A QUESTIONNAIRE ON THE KNOWLEDGE, AWARENESS AND PREFERENCE OF WILCKODONTICS AMONG GENERAL DENTAL PRACTITIONERS, ORTHODONTIST AND ORAL SURGEONS

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ABSTRACT

The often long course of orthodontic therapy is one of its most difficult aspects. In addition to causing pathologic changes (root resorption, periodontal issues), prolonged therapy is burdensome for both patients and their parents. Wilckodontics, an alternative term for Accelerated Osteogenic Orthodontics, is the practice of rapidly moving teeth by decortication. It is a meticulously researched technique that is said to reduce the duration of orthodontic treatment by six to nine months. It is a Descriptive Study with total of 180 doctors were selected and were further grouped as 60 dental practitioners, 60 orthodontist and 60 oral surgeons and they were given a questionnaire containing 12 close ended questions related to Wilckodontics

Despite their knowledge of Wilckodontics, which include periodontal, and surgical treatments that can help with rapid alignment, dentists believe that patients prefer more conservative therapies, choosing longer treatment durations over invasive procedures. The dentist must try to ease these anxieties in order to shorten the duration of the patient's treatment.

KEYWORDS: Accelerated Orthodontics, Wilcodontics, Orthodontic treatment, regional acceleratory phenomenon,

INTRODUCTION

Wilckodontics accelerated Osteogenic Orthodontics (AOO) is a potent multidisciplinary (orthodontic and surgical) therapy. It can standardize the treatment of exceedingly complex situations, expedite, increase the predictability to treat ordinary cases, and give the practitioner access to a new orthodontic patient population[1]. The AOO treatment instead concentrates on improving the way the periodontium reacts to applied stresses, as well as on creating a more intact periodontium and improved alveolar volume which also aids in retention[2]. The AOO technique's surgical component is performed in-office. It is less adverse than the recovery after orthognathic surgery, but the post-operative recovery shouldn't be any more comfortable than that of other orthodontic-related procedures including the extraction of the third molar, bicuspid extraction, exposures, and gingival grafting[3].

The regional acceleratory phenomenon (RAP), first described by Frost in endochondral long bones and then by Yaffe et al[4]. in the membranous bones of the jaws, was in accordance with the cascade physiological response[5]. This accelerated the metabolism in the healing response in both the soft and hard tissues of the periodontium. When combined with the principles of periodontal tissues engineering, the clot stabilization around the particulate bone grafting material used for orthodontic tooth movement (OTM) was increased by 300 to 400 percent, the envelope of motion (degree of movement) was increased by two to three times, and the alveolar volume was increased for more stable clinical results and subtle facial morphing[6].

The AOO approach is the result of a new view of simultaneous alveolar augmentation and surgically driven tooth movement[7]. Murphy has called the potential to change bone through orthodontic tooth movement combined with periodontal bone activation and alveolar augmentation "in vivo tissue engineering" in his synthesis of new ideas in cellular and molecular biology[8]. When the right procedures are followed, the AOO therapy produces a "window of opportunity" that lasts four to five months, which is more than enough time to complete major tooth movement[9]. The orthodontist must use a completely different set of diagnostic and treatment planning parameters in order to account for the physiological reality of the various components of the AOO treatment [10]. For over a century, there have been several variations of the use of primitive surgical intervention to accelerate tooth movement[11]. However, Heinrich Kole's 1959 paper established the stage for later advancements in decortication-assisted orthodontics[12]. Heinrich Kole thought that the strongest resistance against tooth movement was provided by the continuity of the denser cortical bone[13]. Since the defined segments of bone carrying one or more teeth would only be joined by less dense medullary bone, he

hypothesized that by using corticotomy surgery to interrupt the continuity of the cortical layers of bone, the segments could be easily moved using conventional orthodontic techniques[14]. Kole's research gave rise to the phrase "bony block movement," which refers to the possible way that teeth move after corticotomy surgery[15]. Many variations of Kole's technique were reported throughout the course of the following four decades, but "bony block movement" was still the explanation for the facilitated tooth movement in each of these methods[16].

Only very close proximity to the osseous damage will result in the relatively limited reaction of bone activation. For instance, there won't be any appreciable demineralization on the alveolar lingual surface due to bone activation on the alveolar facial surface. Tooth movement is very conductive due to a small layer of highly reactive bone. Therefore, post-treatment stability would be favored by the contrary, a thicker layer of more quiescent bone. Here is a brief description of the corticotomy operation. Following an initial sectional corticotomy, osteopenia—a condition in which the mineral concentration is momentarily decreased—occurs. New bone begins to mineralize during the next 20 to 55 days[13]. The next interim step is the development of softer bone, which gives the teeth less resistance to force and enables quick adjustment. Investigating general dentists' knowledge and preferences on Wilckodontics was the goal of this survey.

MATERIALS AND METHODS

This study is a descriptive questionnaire which containing 12 close ended questions related to Wilckodontics and the take on this procedure among General dental practitioners , orthodontists and Oral Surgeons .180 random dental , oral surgeons and orthodontic practitioners were given this questionnaire (Table 1) via google forms. The inclusion criteria were both graduates and post-graduate practitioners while the students were excluded from the study. The close-ended questionnaire was analysed and the answers were tabulated and frequency charts and tables were calculated using the SPSS software, Microsoft 2000 version©.

1) How often do you handle patients with malocclusion in your practice?	
a. 50 patients annually	b. 100 patients annually
c. More than 100 patients	
2) Preferred method of orthodontics?	
a. Removable	b. Fixed
3) Average duration of treatment	
a. Less than 6 months	b. 6-9 months
c. 9-12 months	d. More than 12 months

4) Preference regarding duration: a. From patients perspective (i) Shorter (< 9 months) (ii) Longer (>9 months) b. From clinician/specialists perspective (i) Shorter (< 9 months) Longer (>9 months)
5) Opinion regarding surgically assissted orthodontics a. From patients perspective (i) Preferable (ii) Non preferable b. From clinician/specialists perspective (ii) Preferable (iii) Non preferable
6) Do you think an extraction space closure can be accelerated by surgically removing a part of the cortical bone in the edentulous area? a. Yes b. No
7) What do you think would increase the time taken for space closure? a. Delay in the rate of resorption of vertical bone b. Delay in the rate of resorption of medullary bone
8) Do you think that the above mentioned method of extraction space closure can give rise to unwanted complications? a. Yes b. No
9) Have you heard of the above mentioned method which is also known as Wilckodontics or Accelerated Osteogenic Orthodontics (AOO)? a. Yes b. No
10) Do you think Accelerated Osteogenic Orthodontic surgical treatment would bring about abrupt changes to the facial profile of the patient as compared to the conventional orthodontic treatment? a. Yes b. No
11) Do you think AOO is comparatively more painful than the conventional space closure orthodontic treatment? a. Yes b. No
12) The incidence of relapse post treatment is more in a. Conventional fixed orthodontic treatment b. Surgically treated orthodontic treatment

Table 1: Questions included the questionnaire

RESULTS

There were 180 participants in this descriptive study and among them, 33.3% were general practitioners, 33.3% were oral surgeons and the remaining 33.3% of them were orthodontists, as shown in Figure 1. Among the 180 participants, 34.4% of them handle 50 patients with malocclusion annually, and another 47.7% of them handle 100 patients with malocclusion

annually while only 17.7% of them handle more than 100 patients with malocclusion annually, as shown in Figure 2. 99.4% of the practitioners prefer rendering fixed orthodontic treatment over removable. 25% of the practitioners think the average duration of the treatment would ideally be around 9 months, while 39.4% of them think it would be around 12 months, and the rest 35.5% of them think it would be for more than 12 months.

From the patient's point of view, practitioners believe that patients would prefer shorter treatment durations, but physicians believe that longer treatment durations greater than nine months would be more optimal for stability and retention.

When coming to the opinion with regard to surgically assisted orthodontics, 100% think the patients wouldn't prefer it, while 17.7% of the practitioners also find it non-preferable and 82.2% of practitioners prefer surgically assisted orthodontics. All practitioners agree upon the fact that the extraction space closure can be accelerated by surgically removing a part of the cortical bone in the edentulous area. 33.8% of the practitioners think due to the delay in the rate of resorption of vertical bone, there is an increase in the time taken for space closure, while 66.1% of the practitioners think it is due to the delay in the rate of resorption of the medullary bone. 45.5% of the practitioners think surgically assisted orthodontic treatment could give rise to unwanted complications. While 36.6% of the practitioners are not aware of the method wilckodontics. 48.3% of the practitioners also think AOO brings about changes in the facial profile while compared to the conventional orthodontic treatment. While 51.1% of the practitioners also think AOO is more painful than conventional orthodontic treatment. All the practitioners agree upon the factor that the incidence of relapse post conventional fixed orthodontic treatment is more when compared to a surgically assisted orthodontic treatment, as explained in Figure 3.

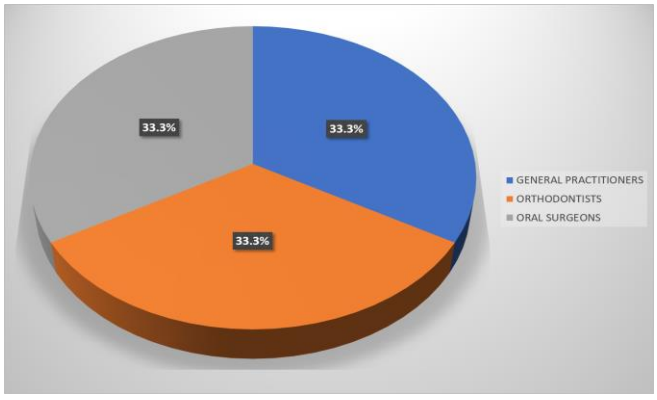

Figure 1: Percentage in the various field of practitioners

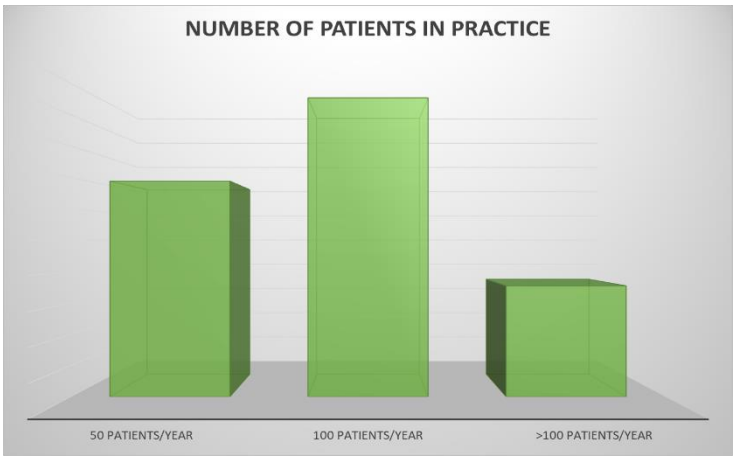

Figure 2: Number of patients the practitioners treat annually

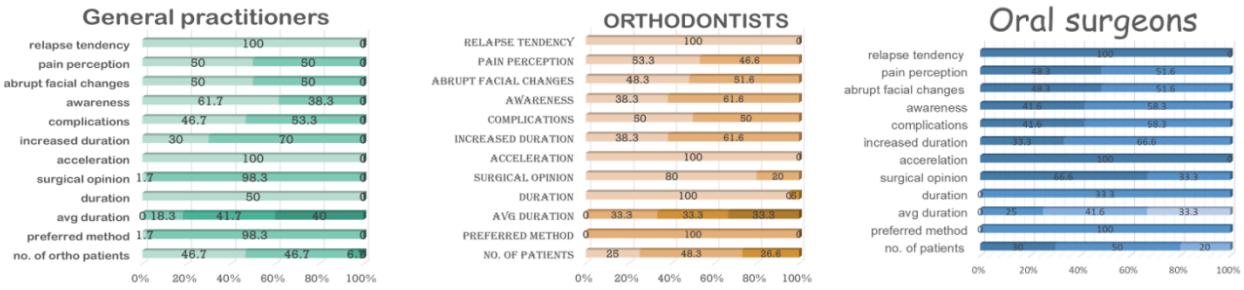

Figure 3: Frequency chart table of the questionnaire, self-explanatory of the answers given by the 180 participants on the 12 close ended questions

DISCUSSION

For the dentist, the patient, and the parents, long-term orthodontic therapy is however tedious. Reducing the length of treatment may improve patient satisfaction and compliance while preventing harmful complications. According to studies, the length of orthodontic treatment is a source of dissatisfaction for both patients and dentists[18]. In addition to surgery, physical and biological stimulation can reduce the course of treatment. However, the patient should remain safe while receiving any concomitant treatment[19]. Understanding the different therapies available to shorten treatment times is crucial for the dentist to deliver the best care possible. This study proves that professional dentists are aware of the different orthodontic adjunctive techniques. The skilled general practitioner or specialist may be able to complete relatively quicker treatments in an in-office environment with the accelerated osteogenic orthodontic approach, which was not previously an option[20].

However, Wilcko et al. debated the idea of "bony block movement" in 2001[1]. They stated that the small fragments of defined bone lose their structural integrity because of some apparent demineralization of the alveolar housing over the root prominences in an evaluation of corticotomized patients using hospital-based high resolution CT scan imaging. In a single-stage procedure (reflection of both facial and lingual flaps), it is completely contraindicated to luxate the teeth or any specified single-tooth segment of bone. This can cause intrapulpal and intraosseous morbidity. Since small dentoalveolar segments will rapidly lose their structural integrity due to the demineralization process, "greenstick fracture" and luxation of these segments will not be beneficial. The degree of tissue turnover and temporary demineralization of the alveolar housing caused by bone activation[17] is strongly correlated with the severity and closeness of the surgical insult. An increase in osteoclasts causes the demineralization of the alveolar housing, and in the absence of hyalinization, necrosis and indirect resorption of infection will leave the bone's soft tissue matrix behind. Demineralization is a sterile inflammatory process mediated by prostaglandins.

According to the study, practitioners' awareness of the AOO treatment procedure is comparatively low, which is why they are reluctant to use it with patients[21]. However, because it lowers down on treatment time, this approach is more favored in cases of severe malocclusion. It is reasonable to argue that greater understanding of this treatment regimen is necessary, as it offers equal advantages to both the patient and the practitioner. Additionally, patients still need to be made aware of the treatment plan, its advantages and disadvantages, and its rewards. Since this approach is becoming more and more popular, raising awareness would be helpful.

CONCLUSION

Despite their knowledge of Wilckodontics, periodontal, and surgical treatments that can help with rapid alignment, dentists believe that patients prefer more conservative therapies, choosing longer treatment durations over invasive procedures. The dentist should try to ease these anxieties in order to shorten the duration of the patient's treatment. It is not appropriate to view the AOO treatment as a last resort or a rescue method. The trained practitioner may be able to do treatments in an in-office setting that would not have been considered before using the AOO technique.

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