



## Using the VISTA technique, a connective tissue graft was performed to manage multiple gingival recessions: clinical case.

PhD. María de los Ángeles Pietschmann Santamaría, Dr. Cristian Alan Castillo Covarrubias, PhD. Lizeth Alejandra Reyes Alvarado, PhD. Dora María López Trujillo, Dr. Elsa Patricia Furrer Franco., PhD. Martha Margarita Aguado  
Arzola

*Coordinator of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

*Resident of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

*Professor of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

*Professor of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

*Professor of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

*Professor of the Master's Degree in Dental Sciences with emphasis in Periodontics at the Universidad Autónoma de Coahuila, Torreón Coahuila, México.*

Date of Submission: 16-05-2023

Date of Acceptance: 31-05-2023

**ABSTRACT:** Gingival recessions are associated with root exposure due to apical migration of the gingival margin, which can have different etiologies. **Objective:** To present a clinical case associated with multiple gingival recessions with a therapeutic management that involved the placement of a connective tissue graft using the VISTA technique. **Clinical case:** A 72-year-old female patient, without systemic involvement, with a history of periodontal disease and a diagnosis of gingival recession type 2 of Cairo in the lower arch.

**Results:** 4 months postoperatively showed favorable healing processes with significant gains in root coverage. **Conclusions:** The management of gingival recessions by VISTA technique and connective tissue grafting for Cairo type 2 recessions is a treatment that offers favorable results.

**Key Words:** Gingival recessions, connective tissue graft, vista technique.

### I. INTRODUCTION

Gingival recession is defined as the application displacement of the gingival margin beyond the amelocementary junction, resulting in exposure of the root surface<sup>[1]</sup>. This clinical picture is accompanied by the loss of other periodontal tissues such as cementum, periodontal ligament, and bone, causing clinical manifestations that are usually the reason for consultation of numerous patients in clinical practice<sup>[2]</sup>.

A study by Albandar and Kingman concluded that the prevalence of gingival recession of 1mm or more in people aged 30 years was 58% and increased with age, and was also found in males, and in African-American patients. Gorman, with similar results, found that gingival recession gradually increased over the years and was more prevalent in men compared to women. These results were corroborated in another study by Murray<sup>[3,4]</sup>.

### Clinical manifestations and etiology

Gingival recessions can occur in isolation, in one or more teeth, or generally. As for the affected site, they can be detected on the buccal surface, this being the most common, as well as in lingual or palatine with or without involvement of the interproximal space<sup>[5]</sup>. The exposed root surface is related to clinical pictures of dental hypersensitivity, non-carious cervical lesions, increased risk of root caries, decrease in the amount of keratinized tissue and unsightly areas, especially when it comes to anterior sectors.

The etiology of gingival recessions may be due to pathological factors such as periodontitis, a disease characterized by the loss of insertion of periodontal tissues, the result of an inflammatory process<sup>[6]</sup>, improper use of brush and dental floss, use of intraoral piercings<sup>[7]</sup>, trauma associated with malocclusion<sup>[8]</sup>, as well as the appearance of vesicles and ulcers associated with herpes simplex viruses<sup>[9]</sup>. We also found anatomical factors such



as aberrant insertions of labial braces <sup>[10]</sup>, the presence of fenestration and dehiscence of the alveolar bone, abnormal positions of the tooth in the arch, situations related to an absent or thin alveolar bone chart that is more susceptible to resorption.

Physiological factors such as traumatic toothbrushing, and orthodontic therapy can act as predisposing factors especially when you have a fine gingival phenotype <sup>[11]</sup>.

### **Classification, diagnosis, and prognosis of gingival recessions.**

In 1985, Miller proposed a classification consisting of four classes, considering the loss of interproximal tissue and the relationship of recession to the mucogingival line. In class I gingival recessions, there is no loss of interproximal periodontal tissue and tissue migration does not extend beyond the mucogingival line, in class II recession there is no interproximal loss, but soft tissue migration reaches the level or apical to the mucogingival line. In a class III there is tissue loss at or beyond the mucogingival line with a lower interproximal loss, unlike a class IV where interproximal loss is more severe compared to buccal migration of soft tissue beyond the mucogingival line <sup>[12]</sup>. The diagnosis is closely related to the prognosis, being of utmost importance the level of clinical insertion and the height of the alveolar bone. In the case of class I and II recessions, the best prognosis is obtained, being able to achieve complete coverage of the recession, whereas in class III we could only achieve partial coverage and in class IV, due to the severity of tissue loss, root cover would not be achieved <sup>[13]</sup>.

More recently, in 2011, Cairo proposed a new classification system for gingival recessions by separating them into three types. In type 1 recession (RT1) there is a gingival recession without loss of proximal insertion, type 2 recession (RT2) comprises a gingival recession with equal or less proximal insertion loss; and type 3 recession (RT3) there is a gingival recession with a more severe interproximal loss <sup>[14]</sup>.

### **Therapeutic options**

The main objective of treatment is to achieve complete root coverage, with favorable aesthetic results in relation to adjacent soft tissues, as well as minimal probing depths after the healing period <sup>[15]</sup>. As mentioned above, full root coverage cannot always be achieved, therefore, it is of utmost importance to properly evaluate the case to inform patients of the possible results of treatment.

Among the techniques of choice for the treatment of gingival recessions are coronal advancement flaps, which are based on the coronal displacement of soft tissues towards the exposed root surface <sup>[16]</sup>. The technique was initially described by Norberg <sup>[17]</sup>. He first described a coronal advancement flap technique that, along with rotated flaps, are the treatments of choice for the management of gingival recessions. Coronal advancement flaps have been modified over time; currently trapezoidal flap designs are made to treat an isolated gingival recession. Zucchelli and De Sanctis would make modifications to the coronal advancement technique without making discharge incisions, which would better maintain the flap's blood supply <sup>[18]</sup>.

Other approaches described for the management of gingival recessions are tunnel techniques, preparations of total or partial thickness are made depending on the gingival phenotype and surgical management, obtaining excellent results with the use of modified coronal advancement flaps, as is the case of the VISTA technique <sup>[19]</sup>.

In 1974, Alan Edel published a report on the use of connective tissue grafts to increase the width of the keratinized gum. Clinical indications were discussed over the years <sup>[20]</sup>. They are currently used to achieve coverage of gingival recessions, correction of defects in the peri-implant marginal mucosa, increase in soft tissue volume and reconstruction of the interdental papilla.

There are different receptor sites for taking connective tissue grafts, within them, we find the hard palate <sup>[21]</sup>, the tuberosity of the maxilla <sup>[22]</sup>, retromolar zone and crestal areas associated with edentulous ridges. The typical area of donation is the hard palate, which can be obtained through different techniques <sup>[23]</sup>.

### **Clinical case**

A 72-year-old female patient comes to the Periodontics department referring as a reason for consultation, wanting to improve the conditions of her mouth. A complete medical history is taken, and the patient is classified as an ASA-1 according to the physical status classification system of the American Society of Anesthesiologists <sup>[24]</sup> and with a physical condition 2 in the adequacy of the ASA classification for dentistry <sup>[25]</sup>.

Within the dental history of the patient, previous periodontal treatment was performed due to a diagnosis of stage II periodontitis, grade A, generalized. Multiple extractions years ago due to periodontal problems and carious processes. It featured metal restorations and resin fillings.

He is currently undergoing treatment for occlusion rehabilitation and the placement of dental implants in edentulous areas.

Within the clinical findings of the area to be treated, which corresponds to the lower arch, we observed dental attrition on the initial edges of canines and incisors and a slight malposition. In the soft tissues there is a thick gingival phenotype, with a band of suitable keratinized gum, pale pink, well delimited from the alveolar mucosa by means of the mucogingival line. The apical migration of the gingival margin is notorious, causing exposure of the root portion in the lower anterior teeth. (Figure 1). A periapical radiographic series was also taken (Figure 2), where a decrease in the bone crest was observed.

Based on the clinical and radiographic findings, the diagnosis is multiple Cairo type 2 gingival recessions (RT2).



Figure 1. Frontal photograph of the lower arcade.

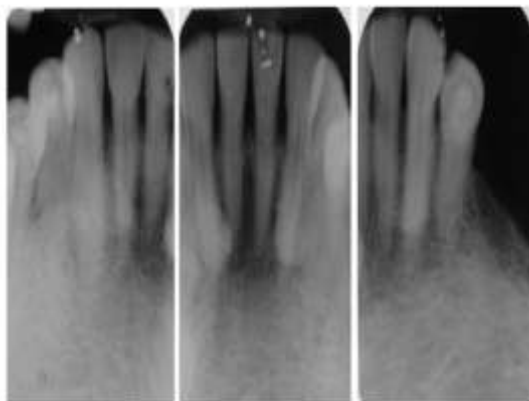


Figure 2. Periapical radiographic series of the lower arch. The level of the bone crest is appreciated.

### Treatment

Perioral asepsis was performed using a 10% povidone iodine solution with an external circular technique. Bilateral anesthesia of the mental nerve was achieved through the administration of 2% lidocaine with epinephrine 1:100,000 via infiltration at the sites to be treated, as well as in the donor area corresponding to the palatine region.

### Receiving area

The receiving area is prepared by making two vertical incisions in the alveolar mucosa, which converge towards the coronal aspect at the level of the midline of the canines. Intracrevicular incisions are then made in the vestibular portion from the right lower canine to the left lower canine, using a straight scalpel handle and a 15c blade, as previously described.

Subsequently, with the use of tunneling machines, a connection of the vertical and surcular incisions is made, preserving the integrity of the interdental papilla, to create a subperiosteal tunnel of extension towards the apical region. (Figure 3)



Figure 3. Intracrevicular incisions were performed with tunneling instrumentation for receiving site preparation.

Coronal displacement is performed to confirm that there are no obstructing fibers that would limit tissue repositioning. Following this, the root surfaces to be treated are prepared by scraping and smoothing with Gracey 5/6 type curettes.

### Donor site

After determining the required length at the receiving site, incision reference points are marked using a North Carolina probe. These reference points, located approximately 2 to 3 mm from the gingival margin of the second quadrant, are marked in a safe area between the distal portion of the canine and mesial portion of the first molar. The marked area is located anterior to the usual

position of the greater palatine foramen and palatine artery (Figure 4). A technique for obtaining connective tissue in envelopes is performed using a single incision, which is associated with less postoperative discomfort due to healing by primary intention<sup>[26]</sup>. The procedure involves making a perpendicular incision to the palatal surface, followed by a parallel incision to separate the keratinized tissue. The flap is then raised to form an envelope, and incisions are made to obtain a connective tissue block in a rectangular shape. This is achieved using a straight scalpel handle and a 15c blade. (Figure 5)



Figure 4. Delimitation of the length of donor tissue.



Figure 5. Incisions for obtaining connective tissue with envelope technique.

After obtaining the connective tissue graft, measurements were taken to ensure it met the required dimensions. A graft measuring 17 mm in length (Figure 6) and approximately 2.5 mm in thickness (Figure 7) was obtained. The tissue was then stored in a 0.9% saline solution.

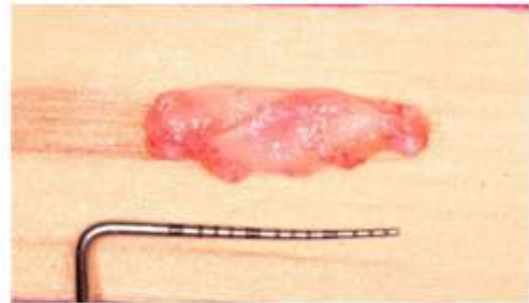


Figure 6. The length of 17mm of the connective tissue is appreciated.

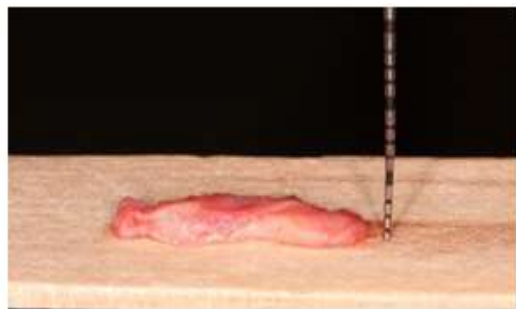


Figure 7. Connective tissue thickness of about 2.5mm.

To achieve hemostasis, pressure is applied at the donor site using gauze moistened with physiological solution as the first step. Next, the connective tissue graft is positioned at the recipient site to visualize its extension in relation to the teeth that require treatment (Figure 8).



Figure 8. shows the connective tissue graft placed at the recipient site to achieve the necessary length required for the lower incisors.

To promote better soft tissue healing, a platelet-rich fibrin membrane (PRF) was placed in the palatal area [26]. The tissues were then repositioned, and a primary closure was achieved using horizontal mattress sutures made with PTFE. (Figure 9)

Once the donor site was sutured, the connective tissue graft was inserted into the tunnel with the assistance of horizontal mattress-type internal sutures, fixed to the graft and displaced below the interdental tissue to move it through the preparation and stabilize it (Figure 10).

Next, a coronal displacement of the tissue was performed to achieve coverage of gingival recessions, suturing with polypropylene 4-0 ellipsis. In the vertical incisions, a primary closure was also carried out by placing simple interrupted polypropylene 4-0 points (Figure 11).



Figure 9. Placement of PRF membrane and primary closure with horizontal mattress points.



Figure 10. Displaced tissue through the tunnel with horizontal mattress suture assistance.



Figure 11. Coronal displacement of the tissue and stabilization with ellipses. Closure of vertical incisions with interrupted sympathetic stitches. Polypropylene 4-0 was used.

Postoperative indications were given orally and in writing. Within the pharmacological therapy, Amoxicillin of 500 mg was prescribed every 8 hours, for 7 days and ibuprofen of 600 mg every 8 hours. Appointments were given to perform washing with 0.12% chlorhexidine every 3 days. Removal of stitches from the donor site was indicated at 7 days and from the recipient site at 21 days.

## II. RESULTS

In the postoperative period one month after surgery, we can appreciate a correct healing of tissues with periodontal health. Again, we can see a band of keratinized gum well delimited from the alveolar mucosa. A partial coverage of the gingival recession is obtained quite adequate, considering the location of the alveolar crest. There was a slight contraction in the area of central incisors of no more than 1mm (Figure 12).



Figure 12. Follow-up appointment one month after the postoperative period.

At 4 months postoperatively, we can see that the stability of the tissues has been maintained, achieving satisfactory results, and having a significant gain in terms of root cover (Figure 13).



Figure 13. Follow-up appointment 4 months postoperatively.

At 18 months postoperatively, tissue stability continues to be observed (Figure 14).



Figure 14. Preoperative photography.



FIG 15: Photograph at 18 months postoperatively.

### III. DISCUSSION

Mucogingival surgery involves procedures for correcting defects in the morphology, position, and amount of soft tissue around teeth or implants<sup>[27]</sup>. This term was introduced by Friedman in 1957 with a different approach<sup>[27]</sup>. In 1993, Miller adopted the concept of periodontal plastic surgery, involving several hard and soft tissue procedures aimed at gingival augmentation, root covering, correction of defects around implants, soft tissue preservation, among others<sup>[28]</sup>.

It is of great importance both in the treatment of gingival recessions, as in any dental procedure, to perform a thorough clinical and radiographic examination to obtain an accurate diagnosis, develop an adequate treatment plan and have predictable results. With respect to the classification proposed by Cairo in 2011, in type 1 recessions a complete radicular coating can be expected, while in type 2 it can decrease significantly, contrary to type 3 recessions, where root cover is not possible<sup>[14]</sup>.

As already mentioned above, there are several therapeutic options for the treatment of recessions, including soft tissue tunneling with VISTA technique, which provides favorable results in the aesthetic anterior sector especially when using connective tissue grafts<sup>[29]</sup>.

In this type of technique, once the epithelium of the recipient site, the connective and muscular fibers are precisely dissected, the remaining thin layer of the lamina propria forms a rigid base that allows the immobilization of the grafts and contributes to reducing secondary contraction during the wound healing process<sup>[30]</sup>.

Connective grafts result in excellent soft tissue integration, without or with minimal aesthetic alterations<sup>[31]</sup>. This is one of the reasons why CTG are considered the gold standard in aesthetic priority sites<sup>[32]</sup>.

### IV. CONCLUSION

The management of root coverings through mucogingival surgery procedures can be carried out by different therapeutic modalities, this in terms of the selection of grafts, biomaterials, soft tissue management or number of surgical interventions.

The risk of complications and profitability can vary according to the factors already mentioned, in the same way they can modify the postoperative symptoms related to pain and inflammation. That is why it is of great importance to make a correct diagnosis, the result of an exhaustive analysis and interpretation of clinical and radiographic data, as well as to have



knowledge of the wishes, possibilities, and expectations of the patient and to be able to adapt the ideal treatment plan for each particular situation. The objective is to obtain satisfactory results for both the clinician and the patients.

### BIBLIOGRAPHY

- [1]. Kassab, M. M., & Cohen, R. E. (2003). The Etiology And Prevalence Of Gingival Recession. *The Journal Of The American Dental Association*, 134(2), 220–225.
- [2]. Imber Jc, Kasaj A. Treatment Of Gingival Recession: When And How? *Int Dent J*. 2021 Jun;71(3):178-187.
- [3]. Gorman Wj. Prevalence And Etiology Of Gingival Recession. *J Periodontol*. 1967;38(4):316-22.
- [4]. Murray, J. J. (1973). Gingival Recession In Tooth Types In High Fluoride And Low Fluoride Areas. *Journal Of Periodontal Research*, 8(4), 243–251.
- [5]. Loe H, Anerud A, Boysen H. The Natural History Of Periodontal Disease In Man: Prevalence, Severity, And Extent Of Gingival Recession. *J Periodontol* 1992; 63: 489–495.
- [6]. Tonetti Ms, Greenwell H, Kornman Ks. Staging And Grading Of Periodontitis: Framework And Proposal Of A New Classification And Case Definition. *J Periodontol*. 2018 Jun;89 Suppl 1:S159-S172.
- [7]. Sardella A, Pedrinazzi M, Bez C, Lodi G, Carrassi A. Labial Piercing Resulting In Gingival Recession. A Case Series. *J Clin Periodontol* 2002; 29: 961–963
- [8]. Tugnait A, Clerehugh V. Gingival Recession-Its Significance And Management. *J Dent* 2001; 29: 381–394.
- [9]. Epstein Jb, Scully C. Herpes Simplex Virus In Immunocompromised Patients: Growing Evidence Of Drug Resistance. *Oral Surg Oral Med Oral Pathol* 1991; 72: 47–50.
- [10]. Parfitt Gj, Mjör Ja. A Clinical Evaluation Of Local Gingival Recession In Children. *J Dent Child* 1964;31:257.
- [11]. Wennstrom JI, Lindhe J, Sinclair F, Thilander B. Some Periodontal Tissue Reactions To Orthodontic Tooth Movement In Monkeys. *J Clin Periodontol* 1987; 14: 121–129.
- [12]. Moawia M. Kassab, Robert E. Cohen, The Etiology And Prevalence Of Gingival Recession, *The Journal Of The American Dental Association*, Volume 134, Issue 2, 2003, Pages 220-225, Issn 0002-8177.
- [13]. Zucchelli G, Mounssif I. Periodontal Plastic Surgery. *Periodontol* 2000. 2015 Jun;68(1):333-68.
- [14]. Cairo F, Nieri M, Cincinelli S, Mervelt J, Pagliaro U. The Interproximal Clinical Attachment Level To Classify Gingival Recessions And Predict Root Coverage Outcomes: An Explorative And Reliability Study. *J Clin Periodontol* 2011; 38: 661–666
- [15]. Cairo F, Pagliaro U, Nieri M. Treatment Of Gingival Recession With Coronally Advanced Flap Procedures: A Systematic Review. *J Clin Periodontol* 2008; 35: 136–162.
- [16]. Pini Prato G, Pagliaro U, Baldi C, Nieri M, Saletta D, Cairo F, Cortellini P. Coronally Advanced Flap Procedure For Root Coverage. Flap With Tension Versus Flap Without Tension: A Periodontal Plastic Surgery 365 Randomized Controlled Clinical Study. *J Periodontol* 2000; 71: 188–201.
- [17]. Norberg O. Ar En Utlaknig Utan Vov-Nadsfortus Otankbar Vid Kirugisk Behandling Av S. K. Alveolarpyorrohoe? *Sven Tandak Tidskr* 1926 19: 171–172.
- [18]. Zucchelli G, De Sanctis M. Treatment Of Multiple Recessiontype Defects In Patients With Esthetic Demands. *J Periodontol* 2000 71: 1506–1514.
- [19]. Aroca S, Keglevich T, Nikolidakis D Et Al. Treatment Of Class Iii Multiple Gingival Recessions: A Randomized-Clinical Trial. *J Clin Periodontol* 2010 37: 88–97.
- [20]. Avila-Ortiz G, Chambrone L, Vignoletti F. Effect Of Alveolar Ridge Preservation Interventions Following Tooth Extraction: A Systematic Review And Meta-Analysis. *J Clin Periodontol*. 2019 Jun;46 Suppl 21:195-223.
- [21]. Urban IA, Montero E, Monje A, Sanz-Sánchez I. Effectiveness of vertical ridge augmentation interventions: A systematic review and meta-analysis. *J Clin Periodontol*. 2019 Jun;46 Suppl 21:319-339.
- [22]. Chandra GB, VinayKumar MB, Walavalkar NN, Vandana KL, Vardhan PK. Evaluation of surgical scalpel versus semiconductor diode laser techniques in the management of gingival melanin hyperpigmentation: A split-mouth



- randomized clinical comparative study. *J Indian Soc Periodontol.* 2020 Jan-Feb;24(1):47-53.
- [23]. Avila-Ortiz G, Gubler M, Romero-Bustillos M, Nicholas CL, Zimmerman MB, Barwacz CA. Efficacy of Alveolar Ridge Preservation: A Randomized Controlled Trial. *J Dent Res.* 2020 Apr;99(4):402-409.
- [24]. López, P.; Torres, O. Variabilidad En La Clasificación Del Estado Físico De La Sociedad Americana De Anestesiólogos. *Medigraphic.* 2017; (40)3: 190-194.
- [25]. Sánchez Trocino B, Diaz Acevedo Ja, Cortez Lopez Ne, Cruz Durán Gm. Valoración Y Clasificación De Pacientes En La Consulta Dental. *Rev Odontol Latinoam.* 2016; (8)1: 1-6.
- [26]. Fan, Yijao; Perez, Karla; Dym, Harry (2020). Clinical Uses Of Platelet-Rich Fibrin In Oral And Maxillofacial Surgery. *Dental Clinics Of North America*, 64(2), 291–303
- [27]. Friedman N. Mucogingival surgery. *Tex Dent J* 1957; 75: 358–362.
- [28]. Miller PD Jr. Root coverage grafting for regeneration and aesthetics. *Periodontol* 2000 1993; 1: 118–127.
- [29]. Chowdary PC, Pavan Kumar YS, Murthy KRV, Kishore DT. A Novel Modified-Vista Technique With Connective Tissue Graft in the Treatment of Gingival Recession: A Case Report. *Clin Adv Periodontics.* 2022 Jun;12(2):75-79.
- [30]. Sullivan HC, Atkins JH. Free autogenous gingival grafts. I. Principles of successful grafting. *Periodontics.* 1968 Jun;6(3):121-9.
- [31]. Chambrone L, Chambrone D, Lima LA, Chambrone LA. Predictors of tooth loss during long-term periodontal maintenance: a systematic review of observational studies. *J Clin Periodontol.* 2010 Jul;37(7):675-84.
- [32]. Naenni N, Lim HC, Papageorgiou SN, Hämmerle CHF. Efficacy of lateral bone augmentation prior to implant placement: A systematic review and meta-analysis. *J Clin Periodontol.* 2019 Jun;46 Suppl 21:287-306.