Consideration of the gingival phenotype in a complete rehabilitation: A case report


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Abstract

The periodontal phenotype is described as the thickness of the periodontal soft tissues plus the bone morphotype. Some of the characteristics proposed to classify the periodontal phenotype are the dental dimensions, the clinical appearance of the gingival tissue, and the bone morphotype.

When carrying out a complete rehabilitation, the vertical dimension should also be taken into account. According to Dawson, it is the position of a stable relationship between the maxilla and the jaw when there is maximum intercuspidation, where the determinant of the vertical dimension is the muscles, based on their repetitive length of contraction, indicating that the closing pattern is highly constant.

Case Description: A 62-year-old male patient with generalized wear and tear, loss of vertical dimension and defective restorations. His case was studied to offer an adequate function and an ideal aesthetic according to the considerations of the patient and his economic possibilities, the treatment was carried out with multidisciplinary accentuation with periodontics and prosthodontics. The results were satisfactory, obtaining a favorable periodontal prognosis and a complete rehabilitation establishing vertical dimension, function, and aesthetics.

Introduction

The PF would be identified after the evaluation of dental, gingival, and bone aspects. Each of these three aspects involves the analysis of different additional elements such as dental aspects, gingival morphologies, and bone characteristics, such as the thickness of the buccal plates.

The new classification determines two types of gingival phenotypes: thin gingival phenotype and thick gingival phenotype (Figure 1).

The diagnostic criteria to propose or design a successful rehabilitation, from a crown to a fixed prosthesis, must be conceived in a treatment protocol, so the periodontal probe must be used to make a periodontal probing (diagnosis) and a sling (surgical procedure) and predict the results to be obtained, especially when there is a critical condition regarding aesthetics. (Zeron, 2011). Furthermore, gum thickness, periodontal biotype, and gingival sulcus depth should be considered to understand the morphology of supra-crystal gingival tissue. One of the consequences of failing to diagnose the periodontal biotype properly is that the components of the periodontal organ can be injured.

When performing a rehabilitation, the margin of preparation should be considered, trying not to invade the biological thickness and the termination line so that dental preparation, sharpness, and gingival contour do not involve
The margin of the preparation should be placed on the healthy dental structure to obtain a favorable prognosis since it could cause chronic inflammation of the periodontium, gingival recession, periodontal pockets, and bone resorption.

When carrying out a complete rehabilitation with a fixed prosthesis whose cause is generalized dental attrition, an occlusal determination is paramount. To determine the vertical dimension, alternatives are used, such as phonetic, aesthetic, anthropometric, and cephalometric methods, with instruments, among others.

A correct vertical dimension must have an adequate interocclusal distance between the resting position and the centric occlusion; mechanically healthy, aesthetically pleasing, and phonetically correct tooth length and cusp height; and comfort of the new facial profile.

Crown elongation

It consists of a surgical procedure to create a more extended clinical crown by removing gum and bone to displace the gingival margin apically.

When performing an elongation, the treatment is more aggressive in a thick periodontium since it is necessary to try to recontour its morphology. At the same time, the fine reacts to a recession. Thus, when we deal with a fine periodontium, we should wait six months; if we deal with a thick periodontium, we should wait about 12 months to place the definitive prosthesis (Zeron, 2011).

In patients with a thin periodontal biotype, minimally invasive or flapless surgery is more convenient, as it minimizes blood supply compromise and decreases the risk of marginal recession. Patients with these conditions (thin biotype) are advised to be informed of the aesthetic risk present, and it is advisable to recommend the increase of soft tissue (connective tissue grafting). On the other hand, patients with a thick gingival biotype have more resistance to surgical trauma and restorative procedures, less possibility of a marginal recession, and, therefore, less aesthetic compromise (Becerra Santos & Ramón Morales, 2009).

Case

A male patient of 62 years of age attends the postgraduate course in advanced prosthodontics in Saltillo, Coahuila, México, for a dental examination, referring to "I have tooth wear, and my bite hits the palate."

Anamnesis refers suffering two stents in the heart by an obstruction in the ascending branch of the left ventricle; currently taking anticoagulants (aspirin protect), Clopidogrel 75 mg, and Tytor 75 mg for the treatment of hypothyroidism, Telmisartan 80 mg in the morning for treatment of hypertension and Lipitor 40 mg to reduce cholesterol and Prosgutt 160mg/120mg for the prostate.

In the clinical examination, generalized dental attrition was found, loss of vertical dimension and defective restorations, class 2 molar and canine, and middle line deviated 1 mm to the right.

The diagnosis was pathological migration, generalized wear, defective restorations, and carious lesions with a favorable prognosis.

The treatment was structured in phases to carry out a complete rehabilitation with the patient’s consent.

Anterior sector

In the initial phase, the removal of anterosuperior crowns was carried out, reviewing the dental substrate and the clinical evolution of the gingiva. The patient is referred to a periodontic specialist to treat gingivoplasty and root planing. Before the surgical phase, the patient discontinued the use of anticoagulants and decided to perform the gingivoplasty treatment (2 mm) with mockup guidance, root smoothing and thinning of the gingival tissue was performed, and suturing with nylon. After the postoperative phase, it is decided to start with the prosthetic phase, which begins with the removal of the upper provisional and anterosuperior dental preparations made (1.3 - 2.3), leaving the equigingival termination line. In the following appointment, the dental preparations of anteroinferior veneers (4.3 - 3.3) were made, and the impression was taken for the working model with polyvinylsiloxane and bite record printing.

The patient went to the consultation for cementation of 12 units of EMAX, six anterosuperior crowns (1.3 - 2.3),...
**Figure 1:** Initial extraoral conditions of the patient. A) Frontal and smile view; B) Frontal close-up view C) Left view; D) Right view.

**Figure 2:** Initial intraoral conditions of the patient. A) Frontal view; B) Upper occlusal view; C) Lower occlusal view; D) Left lateral view; E) Right lateral view.
and six anteroinferior veneers (3.3 - 4.3); restorations were prepared internally with hydrofluoric acid for 20 sec, previously with phosphoric acid for 20 sec and finally with silane for 3 minutes. Dental surfaces were prepared with pumice.

Crowns were cemented with RELYX U 2000 and veneers with RELYX VEENER.

**Lateral sector**

Posterosuperior preparations were made and an immediate dentinal sealant was placed to cement the provisional prosthetic tooth.

In the next appointment, the posteroinferior dental preparations were made, and immediate dentinal sealant was placed, as well as the provisionals. Final upper and lower impressions were made.

Sixteen posterior incrustations were cemented in the upper and lower jaw of EMAX in OD 17,16,15,14, 24,25,26,27. 45,44,46,47,36,35,34,37 and prepared with hydrofluoric acid for 20 sec, with phosphoric acid for 1 minute, and previously with silane for 3 minutes; the
Figure 7: Preparation of dental surfaces with pumice.

Figure 8: Preparation of crowns with hydrofluoric acid, phosphoric acid, and silane.

Figure 9: Cementation of anterosuperior crowns and anteroinferior inlays.
**Figure 10:** Dental preparations, removal of cavities, and dental crowns.

**Figure 11:** Posterior cementation.

**Figure 12:** Final intraoral conditions of the patient. A) Frontal view; B) Right lateral view; C) Left lateral view; D) Upper occlusal view; E) Lower occlusal view.
patient did not present discomfort and final photographs were taken.

Conclusion

The relationship between periodontics and rehabilitation is of utmost importance to know the periodontal phenotype and consider an adequate prosthodontic treatment to achieve a natural and aesthetic appearance.

Establishing the relationship between both specialties helps dental professionals to consider the periodontal biotype that, together, will play an essential role in the patient's treatment; the importance of knowing, differentiating, and diagnosing periodontal biotypes helps us obtain a better treatment plan, which can be adjusted to the economic possibility of the patient and also to the morphology that presents to be able to prolong and maintain longer the prosthesis in the mouth.

References

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