Implants for life

Bret Wise and Lars Henrikson share their vision

IN THE SPOTLIGHT
The world is developing fast and open-mindedness is the key word

TREATMENT SOLUTIONS
Implants and restoration in one visit with the latest innovation in digital dentistry

CASE STUDIES
15 pages of clinical innovation
As part of Digital Open Solutions, DENTSPLY Implants is pleased to introduce the newest benchmark for restoratively driven, digital implant therapy solutions.

When featuring an ATLANTIS Abutment, the Immediate Smile concept combines the proven benefits of SIMPLANT guided surgery and the ATLANTIS patient-specific design into a solution that delivers considerable clinical and patient value.

- All components for guided implant placement and immediate, individualized temporization are available at one single surgical visit
- The ATLANTIS Abutment and temporary crown are delivered at implant installation and provide perfect conditions for individualized esthetics and healthy soft tissue

As with all Digital Open Solutions supplied by DENTSPLY Implants, Immediate Smile featuring ATLANTIS Abutment is implant-system independent and available for all major implant systems.

Find out more at www.dentsplyimplants.com

*Certain restrictions apply. The complete list of compatible implants and ATLANTIS abutments is available at www.dentsplyimplants.com
ON THE COVER
Bret Wise, CEO, DENTSPLY International and Lars Henrikson, Group President, DENTSPLY Implants.

CLINICAL CASES
Industry experts share their results using the latest advancements in implant dentistry.

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DENTSPLY IMPLANTS

magazine

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“We will continue to improve oral health in a responsible way.”
BRET WISE CEO, DENTSPLY International

DENTSPLY Implants for life

06
EDITORIAL

In your hands every day

LARS HENRIKSON
Group President, DENTSPLY Implants

Every day, you are holding your patients’ dental health and thereby their well-being in your hands. Every day, we at DENTSPLY Implants would like to think that we do too. As a dentist, I have been there – the feelings of accomplishment and satisfaction when you see the impact that the dental profession has on many patients’ daily lives.

Chances are that you are also using our solutions – a dental implant, an abutment, bone regenerative material. Our comprehensive portfolio of innovative products and services also includes professional development and practice support. The fact is this – we can offer you the complete package for the treatment of implant patients.

The world is constantly evolving and so are we. Over the last 18 months, we have introduced DENTSPLY Implants in over 20 countries around the world – from North America to Japan – and we will continue to grow and evolve together with you. We are a global implant company, with our roots firmly planted in science and clinical research. However, when you get to know us, you will notice that we act locally. We focus on long-term customer relations and services on a local country level.

Every day, our goal is to make a difference. We are here to stay, to make your life as a dental professional easier and better, just like you are there for your patients every day. In fact, we are really on the same journey – to improve quality of life for patients all over the world. So let’s travel together, so we can get there faster.

Right now, you are holding the first issue of the DENTSPLY Implants magazine in your hands. Enjoy.

LARS HENRIKSON

NEWS & TRENDS

Capitalizing on today’s visually driven interaction

Dental practice 2.0

The human desire to share information has manifested itself in today’s flourishing social networks, with online platforms enabling interaction at faster paces and with larger audiences. Now at over one billion users – 1,000,000,000 – Facebook is certainly the best-known example of this trend. Visual content is attracting the highest interaction rates, as confirmed by the booming success of visual platforms like Instagram and Pinterest. Also called “the Facebook for photos,” Pinterest is gaining traction as the most successful platform to sell services and products, next to newsletters and search engines. More than 70 million Pinterest users are creating image collections around their events, interests and hobbies, drawing inspiration from more and more companies and online shops that are presenting their service offers and products via virtual pinboards. This applies to the dental world as well, with more opportunity for the industry to tap into its visual side, engaging users with visual inspiration, tips and information.

DENTAL IMPLANTS GIVE BETTER QUALITY OF LIFE FOR PATIENTS

Studies

There is a growing trend to include patient-reported outcome measures when evaluating dental implant treatment, to complement clinical outcome measures. Several articles conclude that dental implants improve quality of life for patients when compared with conventional prosthetic therapy. This improvement is valid in different treatment situations, both for removable and fixed implant prostheses, as well as for single-tooth replacement. Moreover, a recent review of 14 studies shows that dental implants represent a cost-effective treatment option and that patient acceptance, willingness to pay for and satisfaction with dental implants were high.

Below are examples of references reporting on improved quality of life and higher patient satisfaction.


Despite a previous decline in dental medicine students, the current number of freshmen has reached its highest level since the early 90s. Particularly remarkable is the high proportion of female students. A look at Ontario, Canada: In 1991, the majority of dental students (84 percent) were male, but today women are ready to seize power in this sector by constituting the majority of the freshmen population.

Other countries report a similar trend with steadily rising numbers of registered female dental students.

**WHILE THE TREND** is universal, this shifting ratio is not yet reflected in the number of practicing dentists. Globally, female dentists are underrepresented at 22.2 percent in the United States, 40.0 percent in Germany, and 44.5 percent in the United Kingdom.

These percentages are expected to increase quickly, taking into account the number of female students in position to graduate and begin their careers in dentistry.

**THE OUTLOOK FOR THE** dental implant sector is strikingly different. Here, the number of female practitioners remains low.

A recently published, award-winning master’s thesis from dentist Angela Boll cites various reasons for the discrepancy, suggesting that the importance of family life and the desire to have children are in conflict with the demanding and time-consuming training required of a dental surgeon.

Given that women have equal surgical competence, Boll proposes the integration of implant training within dental studies and the establishment of mentoring programs to encourage more women to choose implant dentistry as a desired career path.

**Are women taking over?**

D is the position that tooth decay holds on the list of the most common diseases in the United States, second only to the common cold.

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1. The Feminization of Dentistry: Implications for the Profession, Julia C. McKay, PhD; Carlos R. Quiñonez, DMD, MSc, PhD, FRCD(C)
6. DENTISTA 03/2013; publisher: Dental relations, page 22
A global company like DENTSPLY International requires a well-travelled CEO. DENTSPLY Implants magazine recently caught up with Bret Wise, while he was on a visit to Gothenburg, Sweden. It turned into a discussion about the future of the dental implant market.

Travelling the world of dentistry

Everything is high speed during DENTSPLY International CEO, Bret Wise’s brief visits to Gothenburg, Sweden – an intense schedule with many meetings, tours and discussions.

Bret Wise recently came to Sweden to meet with the DENTSPLY Implants team. In August 2011, DENTSPLY, one of the world’s largest manufacturers of professional dental products, announced that it would acquire what was then Astra Tech. Since then, Astra Tech Dental and DENTSPLY’s Friadent division have united to form DENTSPLY Implants – a leading global dental implant company.

During his visit, Bret Wise sat down with us just after lunch one day. Despite the hectic pace of his schedule, Bret is seemingly at ease. But then again, this is not exactly new territory for him.

DENTSPLY International markets its products in more than 120 countries and has production facilities in 21. Keeping himself updated and informed requires a great deal of travel and interaction with employees, customers and business partners.

While acquisitions have always been an important part of DENTSPLY International’s business strategy, Astra Tech serves as an important milestone – it is the largest acquisition in the company’s long history. With over 25 acquisitions in the past ten years, DENTSPLY’s focus has been on acquiring companies with unique technologies or solutions that, when backed by the right level of support, can offer the dental market immense value. These have traditionally been small companies with limited scope. As such, large acquisitions such as Astra Tech are

A SHORT HISTORY OF DENTSPLY – FROM THE START TO THE FORMATION OF DENTSPLY IMPLANTS

1899: THE START
The Dentists’ Supply Company of New York was formally chartered. The first headquarters was located on 42nd Street, New York City in the Candler Building.

1899: THE FIRST YEARS
Serving dental retail outlets as well as manufacturing with its first product, artificial teeth called Platinum Pin Teeth. This product represented a major improvement in the design and manufacture of previous artificial teeth and dentures.

1914: FORM AND FUNCTION
The company established the first systematic facial shape and size relationship that accurately applies to denture tooth form.
rare, but possible when the companies share similar cultures and commitment to the market. This was the case with Astra Tech, which shared a very similar view with DENTSPLY regarding research and clinical support. Both companies were committed to bringing innovative products to the profession that are backed by solid scientific research and sound clinical evidence. This strong commitment continues today under the new DENTSPLY Implants brand.

DENTSPLY INTERNATIONAL'S world-leading role also involves a lot of responsibility. We began by asking Bret how he viewed this responsibility.

“As a profession, DENTSPLY, our competitors and clinicians, have substantially improved the oral health of patients worldwide through a continuous cycle of investment and innovation. At DENTSPLY, we’ve been working at this for 114 years and we continue to find new ways to deliver improved patient outcomes every day. We consider this continuing commitment to innovate as both a responsibility and an opportunity. With a substantial portfolio of products and technologies in each of preventive, restorative, orthodontics, endodontics, implants and prosthetics, we are committed to bringing advancements across a broad spectrum of dentistry. As a leader in the market, we are in a constant state of investment in innovation, clinical research and continuing education to develop even better solutions for dental professionals and their patients. This is particularly true of emerging technologies or markets.”

“Another responsibility we have is to

Bret Wise is on the road approximately 70 percent of the time, visiting DENTSPLY’s many operations and meeting with customers. “DENTSPLY International’s culture is meant to align with the local culture. When it comes to sales, Europe is about 45 percent and North America 33 percent of our business. With operations in 40 countries, we distribute products in over 120 countries under some of the most well established brand names in the dental market,” says Bret Wise.

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**1920: INTERNATIONAL LOCATION**
The Dentists’ Supply Company of New York established its first international office, a manufacturing facility located in Paris, France. A second Paris facility was added to the lineup in 1924.

**1925: SHADE GUIDE SUCCESS**
The company was the first one to introduce artificial tooth colors that could match natural teeth. The shade guide featured 25 different shades of teeth.

**1954: ULTRASONIC DRILL**
The first ultrasonic “drill” which included a separate dental scaling handpiece and insert was invented in 1954 by The Dentists’ Supply Company.
THINGS, BESIDES FAMILY, THAT BRET WISE WOULDN’T DO WITHOUT:

“I wouldn’t do without friends and colleagues, and giving back, reinvesting in society for those who are less fortunate.”
In 20 years, will dental implants and implant treatment be improved from today’s standards? Yes, of course they will!“

FACTS IN BRIEF

NAME: Bret Wise
FAMILY: Wife and three college age children
LIVES: Near DENTSPLY World Headquarters in York, Pennsylvania, USA
PASSIONS IN LIFE: Spending time with family, enjoying outdoor activities on or near the water, and also hiking and taking in the many other pleasures that nature provides.

 WHAT MAKES YOU HAPPY TO GO TO WORK EVERY MORNING:

“I like to think you spend your life doing something that creates value – that will live on beyond your involvement. I feel that within DENTSPLY we are doing just that. Creating value for people that will outlive our own time. That’s pretty satisfying.”

and the pace of innovation is accelerating.”

The continued innovation in the market will also result in different value propositions according to Bret. As the technology advances, we are likely to see a reduction in treatment time, healing time and improved outcomes for patients, including those with compromised bone structures. This will be increasingly important as the global population ages. These advancements will drive the value of the product and service offerings for the dental professional and the patient. Bret Wise draws a parallel with a different market:

“The cars we drive today work perfectly fine – but each year the auto makers continue to innovate and bring improvements in their models. Why do they keep doing that? Because the improvements drive value for the customer. We can say the same about dental implants. The implants we have today work well – but have they reached their full potential? In 20 years, will dental implants, and implant treatment be improved from today’s standards? Yes, of course they will! I have heard the argument that all titanium implants work, so why should I buy the most advanced products? But the fact that a technology works, does not mean that it works as well as it could, or that it is the best solution for

1969: OFFICIAL NAME CHANGE
DENTSPLY was a principal trade name of the Company since the 1940s, when clerks shortened the long form of the Company’s name for billing and other items. Now it became the official name.

1993: GIANT LEAP FORWARD
DENTSPLY merges with Gendex Corporation. The official name of the combined business became DENTSPLY International, Inc.

2001: GROWING THE BUSINESS
DENTSPLY’s business continues to grow, reaching $1.0 Billion US in global sales.
a particular case. When a patient invests in an implant, it is an investment for life. We have a responsibility to make sure that we have done all that we can as a profession to ensure that the product and service meet this expectation. Well, DENTSPLY International has been around for 114 years, we intend to continue to improve our product portfolio and stand behind our products over the long term.”

**DENTSPLY IMPLANTS** represent about 20 percent of DENTSPLY International’s 3 billion US of total turnover; in other words, a very important part of the total business. How does Bret Wise see the future of DENTSPLY Implants?

“With DENTSPLY Implants we have a very capable team and leading technologies, providing us with a strong opportunity to deliver increased value to the customer and patient. However, we are not stopping there. We will continue to invest in this market, including advancing all three of our implant systems, ANKYLOS, ASTRA TECH Implant System, and XiVE. DENTSPLY Implants’ aim is to become the number one dental implant company by serving the needs of dental professionals and patients everywhere. Continued efforts in new product development, investments in key markets, and expansion of open digital solutions provide a path to that goal. With much of the integration from our recent acquisition now behind us, Group President Lars Henrikson and his team are focused on improving the efficiency of our business and providing continuous improvement in customer service and product offerings based on strong science and the clinical needs of patients.”

**DENTSPLY INTERNATIONAL IN SHORT**

**FOUNDED:** New York (1899)

**HEADQUARTERS:** York, Pennsylvania, USA

**CEO:** Bret Wise

**REVENUE:** $2.9 Billion (2012)

**EMPLOYEES:** 12,000

**PRODUCTS:**
- Dental consumable products (28 percent of sales)
- Dental laboratory products (11 percent of sales)
- Dental specialty products (48 percent of sales)
- Medical consumable products (13 percent of sales)

**DENTAL SOLUTIONS:** Preventive, restorative, orthodontics, prosthetics, endodontics, implants

Read more at: www.dentsply.com

**2002: INNOVATION IN-OVATION®**

In-Ovation is a free-sliding orthodontic technology meaning you have less discomfort and a faster treatment than with traditional style braces. Little to no pressure is placed on teeth as they are gently guided into place.

**2012: THE NEW POWERHOUSE**

Astra Tech Dental and DENTSPLY Friadent united its innovative and growing dental implant-related businesses into a new company – DENTSPLY Implants.
Patients today have high demands of their dental care. They care about functionality as well as esthetics and they want it without spending too much time chairside. More and more dentists face these expectations every day. The good news: with ATLANTIS ISUS, they can deliver on modern patient demands.

Designed from a diagnostic tooth set up, created with the latest CAD/CAM technologies — that is ATLANTIS ISUS. Milled from solid titanium or cobalt-chrome blocks, it offers implant suprastructures that are especially homogeneous and free of pores with a tension-free fit. They provide tailored solutions for fixed and removable implant-supported suprastructures, which are compatible with all major implant systems and can be fixed on two or more implants or at the implant-abutment level.*

This solution offers dentists a whole range of options for individual, customized patient care, including, for example, the ATLANTIS ISUS 2in1 concept.** This concept provides primary and secondary superconducting structures for a removable solution. The primary structure is fixed to implants, while the secondary structure attaches to the primary structure using friction and additional retention elements. The secondary can be a hybrid or bridge suprastructure finished with custom teeth and denture resin.

Dentists and patients are not the only ones that benefit from ATLANTIS ISUS solutions: dental technicians can now utilize time formerly spent on designing and casting multi-unit suprastructures to create final esthetics. The simplified online ordering process, which is available 24 hours a day and 7 days a week, saves additional time. One final advantage: the ATLANTIS ISUS precision and quality is backed by a comprehensive 10-year warranty for both titanium and cobalt-chrome materials.

The patient-specific implant suprastructures from ATLANTIS ISUS extend the freedom to create long-term, fixed and removable restorations for daily success and patient satisfaction.

* Implant-level placement is not recommended on ASTRA TECH Implant System and contraindicated on ANKYLOS Implant System.
** ATLANTIS ISUS 2in1 is only available in titanium. ATLANTIS ISUS 2in1 is not available in North America.
The short ANKYLOS® 6.6 mm implant is indicated where vertical bone height is limited.

It may minimize the need for vertical bone augmentation procedures and thereby reduce treatment time and costs.

ANKYLOS® 6.6 has the same unique friction-locked and keyed tapered TissueCare connection as all ANKYLOS® implants, preventing micro-movements between implant and abutment.

The TissueCare connection is a part of the ANKYLOS® TissueCare Concept which stands for long-term stable hard and soft tissue.

This product may not be regulatory cleared/released/licensed in all markets.
Prof. François Duret, an inventor of dental and medical CAD/CAM, has spent 40 years developing new technologies that support practitioners during clinical procedures. Back in the 1970s, he predicted the digital dentistry development that has now become reality. In search of a new glimpse into the future, DENTSPLY Implants magazine had a chat with Prof. Duret.

**AS A PIONEER IN DIGITAL DENTISTRY, YOU HAVE FOLLOWED THE DEVELOPMENTS IN THIS EXCITING AREA FOR THE LAST FOUR DECADES; WHAT IS THE BIGGEST DEVELOPMENT RIGHT NOW?**

“I would say that there are three different areas that stand out right now. First is optical impression, which was just a simplification procedure when it all started. Second is implantology, an area that has advanced and expanded along with internal and external imagery. Third, the materials, which at first were only an incidental revolution of massive homogenous structures to heterogeneous constructions respecting the principles of the human biology.”

**WHAT DO YOU THINK ABOUT THE FUTURE AND DIGITAL DENTISTRY?**

“I can’t imagine that dentistry would ever return to analog mode. Digital dentistry is necessary in radiology and in management. It will be necessary in prosthetic constructions and to aid diagnostics. Down the road, I think that it will extend to the broad field of telemedicine, which will break social and economic barriers. The future will demonstrate the extremely humanitarian nature of the theory of digital dentistry.

In my personal opinion, I think that access to high-level medicine and dentistry will be available even in the poorest regions, through the digitalization of data and its transmissions into many areas. The one thing that has given me the greatest joy in optical impression and dental/medical CAD/CAM is to have proposed a procedure that grants those who have next to nothing, and can’t benefit from the comfort of our health systems, the power to access it quickly within a foreseeable future. To have actively participated, and to have fought year after year for this cause, is without a doubt my greatest achievement. I can only hope that this pillar of digital dentistry remains in the future. If so, I will have fulfilled my contract to my profession.”

**WHAT WILL THE DENTAL CLINICS OF TOMORROW BE LIKE?**

“It seems to me, opposed to what many people think, that we will see a general fragmentation of focus areas after a period of concentration. If you add to this the implementation of telemedicine, which is becoming increasingly efficient, and a decrease in material costs – we should logically be led towards a movement that encourages therapeutic individualism. This will also be further encouraged by preparatory acts and post-treatment directly by the patient, at home, under virtual control of the clinician.”

“The future will demonstrate the extremely humanitarian nature of the theory of digital dentistry.”
The dental implant market – from its clinical and laboratory procedures to its business models – is evolving rapidly. Digitalization and prosthetically driven implant treatments are the main drivers of this progress, with guided surgery being the key to unlock digital potential. It allows clinicians to deliver implants according to plan – which in turn enables prosthetic results as planned. Following the demands of this fast developing market, DENTSPLY Implants now offers a brand new solution that, for the first time, combines the advantages of SIMPLANT guided surgery and patient-specific ATLANTIS abutments – for time saving, perfect esthetic results.

A FOCUS SESSION on “Prosthetically driven treatment planning and execution powered by computer guided surgery” was held in Belgium in early August 2013. Three international prosthodontists with profound knowledge in digital dentistry – Dr. Marcus Dagnelid, private practice in Gothenburg, Sweden; Dr. David Guichet, private practice in Orange, USA; and Dr. Goran Benic, University of Zurich, Switzerland – met to share their experiences and expectations for digital dentistry in general, and the innovative, state-of-the-art solution from DENTSPLY Implants in particular. The clinicians had tried out the new solution in advance, and over the course of the session, they had the opportunity to discuss this new treatment option with their colleagues for the first time. But what is this solution all about?

TO PROVIDE CLINICS and laboratories with cutting-edge innovation, DENTSPLY Implants merged its world-recognized digital open solutions SIMPLANT and ATLANTIS. The new SIMPLANT 16 software combines the benefits of computer-guided surgery with patient-specific ATLANTIS Abutment solutions, bringing surgery and restoration to a new level. It enables a 100 percent digital process that stores all information without having to restart treatment again.

WHAT DOES THIS MEAN for the clinician? The data of the patient only has to be recorded once and can be used for everything from reliable planning and safe execution of implant surgery to creation of a patient-specific abutment and a CAD/CAM temporary crown. In other words, a
SIMPLANT SAFE Guide, a patient-specific ATLANTIS Abutment, and a temporary crown based on ATLANTIS Abutment Core File can be ordered in one single, seamless step. This way, the patient can be treated in one single treatment session and leave with a perfect temporary restoration.

IN COLLABORATION with the laboratory, the clinician gathers the digital data required, including the digital representation of the tooth-to-be in the SIMPLANT 16 software. The clinician can now perform a prosthetically driven treatment planning, and deliver that treatment accurately to the patient. Once the planning of the implant is made, the data is sent to the design and production units, and the SIMPLANT surgical guide, the ATLANTIS Abutment and the ATLANTIS Abutment Core File are designed. The clinician and the laboratory now get the opportunity to review and approve the designs before production starts.

In the hands of the clinician, the planned treatment is realized in an efficient and accurate way. In addition to the advantages offered by the guided surgery protocol and the immediate temporary restoration, the patient-specific abutment provides individualized soft tissue contouring that starts immediately after surgery.

Ultimately, this goes beyond significant time saving in treatment planning and implementation for the dental team and the patient. “For immediate loading, this is the highest quality you can get. The shape and strength of an ATLANTIS Abutment is of much better quality than a peek, chairside temporary abutment, thus creating the perfect emergence profile,” Dr. Marcus Dagnelid said during the meeting.

The patient benefit is obvious: taking care of the implant procedure and the temporary restoration in just one visit.

THE PATIENT BENEFIT is obvious: taking care of the implant procedure and the temporary restoration in just one session, as well as creating perfect conditions for individualized esthetics. Following healing, the clinical situation, including soft tissue response, is evaluated. Based on clinical judgment, the initial ATLANTIS Abutment is either kept, making it a final abutment, or changed to a new ATLANTIS Abutment.

GREAT NEW INSIGHTS on the new treatment concept for immediate restorations were certainly the highlight of the meeting in Leuven. Yet the meeting delivered much more than that. It was an inspirational forum with impressive exchange of knowledge and ideas about how to advance the product and process developments in order to provide clinicians and laboratories with the tools they need to perform prosthetically driven implant treatment – a complete digital workflow starting with the digital scan and utilizing digital processes and merged data sets for more efficacy and accuracy.

Further focus sessions on where digital dentistry will lead us will follow.
ATLANTIS abutments are supported by a unique combination of four key features, known as the ATLANTIS Abutment BioDesign Matrix. These features work together to support soft tissue management for ideal function and esthetic result. Utilizing the unique and patented ATLANTIS VAD (Virtual Abutment Design) software, ATLANTIS abutments are individually designed from the final tooth shape.

The patented ATLANTIS VAD software creates an optimal design based on anatomy, engineering and manufacturability. The result is an optimized abutment solution that offers the best possible function and esthetics.
The surgeons who placed the very first dental implants almost 50 years ago were met with skepticism. In fact, some people regarded them as quacks. Fortunately, a whole lot has happened since then. The implant treatment methods have advanced at an amazing pace and are now a natural part of dentistry.

The early pioneers in implantology were driven by the conviction that this new treatment could tremendously increase the quality of life for edentulous patients. In order to be able to offer the treatment to as many patients as possible, the pioneers, clinicians and the industry started to cooperate. By working together, new methods and products were developed to meet the demands on safety and efficacy.

Today reputable and serious dental implant companies provide products and treatment concepts for a predictable proven tooth replacement method. The expertise of the people who work with implants every day – the dental professionals – has expanded and matured. It is more and more common that implant treatment is a part of the curriculum at the dental schools, however there is still room for improvement. All in all, this means that knowledge, skills and expertise will continue to grow and develop in the future. As the clinicians’ experience increases the demand for more advanced patient-specific solutions increases as well, putting pressure on the industry to develop new products and concepts that are both advanced and highly individualized but yet simple and versatile.

“Open-mindedness and freedom of choice are key factors in implant dentistry today. As suppliers we cannot close the door to our own little world and think that the best way of retaining customers is to keep them locked up in there. We have to be open-minded, not only to exchanging information with clinicians and academia, but also to cooperating with other suppliers if this strengthens our total offer and thereby provides a better solution for our customers. We want our customers to stay with us because we have the best offer, not because they don’t have a choice,” says Werner Groll, Group VP Country Organization/International Sales, DENTSPLY Implants.

The future seems to indicate a stronger demand for open solutions available for all major implant systems, especially in the digital area, a trend that has several positive effects for clinicians and patients alike. Research confirms that dental implants considerably enhance the quality of life of a patient missing one or more teeth. The simplest implant solution – having a denture permanently attached to two implants – means that the quality of life skyrockets compared with using a conventional removable alternative. Self-confidence in social situations grows as fear of the denture falling out disappears.

The hardware accounts for only 15–20 percent of the total cost of the implant treatment. So the serious implant supplier, committed to clinical evidence, scientific research, and documented results, has a very limited possibility to impact the treatment cost as a whole. In order to

«Open-mindedness is the way forward.»
IMPLANT SYSTEMS & PROSTHETIC SOLUTIONS
DENTSPLY Implants offers three different, well-renowned dental implant systems – ANKYLOS, ASTRA TECH Implant System and XIVE, each with their own specific features and benefits. The product portfolio also offers a wide range of the latest prosthetic treatment solutions.

DIGITAL OPEN SOLUTIONS
The digital implant dentistry area is growing rapidly. ATLANTIS patient-specific, CAD/CAM solutions (abutments, bars, bridges and hybrids) fulfill the needs for individualized solutions for both patients and dental professionals. Digital Open Solutions also includes SIMPLANT computer guided implant treatment, ranging from treatment planning and surgical guides to immediate restorative support and communication tools.

BONE REGENERATIVE SOLUTIONS
Patients who lack sufficient bone volume used to be excluded from dental implant treatment. With advancements in bone regenerative solutions, they are now considered suitable patients. In our product portfolio, you will find different solutions for bone regeneration.

PROFESSIONAL DEVELOPMENT
To be able to utilize all the new technologies and to benefit from DENTSPLY Implants’ versatile product portfolio, we offer extensive training & education programs as well as practice building tools.

FACTS ON ORAL HEALTH
Percent of adults ages 35 to 44 have lost at least one permanent tooth to an accident, gum disease, a failed root canal or tooth decay. Furthermore, by age 74, 26 percent of adults have lost all of their permanent teeth.* Globally, about 30 percent of people aged 65 to 74 have no natural teeth.**

*2005-2013 American Association of Oral and Maxillofacial Surgeons (AAOMS)

IMPLANT PENETRATION (% OF TOOTH RESTORATIONS)

lower the price level and thereby make implant treatment a realistic option for a greater numbers of patients, it is necessary for implant companies and clinicians to cooperate to find more efficient treatment methods and concepts. There is immense development potential in several markets to reach out to more patients (see graph above).

“It is only together with the clinicians that we can develop more cost-effective solutions that enable more people to afford implants. In this context, it is vital that we listen closely and that we adapt to what the market wants. Once again, being open-minded is the way forward,” says Werner Groll.

DENTSPLY Implants’ chosen business model reflects the changes in the market.

Björn Delin, VP Global Marketing, goes so far as to say that DENTSPLY Implants exists in its current form and shape because the market indirectly asked for it.

“We are implant specialists. Whatever your needs are, we strive to offer the best solutions on the market. We have three implant systems, each of them with its own specific features and benefits based on clinical evidence and scientific documentation. The prosthetic solutions offer a wide range of options from stock abutments and smart treatment concepts to state-of-the-art patient-specific CAD/CAM abutments, bars, and bridges. We also offer bone regenerative solutions, as well as advanced digital surgical planning. In line with our open-mindedness and freedom of choice approach, the digital solutions are not only available for our own implant systems, but also for all other major implant systems.

If you value the convenience of handling all your purchases from one source and taking advantage of being first with the latest innovations, you can choose DENTSPLY Implants for all steps in the implant treatment process. You can also turn to us for specific items from our extensive product range. We’ll give you a warm welcome in either case. We share goals – let us together redefine implant dentistry for the benefit of the patients,” says Björn Delin, VP Global Marketing at DENTSPLY Implants.

For more about how dental implant treatment affects patients’ quality of life, read the PATIENT PROFILE article on page 46.
DENTSPLY Implants strives to offer the most comprehensive solution for all phases of implant therapy. But what do their customers think about their efforts? We asked three clinicians for their perspective.

Three perspectives on DENTSPLY Implants

DR. LAURENT CLAUDE

“All stakeholders in extensive restorations benefit from the quality guarantee of a company that manages the various stages of prosthetics.”

“I HAVE USED the ASTRA TECH Implant System since 1997 and the system has evolved in many aspects. For example, at the level of implant design and surface conditions that has allowed a reduction in osseointegration time. On the prosthetic level, the ATLANTIS abutments have provided practitioners with an easy way to manage prosthetic abutment orders and stocks. However, it is the perfect design of these custom abutments that has allowed in-mouth sealing of teeth that correspond perfectly to emergences and interdental spaces. Thus, these homothetic abutments for prosthetic teeth have brought reliability to ceramic restorations. Since 2008, I have been using the FACILITATE software and guided surgery kit. In recent years, I have been able to give relevant practitioners the benefit of the communications training offered. This training has allowed them to increase business while respecting the concerns and interests of their patients.

SINCE THE ACQUISITION of Astra Tech by DENTSPLY, I have also used the XiVE S implant, which ensures greater primary stability when I do an immediate loading. The adaptable MP abutments for the XiVE S implants come in two heights and two angulations to allow ideal screw hole positioning for full-arch, screw-retained restorations. Finally, the machined ATLANTIS ISUS suprastructures provide high reliability through passivity and accuracy, even on arches where I installed both ASTRA TECH Implant System and XiVE implants. Thus, all stakeholders in extensive restorations benefit from the quality guarantee of a company that manages the various stages of prosthetics.”

DAVID LITTLE

“It is a tremendous advantage to work with one company who can provide a complete solution.”

“As a clinician who has incorporated most all of the DENTSPLY Implants product offerings into my practice, I can say with confidence that it is a tremendous advantage to work with one company who can provide a complete solution for diagnosis to delivery. I have used Simplant for diagnosis and treatment planning, Symbios when diagnosis shows need for bone regeneration, and ExpertEase surgical guides.

Having three implant systems to choose from allows me to meet the different clinical challenges and patient expectations, which is then further supported by the availability of prefabricated abutments, customized ATLANTIS patient-specific abutments or ATLANTIS ISUS for bars, hybrids and bridges.

In addition, the comprehensive products and services of “One DENTSPLY” helps with the products I need for all the other phases of dentistry; from the impression materials, provisional and cements from DENTSPLY Caulk, lab-fabricated provisional, zirconia, lithium disilicate, denture acrylic and denture teeth from DENTSPLY Prosthetics; to Essix appliances and polishing materials from, DENTSPLY Raintree Essix.

OTHER COMPANIES talk about a one-stop-shop, but DENTSPLY is one company who really delivers on that promise.”

FRANCOIS RIENDEAU

“They have everything under one roof.”

“The advantage in dealing with a company like DENTSPLY Implants is that they have everything under one roof; the representatives are knowledgeable and can offer many solutions to my needs. This makes for a world of difference when it comes to ordering and greatly simplifies our administrative workload. I use the ASTRA TECH Implant System and ANKYLOS implants, MTF bone substitutes and resorbable collagen membranes. I would like to see a xenogenic bone substitute for site preparation. I believe this would be a great addition to their product line.”
Getting an implant is a lifetime investment for the patient. Being able to promise a successful result is crucial for the dentist. DENTSPLY Implants focuses on clinical documentation of its products in order to be able to guarantee just that.

Science and documentation at the core of DENTSPLY Implants

As many as 90 percent of the implant systems on the market today have no clinical documentation – the implant systems from DENTSPLY Implants are among the 10 percent that do.

The fact is that the company invests considerable resources in research, development and clinical documentation of its products. Ulrika Petersson, DDS, PhD, Senior Manager Global Scientific Management, has worked for the company since 2007 and explains:

“DENTSPLY Implants conducts clinical research in 20 countries, on four continents. We are also a partner in more than 120 Investigator Initiated Studies. We are always ready for anyone who has an interest in, or wants to submit a proposal for, a research project.”

HOW IMPORTANT IS THIS DOCUMENTATION TO DENTISTS AND THEIR PATIENTS?

“It is very important for them. Long-term clinical documentation, which means at least five years, is one of the most important pieces of evidence for proving that a product is efficient, reliable and safe,” says Ulrika Petersson.

The documentation process is one of the very cornerstones on which the company builds its operations.

“The DENTSPLY Implants product portfolio is supported by more than 1,200 articles, published in renowned scientific journals, documenting the properties and clinical outcome of our products,” says Ulrika Petersson.

Products that stand the test of time

In 2000, Norwegian Professor Gunnar Ralla (right) received the first dental implant with the OsseoSpeed surface from ASTRA TECH Implant System. Developed by Professor Jan Eirik Ellingsen (left) together with Professor Ralla, this new, fluoride-modified surface was scientifically proven to trigger the bone to produce more bone, speeding up the healing process. To the right, you can see his OsseoSpeed implant – at placement in 2000, with follow-up X-rays in 2005 and 2011. The implant is in perfect condition and the marginal bone has been maintained.
When I read a book, I usually read the first few chapters. Then I stop and flip to the end of the book and read the last chapter; I want to read the end before actually reading the whole book. I do so because I want to know in advance how the story ends, that it is a good, even a great ending. Is the killer caught? Will they marry? Then I can truly enjoy the book. Some may say this takes away the excitement, but I want to know in advance how the story ends.

WHY AM I TELLING you this, you wonder? I’m telling you this because this is how I think about science and the importance of documentation. When you are in a clinical situation, having a patient in the chair, who is about to invest a lot of time and money for the implant treatment, and might be worried and asks you “What is the prognosis?”, “Will this be good for me?”. In this situation, I think no one would like too much excitement.

ALL OF US WANT to be able to say to the patient that the results will be good. I can say so to my patients, because I have read the end of the book. I’m using well-documented dental implant products with reliable and good results. I AM CONVINCED that it is only through accurate documentation of the product performance that the customer can be secure in recommending his or her patient a reliable and predictable treatment. We want to have our own data to prove safety, efficacy and to ensure we provide long-term treatment success for you and your patients.

YOU MIGHT NOT notice our strong scientific foundation in your daily work, but you can rest assured that the science is there, deep and strong and never compromised. Our scientific base is what makes us different. Take my word for it – we have read the whole book.

Scientific reviews

- Clinical documentation on ANKYLOS Implant System
- Clinical documentation on Astra TECH Implant System
- Clinical documentation on XIVE Implant System
- Conical Seal Design – a strong and stable fit
- Connective Contour – increased soft tissue contact zone and volume
- FRIOS Algipore – natural bone remodeling
- Immediate loading
- Long-term clinical documentation of the Astra TECH Implant System
- MicroThread – biomechanical bone stimulation
- Marginal bone maintenance and Astra TECH Implant System
- Narrow implants
- OsseoSpeed – more bone more rapidly
- OsseoSpeed TX Profile
- Overdentures
- Patient-specific CAD/CAM ATLANTIS abutments
- Short implants
- Yttrium stabilized zirconia

“Science & the end of a book”

ANNAKARIN LUNDGREN, DDS, PhD, Director Global Scientific Affairs, DENTSPLY Implants

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The success of an implant system cannot be determined by one single feature alone. Just as with all natural systems, the delicate balance is maintained by the interaction of different but equally important features. The implant system supports the natural balance by a unique combination of interdependent features – the ASTRA TECH Implant System BioManagement Complex. It is designed to ensure long-term clinical success by stimulating bone growth, providing bone preservation, soft tissue health and architecture. To put it simply: function, beauty and biology in perfect harmony.

- **OsseoSpeed™**
  - more bone more rapidly

- **MicroThread™**
  - biomechanical bone stimulation

- **Conical Seal Design™**
  - a strong and stable fit

- **Connective Contour™**
  - increased soft tissue contact zone and volume

www.dentsplyimplants.com
## CLINICAL CASES

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Radiographic check after positioning of final restoration. Read the whole case, starting on page 30.
“Words and pictures can work together to communicate more powerfully than either alone.”*

This is why I strongly believe in the educational value of case studies, as they combine these two elements and effectively transfer clinical data into the real world. They show us what is feasible, demonstrating how our solutions look great not only on paper, but also live up to their promise when put into practice.

Moreover, case reports demonstrate vividly that today we are striving for comprehensive and reliable concepts that require a number of tools to reach the desired goal. From the planning phase to the delivery of the final restoration, modern implantology is so much more than just installing a fixture. It is the patient-specific adaptation of proven clinical solutions. For example, the case report from Dres. Kistler et al. provides great insight into prosthetic treatment options on tilted implants from the team in Landsberg am Lech, Germany. Such as Dr. Zastrow, who shows that a well-planned bone augmentation concept can ensure maximum implant stability. Another hot topic in implant dentistry: digital technology, which has become an important component of optimal patient care – starting with the planning of the surgical procedure to the final esthetic result. This is illustrated by a report from the German practitioner Dr. Bergmann. He shares his results using the latest advancements in dentistry: from the perfect planning and guided surgery to innovative CAD/CAM technologies for the production of implant superstructures. An descriptive example for the trend to go for individual rather than “off the shelf” solutions is presented by Dr. Osorio. Let the expert show you why he trusts customized ATLANTIS abutments.

I invite you to read about your colleagues’ experience – and let yourself be inspired by the results. It’s a great opportunity to learn from the assessments and recommendations of colleagues, who are successfully treating their patients by integrating our products and concepts into comprehensive solutions. But it’s all about give and take – send in your own cases** and have our readers benefit from your experience.

“Words and pictures can work together to communicate more powerfully than either alone.”*

*Photographer and writer William Albert Allard

**If you want to submit a case for review and possible publication in our magazine, please contact your local DENTSPLY Implants representative.

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Implant placement without augmentation? A question about the components and procedure.
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Utilization of patient-specific, CAD/CAM abutments for long-term soft-tissue management.
Julian Osorio, DMD; Robert B. Kerstein, DMD
**Getting started with digital dentistry**

“I have been in private practice for 20 years as a prosthodontist, the last 5 years I have also placed the implants. I am successful and the patients are very happy. Now with all the new digital “toys” coming up, I look at this as something driven by the industry. Could you please try to explain why I, being 50+, should enter into a new complex area when everything I do today is going well?”

As a prosthodontist with a broad skill set as a foundation for your successful practice, it might be predicted that you will practice for many years to come. Emerging technologies will provide the advanced clinician with the ability to create a complete, robust and accurate ‘digital’ patient. Current examples include the ability to combine CBCT data with optical scans of dental casts and facial images.

**WE ARE ABLE** to design implant surgeries, fabricate components and communicate the procedures within a single platform. Other examples include our ability to scan patients or derived impressions, share the digital information with laboratories and direct the efficient manufacture of simple crowns and complete frameworks. The approach may be more efficient, less costly, permit materials innovation and prove to be more accurate.

I respect your concerns. However I don’t agree that the dental industry is the driving force behind this. Our culture is supporting this rapid evolution. As a teacher of young prosthodontists with access to these emerging technologies, I can assure you that we 50+ prosthodontists should admire their seemingly effortless integration of new information technology and digital dentistry. The electronic patient record is coming. Digital manufactory of everything is rapidly enhancing or replacing bespoke traditional craftsmanship.

**IT IS NOT** possible to deny it, information technologies continue to expand. Look no further than your smartphone for a relevant example of industry driving adoption. Recently, business magazines and newspapers have highlighted the breakthrough of 3D printing to the masses and herald the rapid prototyping trends to come. Just like the smartphone, I predict that digital dental technologies will become a daily part of your practice and represent the main way of communicate with your patients, with your dental laboratory technician, with your important referrals and with your other specialist colleagues.

We prosthodontists should take this opportunity to lead dentistry through this next technological evolution. (LC)

**Soft and hard tissue preservation for immediate loading**

“In your opinion, what is the most important factor impacting tissue stability during the different stages of implant treatment?”

Clinical research including different designs and surfaces shows the main factor for soft and hard tissue stability around the implant platform is the placement of the abutment and the immobilization using final torque without removal.

**THE PROSTHETIC techniques** performed from the implant platform level demonstrate the tissue stability over a period of 10 years or more, when no periimplant diseases are present. Platform switching is one factor for the hard tissue integration but more important is the subcrestal implant positioning.

**THIS CONCEPT CAN** be used in immediate or delayed loaded conditions and stabilizes the bone crest over the implant platform. Combined with immediate loading this has advantages for the comfort and acceptance of the patient due to reduced chair time and less costs. (GR)

Many dental professionals can hardly imagine working without digital dentistry.

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**When do I need to graft bone?**

From my experience, the structure of bones involves a procedure that is surprising to many patients, as they were “merely” prepared for the implantation. When are grafting procedures evitable, when aren’t they?

Patients expect successful long-term results when they receive implant-supported prosthetic restorations. Especially in the esthetic zone of the upper front teeth loss of hard and soft tissue has to be treated by grafting procedures to achieve a stable and esthetic result.

**ALTERNATIVE TREATMENTS TO** avoid grafting are for example short or narrow diameter implants – but they cannot replace grafting procedures in the maxillary front. In posterior sites the dentist always has to assess the risk of bone loss around dental implants and the consequences for short implants. Bone loss of 3 mm is a high risk for implants with only 6 mm length but not for an implant of 10 mm length or more in a grafted site. Patients understand this argumentation very well and accept about one week of discomfort after grafting procedures to receive lifelong stable esthetic prosthodontics. (FK)
A leading-edge implant-supported prosthetic concept for long-term success and tissue stability

Patient-specific restorations are the focus of state-of-the-art dentistry. A treatment concept tailored to the specific situation has also become indispensable in implant dentistry. Based on the case presented, this article describes how a custom abutment can be used to create an implant-supported crown very similar to the natural tooth in shape and soft-tissue profile.

A leading-edge treatment protocol distinguishes itself by a perfectly coordinated surgical-prosthetic procedure with the goal of harmony and long-term stability of peri-implant bone and keratinized mucosa. The key parameters of the concept are implant positioning in the lingual or palatal third of the alveolar ridge to ensure a buccal bone plate with a minimum thickness of 1.5 mm [1, 2]. In addition, a zone of keratinized mucosa of at least 3 mm must be maintained or created. The surgical approach is minimally invasive based on advanced diagnostics with three-dimensional DVT, imaging and virtual surgical planning. Furthermore, the “one-abutment-one-time” concept [3] avoids frequent abutment changes with the consequence of peri-implant tissue loss. Lastly, the treatment concept includes a custom CAD/CAM-fabricated abutment with anatomical contour, so that the crown margin terminates at the same level as the gingiva. This serves to avoid excess cement subgingivally and the occurrence of peri-implant inflammation [4].

The importance of stable peri-implant soft tissue for an implant-supported restoration is the topic of numerous publications [5, 6]. But how can the dentist achieve this goal in a safe and efficient manner? A well-coordinated treatment concept and optimal interlocking product components are required. The following case report explains how the interdisciplinary treatment team can combine these aspects. The case report shows how an implant (XiVE) is used in region 36 with a custom abutment (ATLANTIS) fabricated using CAD/CAM technology.

Years of research and development have been invested in the implant design and surface, and the best possible outcome has been achieved in this area. Now attention is being focused on the implant abutment. In addition to standardized abutments, components customized to the patient are becoming increasingly important and promise highly esthetic results and long-term stability. State-of-the-art restorations also focus on other factors such as a minimally invasive procedure and a prognosis-oriented approach, for instance the prevention of peri-implantitis. Before the abutment is fabricated, implant placement or planning of the optimal implant position must be taken into account. The emergence of the implant platform or collar from the soft tissue must be taken into consideration at this stage, and the abutment must be designed accordingly. Three-dimensional diagnostics provide the ideal basis for the conceptual planning. The optimum result can be visualized in advance and the treatment sequence precisely defined.

INITIAL SURGICAL SESSION

According to the plan and the drilling protocol, the implant was inserted in region 36 and the bone grafted in the buccal area (Fig. 3b). To fabricate the abutment during the healing phase of the implant, it was necessary to transfer the situation (implant location) from the mouth to the cast model as precisely as possible. The index registration proved successful for this purpose. The implant impression coping was screwed into place in the mouth and the implant location fixed using

**Summary**

**PATIENT:** A 37-year-old female wants an implant-supported prosthetic restoration in region 36.

**CHALLENGE:** Although the oral situation showed no significant need for treatment besides the replacement of the missing molar, the progressed bone loss in region 36 requires thoughtful planning in order to achieve a stable situation in regard to function and esthetics, i.e. to close the gap for an invisible final result.

**TREATMENT:** In just two surgical treatment sessions, the gap in region 36 was treated using an implant-supported prosthetic restoration with the CAD/CAM method of fabricating a custom abutment (ATLANTIS). Based on the “one-abutment-one-time” concept, the titanium abutment will not be removed again after insertion in the mouth.
a plastic index key. After removing the central screw, the key was removed from the mouth with the impression coping and transferred to the dental laboratory with the impression for fabrication of the master cast. A cover screw was used to enable a submerged healing.

**FABRICATION OF THE ABUTMENT**

The dental technician used the index key to transfer the exact location of the implant to the cast and to mold a wax-up of the planned prosthetic restoration. Based on this specification, the ideal emergence profile was defined (based on biological width) (Fig. 4). A gingival mask provided the corresponding emergence profile of the basal abutment area. It was important to design the connection between the abutment and the later crown at gingival level to prevent excess cement from compromising the long-term result. A subgingival crown margin significantly increases the risk of overlooked excess cement [2].

ATLANTIS (DENTSPLY Implants) was chosen to design and fabricate the abutment using CAD/CAM technology. This concept allows custom abutments for cement-retained prosthetic solutions to be created in a simple and efficient manner. After scanning the implant cast (with gingival mask), a detailed three-dimensional image of the intra-oral situation emerged. At the Design & Fabrication Center (ATLANTIS), a virtual abutment was fabricated based on the patient’s specific situation and an image of the situation sent to the treatment team via the web portal (Figs. 5a–5b). After assessing the templates and slightly adapting the virtual wax-up in the 3D editor, the design was released and fabrication of the abutment ordered (Fig. 5c). Zirconium oxide, titanium, and titanium-nitride-coated titanium (GoldHue) are available as materials for implementation. In this case, titanium was the material of choice for the abutment, for reasons of stability. The laboratory received the industrially fabricated abutment just a few
A LEADING-EDGE IMPLANT-SUPPORTED PROSTHETIC CONCEPT FOR LONG-TERM SUCCESS AND TISSUE STABILITY

SECOND SURGICAL SESSION
The closed healing phase was complication-free and resulted in an osseointegrated implant 36 a few weeks later, as well as a slightly convex profile of the buccal alveolar ridge thanks to the grafting measures. The goal of augmentation was achieved: a 3 mm thick attached gingiva (Fig. 8). In a gentle laser procedure, a small incision was made to expose the implant (Fig. 9). This minimally invasive procedure made it possible to avoid raising the periosteum of the buccal mucosa, which is essential for preserving the grafted bone. The cover screw was removed (Fig. 10) and the abutment inserted. A plastic index key, created in advance in the laboratory, was again used for accurate transfer from the cast to the patient’s mouth. With the key attached over the adjacent teeth, the abutment was accurately transferred and screwed onto the implant in the mouth (Fig. 11a–11b). A slight anemia in the buccal area confirmed the accuracy of the fit. The contour of the abutment emergence profile blended in well with the intra-oral conditions (Fig. 12). The “preparation margin” was at gingival level as desired (Fig. 13). After ensuring that the abutment met the specifications exactly and that the surface will allow epithelial adhesion in the basal area, the temporary crown fabricated in lithium disilicate using CAD/CAM technology was cemented (Fig. 14). The crown will “train” the bone, and over the coming months, shape the soft tissue profile accordingly before the final restoration is inserted. This way, the healing process and training of the peri-implant gingiva will run undisturbed (one-abutment-one-time).

CONCLUSION
In just two surgical treatment sessions, the gap in region 36 was treated using an implant-supported prosthetic restoration. The restoration met all anatomical, prosthetic, functional and esthetic requirements. With the CAD/CAM method of fabricating the custom abutment (ATLANTIS), a restoration was realized in an efficient manner that meets the demands of state-of-the-art dentistry. Based on the “one-abutment-one-time” concept, the titanium abutment will not be removed again after insertion in the mouth. Preservation of the bone and training of the peri-implant soft tissue are thereby optimally supported. Since the crown margin was precisely determined during the virtual wax-up based on the emergence profile, the risk of excess cement and any resulting peri-implantitis was significantly reduced. The crown margin was at gingival level, which greatly simplifies removal of any excess cement. The procedure described allows long-term stable results and is ideal for referring practices that can realize the prosthetic restoration in a safe manner after implant placement.

Literature
FIG. 6 The fabrication of the designed abutment in titanium was carried out at the Fabrication Center.

FIGS. 7A–7C Delivery of abutment, transfer guide and a temporary crown.

FIG. 7B

FIG. 7C

FIG. 8 After the healing phase, the conditions were stable and the width of the alveolar ridge was sufficient.

FIG. 9 Careful exposure of the implant. The laser ensured a minimally invasive procedure.

FIG. 10 The exposed implant is ready to receive the abutment.

FIGS. 11A–11B The transfer guide supported accurate positioning of the abutment in the mouth.

FIG. 11B

FIG. 12 The abutment is screwed on the implant in the exact position and is not removed again. Epithelial soft tissue apposition is not threatened. The screw access is sealed with composite.

FIG. 13 The radiographic check: The designed “biological width” allows optimal apposition of the gingiva in the basal area.

FIG. 14 Inserted crown made of lithium disilicate.
Implant placement without augmentation? A question about the components and procedure

The number of patients who wants to be treated with fixed implant restorations has increased. They have no remaining teeth worth saving or an edentulous maxilla, and they are unsatisfied with their removable restorations that already have been realigned several times and are thus insufficient. However, in cases of advanced atrophy, this desire can usually not be realized without surgical procedures to reconstruct the bone. Tilted implants are a promising alternative therapy in the molar region. They avoid sinus floor elevation and grafting procedures and still permit fixed restorations with screw-retained bridges or bars [1–3].

Numerous implant systems for immediate restoration have already been developed. However, due to the implant connection or system components, only a few permit abutment parts that have large tilt angles or a screw-retained prosthetic restoration. Now a new abutment system (SmartFix, DENTSPLY Implants) permits the prosthetic area to be expanded distally using the tilted position of the implant in the area of the posterior teeth, thus permitting optimal use of the local bone. For that, the implants are ideally inserted infrasinus in regio 15 and 25 and additional implants for receiving a fixed restoration are inserted in regio 2 and 3 on each side of the jaw. The requirement for being able to pursue this concept is residual bone in the posterior teeth area that is about 7 mm in height and 5 mm in width. Inclusion criteria are an insertion torque of more than 30 Ncm, an implant length of at least 10 mm, and a tilt for the distal implants of <40°[4]. In our practice we generally have a DVT-capture taken for 3D-diagnostics in order to obtain an understanding of the still existent bone structures and the degree of atrophy.

This makes it possible to be ideally prepared for surgery, particularly for the difficult implementation regarding the planned tilted implant positions [5]. Since there is usually not a large amount of bone, a flap procedure should routinely be performed. This enables the important visual control of the implant positions achieved on the alveolar ridge. Misalignment could lead to bone defects with a less favorable prognosis [6] and increased risk of peri-implantitis. When necessary there is also the option of peri-implant augmentation.

Only on this basis is it possible to make a well-informed decision about whether it is possible to forego extensive augmentations, where exactly the implants can be positioned, and whether the implants should first heal while covered or can be restored and loaded immediately. Inter alia according to a study from Degidi, in principle there are no significant differences in the implant survival rates when comparing immediate loading of implants to delayed loading of implants [7].

INITIAL SITUATION AND PLANNING

In the 58-year-old female patient, diagnosis did not reveal any limitations for implants due to her general medical history. The patient, with edentulous maxilla but for teeth 13 and 23, which were not viable, wanted a fixed restoration. Using DVT-imaging, we were able to show her that this would not be possible with a conventional procedure unless she underwent sinus floor elevation. The patient rejected this surgical intervention, in large measure due to a family history of complications, as well as the additional surgical complexity and financial reasons.

As an alternative, we had a detailed discussion with the patient regarding the alternative of the SmartFix concept, which was a possibility given the radiological findings. She agreed to this type of therapy and we began planning.

Despite bone loss in the maxilla, it was possible to provide a fixed implant bridge in the posterior region supported bilaterally in regio 6 based on an occlusal screw-retained non-precious metal substructure faced with veneers and composite. An additional four implants for receiving the fixed restoration were planned in regio 12, 11, 21, and 22. In order to prevent incisal emerging screw channels for the prosthetic screws, the angled Balance Base Abutments were also provided in the anterior tooth region. This solution precluded any stability or esthetic problems from the very beginning (Figs. 1–2).

In general, angled abutments permit adequate anterior-posterior support for masticatory function loading. Uniform force transmission across all implants is possible by using twist-proof materials in the superstructures. This was also demonstrated in Finite Element studies [8–10].

The anterior implants, especially, were to heal while covered so that the soft tissue could stabilize sufficiently. The two canines that could not be preserved were extracted immediately prior to placement of the final restoration. This also had the advantage that the original occlusal height was maintained via the remaining canines. The old, just-relined clasp denture was used for the temporary restoration.

IMPLEMENTATION

The six implants were inserted under visual control with no complications after a mucoperiosteal flap was raised. The open approach requires a certain amount of surgical experience. With freehand implantation, the surgery is planned using 3D radiological imaging, observing the safety margins to the anatomical structures. The implants are positioned using...
the landmarks shown on the DVT, which was conducted in advance. In addition, this approach permits the implant positions to be precisely adapted to the extant hard tissue structure, and any differences from the plan can be corrected. In this case there was intraoperative confirmation that angled abutments should be employed as planned, even in the anterior tooth region.

Four ANKYLOS C/X implants (DENTSPLY Implants), length 9 mm and diameter 3.5 mm, were positioned anteriorly and closed off with cover screws. Two ANKYLOS C/X implants, length 14 mm and diameter 3.5 mm, were inserted in regio 6 at an angle of 30 degrees and screw-retained intraoperatively with the Balance Base abutments angled at 30 degrees. Since the distal side of the implant shoulder is seated sub-crestal, this one-abutment-one-time concept contributes to bone retention because osseointegration, or bone remodeling, is not disrupted by repeated removal of the abutment, and the risk of irritating peri-implant tissue drops. In addition, with the ANKYLOS implant, the transition between implant and abutment shifts due to the pronounced platform switching to the center. Also, this keeps mechanical and microbial irritants away from peri-implant tissue. Finally, the gingiva was closed with a continuous suture so that no saliva could enter the wound. Then, an impression was taken of the post-surgery anatomy, transferred to the cast with the cast analogs, and maintained in a control guide (Figs. 3–5).

Before exposure, a mock-up was used to determine the ratio of tooth length to height of artificial gum and to the gingival line itself during an esthetic try-in.

After a healing period of a little more than 12 weeks, the implants were exposed, and the SmartFix ANKYLOS Balance Base Abutments were screwed in anteriorly. The extremely delicate abutment provides optimum freedom of design for the superstructure with respect to height and diameter. At this point in time, the soft tissue had also healed with no irritation. For the structure to fit, it is very important to determine the final position of the implants and the soft tissue structure precisely and transfer them to the working
cast. The anatomy was captured using an open impression with an individual tray fashioned in-house. The precise position of the analogs on the cast was checked intraorally using an intraorally blocked transfer guide made of a fiberglass thread reinforced with autopolymerisate (Pattern Resin, GC, B-Leuven). To rule out the risk of distortion, the transfer guide was then cast in metal and the bite recording was made (Figs. 6–8).

Using these as the basis, the screw-retainable NEM substructure is planned virtually in a CAD/CAM process and milled (ATLANTIS ISUS, DENTSPLY Implants). The advantage of an occlusal screw-retained design for the final restoration is that it is simpler to handle and can be anchored easily and securely. In addition, it is patient-friendly because any required follow-up work can be accomplished quickly and in an uncomplicated manner.

A very important intermediate step is the intraoral check of the substructure fit with the unveneered substructure. For this purpose, the seating of the polished base substructure parts on the mucosa is checked. No deviations were recorded here because of the distortion-free metal transfer guide. Modern veneer composites are largely stain and plaque-resistant. With them it is possible to attain a very attractive red-white esthetic and functionally stable results, which then simplifies hygiene issues for the patient. The cleaning channels were positioned above the laugh line (Fig. 9).

The remaining teeth were extracted immediately prior to insertion of the final restoration (Figs. 10–11). The prosthetic’s screws can be inserted into the angled screw channels and tightened easily when the Cresco screwdriver is used; it can be tilted up to 17 degrees (Fig. 12). Positioning the final restoration is essentially limited to checking and, where necessary, correcting static and dynamic occlusion. The position was digitally reviewed with the T-Scan (Cumdente, Tubingen) (Fig. 13). This device made it possible to determine which contacts occurred in what sequence with what percent of the total force. It is possible to determine which contact is the cause of a misalignment, and which is the result of a misalignment. It is possible to largely preclude any incorrect loading of implants or functional malfunctions in this manner.

Finally, the occlusal screw accesses were covered with composite material. After an eight-week healing period for the extraction alveolae, the restoration was again refined and provided a final result that was both functional and esthetically pleasing (Figs. 14–17).

CONCLUSION
Regardless of whether the restoration is completed in one session or, as in this case, in two sessions: In the maxilla, the use of tilted inserted implants represents a treatment option that is patient-friendly in every respect compared to sinus floor elevation [4, 11]. No time-consuming surgical interventions are required. Comprehensive addition of bone replacement material is avoided, as is the very difficult surgical technique with potential damage to the tissue in the maxillary sinus and the associated risk of post-surgical sinus symptoms in the paranasal sinuses.

Based on the established method according to Malo [4], with the SmartFix concept from DENTSPLY Implants, the area supporting the prosthesis is extended distally by the tilted implant position and optimal use is made of the local bone. The practitioner also has available non-indexed Balance Base Abutments that can be freely positioned. Another advantage is the keyed and friction-locked TissueCare connection in the ANKYLOS Implant System. In particular, it represents further protection for peri-implant tissue when the implant-abutment interface is in the distal subcrest position.

With this method, it is possible to provide patients an occlusal screw-retained bridge or bar, both in the maxilla and in the mandible, that is prosthetically simple, secure over the long term, and, not least, is also a perfect match with the ATLANTIS ISUS system. This is a very interesting option for restorations in dental practices, especially given the demographic aspect of an aging society.

[Image of DR. FRANK KISTLER, PD DR. JÖRG ADLER, DR. STEFFEN KISTLER, STEPHAN ADLER, Dental technician www.implantate-landsberg.de]

Literature

DOCUMENTATION

FIG. 4 Control OPG p.o.
FIG. 5 Transfer guide on the cast
FIG. 6 Anatomy after exposure, with impression copings screwed in
FIG. 7 Gingival mask with ANKYLOS Balance Base Abutments

FIG. 8 Transfer guide with bite recording converted to metal
FIGS. 9A–9C Frontal, occlusal, and lingual views of the milled CoCr framework

FIG. 10A Occlusal view of final restoration
FIG. 10B Basal view of final restoration
FIG. 10C Lingual view of final restoration

FIG. 11 Extraction alveolae for the two canines
FIG. 12A Cresco screwdriver by ATLANTIS, tiltable up to 17°...

FIG. 12B ...and compatible with ANKYLOS and other implant systems.
FIG. 13 Electrotactile occlusion control with T-scan
FIG. 14 Radiographic check after positioning of final restoration
FIG. 15 Anterior view of placed maxillary restoration with easily accessible cleaning channels

FIG. 16 Occlusal view of restoration with palatal exiting screw channels
FIG. 17 Attractive appearance of anterior teeth and lips

Note: Virtual substructure configuration by Siegfried Weiss, Implant Dental GmbH, Landsberg.
Autogenous bone block grafts, bone grafting material or a combination of both procedures can be used to restore an implant site of adequate dimensions in an atrophied maxilla. If the vertical height of the bone is inadequate in the posterior region, a sinus floor elevation is often indicated to safely stabilize the implants. In the case presented here, surgical treatment based on the “biological concept” according to Prof. Khoury [1, 2] and a combination of autogenous bone block grafts and particulated bone chips is depicted. The case also describes the “layer principle” as part of a sinus floor elevation in conjunction with bone grafting material. The objective of the treatment is a restoration with long-term stability and a good esthetic result.

Summary

INITIAL SITUATION
The 60-year-old patient was referred to the practice with a telescopic restoration on natural abutment teeth 11, 21, 22 and 23. Crown and bridge restorations were used in the mandible; however, teeth 21 and 22 could not be preserved and were extracted. Abutment teeth 11 and 23 could not be preserved, but served as abutments for the temporary restoration until fabrication of the final prosthetic restoration. In the premolar region specifically, pronounced horizontal and vertical bone defects that required comprehensive augmentative measures were identified in the preoperative three-dimensional DVT imaging (Figs. 1–4).

SURGICAL TREATMENT
The surgical treatment consisted of three procedures, each in three-month intervals. In the first procedure performed under general anesthesia, a FRIOS MicroSaw was used to harvest a bone block from the retromolar region of the right mandible (Figs. 5–6). The harvested bone plate was thinned and then set at a distance using osteosynthesis screws (MicroScrew according to Prof. Khoury, Stoma, Storz am Markt GmbH, Emmingen-Liptingen/Germany) for horizontal expansion of the right maxilla and the resulting marrow space filled with particulate autogenous bone chips (Fig. 7).

Particulated bone causes an increase in the surface and therefore a better vascularization of the augmented bone. In the second quadrant, an external sinus floor elevation was performed based on the “layer principle” (Fig. 8). A slow resorbable phycogenic bone grafting material (FRIOS Algipore, DENTSPLY Implants) was placed in the cranial region, while the caudal region was filled with autogenous bone chips. The selected arrangement of bone grafting material and autogenous bone chips induced that the implants were in approximately 10 mm of autogenous bone, which accelerated the healing phase. In this technique, the bone grafting material introduced in the cranial region protected against too rapid resorption due to the pressure of the maxillary sinus. The sinus window was covered by a non-resorbable membrane made of medical grade titanium (FRIOS BoneShield, DENTSPLY Implants) that was fixed using three membrane tacks (FRIOS, DENTSPLY Implants) (Figs. 9–10) for position stability. A mucoperiosteal flap was used for soft tissue coverage in which the periosteum was slit to ensure tension-free closure over the grafted bone. In the course of this first procedure, four XiVE implants (DENTSPLY Implants) were inserted in regions 12, 22, 24 and 26 (Fig. 11).

After three months, as a part of the second surgical procedure, the previously augmented area was opened. The site appeared well-regenerated and vascularized. In this procedure, two additional XiVE implants (DENTSPLY Implants) in regions 14 and 16 were inserted, making a total of six implants available with uniform abutment distribution in the maxilla as a basis for later prosthetic restoration (Figs. 12–15). After another three-month healing phase, the last surgical procedure exposed the

An implant-supported prosthetic restoration concept for the edentulous atrophied maxilla

PATIENT: A 60-year-old female with horizontal and vertical bone defects, which required comprehensive augmentative measures.

CHALLENGE: All of the patient’s natural teeth, which serve as abutment teeth for a telescopic restoration, could not be preserved and thus were extracted. In this case, a concept for bone grafting and prosthetic rehabilitation is required, which offers maximum stability and good long-term results.

TREATMENT: The surgical treatment consisted of three procedures, each at three-month intervals. After harvesting a bone block from the retromolar region of the right maxilla with FRIOS MicroSaw, the previously augmented area was opened and six XiVE implants were inserted. Afterwards, the final prosthetic restoration (ATLANTIS) was then carried out based on the stability of the primary splinting of the implants.

An implant-supported bar-latch design based on the prosthetic concept of Dr. Pape (Schellenstein concept) is planned [3].

In the second procedure, the previously augmented area was opened. The site appeared well-regenerated and vascularized. In this procedure, two additional XiVE implants (DENTSPLY Implants) in regions 12, 22, 24 and 26 (Fig. 11).

After three months, as a part of the second surgical procedure, the previously augmented area was opened. The site appeared well-regenerated and vascularized. In this procedure, two additional XiVE implants (DENTSPLY Implants) in regions 14 and 16 were inserted, making a total of six implants available with uniform abutment distribution in the maxilla as a basis for later prosthetic restoration (Figs. 12–15). After another three-month healing phase, the last surgical procedure exposed the
FIG. 1 Initial clinical situation of the old telescopic restoration

FIG. 2 Initial X-ray situation

FIG. 3 3D representation of the maxilla and mandible

FIG. 4 Image of the horizontal bone loss in the premolar region

FIG. 5 Bone block harvesting with the FRIOS MicroSaw

FIG. 6 Thinning of the harvested bone block

FIG. 7 The thinned bone block set at a distance. The area is prepared for filling with particulate autogenous bone chips.

FIG. 8 Sinus floor elevation – The surgical site is filled with FRIOS Algipore.

FIG. 9 The XiVE implant with TempBase inserted in the surgical site

FIG. 10 Covering the sinus window with a FRIOS BoneShield membrane

FIG. 11 Radiographic control after grafting and implant insertion

FIG. 12 Insertion of the additional implants in the grafted region

FIG. 13 Insertion of the additional implant in regio 14

FIG. 14 Insertion of the additional implant in regio 16

FIG. 15 Good regeneration of the grafted region
implants by means of an apical sliding flap. The natural mucogingival junction was then restored and the gingiva forms inserted (Fig. 16–18).

**Impression**
The soft tissue took three weeks to heal around the gingiva forms. Following the prosthetic treatment phase, four appointments were necessary for completion of the final restoration based on the prosthetic concept of Dr. Pape [3]. In the first session, an impression was taken in the reposition technique wherein transfer copings were inserted in the implants (closed-tray impression) and an initial impression taken with a stock tray (Fig. 19). This impression was used in the laboratory to fabricate an initial cast and to prepare a secondary impression using the Pick-Up technique. The impression posts were rigidly attached to the cast using Pattern Resin (GC, Bad Homburg). This index was separated again between the implants in the laboratory and the impression posts placed in the mouth of the patient in the second session (Fig. 20). The separation gaps were reconnected intraorally with Pattern Resin to ensure high precision in the second impression (Impregum, 3M Espe, Seefeld) by stiffening of the posts (open impression with custom tray). In the laboratory, a master cast with gingival mask was fabricated and a tooth set-up prepared for “esthetic try-in” (Fig. 21).

**Prosthetics**
In the third prosthetic session, the wax try-in or “esthetic try-in” was carried out on the patient. The master cast, related counter bite and tooth template were sent to the central fabrication center in Hasselt, Belgium for fabrication of CAD/CAM frameworks (ATLANTIS ISUS, DENTSPLY Implants). The dental technician can use the free ATLANTIS ISUS Viewer software in the laboratory to review in three dimensions and finalize the digital concept of the bar design proposed by the milling center. The bar was then milled out of cobalt-chrome in the fabrication center and the restoration shipped to the dentist’s private laboratory. Thanks to the precision of impression and industrial fabrication, the bar framework exhibited an absolutely tension-free fit and served as the basis for fabricating the final superstructure in the laboratory.

In the final session, before positioning the finished restoration, the fit of the bar in the mouth of the patient was checked using the so-called “Sheffield Test.” The fit of the bar again appeared tension-free, allowing it to be permanently screwed to the implants (Figs. 22–24). The primary splinting of the implants by the bar gives the restoration great stability in the augmented bone in particular. Due to the uniform distribution of the implants in the ridge and creation of a large support polygon, good force distribution across the implants is possible, which in turn achieves a good long-term result. Because the bar construction is screw-retained, the risk of leaving excess cement in the peri-implant region, which represents a risk of peri-implantitis that should not be underestimated according to latest studies, is avoided [4].

The removable palate-free prosthesis is provided with latches (MK1 latch) on both sides to “firmly” anchor the prosthesis to the bar. The latches counteract pull-off forces and prevent abrasive wear on the bar when the cuspid guide is set and resulting friction loss of the bar-latch design (Fig. 25–26).

**Conclusion**
Due to primary splinting of the implants with a bar construction and the large support polygon created, maximum stability is achieved directly in the augmented bone. In the atrophied maxilla, the phenomenon is often observed that the maxilla is smaller than the mandible due to its centripetal shrinkage. The advantage of the bar restoration over a telescopic restoration, with regards to this problem, is the decoupling of tooth and implant position. The bar can be placed in front of the alveolar ridge and, despite an unfavorable initial situation, still achieve good occlusion and lip support.

The bilateral latches are also beneficial for this restoration as they give the patient a feeling of security because he has direct control of anchoring the restoration. In addition, hygiene access is not affected in any way because the restoration is removable. In this way, the use of latches takes into account the patient’s desire for a “fixed” restoration and the requirement for long-term stability, which is the basis of the easy-to-clean design. The removable restoration also allows quick and easy repairs and chipping is never an issue because ceramics are not used.

Unlike a fixed restoration, no esthetically or phonetically compromising cleaning channels are required. The cleaning channels of fixed implant bridges often make it difficult for patients to form the “s” sound. This can bring into question the success of the entire restoration because it can make the patient feel uncomfortable and insecure due to limited language capability. In contrast, the restoration presented here does not affect phonetics or pronunciation by the buccal plate.

The final restoration exhibits a functional, esthetically pleasing, and phonetically unimpiaráng result that also meets the wishes of the patient. Therefore, this treatment concept is a good option for restoration of the edentulous atrophied maxilla.

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**Literature**


FIG. 16 Gingiva formers inserted and the surgical site sutured closed

FIG. 17 Gingiva formers in situ after healing

FIG. 18 Radiographic control after exposure of all implants

FIG. 19 Impression with stock tray

FIG. 20 Preparation of the secondary impression. Impression posts splinted with Pattern Resin.

FIG. 21 Master cast with gingival mask and tooth set-up in wax

FIG. 22 Bar try-in – teeth 11 and 23 extracted

FIG. 23 Tension-free fit of the bar before positioning of final restoration

FIG. 24 Buccal view of the bar with “bolt eye” clearly identifiable

FIG. 25 Radiographic control after bar placement. The proper fit is easy to recognize.

FIG. 26 The integrated bar-latch restoration
Utilization of patient-specific, CAD/CAM abutments for long-term soft tissue management

The traditional approach to soft tissue contouring of an implant-supported restoration is to initially shape the surrounding peri-implant soft tissue of an edentulous site with hand-prepped stock healing abutments, which are later replaced with a custom abutment and final crown, both of which were designed to fit into the space and form created by the stock abutment. However, with the continued advancement of both 3-dimensional imaging, and digital abutment design technology, the final abutment can act as both a link between the implant and the crown, and as a “tissue shaper” that contributes directly to the final surrounding soft tissue contours. This greatly aids the clinician in obtaining the desired esthetic outcome.

Regardless of implant or healing cap diameter, the peri-implant sulcus shape often requires additional modeling to obtain more natural and optimized final restoration esthetics. Traditional methods of tissue contouring include the use of temporary restorations to form the desired soft tissue anatomy. Provisionals can be retained by bonding them to neighboring teeth with properly shaped pontic contours that apply pressure to the peri-implant tissue in order to shape the tissue that resides over the implant [1, 2]. An alternative method is to use abutments that support overcontoured provisional crowns, which push out the peri-implant tissue as it heals [3–5]. When the tissue matures around these types of provisionals, it takes on the shape of the gingival portion of the tooth, pontic, or temporary crown. The abutment and final crown are then fabricated to match the tissue contours.

A more efficient alternative to this traditional method for soft tissue management is to employ patient-specific abutments that can effectively provide ideal anatomical formation of the soft tissue. These abutments can be designed with the desired specific profile that passively fills the healing cap-shaped sulcus from the top of the implant up to the subcrestal tissue, and then expands just below the abutment shoulder region to the dimensions and contour of the tooth to be replaced. The applied lateral pressure induces the peri-implant sulcular tissue to stretch and adopt the abutment’s outer morphology, as the shape of the sulcular inner wall.

At insertion, the seating of a larger, more anatomical abutment design, does result in significant tissue blanching when the tissue is stretched. However, the blanching generally resolves within 1–2 days following abutment placement. Multiple clinical trials utilizing large, anatomic abutments followed since 2008, reveal that healthy tissue that is absent of inflammation quickly forms as the tissue adapts to the abutment’s base shape. Additionally, over that same 2- to 3-year period of clinical observation, where multiple cases of abutment controlled peri-implant sulcular stretching was monitored, no significant recession around these abutments has been noted.

Some important clinical prerequisites should be met when sulcular stretching of the peri-implant tissue using “fully anatomical” patient-specific abutments is attempted, including:

- Any required tissue grafting, bone grafting, or ridge distraction should be performed and fully healed
- The top of the implant should be located at least 2.5 mm below the soft tissue crest, and in the middle or lingual third of the ridge crest
- The edentulous ridge should be well-formed with a crestal height comparable to the gingival margin heights of the neighboring teeth
- The peri-implant sulcus should be significantly smaller than the tooth to be replaced

CASE PRESENTATION

The patient presents with a fractured maxillary left lateral incisor in need of extraction (Figs. 1–3). Following several months of healing, an impression was made (Figs. 4–5), and sent to the laboratory for a prescription for an ATLANTIS patient-specific abutment in zirconia (Fig. 6). The abutment was anatomically designed based on the desired final tooth shape to be replaced, to optimize both function and esthetics (Fig. 7).

To properly install an anatomic patient-specific abutment, the cover screw is retrieved and any loose granulation tissue found within the sulcus is curetted away (Fig. 8). The peri-implant sulcus is anesthetized circumferentially, to minimize patient discomfort resultant from the pressure the oversized abutment will apply to the soft tissue when it is screwed into place. If epinephrine is used, the peri-implant tissues will likely blanch white, from vasoconstriction.

The abutment is then set into the implant, properly aligned, held down firmly into place, and the abutment screw is then torqued to the manufacturer’s suggested requirement. During the screwing-in process, the anatomic abutment will compress...
FIG. 1 Patient presents with a fractured maxillary lateral left incisor.

FIG. 2 Following extraction of tooth #7 (#12), a transitional partial denture is delivered.

FIG. 3 Post-operative radiograph taken immediately following implant (OsseoSpeed TX 3.5 S x 13 mm) placement.

FIG. 4 Six months following hard and soft tissue graft procedures, the patient returned for taking the final impression.

FIG. 5 Radiograph taken to verify proper seating of transfer impression coping.

FIG. 6 The impression and case materials are sent to the dental laboratory with a request for an ATLANTIS Abutment, zirconia (DENTSPLY Implants, Waltham, MA) and delivered to the laboratory.

FIG. 7 Fabrication of the final crown.

FIG. 8 The patient returns for placement of the final abutment and crown.

FIG. 9 The full-anatomic abutment is seated to manage and shape the soft tissue. Initial blanching of the surrounding tissue is observed.

FIG. 10 Approximately 30 minutes after the final restoration is in place, the blanching is already significantly reduced.

FIG. 11 Radiograph taken of abutment.

FIG. 12 Lingual view after placement of final abutment and crown.

FIG. 13 Seven months post implant placement, and two weeks following placement of the final abutment and crown, continued healthy tissue response can be seen.

FIG. 14 Two-and-a-half-year follow-up shows maintained healthy soft tissue.
and blanch the surrounding soft tissues (Figs. 9–10). Proper seating should be radiographically verified to ensure no soft tissue is trapped underneath the abutment that would keep the abutment from fully sealing with the top of the implant.

When using ATLANTIS patient-specific abutments, a final crown can often be placed during the same appointment as when the abutment is installed. The final crown can be fabricated in advance of the patient appointment, by ordering an identical duplicate abutment made from the same digital abutment file that designed the intraoral abutment [7, 8]. The duplicate is an exact master die upon which the final crown can be constructed. It is this author’s clinical observation that at routine follow-up on these stretched sulcus anatomic abutment cases, there is a consistent, healthy, soft tissue response visible, with stable maintenance of the hard and soft tissue contours over time (Figs. 11–12).

CONCLUSION
The utilization of ATLANTIS patient-specific, CAD/CAM abutments can help eliminate the need for pre-fabricated soft tissue healing abutments while providing natural anatomic and optimal esthetic implant-supported restorative results. Patient-specific abutments that contain a specific sub-shoulder design with an emergence profile customized to the particular implant placement and site can be utilized to stretch a small, round peri-implant sulcus outward and induce it to adopt the shape of the abutment, such that both the tissue and final crown contours appear very natural. With this technique, blanching of the soft tissue at the time of abutment placement is common but has minimal impact on the long-term marginal hard and soft tissue health, especially when used in combination with an internal conical connection implant. Lastly, the use of patient-specific abutments for both soft tissue sculpting, and as the permanent abutment solution, has significant clinical advantages over the traditional approach, including simplifying tissue contouring around dental implants for the restorative clinician, and reducing the number of procedures, procedural discomfort, and faster healing time for the patient.

Literature
New & improved

ANKYLOS implant length 6.6 mm

Implant length 6.6 mm is now available for the ANKYLOS Implant System. The shorter implant allows for better use of existing bone and may reduce the need for bone augmentation. The ANKYLOS 6.6 mm implant has the same unique friction-locked and keyed TissueCare Connection as all ANKYLOS implants.

Immediate Smile featuring ATLANTIS Abutment

With this new digital treatment concept in SIMPLANT 16, all components for guided implant placement and immediate, individualized temporization are available at one single surgical visit. The ATLANTIS Abutment and temporary crown are delivered at implant installation and provide perfect conditions for individualized esthetics and healthy soft tissue.

XiVE Platform-Switch concept

Platform-Switch has been used for more than 20 years and today it is a well-accepted treatment method to achieve improved preservation of crestal bone levels. The XiVE Platform-Switch concept offers the opportunity to restore implants with diameter-reduced abutments. The platform-switching concept is designed to attain increased soft tissue volume, which contributes to long-term esthetic outcomes.

SIMPLANT Team-Up

The Team-Up! app by SIMPLANT facilitates the team communication on SIMPLANT cases and is a great communication tool for your patients to convince them of the dental implant treatment plan. This application for iPad® not only allows to share and view SIMPLANT cases but also to communicate about them.

Implant surgeons can now easily team-up with their referring dentists, labs or colleagues to discuss an implant planning case, all of this in the safe environment of the SIMPLANT cloud.

WeldOne concept

The new treatment concept WeldOne, supporting immediate loading solutions, is announced. The technology is available for ANKYLOS and XiVE implant systems, and enables dental professionals to create temporary as well as durable restorations, reinforced by titanium frameworks welded directly in the mouth.

READ MORE

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“Education is the kindling of a flame, not the filling of a vessel.” Great evidence for this Socrates saying is the growing number of dental professionals interested in continuous education and training tools.

With individual objectives in focus

You live and you learn – this rings true for progressive fields like the dental sector, which are marked by innovation and development. The most convincing evidence of the importance of continuous education is the interest in training tools by a growing number of dental professionals. Comprehensive treatment concepts, new digital technologies and the latest in dental materials help dental teams deliver the best treatment options for their patients. The only training prerequisite is to know and understand the applied concepts. To accommodate a wide range of experience levels, DENTSPLY Implants has developed a training concept focused on the needs of each individual.

Identifying new opportunities and inspiring new treatment approaches – the training concept from DENTSPLY Implants is not about “cramming” as many topics into a seminar as possible, but rather about educating participants based on their requirements.

MODULAR, CUSTOMIZABLE courses in surgery, prosthetics or digital advancements allow training programs to be tailored to individual needs – from beginner all the way to advanced users. Each seminar ensures an optimal learning environment, as the number of participants is limited. Not only is it easier to share experiences and insights in small groups, it is also ideal for fostering communication and networking among participants.

FEATURING LECTURES by renowned experts, live surgeries, video lectures, and practical exercises, DENTSPLY Implants training combine theory and practice, helping to put newly acquired knowledge into daily practice, immediately and effectively.

Training lessons are available at 500 course locations around the world, in addition to the education centers in Hanau, Germany, and Mölndal, Sweden.

JUST RECENTLY, 28 practitioners from Russia gathered in Mölndal to learn more about dental implants and ATLANTIS solutions as part of a two-day customized program. With the help of presentations conducted by Tomas Albrektsson from the Sahlgrenska Academy at University of Gothenburg and Andrey Ushakov from the Moscow State Medical and Dental University, among others, the participants had the opportunity to gain new insights in a comprehensive environment. The

PROFESSIONAL DEVELOPMENT
A DAY AT THE EDUCATION CENTER

HELLO THERE...

MIA JENSEN
Senior Manager Global Clinical Affairs & Education

WHY IS CONTINUOUS EDUCATION FOR PROFESSIONALS IN THE DENTAL FIELD SO IMPORTANT?

FOR US, IT’S not about just selling products – we believe in comprehensive support for our customers. This means continuous internal training for our employees so they can provide the absolute best customer care, and external courses for dental professionals so that they can achieve optimal results and the best for their patients. We’ve heard patients repeatedly emphasize that their doctor is a “skilled” dentist – a trend that will certainly gain importance and attention in the coming years. This is why we give our customers the opportunities to learn how to best use our products and grow in new treatment fields, such as digital dentistry. The positive feedback we’ve received from course participants says we must be doing something right: 91 percent of participants rate our courses very good or excellent, and 100 percent would recommend our courses to a colleague.”
center in Sweden is designed to educate students from all different points of view. The conference center is outfitted with modern lecture rooms and a separate, fully equipped operating room to teach students about the many different facets of each topic. One special feature: the audience is separated from the operating room only by a single pane of glass, so surgeries can be followed intimately.

“I enjoyed the customized program, the communication with colleagues, and the friendly attitude of DENTSPLY Implants employees. The simultaneous translation was a great service.”

**DMITRY GASKIN**
Parodontist, implantologist, Candidate of Medicine

“I appreciated the kindness and hospitality of Swedish colleagues, regarding the Russian doctors as friends, colleagues, and members of the family. The topics of the program were various and extensive.”

**ANDREY MARUFIDI**
Dentist, prosthodontics surgeon

“I’ve been teaching more than 30 years and I’ve participated in many various courses in different countries during my professional career. The Swedish colleagues were generous and professional in speech, appearance, and terminology.”

**KULAKOV OLEG**
Exodontist, oral and maxillofacial surgeon, implantologist, Doctor of Medicine

“I, a doctor with 25 years of experience in the field of dental implants, could learn a lot of interesting and useful information. The lectures were led by high-class specialists and useful both for beginners and for experienced doctors because the lectures and workshops are built for clinicians of all levels.”

**ANDREY USHAKOV**
Professor, Doctor of Medical Science

“The educational program is dynamic and absorbing, with two intensive and interesting days of highly efficient implantological research, including scientific validity of each production and clinical stage. And we had an unforgettable meeting with a legendary man – the founder of scientific research in implantology – Tomas Albrektsson.”

**NATALIA ROMANENKO**
DDS, PhD, doctor – implantologist, periodontist

The DENTSPLY Implants education centers ensure the best conditions for learning and evolving. Klas Cramborn, Managing Director of DENTSPLY Implants Russia, who accompanied the Russian participants to Sweden, confirms: “Customized courses have become one very important part of the total offer to our customers. Our participants really appreciate these courses. We have a waiting list of eager dentists who want to learn more from quality lectures held by internationally recognized experts.”

**WITH THESE TRAINING** sessions, DENTSPLY Implants offers a program that is completely rooted in the tradition of the company – promoting a trusted partnership with customers by offering a comprehensive portfolio and highly competent support.
Platform-Switch concept

Platform-Switch
• Provides favorable soft tissue conditions
• Improves preservation of crestal bone levels
• Supported by clinical studies

NEW XiVE® PS abutments

www.dentsplyimplants.com
stepps is the marketing program developed for dental practices and dental laboratories. It was launched in Germany in 2005 and quickly became a big success with thousands of users. DENTSPLY Implants magazine sat down for a chat with Frank Beckerle, Global Brand Manager stepps, to get some inside information.

“Patients do not want implants – they want teeth.”

WHAT MAKES YOU SO PASSIONATE ABOUT YOUR WORK? “During my studies in business administration and marketing I started to work in the health industry. I always liked the combination of a skilled doctor and business because there is so much potential if you combine these two disciplines. But marketing is not part of the dental education.”

IS THAT A PROBLEM? “I think it is. As soon as dentists start their businesses, or actually even before that, they are faced with all these marketing questions and decisions that their education might not have prepared them for. This can be both confusing and stressful.”

AND THAT IS WHERE YOU COME IN? “Yes it is. We want our customers to be successful and we support them with stepps. The future of every practice, clinic and laboratory depends not only on skills in dentistry, but also on marketing and management. The strategic and structured approach of the stepps program helps dental professionals to define goals for their practice and to accomplish them. We have a whole team of specialists that they can turn to for support. We speak the language of our customers and their patients, and we can help them make so much more of their practice.”

WHAT IS THE MOST COMMON QUESTION THAT PATIENTS ASK THEIR DENTIST? “Patients do not want implants, they want teeth. So dentists have to be able to translate what they do into a language that the patient will understand, e.g. using patient-friendly words, images, movies and so on. To justify the cost of a high quality implant treatment, the patient needs to have all the information needed to make that important decision; with stepps, we provide everything needed for effective communication with the patient.”

WHAT ARE YOUR PLANS FOR THE FUTURE? “I will be travelling a lot during 2014 to support our country organizations to analyze the practice marketing needs and to understand what stepps should provide to meet market demand. The roll-out of stepps will be a great experience.”

Read more about the stepps program at dentsplyimplants.com/Resources/stepps
The doctors in the emergency room quickly diagnosed her with a severe concussion, a maxilla fracture with major dental damage, and hemorrhaging on the back of the left thigh. Fortunately, a CT scan revealed no serious brain injury. When given a set of control questions, she stated that the year was 1985. Four days later, she started remembering. Slowly.

Helen Lundblad works as a project manager at AstraZeneca, a large multinational pharmaceutical company. She is a trained nurse and when she was younger, she competed with some success in track and field. Her main events were the 200 and 300 meter hurdles.

This particular Thursday, in the middle of April 2013, was like any other. With one exception: instead of going straight home from work, she took a detour downtown. She was on her way to a 6 pm Carpe Diem meeting, an all-female network of which she had been a member for a few years. She quickly found a place to park close to the meeting venue. She looked at her watch, it was almost 5 pm. She had time for a cup of coffee and to browse through some home-furnishing stores before the meeting. She wasn’t in a hurry.

“I see myself as a reasonably intelligent person. I know what’s happening around me. That’s why it feels so difficult not to remember what I was thinking. The police said the sun was bright and that I may have been blinded. But looking back now, I have to admit my self-confidence has taken a hit; can I rely on my own judgment?”

AT 5:45 PM, SHE CROSSED back over the street and the tram tracks that separate the rows of shops from the parking lot. The pedestrian crossing is located on a straight, unobstructed stretch of road that is several hundred meters long. From here, it was just a short walk to her meeting and she would get there early. Then, the tram car hit her in the back. The force of the blow threw her forward, against the steel barrier fence that separates the two tracks. A witness, who she met by chance afterwards, says that she was face down on her stomach, looking across and up at the fence. She was bleeding heavily and moaning in pain.

“I still don’t remember a thing about the accident itself, and only small fragments of the hours leading up to it. Later on, I saw an article in the daily newspaper, about a person lying on the ground between a tram car and a fence. That person was apparently me. The rescue services had to cut the fence to get me out.”

HELEN IS HAPPY that she survived. From a physical injury point of view, things could have been a whole lot worse. Now, four months after the accident, she has two small scars on her lower lip and chin – the only visible signs of the event that fateful day in April. Immediately after the accident, however, she had massive bruising on her face and both front teeth were missing. For four weeks, Helen lived with the large visible gap that used to be her front teeth. At the same time, she was wearing braces to hold the jaw fracture properly in place and to push back the remaining teeth, which had been pressed forward and upward.

HELEN DECIDED EARLY on not to be ashamed of her injuries. She had, after all, been involved in an accident and this was the result, she reasoned. Consequently, she went to work for a meeting, still missing her front teeth. At the same time, she was wearing braces to hold the jaw fracture properly in place and to push back the remaining teeth, which had been pressed forward and upward.

“If the facial surgeon hadn’t said ‘You’re going to be just fine – you’ll get a dental implant’, I would have been way more heartbroken than I actually am today.”

Missing front teeth turned out to be more awkward than she could imagine. In social settings, she felt very strongly that it wasn’t acceptable. People stared. She was

“Implants will give me my life back.”
very relieved when she got flipper teeth, a temporary partial denture. Although it effectively concealed her injuries, it felt unpleasant and uncomfortable. They were not her natural teeth. Helen had always enjoyed a good laugh, and now she was reluctant to laugh because her upper lip often got caught in the flipper. She also developed a slight lisp and her mouth was often dry. The worst part, however, was that her sense of taste was impaired.

"FOOD AND DRINK have always been a source of great pleasure to me, but now my sense of taste is poor because of the flipper’s plastic. If the facial surgeon hadn’t said ‘You’re going to be just fine – you’ll get a dental implant,’ I would have been way more heartbroken than I actually am today.”

Helen, who thanks to the nature of her work, appreciates just how important clinical documentation is for ensuring successful treatment, immediately said she wanted an implant from DENTSPLY Implants. She was already familiar with the way the company works and felt very confident about its methodology.

BECAUSE HELEN FINDS the temporary denture so awkward, she often removes it when she gets home. When she stands in front of the mirror as she prepares for bed at night, she sometimes feels very sad.

“I don’t recognize the person in the mirror. I look so much older. Who is that, looking back at me? My upper lip flops inward where my front teeth used to be and I’m reminded of the accident. How could I walk in front of an oncoming tram? It’s going to be so great to get that dental implant. To have a permanent solution, to have real teeth again, will mark the end of my body’s physical rehabilitation.”

At time of publication, Helen’s jaw fracture had healed well and she was scheduled for implant surgery in October.
Welcome to China

With the world’s largest population, 14 neighboring countries and a coastline of 14,500 km, China is also a mystical, spiritual and traditional land that fascinates people all over the world. China is a country where history and future come together.

The ANKYLOS and XiVE implant systems have been present in China since 1998. “China is a very interesting culture and market. What at first sounds like a complete contrast – a country between tradition and modernity – is ultimately a unique combination,” says Dr. Werner Groll, who has been deeply involved since the very beginning.

IT IS DIFFICULT TO comprehend the size of this country that has more than 100 cities with each city having over 1 million inhabitants. When you look at some university dental clinics, you find that they place more than 7,000 implants each year; in Europe, the largest clinics place approximately 3,000 implants annually.

DENTSPLY Implants is currently conducting one of the largest clinical study programs ever by a foreign dental implant company at eleven universities in nine cities at fifteen sites. This program is in its third year, and the clinical results support the upcoming introduction of the ASTRA TECH Implant System.

GROLL CONTINUES, “Our customers appreciate that we are able to offer products with exceptionally high quality. Even though we now have a new name and an expanded product range, we haven’t touched the substance of our work and what customers really want – a partner on the journey to achieve optimal results.”

Beijing in 2 minutes

Beijing – a city for every season. No matter when you arrive, there is always a lot to do in China’s majestic capital. Please join us on this two-minute tour of the gems of “the celestial city.”

Chinese Opera

It is a grand spectacle of colorful costumes and unusual singing that blends Chinese legend, music and drama into a performing art. There are numerous branches of opera, with roots going back as far as the third century BC.

Historical walk

There is a world of adventure hidden away in Beijing’s few remaining hutong neighborhoods, a type of narrow streets or alleys. The word hutong is known as early as in the Yuan Dynasty (1271–1368 BC). A visit to these neighborhoods is a great way to experience historical Beijing culture.
Did you know?
Beijing is the second largest Chinese city by urban population after Shanghai.

This Chinese character is the abbreviation for Beijing and appears on automobile license plates in the city.

With 20,693,000 inhabitants, Beijing region is only ranked 26th largest in China.

Beijing Olympic stadium
Known as the Bird’s Nest, this is the new architectural wonder of China and a new landmark in Beijing. It was constructed for the 2008 Summer Olympics. It covers about 258,000 square meters and can hold about 91,000 people.

Forbidden City
As one of China’s most popular attractions, it has housed the Chinese Emperor’s home for over 400 years. The Forbidden City is now known as the Palace Museum and is open to visitors. Wear comfortable walking shoes as the palace is 960 meters long and 750 meters wide.

Blue history
People who are interested in Chinese porcelains know that blue and white is one of the most appreciated porcelain styles across times and regions. The style is artistically simple, however extremely versatile in expression through color contrast and layers. The Palace Museum holds 340,000 pieces of ceramics and porcelain.

Nightlife
In the dim glow of the moon, the city is transformed. Beijing has an extremely active nightlife scene. After a day of taking in the sights of the city, a night on the town brings a whole new experience of Chinese culture.

For many visitors, the aim to go to Beijing Zoo is to see the giant pandas.
On behalf of our entire team, we hope that you have had the chance to enjoy the first issue of DENTSPLY Implants magazine. In our continued efforts to provide you with a publication that is of most interest and relevance to you, we kindly ask that you take a few minutes to provide us with your feedback.

The survey is estimated to take about five (5) minutes to complete. Your answers will be kept confidential and anonymous, unless otherwise requested by you.

To participate in the survey, please use the QR code or write the following link in your web browser www.dentsplyimplants.com/magazine and click the survey banner.

We hope that you will take the time to complete the survey as your opinion is extremely important to us.

Thank you for your time and participation.

Best regards,

The DENTSPLY Implants magazine team
Welcome to DENTSPLY Implants

Improving patient quality of life requires vision, commitment, creativity, and innovation. We are built upon the fundamental values of open-mindedness, a thorough scientific approach, a dedication to long-term clinical evidence, and a strong customer focus. This permeates and inspires everything we do, every day.

We invite you to join us on our journey to redefine implant dentistry.