

A complex treatment with orthodontic modification of the alveolar axis for implant insertion in a patient over 65 years of age with a thin periodontal biotype

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ABSTRACT

The case of a 69-years-old patient with flared anterior teeth (bi-pro-alveolar position with loose of contact points) secondary to periodontitis, was resolved by combining alveolar maxillary preservation with orthodontic treatment to correct the alveolar axes of the mandibular incisors. All mandibular teeth were finally removed but the implants could be placed in the correct antero-posterior tilt axes. The temporary maxillary prosthesis was a removable one under conditions of a thin gingival biotype. The final result meant the correction of the profile and a good preservation of the minimally keratinized gingiva around implants.

Keywords: orthodontic rectification of the dento-alveolar axis, flaring teeth (bi-pro-alveolar position with loose of contact points), periodontitis, dental implants, patient over 65 years, thin periodontal biotype

INTRODUCTION

Implant-prosthetic treatments are a common reality in today's dental offices. Orthodontic treatments as well. Adult patients are seen more frequently in our orthodontic offices. Unlike the adolescent, the adult patient will often need a multidisciplinary approach due to tooth migrations secondary to extractions or periodontal disease [1]. All orthodontic treatments are usually applied to teeth that have a good future on the arch, especially at a young age. Even if they are severely affected periodontally, orthodontic treatment can contribute to their recovery [2].

The case proposed for discussion is a complex one with a particular treatment strategy. An orthodontic method was applied to correct the dento-alveolar position in order to better insert the implants in the lower incisors.

CASE PRESENTATION

The 69-years-old patient, with a continuous public interface, presented to our clinic for an implant-prosthetic treatment on the jaw.

The express requirement of the patient was not to remain esthetically dysfunctional during the treatment, considering the teaching activity she

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FIGURE 1. Initial situation



FIGURE 2. The initial convex aspect of the facial profile

was carrying out. Clinical and paraclinical analysis (X-ray and blood tests) found a maxillary multiple edentulous area with accentuated tooth mobility (except teeth 14,13,23). Also, the remaining incisors were much prone, along with the mandibular ones (flaring teeth), producing a bulging effect of the lips. The periodontal biotype was thin. The imminent loss of the jaw incisors required a quick treatment solution, at least temporarily.

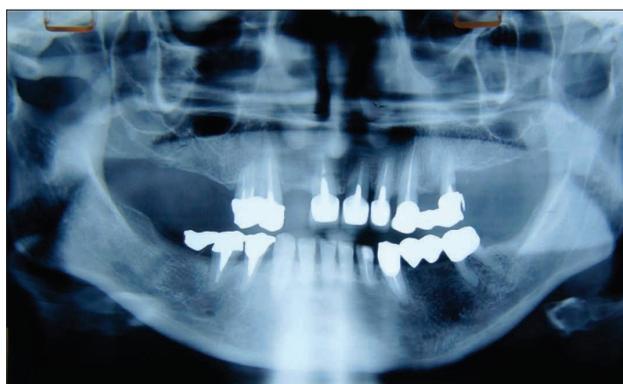


FIGURE 3. Initial orthopantomography

Mandibular teeth also had multiple problems, being “compromised” teeth but not with a functional future. They did not show pathological mobility. The biggest problem of the moment was the inclined frontal area that made impossible a definitive and satisfactory prosthesis.

The patient was also under neurological, allergological and gynecological observation. The opinion of the specialists did not restrict the dental actions.

In this context (we consider it very difficult case) we decided together with the patient a staged treatment that will be presented below.

Stage 1

Extraction of the maxillary incisors with alveolar preservation. The alveoli were enlarged due to excessive tooth mobility. The temporary mobile jaw prosthesis had to follow immediately, but without gingival pressure on the frontal area. The option of post-extraction application of the maxillary implants was not chosen, nor of their immediate loading, because the thin periodontium and the vestibularized and enlarged alveoli would have created serious impediments for a stable and aesthetic success. The major problem, however, is the position of the mandibular incisors. Prosthesis in such conditions means either to reproduce a permanent flaring position or a frontal cross-bite occlusion, both of which are unacceptable in the long run.



FIGURE 4. Postextractional maxillary bone healing



FIGURE 5. Maxillary gingival healing

Stage 2

Application of implants (Nova type) on the edentulous maxillary areas (4 months after extractions). The patient still wore a mobile maxillary prosthesis and was already accommodated with it. The prosthesis has been carefully checked and adjusted, knowing that the pressures generated by it can lead to increased resorption of the alveolar processes [3]. Checking the teeth 14,13,23 showed that they can still be kept.

Stage 3

Orthodontic treatment to straighten the dental axes of the mandibular incisors; it is foreseeable that the mandibular incisors do not have a long-term future but the implicit correction of the alveolar axes was a good objective for the future application of some implants in the correct axis followed by the improvement of the profile.



FIGURE 6. Orthodontic treatment and the initial relationship with the temporary maxillary prosthesis



FIGURE 7. Corrected mandibular dento-alveolar axes

Partial mandibular orthodontic treatment achieved its goal and was a short one (3 months). This was followed by the immediate lingual splinting of the teeth.

Step 4

Develop a definitive treatment plan for the mandible. At approx. 2 months after the orthodontic treatment, the tooth 44 gave way periodontally and the mandibular implant treatment was started. Extractions were made on the mandibular arch and uniformly distributed implants were immediately applied (Exacta type). It should be noted that in the frontal area the insertion axes were correct due to the previous orthodontic rectification. The temporary was provided by a PMMA (polymethyl-metacrylate) bridge with 45,43,33,46 poles. After the integration of the mandibular implants, these teeth were also extracted, being from the category of compromise teeth for the temporary stage. A new temporary mandibular bridge (PMMA) was immediately applied to the implants.

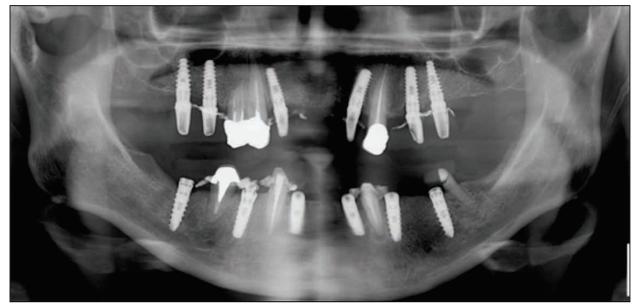


FIGURE 8. Maxillary and mandibular implants; at the jaw of the temporary teeth for PMMA work

Stage 5

Application of the upper and lower temporary "test prosthesis". At this point it was finally possible to harmonize the temporary mandibular work with the maxillary one. The axes of the frontal implants are correct now.

Stage 6

Final prosthesis of both arches. After harmonization, the final prosthesis was delivered, which corresponds from a biomechanical, prophylactic and aesthetic point of view to the objectives initially proposed.



FIGURE 9. Axes of maxillary implants in relation to the mandibular incisors



FIGURE 10. Corrected mandibular implant – alveolar axes and healthy peri-implant gingiva

Step 7 – Post-treatment checkings

After the application of the final Zr-Ceramics works, the balancing in occlusion was done with the help of the electronic T-scan sensor. After treat-



FIGURE 11. The correct dental axes in the final prosthesis

ment, the patient was periodically reviewed for 2 years, the result being stable in all respects.

DISCUSSIONS

Lower incisor extractions are occasionally included in orthodontic treatment in up to about 6% of cases, despite the general notion that this approach is unconventional and less favored by clinicians [4] and more well-known authors may be cited. This refers to general purely orthodontic treatments. Other articles / case presentations show after orthodontic treatments the use of implants to replace a mandibular incisor that was already missing [5]. Many other articles address the issue of or-

tho-implant treatment for upper lateral incisor anodontia [6]. Other articles address the issue of inclined (suboptimal) positioning of implants in the area of the lower incisors with the aesthetic and biomechanical difficulties arising from this positioning [7]. Relatively recently, articles have appeared that aim to change the position of some teeth by subapical osteotomy [8] or of some implants previously placed in inappropriate positions [9]. These types of interventions involve a level of trauma and would have been an unnecessary complication in our case.

CONCLUSIONS

This difficult, long, interdisciplinary treatment, with clear objectives and a high standard of expectation of results was a challenge for the entire medical team. Very rarely, orthodontic treated teeth will be extracted anyway, as was the case with the lower incisors in this case. The aim was to improve the final prosthetic axes. We consider this case to be memorable. The small details and other problems encountered and outdated were not mentioned. We recognize the merit of understanding and patience of the patient who made a considerable effort during the almost 3 years of treatment.

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