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Osseointegration
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Academy NEWS

A QUARTERLY MEMBER NEWSLETTER

Dental Implants: Maintenance and Long-term care



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ACADEMY NEWS

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President's Message

Implant Dentistry is for All

By Tara L. Aghaloo, DDS, MD, PhD

What does TEAM mean to you? As a member of the Academy of Osseointegration, you often hear about the TEAM approach and interdisciplinary collaboration.

The unique brand of the Academy of Osseointegration facilitates a collective environment of all the specialties. Comprising our membership are some of the best and brightest minds in the field of implant dentistry across all disciplines. In fact, the Academy is relatively split among the specialties with periodontists comprising 31%, followed by prosthodontists at 23%, oral and maxillofacial surgeons at 22%, and general practitioners consisting of 21% of our members.

Each individual brings their own unique brand of expertise to the table. Whether you are a restorative or surgical specialist, in a university environment or part of another collaborative dental team, we all benefit from experiences when each individual acts for the benefit of the group, and the group acts for the benefit of each individual.

If I could leave you with a few main thoughts regarding collaboration, it would be to always be open to and welcoming of other specialists and referrals in your area. While you may not need a specific type of specialist at the moment, maintaining those relationships can be essential for other, more complex cases down the road. In my experience, it has also been important to know yourself and not try to be all things to all people.

An effective flow of communication, coordination, and technological savvy are all part of the formula for successful interdisciplinary collaboration. Educational background and training is certainly also very important. To help you continually increase your knowledge and the types of cases your team treats, there are many opportunities for programming, educational and career enhancement. Bringing all the specialties together under the Academy's umbrella inspires our unique brand of multi-disciplinary resources. These include:

AO DocMatter Community. By now all members should be very familiar with and hopefully engaged in DocMatter, our newest member benefit. This private, members-only discussion platform has already proven to be a wonderful way to network with and learn from your peers across specialty lines.

New Credentialing Programs. Coming very soon, the Academy will be offering new Diplomate and Masters Certification credentialing programs. In this new strategic initiative, the Academy will provide a significant avenue to help its members reach the highest standards in implant dentistry. Details to come!

Vast online learning modules. Every month, the Academy offers several live webinars, a great and easy way to keep up with earning ADA-CERP continuing education credits at your convenience, right from the device of your choice. Additionally as part of your membership, you have access to more than 100 videos of past presentations across a diverse grouping of learning modules.

By its very definition, a team is a group of individuals coming together as a team to achieve a common goal. I believe we can collectively agree that goal is to provide the best possible patient care. No matter the makeup of your team, your Academy has been innovative in facilitating that implant dentistry for all, especially when patient needs are at the forefront of everyone's mind.



Looking ahead to 2022 AO Summit: Controversial trends or long-term results for individual patient outcome

*By Joerg Neugebauer, DDS, PhD, Summit co-chair,
Academy Treasurer, and Academy News Guest Contributor*

Preparations for the next international Academy of Osseointegration (AO) Summit are well underway.

The first online Summit committee meeting was held in June and the selected members have committed their support for creating a new and up-to-date position paper about hot topics in implant dentistry to improve the knowledge of our members.

The international Summit will take place August 10-12, at the same venue as previous summits, the Oak Brook Hills Resort and Conference Center in Oak Brook, IL.

Given positive results with web conferences in the last year, preparation for the Summit is using online meetings to reduce travel and collect the most available scientific information prior to the gathering in 2022. We are pleased to announce that one of our past presidents, AO Life Fellow **Michael R. Norton**, BDS, FDS, RCS(Ed) (London, England), has committed to support our Summit as moderator. His role will be to collect various opinions and clarify any controversies to obtain the best outcomes.

Implant treatment is becoming more and more a commodity in the daily dental office. The expectations of the patients are increasing to receive an intervention without any morbidity and the optimal outcome with an *restitutio ad integrum*. This process is driven by a large number of innovations by various researchers and clinicians on one side and also a strong industry providing the dental devices.

Cost effectiveness and optimal clinical outcome seem to be controversial. These aspects are particularly visible for the flapless and guided surgery, which requires a high amount of armamentarium and time to prepare the case. Ceramic implants show a revival after the first generation forty years ago. To increase the acceptance of the prosthetic treatment many kinds of abutment connections claim to allow an easy and reliable fixation of the superstructures. Due to the high number of innovations, implant treatment should be long lasting. To improve the responsibility of the dentists for the patients we want to evaluate the actual trends and look back for the long-term outcome of the various procedures.



Based on these aspects, the AO 2022 Summit committee has set up the following working groups:

- Flapless and guided surgery
- Ceramic implants
- Implant abutment connection and fixation of superstructures

To acquire the latest scientific knowledge for the Summit, we will analyze actual available literature to get input by the most skilled researchers, which will include specialists from North America and all over the world. Selection of the participants is performed according to the experience with the attendees of the last summits.

We are looking forward to the Academy's next Summit as a great success, with special thanks to my co-chair, AO Immediate Past President, **Clark M. Stanford**, DDS, PhD, MHA and the following committee members:

Tara L. Aghaloo, DDS, MD, PhD (Los Angeles, CA)
Joseph P. Fiorellini, DMD, DMSc (Philadelphia, PA)
Steven E. Eckert, DDS, MS (Byron, MN)
Mehrdad Favagehi, DDS, MS (Falls Church, VA)
Todd R. Schoenbaum, DDS, MS, (Augusta, GA)
Markus B. Blatz, DMD, PhD (Philadelphia, PA)
E. Dwayne Karateew, DDS (Chicago, IL)
Ilser Turkyilmaz, DDS, PhD (New York, NY)



Implant Maintenance – From a restorative point of view

*By AO Fellow Riad Almasri, DDS, prosthodontist and
Academy News Editorial Consultant*

My practice focus is full arch dental implant rehabilitations, and we believe our maintenance program plays a key role in prevention and proper management of prosthetic problems. Failures in implant dentistry aren't only biological, but often prosthetic as well. The aim of this article is to describe our maintenance recall recommendations from a prosthetic viewpoint.

Maintenance recall visit: Data collection

- Comprehensive review of medical and medication histories
- Updating peri-implant charting
- Radiographs of dental implants
- Evaluation of oral hygiene
- Occlusal assessment
- Oral cancer screenings

Maintenance of fixed full arch implant-supported prosthesis

- 1 Removal of the prosthesis
- 2 Clean the prosthesis with the recommended techniques depending on the material.
- 3 Verify the torque of multi-unit abutments; this is done following the manufacturer's specifications. Set the torque driver to the exact recommended value and torque each abutment. This step is done to ensure the abutments are not loose.
- 4 Evaluate the prosthesis for any damage, such as wear for acrylic hybrid prostheses or cracks for zirconia prostheses.
- 5 Place the prosthesis back in the mouth; make sure to follow manufacturer guidelines as when abutment screws must be replaced. In our office, mini-screws are replaced at the fifth maintenance appointment.
- 6 Torque screws to the recommended values and place restorative material over the screw access holes.



Photo published with permission from Nobel Biocare

Maintenance of screw-retained implant restorations such as bridges or single crowns

- 1 Removal of restorative material covering screw access openings for screw-retained restorations
- 2 If tissue inflammation is present, or if heavy plaque buildup is noted, consider removing the restoration for cleaning/polishing outside of the patient's mouth.
- 3 Evaluate the prosthesis for any damage.
- 4 Verify abutment torque; this is done to each manufacturer's specifications. Set the torque driver to the recommended value and torque each abutment. Again, this step is completed to ensure the abutments are not loose.
- 5 Place restorative material over the screw access hole(s).

Maintenance of cement-retained implant restorations such as bridges or single crowns

- 1 Evaluate the prosthesis for any damage.
- 2 Percussion testing is carried out to ensure no problems exist with the restoration. A ringing sound indicates no movement of the crown and a dull sound indicates an issue, such as an abutment needing to be re-torqued.
- 3 Unfortunately, with cement-retained crown and bridge, if a problem exists, the major obstacle is lack of retrievability. Attempting to remove cemented restorations can damage the restorations or implant components in the process. This is one reason to avoid cement-retained prostheses. Another reason for avoiding them is to eliminate the possibility of excess sub-gingival cement contributing to the development of peri-implantitis.



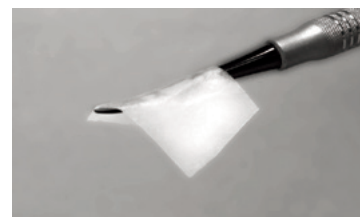
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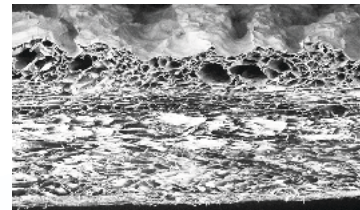
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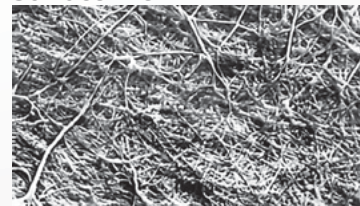
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Leadership in motion: Viewpoint from the Academy's second woman president

Editor's Note: This is the second in an annual series profiling the sitting Academy president. Dr. Tara Aghaloo graciously offered to have a fireside chat with Academy News staff about her career and leading the Academy.

When did you first know you wanted to become a dentist?

I always knew that I wanted a career in health care (especially since my father had ingrained it into my head that I was going to be a physician or a dentist), but at various times I felt that my calling could be either medical or dental. When I found oral and maxillofacial surgery and knew that I could be intimately involved in both, I knew it was the perfect fit for me.

Are there mentors that helped influence your academic and/or career direction?

Absolutely! Mentors definitely shaped my academic interests and overall career path. The term "mosaic mentoring" always resonates with me, where we have different mentors for different aspects of our careers.

As a clinician, I have looked up to **Earl G. Freymiller**, DMD, MD (AO Fellow), oral and maxillofacial surgeon, and division chair of diagnostic and surgical sciences at UCLA. He has been my teacher and mentor since 1994, and I learn something new from him every day.

As a researcher, I have learned from basic science, translational, and clinical investigators. From my PhD mentor, **Sotirios Tetradis**, DDS, PhD, who taught me how to formulate a research question and design experiments to test my hypotheses, to **Vivek Shetty**, DDS, Dr. Med. Dent, who showed me how to be a successful clinical researcher, I learned that my drive was to perform clinically relevant research that would ultimately help the patients who need us most.

How important do you believe the mentoring process is as well as working with students?

The mentoring process is one of the most important aspects of working with students. If our students see us as tired, miserable, and frustrated with our chosen profession, why would they want to join us? We work in the best profession in the world. We help people maintain oral health, present a beautiful and functional face to their personal and professional contacts, and work with the latest technology and materials. What could be more exciting?

We need to share that excitement with our students.

What is it about dental implantology that you are most passionate?

I am most passionate about the regenerative part of dental implantology. Our research and clinical practice will one day allow us to completely regenerate any type of defect that our patients present. Whether they have a congenitally missing tooth where the bone did not develop, have been edentulous for many years with severely resorbed alveolar ridges, have a defect from a tumor, or have lost their teeth from periodontal disease, we must be able to provide all of our patients with long-term functional, esthetic, and predictable implant therapy.

What areas of research are you most involved?

As you can probably see from the last question, the research that I am most involved with is bone healing and regeneration. More recently, I am also focusing on combination defects, since the majority of our patients are missing both hard and soft tissue. Utilizing a tissue engineering approach to regeneration is our present and future. I am especially interested in medically and surgically compromised patients, since as an oral and maxillofacial surgeon, it is very rare that my patients are healthy and have adequate bone and soft tissue to facilitate implant placement.

What brought you from Missouri to UCLA School of Dentistry?

When applying to OMS residency, I interviewed all over the country. I had no idea what type of program I wanted to attend or where I wanted to live. My last interview out of 12 was UCLA. I'm sure everyone who has been on the interview trail knows how grueling it can be. I had already seen several programs that I liked and could see myself going to, so I wasn't sure if I really needed to go to my last (UCLA) interview. I was speaking to my father, and I told him I was tired of traveling and didn't want to go to the last one. He talked to me for over an hour and convinced me to just finish because UCLA might be the place for me. I can't believe how right he was! After meeting the faculty and the residents, and seeing the program and all Los Angeles has to offer, I knew that I had to come here. As I'm sure you can imagine, the rest is history.

Besides your professional capacity at UCLA, are there any volunteer or other projects you're involved in?

Volunteering is actually a big part of my professional life. I have been a volunteer surgeon with the Thousand Smiles Foundation since I was a resident. Our UCLA OMS team travels to Ensenada, Mexico (in my minivan) every three months to treat children with cleft lip and palate. We work with volunteer orthodontists, ENTs, dentists, hygienists, speech pathologists, audiologists, nurses, and students to deliver comprehensive care throughout the life of our patients. We perform their cleft surgeries, including lip repair, palate repair, alveolar bone graft, revisions, and finish up with implants for any missing teeth. It is quite interesting because of course we would all think the cleft lip or palate surgery would be the most impactful of all, but it is often giving a teenager an implant to replace a missing front tooth that the patient is most thankful.

You are the second woman president of the Academy. How significant is this achievement in your career and for women in leadership in the field?

I am truly honored to hold this position, as AO has been a part of my life for over 10 years. As greater than 50% of dental students are women, it is important for them to know that getting involved in organized dentistry is both fun and rewarding. Of course there are unique challenges that women face. Whether it is balancing family and work life, I hope that having more women in leadership positions will inspire others to face them head on and advance the field of implant dentistry.

What are you looking forward to most about leading the Academy this year?

Well, that's an easy question! I'm absolutely looking forward to the Academy of Osseointegration Annual Meeting in San Diego. It's set to be one of the first in-person meetings, and I know we are all looking forward to seeing each other again. I'm starved for live CE and am super excited about the social events. This includes our President's Reception, which we are excited to announce will be held at the USS Midway, named after the climactic Battle of Midway of June 1942. During our annual AO gala, meeting registrants and guests will have full access to the longest-serving aircraft carrier in the 20th century, with activities and fun for the whole family. Watch for details when registration opens this fall.

Is there anything else you would like to add?

I want to say how honored I am to be president of this esteemed Academy and am really looking forward to seeing everyone in San Diego. Our meeting is focusing on implant dentistry for everyone, embracing fundamental and evidence-based principles, improving our current techniques, and looking toward the future with new procedures, materials, and technology.



Call for abstracts closing soon for 2022 Annual Meeting and student travel grants

Dental professionals who present their research at the Academy's Annual Meeting describe it as "A remarkable experience to be among world-class presenters and clinicians" and "A great accomplishment to present my research project at such a keystone meeting in our field."

Every Annual Meeting, nearly 200 abstracts and ePosters are submitted for presentation and recognition. Student and professional researchers are invited to submit their original research and clinical cases in the field of implant dentistry for presentation at the Academy's 2022 Annual Meeting, to be held February 24 - 26 at the San Diego Convention Center, San Diego, CA. Abstracts are being accepted for Clinical Innovations, Oral Research (Scientific and Clinical), and ePosters (Scientific, Clinical and Case Studies). Deadline is October 8, 2021, 11:59 PM (EDT).

In addition, the Osseointegration Foundation (OF), the philanthropic arm of the Academy, is proud to continue the OF Student Travel Grant Program. \$1,000 grants will be awarded to the top 20 scoring Oral Research and ePoster student submitted abstracts of those who apply. Since instituting this program, the OF has provided 70 students the opportunity to present their research at the Academy's Annual Meeting.

The grant is to be allocated toward travel expenses related to attending the 2022 Annual Meeting to assist in paying travel expenses including airfare, hotel and ground transportation. This award is open to both AO student members and student non-members who submit an abstract for the 2022 meeting and are currently enrolled in a dental school program.

The Academy's Research Submissions and ePoster committees will review all submitted ePosters and abstracts. Awards will be presented for the best oral presentations and ePosters during the Academy's Annual Business Meeting on February 26, 2022.



Maintenance recall is important for implants as it is for teeth

By AO Fellow Joseph P. Fiorellini, DMD, DMSc, and Allison Rascon, DDS, Academy News Guest Contributors

Dental implants have been a predictable option to replace missing teeth. The field has also evolved to include more advanced loading protocols, augmentation of deficient bone areas and modification of the implant designs.

These, along with other factors, have led to an expansion in the number of implants placed and the more widespread use by both general practitioners and dental specialists. The importance of proper diagnosis, planning and clinical treatment cannot be understated. Understanding your patient and risks involved are critical for implant success.

Given the inflammatory basis of peri-implant diseases, surgical and restorative clinicians should carefully consider everything from systemic conditions, history of dental diseases, contour, function, and overall cleansability of the prosthesis. More specifically, patient factors including diabetes, history of periodontitis, current periodontal status,

and oral hygiene significantly impact peri-implant health. Clinician attributed factors which have had less discussion, such as implant position and excess cement can also contribute to peri-implant diseases.

As with the natural dentition, a continuum of health to disease has been described with ailing or failing implant status. Typically, this is related to a progressive worsening of clinical parameters such as probing depth, bone loss and pain.

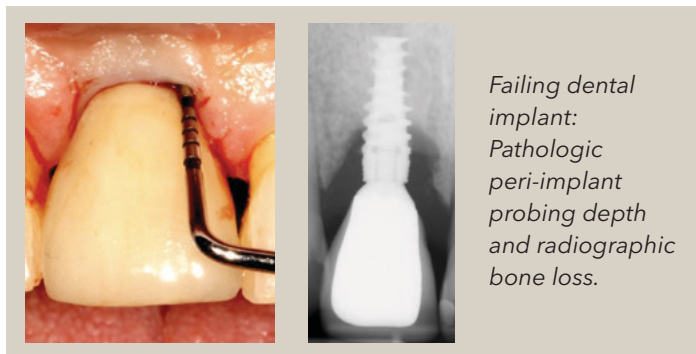
Overall, most studies indicate that a shift occurs from health to disease with regards to the biofilm. The biofilm associated with the diseased dental implant seems to be more pathogenic and somewhat like those in periodontitis, including anaerobic gram-negative bacteria. As the biofilm populations changes and inflammatory response occurs, the practitioner should consider additional measures to monitor clinical changes and/or treat the failing implant. These bacterial changes translate into clinical response.

Studies indicate that the clinician should be aware of the clinical parameters for peri-implant disease and conditions, including perfuse BOP, suppuration, bone loss, and critical implant pocket depth of PD > 5mm. Therefore, the surveillance of implant status is essential and can be assisted by assessment of risk factors, establishment of a proper recall program, and monitoring changes in bone and peri-implant pocket depths.

For example, a healthy patient with no systemic risk factors who loses a tooth due to trauma could have less frequent recall visits when compared to a diabetic smoker who lost teeth due to periodontitis. Supportive implant therapy should include, but is not limited to continuing routine care, radiographic assessment, oral hygiene instruction and constant reassessment of the recall interval. These maintenance periods can be as frequent as every three months or even shorter if necessary.

Regarding restorative considerations, the establishment of the biological width with implant healing has been well documented. Although the dimensions seem to vary when compared to the natural teeth, the formation of an epithelial and connective tissue attachment occurs. The healing also results in the formation of a peri-implant sulcus. Several factors, such as surface characteristics, implant height above the bone level, platform switching, microgap, abutment size, etc. influence the final measurements of the sulcus, epithelial and connective tissue attachments around implants. With the onset of peri-implant disease, these structures begin to migrate apically.

Gingival inflammation can increase the peri-implant pocket and with loss of supporting bone, apical migration of the connective tissue and epithelium occurs. The importance of healthy stable peri-implant tissues is to protect the bone that supports the implant. With the absence of healthy peri-implant tissues, the long-term implant success and survival becomes compromised and less predictable. Clinical studies have



shown that a zone of healthy keratinized tissue, which consists of marginal and attached gingiva, plays an important role in preserving bone around implants.

A professional maintenance recall program that allows for oral hygiene instructions, and plaque control is important in prevention of chronic periodontitis. Similarly, the removal of plaque around peri-implant tissues should be performed as part of a routine periodontal maintenance program to prevent the progression of peri-implant diseases and conditions, and soft tissue augmentation surgery should be performed around dental implants to provide adequate keratinized tissue.

Dr. Fiorellini is professor of periodontics at the University of Pennsylvania School of Dental Medicine and a director on the Academy's Board of Directors. Dr. Rascon is a surgery resident at the University of Pennsylvania.



Scan this QR code and continue the conversation about this topic on the AO DocMatter Community!



Prosthetically and biologically driven implant surgery: Effects on maintenance

By Yong-Han Koo, DDS, Academy News Editorial Consultant

“Begin with the End in Mind.”

– Stephen R. Covey

Implant therapy has been, by far, the most effective treatment modality for restoring patients’ lost oral form and function since Prof. **Per-Ingvar Brånemark**’s serendipitous, yet remarkable, discovery of osseointegration in 1952.

Since then, technological advancements in all aspects of implant dentistry have been astonishing. For instance, digital technology has revolutionized modern dentistry, providing us with efficient workflows and tools for providing faster, safer and more predictable clinical outcomes.

Even with current advancements, complications related to both hard and soft tissues supporting dental implants have become increasingly prevalent. According to a systematic review by **J. Derks** et al., their meta-analyses showed the weighted mean prevalence of peri-implant mucositis and peri-implantitis to be 43% and 22% respectively.¹ **J. Lindhe** et al., reported that greater than 50% of all subjects who received implant restorations endured the negative consequences of peri-implant diseases.²



Fig. 1:
Unhealthy peri-
implant tissues
due to incorrectly
positioned implant.

Photo credit:
AO Fellow Joseph
P. Fiorellini, DMD,
DMSc

Why do we have such a high incidence of peri-mucositis and peri-implantitis?^{1,2}

This is seriously alarming and frustrating for clinicians because we do not currently have a treatment consensus, as these conditions are complex, multifactorial and very difficult to manage. Many clinicians agree that the number one cause of implant failure today is improper positioning of the implant.³ Once an implant is mal-positioned, a cascade of negative events may follow, which affect the long-term stability of the case. Hence, prevention is, indeed, the key to success.

What we all desire to achieve is the ability to predictably produce esthetically and functionally sound, long-term

clinical outcomes. The question is, how do we obtain them predictably? Is there an effective workflow that may significantly reduce the chance of developing implant complications, by maintaining healthy peri-implant soft tissue and bone integration, thereby streamlining the maintenance protocol?

For implant dentistry, a “Begin with the End in Mind” approach can be translated to “Prosthetically and Biologically Driven Implant Surgery.” If we can clearly define the long-term stability criteria, both surgically and restoratively (see below), and execute them as precisely and accurately as possible, only then can we control the variables affecting the outcome and establish a consistent maintenance strategy.

Long-Term Stability Criteria:

- 1 Placement of a 3-dimensionally sound dental implant based on an ideal restorative plan³⁻⁵
- 2 Minimum 2 mm of buccal bone thickness⁶⁻⁸
- 3 Minimum 2 mm of keratinized attached soft tissue⁹⁻¹⁴

Dr. Koo is Diplomate of the American Board of Oral & Maxillofacial Surgery. References are available via QR code:



Dental implant maintenance checklist

By Lourdes Ann Christopher, DDS, MS, Academy News Editorial Consultant and Mehrdad Favagehi, DDS, MS, Academy News Editor

Developing a checklist for dental implant maintenance may be helpful for you, your hygienist and staff during a maintenance recall visit by your implant patient. Every clinician should develop or adopt a checklist that suits their patients and practices. Below is a checklist we've adopted in our periodontal practice.

Medical History:

- ☐ Update medical history. Special focus: smoking, diabetes (diabetic: document A1C-glycosylated hemoglobin %), (non-diabetic: ask screening questions).
- ☐ Investigate osteoporosis; discuss bisphosphonates and implants with patient and their physician.
- ☐ Identify conditions directly or indirectly associated with immune-suppression: Asthma, HIV, lichen planus, lupus, rheumatoid arthritis, SARS COVID-19. Evaluate for addiction, malnutrition, TMJ/Myofascial pain/Migraine headaches, and xerostomia.
- ☐ Identify patients with cardiovascular risk or conditions related to perio-systemic link. Diagnosis and management of peri-implantitis and periodontal inflammation may be beneficial to overall health and reduction of the risk for cardiovascular accidents such as myocardial infarction or stroke.
- ☐ Pregnancy (avoid elective treatment 1st and 3rd trimester).
- ☐ Chemo/radiation cancer treatment patients are at risk of developing periodontal/peri-implant problems.
- ☐ Identify patients with conditions requiring antibiotic prophylaxis.
- ☐ Update list of allergies.

Medication history:

- ☐ Ask for a list from patient prior to their visit as patients may forget some medications. Consider using e-prescription software to seek exact meds history from pharmacies.
- ☐ Focus on meds that can affect bone such as bisphosphonates (warning: IV bisphosphonates), anti-metabolites, steroids.
- ☐ Meds that are associated with gingival over-growth (Ex. Calcium channel blocker hypertension meds, anti-seizure med: Phenytoin (Dilantin), immune-suppressants: cyclosporine) may contribute to gingival overgrowth and inflammation around implants.
- ☐ Selective Serotonin Uptake Inhibitors (SSUI): According to the 2018 AO Summit, there is some evidence indicating they may increase the risk of implant failures. The data is more powerful in regard to adverse effects on Calcium absorption and increased risk of implant failures with Proton Pump Inhibitors (PPI are widely used to manage different GI conditions).

Dental history:

- ☐ Keep track of dental problems and treatment. Document complaints about loose restorations, food impaction, halitosis, dry-mouth, oral hygiene habits.

Clinical examination of implants:

Update overall dental and periodontal charting.

- ☐ Suppuration: May be an important sign of peri-implantitis. Indicates active inflammation.
- ☐ Bleeding on probing, edema, sensitivity, tissue redness, swelling and Inflammation: Take x-rays to determine peri-implant mucositis or peri-implantitis.
- ☐ Probing around implants is recommended by the AO 2018 Summit. It used to be controversial due to problems with having the correct probe angle and potential over probing beyond the fragile epithelial attachment around implants. But more and more experts, including AO guidelines from 2018 recommend probing to establish a baseline and to monitor changes over time.

Mobility

- ☐ Check for any mobility of implant restorations. Often mobility is due to loose abutment screw of the restoration. Torque screws as soon as

possible to avoid metal-fatigue of restorative /implant components to avoid fractures.

- ☐ Mobility of implant fixture itself demonstrates implant failure and it's often confirmed with radiographs.

Restoration

- ☐ Assess the integrity of the restorations: reseat composite resin restorations filling screw access channels if needed. If composite resin cover of implant screw channel is lost and needs to be replaced, use the opportunity to remove restoration and disinfect/clean/polish outside the mouth. If screw retained restorations have sign of scratches in the gingival collar area (metal scalers, etc.), consider sending to lab for high polish.
- ☐ Consult restorative dentist about replacing cement retained restorations with screw retained restorations, if there are problems with cement that can't be managed properly or persistent inflammation noted due to cement/open margins, etc.

Peri-implant tissue muco-gingival evaluation

- ☐ Identify muco-gingival stress: pull lip to see if marginal tissue moves around implant.
- ☐ Measure attached gingiva around implants (muco-gingival line to gingival margin minus probing depth).
- ☐ Consider muco-gingival surgery including soft tissue graft if attached keratinized gingiva is inadequate.

Radiographs:

- ☐ Frequency depends on unique patient condition. In general, consider annual bite-wings and peri-apical x-ray of implants.
- ☐ In case of peri-implantitis: consider Cone Beam CT scan to assess implant position, and more precise view of the extent of bone loss to determine prognosis and management.

Occlusion:

- ☐ Restored teeth/implants wear at different rates than natural teeth: occlusal analysis and adjustments prn.
- ☐ Occlusal guard is recommended for all patients with implant restorations.

Oral hygiene:

- ☐ Electric brush is encouraged.
- ☐ Sub-gingival flossing around implants should be done very gently. Caution patients about sub-gingival flossing with exposed implant surfaces of rough surface implants. Floss material may become trapped.
- ☐ Help patient find appropriate sized inter-dental brushes, encourage rubber tip gingival stimulators
- ☐ Water irrigation devices may help reduce materia alba and plaque formation, but once plaque is formed, mechanical removal is needed.

Prophylaxis

- ☐ Use rubber cup polishing and interdental plastic brushes.
- ☐ Use plastic instruments and plastic tips for ultrasonic/ piezoelectric scalers.

Recall interval and alternating maintenance recall schedules

- ☐ 3- 6 month maintenance recall is recommended based on unique patient needs.



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*References: Accuracy of Edentulous Computer-Aided Implant Surgery as Compared to Virtual Planning: A Retrospective Multicenter Study; R. Vinci, M. Manacorda, R. Abundo, A. G. Lucchina, A. Scarano, C. Crocetta, L. Lo Muzio, E. F. Gherlone, F. Mastrangelo; J Clin Med. 2020 Mar 12;9(3):774. doi: 10.3390/jcm9030774 // Clinical Factors Affecting the Accuracy of Guided Implant Surgery - A Systematic Review and Meta-analysis; Wenjuan Zhou, Zhonghao Liu, Liansheng Song, Chia-Ling Kuo, David M Shafer; pubmed.gov; Epub 2017 Jul 22



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OF slates new board, increases research grant opportunities

The Osseointegration Foundation had some additional adjustments in its final 2021-2022 slate of officers and directors since gaining approval by the Academy of Osseointegration (AO) board of directors at its October 2020 meeting.

As a result of one officer position becoming vacated due to retirement, one current officer and director were elevated to new officer positions, which in turn additionally created the need for one new at-large director to be elected. According to OF bylaws, the AO board has the responsibility to approve any board changes. With all the adjustments in place, the final OF Board of Directors for the 2021-2022 year is as follows:

President: **Wendy M. Croll Halpern**, DMD, periodontist, Flourtown, PA

Vice President: **Andrea L. Henderson**, DDS, prosthodontist, Los Angeles, CA

Secretary/Treasurer: AO Life Fellow **Russell D. Nishimura**, DDS, prosthodontist, Westlake Village, CA

Past President: **Edward A. Marcus**, DDS, periodontist, Yardley, PA

At-large Directors:

AO Fellow **Clark M. Stanford**, DDS, PhD, MHA prosthodontist, AO Past President, Chicago, IL

Franck Renouard, DDS oral and maxillofacial surgeon, Paris, France

Hans-Peter Weber, DMD, prosthodontist, Quincy, MA

Mehrdad Favagehi, DDS, MS, periodontist, Falls Church, VA

Nipul Tanna, periodontist, DMD, MS, Drexel Hill, PA

In other news, the Foundation increased the amount of two of its existing annual grants as a result of proposals brought forth by the AO/OF Research Grant Committee. Due to the need for added funding to attract and support more highly qualified studies, the OF Board voted to increase the Applied Science and Basic Science grants from \$30,000 to \$50,000. In addition, the Foundation approved the development of a new Restorative Research grant, which will fund up to \$50,000.

On a related note, the Foundation and AO/OF Research Grant Committee are pleased to announce the following recipients:

Basic Science Grant

"Strategies for Improving Peri-implant Bone Repair in Osteoporotic Bone Using Novel Additive Manufacturing and Drug-delivery"

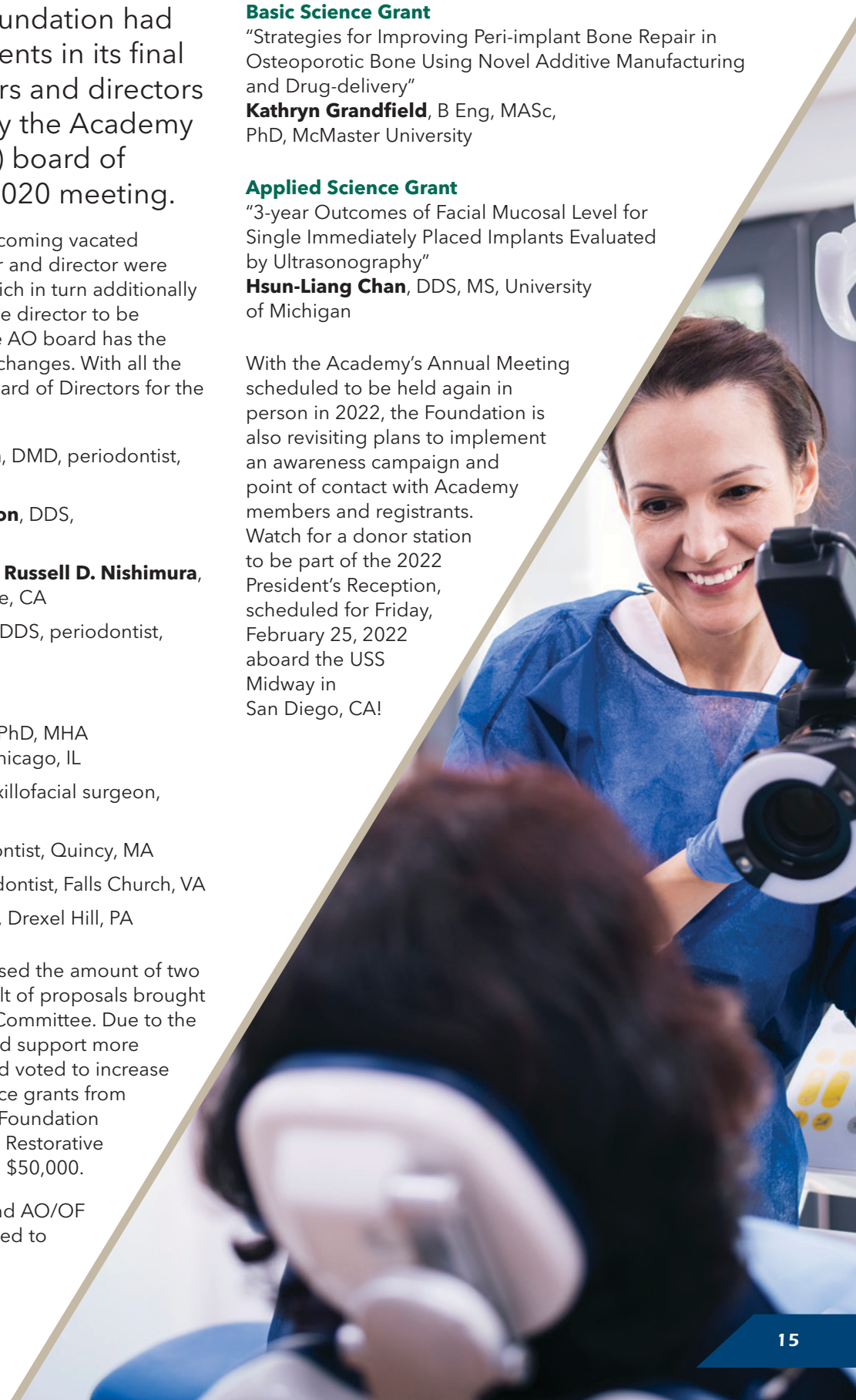
Kathryn Grandfield, B Eng, MASc, PhD, McMaster University

Applied Science Grant

"3-year Outcomes of Facial Mucosal Level for Single Immediately Placed Implants Evaluated by Ultrasonography"

Hsun-Liang Chan, DDS, MS, University of Michigan

With the Academy's Annual Meeting scheduled to be held again in person in 2022, the Foundation is also revisiting plans to implement an awareness campaign and point of contact with Academy members and registrants. Watch for a donor station to be part of the 2022 President's Reception, scheduled for Friday, February 25, 2022 aboard the USS Midway in San Diego, CA!



Number of AO Outstanding Dental Student awardees approaches 850

Since 2005, the Academy of Osseointegration (AO) has recognized nearly 850 students around the United States with an Outstanding Dental Student in Implant Dentistry Award, including 53 students from the Class of 2021.

The award provides dental students with recognition among their peers and a head start on joining the professional field of implant dentistry. Nominated by their respective schools, each student receives a free year of AO membership, a complimentary subscription to the *International Journal of Oral & Maxillofacial Implants (JOMI)*, \$500, and a certificate. Additionally, these selected students receive a complimentary registration to AO's 37th Annual Meeting set for February 24 - 26 in San Diego, CA. Congratulations to the following 2021 awardees!

Abbey Michele Allen

University of Missouri-Kansas
City Kansas City School of
Dentistry

Chau T. Banh

University of Oklahoma
College of Dentistry

Therin J. Baum

University of Nebraska Medical
Center College of Dentistry

Eric M. Bender

University of Pittsburgh School
of Dental Medicine

Colby T. Bradford

University of Alabama at
Birmingham School of
Dentistry

Loredana Calce

Stony Brook University School
of Dental Medicine

Mia Carlone

University of Connecticut
School of Dental Medicine

Suzie H. Choe

University of Maryland School
of Dentistry

Hye Soo Chung

Harvard University School of
Dental Medicine

Ji Yeon Chung

Loma Linda University School
of Dentistry

Joe Clements

University of Washington
School of Dentistry

Kelly Cusack

Southern Illinois University
School of Dental Medicine

Ashton Graham Dahms

A.T. Still University Arizona
School of Dentistry & Oral
Health

Erika J. Elliott

University of Michigan School
of Dentistry

Catherine El Hadi

University of Detroit Mercy
School of Dentistry

Emily G. Farris

Virginia Commonwealth
University School of Dentistry

Eric Feichtinger

University of Colorado School
of Dental Medicine

Cecil Fruge, III

Louisiana State University
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Adit Gadh

Tufts University School of
Dental Medicine

Christopher Gagnat

A. T. Still University Missouri
School of Dentistry & Oral
Health

Nivia Grajeda

UT Health San Antonio School
of Dentistry

Riley Gray

University of Iowa College of
Dentistry

Sydney Hoffman

Oregon Health and Sciences
University School of Dentistry

Luan Huynh

Univ. of Texas at Houston
School of Dentistry

Jamine C. Ifedi

University of North Carolina at
Chapel Hill School of Dentistry

Robert Iulo

Medical University of South
Carolina James B. Edwards
College of Dental Medicine

Maryam Keikhosro Kiani

Midwestern University College
of Dental Medicine

Brady J. Kimball

Creighton University School of
Dentistry

Wangsoo Lee

Case Western Reserve
University School of Dental
Medicine

Kevin B. Magana

University of the Pacific Arthur
A. Dugoni School of Dentistry

Rekha Manoharan

University of Pennsylvania
School of Dental Medicine

Mustapha Mansuri

University of Minnesota School
of Dentistry

Suzanne Raad McShane

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Dental Medicine

Dallas L. Montag

Ohio State University College
of Dentistry

Wilson B. Moses

University of Mississippi School
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Minh Chi Nguyen

Nova Southeastern University
College of Dental Medicine

Teresa Nguyen

University of Southern
California Herman Ostrow
School of Dentistry

Jamie R. Progebin

University of Louisville School
of Dentistry

Dylan G. Qualls

University of Tennessee, Health
Sci Ctr. College of Dentistry

William T. Ruch

Temple University Kornberg
School of Dentistry

Alexander Todd Sabitoni

Boston University Henry
Goldman School of Dental
Medicine

Angela Christine Schmidt

Marquette University School of
Dentistry

Stephanie Schreiber

University of Illinois at Chicago
College of Dentistry

Daniel Soto Soto

University of Puerto Rico -
School of Dental Medicine

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Dental Medicine

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Cynthia Udeh

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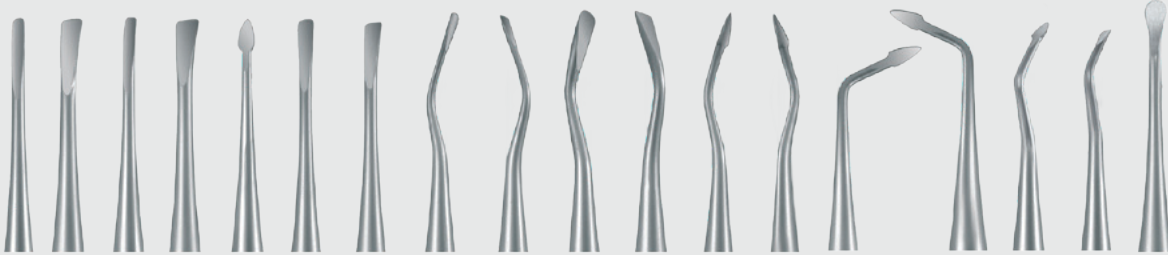
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Academy News partners with AO DocMatter to extend articles online

We have heard your requests to be able to ask questions, make comments, and otherwise interact with the Academy News authors. Authors, we've heard your requests to go beyond the traditional bounds of the printed paper and go into more detail on your articles.

Now you can.

We would like to bring your attention to an exciting innovation within the Academy's communication channels: beginning with this edition of *Academy News*, select articles will be selected for expansion and discussion within the AO DocMatter Community.

Please be on the lookout for articles in that will be co-hosted by *Academy News* and the AO Member Community on DocMatter - you will be able to tell which articles cross over by the QR code on the page with the DocMatter logo banner on the page that says: "*Academy News* - Now in the AO DocMatter Community!"

In this addition, our first article bridging the gap between *Academy News* and DocMatter is “Maintenance recall is important for implants as it is for teeth” on page 10, co-authored by *Academy News* Guest Contributors AO Fellow **Joseph P. Fiorellini**, DMD, DMSc, and **Allison Rascon**, DDS.

This collaboration between *Academy News* and the AO Member Community is the first of many ways we will be taking advantage of the two-way learning environment provided by the AO DocMatter Community to extend the lifespan of AO educational offerings and give you behind-the-scenes access to the dental implant experts.

New AO Credentialing: A sneak preview!

Coming very soon, the Academy will be offering new Diplomate and Masters Certification credentialing programs.

This new strategic initiative by the Academy and a new AO Credential Board Committee will provide a significant avenue to globally promote high quality implant education, and enhance patient care through well-educated implant practitioners. Through this new structured curriculum, participants would be able to attend AO approved domestic and international training centers, as well as affiliated universities to further their implant education.

Stay tuned for details!

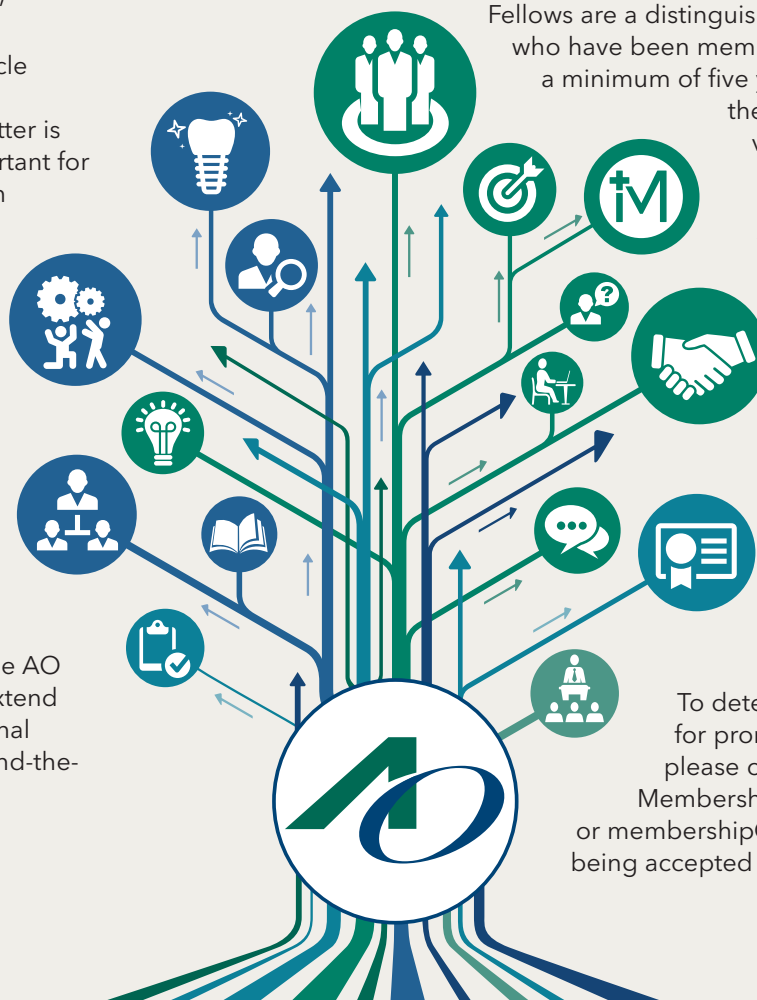
AO Fellowship provides prestigious level of membership recognition!

Have you considered applying for Fellowship in the Academy of Osseointegration?

Fellows are a distinguished group of individuals who have been members of the Academy for a minimum of five years and contributed to the field of implant dentistry via service to AO and other organizations.

As a Fellow, your member benefits continue at the highest level. You are recognized in front of your peers at the Annual Meeting and receive a Fellow Certificate to display in your office. In addition, Fellows receive priority registration for the Academy's Annual Meeting and become eligible to serve in leadership positions.

 To determine if you are eligible for promotion to Fellowship, please contact Amanda Wiff, AO's Membership Manager at 847-725-2267 or membership@osseo.org. Applications are being accepted through November 30, 2021.



Achieving Long-Term Success in Osseointegration with Maintenance Driven Implant Dentistry

By Mehrdad Favagehi, DDS, MS, Academy News Editor

Prof. **Per-Ingvar Brånemark** started modern osseointegration as a last resort to help the “dentally crippled:” fully edentulous patients with severe mandibular atrophy, for whom there was no other prosthetic solution. Success was achieved when titanium implants anchored in bone provided retention for fixed prosthesis.

Our criteria for success had to be extended beyond successful osseointegration to include proper implant placement as implants became the standard of care for replacing teeth even in the aesthetic zone.

A new approach was adopted: Restoratively-driven implant surgery revolutionized implant dentistry. It transformed implant dentistry as it redefined success. Instead of placing implants in existing bone and having restorative dentists struggle to fit restorations to implants, grafting and tissue regeneration were used to develop ideal implant sites to facilitate restoratively-driven implant surgery. CT guided surgery and advances in the digital workflow advanced restoratively-driven implant dentistry further, by eliminating guess work, thereby reducing positioning errors. Osseointegration has come a long way in the past 50 years; however, we still have a problem: peri-implantitis.

Approximately one out of five dental implants have been reported to have the chronic inflammatory condition associated with progressive bone loss, which we refer to as peri-implantitis. Peri-implantitis cannot be disregarded, as we strive to achieve long-term success in implant dentistry.

Fortunately, we have come to know much about the risk factors involved in the etiology of peri-implantitis: Smoking, medical issues such as uncontrolled diabetes, retained dental cement, history of severe periodontitis, poor oral hygiene, inadequate attached gingiva for a proper peri-implant soft tissue seal, ill-fitting restorations, bone loss, contaminated exposed rough implant surfaces, traumatic occlusion, etc.

Many of these issues and risk factors can be recognized and prevented with proper diagnosis and planning. However, our efforts shouldn't end there.

Long after an implant has been restored, we still have the responsibility to prevent prosthetic or biological failures such as peri-implantitis through careful monitoring of implant patients during frequent maintenance recall visits. Patients can be kept out of trouble by checking their medical histories, as we screen for diabetes or smoking and advocate a healthy lifestyle or performing

occlusal adjustments and providing occlusal guards. Mucogingival defects and inadequate gingival tissues can be treated with mucogingival surgery, ill-fitting restorations, food impaction sites or retained cement can be addressed by removing and cleaning screw-retained restorations or by modifying or remaking restorations, as needed.

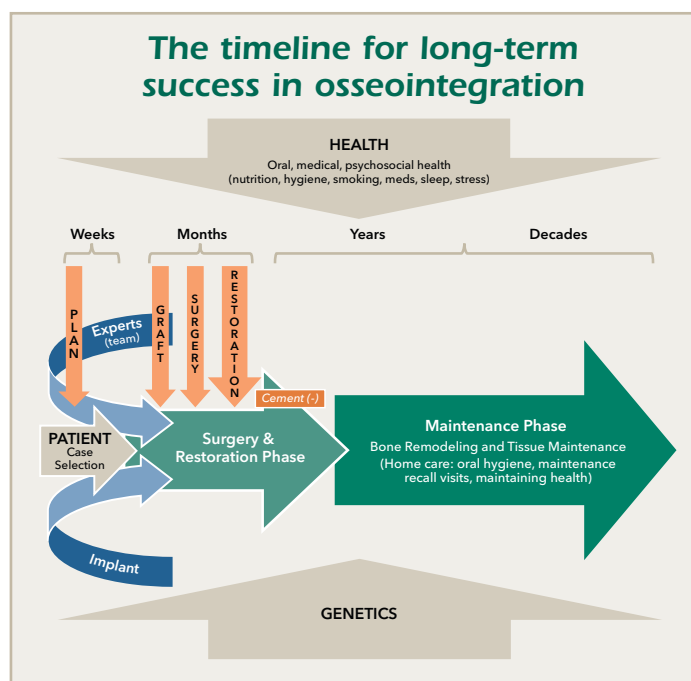
As Dr. Koo discussed in his article on page 12, restoratively driven dental implant treatment changed our approach to surgical planning by starting from the end first: planning the restoration before surgical planning starts. Similarly, a maintenance driven

approach will prompt us to develop a maintenance plan early on, before the surgical and restorative plans are finalized. The combination of the two approaches will allow us to achieve long-term success in osseointegration.

The Editor's Editorial is intended to contribute to the dialogue on issues important to implant dentists. The views expressed in the editorial do not necessarily reflect the policy of the Academy of Osseointegration or its board of directors. To provide feedback about this edition, or to contribute as a guest author, please contact me at mfavagehi@yahoo.com. We will endeavor to publish pertinent comments or views when space permits.



Dr. Mehrdad Favagehi

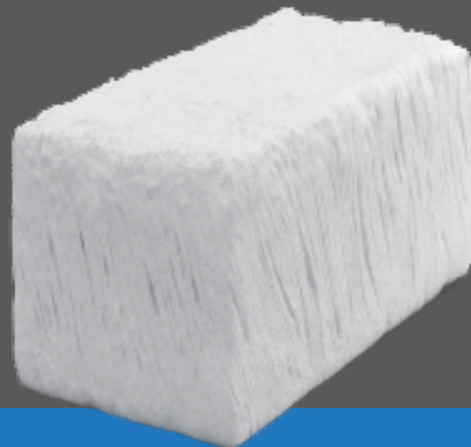


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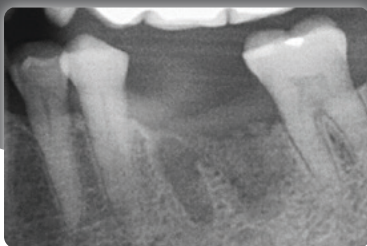


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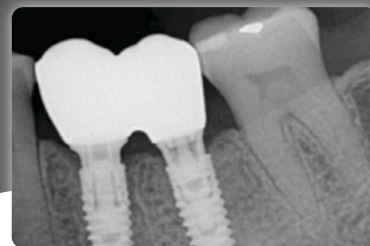
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Academy welcomes 235 new members

The Academy of Osseointegration (AO) is pleased to welcome 235 new Active, Associate, International Affiliate, and Student Members who joined between August 2020 and August 2021. The Academy has approximately 4,000 members in more than 70 countries around the globe.

Active Members

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Francis Jones, DDS, MBA, PhD
Alan Jacob Jurim, DDS
Zinaida Kaleinikova, DMD, MS
Maryam Keikhosro-Kiani, DMD
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Ghadeer Thalji, DDS, PhD

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Shih-Cheng Wen, DDS, MS

October 20

Use of Short Implants in Clinical Practice: Evidence Based Guidelines

Andrea Ravida, DDS

November 3

Dental Practice Management

Emilio Arguello, DDS, MS

November 18

Soft Tissue Surgeries Around Dental Implants

Edward Shih-Chang Tseng, DDS, MS

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Konrad Meyenberg, DMD

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