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RESEARCH ARTICLE

WILCKODONTICS: HOW AND WHY?

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Abstract

Out of all the approaches available in the field of accelerated orthodontics, surgical approaches are considered to be the most effective methods for acceleration of orthodontic tooth movement. Since the introduction of the Wilckodontics in this field, it has managed to gain a considerable attention of clinicians for the faster orthodontic tooth movement. Here is a review on various concepts and techniques of Wilckodontics.

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Introduction:-

Wilckodontics is also known as periodontally accelerated osteogenic orthodontics (PAOO). The periodontium is a dynamic tissue and regulation of its remodelling gives an edge to the traditional orthodontic treatment.¹ The synergistic effort from the periodontic and orthodontic fields in the PAOO technique can shorten the conventional orthodontic treatment time to 3 to 9 months. This technique has roots in orthopedics, dating back to the early 1900s. Only recently, it was modified to assist in straightening of teeth and fixation of bites.²

In 2001, Wilcko et al³ reported a revised corticotomy-facilitated technique that included periodontal alveolar augmentation, called periodontally accelerated osteogenic orthodontics. It demonstrated acceleration of treatment to one third of the usual time. Wilcko et al³ mentioned in cases of rapid orthodontics with corticotomies, that corticotomies could increase tooth movement by increasing bone turnover and decreasing bone density.

Wilcko's⁴ modification technique used a combination of demineralized freeze dried bone allograft/ xenograft/ or a bio resorbable alloplastic graft material. Several reports indicated that this technique is safe, effective, extremely predictable, associated with less root resorption, reduced treatment time, and can reduce the need for orthognathic surgery in certain situations.

Wilcko and coworkers⁴ have also demonstrated that it is not the design of the selective alveolar decortication that is responsible for the rapid tooth movement.

Concepts and Indication:-

Wilcko et al and Ferguson et al³ reported on a new in-office technique that is a combination of "bone activation" (selective alveolar decortication, ostectomies, and bone thinning with no osseous mobilization), alveolar augmentation using particulate bone grafting material, and orthodontic treatment. It is called the accelerated osteogenic orthodontics (AOO) technique or periodontally AOO technique. Connective tissue grafting for root coverage has been shown to be feasible with full-thickness flap reflection and bone activation and can be included in the surgery or performed after the debracketing. The potential advantages of the treatment in comparison with traditional orthodontics are:

1. Enhanced scope of malocclusion treatment (ie, an increase in the limits of tooth movement and a decreased need for extractions).
2. Decreased treatment time (increased rate of tooth movement).
3. Increased alveolar volume and a more structurally complete periodontium (correction of preexisting bony dehiscence and fenestrations).
4. Alveolar reshaping for the subtle enhancement of a patient's profile when indicated. (The alveolar chin prominence cannot be advanced except by genioplasty.)
5. Simultaneous rapid recovery of shallow unerupted teeth (deep impaction cases must be done in stages).

Wilckodontics/ Accelerated Osteogenic Orthodontics Technique:-

The periodontally accelerated osteogenic orthodontics (PAOO) also termed as Wilckodontics, involves full-thickness labial and lingual periosteal flap reflection accompanied by selective Corticotomy in the interdental areas both labial and lingual. The corticotomy segment can be moved faster in one third to one fourth the time required for traditional orthodontics alone. This is a physiologic based treatment consistent with regional acceleratory phenomenon and maintaining an adequate blood supply is essential.⁵

PAOO is an effective treatment approach in adults to decrease treatment time and reduce the risk of root resorption. Selected corticotomy limited to the buccal and labial aspects also significantly reduces treatment time.

Orthodontic Adjustments after PAOO Surgery:-

After complete recovery from the procedure, orthodontist adjusts the appliance about every 2 weeks. Depending on case, braces are put for 3 to 9 months. After the braces are removed, a retainer for at least 6 months is usually recommended. The same types of braces and retainers are used in PAOO as in traditional orthodontics, so you will have your choice of metal or ceramic brackets.⁶

Patient Qualifications for PAOO Treatment:-

PAOO can be done on people of any age, as long as they have a healthy periodontal situation. According to Dr Wilcko⁷ the technique has been done on children as young as age 11 and on senior citizens as old as 77 (mainly as preparation for dental implants or devices). You are not a candidate for this procedure if you have dental bone loss, periodontal disease, root damage or root resorption. In addition, if you have a disease, such as rheumatoid arthritis which requires you to take regular doses of NSAIDs, you may not be a good candidate for PAOO. Dr Wilcko⁸ says that the PAOO technique can correct most of the orthodontic problems that are treated with traditional long-term braces. The only exception is a Class III condition, in which the lower jaw is too long relative to the rest of the face and the chin protrudes. Class III cases have many physical constraints which may not lend themselves to AOO treatment.

Advantages Of PAOO Surgery:-

1. Less time than traditional orthodontics.
2. Less likelihood of root resorption.
3. History of relapse has been very low.
4. There is less need for headgear (depending on the case).
5. The technique has its roots in proven orthopedic research and treatments.
6. Both metal and ceramic brackets can be used.⁸

Disadvantages Of PAOO Surgery:-

1. Expensive procedure.
2. Mildly invasive surgical procedure and like all surgeries, it has risk of some pain, swelling and the possibility of infection.
3. Patients who take NSAIDs on a regular basis or have other chronic health problems cannot be treated with this technique.
4. It does not lend itself to class III malocclusion cases.⁸

Conclusion:-

All the techniques that have been developed in the field of accelerated orthodontics carry certain advantages as well as limitations with them. However, the clinician's sound knowledge, regarding all these techniques and their outcomes, plays a major role. Wilckodontics is reported to have postoperative stability and improved retention. But, the main disadvantage of all the surgical approaches is their invasiveness and the acceleration was only in the first 3 to 4 months which declines with time to the same level as of the conventional technique.

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