by Dr. Stefan Holst, Nobel Biocare

According to some widespread, but crude, definitions, periimplantitis can be characterized by a perimplant bone loss of as little as 1 mm in the first year after initial treatment. Since some post-treatment bone loss is in all but inevitable during initial bone remodeling in even the most successful and long-lasting cases, such definitions lead, as a matter of course, to controversy.

One of the most widely quoted scientists in dental implantology, Prof. Tomas Albrektsson, worries that periimplantitis is increasingly being used as an alarming label for benign marginal bone loss around implants. On a recent visit to Zurich, Switzerland, he spoke with Dr. Stefan Holst, Nobel Biocare’s Vice President of Implant Systems and Research, on this topic.

Dr. Stefan Holst: Periimplantitis is currently a prominent topic of discussion at various events and congresses. Is the nature of this debate beneficial for the implantology community or could it be a threat to our reputation?

Prof. Tomas Albrektsson: If the biological reasoning is not sound, then it is always a threat. When we look at the clinical outcomes in long-term studies, they are so much better than many of those that we hear and read about. I am very critical of this since it creates problems where there may not be anything problematic. The frequency of periimplantitis has been grossly exaggerated in the literature. All bone loss that occurs in the first year is definitely not periimplantitis.

From the clinician’s standpoint, we should take all types of marginal bone loss seriously—even if the great majority of implants with some bone loss will never develop periimplantitis. The problem is that we do not know which ones this applies to.

For example, one reason for problems with bone loss is cement remnants in the soft tissue. If this is removed in time, the bone loss stops. The implant can then function properly ever after without any problems. However, there is also the possibility that if the cement remnants are left in place for ten, 15 or 20 years, periimplantitis affecting the same implant may follow.

A clinician should always take action when he or she sees marginal bone loss or rather the preface of it, which is called mucositis. Mucositis is only the first sign of an immunological reaction; it has nothing to do with anything other than immunology, but this is unfortunately not understood by many of our clinical colleagues.

Recent studies among the Swedish population imply that implant brand plays a role in periimplantitis. Is this not misleading given that so many factors influence treatment outcomes?

Many of the figures that are being quoted, be that in the recent Swedish publication or others, are lamentably unrealistic. They have used the most liberal definitions of what they call a disease when in reality it is no such thing.

Our own studies of long-term follow-up of implants demonstrate very clearly a similar, small percentage of implants that are affected by periimplantitis. This is between 1 and 2 percent—whether one of the major implant systems or another is used, it makes no difference.

However, implant systems that say they are similar to other documented implants and therefore need no documentation of their own are not to be trusted.

How does a clinician determine whether bone loss is a natural physiological reaction or due to disease?

Prof. Tomas Albrektsson: “The frequency of periimplantitis has been greatly exaggerated in the literature. All bone loss that occurs in the first year is definitely not periimplantitis.”

“Implant systems that say they are similar to other documented implants and therefore need no documentation of their own are not to be trusted.”

“My clinical experience is that bone loss is a natural physiological reaction even if it is a bit excessive. The profession must unite to protest alarming reports in a much stronger and united manner than we have done to date.”

Based on your clinical experience, what are the factors that play a role in bone loss?

Treatment complications cause bone loss. We call it the “triad of poor.” First is the use of poor implant systems. As mentioned, these exist and are sold at a cheap price.

Second is poor clinical handling by clinicians without the necessary skills. Third is what we can term poor patients—those patients that are difficult to treat. These are the causes of bone loss that in some instances, although rare, may in the long term lead to periimplantitis, but in most cases do not.

So what can we as dental implant professionals do to prevent the proliferation of misinformation about periimplantitis?

I am increasingly irritated with people calling benign bone loss a disease. Those who are doing so have to read the new research that is out and realize they are wrong.

The profession must unite to protest against alarming reports in a much stronger and united manner than we have done to date. However, we must, of course, continue to take patients very seriously. We cannot ignore bone loss, even if it proves to be benign. We have to be active all the time and work to the best of our knowledge for our patients.
Driving in the fast lane
He has made a place for himself on two different kinds of podiums

by Michael Stuart, Nobel Biocare

Dr. Arturo Llobell likes a challenge. Right from the start of his dental career, one specialty was not enough. He opted to become both a periodontist and a prosthodontist, so no two days would ever be the same. It paid off. Today, Llobell enjoys a busy and varied dental practice in Valencia, Spain.

Though just 28, Llobell’s first career was not dentistry. To say his previous vocation was also fast-paced would be an understatement. As a junior racing driver, Llobell was among the best in the world, having been twice named Spanish national champion and finishing fifth in an international competition.

Many of Llobell’s former opponents became Formula One stars, and he previously tested cars alongside Sebastian Vettel and Lewis Hamilton, both of whom went on to become world champions.

Patient care comes first
Eventually there came a time when Llobell had to choose between a career as a clinician and pursuing the path to Formula One. A bad crash, among other factors, led him to opt for dentistry, and he has not looked back since. Interestingly, he says, the two fields are not as different as one might think.

“In both racing and dental surgery you need a significant amount of preparation,” Llobell explained. “Then, during the task at hand, you need a high level of concentration and attention to detail. You also need to react to changing variables if you are to succeed.”

Today, Llobell has swapped one podium for another. He now speaks at implantology events around the world and has recently accepted faculty positions at the University of Valencia in Spain and the University of Pennsylvania in the U.S.

Dual specialties, one implant provider
At the heart of Llobell’s progression are the positive treatment outcomes he achieves for his patients. A Nobel Biocare customer since the start of his career, Llobell says the company’s products have helped him the confidence to use increasingly progressive treatment protocols.

“I started working with Nobel Biocare during my residency in both periodontics and prosthodontic prostheses. I chose Nobel Biocare because it is both an established and leading implant company that offers products for both specialties,” he explained.

Llobell added: “A number of important clinicians use our products on a daily basis, and that gives me confidence in the brand.”

“Primary stability without surprises”
Llobell is particularly impressed with the new NobelParallel Conical Connection implant. “I find the NobelParallel Conical Connection implant easy to use in multiple clinical scenarios. It has a straightforward drilling sequence, which makes it easy to maintain the direction during insertion, while also giving me the chance to achieve primary stability without surprises.”—“Being able to achieve adequate primary stability permits me to opt for immediate loading protocols more often than before,” he added.

A leader of tomorrow
Llobell was named a member of the Emerging Leaders program by the Foundation for Oral Rehabilitation (FOR), which he says helped him develop as a speaker. “Being part of FOR’s Emerging Leaders group was a great experience for me as I had the chance to get in touch with world-renowned clinicians who were more than happy to give me—and the other young clinicians involved—a hand in every aspect of clinical dentistry, as well as lecturing advice.”

With its new Guide to Growth program, Nobel Biocare is hoping to help more aspiring implantologists follow Llobell’s example. Combining advanced clinical training with practice management advice, this development program seeks to help ambitious clinicians fulfill their potential by growing their implant practices.

Llobell is proud that with the appropriate skills, partners and advice, the sky is the limit. He is part of the lineup at the 2016 Nobel Biocare Global Symposium in New York that reads like a who’s who of implant dentistry. “To be sharing the podium with some of Nobel Biocare’s top speakers is an honor. I am really looking forward to it.”

More to explore!
More information about Llobell’s presentation, titled “Emerging technology—Integrated workflow improvements in everyday routine”, which he held yesterday at the Nobel Biocare Global Symposium can be found at www.nobelbiocare.com/global-symposium-2016.
How to optimize the emergence profile
An interview with clinician Dr. Léon Pariente

According to Dr. Léon Pariente, a leading clinician based in Paris, France, the emergence profile matters. In this short interview on the topic, he explains why efforts to optimize the emergence profile should begin at the planning stage.

Dr. Léon Pariente: The emergence profile should be considered holistically. It is the portion of the prosthesis that allows the implant to turn into a natural-looking tooth. It is the border between the surgical and prosthetic worlds.

An optimal emergence profile gives a smooth transition from the circular implant platform to the natural shape of the tooth at the gingival level. It should be customized for every restoration.

To be ideal, it should be considered during the implant planning phase, particularly in selecting a suitable implant, both in terms of connection type and platform diameter, as well as in determining the implant positioning in all three dimensions. Clinical factors to take into consideration are the thickness of the gingiva in the area of implant placement, the size of the horizontal cross-section of the future crown at the gingival level, and the position of the future crown relative to the bone.

How does the choice of implant affect the emergence profile?

Firstly, the discrepancy between the diameter of the platform of the implant and the diameter of the cross-section of the future crown at the gingival level needs to be compensated for by the abutment. The contour of the abutment from the platform to the gingival level constitutes the emergence profile. The angle between the platform of the implant and the wall of the abutment should be as wide as possible to avoid creating a bacteria reservoir.

In addition, the connection type (external or internal) and the collar of the implant, whether polished or not, have a direct influence on the depth to which an implant can be placed to protect the surrounding bone from physiological resorption while retaining the biological width. Internal connections such as Nobel Biocare’s conical connection, which can be placed under the bone level, therefore allow more flexibility when placing the implant. Smaller-platform implants should be placed deeper, leaving more vertical room to compensate for the discrepancy in diameter between the horizontal cross-section of the future crown at the gingival level and the platform itself.

Why is it worth investing time and effort in optimizing the emergence profile?

An optimal emergence profile supports the gingiva around the implant-retained crown. This prevents the formation of proximal or buccolingual food traps and allows the patient to maintain the required level of hygiene around the implant. Furthermore, it is a prerequisite for the formation of pseudo-papillae in the interproximal spaces. Poor emergence profile design can have consequences that can ultimately lead to the loss of the implant.

What are the main challenges in establishing an optimal emergence profile?

The main challenges that prevent a clinician achieving an optimized emergence profile are improper choice of implant diameter or incorrect implant placement depth. Furthermore, in anterior cases, an ideal gingival contour must be created with a provisional crown before taking the impression for the final crown. The main challenge in this case can be transferring the soft-tissue contour to the cast accurately.

What are the main misconceptions about establishing the emergence profile?

Because of the popularity of standard abutments that are cheap and easy to use, people often think that it is very complicated or expensive to create abutments with a customized emergence profile. The accessibility of the NobelProcera solution should make customized abutments the standard of care.

More to explore!

In order to see an ideal emergence profile in one of Dr. Léon Pariente’s case reports, scan the following QR code.
KaVo MASTERSurg LUX Wireless surgical unit
Taking dental surgery to a whole new level

by KaVo Kerr Group

The KaVo MASTERSurg LUX Wireless was designed to redefine surgical standards, offering all dentists and oral surgeons an ideal surgical solution, no matter what their individual needs.

With an eye toward maximizing comfort, the unit features wireless foot control, allowing the user great freedom of movement, and a modern touchscreen with a non-reflecting display to allow optimal viewing from all angles. Valuable for the comfort that comes from peace of mind, the data documentation function supports procedures with real-time display of the torque and other important digital data, saving it concurrently.

Another critical feature is the customizable programming to address individual needs. Users, a clinician can customize up to ten programs, each with ten individually programmable steps.

Those outstanding features are the foundation for the quality and high performance provided by the INTRA LUX 6000 LED, one of the world’s lightest surgical motors.

Delivering, on the promise of innovation and quality, KaVo users worldwide have come to expect, the KaVo MASTERSurg LUX Wireless is taking dental surgery to a whole new level, providing a feature set that makes a substantial difference in delivering maximum performance on a daily basis.

Treatment planning: Begin with the end in mind
The value of planning for final results before treatment initiation

by Dr. Gary Orentlicher, US

I have frequently remarked that in the last 15 years there has not been a greater practice builder for me, as an oral and maxillofacial surgeon, than my involvement in guided surgery. Using my iCAT (Imaging Sciences International), in combination with NobelClinician Software (Nobel Biocare), has made me a better, more accurate dental implant surgeon, and most importantly, has greatly improved my patients’ case outcomes. It has changed the way I practice daily in all aspects of patient diagnosis, planning, and surgery.

iCAT and NobelClinician allow for treatment planning and surgical predictability with full 3D and restorative outcomes in mind. iCAT’s high-resolution volumetric images provide complete views for a more thorough analysis of bone volume and structure and of teeth and implant orientation. This means more accurate evaluations, minimally invasive procedures, more predictable treatment results, shorter appointment times and happier patients.

In a presentation I made this spring, I spoke about what I regard as the indications for guided surgery. They include:

- three or more implants in sequence
- cases with anatomical and/or structural issues
- implant position critical to a planned restoration
- problems related to proximity of adjacent teeth
- fully edentulous patient cases
- immediate extraction and implant placement
- significant alteration of bony anatomy (e.g., trauma, grafting, distraction and pathology)
- medical problems (e.g., radiation therapy, bleeding dyscrasias, and orthopedic and psychological problems).

In each case, there are four primary steps to a successful guided surgery workflow:

- Step 1: 3D imaging with a scanning prosthesis or optical scans
- Step 2: 3D treatment planning with planning software
- Step 3: Creation of a computer-generated guide, laboratory and surgery
- Step 4: Knowledge of the appropriate implant-specific drilling instrumentation.

In my clinical experience, the quality of the product one uses makes a significant difference in the process and final treatment result. I look for quality, ease of use and support that helps me practice with the greatest amount of confidence.

I use the iCAT cone beam 3D unit, which offers many valuable features, including flexible imaging control. This allows me to customize my scans by minimizing the field of view and radiation dosage while maximizing resolution. With iCAT, I gain greater control over my workflow and the entire scanning process.

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Dr. Gary Orentlicher

About the author
The comprehensive creos xenogain portfolio features a range of xenogeneic bone substitutes and creos xenoprotect, a resorbable collagen membrane. Each product in the creos range of xenogeneic solutions has been developed to optimize treatment results. This comprehensive selection offers biocompatibility, easy handling, slow resorption rates and variety. Whichever option the clinician chooses, he or she can be confident of building a reliable foundation for implant treatment success.5

Introducing creos xenografts

Designed by nature, developed for clinicians

by Nobel Biocare

Sufficient bone quantity and quality are essential for successful dental implant treatment. For that reason, Nobel Biocare introduced xenogeneic bone substitutes and xenoprotect, a resorbable collagen membrane. The latest addition to the creos range is the creos xenograft. Creos xenograft is available in a bowl ready for mixing, eliminating the need for an additional sterile setup device.

The comprehensive creos xenograft portfolio features a range of xenogeneic bone substitutes and creos xenoprotect, a resorbable collagen membrane. Each product in the creos range of xenogeneic solutions has been developed to optimize treatment results. This comprehensive selection offers biocompatibility, easy handling, slow resorption rates and variety. Whichever option the clinician chooses, he or she can be confident of building a reliable foundation for implant treatment success.5

Once hydrated, creos xenoprotect offers highly resistant to degradation, creos xenoprotect offers prolonged protection of the graft site, while its excellent vascularization and tissue compatibility support fast healing.6

Once hydrated, creos xenoprotect is stronger than other non-cross-linked and chemically cross-linked membranes once hydrated. As it is highly resistant to degradation, creos xenoprotect offers prolonged protection of the graft site, while its excellent vascularization and tissue compatibility support fast healing.6

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Easy to handle—creos xenogain

For quick and easy application of the graft, creos xenogain is delivered sterile and comes either in a vial or in a bowl ready for mixing. There is also a choice of two granule sizes and up to four volume options, offering a wide variety of alternatives depending on the clinical indication and preference.

The natural barrier—creos xenoprotect

Once the bone substitute has been applied, the resorbable xenoprotect membrane can be used to hold it in place and act as a barrier to soft-tissue ingrowth. Manufactured using highly purified collagen and elastin fibers, it possesses outstanding handling properties that make it easy to reposition and unfold. Hydrated in seconds, but with minimal size increase, creos xenoprotect can be trimmed when dry for accurate placement at the graft site.

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References:
5. Data on file for xenogeneic options for a wide variety of indications and preferences.
6. Data on file for xenogeneic options for a wide variety of indications and preferences.
9. More to explore! For more information about creos regenerative solutions, including articles and cases, visit www.nobelbiocare.com/creos.
Teamwork, for predictable outcomes

“Working as a team allows us to make the most of our individual strengths and expertise.”

by Nobel Biocare

Dr. Tarun Agarwal, a general dentist, and Dr. Uday Reebye, an oral surgeon, advocate a team approach to implant dentistry that entails a surgical specialist, an anesthesiologist, a restorative dentist and a dental technician or laboratory. The editors of Nobel Biocare News recently asked these two doctors in the U.S. for their insights about teamwork in general and the All-on-4 treatment concept in particular.

How did you begin working together?

Dr. Tarun Agarwal: I first met Uday while he was a medical student at the University of North Carolina at Chapel Hill. Later, after he had completed his oral surgery residency and opened his practice here in North Carolina, I began seeing him the surgical cases that I was not comfortable treating. Our professional relationship flourished when Uday encouraged me to collaborate on some of his surgical cases. He was very open to sharing tips and tricks, even allowing me to participate in the surgery.

Dr. Uday Reebye: At the same time, Tarun taught me about prosthetic and implant advancements that had a great impact on my work.

Agarwal: It became quite clear that the cases we did together were the cases that turned out best and had the fewest complications. I think it was the strategic collaboration and taking a holistic (surgical and restorative) approach to the cases that made the difference.

Reseebye: And it usually works out that whoever wins the argument has thought through the issue at hand a little longer and harder.

Agarwal: I can give you an example. Uday was hesitant to begin using computer-guided implant surgery. Initially, it was slower than the traditional technique he was used to, but for me, it made the restorative component absolutely more predictable and quicker. After our first case, he became aware that the extra 20–30 minutes of his time saved the patient multiple visits on the restorative side.

Reseebye: It was an easy trade-off to make. At the end of the day, we resolve any differences of opinion guided by a single principle—do what is in the best interests of the patient.

Reseebye: Yes, in my opinion, the All-on-4 treatment concept can only be successful as a team effort. It is a beautifully thought-out concept that marries surgical and prosthetic philosophies. I have to tell you that teamwork brings a great deal of enjoyment to the clinic. If you are happy when working, patients are happier and assistants are happier; and somehow that combination results in great outcomes.

Reseebye: It really does! In our team approach, the restorative dentist creates the case blueprint, the surgical specialist serves as an engineer—by verifying the blueprint is surgically feasible—and the anesthesiologist is totally focused on patient comfort. Starting with the endpoint in mind and collaborating to make it possible have routinely led to great outcomes.

Reseebye: And because this treatment concept is more affordable for patients, a greater number of patients become implant candidates. For us, the All-on-4 treatment concept has virtually created a new market.

What would you say to clinicians thinking about starting with the All-on-4 treatment concept?

Agarwal: Go learn about it with an open mind! There are literally millions of patients who can benefit from this treatment. Nobel Biocare has a predictable workflow with a tremendous support system to make you successful.

Reseebye: Before I took my first All-on-4 case, all I heard from many clinicians (none of whom had taken a class or performed All-on-4 surgery) was that the concept was flawed and a recipe for disaster. Seven years later, all I can say is that I am so happy we did not listen to them. My advice? Keep an open mind, take a course and see for yourselves what a great service you can provide for your patients.

For any clinicians considering adopting a team approach like yours, is there a secret to a successful partnership?

Agarwal: You have to let go of your ego. We are all equals to the patient, after all, each bringing a different area of expertise to the team.

Reseebye: Let me add this: Listen to your patients. Be willing to talk to other clinicians, to share ideas and never be afraid to reach out when you need help. Most of us love to share what we know with each other—to be of help and to learn more at the same time. And finally, enjoy! It is a wonderful journey.

Is the All-on-4 treatment concept especially appropriate for your team approach?

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What do you regard as the main benefits of the All-on-4 treatment concept, for both clinicians and patients?

Reseebye: We see many edentulous or about-to-be edentulous patients who need new teeth. Previous treatment modalities were so expensive and difficult that these patients left our clinics depressed, with no hope in sight. The All-on-4 treatment concept allows us to clin-
The very definition of synergy

The whole is greater than the sum of its parts

by Dr. Stefan Holst, Germany

Nobel Biocare does not develop individual products but entire solutions that provide fully functional, natural looking, long-lasting results. In order to ensure long-term clinical performance, safety and cost-efficiency for everyone involved in the treatment process, each Nobel Biocare component has been designed to fit and function perfectly with its related components. Together, they produce a finely tuned system.

Parameters that influence long-term performance

Computerized simulation tools, such as finite element analysis, and biomechanical testing in the laboratory have served to identify parameters that can impact the performance of an implant system. These parameters include joint compression (the force that acts at the implant–abutment interface under loading conditions), preload (the tensile force keeping the components together) and the friction coefficient (which depends on the surface materials that are in contact with each other).

Other significant parameters include the force that the patient exerts on the system by chewing (masticatory force), as well as the length of the contact between the abutment and the implant, as well as—when using a clinical connection implant—the angle of the abutment. A small change in any of these parameters—even one not visible to the eye—can lead to extreme load and stress conditions that result in system failure.

Precise fit for joint stability

The interface between the implant and abutment is critical for joint stability. Manual adjustment of a cast or the use of a substitute abutment can alter the contact angle and contact length. Such an undefined contact situation on the implant steel, may also have an impact on performance-relevant parameters.

Preload, the force that holds the components together

Preload is defined as the tensile force creating the friction angle in the abutment and the implant. It is generated by the application of torque to the screw, although only a fraction of the torque force is stored as preload, while a much larger percentage is spent on overcoming friction.

To account for this major loss of torque, and to ensure that the system is sufficiently held together, the screw has to be inserted at the recommended torque. Fully manual screw insertion is likely to result in lower torque and, consequently, suboptimal preload. Insufficient preload leads to increased relative motion between the system components, and this can contribute to screw loosening and/or component failure. Conversely, preload values that are too high can result in component fracture.

Optimized to the last detail

Nobel Biocare abutments are delivered with a dedicated clinical screw that has been optimized for the implant–abutment system it is a part of. Depending on the abutment, connection type and platform size, screws come with or without a surface coating.

The absence or presence of the coating and the coating type all affect the preload. For example, with a diamond-like carbon coating, screws marketed under the TorqTite brand show higher preload values compared with screws that have a standard titanium surface. Nobel Biocare provides an appropriate screw type for every implant–abutment connection, ensuring a tight and stable fit for long-term performance.

Avoid substitutes, minimize patient risk

If substitute components are used, the parameters governing system performance are no longer controlled. Consider maximum joint compression—which defines the load that the implant collar can bear—as an example. A substitute may result in a force that is higher than the allowed maximum, causing the implant to fracture.

To prevent such catastrophic results, the peak forces have to be distributed in a controlled way. This can only be achieved by using high-quality, precision-manufactured components that have been designed and tested both individually and as part of the system for which they have been designed.
Why NobelProcera CAD/CAM bars?

For the sake of quality, function, esthetics and good business

by Michael Stuart, Nobel Biocare

Certified dental technician Thomas Wade is the owner of New Horizons Dental Laboratory on the outskirts of Denver, Colorado, U.S. According to him, the quality and efficiency gains that result from outsourcing the production of bars to NobelProcera is rewarding for everyone involved.

Wade has chosen NobelProcera technology as his exclusive provider of CAD/CAM-milled titanium bars for two main reasons: “First of all,” explained Wade, “the NobelProcera software allows us to access and provide a wide variety of solutions entailing many different types and styles of bars, customization features, and attachments—all in order to better address the patient’s individual needs.”

Secondly, it is Wade’s view that this technology puts design control in the proper hands. “A bar is best designed by a skilled technician with experience in intra-oral biomechanics,” he stated simply. He went on to explain that, since the bar is only one of several components in a successful restoration, the bar designer must fully understand how the bar will support the other components, such as denture teeth and the PMMA base, in order to provide long-lasting function and esthetics.

Wade cited other reasons for using NobelProcera CAD/CAM bars. Broad and comprehensive technical support is high on his list, as is the state-of-the-art design software that keeps him competitive as he works at the technological cutting edge.

“Meticulous quality control by NobelProcera, especially as it relates to passivity of fit and finish,” Wade added, “all but eliminates remakes,” saving time, effort and money.

Clear advantages

In order to convince clients to adopt this technology, Wade uses photographs of the bars themselves and of the finished cases both in his brochure and on his website.

“In the early days, I actually took the first few bars I did around to key clients to show them the accuracy and beauty of these bars first hand,” he explained. “Today, I not only show the bars, but also use screenshots taken from the design, including the all-important 2D cross-section to help highlight to better, more effectively treat a patient’s specific intra-oral needs.”

NobelClinician facilitates teamwork

Especially in cases involving edentulous or nearly edentulous arches, clinicians who use NobelClinician treatment planning software become natural collaborators for a laboratory like New Horizons.

“Demonstrated quality serves as a strong marketing tool,” he said. “Also, at a time when most bar cases have been oversimplified to a one-size-fits-all treatment plan of full wrap design, I have made my clients aware that we can offer a multitude of design styles to our patients.”

“Fixed versus fixed-removable prostheses”

Thomas Wade will be lecturing two sessions today. His lecture, titled “The All-on-4® treatment concept for an immediate temporary bridge,” will take place at 9 a.m. and again at 11 a.m. In addition, he will be presenting a lecture on the topic “Fixed versus fixed-removable prostheses” at 1 p.m. and 4 p.m.
We come into this world primed to connect with the faces around us. This ability is literally hardwired into our neural circuitry. There is a specialized region in our brain, located in the temporal lobe in a region called the fusiform gyrus, that is filled with neurons that preferentially fire whenever a face comes into view. Within minutes of birth, babies begin using this brain region; studies demonstrate that even very young infants show a strong preference for looking at faces over all other objects.

The brain is responsible for coordinating every single activity that keeps you alive; and some terribly precious real estate in the brain is allocated to a pint-sized structure whose only apparent purpose is to become activated in response to a face. Since evolution is constantly shaping the brain and adapting its function to ensure our survival, the fact that a brain region is dedicated to this task indicates that facial recognition must be essential for our survival.

But why?

One reason is that the face is the means by which we communicate. Thirty years after On the Origin of Species was published, Charles Darwin addressed this very question in The Expression of the Emotions in Man and Animals. In this book, Darwin wrote, “The welfare of mankind depends on the expression and recognition of emotion.”

And if you do not believe Darwin, then witness any adult with an infant. Of all the motor skills that infants must master in the first few years of life, none is as important as mimicking the facial gestures of people around them. Even at a very early age, humans devote a great deal of attention and energy to teaching infants the movements required for facial expression. In fact, we know that children who are incapable of or uninterested in learning this task are often later diagnosed with conditions such as autism.

This focus on the face ultimately translates into our faces becoming central to our sense of identity. One does not need to look much further than children’s drawings to see this. Ask a 5-year-old to draw a human being and you will get a stick figure with a lollipopsized head, complete with a face. The face defines the entity.

Illustrators of children’s books exploit this very characteristic: Everything of emotional importance to a child is illustrated with a face. The sun has a face. The moon has a face. Thomas the Tank Engine has a face. It is a way to personalize the world.

Beauty, a sign of well-being

The face is not only important as a means to communicate; it also serves to advertise our health, youth and vitality. A face that projects an image of great health indicates our health, youth and vitality. A face that defies the laws of gravity indicates that you are different on the inside. Nevertheless, there is no denying that a physical transformation of our face powerfully affects the way we view ourselves and the way others respond to us.

Therefore, beauty is best defined by the kindness, compassion, intelligence and warmth of an individual, it is also expressed as optimism and perseverance in the face of adversity.

For those who have suffered a mishap or a disease that leaves them looking different, reconstructive surgery and/or prosthesis supported by osseointegrated implants can be decisive for living a good life outside the confinements of the home.

Across all ethnic groups and epochs, the general hallmarks of beauty have been symmetry and a balance in proportions. In short, as a species, we find the average face to be the most beautiful.

Reverse side of the coin

Diseases and injuries can create asymmetries and imbalances in the proportions of the face that can be fatal for social interaction. Because the face is often the calling card of a disease, people often intuitively shy away from disfigured people. Looking different on the outside, of course, does not mean that you are different on the inside. Nevertheless, there is no denying that a physical transformation of our face powerfully affects the way we view ourselves and the way others respond to us.

Although beauty is best defined by the kindness, compassion, intelligence and warmth of an individual, it is also expressed as optimism and perseverance in the face of adversity.

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Across all ethnic groups and epochs, the general hallmarks of beauty have been symmetry and a balance in proportions. Surprisingly perhaps, people universally agree that the most beautiful faces are actually those that are the most average-looking. Experiments using composite images based on hundreds of women’s faces have demonstrated that when people are confronted with the image of Ms. Average-Face World—regardless of the viewers’ ethnic background—they uniformly agree that she is more beautiful than the individual faces that make up the composite. In short, as a species, we find the average face to be the most beautiful.

About the Author

A member of the scientific committee for the 2016 Nobel Biocare Global Symposium and a professor in the Department of Surgery at Stanford University, Dr. Jill A. Helms carries out research in the field of regenerative medicine, collaborating with experts in bioengineering, materials science, physics and the life sciences. In this article, she explains why reconstructive craniofacial surgery can be decisive for the well-being of a deformed or injured patient. autaeratem nis estiusl otatur?

More to explore!

**Manufacturer matters when it comes to ceramic abutments**

An interview with Prof. J. Robert Kelly

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**by Nobel Biocare**

A new study conducted by leading materials scientist Prof. J. Robert Kelly has confirmed that not all dental implant restorations are created equal. In this interview, Kelly discusses the research, which has very recently been published in the International Journal of Oral and Maxillofacial Implants.1 The findings make for positive reading for NobelProcera customers.

Nobel Biocare News: Your latest research tested the fatigue behavior of zirconia implant abutments from four major manufacturers. What led you to take this approach?

Prof. J. Robert Kelly: We wanted to study commercial products not in order to make commercial comparisons, but to study realistic products. Our goal was to look for positive and negative findings, and the study received funding from the ITI Foundation. Our search for comparison products led us to NobelProcera and Glidewell—for BL implants these two manufacturers only produce hybrid zirconia abutments that have a titanium insert interface to the implant—and the available abutments from Astra and Straumann that are fully zirconia.

What was your methodology for testing these products?

For the first phase, we first took six of the abutments in each of the four groups and tested them with repeated loads of 200 N. We chose 200 N for the accelerated aging based on our previous work. We did not want to break the implants, so we thought that was a fair load to start with. The results then allowed us to design the second phase, by determining the loads that we would use in testing with another 12 implants. However, by the time we received the data from the first phase, we were astonished. There were clearly significant differences between manufacturers in each of the categories. This was subsequently verified in full-sample testing.

You found that the NobelProcera product outperformed all of the others, what are your thoughts?

Yes, absolutely. While we had to re-duce the load with some of the other abutments, with the NobelProcera product, we ran out no fractures at 25 million cycles, so the load had to keep going higher and higher.

How would you explain this apparent weakness of the other abutments?

The vast differences were unexpected, as the macro-designs are similar across the manufacturers. To help determine why we were seeing such varied results, I asked my colleague Dr. Isabelle Denry to do scanning electron microscopy analyses. Looking at one of the poorest performing abutments in the study, she identified that the weakness was the result of damage arising from the manufacturing process—subsurface grinding damage, large cracks, inhomogeneous crystals and a diffuse layer of porosity. From this, it was evident that manufacturer matters.

There are many reports of issues caused by third-party abutments being used with a system that they were not designed for. Considering that manufacturer matters, do you advocate using only authentic components?

In general, I advise against using lower cost third-party abutments. There is too much to lose. From what we have seen over the years, the quality of the materials is inferior, and the outcome has such a high value: the patient has very high expectations of the clinician—why would you risk that to save $100?

Considering that the NobelProcera abutment for BL implants outperformed all of the others, what are your thoughts?

NobelProcera is produced in a high-quality process, since Nobel Biocare fabricates components that are designed, tested and then verified for the BL implant system.

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### Zirconia abutments with titanium base

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Fatigue Behavior (cycles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NobelProcera</td>
<td>1,000,000,000,000,000,000,000,000</td>
</tr>
<tr>
<td>Glidewell</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

Extrapolated cycles for 10% failure at 70N (expected clinical load):

- D1: 20 million cycles
- D2: 30 million cycles
- D3: 1 million cycles
- D4: 7 million cycles

### Full zirconia abutments

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Fatigue Behavior (cycles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straumann®</td>
<td>30,000,000 30 million cycles</td>
</tr>
<tr>
<td>Atlantis®</td>
<td>20,000,000 20 million cycles</td>
</tr>
</tbody>
</table>

“Manufacturer matters”: the four abutments look very similar in clinical examination, but differed significantly in performance, indicating the impact of design and production method.

Reference:

“This is the most comprehensive congress I have ever taken part in”

An interview with scientific committee chairman Drs. Berthil Friberg and Peter Wöhrle

by Dental Tribune International

Drs. Friberg and Wöhrle, could you please introduce yourselves to the readers by telling them how you became involved in the scientific committee of the 2016 Nobel Biocare Global Symposium?

Dr. Berthil Friberg: I have been a member of the Brånemark Clinic in Gothenburg, Sweden, since its founding in 1986. For the past 30 years, I have been working in close collaboration with Nobel Biocare regarding lectures, research and clinical activities.

Dr. Peter Wöhrle: During my doctoral and postdoctoral training at Harvard in the 1980s, I was introduced to the work of Prof. Per-Ingvar Brånemark. Ever since then, implant dentistry has been the focus of my professional career. Over the years, I have become increasingly involved in research and teaching in addition to clinical work. My formal training in the interdisciplinary areas of implant dentistry, namely surgery, prosthodontics and laboratory technology, allows me to help improve outcomes based on understanding the effects and synergies on each other and streamlining of the different aspects of treatment.

What did you consider most important in compiling the scientific program for the symposium?

Friberg: This is the most comprehensive congress I have ever taken part in. It covers all topics of importance in daily implant practice, the laboratory, preclinical evaluations and treatment planning, implant placement and postoperative outcomes, and how to handle them, and how to interpret results.

Wöhrle: This symposium has something to offer for every attendee, as it covers all aspects of topics related to implant dentistry. We went to great lengths to develop several different tracks based on specific topics of interest. Once the attendees decide which topic is most interesting, the schedule allows and encourages full exploration of that subject via lectures, master classes and hands-on courses. We will have multiple activities every minute of the symposium, offering unprecedented learning opportunities based on individualized interests and scheduling.

The theme of this year’s event is “Where innovation comes to life.” Which innovations can participants look forward to in particular?

Friberg: In addition to various new components, including NobelParallel, NobelActive WP and angulated screw channel abutments, which aim to facilitate the work of clinicians, participants will learn about the work of Prof. Per-Ingvar Brånemark. Ever since then, implant dentistry has been the focus of my professional career. Over the years, I have become increasingly involved in research and teaching in addition to clinical work. My formal training in the interdisciplinary areas of implant dentistry, namely surgery, prosthodontics and laboratory technology, allows me to help improve outcomes based on understanding the effects and synergies on each other and streamlining of the different aspects of treatment.

Wöhrle: There will be ample innovations presented during the symposium, culminating in the innovation assembly forum on Saturday afternoon. The entire session will be devoted to new and upcoming products and trends in implant dentistry. This is an event not to be missed.

What are the implications of these new developments for daily clinical practice, and how can both dentists and patients benefit?

Friberg: These developments will help facilitate treatment in the posterior region, avoid cementation in the anterior region and prevent complications. They also offer various implant designs for specific clinical situations and represent further developments in hard- and soft-tissue management.

Wöhrle: The overarching goal of significant innovations in implant dentistry is to allow practitioners to achieve better long-term clinical outcomes in more patients. The graft-less approach and digital workflow, including 3-D planning and implant placement with CAD/CAM-generated surgical templates, are prime examples of how innovations can transform long-established protocols for the benefit of the patient.

Both of you have many years of experience in implant surgery. How has the field progressed in the last 20 years, and how can events like the Nobel Biocare Global Symposium support dentists in keeping up with these changes?

Friberg: This meeting addresses the main innovations we have seen over the past several years, such as improved techniques in both surgery and prosthodontics. With the technology and methodology today, we are, for example, able to treat severely compromised cases in terms of poor bone volume and poor bone texture much better. At the symposium, participants will have the opportunity to interact during treatment planning sessions, and ahead of the event, they have been able to suggest topics of individual interest that will be presented by various speakers.

Wöhrle: Major milestones in the last 20 years have been the introduction of the TiUnite surface, significantly decreasing early failures in certain applications and groups of patients, and immediate loading in select cases, shortening treatment time and thus cost for patients. Currently, the digital revolution—CT-based planning programs, CAD/CAM-generated surgical templates, and digitally designed and manufactured restorations—has changed the way we practice dentistry today, and it will change it even more in the future.

Digitization is becoming increasingly important in all kinds of industries and dentistry does no exception. Will the symposium also address this topic, as outcomes of implant placement may become significantly more predictable with digital technologies?

Friberg: In my opinion, computer planning of implants is much more important when treating patients with severely resorbed jaw bone and in patients in whom implants may interfere with various anatomical landmarks, and for whom exact positioning of the implants may be the difference between success and failure. Straightforward cases are normally solved without digitization.

Wöhrle: Digitalization will absolutely be addressed. Digital implant planning and placement deliver more efficient care with consistently better outcomes, especially in the partially edentulous patient. Placing an implant that is restorable is no longer the gold standard but an immediate loading in planning, elevates the level of excellence while increasing efficiency and safety.

Another major topic in implant dentistry is the treatment and prevention of peri-implantitis. What is the current scientific evidence on this issue?

Friberg: This is a topic addressed in many congresses today. We must keep in mind that there is still not an accepted definition of periimplantitis and, thus, prevalence figures vary a great deal. Several efforts have been made to gather expertise from all over the world to provide consensus statements on the problem.

At the moment, we do not sufficiently understand the periimplantitis issue, its site specificity, its sometimes very poor response to treatment, the impact of microbes, the foreign body reaction and so on. However, all these topics will be addressed at the symposium to provide clinicians with the latest research on periimplantitis.

Wöhrle: As Dr. Friberg just explained, there is no consensus on the definition of periimplantitis, its cause or even its treatment. I am looking forward to the latest research and updates that will be presented during the symposium.

“Where innovation comes to life” — Nobel Biocare Global Symposium

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considered a pioneer in this area, and I have sure on all the protocols. Prof. Paulo Malo is incorporating that, and I want to be a little more All-on-4 treatment concept. We just started in- modalities in my practice, especially the new things and to incorporate new treatment interfering so much innovation. I am here to learn.

Gaurav Malik
India
This is one of the best global events, offering so much innovation. I am here to learn new things and to incorporate new treatment modalities in my practice, especially the All-on-4 treatment concept. We just started incorporating that, and I want to be a little more sure on all the protocols. Prof. Paulo Malo is considered a pioneer in this area, and I have been following him for quite some time. I will be attending his master class and his hands-on.

Joe Merheb
Belgium
“I am a surgeon, and I was invited to attend by Nobel Biocare. I am here to learn more about implant surgery. A nice smile and the ability to chew is a very important part of a person’s happiness and comfort. Being able to give this to my patients in a nice and elegant way, which differs a lot from traditional prosthesis, is a very important improvement. It helps patients physically, psychologically and socially. There are a lot of interesting presentations being offered here.”

Chinji Nakajima
Japan
“I am here at the Nobel Biocare Global Symposium to study. I have been using implants in my practice in Tokyo for 20 years now. I am particularly interested in the bone regeneration class being presented here by Dr. Istvan Urban of Hungary.”

Melinda Paris
Canada
“I am from Quebec City, and I am here to get more expertise in the All-on-4 treatment concept. I am particularly looking forward to the hands-on educational opportunity here. I use Nobel Biocare implants in my practice. I like the stability. The technology is user-friendly, and the company’s customer service is very good.”

Anthony Sallustio
USA
“I have been using Nobel Biocare implants almost exclusively in my practice in Ocean Township, New Jersey, for 20 years. I am here looking for new technologies and ways to improve delivery of care to my pa- tients, improving their lives. With this tech- nology I can offer predictability, improvement of function and form, and better esthetics.”

Garry Shnayder
USA
“I have been using Nobel Biocare im- plants in my practice in New York City for six years. I am here at the conference to see what’s new and current, and to see what I can improve on. I always strive to be on the leading edge of technology for the benefit of my patients.”

Andy Temmerman
Belgium
“It’s always nice to see some valuable lectures and to see New York, of course. I am a regular user of Nobel Biocare implants. I have heard that they will be introducing new abutments, and that is something I am looking forward to. There is a lot of science right now advocating for the immediate placement of abutments, and I think this will ultimately lead to a final outcome in a better way.”

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Global Symposium attendees speak out

Dental professionals from near and far are here to stay on the cutting edge

by Dental Tribune International

Dental practitioners from around the globe have gathered in New York City for the 2016 Nobel Biocare Global Symposium. They came here to take advantage of the wealth of information and expertise being shared, to be among the first to see the latest technological advancements, and to connect with their compatriots. DTI spoke with a few attendees to find out what they are hoping to learn here and take back home to their practices.

Javier Alández
Spain

“I think everything being presented here at the symposium is very interesting. I have been using implants in my practice for 27 years. I always work with Nobel Biocare. With these products I can offer my patients security and confidence.”

Patrik Andrén
Sweden

“I only started placing implants two years ago and have already attended a number of local Nobel Biocare symposia in Sweden. However, this is my first global event and I’m very excited. I’m especially looking forward to learn more about digital dentistry, because that’s the way to go.”

Bassim Essadi
Jordan

“This is the biggest event in dental implants, and I am here every three years. All of the speakers here are very good. This technology means less discomfort, more predictability and stable results for my patients. In addition to the very valuable lectures, I also enjoy being in New York.”
news

the people joining this third global event of Nobel Biocare have travelled long distances from all over the world, which reminds us how important this conference is,” Wöhrle said.

In addition, Nobel Biocare prepared an exciting array of forums, including an innovation assembly on Saturday, at which the company will be exclusively previewing its upcoming innovations, and a full-day forum on Sunday that will be focusing on compromised patient treatment.

Under the slogan “Where innovation comes to life”, Nobel Biocare is unveiling a number of innovative new products and solutions at the event, including the On1 restorative workflow concept that bridges the gap between the surgical and prosthetic workflows, a new NobelProcera Crown in a new high-translucency multi-layered full-contour zirconia material, and the new NobelZygoma implant that provides greater surgical and prosthetic flexibility when treating severe maxillary resorption without grafting.

“The innovations we are presenting at the Nobel Biocare Global Symposium 2016 have all been created to address the specific needs of today’s dental professionals as they strive to improve care for patients. Informed by studies confirming the possibilities and advantages offered by immediate placement and provisionalization, many of these new products and solutions are so unique that they are either patent-protected or in the patent process,” Geiselhöringer said.

From the President

WORKFLOW ENHANCEMENT

At Nobel Biocare, our innovation efforts are based on clinical requirements, patient needs and scientific research. These have led us to superior products and solutions, as well as efficient treatment workflows that reduce treatment time—in other words, shorter time to teeth.

With our leading integrated workflow, treatment steps that were previously considered mandatory have been made faster, combined or even removed entirely. Our new technologies continue to enhance diagnostics and treatment planning. Digital integration improves collaboration among treatment partners and helps bring the laboratory into the treatment process as early as the planning phase, meaning prosthetic considerations are taken into account right from the start.

We are also advancing componentry in order to improve clinical workflows. The most important new addition to our portfolio in this regard is the On1 concept. This new approach to the restorative process ingeniously bridges the gap between the surgical and prosthetic workflows with a modular solution. The On1 Base connects to the implant at time of surgery and is then left in place throughout the healing process, the prosthetic work and the lifetime of the restoration. This leaves the tissue undisturbed for optimized healing, but unlike with tissue-level implants, there is no compromise on restorative flexibility.

In addition, the workflow for the components has been refined with a view to dramatically reducing treatment time. As the On1 healing cap supports an intra-oral scanning approach, conventional impression-taking procedures for delivery of the final crown can be eliminated. This can save time and improve patient comfort. What’s more, the On1 Base offers the clinician placing the implant added peace of mind, knowing that only precision-engineered Nobel Biocare components can be used in conjunction with the implant, thus removing the risks associated with an ill-fitting third-party abutment.

Such advancements mean dental professionals can treat more patients each day, with better results. Consequently, more patients experience the improved quality of life dental implant treatment brings, and both clinicians and technicians can grow their businesses. It is such outcomes that we at Nobel Biocare strive for every single day; it is designing for life in action.

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Yesterday, the 2016 Nobel Biocare Global Symposium opened its doors to dental professionals from all over the world in the heart of New York. Held for the third time, the event promises to be the implant dentistry event of the year.

A continuous increase in demand for dental implant treatments as a result of growing consumer awareness, the ageing population, growing accessibility, as well as greater product availability and other influencing factors, has accelerated the demand and need for education in this field over the past decade.

Nobel Biocare has established its reputation as a provider of top-level education through the development and refinement of dental therapy concepts. With its global symposium in particular, the company stages a truly exceptional event by inviting dental professionals to join its high-class education program at the legendary Waldorf Astoria in the world metropolis New York.

With more than 150 world-class speakers, and a total of over 50 master classes, and about 40 hands-on courses for dentist and dental technicians, the event promises to be an incomparable experience for everyone attending.

At the symposium opening on Thursday morning, Nobel Biocare president Hans Geiselhöringer said: “We are today continuing the journey to innovation we started in 2010 with the first global symposium. Over the past three years, we have invested in developing innovations that help dentists treat their patients better and will continue to do so. In this approach, the well-being of the patient is always our priority. We challenge ourselves every day to think about how we can be more successful in treating patients—this is the DNA of Nobel Biocare.”

Since the announcement of the symposium dates, dental professionals have eagerly registered. The event was sold out well before the registration closing. Overall, Nobel Biocare will be welcoming more than 2,000 participants over the course of the four symposium days, with about one third of the people attending from North America, one third from Europe, and a considerable number of attendees from the Asia-Pacific region as well as the Middle East and Africa.

The program of the symposium is divided into three main themes: Treatment enhancement and refinement—evidence counts; Reaching excellence in esthetics by joining the journey of digital dentistry; and Achieving clinical excellence in challenging situations. Each theme has a complete line-up of its own, from lectures and master classes to hands-on sessions.

For the first time in the history of the symposium, registrants had the opportunity to influence the symposium program by voting for various topics, formats and speakers in advance. Through a crowdsourcing model, visitors to the event website selected the topics they would like to see featured. Those that received the most votes were incorporated into the program. The chosen sessions were two case studies—one on soft-tissue management and the other on immediate loading protocols—and a keynote lecture on the true benefits of digital dentistry.

On behalf of the members of the organizing committee, scientific chairperson Dr. Peter Wöhrle welcomed attendees during the kick-off session on Thursday morning. “Many of