Functional & Cosmetic Excellence: Revitalization of a Proven Treatment Philosophy

By Dr. Straty Righellis, USA & L. Douglas Knight, USA

Functional and Cosmetic Excellence (FACE Tx)® is an approach to orthodontic treatment that establishes measurable treatment goals for six elements that form the basis of comprehensive, interdisciplinary, high-quality orthodontic care:

• Functional occlusion
• TMJ health
• Facial balance
• Optimal dento-gingival esthetics (smile design)
• Periodontal health
• Stability

For each of these goals, the origins of the FACE Tx® discipline have defined specific elements that create a framework for the systematic evaluation of the esthetic and functional needs of each patient and a method to assess treatment results. These treatment goals are supported by reputable studies published in well-respected, peer-reviewed journals. Sharing these goals and the means to achieve them with an interdisciplinary team—the orthodontist, the dentist and/or other specialist(s)—provides you, the orthodontist, an opportunity to work with esteemed colleagues to create outstanding results for beauty, health and function.

Building successful practices is an important side benefit of this approach. Developing the skills required to manage and function within FACE Tx interdisciplinary treatment teams increases the complexity of cases one can treat. The collaborative interaction with experts in their respective fields (prosthodontists, periodontists, cosmetic and general dentists and surgeons), who ascribe to the same principles of tooth positioning and jaw function, creates a knowledge base to treat to predictable, on-time optimal results while meeting and/or exceeding patients’ expectations. As a result, one’s referral network expands with resultant practice growth.

Worldwide Program of Instruction

FACE Tx offers one of the world’s only postgraduate interdisciplinary continuing educational programs. Offered in numerous countries to university-trained orthodontists, it provides didactic instruction and hands-on experience. Through a series of 5 to 7 one-week sessions, a team of established educators and practitioners convey this unique curriculum. The associated FACE Tx fraternity incorporates a lifetime learning forum for thousands of doctors who have adopted FACE Tx principles to their practices.

The FACE Tx teaching staff builds on each participating clinician’s knowledge base. The full-time faculty—Dr. Jorge Ayala (Santiago, Chile), Jeffrey McDonough (New York, USA), Straty Righellis (California, USA), and Domingo Martin (San Sebastian, Spain)—will manage active private practices and have extensive educational and clinical experience. The teaching faculty comprises considerable years of skills and knowledge to formulate the FACE Tx approach to diagnosis, treatment planning and execution.

Defining Functional Occlusion, Smile Esthetics and Facial Balance

A number of orthodontic disciplines specify functional occlusion as a primary treatment goal, but few articulate its measurement or, for that matter, incorporate gnatho-muscular-tongue (GTM) measurement protocols. Dr. Domingo Martin defines functional occlusion by what it is as well as what it is not. (See above.)

While functional occlusion serves as the foundation for the FACE Tx approach, the discipline further differentiates itself by integrating facial balance with dento-gingival esthetics for a comprehensive approach to diagnosis, treatment planning and execution. Dr. Renato Cocconi and Dr. Micro Raffani, have analyzed the standards for optimal facial balance and dento-gingival esthetics and have quantified the relationship of the inclination of the upper incisors with the alar base and the pedestal of the nose. These elements are important diagnostic findings for the development of specific treatment goals and metrics to assess the esthetic quality of treatment results. Dr. Jorge Ayala has quantified the range of optimal facial balancing elements of various ethnicities, which is essential to strengthening our ability to apply the highest standards of care across various cultures. From this data, he developed the first VTO- and STO-based orthodontic and orthognathic surgery treatment planning systems that incorporate soft tissue. From this research and those practicing orthodontists, along with the other clinicians in the group, comes a refreshing approach to lifelong learning that is not only didactic, but clinically realistic. It can be readily applied to one’s day-to-day practice.

What the FACE Tx Course Teaches

During the comprehensive one- to two-year FACE Tx program instruction, participants develop a solid foundation of knowledge and skills in the following areas that is clinically practical:

• In-depth evaluation of joint function and occlusion
• Mounting models with the most up-to-date instrumentation in simulating patients’ jaw movements
• Latest analytical techniques to assess facial balance and esthetic smile design
• Multidisciplinary case diagnosis and computer assisted treatment planning (VTO)
• Efficient and simple treatment mechanics with self-ligating appliances
• Establishing one’s own interdisciplinary treatment team
• Treatment and practice management strategies and marketing techniques to enhance one’s interdisciplinary network, and
• Knowledge of the type patients one can treat successfully and language to use that will offer patients choices

The FACE Tx teaching faculty shares proven techniques about how to adapt course instruction to clinical practice. There are several keys to successful treatment outcomes:

1) See everything before you begin

Figure 1a-d. The elements of a mutually protected occlusion: (a) optimal overjet and overbite in centric occlusion; (b) right working excursion; (c) right balancing excursion; (d) right protrusive excursion

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Avoiding common problems in tooth extractions

By Dr Kamis Gaballah, UAE

The last two decades have seen significant advances in restorative techniques and materials for dentistry. The latter, along with community-based preventive measures that aim to reduce the incidence of caries, have resulted in many patients living with functional teeth for a longer period. Yet, extraction of teeth forms the considerable bulk of the workload in oral surgeries owing to several factors, including the late presentation of patients with advanced dental disease, the presence of symptomatic impacted teeth, such as third molars, and the need to extract teeth for orthodontic or orthognathic treatment.

The extraction of teeth varies greatly based on the type of patient who is undergoing the procedure. For example, elderly patients with significant co-morbidities and on a complex combination of medications as compared with young healthy individuals render the procedure complicated and require much more preparation with modifications during and after patient management. Additionally, extractions can range from a single, fully erupted tooth with favourable morphology to multiple misaligned, impacted teeth or teeth with challenging morphology. Local anatomy, such as tooth proximity to the nerve, maxillary sinus and tuberosity, also plays a significant role. These variations usually dictate who is to perform the extraction, as many general practitioners deal with less complicated cases of dental extraction in individuals regarded as healthy patients and may not feel comfortable operating on medically complex patients.

Extraction of such individuals may also have broader implications on the type of appliance and treatment that could be selected. For example, individuals with significant co-morbidities may not feel comfortable operating on medically complex patients.

Complex extraction cases have been linked to a higher rate of postoperative complications; therefore, a cautious and systematic approach should be adopted that includes a detailed preoperative assessment to predict the potential difficulties that might arise during extraction. The documentation of all complicating factors along with their potential impact on postoperative morbidities is crucial and should be included in the informed consent. In the following article, other useful tips will be provided that are not usually included in traditional textbooks or lecture notes to help general practitioners to perform safer extractions.

Dr. Righellis graduated from UCLA Dental School and received his orthodontic specialty certification from University of California, San Francisco. He maintains a private practice and is an associate clinical professor at the University of the Pacific and University of California, San Francisco. Dr. Righellis is a diplomate of the American Board of Orthodontics and the American Board of Orofacial Myology. He is on the editorial review board of the American Journal of Orthodontics and is an active member of the American Association of Orthodontists, the American Academy of Orthodontists, and the International Association of Orthodontists.

Figure 2. Because of Ormco’s long history of engineering and production excellence, the instructors of the FACE Tx philosophy have partnered with Ormco for the delivery of an appliance system that meets its requirements — Prodigy SL, an active-passive self-ligating appliance.

The FACE Tx philosophy incorporates comprehensive diagnostic and treatment planning, efficient treatment mechanics and the latest orthodontic advancements for treating each patient’s dental, facial, and gnathological systems. Its aim is to facilitate a collaboration between the goals of orthodontics and comprehensive dentistry that incorporates interdisciplinary coordination.

This approach expands the network of professionals who share principles of tooth positioning and jaw function. Such collaboration greatly strengthens one’s referral base as these colleagues understand the value of the orthodontic specialty and the specific value of FACE Tx. It promotes the viability of the orthodontic specialty through the development and maintenance of viable practices that combine function with beauty. The ultimate aim of FACE Tx is to foster excellence in orthodontic patient care and treatment through education, research, and collaboration.

Studying IDN injury during LM3 extraction

Excessive bleeding into the socket during surgery
Abrupt narrowing of one or both of the white lines
Clinical observation of the bundle during surgery
Displacement of the IDC by the roots

Risk factors for IDN injury during LM3 extraction

Table 1

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Table 2

| Patient’s age | Representing the IDC most of dentists and surgeons |

Avoiding common problems in tooth extractions

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The resistance of hard tissue should be expected, particularly if maxil-
lar third molars are being extracted, as the potential for damage to both the buccal plate and the tuberosity is relatively com-
mon when excessive force is applied with dental forceps. Fracture of the tuberosity may produce irregular sharp bony boundaries, significantly soft tissue lacerations, and potentially an oronasal fistula. If such risk fac-
tors are identified, tooth sectioning should be followed by elevation of roots with dental luxators instead of traditional elevators or forceps, which are known to deliver much higher force to the alveolar bone.

The indicators for the extraction of impacted lower third molars have been the subject of a long-standing debate. Surgical procedures for the extraction of unerupted L3M are aimed at preserving the integrity of the bone. This includes pain, swelling, and the possibility of temporary or permanent nerve damage, result-
ing in altered sensation of the lip, chin, gingiva or tongue. Damage to the inferior dental nerve (IDN) is a well-known complication of surgical extraction of deeply impacted L3M. It should be acknowledged that this is not simply a loss of sensation, the damaged nerve can be responsible for a number of abnormal sensa-
tions, including sharp pain and abnormal response to stimuli, such as the perception of a light touch as a sharp stab. This has a sig-
nificant impact on quality of life for many patients.

Injury to the IDN may occur from complications that may indirectly be triggered by forces transmitted by the root and surrounding bone dur-
ing elevation or directly by surgical instruments, such as elevators. The nerve may also become transected by rotary instruments or during ex-
traction of a tooth whose roots are notched or perforated by the IDN. The risk factors for IDN injury dur-
ing extraction of L3M are shown in Table 1.

Preoperative radiographic investiga-
tions provide intraoral images, such as occlusal radiographs, pan-
oramic views of the jaws, and conven-
tional CT or CBCT scans. It should be noted that risk-predicting signs in radiographs only indicate that there is an increased risk of nerve damage associated with the extraction of the corresponding third molars. However, they cannot actually prevent the nerve injury if the tooth is to be extracted. The effective strategies that may avoid or minimise the risk of injury to the IDN can be collec-
tively categorised into two main sets. The first is the preoperative workflow, which should include critical assess-
ment of the need to extract the third molar, clinical examination and radiographic evaluation, and the sec-
ond is intraoperative measures, including proper selection of local anaesthetic agent, the injection tech-
nique, modification of the surgical procedure and measures to reduce the degree of potential injury to the nerve.

Most literature published in the last decade has given us sufficient evi-
dence to suggest a significant risk of damage to both the inferior dental and the lingual nerve owing to the nerve block procedure.

This injury may be related to the pharmacological properties of the agent itself or the injection tech-
nique. Studies have shown that the lingual nerve is affected approxi-
mately twice as often as the IDN, and one reason for this may be the fasic-
lar pattern of this region where the injection is given. It also appears that about half of patients feel an electric shock sensation during injection. There is a higher incidence of reports of nerve injury after the use of artic-
aine and prilocaine. Although the reason for this remains unknown, it has been suggested that this may be because they are 4 % solutions, whereas the other commonly used phar-
macological properties of the 4 % articaine and 3 % prilocaine. Hence, it is recommended that the use of such anaesthetics be lim-
ited to local infiltration. It has been claimed that needle contact with a nerve felt by the patient as an electric shock is related to injection injury. An obvious explanation is that the possibility of mechanical in-
jury to the nerve is more likely in the case of multiple repeated attempts at the inferior dental nerve block procedure. Therefore, it is crucial that the operator achieve optimal pain control with minimal episodes of injection with minimal doses of anaesthetic agent.

The surgery should be planned ac-
cording to the information obtained from the preoperative assessment process. The procedure itself should aim to minimise the manipulation around the IDN. Both should include the carefully planned access, tooth sectioning and elevation techniques. In many scenarios, the extraction of the whole tooth may carry an un-
avoidable risk of injury to the nerve, therefore intentional retention of the crown using tooth buccal, lingual or occlusal preparations may take place prior to the tooth removal can be largely avoided or minimised through modification of the traditional extraction technique. The first such modification is the use of dental periosteum and luxato-
ners to gently strip the periodontal attachment fibres and widen the socket without causing cracks or fracture of the cortical plates, as commonly encountered when using dental forceps or the bulky elevators. The use of such gentle instruments also eliminates the need for elevation of mucoperiosteal tissue. However, it should be noted that the safe use of these instruments requires adequate training and should be encouraged during undergraduate clinics. Cisl stabilisation through light packing of the socket with collagen sponges may help to minimise clot dislodge-
ment, as well as accelerate the heal-
ing process and bone regeneration.

The second strategy is the alveolar bone preservation procedure. This includes packing the extraction socket with different fillers, such as bone graft or synthetic bone grafting materi-
als, that support the alveolar bone wall, thus preventing their collapse and shrinkage. It should be noted that this intervention can only slow down the post-extraction changes and is not likely to improve the success of the dental implant, but cannot stop them alto-
gether.

Finally, post-extraction care should include an explanation of the heal-
ing process and potential symptoms encountered after such procedures.

The prescription of medications should be limited to non-steroidal anti-inflammatory drugs in most cases and imprudent use of antibi-
otics or socket dressing should be avoided.

Dr Kamis Gaballah
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