

Is There Still Time to Orthodontics in Elderly Patients?

Ainda há Tempo para a Ortodontia na Melhor Idade?

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Abstract

Life expectancy rate has increased in the past decades and a crescent number of elderly patients are searching for dental treatment aiming for aesthetic and functional rehabilitation. Geriatric Dentistry is a dental specialty which focuses on the elderly population dental care, specially aiming at preventive and healing care of patients with diseases or systemic and chronic conditions, associated to physiological, physical or psychological deficiencies. Other specialties in Dentistry, such as Orthodontics, have become important allies in this new challenge of the Dental profession. This study aimed at analyzing characteristics involved in orthodontic treatment when associated with gerontologic needs, considering relevant factors to an adequate application based on a case report. The treatment was planned integrating Periodontics, Orthodontics, Prosthodontics and Operative Dentistry practice, allowing the reestablishment of function and aesthetics harmonically. Orthodontic treatment represents a feasible procedure in Geriatric Dentistry, as long as applying light forces and respecting both the characteristics and limitations of these areas of treatment.

Keywords: Geriatric Dentistry. Orthodontics. Aged.

Resumo

Com o aumento considerável da expectativa de vida da população, um crescente número de pacientes idosos tem procurado tratamento odontológico para reabilitação estética e/ou funcional. A Odontogeriatría, é a especialidade odontológica que enfatiza o cuidado bucal da população idosa, especificamente do atendimento preventivo e curativo de pacientes com doenças ou condições de caráter sistêmico e crônico, associadas a problemas fisiológicos, físicos ou psicológicos. Diversas especialidades odontológicas, dentre elas a Ortodontia, vêm se integrando com esta área odontológica. Este trabalho objetiva abordar as características do tratamento ortodôntico associado a uma atuação odontogeriátrica, considerando os fatores relevantes para a execução do tratamento ortodôntico nesses pacientes a partir do relato de um caso clínico. Planejou-se este caso de forma integrada, envolvendo Periodontia, Ortodontia, Prótese e Dentística Restauradora, que foram capazes de devolver à paciente função e estética. O tratamento ortodôntico representa uma intervenção viável na atuação odontogeriátrica, desde que realizado com forças suaves, considerando as limitações e respeitando as características inerentes a esta atuação.

Palavras-chave: Odontologia Geriátrica. Ortodontia. Idoso.

1 Introduction

With advances in medicine and science, life expectancy of the population has increased considerably. According to Instituto Brasileiro de Geografia e Estatística - IBGE "Brazilian Institute of Geography and Statistics", the life expectancy of the Brazilian, which in 2004 was 70.4 years at birth, should reach 81.3 years in 2050. In addition, it is still expected that in 2025 the elderly will be 15% of the country's population according to IBGE. As a result, every day, a greater number of elderly people aged 60 years or older are concerned with health and aesthetics¹.

Although the increase in life expectancy denotes the improvement of social indicators, it results in the replacement of infectious-contagious diseases by chronic-degenerative diseases^{2,3}. This is because with aging, physiological functions

begin to decline gradually, resulting in changes such as loss of skin elasticity, reduction in muscle tonus and diseases such as cardiovascular diseases, cancer, diabetes and neurological disorders^{4,5}.

The oral cavity also suffers the effects of aging, which varies according to the individual physiological factors⁶. Salivary flow decreases and in many cases xerostomia occurs due to the use of medications, this picture leads to a change in the microbiota, which associated with a carbohydrate-rich diet may increase the caries levels^{4,7,8}. In the periodontium, the alterations are associated with the increase in the rate of reabsorption and the decrease in the rate of bone deposition, with consequent decline in vascularization and hyalinization of the structural cells.

These factors, together with the loss of dental elements, culminate with the decrease in alveolar bone. In addition,

teeth that are close to missing elements suffer inclination due to loss of insertion and lack of interproximal contact. In this context, Orthodontics must be prepared to act with the elderly patient, because orthodontic correction reestablishes the chewing function lost with time^{2,9,10}.

Thus, based on a report of a clinical case, this study aims to address the characteristics of orthodontic treatment associated with geriatric dentistry action, considering the factors relevant to the execution of the planned treatment in an integrated way, involving Periodontics, Orthodontics, Prosthodontics and Restorative Dentistry.

2 Case Report and Development

2.1 Diagnosis and Etiology

A 65-year-old M.B.L. patient sought dental clinic for treatment, with complaints involving chewing, phonation and esthetic aspect of smile. During extraoral examination (Figures 1, A-C), the presence of good facial profile and absence of asymmetries was verified. In the intraoral analysis (Figures 1, D-H), an integrated treatment plan was necessary, using the following dental specialties: Periodontics, Orthodontics, Prosthodontics and Restorative Dentistry.

Figure 1 (A-C) - Initial extra-oral aspect



Source: The authors.

Figure 1 (D-H). Initial intra-oral aspect shows the presence of gingival recession, extensive restorations, need for periodontal treatment, prosthetic rehabilitation and orthodontic treatment

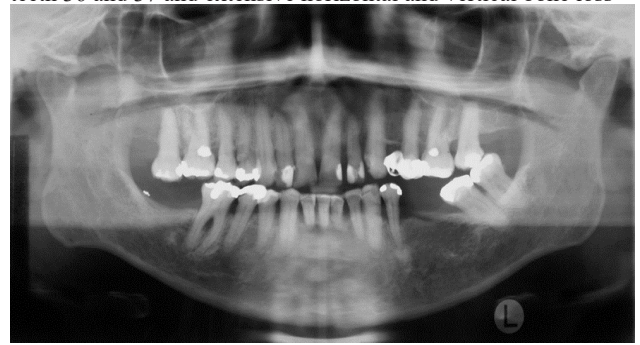


Source: The authors.

Complementary radiographic examinations were requested, including lateral-standard tele radiography, panoramic radiography and full-mouth periapical radiography (Figures 2 and 3). Lateral tele radiography allowed a more detailed examination of the facial profile; panoramic radiography enabled a general evaluation of the tooth and bone level condition and allowed to determine the teeth that should be extracted due to bone loss and high degree of mobility (31, 41 and 42); periapical radiographs allowed the study of the presence of caries, roots formation and quantification of bone

loss around each dental element.

Figure 2 - Initial panoramic radiography showing mesial drift of teeth 36 and 37 and extensive horizontal and vertical bone loss



Source: The authors.

Figure 3 - Sequence of periapical radiographs, fundamental to accurately evaluate the amount of bone loss and the individual condition of each dental element



Source: The authors.

2.2 Treatment Progresses

From the physical examination, anamnesis and complementary examinations, the following treatment plan was defined:

Periodontal treatment was initiated through oral hygiene instruction, prophylaxis, dental scaling and crown-root planing. Conjunctive graft was followed in the canine and premolar regions, which showed gingival retraction at the beginning of the treatment. At the end of this phase of treatment, it was established that the patient should return to periodontal scaling every 4 months, to allow the maintenance of periodontal health. At this moment, the patient was released for the beginning of the corrective orthodontic treatment. In conjunction with periodontal treatment, the necessary restorations were performed based on clinical and radiographic examination.

During the orthodontic treatment, it was opted to keep teeth 31, 41 and 42, since the patient was able to maintain good oral hygiene, with the aim of facilitating orthodontic mechanics in obtaining a correct overjet and overbite. The treatment was performed using a fixed orthodontic appliance to align and level the upper and lower teeth, close the diastemas and promote up righting of the lower second molars (37 and 38). The closure of diastemas had the objective of improving the phonation, the distribution of occlusal forces during chewing

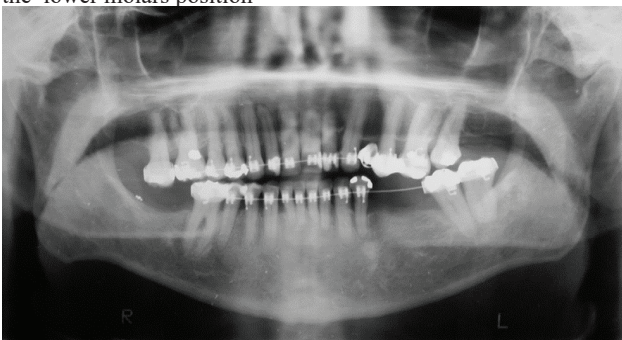
and the esthetic of the patient's smile. The up righting of the lower molars was performed by means of an open section spring, which allowed later prosthetic rehabilitation (Figures 4 and 5).

Figure 4 - Intra-oral photos showing the corrective orthodontic treatment performed to align and level the upper and lower arches, close the multiple diastemas and upright the teeth 37 and 38



Source: The authors.

Figure 5 - Panoramic radiography showing the improvement of the lower molars position



Source: The authors.

From the up righting of teeth 37 and 38, a removable partial prosthesis was allowed to be made in the lower arch, which allowed the patient greater chewing comfort. To complete the integrated treatment, the patient performed esthetic restorations in the lower teeth. This stage of treatment lasted 9 months, and at the end, definitive retention was installed in the anterosuperior and anteroinferior teeth (3x3) (Figures 6, A-H).

Figure 2 (A-H) - Extra and intra-oral aspect at the end of the treatment



Source: The authors.

After two years after the end of the treatment, control was performed, and stability of the results obtained was verified (Figures 7, A-H). In a special way, it was observed that the integrated treatment enabled the improvement of chewing,

phonation and the smile esthetic characteristics, aspects related to the main patient's complaint.

Figure 3 (A-H) - Extra (A-C) and intra-oral aspect (D-H) after two years of treatment completion, being verified the stability of the results obtained



Source: The authors.

2.3 Discussion

The aging of the population is a fact that is occurring in both developed and developing countries. In Brazil, this aging, which is a reflection of the progress in general health and oral health of the population, will reflect on the profile of the elderly population in a few years. It is expected that in a recent future, the population that still today has a high degree of edentulism, may have a great improvement in oral and general health, because when the patient loses his or her chewing capacity, this may interfere with the nutritional quality associated with other factors such as xerostomia and decreased taste^{6,8}.

Many are the oral alterations that occur with aging itself, especially in the periodontium, which is responsible for dental movement. In view of this, orthodontics in adult patients should be interdisciplinarily worked with periodontics, since chronic periodontitis has a high incidence rate in individuals over 50 years of age, causing moderate destruction of periodontal tissue³.

A compromised periodontium presents a reduction in the periodontal ligament area, leading to a para-apical displacement of the tooth resistance center. Thus, in cases of orthodontic treatment, a light and constant force associated with a well-performed technique is necessary to modify the defect morphology and decrease the probing depth^{3,5}.

In addition, it should be emphasized that elderly patients require special care, because with aging, the general and oral physiological changes that occur lead the orthodontist to have a differentiated attention so that biomechanical

performance respects the limitations caused by these changes, mainly respecting a slower bone reabsorption/deposition mechanism².

In addition to biomechanical cares, care is needed for the patients' general health, due to homeostatic imbalance⁴. Some systemic diseases such as malnutrition, diabetes and osteoporosis may interfere with the evolution of treatment due to a decrease in the potential for cell repair, in addition to the medications commonly used in this age group that cause oral alterations such as xerostomia, which makes phonetic difficult, leading to the occurrence of secondary infections^{1,2}.

The practice of orthodontics in geriatric dentistry allows a collaboration in order to achieve ideal health conditions. This approach has the main objective of aligning and leveling teeth, reestablishing the smile esthetic. However, it also works in periodontal aspects, leading not only to an improvement in oral and general health, but also to a gain in quality of life, because oral health interferes even in the social life of the elderly^{1,2,7,10}.

The improvement of all these aspects returns a health condition as a whole, returning the chewing function, because inadequate chewing can lead to malnutrition. It should also be stressed that an improvement in esthetics and phonetics will reflect directly on patients' social relationships, returning an appearance that leads to an improvement in their self-esteem¹¹.

The elderly patient can perform orthodontic treatment if he or she is enjoying good health. Only patients with systemic disorders should not start treatment before seeking a physician. Systemic conditions such as cardiovascular, cerebrovascular, neurological, pulmonary, metabolic and hormonal disorders should be treated before the beginning of treatment and the true needs of orthodontic treatment evaluated in this patient¹¹⁻¹³.

Some important changes, such as osteoporosis and diabetes, may affect the orthodontic treatment. Osteoporosis alters the process of bone remodeling, reducing bone deposition, while diabetes alters the cellular metabolism, hindering the tissue regeneration. In these cases, good planning should be carried out objectively due to the low tolerance and discomfort caused by orthodontic treatment¹⁴⁻¹⁶.

In the case presented, it was possible to observe a considerable improvement in the teeth positioning and in the supporting tissues, in addition to a functional improvement due to the correction of the teeth inclination. The orthodontic treatment enabled a prosthetic rehabilitation, and consequently an esthetic gain.

In this sense, it is important that health professionals seek information to obtain a diagnosis of the health conditions of the elderly population and thus provide subsidies for the planning of intersectoral actions for health promotion and care. In this context Orthodontics must be prepared to act with the elderly patient, in a punctual and resolute manner, respecting their needs and characteristics¹⁷⁻¹⁹.

3 Conclusion

The objective of this study is to show that orthodontic treatment is possible in an geriatric dentistry approach, provided that it respects the limitations inherent to the profile of these patients. It is necessary to consider oral characteristics, such as dental losses, prostheses, extensive restorations, alterations in the supporting tissue. A good planning and multidisciplinary treatment will return to the patient the function, bringing an improvement in the supportive and esthetic tissues in an integrated way, thus contributing to the quality of life of this patient.

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