must be treated previously to prevent or stop the advance the recession.

**Case report:** A 54-year-old female patient with Miller Class III and IV gingival recessions and absence of keratinized gingiva, which was treated by a free gingival graft and connective tissue graft with surgical papilla technique, which was treated interdisciplinarily with prosthodontics.

**Conclusion:** Miller class III gingival recessions treated with connective tissue graft using a coronal advanced flap with the surgical papilla technique and also absence of keratinized gingiva treated by a free gingival graft, resulted in clinical attachment level gain, obtaining stable clinical parameters three months post-surgical.

**Keywords:** Gingival recession, Keratinized gingiva, gingival graft

#### **1. Introduction**

Gingival recession (GR) is a process of apical migration of the gingival margin below the cement-enamel junction [1], which has as a consequence root caries, hypersensitivity, aesthetic problems and a continuous advance of the recession [2].

GR can be described using Miller's Classification, which is classified from I to IV as the defects of the GR extend beyond the mucogingival junction and the amount of interdental insertion loss [3]. As the severity of the defect of the GR increases, lower root coverage is expected, as in the case of Class III and IV [4], however the use of different techniques with connective tissue graft (CTG) has been used successfully for root coverage [5].

Lang & Löe have suggested that it is necessary a minimum of 2 mm of attached gingiva should be present for gingival health, where less than 1 mm is related to persistent gingival inflammation [6].

The absence of keratinized gingiva in areas that will be rehabilitated by a removable partial denture can cause damage to the gingival tissue as GR, that is why it must be treated previously to prevent or stop the advance the recession [7]. Nowadays, free gingival graft (FGG) is the most documented procedure to increase keratinized gingiva, with the best long-term success rate [8].

The objective of this article is to report a clinical case of a 54-year-old female patient who was diagnosed with moderate generalized chronic periodontitis and Miller Class III and IV GRs with absence of keratinized gingiva.

#### **2. Case Report**

A 54-year-old female patient attended the Graduate Periodontics Program, School of Dentistry, Universidad Autónoma de Nuevo León, to evaluate the piece 4.3 because of dental mobility. In the clinical history the patient refers to not present any medical condition or be under any medical treatment, so it was classified as ASA I [9].

In dental history, the patient has metal-porcelain crowns in 1.6, 1.5, 2.7, 3.4 and 3.3, a fixed

partial denture in 4.3 to 4.5 from more than four years ago, also has free-metal inlays in 2.5 and 2.6 from more than five years ago and also received periodontal treatment about four years ago. At the intraoral physical examination the patient presents dental bacterial plaque and calculus, gingival inflammation, probing depth of 5 to 7 mm located in the posterior segment of the upper arch and localized probing depth of 8 and 15 mm with purulent exudate in the piece 4.3 and 6 to 7 mm in 4.5 with grade III mobility and also probing depth of 7 mm in 3.4. It also presents multiple GRs, non-carious cervical lesion (NCCL) in 1.2, and absence of keratinized gingiva from 3.2 to 4.2 (Fig. 1).

In the radiographic analysis generalized moderate horizontal and advanced located in 2.7, 3.4 and 4.3 bone loss was found (Fig. 2). Due to the clinical and radiographic findings, it was diagnosed as generalized moderate chronic periodontitis and advanced located in 2.7, 3.4 and 4.3, mucogingival deformities around teeth: Miller Class III GR in 1.7, 1.6, 1.2, 2.1 - 2.6 and Class IV in 2.7, 3.2 - 4.2 and mucogingival deformities and conditions around edentulous ridges: Horizontal and vertical deficiency of the alveolar ridge in quadrants III and IV <sup>[10]</sup>.

After the diagnosis, the hygienic phase was carried out, which consisted in scaling and root planning, and the instruction of oral physiotherapy with soft bristle brush, dental floss and interproximal brush. In addition during this phase the dental extraction of the piece 2.7, 3.4, 4.3 and 4.5 was indicated with the placement of an immediate partial denture and an acrylic provisional in 1.6 because it was extruded and badly adjusted. Subsequently, the patient was re-evaluated four weeks later, where loss of clinical attachment level (CAL) and remission of the periodontal pockets were found, however due to the absence of keratinized gingiva and GRs, a FGG of 3.2 to 4.2 was indicated and CTGs in 1.2 and 2.2 with the surgical papilla technique <sup>[11]</sup>.

The FGG was carried out two millimeters below the gingival margin, from distal line angle of 3.2 to the distal line angle of 4.2, a total-partial-total thickness flap was reflected, a graft of 21x7 mm was taken and sutured with simple sutures on the coronal and lateral part of the graft and with suspensory sutures to adapt the graft using 5-0 chromic catgut (Fig. 3). Were prescribed oral intake 400 mg of ibuprofen every six hours for seven days, and chlorhexidine at 0.12% every 12 hours for 15 days. The patient received the postoperative instruction in writing and the sutures were removed after fifteen days.

GRs of 1.2 and 2.2 were treated by surgical papilla technique, however, because they presented a Winter and Allen Class II NCCL in 1.2, a composite was placed one day before surgery. Prior to the incisions, scaling and root planning were performed, posterior incisions were made from the distal line angle of 1.3 to the mesial line angle of 1.1, as well as the mesial line angle from 2.1 to the distal line angle of 2.3, a partial thickness flap was reflected and the papillae were de-epithelialized, later a 10x8 mm graft was placed in each recipient site which was taken as a FGG and was de-epithelialized <sup>[12]</sup>, the graft was sutured with simple sutures using chromic catgut 5-0, subsequently the flap was coronally sutured by suspensory sutures with vicryl 4-0 (Fig. 4). Were prescribed oral intake 400 mg of ibuprofen every six hours for seven days, and chlorhexidine at 0.12% every 12 hours for 15 days. The patient received the postoperative instruction in writing and the sutures were removed after fifteen days.

It was revalued at six weeks, where CAL gain was found in 1.2, 2.1 and 2.2, an increase in the keratinized gingiva of 3.2 - 4.2, in addition to a good control of dental bacterial plaque (Fig. 5), so that it was indicated to perform periodontal maintenance every three months and continue with the indicated prosthodontic treatment (Fig. 6).

### 3. Discussion

A systematic review from the AAP Regeneration Workshop has suggested that the treatment of radicular coverage in Miller Class III GRs is ideally by CTG <sup>[13]</sup>. Some studies have suggested that tunnel technique offers up to 82% of root coverage in Miller class III GRs after one postoperative year; however these results were based on multiple Miller Class III GRs, where unlike in our study, we found a good range of root coverage a coronal advanced flap with surgical papilla technique in unitary recessions <sup>[14]</sup>.

Winter and Allen described a treatment protocol for NCCLs associated with GRs, based on surgical and restorative procedures <sup>[15]</sup>. In the clinical case described above, the methodology suggested by Winter and Allen was followed to achieve full coverage of cervical defects, performing a coronal advanced flap using surgical papilla technique and CTG, and because it was a Miller class III GRs and Class II NCCL was placed a composite restoration prior to grafting, achieving CAL gain.

The use of a removable partial dentures in areas with absence of keratinized gingiva increases the level of gingival inflammation in the areas covered by the prosthesis and under the arms and hooks of the abutment teeth, possibly causing a GRs or increasing it in the case that previously exists <sup>[16]</sup>.



Fig 1: Initial Clinical Photographs.

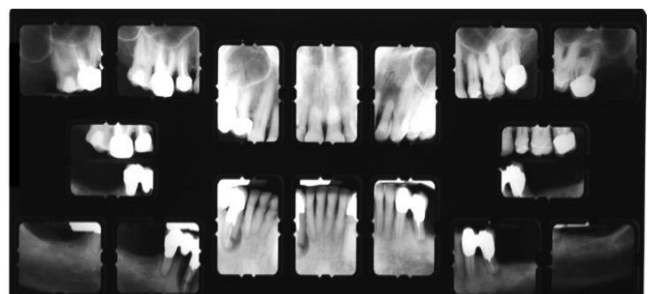


Fig 2: Periapical radiographs.



**Fig 3:** FGG from 3.2 to 4.2. a) Initial clinical photograph, b) Design of incisions, c) Incisions, d) Graft test, e) Graft sutured in the recipient site, f) 21 days of healing.



**Fig 4:** CTG with surgical papilla technique. a) Design of incisions, b) Graft suture by simple sutures, c) Suture of the pedicle with suspensory sutures, d) 14 days of healing.



**Fig 5:** Final clinical photographs, showing an increase in keratinized gingiva in the anteroinferior segment and CAL gain in 1.2, 2.1 and 2.2, as well as an increase in the thickness of the gingival biotype.



**Fig 6a):** Initial clinical photograph, b) Final clinical photograph with partial denture at three months post-surgical.

#### 4. Conclusions

In this clinical case of a patient with Miller Class III GRs treated with CTG using a coronal advanced flap with surgical papilla technique and also has absence of keratinized gingiva, treated by a FGG was obtained CAL gain, obtaining stable clinical parameters at three months post-surgical.

#### 5. Acknowledgments

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