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A QUARTERLY MEMBER NEWSLETTER

The state of dental implant education



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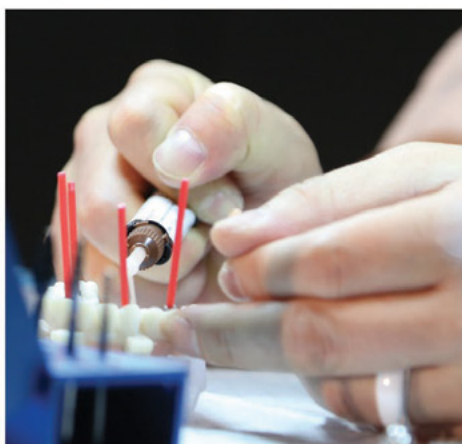


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July 26-27, 2024



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ACADEMY NEWS

Academy of Osseointegration
85 W. Algonquin Road, Suite 550
Arlington Heights, IL 60005
847.439.1919

Editor

Mehrdad Favagehi,
DDS, MS

Board Liaison

Joseph P. Fiorellini,
DMD, DMSc

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AO's vital role in developing knowledge base for implant clinicians

By AO Fellow Joerg Neugebauer, DDS, PhD

Implant dentistry has advanced to become an increasingly popular treatment option all over the world for replacing missing teeth. But not all areas of our profession have moved in the same or even similar direction to adopt the latest developments in implant dentistry.

The mission of the Academy of Osseointegration is to serve and support members in their efforts to advance the science and best practices in implant dentistry. Keeping this in mind, we have to think about how we should manage our knowledge in implant dentistry. In the last four decades, we've accumulated a large amount of knowledge about how to achieve successful outcomes. For a successful treatment, "correct" surgical placement and restorations are essential. But what exactly defines "correct"?

During the evolution of various treatment concepts, the parameters for the evaluation of correctness have improved. Today we have many different surgical and prosthetic treatment options based on various concepts. Sometimes these concepts are controversial and sometimes the differences are minimal. Judging what is correct or false has become more and more difficult, especially from a universal or international viewpoint. Each practitioner bases their best practice decisions on their individual level of knowledge. But is their knowledge base adequate for making the best decision for their patients?

The dental landscape has changed in recent years. More and more dentists work in larger organizations and sometimes they must base their treatment decisions on strict guidelines by their employer or organizations they trust or have to trust.

In this new dental practice environment, clinicians need to have access to the best and latest evidence-based information to update their knowledge base so that they can provide their patients with the best treatment.

The Academy provides its members invaluable content for making the best evidence-based decisions that reflect the cutting edge of implant dentistry. The large amount of information can be realized if you look to all issues of its premier journal, *The International Journal of Oral & Maxillofacial Implants (JOMI)*, which is in its 39th year or *The International Journal of Periodontics & Restorative Dentistry (IJPRD)*, which is in its 44th volume. This printed information is expanded by the e-learning possibilities

via AO's website with webinars, ePosters at every Annual Meeting, and the summaries of the recent best evidence-based AO summits.

AO is an organization which is not limited to any specialty and is open for all the different specialties and groups in implant dentistry. The robust, multi-disciplinary exchange of information among the various groups that form our organization is available to all of our members for the benefit of their patients.

The Academy is looking at how it can take its leadership role in developing implant dentistry in the future, not only in North America, but also through its global international task force. We have increased our collaboration with other leading organizations through alliances. The trans-Atlantic Osseo Alliance between AO and the European Academy of Osseointegration (EAO), and the upcoming joint peri-implantitis consensus conference between AO and the American Academy of Periodontology (AAP) are examples of new partnerships that allow AO to continue its leading role in implant dentistry.

AO also offers the Master and Diplomate Certificate Program, which fosters continuous education at different levels and also different certifications.

AO members all over the world can rely on the many resources assembled by AO to increase their knowledge base of implant and provide the best implant treatment for their patients.



Dr. Joerg Neugebauer

Dr. Joerg Neugebauer takes helm of AO as 38th president

Joerg Neugebauer, DDS, PhD, an oral surgeon from Landsberg Am Lech, Germany, recently became the Academy of Osseointegration's (AO) newest president at the organization's Annual Business Meeting in Charlotte.

As the Academy's 38th President, Dr. Neugebauer succeeds **Hom-Lay Wang**, DDS, MSD, PhD at the helm of AO. "It gives me great pleasure and with strong confidence that I pass the gavel to our incoming president, Dr. Joerg Neugebauer. I know that his enthusiasm, perspective and leadership will keep our Academy forging ahead," said Dr. Wang as he passed the presidential gavel.

"I'm looking forward to my presidency and want to continue the work of Hom-Lay and our team to have success at our meeting in Seattle and also in all of AO's initiatives. Now it is time to raise our large amount of knowledge so we can increase implant dentistry to the next level and the next level in patient care," said Dr. Neugebauer.

He continued, "If you look to AO, we have an organization that is not limited to any specialty. It is open to all groups in implant dentistry. So we have an exchange among all the working groups treating one patient. This is also reflected in our very strong committee structure where we are looking at how we can develop implant dentistry in the future around the globe."

"In these disruptive times, it is important for our leaders to recognize that it is always better to work together and cooperate. Working together, we are always stronger," Dr. Neugebauer concluded.

As part of AO's Annual Business Meeting, AO delegates elected two new directors: **Harriet K. McGraw**, DDS; and **Bach T. Le**, DDS, MD, as well as elevated director **Jeffrey Ganeles**, DMD, to treasurer.

A general dentist who has practiced in Harbor Springs, MI for more than 30 years, Dr. McGraw has been an AO member since 2005, most notably as editor of *Academy News* and as a member of the Osseointegration Foundation board of directors. Dr. Le has been in private

practice in Whittier, CA since 2000 as well as clinical associate professor of Oral & Maxillofacial Surgery at the Herman Ostrow School of Dentistry at USC. He has been an AO member since 2008. Dr. Ganeles, a Boca Raton, FL, periodontist, was elected to the AO Board of Directors in 2018. He has been a member of the Academy since 1990.

The full AO board for 2024-2025 will be:



The Academy's 2024-2025 Board of Directors includes (front row, left to right): Drs. Joseph P. Fiorellini, vice president; Hom-Lay Wang, immediate past president; Robert C. Vogel, president-elect; Joerg Neugebauer, president; Jeffrey Ganeles, treasurer; and Joseph Y.K. Kan, secretary; and directors (back row from left): Drs. Robert R. Lemke, Harriet K. McGraw, Daniel I. Taub, Lambert J. Stumpel, Robert A. Levine, Bach T. Le; and Executive Director Kevin P. Smith.

Officers

President

AO Fellow **Joerg Neugebauer**, DDS, PhD; an oral surgeon from Landsberg Am Lech, Germany

President-elect

AO Fellow **Robert C. Vogel**, DDS; a general practitioner from Palm Beach Gardens, FL

Vice President

AO Fellow **Joseph P. Fiorellini**, DMD, DMSc; a periodontist from Philadelphia, PA

Treasurer

AO Fellow **Jeffrey Ganeles**, DMD; a periodontist from Boca Raton, FL

Secretary

AO Fellow **Joseph Y. K. Kan**, DDS, MS; a prosthodontist from Loma Linda, CA

Immediate Past President

AO Fellow **Hom-Lay Wang**, DDS, MSD, PhD; a periodontist from Ann Arbor, MI

Directors

Robert M. Lemke, DDS, MD; an oral and maxillofacial surgeon from San Antonio, TX

AO Fellow **Lambert J. Stumpel**, DDS; a general practitioner from San Francisco, CA

AO Fellow **Robert A. Levine**, DDS; a periodontist from Philadelphia, PA

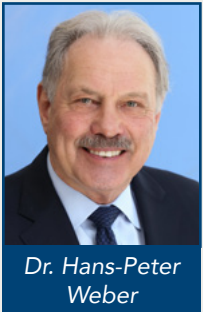
AO Fellow **Daniel I. Taub**, DDS, MD; an oral and maxillofacial surgeon from Philadelphia, PA

Harriet K. McGraw, DDS; a general practitioner from Harbor Springs, MI

Bach T. Le, DDS, MD; an oral and maxillofacial surgeon from Whittier, CA

OF board slate set for 2024-25

The officers and directors for the Osseointegration Foundation (OF) have been selected, as approved by the Academy of Osseointegration (AO) Board of Directors at its March 2024 meeting.



With **Hans-Peter Weber**, DMD elected as president, the OF's slate also includes the addition of two new directors, **Amerian D. Sones**, DMD, MS and **Robert J. Miller**, DDS. The appointment of Dr. Sones, AO past president, Fellow and AO Diplomate will help maintain continuity of an AO board presence on the OF board, and also expand her influence and continued leadership in the OF Education and Research Naming

Funds. Dr. Miller, a member since 2002, served as a member of the Clinical Innovations Committee since 2003, including as chair for the past three years. He is also an AO Fellow and AO Diplomate.

Dr. Weber has previously served as a Professor and Chair of the Department of Prosthodontics at the Tufts University School of Dental Medicine and the Department of Restorative Dentistry and Biomaterials Science at Harvard. He is now a Professor Emeritus at Tufts. Since retiring from full-time academic dentistry, he has provided dental implant and prosthodontic care at Boston Prosthodontics Dental Group.

Born in Switzerland, Dr. Weber earned his first dental degree at the University of Bern. He then went on to receive his specialty certificates in prosthodontics and periodontics there as well. After coming to the U.S. in 1987, he obtained his DMD from the Harvard School of Dental Medicine.

In the past year, the Osseointegration Board of Directors is pleased to have been able to provide \$175,000 in funding for the following:

- Charitable Grant Program
- Student Travel Grants
- Nobel Biocare Brånemark Osseointegration Award
- Osseointegration Foundation Translational and Clinical Science Research Grant
- Osseointegration Foundation Restorative Research Grant
- Osseointegration Foundation Basic Science Research Grant



The OF's 2024-2025 Board of Directors includes (front row, left to right): Drs. Hans-Peter Weber, president; Russell D. Nishimura, past president; and Mehrdad Favagehi, vice president. Back row (from left); Drs. Binnaz Leblebicioglu, director; Nipul K. Tanna, secretary/treasurer; and Amerian D. Sones, director. Not pictured: Directors Lesley A. David, Robert J. Miller, and Hom-Lang Wang.

As a new initiative, the OF's new Education and Research Fund sponsored the Academy's 2024 Opening and Closing Symposia along with the Young Clinicians' Luncheon. Funds were allocated from the R. Gilbert Triplett Education and Research Fund, and the Jeffrey D. Lloyd Memorial Education and Research Fund.

The 2024-2025 OF Board of Directors includes:

Officers

President

Hans-Peter Weber, DMD

Vice President

AO Fellow **Mehrdad Favagehi**, DDS, MS

Secretary/Treasurer

Nipul K. Tanna, DMD, MS

Past President

AO Life Fellow **Russell D. Nishimura**, DDS

Directors

AO Fellow **Hom-Lay Wang**, DDS, MSD, PhD

AO Fellow **Amerian D. Sones**, DMD, MS

Lesley A. David, DDS

Binnaz Leblebicioglu, DDS, MS, PhD

AO Fellow **Robert J. Miller**, DDS

AO Fellow Stephen L. Jacobs BDS MGDF RCS (Eng)

AO remembers Dr. Stephen L. Jacobs

By: Michael R. Norton, BDS, FDS, RCS(Ed); Academy News Guest Contributor and AO past president, 2017-2018

It is with a great sense of sadness that our dear friend and esteemed colleague, **Stephen Jacobs**, passed away on 11th March, 2024 after his relatively short battle with ill health.



Dr. Stephen L. Jacobs

personality and it leaves him with the legacy of a crown of a good name.

Stephen graduated from the University of Birmingham Dental School in 1985, from where he eventually set up the Dental FX practice in Glasgow, becoming both director and principal in 2006. Stephen was an early adopter of the newly emerging dental implant technologies, placing his first implant in 1992.

He soon became a recognised name and a speaker for Biomet 3i before converting to the Astra Tech implant system a few years later, establishing his practice as a centre of excellence for implant referrals, as well as a centre for education and training. As a result, many a colleague would come to view Stephen as their mentor and are indebted to him for their start on their implant journey.

It is no surprise that Stephen also threw himself into organised association activity, becoming an integral part of the Association of Dental Implantology (UK) from its earliest days, eventually becoming president from 2009 –

Stephen was a world-renowned dentist with a passion, knowledge and drive that permeated the field of implant dentistry. The breadth of respect he engendered amongst his many colleagues and patients is a testament to

his success. This was enhanced by his warm, kind, generous and humorous

2011. He also became active in the premier global implant organisation, the Academy of Osseointegration, joining in 1999, serving on many committees, and assisting in establishing the International Charter Chapter movement and running the U.K. Charter Chapter. In 2016, he became only the second U.K. dentist to be awarded the prestigious Fellowship of the Academy and ultimately became a director on its board in 2019.

Sadly, his service was cut short by his illness, and he had to step down last year. However, befittingly at AO Annual Meeting in Charlotte, NC he was recognised for his outstanding service to the Academy. I received this award on his behalf and provided an emotional speech in recognition of my friend and colleague of many years.

For a long time, Stephen nursed his wife, Lucy, through her own long and difficult battle against illness, which was sadly was no stranger to the Jacob's household, and he was grief-stricken at her passing, just a few years ago.

Stephen is survived by his three daughters Talia, Carly and Alyssa, to whom we send our most heartfelt condolences.



Dr. Stephen Jacobs received his Fellowship in the Academy of Osseointegration from Drs. Russell Nishimura (left) and Michael Norton in San Diego in 2016.

On dental education: An interview with Dr. John Kois

By Harriet McGraw, DDS; Academy News Guest Contributor

In a previous article on the current state of dental education, educators from North America and Europe shared their thoughts. In a recent interview with **John Kois**, DMD, MSD, he provided his perspective as someone who is very directly involved in teaching dentists who have been in practice awhile, along with many recent dental school graduates.

Dr. Kois has observed, "Overall, the dentists I see at the Center (Kois Center, Seattle, WA) are very passionate about dentistry. The demographic is much younger than in the past; late 20's, early 30's. They are willing to make a very significant commitment in time and resources for continuing education. They have a great sense of pride in the profession and are trying to do the right thing for their patients. However, the gap between where young dentists start out and where they need to be is growing. The problem stems from the increasing complexity in the growing science of dentistry, as well as the expanded procedures they are required to perform. Unfortunately, more and more dentists are feeling less secure about themselves commensurate with the added pressure to produce more dentistry in order to pay their bills.

When asked what he sees as shortcomings in dental education, Dr. Kois was quick to respond: "Rather than making critical comments about it, we need to figure out how to change the perspective and scope of dental education. My purpose in this conversation is to provide some level of insight that can lead to some level of improvement."

Dr. Kois elaborated on his insights on the future of dental education: "The amount of information we are trying to teach dental students is increasing at the speed of thought. The science in the field is growing exponentially, which makes it difficult to not feel overwhelmed. Students know that if they are not involved in science-based learning, they will be left behind. New graduates come out of school with a skillset enabling them to perform basic procedures, which, unfortunately, is currently not sufficient to be competitive and confident in our profession. The piece that deserves more focus is the ability to think. If

the focus is on all the 'cool data acquisition technologies' with cone beams, jaw tracking, digital scanners, etc., without the ability to analyze the information it provides,

patients are not being served. What does the data mean and how does one make decisions from the data collected? Data acquisition can be bought, manufacturing, and to some extent,

execution, can be outsourced. What cannot be bought or outsourced is the ability to interpret information gathered through patient interviews, clinical examination, and technology. The focus needs to be on critical thinking."

Dr. Kois offered his perspective for the future of dental education: "What we're trying to build is an education through asking better questions, because good questions inform, great questions transform. By educating our younger dentists on how to arrive at a diagnosis and create a treatment plan using evidence-based data analysis, we'll improve patient healthcare. All our treatment is not accomplished with a handpiece or a scalpel. "Knowledge is cheap, you can google it, but wisdom is priceless. Our future is dependent on making wiser, better decisions through a lifetime of learning."

"Knowledge is cheap, but wisdom is priceless. Our future is dependent on making wiser, better decisions through a lifetime of learning."



Dr. John Kois



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The end of education as we know it?

By: Paul A. Fugazzotto, DDS; Academy News Editorial Consultant

Effective and meaningful education was undermined and essentially destroyed in 1974. Learning algebra and calculus became pointless. Intellectual laziness won out over conceptualization and true understanding. The calculations necessary for an 18-year-old junior in college to succeed at analytical chemistry became instantaneously available to all, with minimal effort.

Why subject oneself to the rigors of physics or advanced organic chemistry when you could have "Einstein in your pocket" for \$175.00? Better to play poker in the lounge and flag football on the turf. Passing tests, "getting good grades," would be effortless, requiring only an electrical outlet.

How did this happen? Texas Instruments released the SR-50 handheld electric calculator.

Teeth were gnashed and manual cranial depilation was carried out throughout the colleges. Professors loudly bemoaned the destructive impact of this demonic instrument upon education and learning, while quietly fearing that their usefulness was at an end.

Fortunately, the predicted apocalypse failed to materialize.

Did significant cheating occur while the administration and faculty were deciding how best to meet this new challenge? Undoubtedly. However, the ultimate outcome was the integration of this technology into the educational process, freeing students from mundane tasks, and affording the time for more meaningful exploration of the topics in question.

Geoffrey Hinton, a pioneer of deep learning and winner of the 2018 Turing Award, is now "scared" of the technologies he helped build. Instrumental in the

creation of backpropagation, an algorithm which allows machines to learn, Hinton worries what will happen when "machines become smarter than us," an eventuality all AI researchers are confident will come about.

But wait. Yann LeCun, Meta's chief AI officer, agrees that machines will become smarter than humans, but believes "intelligent machines will usher in a new renaissance for humanity, a new era of enlightenment."

"Technology is not an instrument, it is a way of understanding the world"

– Martin Heidegger

Educators are worried that ChatGPT will render research papers, written examinations, and theses meaningless. Why spend hours doing research or writing papers when ChatGPT can do it for you while you have a pastry and a double espresso?

Irena Sailer, DDS, MS, chair of fixed prosthodontics and biomaterials at the University of Geneva, is concerned about the integrity of such student research and written theses. However, rather than attempting to ban ChatGPT use, a pointless and ostrich-like endeavor, Dr. Sailer is considering the institution of oral examinations and theses presentations to appropriately assess student mastery of the subjects in question.

While ChatGPT certainly poses a potential threat, and must be effectively integrated into the educational process, is its

use the greatest challenge one faces while educating and preparing students for the rigors of dentistry?

Unfortunately, no.

As AO Fellow **Clark M. Stanford**, DDS, PhD, MHA, dean and professor at the University of Iowa College of Dentistry notes, dentistry in North America "is still based upon the concepts put forward in the 1920s by William Gies, a biochemist from Columbia University. He created the framework of the curriculum we think of as dental education today, which has not changed since 1927. The classic model is the 2 x 2 year curriculum: two years of basic science and simulation pre-patient training, followed by two years of clinic. The challenge for dental education has always been that we take medical school and a residency, and we put them together in three-to-four years of dental school."

Dr. Stanford states that "one of the challenges is, what do we take out of the curriculum to add in new things like digital workflows, and the issues and concepts around implant placement and risk planning. Students come in thinking they're going to have all this in-depth clinical experience in implant placement and implant restoration, and they don't even know how to take out a tooth, lay a flap, and suture with any competence. In dental education, we struggle. We want to add these things, but also don't want to create the idea that if a student placed one implant in dental school, he or she is therefore competent to place implants."

Dennis P. Tarnow, DDS, clinical professor of periodontology and director of implant education at Columbia School of Dental Medicine, concurs and believes that COVID exacerbated the problem. "The pandemic has put dentistry as well as other disciplines two years behind. I train multiple graduates right out of school coming into graduate programs; first year perio, pros, oral surgery. I've been doing it for years and I know these are bright kids. They are now the least prepared students I have ever seen, and that doesn't mean they're stupid. They are just as smart as the other kids were, but they had no patients to treat. The lectures were all on Zoom, so they never got a personal connection with the professor the way we did. I find myself teaching them junior dentistry as opposed to graduate program concepts. I ask, 'How many of you have done a crown on a human being? On an implant? How many of you have put a crown on?' The answers are 'I did one. I did three.' That's not proficiency. That's not even competence."

German Gallucci, DMD, PhD, chair of the Department of Restorative Dentistry & Biomaterial Sciences at Harvard School of Dental Medicine, concurs, stating that "predoctoral education is the critical step. When you teach a student how to place implants, at the very least, they should become proficient in treatment planning, diagnosing, and restoring implants at this point. I don't think this is happening in that comprehensive way. At the postdoctoral level, you come out of dental school with a basic, limited knowledge of implant dentistry. You go into specialty training from very limited knowledge to a hyper focused outlook. If you go into perio, you only learn

surgery. If you go to pros, you only learn restorations. You have now burned a bridge to greater understanding and growth, and you may never recover. Never."

In addition to shortcomings in technical proficiency, interdisciplinary treatment planning and the concept of comprehensive care become victims of the conundrum of "limited time to teach everything." Without a comprehensive outlook toward the patient and the patient's needs and desires, clinicians become nothing more than mechanical piece workers, with minimal impact on their patients' quality of life.

The perio - pros programs of the 1970's and 80's such as BU, Penn and Seattle (to name but a few) were characterized by an intimate inter-relationship between all disciplines of dentistry. No work was performed without a comprehensive treatment plan having been agreed upon. When a completed case was presented to Dr. Gerald Kramer, the initial discussion of how to look at a patient, perform a thorough examination and diagnosis, and then formulate a multi-disciplinary treatment plan, was at least as valuable as the comments and guidance received regarding the actual therapies to be performed.

As patient treatment becomes more siloed, as dental school departments build walls and moats to protect their territories, it is the students, and ultimately the patients, who suffer.

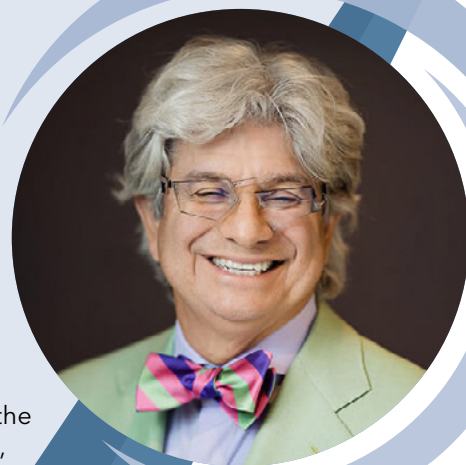
So, what is the solution?

Do you add another year of training to dental school education? The costs for such an education are already close to prohibitive for many people. Even those who manage to finance their educations often come out of school so deeply in debt that they choose less than ideal career paths and may still never "get out of the hole."

Does a one-year post graduation residency become mandatory, if a specialty is not being pursued by the new dentist? Where do all of these residency positions come from and who funds them?

Are most of the "basic science" requirements shifted to undergraduate education, becoming prerequisites to applying to dental school?

While such an approach would help open up more time for clinical education in dental school, what is the personal cost to the student? College, in its true



Continues on page 14

Dr. Paul A. Fugazzotto

Highlights from the Academy's 2024 Annual Meeting

Optimizing Care Beyond the Boundaries

This year's Annual Meeting, March 7 - 9, was held for the first time in Charlotte, NC. Attended by implant professionals from around the world, "Going Beyond the Boundaries" featured an expanded number of Hands-on Workshops, nearly 100 exhibiting companies, close to 230 research submissions, and 70 expert presenters, all to provide attendees a perspective on "Optimizing Patient Care Through Scientific and Clinical Innovation." On the social side, registrants experienced a "high octane" evening at the Academy's iconic President's Reception, held at the NASCAR Hall of Fame, an interactive venue with an array of exciting activities, just a short walk from the Charlotte Convention Center.

01 Presenting the gavel is always a highlight at the Annual Meeting, with Dr. Hom-Lay Wang handing over the reins to Dr. Joerg Neugebauer.

02 President and Mrs. Neugebauer take a break from the festivities at the annual President's Reception, held at the NASCAR Hall of Fame.

03 The NASCAR Hall of Fame, complete with many interactive activities for attendees to enjoy, was the site of this year's "high octane" President's Reception.

04 Dr. David Cochran was bestowed the Nobel Biocare Brånemark Osseointegration Award recognizing his exemplary career.

05 Dr. Shi Yin was one of the two winners of this year's Emerging Leaders competition, with Dr. Rafael Siqueira as the second recipient.

06 The Young Clinicians' Reception is always a popular social event and opportunity for colleagues to re-connect every year.

07 Members of the AO Social Media Committee, led by Dr. Lorenzo Tavelli, have some fun of their own creating posts for AO's channels.

08 The 2024 program was under the leadership of AO Program Chair Dr. Gustavo Avila-Ortiz (left) and President Hom-Lay Wang.

09 Nearly 200 ePoster presentations provided attendees with many opportunities to discuss the latest research.

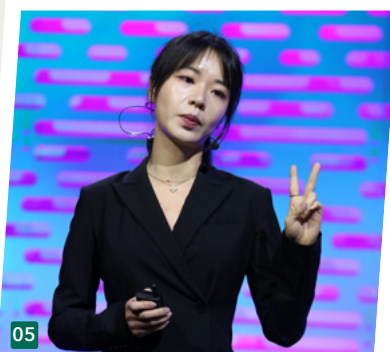
10 A new social feature this year was the "Selfie Station" where attendees could take fun photos to remember their time at the meeting.

11 Five hands-on workshops offered for attendees to learn the latest technologies were very popular, and in some instances, sold out.

12 Congratulations to Dr. George Mandelaris for achieving AO Fellowship. Also recognized for this receiving honor was Dr. Neema Bak.

13 Twenty-five OF Student Travel Grant recipients celebrate at the Young Clinicians' reception after presenting their research.

14 This year's meeting saw many AO past presidents re-connect, including Drs. Vincent J. Iacono (2010), Dayn C. Boitet (2002), Stephen M. Parel (1995), Edward B. Sevetz, Jr. (2007), Clarence C. Lindquist (2004), Michael R. Norton (2018), Steven G. Lewis (2009), and Amerian D. Sones (2023)





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sense, is meant to be a time of intellectual exploration; an opportunity to be exposed to areas of interest which can enrich one's outlook on the world, one's very life.

Dr. Stanford related the following tale: "When I first started college, I went to talk to one of the faculty at the dental school and I said, 'should I be taking this science class or this science class or this science class?' And she looked at me and said, 'you're going to be treating human beings. I want you to take as many of the humanities as you can because we'll teach you the science. You have to be a humanist first.'"

Dr. Tarnow highlighted another fundamental challenge faced by educators in the United States, that of attracting and retaining high quality educators. "It used to be that the chairmen of departments were really well-known names. They were the kings of dentistry, and almost everybody knew them. There are very few that are still out there. Now we're getting a lot of young people because they have their boards, which is great.

But at the same time, people who have 20 or more years experience aren't staying because they're not getting paid. The academic world thinks it's great to be the chairman of a department, which it is. It's very prestigious. But at the same time the universities are not willing to pay the amount of money necessary to retain people. In Europe, faculty are paid two-to-three times what our people are paid. There, teachers stay there for life, until they're 65 or 70 when they're forced to retire. Professorships and chairmanships are a big to-do in Europe. They're sought after. Doctors want to become chairmen.

Many years ago, **Myron Nevins**, DDS, was discussing his time teaching at Boston University as the clinical director of Dr. Kramer's periodontal program. "The excitement of what we were all doing; the interdisciplinary communication, treatment planning and teaching with **Don Mori**, DMD (prosthodontics), **Herb Schilder**, DDS (endodontics), and **Anthony "Tiny" Gianelly**, DMD, PhD, MD (orthodontics); the certainty that we were doing something special; it was like Camelot."

Is the problem more than one of financial remuneration? Should the word "prestige" be accompanied by "respect?"

Dr. Stanford again: "In the United States, we still have an attitude among the practicing community: 'Well, they couldn't do it, so they teach.' So, by extension faculty are the stupid ones that don't know how to do it. They would never survive in the real world. When someone hears that level of disrespect, they could be extremely bright, highly talented young periodontists who ask themselves, 'Why would I want to go work for the university when I'll be viewed as a failure by the practicing community?'"

Dr. Sailer provides an excellent, succinct counterpoint: "We don't have these problems. Professors are respected and looked up to. Our faculty want to be here, want to become professors. It is both a vocation and a career."

Of course, it can only help that Dr. Sailer's faculty are working with one of most incandescent stars in the field.

It is absurd to assume that those who have devoted their careers to teaching and seeing patients intramurally, rather than in private practice, are somehow inferior clinicians. Would someone care to make that claim about **Gerry Chiche**, DDS? Perhaps **Urs Belser**, DMD? The list of examples of clinical excellence by full time professors goes on and on.

Now what? Are we doomed? Not according to Drs. Gallucci and Stanford.

Dr. Gallucci identifies an advantage to the Zoom training which has become more prominent since the onset of the pandemic. "The access to education now, what we all learned from the pandemic about being connected, it's a huge opportunity. All of these connections are a form of education and have opened up a different way of mentorship. Now you can open your Zoom and have a study club with colleagues all over the world. It's way more efficient to disseminate knowledge."

Dr. Gallucci also speaks of the need to better understand today's students, thus increasing education's effectiveness. "The new generation has different standards. Work/life balance is very important to them. They are leading a life that we as educators need to completely understand. I say with 100% conviction that this is what we need to do in education. When you and I went to school? There was a professor in front of the blackboard or whiteboard or greenboard. They would write something, and we would take a note and that was our way of getting the information, right? Now these kids, they have other sources of information. They don't need us to pass the information. But what they don't have is the ability to catalog that information, to analyze it. I believe this is the role of education. We become the guides for the students, to make sure they are getting and understanding the right information. Educators have to put their egos away a little bit. If we don't approach this generation of learners in that way, we are immediately disconnected."

Could there be a clearer explanation of the dialectic, which is the underpinning of the Socratic method? Plato was not a lecturer, but an intellectual tyrant. He was a facilitator of knowledge and understanding. The definition of a true teacher.

Dr. Stanford summed it up best when asked if he is optimistic about dental education:

"Am I optimistic about education? Well, I have to be because, what's the alternative? There is an opportunity here, with the advent of technologies in healthcare and writ large across all of healthcare, for us to bring information that's relevant to the point of care in a way that is most comprehensible to both the provider and the patient, and to be able to make the best healthcare decisions moving forward. This is also an opportunity for us to educate."

Numerous research awards bestowed at 2024 Annual Meeting

Many individuals were honored with various awards at the Charlotte Convention Center, March 7 – 9, 2024. Among the winners and recipients were:

New AO Fellows

Fellowship in the Academy is obtained by demonstrating a commitment to the field of osseointegration. Members must excel in academics and service to the Academy. Four active members achieved Fellowship status this year:

George A. Mandelaris, DDS, MS; **Neema Bak**, DDS, PhD

New AO Masters and Diplomates

Congratulations to the following who were recognized as the newest members to earn an AO Certificate:

Stephen Chu, DMD, MSD; **Young K. Kim**, DMD, DMSc;
Lisa Lang, DDS MS, MBA; **Shebli Mehrazarin**, DDS, PhD;
Robert Stanley, DDS; and **Min Yang**, DDS.

Nobel Biocare Brånemark Osseointegration Award

David L. Cochran, DDS, MS, PhD, was the 16th recipient of the Nobel Biocare Brånemark Osseointegration Award. This annual award, made possible by a grant from Nobel Biocare, is bestowed by the Osseointegration Foundation (OF), the Academy's philanthropic arm. It honors an individual whose impact on implant dentistry is exemplary in any or all of the Foundation's mission categories: research, education, and charitable causes.

William R. Laney Award

Named after the Academy's first president and inaugural editor of the *International Journal of Oral and Maxillofacial Implants (JOMI)*, **William R. Laney**, DMD, MS, this award recognizes the best article published in the past year in the Academy's official publication, in which Dr. Laney served for many years as Editor Emeritus. The 2024 recipient was **Binnaz Leblebicioglu**, DDS, MS, PhD, "Titanium as a Possible Modifier of Inflammation Around Dental Implants" published in Volume 37, Issue 2, 2022 of *JOMI*.

Osseointegration Foundation Research Grants

As part of its mission to foster the highest ideals of research, awards up to \$50,000 to each dental professional pursuing groundbreaking research. The following First Place recipients presented their findings:

Translational and Clinical Science Research Grant

I-Ching Wang, DDS, MS

Correlation Between Peri-implant Mucosa Color and Tissue Dynamics: Phenotype and Health Recognition Using Dental Ultrasonography

Osseointegration Foundation Restorative Research Grant

Robert Nedelcu, DDS, PhD

Clinical Methods for Evaluation of Implant Framework Misfit – An In-vitro Assessment

Basic Science Research Grant

Y.W. Stacy Cho, DMD

Decoding Cellular Regulatory Circuits for Targeted Therapy Design for Peri-implant Diseases

Emerging Leaders

Spearheaded by AO past President **Amerian D. Sones**, DMD, MS, 2024 was the second year for this case presentation competition for early career clinicians. This year's competition resulted in a tie for first place. Congratulations to co-winners:

Rafael Siqueira, DDS, MS, PhD

Beyond Immediate Esthetics: Lessons Learned for Long Term Success in Single Tooth Implants in the Esthetic Zone

Shi Yin, DDS, MS

Scarf Connective Tissue Graft Simultaneous With Immediate Anterior Tooth Replacement

First Place ePoster Award

Gabriela Sabatini, DDS, MSc

Fatigue Behavior of Implant-supported Cantilevered Prostheses in New Generation CAD-CAM Polymers and Their Adhesion to Titanium Base Abutments: An In-vitro Study



Dr. Sabatini with Dr. Burak Yilmaz, Chair, ePoster Committee.

Digital workflow for implant therapy at VCU

An interview by Academy News staff (AN) with Rafael Siqueira, DDS, MS, PhD (RS)

AN: Do pre-doc students at Virginia Commonwealth University (VCU) restore implants? Single units? Full arch? Any limitations for pre-doc?

RS: Yes, pre-doc students restore implants at VCU. In fact, some of them restore a pretty good number (I have talked to a student that restored 18 implants in total). There are some limitations: short implants, implants in the esthetic zone when the patient has a high smile line, maxillary overdentures and full-arch restorations, are the major ones.

AN: Do pre-doc students place implants?

RS: They do not place implants in patients. They have hands-on sessions and they observe and assist the periodontist, and OMFS residents place them.

AN: Is there an implant selective program or rotation for pre-doc students to observe/place implants?

RS: We have different selective programs at the D4 year that expose students to implant therapy: a periodontist selective course and a prosthodontics selective course. In the selective prosthodontics, I have seen students restoring more complex cases that wouldn't qualify for the regular pre-doc implant program.

AN: Do they use digital technologies (3d scanners) in the pre-doc clinics?

RS: Yes, and VCU is ahead of the game compared to most dental schools. They are exposed very early in their training to optical scanners. There is an entire classroom built and dedicated for this training and the school has several planmeca, trios 4 and medit intraoral scanners. There is a digital lab with multiple 3d printers, two high-performance milling-machines (PM7 Ivoclar) and several smaller milling machines. The lab also counts on assistants and technicians and almost all crowns delivered at the school are fabricated in-house. Customized abutments are often fabricated outside (Atlantis is one of the main labs for this) but the crowns then done in-house. Students have access to all this technology and to learn from the CAD CAM team.

AN: Any comments about VCU pre-doc dental implant curriculum?

RS: I'm proud to share that we pioneered at least two programs in the last year. All students, residents and faculty at VCU have access to an implant planning software (RealGuide) where cases can be planned and guides designed fostering communication between all involved since it is a cloud based software. Students initiate the case planning with the resident and share with the prosthodontics and periodontics/OMFS faculty for feedback. The software can be opened on any computer anywhere in the school as long as it is installed and you have your login. Once a case is approved, the guide is exported and sent to the CAD/CAM lab for 3D printing. The guide is then sent by the CAD/CAM team to the place where implants are stocked. The guide is placed in a bag with the implants and parts the residents have ordered for them to collect before the surgical procedure.

Another program that we started this year is Azento box in partnership with Dentsply Astra implants. Students and residents submit patients CBCT and digital models to Dentsply who plans the case and sends us back for approval. Students meet with the faculty and once the case is approved, Dentsply fabricates and sends us a box with surgical guide, implant, drill, and custom healing abutment. Everything customized to that specific case.

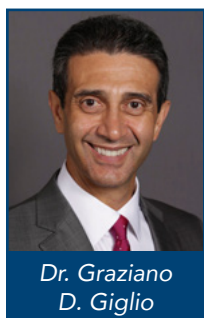
Those opportunities expose the predoc students and residents to different workflows which, in my opinion, is very rich for their education.



Restorative considerations and their biologic implications for implant-supported single crowns

By: Graziano D. Giglio, DDS; Academy News Guest Contributor

As dental implants have evolved into a universally accepted treatment option for patients, it is essential to identify restorative considerations and how they impact the biologic outcomes given the increasing incidence of peri-implantitis.



Dr. Graziano
D. Giglio

The peri-implant complex (hard and soft tissues surrounding the implant) is quite different from the periodontium around a natural tooth: the tissues surrounding an implant do not possess a periodontal ligament (PDL) or supracrestal fibers that attach to the implant surface or the restoration. In the peri-implant mucosa, the gingival fibers are angled longitudinally, parallel, or circumferential to the long axis of the implant.¹ The

connective tissue attachment in the periodontium consists of well-organized collagen bundles that are perpendicular to the cementum on a tooth. In the peri-implant complex, there is a high density of collagen with the collagen fibers mostly parallel to the implant surface.²

These anatomic distinctions translate to a peri-implant complex that is at greater risk of bacterial penetration and biofilm formation, and physical manipulation, such as clinical probing, than its natural counterpart. Five restorative factors that influence the biologic outcomes of implant-supported single crowns are: abutment-implant connection, abutment dis/reconnection, type of retention, restorative material, and prosthetic contours.

1. Abutment-implant connection

The microgap at the implant-abutment interface is infiltrated with bacteria and the functional micromovement of the abutment may cause percolation of the bacterial contaminants in the surrounding tissues, triggering an immune response.³ By moving the microgap more axially in a 2-platform switched scenario, the microbes are further from the bone crest, benefitting the peri-implant complex.

Platform shift or switch is defined as an implant system with an abutment whose diameter at the connection level is narrower than that of the implant (implant-abutment diameter mismatch).⁴ Platform switch systems shift the mechanical stress from the periphery of the implant internally towards the long axis, thus reducing the potential

microgap during functional micromovement.^{5,6} Today, with the commonly used internal conical connection, a platform switch is inherent in most implant systems. In addition, platform switching allows for additional horizontal soft tissue thickness.

2. Abutment Disconnection/Reconnection

Abrahamsson was the first to discuss abutment disconnection/reconnection (dis/reconnection) contributing to apical proliferation of the soft tissue and bone resorption in the peri-implant complex.⁷ It has been suggested by others that repeated removal and insertion of the abutment will lead to bone loss around an implant.⁸ Regardless of the treatment protocol, limiting the number of dis/reconnections is beneficial to minimizing marginal bone loss.¹⁸

The concept of “one abutment, one time” will prevent bone loss, maintain soft tissue health, and simplify restorative therapy in high esthetic areas.⁹ In addition, with the use of digital technology, a definitive abutment can be designed and fabricated prior to surgery and secured to the implant at the time of placement, with a fixed provisional without occlusal loading in centric relation and eccentric movements, and never removed. This should be considered particularly in the esthetic zone, where the demand is greater and there is less room for error.

3. Type of Retention

Restorations retained by a screw or cement are clinically acceptable and exhibit high success rates.¹⁰ Customized abutments, which are preferable in the esthetic zone, provide soft tissue support, and are associated with cement-retained crowns. When using a cementation protocol with implant restorations, care must be taken to remove excess subgingival cement to avoid biologic complications. To circumvent this issue, margins should be placed supragingival whenever possible, and 0.5-1.0 mm subgingival on the labial of an implant-supported prosthesis.^{11,12}

Two advantages of a screw-retained prosthesis are the elimination of subgingival cement and ease of retrievability. The systematic review by Sailer et al. concluded that screw retention is preferable to cement retention as screw-retained implant restorations are easily retrieved and technical problems, such as screw loosening, can be more readily resolved than biologic complications associated with cement-retained prostheses.¹⁰

Screw-retained standard/stock abutments in low esthetic areas of the oral cavity provide increased strength and retrievability but may extend too far subgingival in the

Continues on page 18

Surface Roughness (μm)

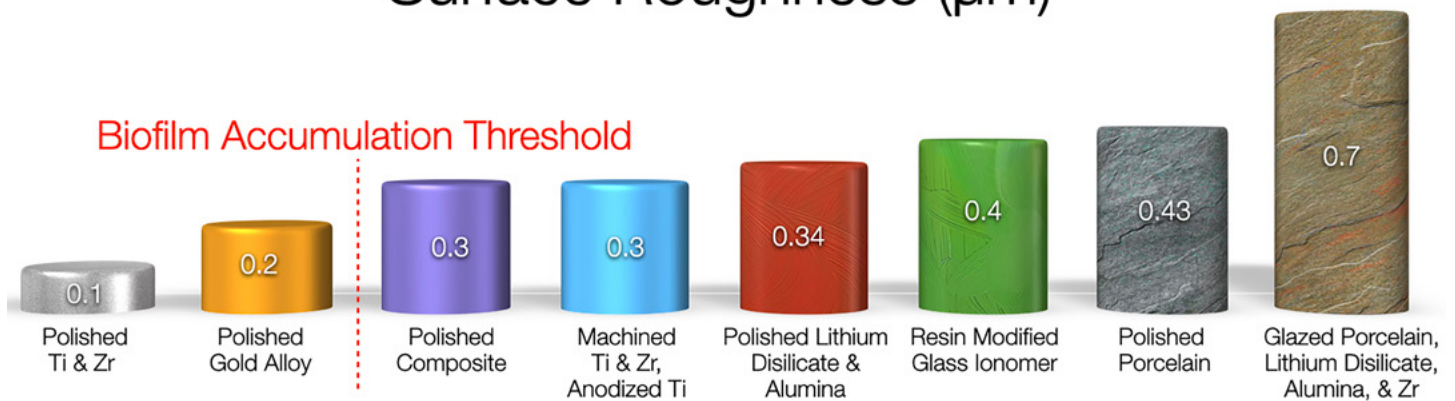


Figure 1. Comparing the relative average surface roughness of restorative materials. Biofilm accumulation occurs on surfaces that possess a roughness greater than $0.2 \mu\text{m}$.

interproximal zones if attempting to achieve a subgingival labial margin. Consequently, customized abutments are recommended in esthetic areas or in the presence of highly scalloped soft tissue where interproximal tissue support is essential. In this scenario, a screwmentable implant restoration allows for retrievability, minimizes excess cement, and supports the interproximal tissue without compromise.¹³

A screwmentable implant prosthesis consists of a custom abutment with a slightly subgingival facial margin that follows the contour of the soft tissue, supports the papillae, and a crown with an access opening on the 4 lingual surface, that is cemented over the abutment to allow for future retrievability of the restoration. Care must be exercised to prevent residual cement in the sulcus when intraorally cementing the crown over the custom abutment.¹⁴ Clinicians may elect to cement the crown extraorally, for ease of cement removal, and then insert the screwmentable into the implant using the access opening on lingual surface to tighten the abutment screw with a driver. After tightening the screw to the appropriate torque, the access opening will need to be obturated.

4. Restorative Materials

In esthetic areas, the use of a ceramic abutment such as zirconia is advocated, while in low esthetic areas a metallic abutment (standard/ stock) is indicated.¹⁵ Epithelial cells, through a hemidesmosome attachment, will bind to any clean and polished surface analogous to the attachment of epithelial cells to natural teeth.¹⁶ This attachment to restorative materials in the peri-implant complex is described as adherence since it is not as strong as the Sharpey's fibers attachment to natural teeth. The three surface characterizations that determine the biofilm or cell adherence to the materials are roughness, free energy, and chemistry.¹⁷

Restorative materials should be smoothly polished when placed below the gingival margin to increase the likelihood of soft tissue adherence to the material. Placing restorative

materials with a surface roughness (Ra) of greater than $0.2 \mu\text{m}$ will result in biofilm accumulation.¹⁸ Glazed ceramic surfaces tend to have Ra values $0.7 \mu\text{m}$ or greater and therefore are not recommended subgingivally.¹⁹ The literature suggests removing the glazed layer by polishing ceramic materials to decrease plaque accumulation and stimulate soft tissue adhesion at the gingival margin of the restoration.²⁰

"Polished" refers to a smooth surface that is free of plaque traps, which is achieved by removing any contaminants from the restorative materials (titanium, zirconia, alumina, and lithium disilicate) with rubber wheels and properly disinfecting the prosthesis prior to definitive placement. Figure 1 summarizes different restorative materials and their average roughness (Ra).

The other factors that influence the biology in the peri-implant complex are free energy and chemistry of the material. For example, zirconia, titanium, gold alloys and resin modified glass-ionomer cement (RMGIC) have antibacterial properties resulting in low biofilm accumulation irrespective of surface roughness.^{21,22,23} Although gold alloys can be polished well and have significant bactericidal effects, they do not show a high degree of cell adhesive properties unlike titanium and zirconia.²⁴

RMGIC contains fluoride which continues to release after setting, protecting the restoration from plaque accumulation.²³ As a result, it is suggested that when cementing an implant supported restoration a RMGIC be used due to these biocompatible qualities. Composite resin may be polished closely to the biofilm accumulation threshold, but it hydrolyzes in the oral environment, resulting in poor durability.²⁵

The restorative materials that showed the most fibroblast proliferation invitro are zirconia, titanium, lithium disilicate, and alumina. Although the literature suggests that these four materials are biocompatible and support binding of epithelial cells in vitro, no in vivo studies have been

Soft Tissue Integration

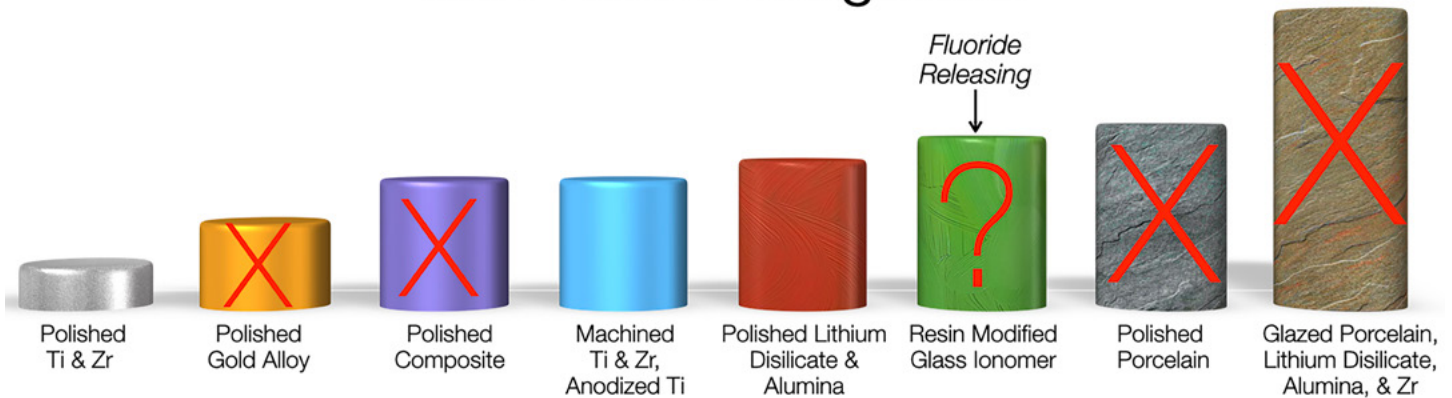


Figure 2. Restorative materials and their potential for epithelial cell adhesion. Polished gold, composite, porcelain, and glazed ceramics do not display strong cell adhesive properties. Resin modified glass ionomer is biocompatible, however, it is unclear if this material allows epithelial cell attachment.

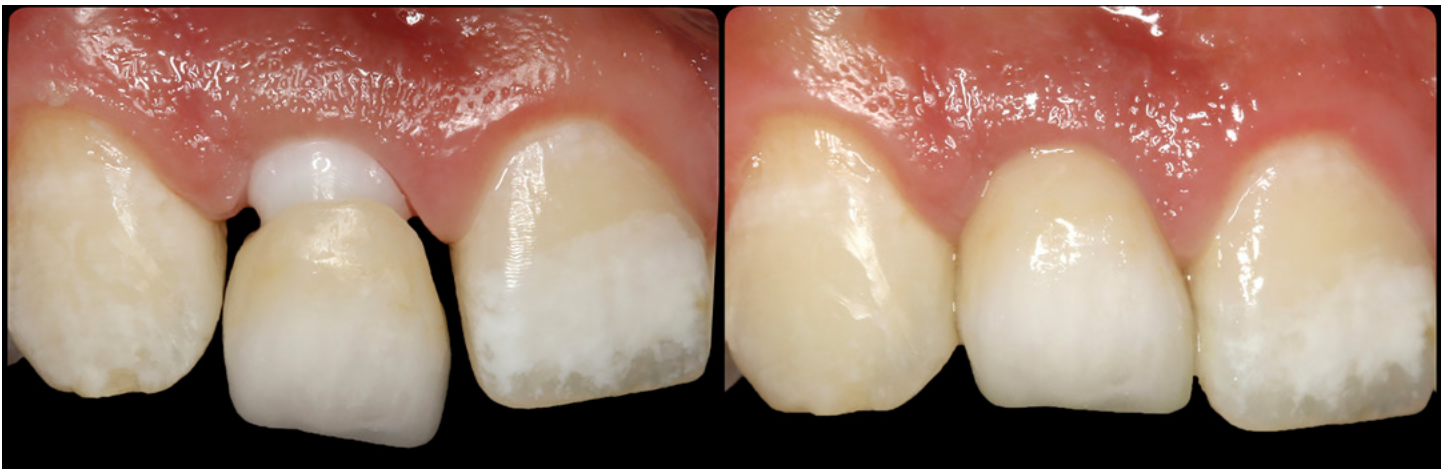


Figure 3. Screw-retained single implant-supported restoration. The zirconia Ti-base hybrid abutment was connected at the time of implant placement. Following uneventful healing, the lithium disilicate crown was cemented over the abutment four months later.

conducted since Abrahamsson in 2007.¹⁶ Figure 2 summarizes various restorative materials and their potential for 6 epithelial cell adhesion. A clinical example of a biocompatible implant-supported restoration using a zirconia Ti-base hybrid abutment with a lithium disilicate screw-retained crown is shown in Figure 3.

5. Restorative Contours

It is important to design proper contours for an implant-supported prosthesis that are harmonious with the surrounding tissues. The ideal subgingival contour of an anterior implant abutment should be concave to maximize the connective tissue thickness, support the gingival architecture, and optimize esthetics.²⁶ The contact point to bone crest distance between an implant restoration and a natural tooth was shown to be 5.0 mm 100% of the time by **Vincent Choquet**.²⁷

Between adjacent implants the expected papillary crest to bone crest distance is only 3.4 mm when compared to 5.0 mm between a natural tooth and an adjacent implant as described by **Dennis P. Tarnow**, DDS.²⁸ As a result, in

the esthetic zone, it may be preferable to avoid placing implants next to each other to minimize the possibility of a shortened or absent papilla, and instead develop an ovate pontic adjacent to an implant to create a larger and more esthetic papilla.²² The angulated screw channel (ASC) concept may be used to alter the screw access opening of an implant restoration in a more favorable position to allow for development of proper contours for implants that are not in an ideal position.

As clinicians, the decisions that we make directly affect the long-term success of implant therapy and in turn, patient health. There are a multitude of factors influencing the stability of the peri-implant complex. By being aware of evidence-based restorative seven factors that influence the biologic outcomes, we can predictably achieve esthetic, functional, and stable results in implant therapy.

References for this article are available via scanning this QR code.



Pre-doctoral dental implant education at OHSU

An interview by Academy News staff (AN) with AO Fellow Despoina Bompolaki, DDS, MS (DB)

AN: Do pre-doc students at Oregon Health & Science University (OHSU) restore implants? Single units? Full arch? Any limitations for pre-doc?

DB: Yes, we have a pretty robust and well-organized predoctoral implant program. Implant-supported restorations are part of our clinical criteria for graduation. In order to be eligible for graduation, students need to restore at least four implants, present at least two cases at the interdisciplinary implant seminar (led by restorative and periodontics faculty), and attend at least one implant placement surgery. Students typically restore single implants (including low-risk anterior esthetic cases), and they may also restore straight-forward multiple-unit fixed partial dentures (up to three units). They also restore mandibular implant-retained overdentures (using Locator abutments). In the past, we used to restore implant-assisted removable partial dentures, but we have stopped in the last few years due to the high complexity of these cases, and the increased number of technical complications that we observed. Predoctoral students do not restore full-arch cases or maxillary implant-supported overdentures, and we also do not restore implants that were placed outside OHSU.

AN: Do pre-doc students place implants?

DB: No, predoctoral students do not place implants. All implants that are restored at OHSU are placed by periodontics and/or oral and maxillofacial residents.

AN: Is there an implant selective program or rotation for pre-doc students at OHSU to observe/place implants?

DB: There is a Graduate Periodontics rotation, where students are assigned to attend surgical procedures (including implant placement, augmentation procedures prior to implant placement, etc.) at the Graduate Periodontics clinic. We have always strongly encouraged our predoctoral students to assist during implant placement for all their assigned patients. Attending at least one implant placement procedure is now a formal requirement for graduation.

AN: Do they use digital technologies (3d scanners) in the pre-doc clinics?

DB: The majority (more than 80%) of our definitive single-unit implant restorations are done in house using a fully digital workflow. The students are only using an analog workflow for fabricating the provisional

restoration. Once the site is stable and the patient is ready to proceed with the final restoration, the student obtains digital intraoral scans of both arches. The restoration is designed digitally and milled in-house. Digital technologies are also implemented during the planning and surgical stages for all predoctoral cases; students obtain digital impressions and complete a digital design of the proposed restoration in order to plan their cases. When the design has been reviewed with the postdoctoral resident who will place the implant, a 3D printed guide is ordered to assist with fully guided surgery.

AN: Any comments about OHSU pre-doc dental implant curriculum?

DB: As we mentioned before, our implant program at OHSU is pretty robust and one of the first that was developed in the U.S., more than 20 years ago. We started with Zimmer implants, but in the last decade, the OHSU implant program has expanded significantly. We now restore a variety of implant systems (mostly Straumann, Nobel and Astra). Even better, we are closely monitoring our long-term restorative outcomes as part of our clinical research program, and have already published three studies at peer-reviewed journals with our findings, and have more studies related to the implant program underway. This has been made possible by our strict protocols and the high level of calibration among the faculty members who participate in the implant program.



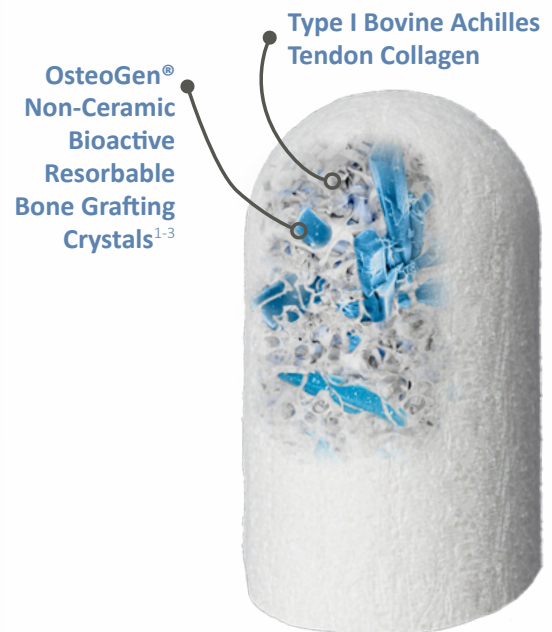
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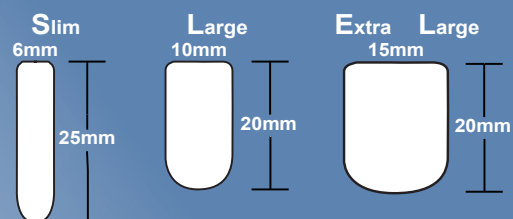
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England and America are two countries separated by a common language

– George Bernard Shaw

Interview by Academy News Editorial Consultant Paul Fugazzotto, DDS; with Dr. Ronald Jung, President, European Association for Osseointegration

As with all great quotes, Shaw's comment can be appreciated on many levels, whether it be at a pub, or a gathering of Wittgenstein scholars discussing the meanings of language.

Unfortunately, a similar sentiment, that "dentistry is different in Europe than in America," is often voiced when discussing dental therapies and oral health, or why care was not delivered at the appropriate level of quality and comprehensiveness. A sampling of the statements I have heard over the last few years when attending presentations include:

- "In Europe the training is different: students are taught how to do everything in every dental discipline" (at a recent presentation by Dr. **Ronald Jung**).
- "In America, we have to work with general dentists who can't do this type of work; so we don't do anything fancy" (at a presentation by Dr. **Danny Buser**).
- "You can't do what he is doing in private practice; it doesn't work economically" (at a presentation by Dr. **Pascal Magne**).
- "He can do that because he's on Fifth Avenue in New York" (at a presentation by Dr. **Burt Langer**).
- "He can do that stuff because he is famous" (at a presentation by Dr. **Dennis Tarnow**).

- "They can do whatever they want in Europe, because patients never sue the dentist" (at too many presentations to cite).
- And one of my favorites..."She must have a lot of family money to be able to do so much clinical research" (at a presentation by Dr. **Cherilyn Sheets**).

Is this American – European dichotomy real, or merely a sign of unease, when the attendee sits through a presentation highlighting therapies he or she does not perform; a presentation which exemplifies what can be accomplished through thoughtful, comprehensive patient care; while cases flash through the attendee's mind which could (should) have been treated differently?

Of course, I have also had comments directed to me from attendees of presentations I have given in the USA and abroad, including:

- "Boston has a higher dental IQ than the city where I practice."
- "My referring dentists don't want to do complicated things."
- "My periodontist / oral surgeon doesn't know how to do the things you are showing."
- "We don't use specialists very much in my country, so we don't do this type of work."

- “You have better dentists to work with in the U.S.”
- “In America patients will spend more money on their teeth.”
- And another oldie but goodie... “You only treat rich people.”

In an effort to explore this supposed “difference” between American and European dentistry, I (PF) spoke recently with **Dr. Ronald Jung** (RJ), chairman of the Clinic of Reconstructive Dentistry at the University of Zurich, and president of the European Association for Osseointegration. Dr. Jung is a highly talented, introspective clinician with an impeccable reputation.

PF: Dr. Jung, much is often made in the United States of the differences in treating patients in America and Europe. Is the same feeling present in Switzerland, and in other countries where you have given presentations?

RJ: Yes, I think there is a feeling around in Switzerland that there is a dentistry in America and one in Europe. The best example is that we have American Guidelines in dental Radiology and we have European Guidelines in dental Radiology. This does not make sense. We should all have the same passion for providing our patient with the best possible care.

PF: The European model of dental education, and it’s supposed focus upon training undergraduate students to confidently perform all aspects of dentistry upon graduation, is cited as one of the primary reasons that there are more “super dentists” in Europe than in the U.S. This contention is coupled with the belief that “there are not enough specialists to go around” in European countries, further forcing general dentists to “do everything.” As someone who is well versed in the various dental educational models, do you believe this is an accurate representation?

RJ: I do believe that there are differences in terms of specialties and general dentists. In Europe we do have significantly less specialists. More general practitioners (GP) are doing a major part of dental work in Europe. The specialist in Europe gets primary patients which can hardly be treated and the straight forward and advanced cases are going to be done by the GPs.

PF: Following up on the discussion of undergraduate proficiency, what do you see as the greatest challenges to preparing dental students for private practice?

RJ: The understanding and the complexity of dentistry has increased over the last 15-to-20 years. This leads to more theoretical knowledge; what is more and more missing is the routine in clinical practice. This is missing for the private practice.

PF: What percentage of your patient time is spent retreating patients who have had a less than desired therapeutic outcome from other practitioners? Of these “retreatments” (itself a misnomer, as the therapy you perform for these patients is not truly retreatment, but rather more appropriate treatment), what percentage arise from treatment rendered by a “super dentist,” and what percentage by a restorative dentist - specialist(s) team?

RJ: My clinical practice at the University of Zürich is a highly specialized clinic treating up to 60-to-70% of the patients as “redentistry cases.” This percentage is not representative because I receive patients from all over the world including Australia. Approximately two percent are coming from “super dentists,” the rest from other dentist primary outside Switzerland.

PF: Speaking of dental specialization, I have heard many U.S. specialists say, “In Europe specialists aren’t respected by general dentists, so general dentists do everything, meaning complicated work isn’t done very often.” Assuming “complicated” work refers to interdisciplinary care, do you believe that dental specialists are less respected, and that more complex, multi-disciplinary courses of therapy are often ignored?

RJ: I also believe that specialists in Europe are less respected than specialists in the U.S. As the GP is doing so much, it often ends up that the specialists have the most complex and multi-disciplinary cases, which are going to be treated in a multi-disciplinary set up.

PF: Economic factors are often put forth as another reason care is so different in the U.S. and Europe, because “U.S. dentists have to worry about overhead and patient insurance coverage, while everything is paid for by insurance in Europe. Is this statement accurate? If so, does and/or should this fact influence the care proposed to patients?



Timelessness in vertical ridge augmentation

By: Istvan Urban, MD, DMD, PhD; Academy News Guest Contributor

In a recent paper titled, *Minimal Invasiveness in Vertical Augmentation*, we concluded that using the term “minimally invasive” with vertical ridge augmentation is an oxymoron, or at least questionable, despite the fact that we are making new advances to reduce patient morbidity.

For me, reducing invasiveness has been an important goal as I have been refining my surgical techniques during the past two decades. As a result, my surgery has completely changed since I started to do these advanced procedures. Even though our bone regeneration success rates were already excellent 20 years ago, today our patients can heal much easier, experiencing less pain and swelling.

Flap advancement techniques around the mental nerve, as well as the mandibular lingual flap advancement, have become significantly less invasive. Anterior maxillary flap closure has always been difficult since there is no lingual flap that can assist in the closure. New techniques, such as the sub-orbicularis preparation and the papilla shift techniques, made this challenging area more predictable. The posterior maxilla has been a region which frequently resulted in increased swelling and hematoma formation. Development of a more superficial flap advancement approach by avoiding the injury of the pterygoid venous plexus has resulted in less morbidity of this sensitive area.

Today, we can say that vertical augmentation surgery is very predictable, regardless of the location or the size of the defect. I'd like to say that I feel the defect that I could not treat on this planet has not been born yet.

However, my main goal currently is not only to regenerate a defect, but to make the regenerated bone everlasting. What do I mean by that? It was not always given that once you regenerate, it will last forever. Well, we always found that regenerated bone behaves

like native bone. However, maintaining the bone level at the neck of our implants can be much more challenging and can't be just taken for granted.

When we regenerate, we modify soft tissue in terms of its thickness and we are also distorting soft tissues, losing keratinized tissue and the vestibule. Reconstructing soft tissue has become an integrated in part of our treatment. However, you can also destroy much of your new regenerated tissue with soft tissue grafting in case you use the wrong type, the wrong size or do it at the wrong time.

Regenerated bone also loses volume during its maturation phase. We do need to estimate about two millimeters of remodeling during the corticalisation of the reconstructed volume. Augmenting the surface of the reconstructed bone at implant placement using minimally invasive bone graft techniques, such as the “mini sausage” in conjunction with proper soft tissue augmentation techniques demonstrated good bone and soft tissue stability. However, placing a tissue level implant deeper in regenerated bone may also work without the need of additional grafting.

There are trends of different surgical techniques as well as the use of different materials, which are frequently not backed up with proper research. Therefore, some of these techniques may not serve the best interest of patients. A recent review paper that was looking at crestal bone changes of implants placed into vertically augmented bone with various surgical approaches has shown a lack of long-term documentation of crestal bone stability after loading with some of these new approaches.

Treatment approaches that have higher rates of complications or higher rates bone resorption will lead to less success in regeneration as well as implant survival. Clinicians should always keep in mind that these surgeries are too invasive for them not to have success and good long-term results.

When I treat a patient, I think about two main objectives. One is the three-week healing, which is a very good indication for the success of regeneration. The other goal is implant health and graft maintenance at the

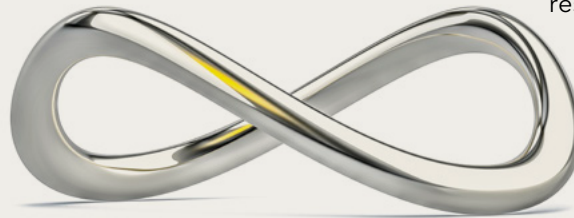
Continues on page 25

Dr. Istvan Urban

10-year follow-up. I will not make any compromises which could jeopardize these two goals. You need to have a strong mind for this as shortcuts in treatment strategies or shortening healing times may be tempting to both clinicians as well as patients.

Placing an implant in regenerated bone does not mean your treatment has been completed. Most of these patients have a combination of bone as well as soft tissue deficiencies. Our most frequently used treatment strategy is called the "safe track." The "safe track" has four stages. It takes about 15 months to get from a defect in the anterior maxilla to implants loaded in regenerated bone surrounded in well reconstructed and stable soft tissues with beautiful peri-implant papillae.

If you need to reconstruct the vestibule, soft tissue thickness and peri-implant papillae, the soft tissue phase of the regeneration will consume about six months of your total treatment time. If you try to reduce this, you will either have a compromised outcome or additional risk of complications.



In easier cases, such as single tooth vertical defects in healthy patients, however, we may be able to accept a slightly increased risk and implement what we call the "fast track." In this treatment approach, we combine membrane removal with implant placement, mini sausage and connective tissue grafting. The "fast track" takes 12 months from a defect to a loaded implant including soft tissue reconstruction.

Patient selection, preparation for surgery, good surgical techniques based on sound biological principles and research, and careful postoperative care will lead to reduced rates of complications and increased patient comfort.

Vertical augmentation has been mystified as a difficult surgical procedure. To me, it is not a technical, but a biological challenge as we are regenerating tissues without the support of any bony wall frameworks. Therefore, we have to respect all biological principles and allow appropriate healing times. This is in the best interest of our patients.

Dr. Fugazzotto interviews Dr. Jung interview *(continued from page 23)*

RJ: This statement is partially correct. Every European country has different insurance coverage. In Switzerland for instance, the majority of treatments are NOT covered by insurance companies. Therefore, in this context a comparison is not possible.

PF: In summary, what is your opinion of the differences and similarities in dental care in the U.S. and Europe?

RJ: I do believe that the economic pressure in the U.S. is bigger than in Europe. Patients in the U.S. are more interested in immediacy and faster treatment protocols.

PF: What do you believe is the ultimate goal of patient care?

RJ: To understand that we do not treat "patients" we treat "human beings" and we should do this is the best possible way to provide oral health care.

Can any conscientious clinician disagree with Rony's assessment of the ultimate goal of patient care?

Over many years of private practice and teaching, I have come to define therapeutic success as: **maximizing treatment outcomes and minimizing patient trauma, while addressing patient needs and fulfilling patient desires, in a comforting, welcoming environment, to the best of the team's ability.**

However, this definition of therapeutic success is not the ultimate goal of patient care.

Patients don't come to us for teeth.
Patients don't come to us for comfort.
Patients don't come to us for function.
Patients don't come to us for esthetics.
Patients come to us to attain an optimal quality of life.

If this goal is always paramount in our minds; so long as this goal supersedes any perceived hurdles or differences; we can change peoples' lives.....in the U.S. and abroad.

As Rony stated, we must always understand we are treating human beings. I would only add that our patients come to us, give us their bodies, and say "please help me." This is the challenge: one we must always do our best to meet.

**I am not so much speaking
to the representatives of
diverse States of Europe and
America as to the exponents
of principles and hopes that
are common to us all...**

- Henry Campbell-Bannerman

Stony Brook provides lifelong learning

By: AO Fellow Vincent J. Iacono, DMD; Academy News Guest Contributor

The Stony Brook University School of Dental Medicine has incorporated significant didactic and clinical implantology components to its dental curriculum.

In academic years 2 and 3, there are Implantology I and II courses of approximately 75 hours in total length. The courses include a study of implantology from its origins and development to the current state of diagnostics, pre-implant surgery, implant placement, restorations, maintenance and the prevention and treatment of complications. The dental students have hands-on laboratory sessions with three implant systems including Nobel Biocare, Straumann and BioHorizons.

The clinical component includes the diagnosis, planning and restoration of dental implants as single units, 3-4 implant fixed partial prostheses, and/or 2-4 implant supported overdentures. However, the dental students do not perform implant surgery due to the lack of significant surgical training in the dental curriculum but provide surgical guides. At this time, there is no clinical implant competency test due to the lack of sufficient numbers for a summative clinical assessment.

The dental students have no implant surgery selective but have required rotations in years 3 and 4 to assist in implant site development and implant placement surgeries performed by the residents in the advanced dental education program in periodontics. The latter clinical component includes case-based competency tests on implant treatment planning, referrals, and the evaluation of treatment provided.

It should be noted that the School of Dental Medicine has a state-of-the-art Center for Implants and Digital Technology (CIDT). In their rotations in the CDIT, the dental students learn the advantages and disadvantages of planning and restoring implants by analog techniques and digitally using optical scanners. They learn how to use scans and to merge data obtained for CBCT scans and chairside restorations. Surgical guides are prepared from analog and digital impressions.

It is stressed that the dental students are taught the parameters of implant therapy, the need to obtain the necessary periodontal/

AO events and CE calendar



June 12, Noon ET

Live Webinar

Contemporary Treatment Planning for the Optimal Prosthetic Outcomes at the Esthetic Region

Serdar Yalcin, DDS, PhD

July 26 - 27

Hands-on Workshop

Immediacy in the Esthetic Zone: The Perio-Ortho-Restorative Connection

Joseph Kan, DDS, MD

Nobel Biocare Headquarters, Yorba Linda, CA

September 18, Noon ET

Live Webinar

Prosthetic Considerations That Impact Single Implant Surgery and Restoration Design: Clinical Decision Tree and Digital Case Demonstration

Junying Li, DDS, MS, PhD

surgical education and experience to become competent in implant surgery, be knowledgeable of referral protocols, and learn how to prevent and manage implant complications. And, perhaps most importantly, they are taught to maintain a culture of life-long learning as the discipline of implantology continues to be enhanced by new technologies.



Dental implant education: A mission of our Academy

By: AO Fellow Mehrdad Favagehi, DDS, MS; Academy News Editor



Every profession has its own focus and familiar jargon. In implant dentistry, a word we often focus on is “micro-gap,” as the microscopic gap between the implant fixture and the abutment. We talk a lot about the micro-gap, but we rarely hear about the “macro-gap” in implant dentistry.

The “macro-gap” in implant dentistry is the distance between dental school graduation and competency in implant practice. Even though implant dentistry has become an integrated part of routine dental practice, no one expects dental students to be implant experts immediately following graduation.

More and more dental schools are beginning to expose pre-doc students to the basics of implantology, but still reserve comprehensive dental implant education for the post-doctoral level.

Even at the post-doctoral level, in traditional specialties and advanced education residencies, the implant curriculum seems like an add-on instead of part of a cohesive core curriculum. There are exceptions, but in general, what is lacking in traditional dental education is a strong inter-disciplinary core curriculum focused on implant dentistry taught by leaders in implant dentistry. Given the numerous challenges dental schools face with operational issues as well as economics, staffing, patient and faculty shortages, it's unreasonable to expect a swift solution. But here is exactly how our academy can help.

Being true to its mission to raise standards in research, practice and dental implant education, the Academy of Osseointegration has worked tirelessly since its inception to create educational content for those interested in achieving the highest standard of patient care in implant practice. The Academy has built a world-class curriculum in implant dentistry which is now accessible on our website, complimentary to our members. This includes student members. Hundreds of hours of AO online courses, Annual Meeting presentations and recorded webinars together with our two journals, ePosters and proceedings of best evidence summits can help dental educators prepare their students to become implant experts. For those interested in hands-on learning, AO is continuing to expand implant training centers across the world.

The educational resources assembled by AO can help dental educators fill the macro-gap that currently exists between dental education and implant practice. Some

dental schools have already incorporated the INVISALIGN training certificate into their curriculum so new dental graduates could provide limited orthodontic services after graduation. Likewise, dental program directors can guide their students to take advantage of the AO implant curriculum to prepare for the rigorous testing requirements needed for their students to earn a Masters or Diplomate Certificate in Implant Dentistry after graduation.

From the AO mission statement:

“The Academy of Osseointegration’s dedication to the highest standards in patient care, research and education remain the reason so many professionals have made the decision to ally themselves with this leading organization.”

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 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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¹ Norton MR, Astrom M. The influence of implant surface on maintenance of marginal bone levels for three premium implant brands: A systematic review and meta-analysis. Int J Oral Maxillofac Implants 2020;35(6):1099-1111
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