



RESEARCH ARTICLE

SEVERE PERIODONTITIS AND ORTHODONTICS: CASE REPORTS AND LITERATURE REVIEW

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ARTICLE INFO

Article History:

Received 19th February, 2022
Received in revised form
20th March, 2022
Accepted 15th April, 2022
Published online 30th May, 2022

Key words:

Kale land, Media, Liquid Fertilizer,
Hydroponic Substrate.

ABSTRACT

Early diagnosis and treatment are essential for successful long-term prognosis in patients with aggressive periodontitis. The role of the orthodontist in diagnosis and referral to periodontal treatment is crucial since most orthodontic patients are adolescents in which aggressive periodontitis mostly affects. Many patients undergoing orthodontic treatment believe that their regular and frequent visits to the orthodontic office are sufficient to monitor their dental and periodontal needs. Orthodontists should be aware of this notion, which makes the fulfillment to the above guidelines of even greater importance. Strict adherence of the guidelines as a routine protocol for periodontal examination prior, during and following orthodontic treatment may dramatically decrease the severity and improve the prognosis of aggressive periodontitis in orthodontic based clinic. Finally, this article describes a combined periodontal-orthodontic therapy in two patients with generalized aggressive periodontitis. A complete periodontal treatment was first conducted. After completely reducing inflammation and stabilizing the periodontium, the clinician started the orthodontic treatment by using moderate forces along with periodontal monitoring, thus reaching the aesthetic and functional objectives set when treatment started.

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Citation: El Aouame Ama, Bouzid Hajar, Lahcen Ousehal and Farid EL Quars. 2022. "Severe periodontitis and orthodontics: Case reports and literature review". International Journal of Current Research, 14, (05), 21487-21490.

INTRODUCTION

Periodontitis is an inflammatory disease, of bacterial origin, characterized by the progressive destruction of the tooth-supporting tissues, with loss of attachment and alveolysis, leading to the formation of periodontal pockets and/or the appearance of gingival recessions (1). Periodontitis will have, for the patients, aesthetic consequences, by the loss of teeth, migration of teeth and the gingival recessions, but also functional consequences, disorder of phonation and mastication. These consequences will also impact the quality of life of patients. According to the epidemiological survey conducted in Morocco in 2012, periodontal disease affects 43.2% of children aged 12 years, 59.7% of adolescents aged 15 years and 77.4% of adults between 35 and 44 years(4). One of the therapeutic options that can be considered at the end of periodontal therapy, during the supportive periodontal therapy, is orthodontic therapy. These orthodontic therapies are an integral part of the corrective phase of periodontal therapy.

The challenge before any orthodontic treatment is to change the patient's behavior towards his oral cavity and bacterial plaque. This work proposes to study the interest and the contribution of orthodontic treatment in patients suffering from generalized aggressive periodontitis through 2 clinical cases carried out within the service of dento-facial othopedics, CCTD, UHC CASABLANCA.

PATIENTS AND METHODS

Presentation of the 1st clinical case: This is a young patient, 30 years old, referred by the periodontology department of the UHC Ibn rochd Casablanca, with a purely aesthetic reason for consultation in relation to the secondary displacement of her upper and lower incisors. The interrogation revealed that the patient is in apparent

good general health, locally, she is followed for a generalized aggressive periodontitis.

Clinical review: Frontal and lateral examination shows a symmetrical oval face with a convex profile, equal facial layers, and the lips are joined at rest. The patient's smile clearly objectives her reason for consultation which is unaesthetic by the presence of a diastema between the 11 and 12 and the upper dental projection.

Dental examination: The endobuccal examination reveals average hygiene, with oval and wide dental arches, we note secondary migrations as a consequence of the patient's periodontal disease. (FIG 1)

Occlusal relationships: In the transverse direction: the maxilla circumscribes the mandible at all points. In the antero-posterior direction: CL I right and left canine CL I right and left molar In the vertical direction: 3mm overbite

Complementary examinations : (Fig 2): The orthopantomogram shows a complete dental formula, with important deep to terminal alveolar bone loss, especially in the anterior teeth and the lower molars, and a coronal radiolucency in the 47-37. The profile teleradiography shows clear airways, a sign of medium rotation, as well as the tipping of the maxillary and mandibular incisors in the vestibular direction. Thanks to this incidence, we were able to carry out the cephalometric analysis which objectified a normodivergent skeletal Class II, with biprotrusion.

SNA	82°	85°
SNB	80°	82°
ANB	2°	3°
SND	76°	80°
I to NA	22°	35°
I to NA mm	4 mm	7mm
i to NB	25°	36°
i to NB mm	4 mm	7mm
Po to NB	mm	1 mm
I to i	131°	103°
Occl to SN	14°	15°
GoGn to SN	32°	34°

Treatment Goals:

Address the patient's reason for consultation Maintain class I canine and molar Reposition the incisors to reduce biprotrusion Improve the aesthetics of the smile Ensure short and medium term stability

Treatment plan: Cause related periodontal therapy, prior to any orthodontic treatment, which can be started only after re-evaluation and stabilization of the disease, and which includes: Education and motivation in oral hygiene Scaling and root planing sessions associated with antibiotic therapy in the case of a severe, aggressive form. Re-evaluation: 2 months after the last root planing session The patient did not benefit from a surgical treatment. Once this phase is completed, the orthodontic treatment can be started, for this patient a multiattachment orthodontic treatment with wisdom teeth extractions was proposed. The orthodontic treatment by multi-brackets appliance allowed us, thanks to the use of light forces, to correct the migration of the teeth, to close the spaces and to ingress the incisive group allowing the improvement of the gingival recessions and the restoration of a good dento-periodontal architecture. A mandibular interproximal enamel reduction was also used to reduce the black triangles. Posterior Turbos and a TMA device were also used to straighten the 37-47. (FIG 3) At the end of the treatment, a bonded maxillary and mandibular metal splint was performed to prevent recurrence. (FIG 4)

2nd clinical case: This is a 29 year old patient who was also referred to us by the periodontology department where she is being followed for the treatment of aggressive periodontitis. The periodontal disease is stabilized, the hygiene control is satisfactory. The patient presents a

slight anterior mandibular and maxillary dental overlap, with extrusion of 11 . (FIG 7-8)

Diagnosis:

Skeletal: CL II , hyperdivergent

Dental: CL I right and left canine, CL III right and left molar Upper protrusion, lower normotrusion

We performed a multi-attachment orthodontic treatment allowing the correction of dental overlaps and a good alignment compatible with the rigorous control of oral hygiene. A permanent bonded splint was made to ensure the durability of the results (FIG 10).

SNA	82°	80°
SNB	80°	75°
ANB	2°	5°
SND	76°	73°
I to NA	22°	20°
I to NA mm	4 mm	3 mm
i to NB	25°	37°
i to NB mm	4 mm	6 mm
Po to NB	mm	2 mm
I to i	131°	145°
Occl to SN	14°	20°
GoGn to SN	32°	30°



Fig 1. Intraoral images before orthodontic treatment

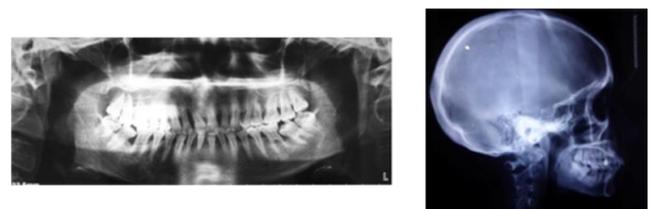


Fig 2. Pre-treatment panoramic radiograph and profile teleradiography

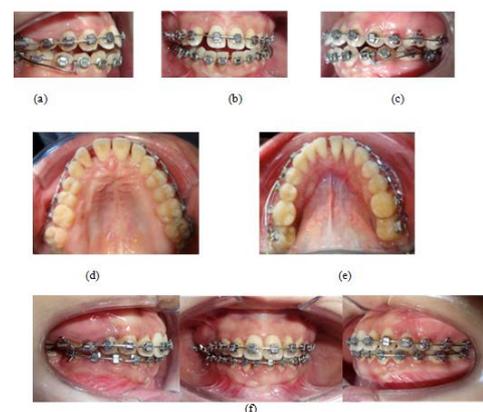


Fig 3: intraoral images during orthodontic treatment a-c: TMA appliances b : Anterior open bite due to the use of posterior turbos d-e : aerial view of the arches f: Evolution of the orthodontic treatment



Fig 4 Intraoral images after orthodontic treatment



Fig 9. Intraoral images during orthodontic treatment

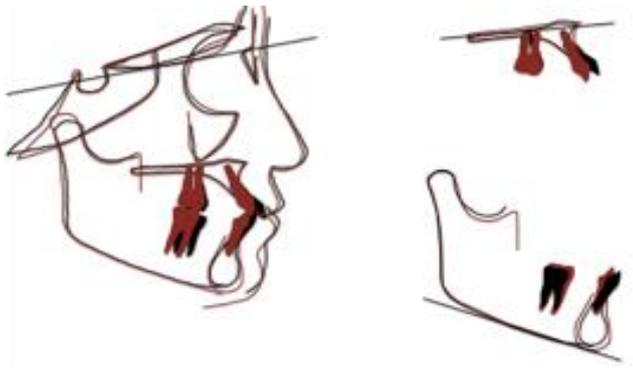


Fig 5 : Overlaps



Fig 10. Intraoral images after orthodontic treatment

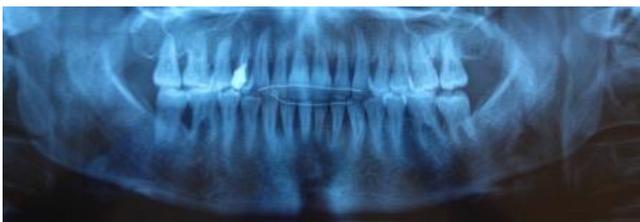


Fig 6. Panoramic radiograph after treatment

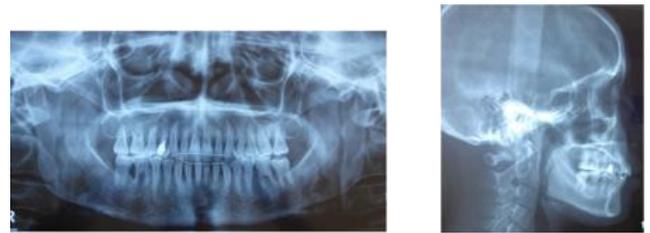


Fig 11. Panoramic radiograph and profile telerradiography after treatment

Clinical case n 2 :



Fig 7 : Intraoral images before orthodontic treatment

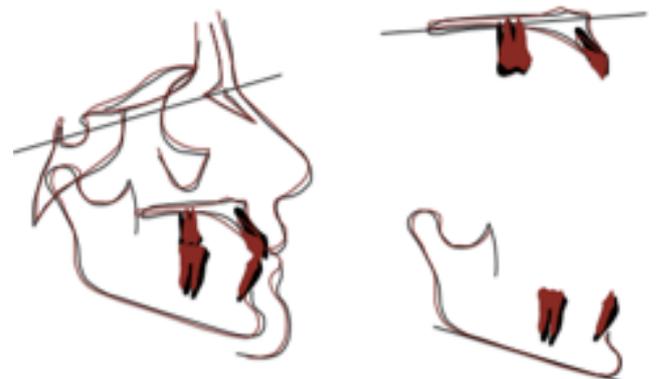


Fig 12 : Overlaps



Fig 8 : Pre-treatment panoramic radiograph and profile telerradiography

DISCUSSION

Orthodontic therapies promote periodontal health through their ability to create an adequate dental environment. They can also contribute, in conjunction with periodontology, to the correction of certain aesthetic and functional defects associated or not with periodontitis (10). After a satisfactory periodontal re-evaluation, our two patients were psychologically ready to accept orthodontic treatment, the imperatives and constraints of which they were aware. A bibliographical research was carried out in this direction, which comforted us on the contribution of orthodontics as a complementary therapy to the periodontal treatment.

The dental movement must be well controlled with adapted and light forces which will allow us to have a periodontal remodeling without inducing harmful effects. The type of appliance chosen for our cases, is a fixed multi-attachment appliance, in uninformed vestibular technique with passive archwire, and whenever possible, bonded brackets on the molars are preferred, as well as an elimination of the composite is necessary to avoid the retention of plaque and facilitate the hygiene of the patient. Some authors believe that the placement of an orthodontic appliance complicates the hygiene measures and thus favors the risk of gingival inflammation. In the presence of insufficient keratinized tissue, orthodontic treatment on a reduced periodontium would therefore increase the risk of periodontal destruction. However, Wennstrom *et al.*, have shown that during orthodontic treatment, there is no relationship between the initial height of keratinized tissue and the worsening of gingival recession; it is the thickness of keratinized tissue that is the determining factor in the risk of attachment loss. Tulloch agrees with us and prefers fixed appliances in patients with periodontitis, which will allow adequate control of the forces exerted and good management of the anchorage (8). Deepa proposes the use of invisible retainers for orthodontic treatment in these patients because of their light and intermittent forces that allow bone regeneration during dental movement, they also allow a better control of hygiene, an important factor especially at the level of a periodontium that is healthy but sometimes weakened. Among the selected studies, those of Melsen *et al* and Corente *et al*, which showed that the association of orthodontic and periodontal treatment can promote a gain of attachment and bone repair (11)

Contrary to Bollen *et al*, who considered after a long analysis that there is no evidence on the effectiveness of combined treatments (3) Our results adhere to those of Melsen *et al*, corrente *et al*, a significant bone gain for both cases was observed. Another study conducted in 2011 by Sylvie *et al* to compare the long-term results in two groups of periodontics-orthodontics and periodontics alone, an overall increase in bone level was observed. Orthodontic treatment combined with periodontal treatment did not compromise the benefit of periodontal treatment in any way. Sometimes, we are confronted with treating mucogingival problems, Waddah S. *et al* showed through 3 clinical cases, that the implementation of an orthodontic treatment has effects on the periodontal health by modifying the morphology and the anatomy of the superficial and deep periodontium, so the reconstruction of papillae can be realized easily and sometimes even without surgery (2). Another post-orthodontic phase is necessary, which consists essentially of the installation of an occlusal splint. Different types of ortho-periodontal splints are theoretically possible: the direct chairside technique (fiber-reinforced composite splint) or the indirect laboratory technique (cast metal splint) (Le Guiffant *et al.*, 2007). Our splint was made on a reduced periodontal support and had to satisfy several decision criteria. Our patients benefited from a twisted splint bonded lingually/palatinally with tooth-by-tooth composite dots, leaving the teeth with desmodontal mobility. From a physiological point of view, this solution is preferred to the bonded cast type of splint (4).

It is desirable to keep the wire and especially the bonding points as far away from the gum line as possible to preserve the periodontium. Levin, *et al.* show that the closer the device is to the gum, the higher plaque indices and formation of dental calculus. And, finally an orthodontic and periodontal follow-up was established for both patients.

CONCLUSION

We have tried to show the importance of orthodontic treatment as a curative treatment for certain periodontal diseases. Indeed, the treatment of periodontal disease should be considered from the point of view of a close cooperation between the orthodontist, the periodontist, the prosthodontist and the occlusodontist. If dental plaque is the main etiological factor of periodontal lesions, the treatment must include the restoration of an anatomical situation allowing its efficient elimination.

REFERENCES

- Carvalho CV, Saraiva L, Bauer FPF Orthodontic treatment in patients with aggressive periodontitis Am J Orthod Dentofacial Orthop. 2018
- Intêret de l'orthodontie dans les traitements du complexe mucogingival pathologique : absence de papilles Rapport de cas Waddahsabouni , Gilles koubi , Georges Rachlin JPO 2018
- Traitement d'une parodontite agressive : approche pluridisciplinaire Christelle Darnaud , Catherine Galleti, Amandine Para , Francis Mora . JPO 2017
- Periodontic and orthodontic treatment in adults Marianne M. A. Ong, BDS, MS,a and Hom-Lay Wang Am J Orthod Dentofacial Orthop. 2002
- Sylvie BOYERa , Fran, coiseFONTANELa , Marc DANAN Severe periodontitis and orthodontics: Evaluation of long-term results aInternational Orthodontics 2011
- Ameziane R. – El wady w. –Chbicheb S. – Halabi N. Guide de promotion bucco dentaire 2015-2025 – royaume du marocministère de la santé
- M.sebbar , Z.abidine , N.Laslami , Z.Bentahar Periodontal Health and Orthodontics In book: Emerging Trends in Oral Health Sciences and Dentistry -March 2015
- HAGA HAZAN-MOLINA1 , LIRAN LEVIN2 , SHMUEL EINY1 & DROR AIZENBUD Aggressive periodontitis diagnosed during or before orthodontic treatment Acta OdontologicaScandinavica, 2012
- Place de l'orthodontie dans la thérapeutique parodontale : aspect clinique F. BOURZGUI, L. OUSEHAL, Z. BENTAHAR, M.BAITE, F. EL QUARS / COURRIER DU DENTISTE
- La Prise en charge orthodontico-parodontale, Protocoles en 2016 et présentations de Cas cliniques
- Ulysse Calleda - universite toulouse iii – paul sabatier faculte de chirurgie dentaire – these 2016 – P :75
