Nobel Biocare NEWS

Information for the Osseointegration Specialist

Issue 2/2017

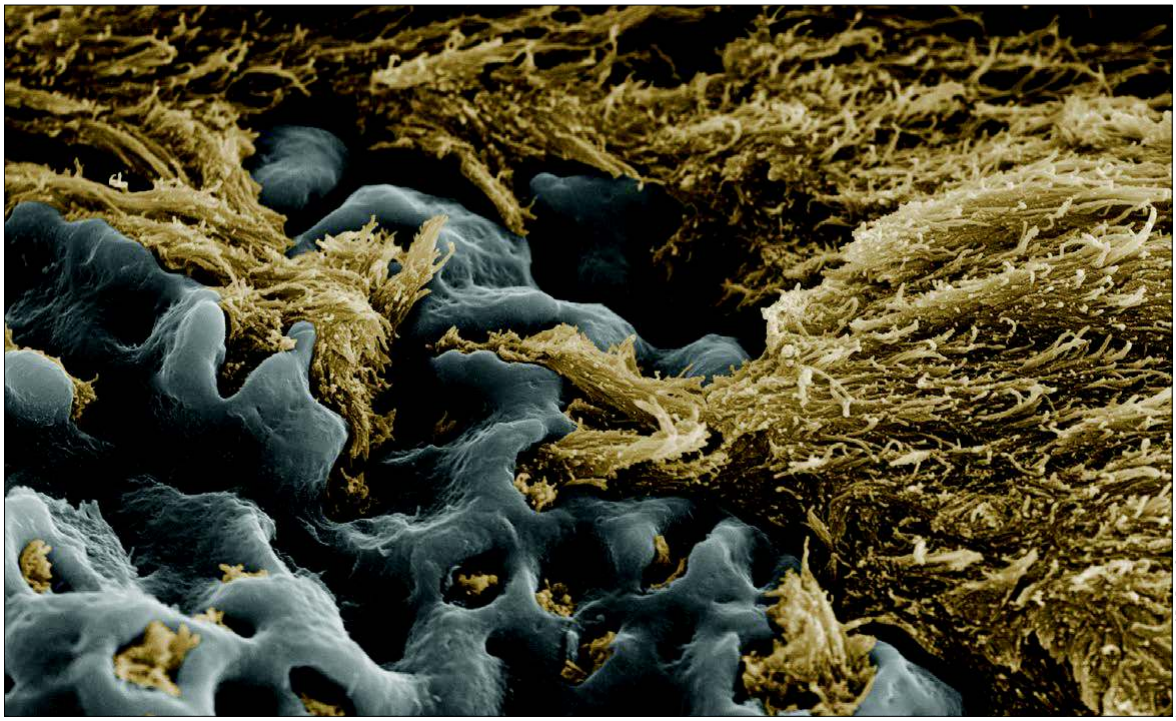
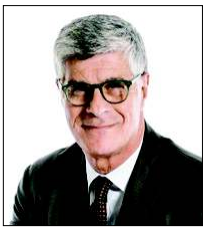


Image courtesy of Dr. Peter Schüpbach

In this Issue



TiUnite® – In Harmony with Nature

Building immediate solutions for immediate patient needs on this outstanding implant surface

Following the introduction of the TiUnite surface in 2000, a clear decrease in early implant failures was observed—especially in areas with poor bone density. In retrospect, that launch can be seen as an important milestone on the journey towards routine Immediate Function.

By Frederic Love

In the years since its launch by Nobel Biocare, TiUnite has become one of the most clinically researched dental implant surfaces ever brought to market.

Evidence was first accumulated, and then evaluated in more than 430 clinical publications—comprising over 21,000 patients and 82,500 implants. Compared with machined implants, TiUnite helps to maintain the implant stability achieved at placement during the critical healing phase while enhancing osseointegration and anchorage in surrounding bone.

Although it was not originally conceived nor ultimately designed with an eye towards what we now call Immediate Function, the osseointegration that TiUnite facilitates in the early healing phase nonetheless turns out to be of great importance when meeting patient needs for fixed immediate teeth.

Working from the foundation up

In order to meet patient demand for immediate solutions dependably, the dentist must evaluate each patient's situation conscientiously and choose the right mix of procedures and products.

Naturally, an Immediate Function approach requires the right dental implant as well as the right protocol, if it is to offer both short and long-term success. That's why Nobel Biocare has developed implants and drilling protocols for high primary stability at a level that supports Immediate Function (immediate loading) when and wherever the clinical situation permits.

Long-lasting results

Clinical evidence also shows that TiUnite offers significant benefits not only in the period immediately after treatment, but in the long term as well. Implants with the TiUnite surface maintain marginal bone, both in partially and fully edentulous cases, with cumulative survival rates of 97.1–99.2% after ten or more years—even when placed in fresh extraction sockets and immediately loaded.

Outcomes speak for themselves: Nobel Biocare implants are the only implants on the market to provide the moderately rough TiUnite surface. TiUnite has been clinically proven to enhance osseointegration compared with machined implants, allowing immediate loading protocols to be used more frequently and with outstanding results.

To put it simply, in order to establish an enduring restoration, it's essential to build on a sound foundation.

Accelerating rate of advance

Much of this issue of *Nobel Biocare News* reflects the fact that dental implant patients are increasingly demanding immediate restorations. To meet these demands, leading dental professionals such as our readers are seeking solutions with fewer surgical steps, shorter treatment time, high success rates, high patient satisfaction and function on the day of surgery.

In addition to earlier breakthrough innovations from Nobel Biocare, such as TiUnite, the All-on-4® treatment concept and zygomatic implants—just to name a few—new component and workflow enhancements from the company are further enabling immediate implant placement and reducing the time needed to deliver prosthetic teeth to dental implant patients today.

Tomorrow, we'll see treatment decisions being made already at the initial consultation stage (see "From Scan to Plan" on page 10) and consolidated treatment planning facilitated by computerized tools that will help to optimize every case for the best possible prosthetic outcome (see "Introducing the DTX Studio", also on page 10).

Stay with us as we reveal the future of implant dentistry one innovation at a time! <

→ FYI: The cover photo above shows osseoconductive bone formation—human histology six months after implant insertion with bone anchored in the TiUnite pores. Read more at: nobelbiocare.com/news.

From the President

Hans Geiselhöringer, President

Quality is the cornerstone upon which our company, and its reputation for success, has been built. It also provides the foundation upon which we will build our future. As dentistry evolves, the need for high-quality products and solutions does not change.

Our dedication to quality lies behind Nobel Biocare solutions that offer dramatic reductions in time-to-teeth for dental implant patients.

From the extensively researched TiUnite implant surface to the design of our implants and the enhancement of restorative componentry and workflows, our carefully developed—and continually tested—solutions enable Immediate Function where it might previously have been impossible.

We believe quality that delivers such outcomes is worth fighting for. That's why we go to great lengths to protect our high-quality innovations from those who would create potentially inferior copies.

Quality matters to patients, and so it will remain an area in which we will not compromise. We will do all we can to defend and further develop our innovations to ensure Nobel Biocare products support only the highest possible standard of care. The Nobel Biocare logo is, and will remain, a symbol of industry-leading standards for dental professionals. <

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Original. Proven. Life changing: The All-on-4® treatment concept

Rehabilitate an entire jaw with just four well-placed implants.

A revolution when it was first introduced, the multiple benefits of the All-on-4® treatment concept are now well proven. The concept was developed to efficiently provide edentulous patients and those with a failing dentition with an immediately loaded, fixed full-arch prosthesis.* Today, Nobel Biocare continues to develop the concept, with innovations designed to further enhance treatment results.

By Michael Stuart

The All-on-4® treatment concept makes the rehabilitation of fully edentulous mandibular or maxillary arches possible using just four implants. By tilting the two posterior implants, anatomical structures such as nerves and the sinus are avoided and the need for bone augmentation is reduced. Tilting the posterior implants also moves the implant-abutment connection to the back of the mouth. Cantilevers are therefore reduced, improving support for the prosthesis.

It's an approach that is less invasive and cost-intensive for the patient than bone grafting, more efficient for the clinician and—most importantly—is clinically validated to work.

Introduced more than 20 years ago, the All-on-4® treatment concept offers a reliable solution for patients looking to escape the discomfort that so often comes from wearing a removable denture, or those with a failing dentition who do not want to spend even a day without teeth. Long-term success has been shown in both the edentulous maxilla and mandible. More than 30 clinical trials provide evidence of cumulative survival rates of 94.8–98.0%.

These results go hand-in-hand with patient satisfaction. In one study (see online references), 95% of 250 patients said that they were satisfied with their new teeth, while 88% said they would definitely recommend similar treatment to friends and colleagues.

Immediate Function

Today, Nobel Biocare offers more implant options than ever before for the All-on-4® treatment concept, helping clinicians choose the right implant for each case.

When Nobel Biocare implants are used, a unique combination of implant design, surgical protocol and the proven TiUnite surface help to ensure primary stability and maintain it during the healing phase.

This stability means that Nobel Biocare implants make it possible for a fixed provisional restoration to be loaded on the day of surgery—a key benefit of the All-on-4® treatment concept and an important consideration when trying to meet patient demands.

There are now more implant options for the All-on-4® treatment concept than ever before, including NobelParallel Conical Connection (pictured), NobelActive and an extended range of NobelSpeedy implants.

The All-on-4® treatment concept is the original, proven and cost-efficient graftless solution that provides patients with a fixed full-arch prosthesis on the day of surgery.

For increased flexibility

NobelSpeedy, the original and widely documented implant for the All-on-4® treatment concept, is now available in more lengths and diameters for increased surgical flexibility.

Shorter, longer and wider versions have been added to an expanded NobelSpeedy range designed to further help clinicians utilize a graftless approach and achieve cortical or bicortical anchorage where bone quality and quantity are limited, thus allowing more patients to benefit from the proven advantages of the All-on-4® treatment concept.

NobelActive and NobelParallel Conical Connection are other well-established implant systems that have proven effective for the All-on-4® treatment concept.

Precision during implant placement for the All-on-4® treatment concept can be maximized with 3D digital diagnostics and guided surgery. Using the NobelClinician software, clinicians can make the most of the digital treatment information they have acquired and conduct prosthetic-driven implant planning for their All-on-4® treatment concept patients.

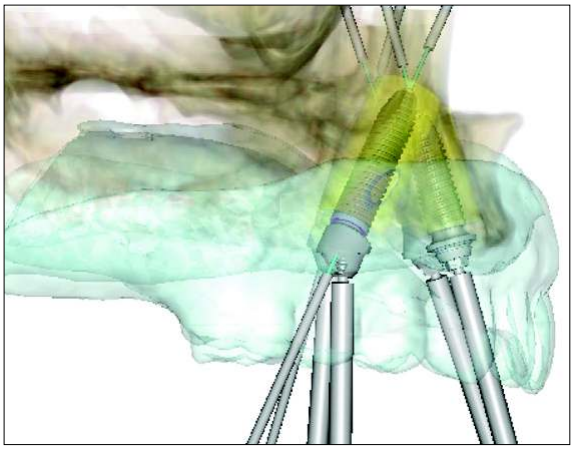
NobelClinician also facilitates collaboration between members of the treatment team and allows easy ordering of all surgical components required for the planned treatment.

Once finalized in NobelClinician, the plan can be predictably transferred to clinical reality using the NobelGuide guided surgery concept, which provides the clinician with ready-to-use patient-specific surgical templates and instruments tailored for the surgery.

In cases where maxillary bone is severely resorbed, zygomatic implant placement may nevertheless allow graftless restoration of the full arch on four implants.

Building further on 25 years of success with Nobel Biocare's zygomatic implants, the new NobelZygoma implants provide greater surgical and prosthetic flexibility than previous options, while a new tapered apex is designed to support high primary stability for Immediate Function.

The new snap-fit function of the Multi-unit Abutment Plus can save valuable time during the conversion of a denture into a fixed provisional restoration—a common procedure in the All-on-4® treatment concept.



Precision during implant placement for the All-on-4® treatment concept can be maximized with 3D digital diagnostics and guided surgery. Using the NobelClinician software, clinicians can make the most of digital treatment information and conduct prosthetic-driven implant planning for their All-on-4® treatment concept patients.

Create an accurate prosthesis in a snap

At the restorative stage of the All-on-4® treatment concept procedure, clinicians using conical connection implants can now take advantage of the new Multi-unit Abutment Plus—an enhancement of the successful Nobel Biocare Multi-unit Abutment. It is designed to significantly reduce the chair time required to perform provisionalization processes such as a denture conversion—a procedure commonly used for the All-on-4® treatment concept.

By introducing a snap-fit function between the temporary cylinders and the abutment, screws are no longer required during the try-in process. This means the common practice of removing the temporary cylinders and the denture several times during the conversion process can be done in a few snaps, with no need to tighten and loosen four screws each time.

This new way to work provides a significant time-saving opportunity for the clinician. It can also dramatically increase patient comfort and eliminates worry about the screws potentially dropping out.

When it comes to the final restoration, NobelProcera offers a wide variety of precision-milled fixed and fixed-removable restorations for All-on-4® treatment concept patients.

Patients looking for maximum esthetics can opt for individualized crowns on a zirconia implant bridge, while those requiring a cost-effective restoration can select a removable overdenture in acrylic on an implant bar. Regardless of the option they choose, NobelProcera offers easy handling for the clinician and excellent esthetics and function for the patient.

Restoring more than a smile

The All-on-4® treatment concept puts dental professionals at the forefront of their profession. In fact, 24% of those that attended a Nobel Biocare All-on-4® treatment concept course grew the number of implants they placed by 50% the following year. (Data on file.)

Such success is largely thanks to the popularity of the All-on-4® treatment concept among patients. Reduced cost, less trauma, Immediate Function and excellent esthetic results are all clear patient benefits, as is the prospect of a solution that feels like natural teeth.

Greater chewing ability, improved speech, increased comfort, less bone resorption—the list of attributes that can help drive patient acceptance goes on and on. Above all, in combination these benefits lead to a potentially life-changing result: the return of a patient's self-confidence.

Looking to start with the All-on-4® treatment concept? At the web address immediately below in red, you can download an e-book introducing the concept's key principles. You can also sign up there for a new premier online training course presented by leading All-on-4® treatment concept experts. <

* *For patients meeting criteria for the immediate loading of implants.*

→ More to explore!

Contact your local Nobel Biocare representative to find out how you and your patients can be part of the All-on-4® treatment concept success story. More information can be found at: nobelbiocare.com/all-on-4.

For the complete list of references for this article, please visit: nobelbiocare.com/news

Professor Paulo Malo, who successfully treated the first patient with the All-on-4® treatment concept in 1998.

A few well-chosen words from the pioneer: "The use of four implants reduces treatment complexity, which yields many benefits. Costs for both the doctor and the patient are reduced because less surgical time and fewer products are used. The lab technician can profit from reduced intricacy in the fabrication of the prosthesis—leading directly to more predictable workflow patterns. And simplified hygiene bodes well for improved long-term oral health." <

→ More to explore!

To view a video in which Professor Malo gives three tips for a successful start with the All-on-4® treatment concept, please follow this link: youtube.com/nobelbiocare.

Also, don't miss the next issue of *Nobel Biocare News*, which will feature an interview with one of Professor Malo's many patients.

Science matters

Designed for stability

Primary stability by design. (Karl and Irastorza-Landa, Quintessence Int. 2017 Feb ; doi: 10.3290/j.qi.a37690)

Implant primary stability is desired for shortening treatment time. The insertion torque (IT) and stability quotient (ISQ) of three bone-level implants—NobelActive (Nobel Biocare), Bone Level Tapered (Straumann) and OsseoSpeed EV (Dentsply)—were measured in vitro, for comparison of their stability.

The extraction site was modeled using a multi-layer polyurethane foam, with layers of different densities mimicking soft and cortical bone, to simulate a worst-case condition. Mean IT of NobelActive implants (n=10) was 36.52 Ncm, significantly higher than both Straumann (27.6 Ncm) and Dentsply (23.7 Ncm). Also, the ISQ of NobelActive was 53.9, significantly higher than Straumann (39.1), and higher than Dentsply (51.3), although the latter did not reach statistical significance. The authors attributed the excellence of NobelActive to its design.

→ ncbi.nlm.nih.gov/pubmed/28168242

Immediate esthetic solution

Excellent soft and hard tissue response with NobelActive. (Ganeles et al, Int J Periodontics Restorative Dent. 2017 Mar/Apr; doi: 10.11607/prd.3096)

This prospective cohort study evaluated the clinical outcomes of NobelActive implants in the maxillary esthetic zone. 15 patients received 15 narrow or regular platform implants in fresh extraction sites which were immediately provisionalized. As a definitive restoration, all patients received a crown on either Procera® Esthetic Abutments (Zirconia; n=13) or Esthetic Abutments (titanium; n=2) within six months.

At two-year follow-up, success and cumulative survival rates were 100%, and marginal bone level was changed to –1.4±1.89mm (from-2.34±1.98mm at implant insertion), resulting in 0.83 mm of bone gain. Soft tissue assessment at two years showed improved mean Jemt Papilla scores (2.1 at insertion to 2.55), low bleeding on probing (9%) and no plaque accumulation. The authors concluded that NobelActive can be used effectively in extraction sites in the maxillary esthetic zone.

→ ncbi.nlm.nih.gov/pubmed/28196173

Full-arch restoration with adaptive joints

Enduring fixed framework with large range of passive fit. (Carretta et al., 2017 Mar; IADR San Francisco)

Trefoil™ incorporates a prefabricated framework designed to the natural arch of the mandible and fixed on three implants. Adaptive joints compensate for the deviations from planned implant placement. This study investigated the mechanical performance of Trefoil and the range of passive fit provided by its adaptive joints.

Coupled finite element and mechanical analyses determined the maximum range of passive fit as ±0.4mm horizontal, ±0.5mm vertical and ±4.0° angular deviation. The median fatigue limit of Trefoil was measured for ideal (no implant deviation) and worst-case (maximum deviation within the passive fit range) scenarios and compared to Novum® in the ideal case. The novel Trefoil design showed high resistance to mechanical fatigue, 313 N in ideal and 304 N in worst cases, both of which outperformed the Novum system (215N) in its ideal case ($P < 0.001$).

→ dentalcongressposters.com/iadr2017/carretta.pdf

ASC is Now Available For Implant Bridges

Opening a world of superior treatment options

The angulated screw channel option and all its associated benefits are now available for multi-unit implant bridges in NobelProcera's latest high translucency full-contour zirconia material*. This strong material, combined with ASC, provides outstanding solutions—both in the anterior and posterior.

True innovation is about finding new and improved ways of doing things. At Nobel Biocare this means developing new products and solutions that help dental professionals treat more patients better.

By Chris Kendall

With NobelProcera ASC (angulated screw channel) solutions and Nobel Biocare's unique Omnigrip tooling, which makes them possible, indisputable innovation has been achieved. These products allow clinicians to offer screw-retained restorations in a practical and esthetic way that would have—in many cases—previously proven impossible.

Restorations now available for a range of new indications via multi-unit implant bridges

The angulated screw channel option was first made available for single-unit zirconia abutments and full-contour implant crowns with Nobel Biocare's internal conical connection. Now, the benefits of the ASC and Omnigrip tooling are also available for multi-unit implant bridges in NobelProcera's latest high translucency full-contour zirconia material*. This strong material, combined with ASC, offers great solutions both in the anterior and posterior, especially with the option to create a cut-back, and to design natural esthetics by veneering restorations intended for the esthetic zone.

The Omnigrip System is instantly distinguishable from other tooling by blue markings on both the screwdriver and screws.

The unique pick-up function of the Omnigrip Screwdriver should be experienced to be fully appreciated. The level of grip improves handling and is designed to reduce the risk of the screw detaching in the patient's mouth.

Increased restorative flexibility with no cement: It's as easy as A-S-C

With NobelProcera ASC solutions, the screw channel can be placed with an angle of up to 25 degrees from the axis of the implant, anywhere within a 360-degree radius. In the anterior esthetic region, this makes it possible to use screw-retained restorations where a labial screw access point would previously have ruled them out. When designing the screw channel, the screw access hole can instead be positioned on the palatal side of the restoration. The patient therefore benefits from an optimized esthetic result without any risk of the difficulties that can arise from excess cement. Using a screw-retained rather than a cement-retained solution also makes the restoration easier to retrieve.

In the posterior region too, NobelProcera ASC solutions come into their own. When used on molars or premolars, the ability to tilt the screw channel mesially makes it easier for the clinician to place and access the restoration. And, because of the strength of the material, the full-contour zirconia implant crown with ASC is an appealing choice for the posterior, thus providing the clinician with an excellent option for the best possible restoration.

Come to grips with better handling with innovative Omnigrip™ tooling

The benefits of ASC are possible thanks to the associated Omnigrip tooling. A further innovation from Nobel Biocare's product development team, it's more than just a screwdriver.

Even in the posterior, the unique tip of the easy-to-handle Omnigrip screwdriver provides trouble-free accessibility to the angulated screw channel, in which the screw can be tightened and loosened with ease.

The pick-up ability of the special tip is also an outstanding feature. The Omnigrip Screwdriver delivers a strong hold for full insertion torque—even at an angle—partly for convenience, but more importantly for safety. The Omnigrip is designed to hold the screw firmly when it matters most: when the clinician is working in the patient's mouth.

An advantage from every angle

Together, the benefits of NobelProcera ASC solutions and the Omnigrip tooling are clearly apparent. Clinicians gain not just new treatment possibilities, but opportunities to increase the number of screw-retained restorations they place.

Patient satisfaction is likely to improve as the barriers of accessibility and flexibility are overcome to achieve optimized esthetics, potentially involving less chair time. And, with the adapter being mechanically retained, labs save time too. Nobel Biocare innovates to help its customers treat more patients, and to treat them better. These products do just that. <

**Available in up to five units.*

→ More to explore!

To find out more about how NobelProcera ASC solutions and the Omnigrip tooling can help improve restorative results, please visit nobelbiocare.com/asc.
In order to "experience esthetics from a different angle," you may also want to contact your local NobelProcera sales representative.

Nobel Biocare 2017 Symposia Program

High-quality dental implant education goes global.

With a program of 12 symposia to be held in as many countries this year, Nobel Biocare is again merging leading learning opportunities with breakthrough innovations for dental professionals around the world.

By Frederic Love

Building on the success of the Nobel Biocare Global Symposium held in New York last June, every event in the 2017 program will combine lectures and master classes from leading names in implantology with opportunities for hands-on learning. In total, over 6,500 dental professionals are expected to attend Nobel Biocare symposia during the course of the year, making it the premier program of its kind in the industry.

These events will address prevalent topics in modern dental practice, including immediate loading protocols, evidence-based dental implant treatment and digital dentistry. Some of the most renowned lecturers and educators in the world will be appearing alongside respected local speakers, making participation a truly rewarding learning experience for dental professionals across the globe.

In addition to a comprehensive educational program, each symposium will give attendees the chance to network with peers and discover the latest Nobel Biocare products and solutions, all of which have been designed to help them treat more patients better. The events will showcase flagship Nobel Biocare innovations including the original, proven, and life-changing All-on-4® treatment concept, enhanced collaborative workflows for shorter time-to-teeth and the On1 restorative concept—plus many others. <

Please see the full program on the facing page.

Strength Meets Esthetics: FCZ from NobelProcera®

Full-contour zirconia (FCZ) as it should be

Full-contour zirconia (FCZ) restorations are growing in popularity. Long-associated with high strength, advances in zirconia materials have led to substantial improvements in esthetics and efficiency. A perfect example is the high-translucency, multi-layered full-contour zirconia from the ever-growing NobelProcera portfolio.

By Vanessa Seeberger

With NobelProcera's multi-layered full-contour restorations, esthetics and efficiency have been considered at every step. At the start of the process, powerful CAD tools in NobelDesign software (and soon in the DTX Studio platform, which is currently under FDA 510(k) review, see page 10, "In Brief") make it straightforward to design an esthetic restoration. At the production stage, the restorations are created with the consistent quality and precision of fit that NobelProcera CAD/CAM production is renowned for.

NobelProcera full-contour restorations do not require veneering or sintering, so less labor for adjustments is needed to finalize the restoration. Excellent occlusal details and surface finish mean the technician need only apply subtle staining before polishing and glazing.

In cases where the technician feels traditional ceramic layering is required to achieve the desired esthetic result, a partial cutback of the material is easy to design. The ceramic can then be layered on top to create an optimized blend of high-end esthetics and high-strength monolithic zirconia.

Image courtesy of Dr. T. Staas and Mr. M. Wouters

Two partial high-translucency multilayered anterior bridges. Here, a partial cutback and ceramic layering have been used to achieve the desired esthetic result.

NobelProcera restorations, like no others, made from high-translucency, multilayered full-contour zirconia.

The multilayered nature of the zirconia helps save time. By mirroring the natural color variations between the cervical margin of a tooth, the dentin and the enamel, the technician has less work to do to achieve an esthetic result. The high translucency of the material further enhances esthetics, making NobelProcera full-contour zirconia restorations suitable even for anterior cases.

There are esthetic advantages for the clinician when it comes to placement of the restoration, too. As the color runs throughout the material, any final adjustments won't cause color variations or white spots on the restoration.

Chosen for strength that lasts

Strength remains a key benefit of monolithic zirconia, and NobelProcera's full-contour zirconia exhibits strength at a level that helps prevent remakes. NobelProcera's full-contour zirconia has been selected for properties that support outstanding durability. It has been shown to undergo minimal monoclinic shift, meaning its structure resists changes caused by pressure and moisture over time, making the material highly durable. Plus, with full-contour restorations, the risk of veneer chipping is removed.

From strength to strength

NobelProcera is continuing to expand its range of multilayered zirconia solutions, increasing choice and flexibility, with each option designed to address the patient's long-term functional and esthetic needs. One of the latest additions is the NobelProcera Implant Bridge with the innovative ASC (angulated screw channel) feature. This feature provides easy, yet precise positioning of the screw hole channel—see the facing page—which increases restorative flexibility.

Given the benefits of strength, durability, esthetics and ease of use, NobelProcera full-contour zirconia restorations are sure to be a popular choice for clinicians and dental technicians alike. <

→ More to explore!

Find out more about full-contour zirconia restorations by visiting: nobelbiocare.com/fcz

NobelProcera full-contour, high-translucency, multilayered zirconia restorations possess well-defined occlusal detail, helping reduce the time it takes for the technician to achieve the desired end result.

Complete Symposia Schedule

Book the best date and location now!

In 2017, a Nobel Biocare symposium will be convening in a city near you.

March 31–April 1	Albufeira, Portugal
May 4–5	Dubai, United Arab Emirates
May 5–6	Santiago de Compostela, Spain
June 1–2	Mexico City, Mexico
June 9–11	Moscow, Russia
July 1–2	Huangzhou, China
August 11–13	Miami, Florida, USA
August 26–27	Tokyo, Japan
September 21–22	Maastricht, Netherlands
September 29–30	Zagreb, Croatia
October 6–7	Vilnius, Lithuania
November 10–11	London, UK

For more information, or to register, please visit: nobelbiocare.com/events

Upcoming Events

Meet Nobel Biocare at events around the world. These professional gatherings provide a great opportunity for catching up with the latest innovations and scientific research.

EAED Annual Meeting (European Academy of Esthetic Dentistry)
May 25–27
Milan, Italy

SEPA
May 25–27
Málaga, Spain

Nobel Biocare Symposium Mexico
June 1–2
Mexico City, Mexico

Osteology Symposium Japan 2017
June 3–4
Tokyo, Japan

Nobel Biocare Symposium, Russia
June 9–11
Moscow, Russia

Quintessence – 3rd International Symposium In Esthetic, Restorative & Implant Dentistry
June 16–18
Barcelona, Spain

Nobel Biocare Gipfeltreffen Weggis
June 23-24
Weggis, Switzerland

British Association Oral and Maxillofacial Surgeons Annual Scientific Meeting
June 28–30
Birmingham, UK

82nd Annual Meeting - Pacific Coast Society of Prosthodontics
June 28–July 1
Coeur d'Alene, Idaho, US

The 126th Scientific Meeting of Japan Prosthodontic Society
June 30–July 2
Kanagawa, Japan

Nobel Biocare Symposium China
July 1–2
Huangzhou, China

Nobel Biocare Gipfeltreffen Saalfelden
July 13–15
Saalfelden, Austria

2017 ICOI Japan Symposium
July 14–16
Tokyo, Japan

AAED Annual meeting
August 3–5
San Diego, CA

Hong Kong International Dental Expo and Symposium 2017
August 4–6
Hong Kong, Hong Kong

AMP Congress
August 30–September 2
Guadalajara, Mexico

Nobel Biocare Symposium USA
August 11–13
Miami, Florida

→ More to explore
For the most recent updates, visit: nobelbiocare.com/events

Undisturbed Soft Tissue Healing

Do not underestimate the importance of soft tissue maintenance to successful dental implant outcomes.

The On1 restorative concept is designed to protect soft tissue while retaining treatment flexibility.

By Jim Mack

The On1 concept is an innovative modular solution that connects the surgical and prosthetic workflows. The On1 Base connects to the implant at surgery and stays in place throughout the lifetime of the restoration, leaving the soft tissue undisturbed for optimized healing.

Peace of mind and ease of use

For the surgeon, the On1 concept offers the flexibility to use any of three different implant systems with internal conical connection—NobelActive, NobelParallel and NobelReplace.

It also offers peace of mind that only precision-engineered Nobel Biocare components can be used for the restoration, removing the risks associated with an ill-fitting or non-biocompatible third-party abutment.

For a restorative clinician, the raising of the connection to tissue-level not only ensures no interference with the soft tissue during healing, it also simplifies the placement of the restorative components. There are benefits for the patient too, as the On1 Base can also prevent the discomfort previously associated with the recurrent exchange of components such as healing abutments or impression copings.

Reduced chair time

The On1 IOS Healing Cap* supports an intraoral scanning approach, which can speed up the impression taking process. In addition, the On1 IOS Healing Cap, the On1 Base and the On1 Temporary Abutment all come with a pre-mounted handle for easier placement.

Restorative flexibility

Two height options provide the flexibility to select the On1 Base depending on the thickness of the soft tissue, and even change the base if the clinical situation requires it. In contrast to the use of traditional tissue-level implants, this makes it possible to optimize short- and long-term esthetic outcomes.

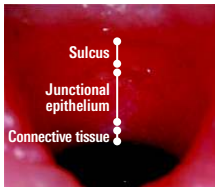
In summary, the On1 Concept is much more than a new abutment line: it's a new restorative approach, created to support soft tissue healing and address the clinician's desire for flexibility and ease of use. <

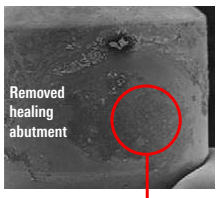
The On1™ concept

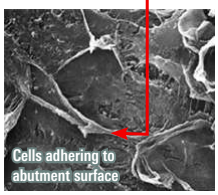
The On1 concept is unique. It's the first concept to prevent soft tissue disruption from abutment exchange and maintain full restorative and surgical flexibility. The On1 concept also radically simplifies the restorative procedure, as it moves the prosthetic platform from bone level to tissue level.

LEAVE THE IMMEDIATE SOFT TISSUE ATTACHMENT INTACT

The On1 Base is seated at the time of implant placement. The immediate soft tissue attachment is then left intact as the On1 Base remains in situ during the entire restorative workflow and throughout the lifetime of the restoration.

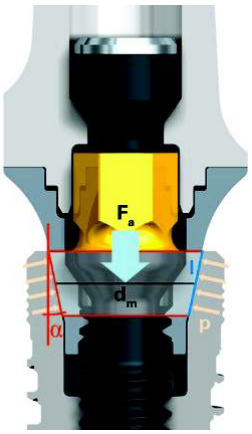






Images © Professor Eric Rompen

The On1 concept avoids repeated disruption of the soft tissue. This reduces the risk of bacteria entering the site. It also results in less discomfort for your patient.



GAIN PEACE OF MIND

The On1 Base has a unique prosthetic connection, ensuring that only precision-engineered Nobel Biocare restorations are used.

$$p = \frac{F_a * \cos(\rho) * \cos(\frac{\alpha}{2})}{d_m * \pi * l * \sin(\rho + \frac{\alpha}{2})}$$

A system is only as strong as its weakest link. This is why the On1 concept is designed and tested as a complete system. Small changes in any parameter can lead to extreme load and stress conditions, which can ultimately result in implant failure.

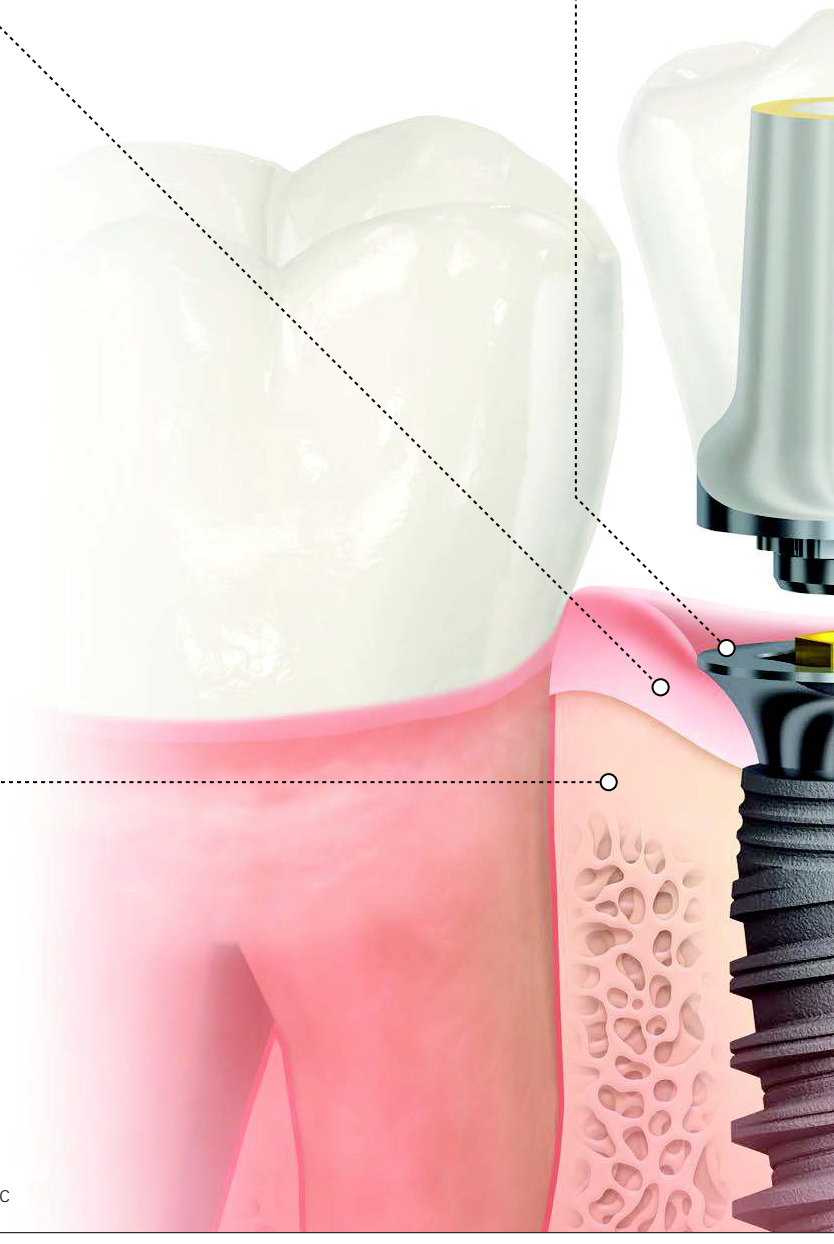
MAINTAIN SURGICAL FLEXIBILITY

The On1 concept can be used with any Nobel Biocare conical connection implant system, each designed for high primary stability and built-in platform shifting.

NobelParallel CC

NobelActive

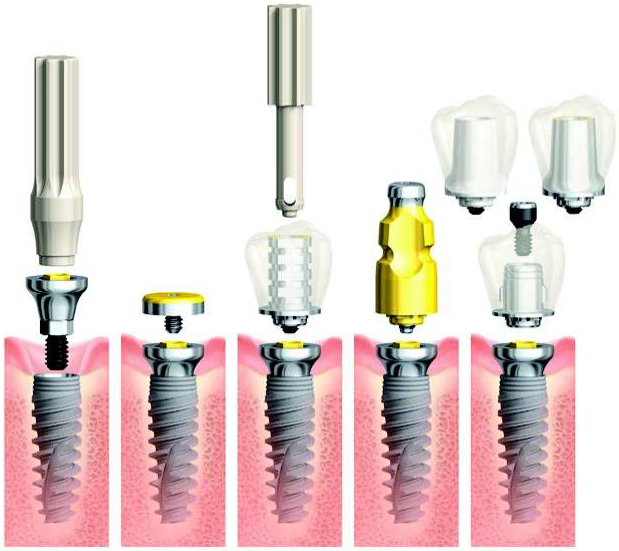
NobelReplace CC



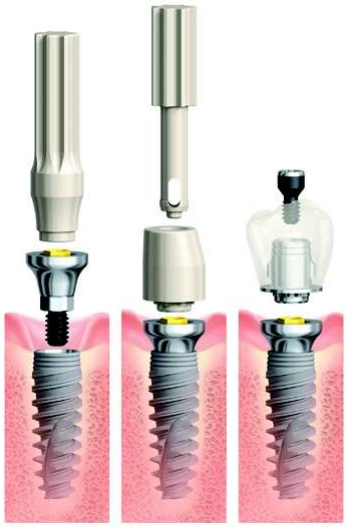
CHOOSE YOUR PREFERRED WORKFLOW

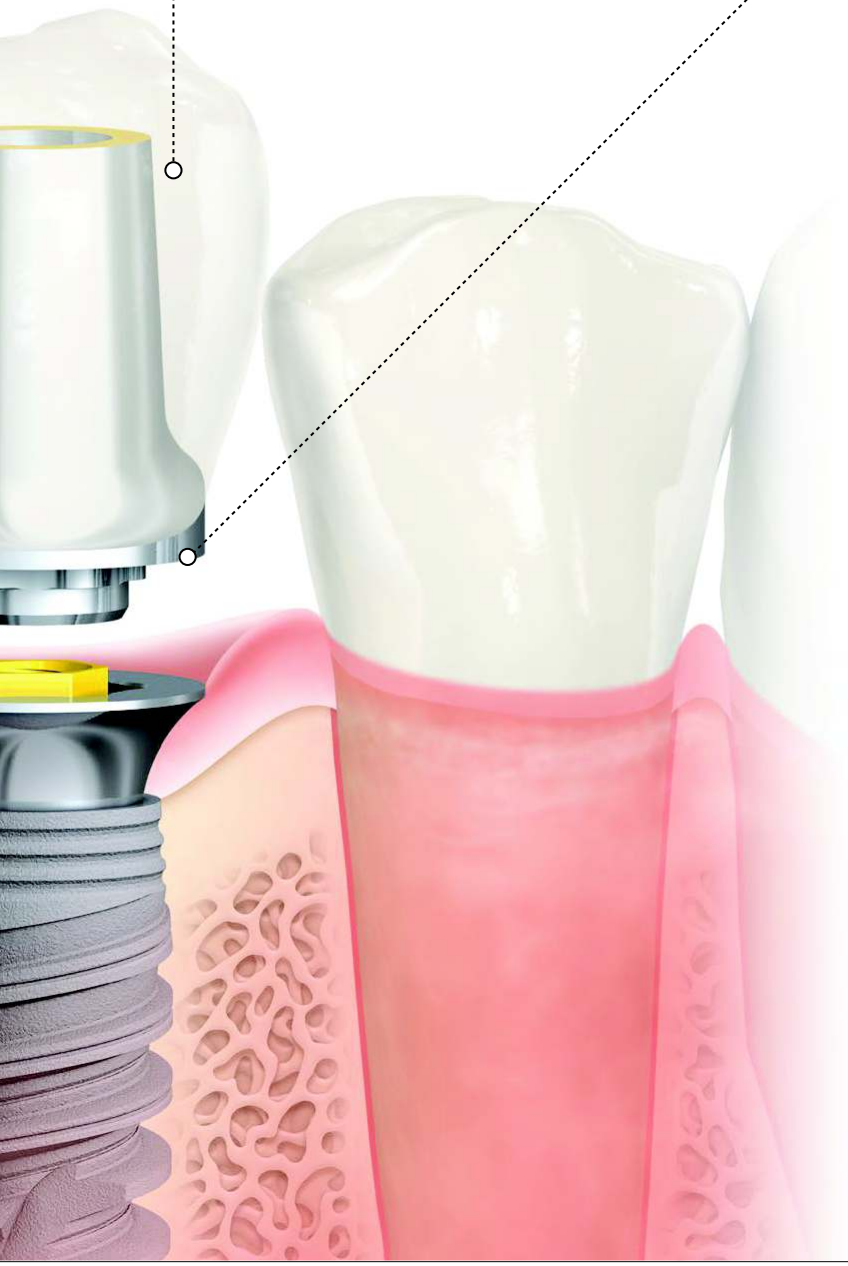
The On1 concept provides you with the option to follow the conventional impression taking workflow or the intraoral scan workflow using the special On1 IOS (Intraoral Scannable) Healing Cap*. For easier handling, key components are delivered with a pre-mounted holder.

Option 1
Following the conventional workflow, the On1 Base stays in position while the healing cap, temporary restoration, impression coping and final restoration are placed.



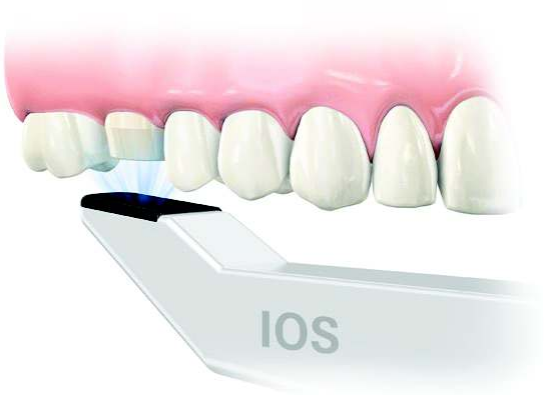
Option 2
Following the intraoral scan workflow, only the IOS Healing Cap* is used before the final restoration is placed.





INCREASE WORKFLOW EFFICIENCY WITH INTRAORAL SCANNING

Save substantial chair time with the unique On1 IOS Healing Cap, which supports an intraoral scan workflow.* This eliminates conventional restorative procedures, including impression taking, while also serving as an anatomically shaped healing abutment for optimized soft tissue contouring.



* Some products and workflows may not be regulatory cleared/ released for sale in all markets. The On1 Universal Base and intraoral scan workflow are not available in the US.

"With On1 you get the best of both worlds – a bone-level implant with built-in platform shifting and restoring at tissue level without disturbing the mucosal seal."

Dr. Bernard Touati, France

FIND OUT MORE

Learn more about how the On1 concept supports soft tissue health and can save you time.
Scan the QR code or visit: nobelbiocare.com/On1.

Meeting All Your Regenerative Needs

Designed by nature, developed for clinicians – that's the creos™ xenogenic product range.

Sufficient bone quantity and quality is a key factor in successful dental implant treatment. That's why Nobel Biocare has introduced creos regenerative solutions – an extensive array of options for guided bone regeneration (GBR) and guided tissue regeneration (GTR) procedures.

By Michael Stuart

The latest addition to the creos range is the creos xenogain bone substitute. Together with the creos xenoprotect resorbable collagen membrane, it now offers clinicians a comprehensive set of xenogenic options for a wide variety of indications and professional preferences.

A foundation for implant treatment

The creos xenogain bone substitute has been developed with clinical needs in mind. It is proven biocompatible, and processing methods remove the bovine proteins and lipids.

The natural bone matrix of creos xenogain is characterized by micro- and interconnected macropore structures. With a calcium phosphate ratio that reflects the composition in human bone and a low crystalline structure, creos xenogain is accepted by the body as a suitable framework for bone formation. Xenogenic bone substitutes have a slow resorption rate and act as a long-lasting scaffold, maintaining space for bone regeneration.

Easy to handle

For quick and easy application of the graft, creos xenogain bone substitutes are delivered sterile and come either in a vial, in a syringe, or in a bowl ready for mixing.

In addition, creos xenogain collagen is a 10% collagen composite that is available* as a block or a syringe to aid application of the material in certain indications—extraction sockets, for example. 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 practitioner preference.

Providing a natural barrier

Once the bone substitute is applied, the resorbable creos xenoprotect membrane can be used to hold it in place and act as a barrier to soft tissue ingrowth.

Manufactured using highly purified collagen, 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.

Excellent bone augmentation (GBR) results were revealed in a recent clinical study using creos xenoprotect as the barrier membrane. In vitro experiments have shown it to be stronger than other membranes, and with a higher pull-out force and tensile strength, it offers advantages for membrane fixation. In a subcutaneous model, creos xenoprotect also showed less degradation after 20 weeks than another membrane, together with vascularization behavior and excellent tissue compatibility.

Each product in the creos range of xenogenic solutions has been developed to optimize treatment results. Whichever of these scientific-evidence-based options the clinician chooses, they can be confident of building a reliable foundation for implant treatment success. <

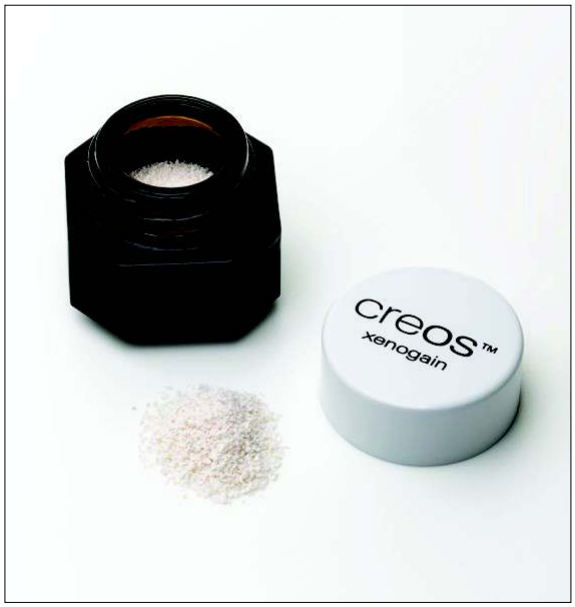
* *creos xenogain collagen may not be regulatory cleared/released for sale in all markets. Please contact the local Nobel Biocare sales office for current product assortment and availability.*

The comprehensive creos xenogain product range features a range of creos xenogain xenogenic bone substitutes and creos xenoprotect, a resorbable collagen membrane.

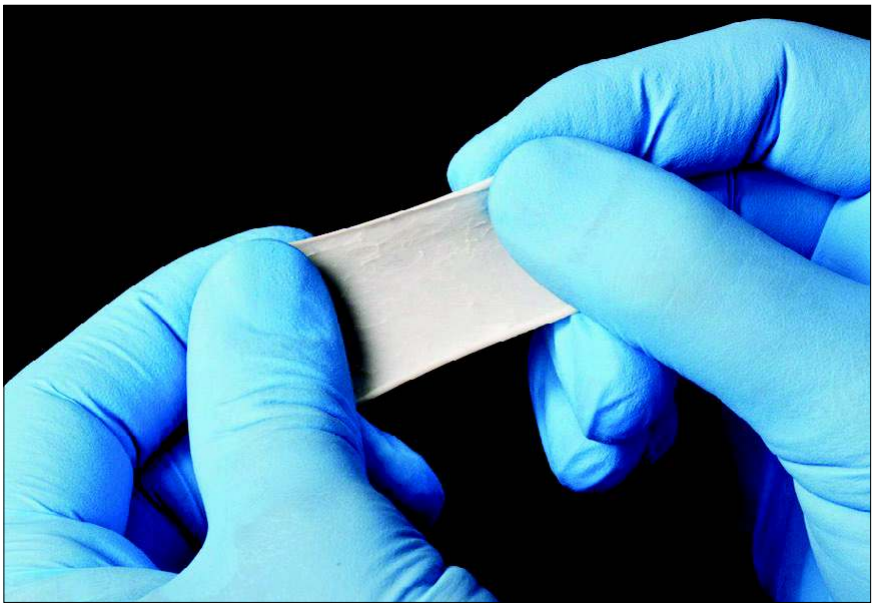
→ More to explore!

For more about creos regenerative solutions, including articles and cases, visit nobelbiocare.com/creos.

For the complete list of references for this article, please visit: nobelbiocare.com/news



As depicted here, creos xenogain is available in a bowl, ready for mixing, which eliminates the need for an additional sterile dappen dish.



The creos xenoprotect membrane exhibits higher strength than other non-cross-linked and chemically cross-linked membranes once hydrated.

Moving Forward

Successful Third Consensus Conference: Prosthetic protocols in implant-based rehabilitation

FOR SCIENCE EDUCATION HUMANITY
FOUNDATION FOR ORAL REHABILITATION

The Foundation for Oral Rehabilitation (FOR) held its 2016 Consensus Conference, from November 30 to December 1, 2016, at the University of Pennsylvania School of Dental Medicine, on the topic of "Prosthetic protocols in implant-based rehabilitation."

Dr. Markus Blatz, Professor and Chair of Preventive & Restorative Sciences at Penn Dental Medicine, and Dr. Charles Goodacre, FOR's Education Council and former Dean of the Loma Linda University School of Dentistry, served as co-Chairs of the meeting, bringing together an international panel of experts in the field of prosthodontics.

The presenters included (clockwise from upper left): Drs. Markus Blatz, Joannis Katsoulis, Vygandas Rutkunas, Avinash Bidra, Radi Masri, Frank Tuminelli, Charles Goodacre, Wael Att, Friedrich Neukam, Petra Gierthmühlen, and Daniel van Steenberghe.

Selected participants conducted systematic literature reviews on different aspects of implant-based rehabilitation prior to the meeting for discussion by the assembled group. The literature review topics and presentations included:

- Removable versus fixed implant-supported dentures
- Clinical outcomes of full-arch implant-supported zirconia prostheses
- Influence of abutment material on biologic/clinical outcomes
- Immediate-load zygoma implants
- Full-contour monolithic implant restorations
- Digital versus conventional implant impressions
- Fit of prosthetic components and clinical outcomes
- Material selection and clinical outcomes
- Clinical performance of CAD/CAM monolithic ceramic implant-supported restorations, bonded to titanium inserts

Other participants included: Senior Advisor Dr. Daniel van Steenberghe and FOR Chairman Dr. Friedrich Neukam; as well as Ursula Stocker and Dr. Natalia Martinez of the FOR team.

"We were honored and proud for the opportunity to host and chair this exceptional conference with global leaders and authorities in the field of prosthodontics, people who have compiled an extraordinary wealth of significant and relevant information," said Dr. Blatz. "High-quality systematic reviews and consensus conferences have become increasingly important in recent years as the backbone of evidence-based dentistry."

The outcomes of the conference will be published—as a special issue—in the highly-ranked *European Journal of Oral Implantology* (publication is anticipated mid-2017) and will also be shared on FOR's Consensus Conference landing page.

Not yet part of the FOR community? Sign up to benefit from a free subscription to the full content!

→ for.org/en/user/sign-up

"Stay at the forefront of implant dentistry!"

Three ways clinicians placing dental implants can lead the profession

Based in Beverly Hills, California, USA, Dr. Sanda Molodvan is known not only for her presentations at scientific congresses around the world, but also for her appearances on the American television show, *The Doctors*. The recognition she has received as a leading periodontist comes from the excellent results she achieves, to which her growing practice gives testament. The success of her holistic approach to implant dentistry has recently seen her team move to modern new premises to accommodate demand.

By Dr. Sanda Moldovan

Dr. Sanda Moldovan: "The All-on-4® treatment concept makes it possible for patients to wake up after treatment with a total makeover of their smile."

For any clinician looking to stay at the forefront of our profession, I believe there are three imperatives that serve as keys to success.

Actively seek knowledge and inspiration

My practice has grown and continues to grow every year, but one of the main challenges that we face is finding the time to constantly learn and implement new services in our office while also keeping a peaceful, happy and healing environment for our patients and our staff.

To be at the forefront of dentistry, we have to stay coachable and open-minded to new treatment options. Medicine and dentistry are constantly changing and intertwining. It is essential to keep learning to better serve our patients.

My advice is to also look beyond dentistry for inspiration. It's time to reestablish the mouth's importance as a gateway to one's overall health. This inspires me to work more with medical doctors, nutritionists and other health professionals to treat the body as a whole. I think we should all help to bridge the gap between medicine and dentistry by bringing awareness to the healthcare community.

To further broaden my knowledge, I plan to attend conferences on nutritional research, such as those held by the American College of Nutrition, and the American Academy of Anti-aging Medicine. These meetings provide access to scientifically relevant information, and the latter additionally delivers updates on breakthroughs in regenerative medicine, which can be very helpful for those of us working within periodontal and bone regeneration.

Address patient concerns with graftless protocols

Our patients want faster time to teeth. When I put myself in their shoes, I see Immediate Function and esthetics as a necessity for our patients, not a luxury.

Two of the main concerns that our patients have are time and money. With a graftless approach we can address both.

In terms of time, a graftless approach requires fewer appointments and it takes less time to provide fixed teeth than with grafted solutions. With a graftless protocol a full-arch or full-mouth can be transformed in a day—provided the patient meets certain criteria and adequate primary stability of the implants is achieved.

Graftless solutions are also more cost-effective than bone grafting solutions, typically costing more than 30% less.

It is for these reasons that I started using the All-on-4® treatment concept seven years ago. I could finally offer patients a beautiful and predictable smile on the day of surgery. Most of my patients are women of an average age of 50-55 who don't want to go a day without teeth. The All-on-4® treatment concept makes it possible for them to wake up after treatment with a total makeover of their smile.

Patients are actually now walking into our office asking for the All-on-4® treatment concept because they have learned how predictable and life changing it is.

Embrace the latest technology

The digital technology available to us today makes it easier to do treatment planning between different doctors. Software like NobelClinician also allows the clinician to perform virtual surgery prior to the actual procedure.

One technology I cannot do without is a CT scan. It helps me diagnose properly and see things I previously couldn't with a regular X-ray.

In 2017 I hope to learn digital impression techniques as well as to perfect the laser peri-implant repair protocol, to better regenerate bone around dental implants.

I believe it is an exciting time to be in dentistry. Through advancements in technology and science, we can impact someone's life in so many ways: enhancing confidence and self-esteem by creating beautiful smiles without dentures. <

→ More to explore!
To register for training or for more information, please visit: nobelbiocare.com/all-on-4course.

From Scan to Plan At the Very First Visit

It lets your patient "get the picture" at the first appointment.

Experience a truly visual way to achieve optimal treatment results. NobelClinician is a user-friendly solution for diagnostics, treatment planning and patient communication. It uses state-of-the-art technologies to help dental professionals improve all aspects of dental implant treatment.

By Chris Kendall

Patients can receive a proposed treatment plan at their very first appointment with NobelClinician's new intraoral scan workflow.

Updated NobelClinician software allows clinicians to combine surface scan data from an intraoral scanner with CBCT data, which—when combined with prosthetic information from a diagnostic setup—can provide the full clinical picture in just one visit.

As a result, clinicians are now able to preview a proposed treatment plan with the patient during the very first consultation, which can help increase patient acceptance of treatment and satisfaction.

Choose the workflow that's right for you

As with the current integrated workflow, the clinician takes a CBCT scan in line with their usual diagnostic procedures and routines.

The updated software's SmartFusion technology now offers the choice to either effortlessly merge CBCT data with surface data from an intraoral scanner, or to fuse it with a model scan from the desktop scanner—whichever workflow suits the clinician's preferences and the patient's needs.

With the merged hard and soft tissue data, NobelClinician provides a detailed visualization of the anatomical structures and prosthetic demands, enabling the clinician to diagnose and plan implant treatment based on intraoral soft tissue information and the underlying anatomy.

New possibilities for your existing intraoral scanner

NobelClinician accepts input from intraoral scanners that produce an STL file, so clinicians who are already using an IOS system that they're satisfied with don't have to invest in new equipment to benefit from the new intraoral scan workflow. <

→ More to explore!
Learn more about digital treatment planning with NobelClinician at: nobelbiocare.com/nobelclinician

Shorter Delivery Times For NobelProcera® Bridges

As of April, NobelProcera customers will receive precision-engineered NobelProcera Bridges in zirconia more quickly. Estimated delivery time will be cut from four days to three, helping dental professionals reduce time-to-teeth for patients.

The time saving is the result of a concerted effort to further enhance efficiency at the NobelProcera production centers in Mahwah, New Jersey, USA, and Chiba, Japan. The center in Mahwah is the largest dental milling center in the world and is already playing a leading role in the industry as a center of excellence for innovation in dental restorations.

Victor Nieto, Vice President, Global Operations at Nobel Biocare says, "We are pleased that we can now offer our customers high-quality NobelProcera Bridges in less time. Time is precious for dental professionals and patients alike. Across Nobel Biocare we are innovating to offer superior solutions that shorten treatment times. Providing precision-engineered restorations faster is an important part of this."

Quality control is also a key concern for the teams at the NobelProcera production sites, with stringent procedures in place to help ensure that customers receive only restorations of the highest quality.

For Luc Rutten, a renowned Master Dental Technician from Belgium, and a recent visitor to the NobelProcera facility in Mahwah, puts it this way: "The plant in Mahwah really impressed me.

Investing in speed: State-of-the-art production in Mahwah, NJ, USA.

Quality assurance there is outstanding. After every step in the production process, they carry out a precision review. Rigorous accuracy is maintained at the level of a few microns. The resulting precision of the copings, abutments, bridges, and implant bars in titanium and zirconia leaves nothing to chance—which means that I feel nothing but confidence."

More work is already underway to further enhance the customer experience for NobelProcera restorations. Watch for updates in upcoming issues of *Nobel Biocare News*. <

In Brief

Introducing DTX Studio™ Software

Dentistry is all about making the right connection. Whether it is the connection between diagnostic equipment and planning software, an implant and an abutment, or the all-important rapport between the dental professional and the patient—having the right connection matters.

This is the principle behind the development of the DTX Studio software, a single digital platform designed to connect the modern dental professional with the latest technologies and the entire treatment team at each stage of the treatment process. The name represents the software's combined capabilities in diagnostics and treatment, plus its many other extended possibilities. Due for release in selected markets in fall 2017—with certain modules currently pending FDA 510(k) review—the DTX Studio software will serve as the one central hub for key case information, all the way from patient imaging acquisition to diagnostics and the design of the temporary and definitive restorations.

→ DTXStudio.com

Digital Production on Demand

Growth is the trend in the dental implant market, and there's little sign of it slowing in the years ahead. As a result, dental laboratories that can consistently provide high-quality implant based restorations will be increasingly in demand. However, ramping up production of any of these components can require significant investments in equipment, time and staff training that many labs simply cannot afford. That's where NobelProcera Scan and Design Services can help.

Send a case, receive precision-fit abutments and implant crowns
Previously only available for ordering implant bars, labs can now streamline their workload and expand their offering of abutments and implant crowns by outsourcing design and production to NobelProcera. The process is simple. Using the online form, the lab uploads a 3Shape or NobelProcera digital scan file, enters their design specifications and sends their request in a click.

With the order sent directly to the expert NobelProcera production facility, a team of skilled CAD designers creates a design and shares a 3D visualization for the lab to approve. When the lab is happy, the precision-fit abutments and implant crowns are precision-manufactured, quality checked and dispatched back to the lab.

Outsourcing means opportunity
In a matter of days, the precisely manufactured abutment or implant bar is shipped to the lab with a material authenticity certificate and a five-year product warranty. By removing the need for expensive investments and offering unrivaled results, NobelProcera's Scan and Design Service lets labs take advantage of requests for high-quality NobelProcera abutments and implant bars that they might otherwise be forced to pass up. In other words, it affords labs the flexibility to take opportunities that they can't afford to miss.

NobelProcera CAD/CAM prosthetics are produced at state-of-the-art facilities in Mahwah, New Jersey, USA; and Chiba, Japan. Manufactured in accordance with the ISO 13485 quality management system and cleared by the FDA where required, the output quality of every prosthetic is monitored. This results in products demonstrating high precision of fit, mechanical stability and years of safe and reliable performance.

Please note: Some products may not be regulatory cleared/released for sale in all markets. Please contact your local Nobel Biocare sales office for current product assortment and availability.

→ nobelbiocare.com/NobelProceraServices

The Year Ahead in Implant Dentistry

Six clinicians see the world from a variety of perspectives, but they are all smiling about their plans for the future.

The editors of *Nobel Biocare News* posed the following questions to half-a-dozen clinicians: "What do you think will be the big trends in implant dentistry in 2017, and what does the year ahead look like for you?" This is what they had to say:

By Michael Stuart

A self-described "total solutions provider" from Beverly Hills, California, in the United States, **Dr. Kyle Stanley** has placed somewhere between 500 and 1000 implants to date.

His preferred Nobel Biocare implant systems are NobelActive and NobelParallel Conical Connection. He is also enthusiastic about the On1 treatment concept.

"In 2017 I look forward to treating cases with the On1 concept, as I think this is a game-changer in both surgical and restorative dentistry," he says. "With NobelClinician I have been able to place implants in the planned position using guided surgery for some time, and now I think the On1 restorative concept will keep my papillae and gingival margins in the proper position and preserve the soft tissue attachment around my implants, providing restorative flexibility for years to come."

During the year ahead, he says that he hopes to attend some courses to improve his soft tissue grafting around implants.

"This year is going to be an exciting year for me and my family in more ways than one—with the arrival of a baby boy. We have big plans to travel with our son while I lecture and try to show him life outside of Los Angeles.

"I also look forward to spending some time relaxing with my hobbies, including surfing. Living in Los Angeles means great weather all year round, so I intend to utilize the beautiful Pacific Ocean more."

Dr. Nicole Winitsky is a prosthodontist in Stockholm, Sweden.

"In the year ahead I hope and believe that the trend toward choosing screw-retained restorations—which means that the optimal position of the crown determines where to place the implants—will continue. By focusing on better planning and more accurate implant placement, we can work in a more predictable way, both regarding the esthetic result and the long-term prognosis. Digital planning is an important part of this communication and treatment planning."

In 2017, she intends to focus a great deal of energy on her research, which encompasses the long-term follow-up of single implants in the esthetic zone in young adults.

"I'm really excited about the prospect of analyzing my results," she tells us, "to see how this information can benefit dental practice."

On the clinical front, she says that she "would like to further incorporate digital planning and also intraoral scanning into my daily practice."

Active in many different areas, Dr. Winitsky will also continue with a related new project—running a Swedish odontological podcast.

"Outside the realm of dentistry," she adds, "my oldest son will graduate from high school this year, and that feels like a proper milestone. It will be really exciting to see where his life will head from now on!"

Dr. Sebastian Horvath is a dentist and specialist in prosthodontics in Jestetten, Germany.

He has placed between 500 and 1000 implants as of this writing, and is a big fan of NobelActive. NobelGuide guided surgery and Immediate Function are his preferred treatment concepts from Nobel Biocare.

"I foresee that the trend for monolithic restorations will continue in 2017," he states with conviction. "As they are completely comprised of a single material and fabricated in a single step, the risk of manufacturing error is greatly reduced. Furthermore, the quality of the material is usually better. These advantages will benefit the patient and the dentist with the potential for longer-lasting, cost-efficient restorations."

Dr. Horvath explains that he and his colleagues have been successfully using CAD/CAM restorations for posterior teeth in their office for a while, "but this year," he says, "we want to move to anterior teeth and esthetic restorations. Together with a few friends I will attend a course on this.

"Outside the practice I plan to do more sailing. A few years back I got all the necessary licenses. Now we want to buy our first boat and have a great time with family and friends on it."

Prof. Nurhan Güler is an oral and maxillofacial surgeon who lives and works in Istanbul, Turkey. Over the years, she has placed more than 5000 implants.

Her preferred Nobel Biocare implant systems are NobelActive, NobelParallel Conical Connection and NobelZygoma. Her preferred treatment concepts? The All-on-4® treatment concept and Immediate Function.

"I think the year's biggest trend in implant dentistry will be Immediate Function and graftless treatment solutions," she says, "which will satisfy patient expectations for both esthetics and function."

In 2017, she is looking forward to treating more cases with the new NobelZygoma. "I use it as a graftless treatment solution and I think that the new tapered apex shape and non-threaded coronal part of the NobelZygoma implant give me more options for different anatomical situations in order to provide high stability for Immediate Function.

"During the year ahead, I plan to be involved as a speaker and surgeon in cadaver and live surgery courses on zygomatic implants in Turkey. Moreover, I intend to attend courses around the world to learn about new concepts. To further my education, I am looking forward to a visit to Parma University, which will focus on oral and perioral esthetic medicine."

On a personal note, she will be visiting Africa for the first time, and traveling there by rail.

"I am really looking forward to a blend of African safari and many memorable moments on the 'Pride of Africa' train. I will also spend my time playing the Turkish instrument, *Kanun*. And, as always, yoga will play a significant part in my life.

Dr. Dilip Deshpande is a maxillofacial prosthodontist, in Mumbai, India, where he has placed over 10,000 implants to date.

He favors NobelActive and Brånemark System implants, and his preferred treatment concept is Immediate Function.

Looking toward the immediate future, Dr. Deshpande says, "I believe that regeneratives should be a major force driving the implant-based market in the coming year. Because I focus on maxillofacial reconstruction, this product line plays a key role for my practice.

"The creos xenoprotect membrane is very promising and I am looking forward to trying Nobel Biocare's latest range of xenogenic bone substitutes to supplement it."

He also says that he is conducting research on the clinical applications of stem cells for bone growth.

"I find the osteoid matrix to be more compatible and stronger when stem cells are used for deficient bone-based cases, and I am hoping this modality will become further refined and popular for clinical applications."

Always curious to go beyond routine practices and to explore new avenues, he says that he intends to explore graftless solutions such as the All-on-4® treatment concept as well as zygomatic treatment options this year.

"I attended Professor Paulo Malo's workshop last year in Mumbai, which definitely motivated me and my team."

Adventure abroad awaits this year. "I am a travel buff and also an avid history enthusiast," he explains, "so I'm always looking at combining these two whenever I travel! This year I plan to tick Alaska off my bucket list."

Dr. Tom Owen is a dentist who owns a thriving practice in Poynton, England and has placed somewhat fewer than 100 implants to date, mostly from the range of NobelParallel Conical Connection.

He likes to work with the On1 concept and is excited about the future of his profession.

"In 2017 I can imagine more and more dentists will have intraoral scanners and work closely with labs that have 3D printers. Some scanners can even assess for shade and occlusion now. I think digital smile design will get even quicker, augmented virtually in real time."

This year he is sending his staff to the Nobel Biocare course for dental assistants in Newcastle, UK.

"I also plan to start more immediate loading cases when suitable—with Nobel Biocare I have the correct system to do so.

"I will also continue to build my new business, Wish Dental, which has become more than I ever dreamed of.

"When I'm not working I'll be spending time with my wife, eight-month-old twin boys and my son who is nearly two. We also have two dogs, so I am the head of a big, fun family. We plan to have some nice family holidays. I hope to try the new surf center in North Wales as we keep a caravan nearby." <

The Mechanical Environment Of Immediate Placement

Part two of a three-part series: "Understanding the Biology and Mechanics of Immediate Placement"

Working with researchers Liao Wang, Xibo Pei, and Yan Wu at the Stanford University Department of Surgery, Professor Jill A. Helms has been studying what happens around immediately loaded implants. In this, the second of a three-part series, Dr. Helms discusses our best current understanding of the mechanical context of an immediately loaded implant.

By Professor Jill A. Helms

In the previous issue of *Nobel Biocare News* we discussed the extraction socket and what happens biologically to the bone tissue there as it heals. In this edition we are going to examine what happens when you place an implant in this setting. In other words, we are going to look closely at the biomechanical interface.

When considering this interface, there are two regions of the extraction socket that are of particular interest.

The first region is where the implant has engaged with the bone. As with traditional placement in an osteotomy, the implant is in direct contact with the bone in this region, and osseointegration tends to follow apace.

When you put an implant into an extraction socket, however, there is a second region where the implant is not in contact with the bone. Here we see such a gap. (Fig. 1.) Although we call it a "gap," let me assure you that this choice of word in no way indicates that this space is empty.

The gap we observe between the implant and the extraction wall is filled with tissue. First it fills with blood, then a fibrin clot. The fibrin in turn traps cells, which we model in our laboratory to find out how bone forms in this gap.

My colleague at Stanford, Professor John Brunski, developed a finite element model, which simply and effectively helps us to understand what takes place within this space, filled as it is with blood, fibrin, and other cells.

In order to put Brunski's finite element model to work in our mouse model, we place an implant in an osteotomy designed to represent the interface we wish to study—the gap region between the bone and the implant. Then we subject the implant to a nominal load, which we do, of course, because we want to study the consequences of immediately loaded implants.

The resulting model is illustrated in Figure 2. We have the implant, the gap filled with the tissue, and the bone, as shown in the left hand panel. Although the gap interface appears uniform, the finite element model shows that there are regions of high strain in this situation. The regions of high strain are around the tips of the implant threads that are near bone.

Please also note the regions of low strain. This turns out to be very, very important. These areas of low strain are, in part, predicated on the design of the implant.

When we look at the regions of high strain, we know that cells cannot differentiate into osteoblasts there if the strain is excessively high (on an order of 30 percent). In regions of low strain, on the other hand, bone formation is actually stimulated.

Let's use a molecular marker to visualize the onset of new bone formation. Using a marker called alkaline phosphatase (ALP), we can clearly observe that it is in the areas of low strain (indicated with the red arrows) where we see the beginnings of new bone formation and mineralization. Gradually, this mineralization spreads and the areas that once represented gaps around the immediate implant ossify (right side of Figure 3).

This work demonstrates what many clinicians have already observed in practice. We can create mechanical environments within the extraction socket where low strain encourages the differentiation of osteoblasts. Of course, encouraging their differentiation—especially in cases where a patient's own bone-forming capacity might be diminished because of age or an underlying health condition—is our ultimate goal. <

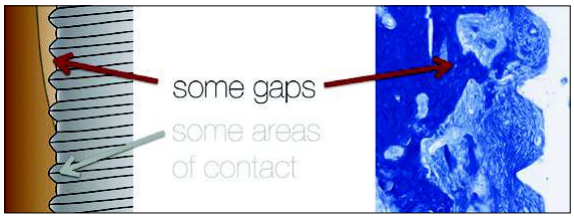


Figure 1. When placing an implant into an extraction socket, there will be some areas of direct contact with the bone and also some gaps.

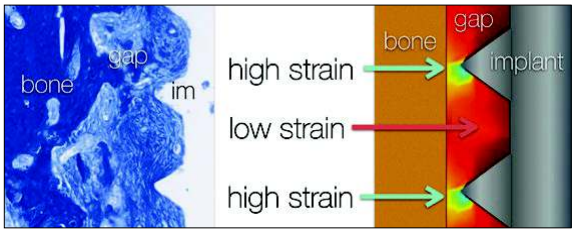


Figure 2. The amount of strain at different locations in the implant-extraction-socket interface affects subsequent bone formation.

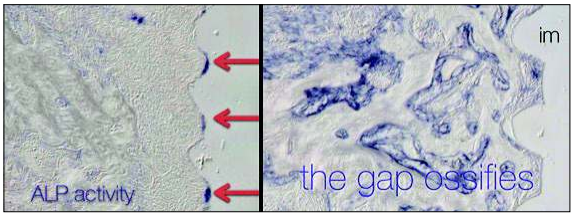


Figure 3. Using alkaline phosphatase (ALP) as a marker, we can follow mineralization, and where it most readily takes place, over time.

→ More to explore!

In the next issue of *Nobel Biocare News*, Professor Helms will complete this series, discussing innovative approaches to challenging situations. Part 1 can be found online at: nobelbiocare.com/news.

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