TADs: From enthusiasm to frustration or back to the future

How to improve stability, versatility, and success rates using innovative mechanics and appropriate insertion sites.

TADS were one of the most discussed topics of the last decade. It started in the 90th and experienced in the last 10 years an extreme hype. Practitioners were enthusiastic about the possibility to counteract newton’s third law. Now, more than ten years later quite a lot of clinicians a frustrated about high loss rates and non-working biomechanics. The course will discuss the authors evolutionary process from enthusiasm to frustration and finally to a realistic reliable and valid everyday strategy.

Currently, the alveolar process still is the most preferred insertion site. However, due to the varying bone quality and the risk of root contact, the survival rate of implants inserted in the alveolar ridge, especially interradicular, still needs improvement. Other regions, such as the anterior palate for miniscrews and implants or the mental region for miniplates, provide much better conditions for mini-implant insertion, since the amount and quality of the available bone is far superior. Implants with different types of abutments and connectors allow the construction of versatile and cost efficient appliances for a large variety of orthopedic and orthodontic applications. Utilizing TAD’s in the anterior palate and the mental region eliminates the risk of root injury and takes the implants out of the path of tooth movement.

This one day course will show an overview of the up to date literature, current developments of screw design, appliance designs, main indications, placement techniques, and risk factors during placement and orthodontic treatment. It will especially focus on the success rate of mini-implants, palatal implants and miniplates and the biomechanics of the connected orthodontic appliance. The lecture will show scientific and clinical perspectives on how mini-screws can become a safe and reliable standard device.

The course will give a detailed and picture full explanation of the clinical use of palatal mini-implants and various miniplates in the mandible. It will focus on the biomechanics of well working and thought indications.

One-day Course:

09.00  Introduction: New Advances in TADs, from enthusiasm to frustration, where are we now?
09.30  Insertions sites for palatal implants and mandibular plates
10.30  Coffee break
11.00  Molar distalization with skeletal supported push coil distalizers and pendulum devices
12.30  Lunch
13.30  Molar mesialization, En-Masse-Retraction, Molar uprighting
15.00  Coffee break
15.30  Rapid palatal expansion and class III treatment, temporary implants, alignment of ankylosed teeth
17.00  Approx. end of the course
Chris Chang

Lecture synopsis:

Session 1: Challenging Class III

Skeletal Class III malocclusions are usually treated with extensive orthodontics and orthognathic surgery after completion of active growth. Conservative treatment (without orthognathic surgeries) requires a broad range of tooth movement in 3D. Temporary Anchorage Devices (TADs), placed between the roots of teeth, are of limited value for moving the entire dentition, relative to its apical base of bone. However, extra-alveolar TADs, placed in basilar bone of the maxilla and mandible, provide anchorage for extensive dentofacial orthopedic corrections, in both growing children and adults. Many skeletal Class III malocclusions can be effectively managed without orthognathic surgery. In this talk I will demonstrate the potential for conservative management of severe Class III malocclusions.

Learning Objectives:

- Recognize the potential for treating skeletal Class III malocclusions, without orthognathic surgery, in growing patients and adults.
- Evaluate differing approaches to diagnosis, treatment planning, and timing of both orthopedic and orthodontic biomechanics.
- Compare treatment outcomes, cost and long-term prognosis for conservative treatment, compared to orthognathic surgery.

Session 2: Gummy Smile Correction

An innovative approach to correct gummy smile will be presented. The upper whole arch intrusion and retraction by Temporary Anchorage Devices (TADs) has been proved to be an effective way to improve gummy smile. This lecture will start with diagnosis and treatment planning of gummy smile. Detailed mechanics and screw insertion techniques will be introduced. The rationales for surgical crown lengthening to finalize the smile will also be included.

Learning Objectives:

- Recognize different types of gummy smiles.
- Design varied approaches to solve different gummy smiles.

Session 3: Tough Impaction Made Easy

Key steps of treating impacted teeth will be presented and discussed with detailed photos and videos to ensure that participants will have a thorough understanding of varied treatment methods. Important tips will also be included.

Learning Objectives:

- Apply orthodontic bone screws to treatment of impacted cuspids and molars.
- Design multiple mechanic force systems for varied types of impacted teeth.
- Conduct simple surgical procedures for impacted teeth.
Session 4: Ortho-Implant Combined Treatment

Missing teeth is a common problem in our daily practice. Chronic tooth loss often results in tilted adjacent teeth, elongation of antagonistic teeth, bone resorption in the edentulous zone, and even maxillary sinus pneumatization. These issues further complicate subsequent implant therapy and outcomes can be significantly improved by orthodontic treatment.

Orthodontic treatment provides an ideal alternative to create more favorable soft and hard tissue conditions and pave the way for following prosthetic or implant therapy. This lecture aims to demonstrate how orthodontics can facilitate a more comprehensive treatment beyond replacing missing teeth. The connection of orthodontic treatment and implant therapy is believed to be the future of dentistry.

Learning Objectives:

- Understand critical considerations to design a treatment plan according to specific goals in complex adult cases with chronic tooth loss.
- Improve ability to design the process and sequence of orthodontic treatment and implant therapy.
- Apply miniscrews to solve the problem of inter-occlusal space deficiency.

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<td>8:30 – 9:00 AM</td>
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<td>Registration and Breakfast</td>
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<td>9:00</td>
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PS. Topics 2-4 are interdisciplinary sessions. These three sessions can be presented with varied focuses based on audience’s primary background.
Dan Grauer

8:30 – 10:00 1- “CBCT imaging concepts and clinical applications of digital orthodontic models”

Orthodontics as a specialty is going through a technological revolution. During the last 10 years there were more new developments in orthodontics than in the whole history of our specialty. One of the areas undergoing rapid progress is three-dimensional (3D) imaging. These changes have a direct effect on diagnosis, treatment planning, knowledge generation, treatment implementation, design and fabrication of appliances, communication, marketing, interdisciplinary interaction and education in orthodontics.

Lecture Objectives:
1- Understand imaging concepts for the clinician
2- Learn new applications of digital orthodontic models
3- Outline research and future clinical directions of 3D applications in orthodontics

10:00 – 10:30 Coffee/Tea break

10:30 – 12:00 2 -“Customized Appliances and Esthetics During and Orthodontic Treatment”

Today we can straighten teeth without anyone noticing. Hidden braces, clear aligners and other systems can provide good results with minimal interference in your patients’ life style. The restorative dentists and other specialists need to be aware of the possibilities and limits of customized orthodontic treatment. Digital dentistry is around the corner; are you in?

Lecture Objectives:
1- Learn the latest technological applications to enhance orthodontic treatment accuracy
2- Learn the reasons behind appliance selection and customization
3- Evaluate the accuracy / precision of customized lingual orthodontic

12:00 – 13:30 Lunch break

13:30 – 15:00 3- “Interdisciplinary Management of Gingival Smile: The Ortho/Perio Connection”

When a patient complains of gingival smile, is it because of the position of the teeth? Or maybe it is the position of the lip? Does the periodontium have any relationship to the gingival display? Correction of excessive gingival display during smile requires an interdisciplinary approach; this includes precise diagnosis, management, sequence, timing and communication among all members of the team and the patient. Vertical positioning of the upper incisor is paramount to achieving optimal esthetics. Macro, mini and micro-esthetic concepts should be incorporated into your routine systems in the office.

Lecture Objectives:
1- Classification and diagnosis of excessive gingival display during smile
2- Sequence and timing of orthodontic and periodontic approach
3- Guidelines for optimal esthetics

15:00 – 15:30 Coffee/Tea break

15:30 – 16:15 4 “Treatment Planning of Complex Cases: Surgery or Skeletal Anchorage”

In this presentation two cases will be presented where both skeletal anchorage and orthognatic surgery would have been indicated. The details of treatment and the final outcomes illustrate the
advantages and disadvantages of either approach. The goal is to generate a borderline situations and discussion among the audience.

16:15 – 17:00 5- “Deficient Incisor Exposure at Rest and During Speech”

This lecture follows the same diagnostic and treatment planning approach of the ortho/perio lecture. Diagnostic criteria and a few cases will be presented to highlight the connection between restorative dentistry and orthodontics.

17:00 – 17:30 Discussion – Q&A

Of course we can modify the content, duration and sequence of the lectures to fit your program. All lectures have an interdisciplinary approach: 1 is Orthodontics / Radiology / Orthognathic Surgery. 2 is Orthodontics / Restorative Dentistry. 3 is Orthodontics and Periodontics (This is the long version of what I presented at the AAO meeting). 4 is Orthodontics / Orthognathic Surgery and 5 is Orthodontics / Prosthodontics.

I hope that we can make this happen.

Best regards,

Dan Grauer DDS PhD

Jorge Faber

Anticipated Benefit: The elimination of conventional orthodontic preparation for orthognathic surgery (2.5 hours)

Conventional orthodontic-surgical treatments for the correction of dentofacial deformities comprise - after diagnosis and treatment plan - a presurgical orthodontic stage, the orthognathic surgery per se and the orthodontic finishing stage. This treatment method has also been tested by time. It has been used for decades and proved highly effective. However, it has two main limitations. The first is that many patients with Obstructive Sleep Apnea Syndrome should undergo maxillomandibular advancement as soon as possible, for this is the most successful surgical procedure to treat OSAS. These patients cannot afford awaiting the conventional orthodontic preparation for surgery. The second is that many patients who seek treatment do so motivated by the promise of aesthetic enhancement, despite the treatment’s primarily functional nature. On account of these limitations, since 2004 Dr. Faber has been using in his private practice a treatment methodology that anticipates surgery. After diagnosis, this protocol consists in extensively planning all treatment phases, installing the orthodontic appliance, operating on the patient and only then performing the actual orthodontic treatment. This methodology anticipates the benefits of surgery and has, therefore, been appropriately named Anticipated Benefit Method. Although the orthodontic planning is more complex than conventional treatment, surgical plans are not. Surgeons, however, should be aware of all orthodontic steps taken throughout the treatment. The purpose of this lecture is to present the rationale of this protocol, and illustrate it with long term treatment results.

Obstructive Sleep Apnea treatment in children and adults: An evidence based approach (1 hour)

Patients with Obstructive Sleep Apnea Syndrome (OSAS) have an associated risk for cardiovascular events, including arterial hypertension, stroke, and arrhythmias. Besides, psychologically speaking, adult patients tend to present with anxiety and mood disorders, whereas there is mounting evidence that in young patients sleep disorders lead to daytime disturbances closely mimicking attention deficit/hyperactivity disorder (ADHD). Furthermore, patients could have their ADHD eliminated if their habitual snoring and any associated symptoms of sleep-related breathing disorders are effectively treated. In the presence of significant snoring orthodontists must request a polysomnography (PSG). There are distinct approaches to treat adults, and preadolescent and
adolescent patients. They range from maxillary expansion to mandibular advancement splints and surgical maxillomandibular advancement. This lecture will focus on the proper diagnosis and treatment of OSAS. The role of the orthodontist in ADHD treatment will be addressed. The latest evidence will be discussed under the light of the 20-year clinical experience with mandibular advancement splints.

Rapid Prototyping (1 hour)
Rapid prototyping (RP) comprises several technologies that use data from computer-aided design files to produce physical models and devices by a process of material addition. These models can provide significant advantages when compared with conventional radiography and CT scans. Especially, in the diagnosis, treatment planning, and communication with patients for various orthodontic and surgical conditions, such as impacted and supernumerary teeth, and surgical orthodontic treatment. Besides that, real state prices are becoming prohibitively high in many countries, forcing eModels to gain popularity. Dental modeling by means of rapid prototyping can play a significant role when physical models need to be materialized from eModel files. Finally, aligners can be easily fabricated from RP. This lecture will discuss these and other clinical applications of RP.

Miniplates as anchorage: Expanding the limits of orthodontic treatment (2.5 hours)
Skeletal anchorage has expanded the limits of orthodontic treatment. The spectrum of applications includes simultaneous retraction and/or protraction of upper and lower dentition. These movements can be implemented on the treatment of bialveolar dental protrusion, Class II and Class III malocclusions. This lecture will address several clinical applications with long term results, as well as present the advantages and limitations of this technique. Important issues associated with the surgical strategy will also be considered.