

Orthodontic Treatment in Adult Patients with Periodontal Commitment: Case Report

Tratamento Ortodôntico em Pacientes Adultos com Comprometimento Periodontal: Relato de Caso

Wilson Guilherme Nunes Rosa^a; Sheila Soratto Nandi^b; Isabella Félix Ueda^c; Thais Maria Freire Fernandes^a; Renata Rodrigues de Almeida-Pedrin^a; Marcio Rodrigues de Almeida^a

^aUnopar, Stricto Sensu Graduate Program in Dentistry. PR, Brazil.

^bAvantis, Stricto Sensu Graduate Program in Dentistry. SC, Brazil.

^cUnopar, Dentistry Course. PR, Brazil.

*E-mail: thais.poleti@unopar.br

Abstract

There is an increasing demand for orthodontic treatment by adult patients in dental offices. Orthodontic treatment in adults has particular characteristics, because, in addition to not showing active growth, there are situations that demand interrelation with other areas of dentistry, such as, Periodontics, Dental Prosthesis, Restorative Dentistry and Implantology. The objective of this work was to describe a clinical case of an adult patient with periodontal involvement, establishing the main considerations to be taken in the orthodontic treatment of adult patients with periodontal involvement. The results obtained in the clinical case showed that it is possible to treat patients with periodontal involvement as long as some precautions are taken, such as strict hygiene control, in association with the specialty of periodontics, a reduced sequence of wires, in order to shorten treatment time, using low intensity forces, to minimize damage to periodontal tissues. The orthodontic treatment performed, gave the patient the desired smile functionality and aesthetics, prioritizing a strict hygiene control, the use of light forces, simplification in orthodontic movement, as well as the use of fixed and permanent restraints in areas of reduced periodontium.

Keywords: Orthodontic Treatment. Adult. Periodontics. Alveolar Bone Loss.

Resumo

É crescente a procura de tratamento ortodôntico por pacientes adultos nos consultórios odontológicos. O tratamento ortodôntico em adultos, apresenta características particulares, pois, além de não apresentar crescimento ativo, ocorrem situações que demandam a inter-relação com outras áreas da odontologia como a, Periodontia, Prótese dentária, Dentística Restauradora e Implantodontia. O objetivo desse trabalho foi descrever um caso clínico de paciente adulta comprometida periodontalmente, estabelecendo as principais considerações a serem tomadas no tratamento ortodôntico de pacientes adultos com comprometimento periodontal. Os resultados obtidos no caso clínico, demonstraram, que é possível tratar os pacientes com comprometimento periodontal desde que sejam tomados alguns cuidados, como controle restrito de higienização, em associação com a especialidade da periodontia, uma sequência reduzida de fios, com o intuito de abreviar o tempo de tratamento, utilizando forças de baixa intensidade, para minimizar danos aos tecidos periodontais. O tratamento ortodôntico realizado, devolveu a paciente a funcionalidade e a estética do sorriso almejada, priorizando um controle rígido de higienização, o uso de forças leves, a simplificação na movimentação ortodôntica, bem como o uso de contenções fixas e permanentes em áreas de periodonto reduzido.

Palavras-chave: Tratamento Ortodôntico. Adulto. Periodontia. Perda Óssea Alveolar.

1 Introduction

The search for orthodontic treatment by adult patients is increasing, many are the reasons for justifying this increase, among them the modernization of the appliances and the development of new orthodontic techniques, as well as the greater perception of society about the esthetic and functional advantages of orthodontic treatment¹.

There was a large increase in the number of adult patients who started orthodontic treatment in the period from 2000 to 2010, reaching an average of 28.14%, however, the percentage of women (31.26%) was higher than the male sex (23.7%), showing that dental esthetics are a factor of great importance for adherence to orthodontic treatment².

The orthodontic treatment of the adult patient is different from the young, since adult patients may present, in addition

to malocclusion, complicating factors to treatment such as multiple restorations, teeth with need of dental exodontics and periodontal disease³.

Orthodontic treatment in adults has particular characteristics, because, in addition to not showing active growth, there are situations that demand interrelation with other areas of dentistry, such as, Periodontics, Dental Prosthesis, Restorative Dentistry and Implantology⁴.

Periodontal treated patients may be submitted to orthodontic therapy, because dental movement in individuals with reduced periodontium does not result in significant insertion loss. In addition, orthodontic movement may favor the treatment of infra-bone defects due to the stimulation of the bone apposition process and thus, the height of bone defects can be reduced⁵.

Therefore, the objective of this work is to describe a

clinical case of an adult patient with periodontal involvement, establishing the main considerations to be taken in the orthodontic treatment of adult patients with periodontal involvement.

2 Case Report

Patient V.M.A. *, 42-year-old female, attended the office, complaining about the smile esthetic in addition to finding the lips forced during the oral sealing. In the facial analysis, the Standard facial type I and the dolichofacial biotype were verified (Figure 1: A-B-C). Radiographically, generalized horizontal bone loss can be seen (Figure 2 and 3). The intraoral clinical examination revealed the absence of several dental elements, discreet maxillary crowding, slight dental protrusion, posterior cross-bite (Figure 4 and 5).

Figure 1 - Initial aspect: A) Frontal standard; B) Smiling frontal standard; C) Lateral standard



Source: The authors.

Figure 2 – Initial Profile Tele radiography



Source: The authors.

Figure 3 - Initial panoramic radiography



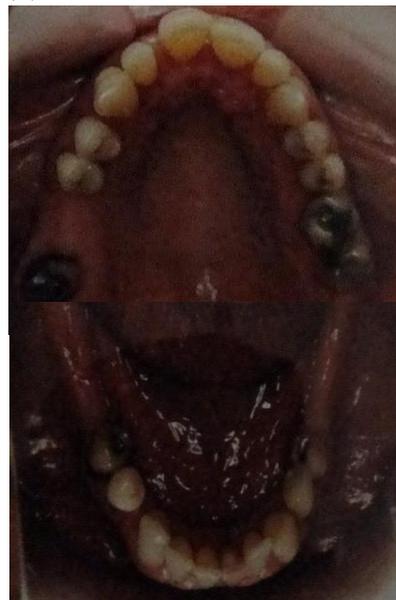
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Figure 4 - Initial intraoral Photos A) Front; B) Right side; C) Left side



Source: The authors.

Figure 5 - Initial occlusal photos: (A) Upper occlusal; (B) Lower occlusal



Source: The authors.

The patient was then referred to the periodontist, who performed the appropriate periodontal therapy, in addition to establishing severe control of the dental biofilm. After discharge of periodontal treatment, and the signing of the Free and Informed Consent Term, MBT brackets prescription were installed individualizing the lower incisors, which were inverted to make the torque of the same positive. The treatment consisted of a mechanical closure of spaces with current elastic, with the sequence of wires, .016, .016 x .025, .019 x .025 NiTi and .019 x .025 steel, associated to interproximal wears with the aim of minimizing interproximal spaces (black space) and softening biprofusion, with a slight anterior retraction, totaling 10 maintenance visits accompanied by prophylaxis (supragingival scraping), in addition, the patient maintained periodic quarterly control with the periodontist.

At the end of the treatment, a great dental alignment and leveling was obtained, complete crossbite correction, adequate functional guidances (lateral and anterior), there was an improvement of gingival esthetics and the maintenance of the bone support. As a retention protocol, semi-rigid retentions were provided joining all teeth, the patient also has a Hawley type retainer that is used in cases of semi-rigid retentions breakage until the fixed retention is adjusted in the office. Periodontal control was maintained together with the periodontist, initially with half-year and later yearly appointments.

Figure 6 – Final result: A) Frontal standard; B) Lateral standard



Source: The authors.

Figure 7 – Final radiographs: A) Profile tele radiography; B) Panoramic radiography



To be continued...



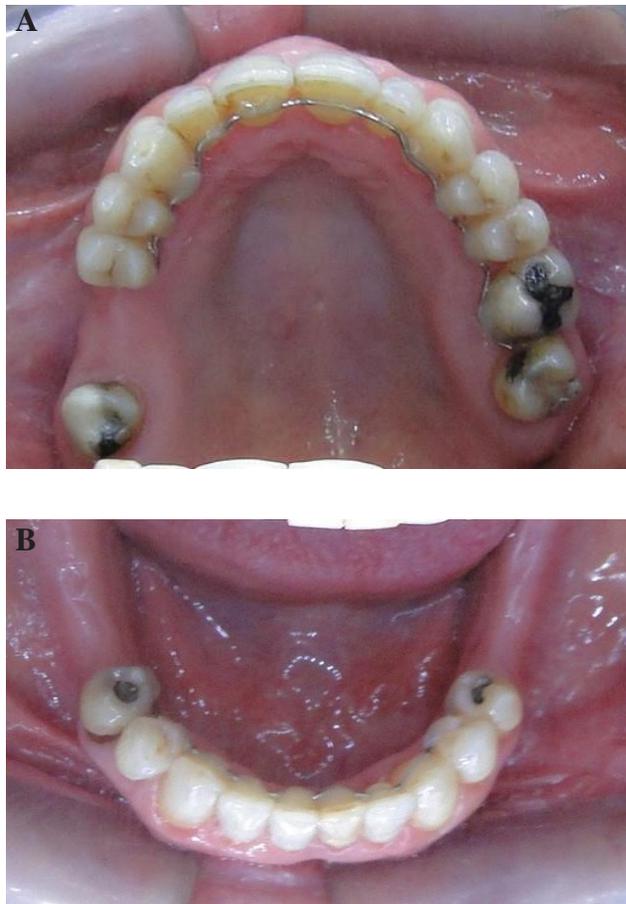
Source: The authors.

Figure 8 - Final intraoral photos A) Front; B) Right side; C) Left side



Source: The authors.

Figure 9 - Final intraoral photos: (A) Upper occlusal; (B) Lower occlusal.



Source: The authors.

Orthodontic movement is an effective and reliable therapy, demonstrating evident benefits for the treatment of periodontal compromised cases^{1,5,6}.

The success of orthodontic-periodontal treatment depends on harmonious cooperation between the orthodontist and the periodontist^{7,8,9}. In the absence of periodontal inflammation, orthodontic treatment presents satisfactory results in a periodontal compromised patient. Correct orthodontic treatment can help stabilize the periodontal tissues, and may even promote the formation of new insertion tissue. However, orthodontic treatment inadequately performed in periodontal patients can certainly contribute to the future collapse of periodontal tissues. In the presence of biofilm-induced inflammation, orthodontic forces can cause a faster degradation of periodontal tissues. The combination of inflammation, orthodontic forces and occlusal trauma can produce faster destruction of the support periodontium than that which would occur with inflammation alone. Patients with active periodontal disease cannot be treated orthodontically, since, in the presence of bacterial biofilm and gingival inflammation, orthodontic movement increases the rate of destruction of the conjunctive insertion⁵.

Orthodontic treatment, regarding the periodontal tissues, is a double-acting procedure, since it may be favorable in

improving periodontal health status, and on the other hand it may be a harmful procedure when it is not carried out with caution, planning and follow-up, it may generate periodontal complications, such as: gingival recessions, bone dehiscences or formation of gingival pockets¹⁰.

It is essential to perform adequation of the oral environment prior to orthodontic therapy, with all restorations, extractions, endodontic therapy performed when necessary and mainly, oral hygiene instruction for the beginning of orthodontic treatment⁹.

Due to lower vitality of the periodontal ligament, dental losses and periodontal support, the higher prevalence of periodontal disease and the lower capacity of involvement with long treatments by adult patients, the ideal treatment objectives will not always be obtained in adult patients. Treatment should be limited to eliminate the areas of pathological occlusion, establish satisfactory disocclusion guidances and solve the patients' esthetic complaints^{2,11,12}.

A new and correct dental position may be very favorable to periodontal structures in the long term since, properly aligned teeth, with absence of crowding or excessive proclinations, are easier to be hygienized. In addition, the Orthodontics and Periodontics interrelationship when well performed can contribute to the improvement in dental support. In the case described by the authors in this Article, the patient corresponded to orthodontic and periodontal treatment, with good biofilm control, thus it was possible to obtain a good alignment between the present elements and a satisfactory occlusion, what favored the achievement of a significant improvement in esthetics^{9,12}.

3 Conclusion

The results obtained in the clinical case demonstrated that it is possible to treat patients with periodontal involvement provided that some cares are taken. In order to be able to treat them effectively, it is necessary to have multidisciplinary planning involving several areas of dentistry, especially periodontics. The main considerations to be taken in the orthodontic treatment of adult patients with periodontal involvement are:

- To refer patients for evaluation and/or treatment together with the periodontist,
- To maintain strict hygiene control during orthodontic treatment,
- To use light forces,
- To shorten the orthodontic treatment, limiting to solving the patient's esthetic complaints, obtaining functional occlusion guidances and eliminating pathological occlusion areas,
- To use fixed and permanent retentions in areas of reduced periodontium.

References

1. Nunes IMB, Raveli DB, Bernardes LS, Souza LRB, Pieri LV, Henriques JFC, Henriques PR. Tratamento ortodôntico em pacientes adultos com periodonto de inserção reduzido:

- relato de caso. *Rev Clín Ortod Dental Press* 2012;10(6):40-5.
2. Werneck EC, Mattos FS, Silva MG, Prado RF, Araújo AM. Evaluation of the increase in orthodontic treatment demand in adults. *Braz Dent Sci* 2012;15(1):47-52. doi: <https://doi.org/10.14295/bds.2012.v15i1.738>
 3. São-José GP, Paula Macedo M, Pires Martins LHM, Nogueira FF, Sousa Resende Penido, CV, Oliveira Penido SMM. Extrusão ortodôntica forçada como recurso para obtenção de osso e gengiva para posterior implante: relato de caso. *Rev Clín Ortod Dental Press* 2016;15(5):52-63. doi: <http://dx.doi.org/10.14436/1676-6849.15.5.052-063.art>
 4. Pias AC, Ambrosio AR. Movimento ortodôntico intrusivo para reduzir defeitos infra-ósseos em pacientes periodontais. *RGO* 2008;56(2):181-8.
 5. Maia LP, Novaes Junior, AB, Souza SLS, Palioto DB, Taba Junior M, Grisi MFM. Ortodontia e periodontia—parte II: papel auxiliar da terapia ortodôntica no tratamento periodontal. *Braz J Periodontol* 2011;21.3: 46-52.
 6. Calheiros A, Fernandes Á, Quintão CA, Souza EV. Movimentação ortodôntica em dentes com comprometimento periodontal: relato de um caso clínico. *Rev Dental Press Ortodon Ortop Facial* 2005;10.2:111-8.
 7. Harfin JF. Qual é a quantidade mínima de periodonto de inserção necessária para realizar movimentos ortodônticos? *Rev Dental Press Ortodon Ortop Facial* 2004;9(1):145-57.
 8. Gkantidis N, Christou P, Topouzelis N. The orthodontic-periodontic interrelationship in integrated treatment challenges: a systematic review. *J Oral Rehabil* 2010;37(5):377-90. doi: 10.1111/j.1365-2842.2010.02068.x
 9. Machado MS, Santos MO, Barbosa RFX, Ferreira ACR, Barbosa OLC, Barbosa CCN. Tratamento ortodôntico em paciente com periodonto reduzido: relato de caso. *Braz J Surg Clin Res* 2017;19(2):91-5.
 10. Gomes ZMR, Silva Felipe L, Coura LR, Morais AMD, Honda R, Tiago CM. Inter-relação ortodontia e periodontia: revisão de literatura. *J Orofac Invest* 2017;4(1):30-40.
 11. Reis SAB. Considerações estéticas no diagnóstico e planejamento ortodôntico de pacientes adultos. *Rev Clín Ortod Dental Press* 2010;9(3):7-22.
 12. Correia MF, Nogueira MNM, Spolidório DMP, Seabra EG. Diretrizes para o tratamento periodontal e acompanhamento durante o tratamento ortodôntico. *Rev Odontol Bras Central* 2013;21(61):80-4.