INTERNATIONAL ACADEMY OF GNATHOLOGY
AMERICAN SECTION

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The Langham Huntington
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Gnathology is a clinical science based on physics, engineering, medicine and dentistry, with a strong foundation in geometry. It is a rigorous discipline of diagnosis and therapy with respect to the entire stomatognathic system. Required is precise measurement, record making, confirmation, and skillful clinical techniques. The objective is accurate, durable, and predictable dental restorations.

Gnathology has evolved. While equipment, materials and techniques have changed, anatomy, physiology and tooth morphology have not. Gnathology is based on sound dental science. Remarkable progress has been made, from cast clutches to reference plates, from chin point guidance to the Lucia jig and leaf gauge, from multiple remounts to no remounts due to “resolution before reconstruction”. These and other significant changes in the clinical application of gnathological principles over the last 50 years will be discussed. Attendee will learn:

- the importance of TMD resolution before oral reconstruction;
- broad clinical application of the leaf gauge;
- TMD splint therapy… when, why, and how;
- occlusal correction of the natural and restored dentitions;
- instrumentation and articulator selection.
Failing dentitions create some of the more complex and perplexing treatment planning decisions for dentists, whether generalists or specialists. This presentation is designed to address the available evidence regarding the predictability and success of various treatment options for patients with dentitions failing from caries (including caries secondary to xerostomia), periodontal disease (including refractory disease), and wear. A single recurring theme will be articulated: “Identify those patients who are at high risk of disease and treat them differently from those who are not.” A disease control protocol will be provided for those at risk from each disease modality, as well as guidelines for assessing disease control. Finally, a decision tree will be suggested for treating patients whose disease cannot be clinically managed. In addition, participants will be introduced to the concept of levels of evidence and will be empowered to continuously update their own practice protocols based on the best available scientific evidence. Attendees will learn:

• to recognize underlying etiologies for failing dentitions;
• to value levels of evidence in selecting treatment options;
• to create plans for failing dentitions consistent with best evidence.
The infant child is born as an obligate nasal breather which facilitates proper craniofacial development via a natural feeding and breathing pattern. Among the most important and immediate physiologic functions at birth is the maintenance of breathing. This necessary function trumps all other non-autonomic physiologic functions and this reality does not change for the lifetime of the individual; all physiologic systems are influenced accordingly. Sleep disordered breathing, TMD, dental crowding, nocturnal bruxism, diurnal clenching, craniofacial distortions, ADHD, and many other medical sequelae are considered signs and symptoms of the deficient airway in the vast majority of case. A wellness approach to dental health and development is optimal in comparison to disease management of the various associated signs and symptoms. This approach does not obviate traditional dental intervention but rather enhances its delivery by taking a global approach to the many problems the dentist manages on a daily basis. Attendees will learn that:

- worn dentitions can be associated with “constricted airway” versus a “constricted” chewing cycle;
- aberrant craniofacial development is a major TMD risk;
- organic occlusion is related more with airway function than CR;
- airway evaluation is important to dental well-being and function.

**Airway function and dysfunction: It’s relevance to dental and general health**

Dr. Mark A. Cruz
Monarch Beach, California

**11:15-12:30 pm**
Dental implants are frequently used in prosthetic dentistry as a means for providing tooth replacement. However, loading of the dental implant can prove to be problematic unless careful consideration is given to the principles of biomechanical loading. This presentation will discuss the various occlusal schemes and philosophies currently being employed when utilizing dental implants for prosthetic treatment. Fixed and removable occlusal principles will be reviewed for both the partially edentulous and completely edentulous patient population. In addition, immediate loading protocols will be discussed including the indications, as well as, the complications associated with this treatment option. This presentation will also discuss the biomechanical loading differences between the anterior and posterior dental segments. Ultimately, the occlusal design chosen may prove to be the most important factor for the long-term success of the prosthetic restorations that we provide for our patients. Attendees will learn to:

- Identify the various occlusal schemes that are available when treating patients with dental implants.
- Select the appropriate occlusal scheme based on the type of prosthesis to be delivered and the specific function of the patient.
- Understand the principles of immediate loading and the consequences of rendering such treatment.
Ceramic materials have become integral elements of esthetically driven restorative treatment concepts ranging from conservative veneers to full-coverage restorations to full-mouth rehabilitations. High-strength ceramic materials and CAD/CAM technologies are applicable to tooth and implant-supported restorations. This evolution, paired with progressive adhesive dentistry, has shifted traditional treatment paradigms toward more esthetic, less invasive, functional, long-term restorations. CAD/CAM advancements prove beneficial in full-mouth reconstructions, particularly involving dental implants, where accurate fit is fundamentally important. Critical considerations include case selection, treatment planning, and laboratory/clinical handling (preparation, cementation, and resin bonding), all based on the current scientific evidence. This presentation will provide an update on dental esthetics, ceramics, adhesion, and CAD/CAM technology and address guidelines for long-term success with tooth- and implant-supported ceramic restorations. Attendees will learn:

- Characteristics of modern ceramic materials and their indications.
- CAD/CAM technology and its diverse applications.
- Guidelines for successful and long-lasting ceramic restorations, from laminate veneers to full-mouth implant-supported prostheses.
The management of TMD can be quite challenging. Many treatment concepts are not necessarily founded in science, but instead on traditional theories. This presentation will provide evidence base strategies for managing TMD and offer considerations for treatment selection for your patient. The etiology and management of muscle pain disorders and intracapsular disorders will be described. The use of occlusal appliances in managing both muscle pain and intracapsular disorders will be presented. Special emphasis will be placed on determining when occlusal changes may be indicated for your patient with TMD. Attendees will learn:

- six muscle pain disorders that may appear as TMD;
- different types of intracapsular TMJ disorders;
- management rationale for masticatory muscle disorders;
- management rationale for intracapsular TMJ disorders;
- occlusal devices for muscle pain vs. intracapsular TMJ disorders;
- when permanent occlusal changes may be indicated for the patient.
Traditional methods of creating restorations have been replaced by digital processes and are forever changed. The multiple technologies of 3D CBCT imaging, intraoral scanning, laboratory scanning, 3D digital restorative design and CAD/CAM production have contributed to this trend. Simultaneously, restorative materials have been introduced that have improved strength and esthetic qualities. Integration of these capabilities create opportunities for enhanced restorative performance, decreased costs, and practice efficiency.

A practice-based model centered on digitally enhanced treatment will be highlighted. Elements of the digital workflow (digital treatment planning using merged datasets, linked digital workflows, guided implant surgery, CAD/CAM abutment/restorative design) will be presented as new, efficient, and predictable esthetic restorative alternatives. Expanded treatment options with new implant designs will be presented. Success is based on thoughtful application of technology to patient needs. Attendees will learn:

• digital treatment protocols versus traditional workflows;
• digital technologies that enhance treatment outcomes;
• uses and limitations of digital design and CAD/CAM production;
• trends in esthetic implant restorative material and design options.
It is well established that the presence of proper soft tissue quality and quantity is essential for achieving a pleasing smile with a successful prosthesis. Since the majority of patients display a portion of their gingivae in a normal smile, inadequate gingival architecture results in compromised esthetics and will, therefore, require further intervention. The use of various augmentation procedures, as well as gingiva-colored ceramics, have been suggested to address the esthetics in such patients. The purpose of this presentation is to discuss the importance of proper gingival architecture, as well as decision criteria for the use of surgical and non-surgical techniques to enhance the esthetics of our patients. Attendees will learn:

• the esthetic importance of proper gingival architecture;
• indications and timing of graft placement;
• when to opt for gingiva-colored ceramics prosthetics.
The masticatory system functions in a complex, integrated, orthopedic manner. Long-term oral health is dependent on the harmonious function of the dentition, hard and soft tissue supporting structures, TMJ complexes, and the neuromuscular system of the head and neck. A detailed analysis of the various components with an understanding of anatomy, physiology, and neural pathways facilitates case-specific diagnosis and management. Physiologic occlusal function is a key component of orthopedic stability of the masticatory system. A causal relationship between mechanical stresses (occlusal parafunction) has been suggested by many. Forces entering the masticatory system are dissipated through many structures (e.g., TMJ complex), in some cases resulting in maladaptation and/or pathology. Molecular biological factors resulting from excessive mechanical stresses will be highlighted. Etiologic factors of TMD subgroups and their management will be discussed. Attendees will learn:

- multiple deleterious effects of occlusal trauma;
- importance of sleep-related movement disorders such as bruxism;
- mechanisms involved in myogenous and arthrogenous TMDs;
- Physical, pharmacologic, and pharmaco-therapeutic approaches to management of bruxism.
This evidence-based course is designed to provide effective and practical strategies for managing acute dental pain emergencies. The latest information on NSAIDS, acetaminophen-containing analgesics and local anesthetics will be provided with the objective of having immediate application to your next patient emergency. Want to know how to anesthetize that hot tooth? How to predictably manage severe acute pain after surgical or endodontic treatments? How to combine common medications to improve analgesia? This course will answer these practical tips and more using a lecture style that emphasizes interactions with the audience in answering common pain problems with useful solutions. Attendees will learn:

- a fast/efficient routine for managing dental pain emergency patients;
- the best combination of analgesics to manage dental pain;
- effective local anesthesia to the classic “hot” molar case.
Osseous stability of the mandibular condyles is necessary for accurate, esthetic and functional orthodontics and/or orthognathic surgery. Condylar resorption is not a diagnosis but a symptom belonging to several possible diagnoses. Prior to treatment it is important to identify those patients at risk for condylar resorption so that a comprehensive treatment plan can address not just the face, airway and occlusion, but stability of the condyles as well. Pharmacotherapeutics, splints, occlusal equilibration are important tools for reducing inflammation and reducing compression which results in condylar change. Attendees will learn:

- to identify at risk patients before resorption occurs;
- to identify active disease from cone beam CT scans;
- biological pathways responsible for condylar resorption;
- how to influence condylar resorption pathways with pharmacotherapeutics;
- how splints and equilibration decrease compression and reduce inflammation and resorption.

1:30-3:00 pm
Dr. Michael J. Gunson
Santa Barbara, California

Facially generated treatment planning: Orthognathic surgery & TMJ considerations
This clinically oriented discussion compares newly developed ceramic materials and addresses their clinical success. The presentation reviews step-by-step techniques to eliminate cementation problems. It will not deliver instant personal financial success, nor will it promote weight loss, but it will provide an evidence-based approach to controversies surrounding clinical dentistry: how to bond to zirconia, which resin cements are most color stable, what are hybrid ceramic materials, and why zirconia is becoming more translucent. You will understand why ceramic materials and new cements work, rather than hear, “It works for me”. You will see the results of current clinical trials and laboratory studies which will illustrate when and where restorative materials can be used successfully. The presentation is a clinical update. Success with adhesives, ceramic materials, and cements will be demonstrated. This fast paced presentation will improve your selection of dental materials and their incorporation into everyday patient care. Attendees will learn:

- selection of appropriate techniques and materials.
- three ways to bond zirconia - yes you can bond to zirconia!
- ceramic-cement combinations that work.
- which diamond burs cut zirconia most effectively.
Occlusal force distribution patterns recorded with the T-scan computerized occlusal analysis system are clinically valuable. These patterns reflect movement of the center of force as contact is recorded around and within the occluding dental arches during mandibular envelope of function engagement and release cycles. 2-D and 3-D objective force measurements bring subjective articulating paper markings into the digital age, permitting organized and documented occlusal contact diagnoses. Distribution patterns also correlate with intraoral structural damage secondary to microtrauma and friction interferences that interfere with “balanced” occlusion.

Smart sensor movies of occlusal force engagement indicate new paradigms for contact points and lines traditionally seen with articulating paper markings. Force cycle movies organize, sequence, and quantify occlusal contacts into patient specific distribution patterns. This digital articulating paper approach is easy, quick, and transcends current understanding of occlusal contacts. Attendees will learn:

- intensity, sequence and distribution of contacts in digital movies;
- to bring prematurities and bioresistance to equilibrium;
- to interpret a force scan;
- to correlate high force area with craniofacial structural damage;
- a “measure, predict, prevent” approach to occlusal treatment.
IPS e.max has taken the esthetic, functional and restorative world by storm. Zirconium restorations pale in comparison when comprehensively evaluated as a multi-use material. There almost isn’t anything you can’t do with IPS e.max. Veneers, inlays, onlays, crowns, bridges, resin bonded bridges, modification of implant abutments, modification of cast post & cores and even ceramic occlusals for complete and partial denture tooth surfaces are just some of the multitude of uses for this material that will be presented. Also to be addressed is that IPS e.max can be pressed or milled. Restorations can be surface shaded or for ultimate natural esthetics layered with enamel veneering porcelains, and most importantly ingot selection can make or break the final esthetic success. Attendees will learn:

• strengths and weaknesses of a lithium disilicate ceramic material;
• laboratory and clinical procedures to optimize materials properties;
• the multitude of restorative options IPS e.max offers.

Is it enamel or is it e.max? – All-ceramic restorative options