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“Wilckodontics”- A novel synergy in time to save time: A case report

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Abstract

It is paramount to know the expectations of patients in terms of type of treatment provided and problems associated with it, duration and frequency of attendance in orthodontics treatment. Since the orthodontic treatment requires more time, in 2001 “Wilckodontics” was introduced by Wilcko brothers, including the treatment modality consisting of an in-office periodontal procedure combined with orthodontic tooth movement.

Alveolar decortication with augmentation bone grafting technique combined with orthodontics is called periodontally accelerated osteogenic orthodontics or PAOO. It accelerates orthodontic tooth movement and malocclusions are resolved 3–4 times faster, treatment times for complex cases average 6 months compared to 18–27 months. From an aesthetic perspective the PAOO technique not only addresses tooth alignment, but also facial features. With the increasing number of adults considering orthodontic treatment, the propensity for adults and even some non-growing adolescents for periodontal problems, the PAOO technique can be an especially attractive treatment option and be a “win-win” situation for the orthodontist, the periodontist and the patient.

This article represents the case report of two patients who underwent periodontally accelerated osteogenic orthodontics treatment.

Keywords: Wilckodontics, corticotomy, PAOO and RAP

1. Introduction

At the present time, there are many adult patients who are in quest of orthodontic treatment [1]. In comparison to adolescents there are several psychological, biological and clinical differences. They have insignificant growth when compared to children and hyalinization might occur during the treatment [2].

The most frequent concern of orthodontic patients are removal of their braces and this constant demand to shorten the treatment time in adult patients often results in protracted treatment time and associated periodontal problems. With all these considerations in mind adult orthodontic treatment differ and is challenging. Hence, periodontally accelerated osteogenic orthodontics has offered solutions to many limitations in the orthodontic treatment of adults [3]. The advantages of corticotomy assisted orthodontics includes reduced treatment time, enhanced expansion, increased traction of impacted teeth and post orthodontic stability.

Corticotomy is defined as the osteotomy of the cortical bone. It is a procedure whereby only the cortical bone is cut, perforated or mechanically altered in a controlled surgical manner. Hence, combining orthodontics with selective alveolar decortication and bone grafting can lead to a wider range of tooth movements while simultaneously reducing risk factors that may lead to periodontal breakdown.

This paper describes the treatment of 2 patients that were treated in the department using corticotomy procedure.

2. Case Reports

Case 1

A 22 year old male patient reported to dept of periodontics who was referred from department of orthodontics, FDS, MS Ramaiah University of Applied Sciences for the space closure. His medical history showed no allergies or medical problems. No signs and symptoms of temporomandibular dysfunction was observed. His intra oral examination revealed Angle’s class I malocclusion with maxillary and mandibular prognathism.

The area to be operated was anaesthetised by local anaesthesia. Crevicular incision and vertical releasing incision was placed to preserve the interdental papilla and a full thickness flap was raised. Corticotomy was done with a straight fissure bur in both 3rd and 4th quadrant followed by placement of bone graft. The area was sutured with a surgical silk suture. The patient was recalled after 4 months and space closure was seen in both the quadrant. [Fig 1 – Fig 8]



Fig 1 and 2: Pre-operative view



Fig 3 and 4: Full thickness flap raised and corticotomy performed in both the quadrants



Fig 5 and 6: Sutures placed in both the quadrant



Fig 7 and 8: Post-operative view showing closure of space

Case 2

A 26 year old male patient named Aroop Kumar reported to dept of periodontics who was refered from dept of orthodontics FDS, MS Ramaiah University of Applied Sciences for the closure of space in 1st and 2nd quadrant. His medical history showed no allergies or medical problems. No signs and symptoms of temporomandibular dysfunction was observed. The same procedure was carried out as mentioned in the previous case and intramedullary penetration was done in 2nd quadrant. The area was sutured with a surgical silk suture. The patient was recalled after 5 months and space closure was seen in both the quadrants. [Fig 9- Fig 15]



Fig 9 and 10: Preoperative view of 2nd case



Fig 11 and 12: Full thickness flap raised and corticotomy performed



Fig 13: Full thickness flap raised and intramedullary penetration with corticotomy performed



Fig 14 and 15: Post-operative view showing closure of space

3. Discussion

An increasing number of adult patients are seeking orthodontic treatment. There are several psychological, biological and clinical differences between the orthodontic treatment of adults and adolescents. Adults have more specific objectives and concerns related to facial and dental aesthetics, the type of orthodontic appliance and the duration of treatment [1]. Growth is an almost insignificant factor in adults compared to children, and there is increasing chance that hyalinization will occur during treatment [2]. Finally, adult patients are more prone to periodontal complications since their teeth are confined in non-flexible alveolar bone. The development of corticotomy-assisted orthodontic treatment (CAOT) opened doors and offered solutions to many limitations in the orthodontic treatment of adults.

Periodontally accelerated osteogenic orthodontics (PAOO) technique is a combination of a selective decortications facilitated orthodontic technique and alveolar augmentation [3]. PAOO does not just cut into the bone but decorticates it - some of the bone's external surface is removed [4]. Recent evidence suggests a localized osteoporosis state, as a part of a healing event called regional acceleratory phenomenon (RAP), may be responsible for the rapid tooth movement after PAOO [5]. The two main features of RAP in bone healing include decreased

regional bone density and accelerated bone turnover, which are believed to facilitate orthodontic tooth movement [6]. Accelerated osteogenic orthodontics can play an important role in the comprehensive treatment of a patient's occlusal and esthetic needs. This technique has been shown to increase alveolar bone thickness, decrease treatment time, and enhance post-treatment orthodontic stability [7]. It is the placement of the bone graft which is an additional step that is believed to be responsible for the increased post-treatment alveolar bone width. With this technique, one is no longer at the mercy of the pre-existing alveolar volume, and teeth can be moved 2 to 3 times further in (1/3) to (1/4) the time required for traditional orthodontic therapy [7].

Although CAOT may be considered a less-invasive procedure than osteotomy-assisted orthodontics or surgically assisted rapid expansion, there have still been several reports regarding adverse effects to the periodontium after corticotomy, ranging from no problems to slight interdental bone loss and loss of attached gingiva.

4. Conclusion

This case report presents an esthetic perspective that the PAOO technique not only addresses tooth alignment, but also facial features. With the increasing number of adults considering orthodontic treatment, the predisposition for adults and even some non growing adolescents for periodontal problems, the PAOO technique can be an especially attractive treatment option and be a "win-win" situation for the orthodontist, the periodontist and the patient.

5. References

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