DIGITAL IMPLANTOLOGY
Dear readers

The Straumann® CARES® Digital Solutions portfolio provides dental professionals with a holistic, reliable and precise solution in digital dentistry. From the intraoral scan of the oral situation to sophisticated, prosthetic-driven backward planning using our guided surgery software suite – the digitization of the dental workflow is bringing about new and exciting possibilities for you, whether a surgeon or lab technician.

We at Straumann have assumed a key role in this crucial area. Straumann has shown its high level of commitment to developing an open software standard for the dental industry through its collaboration with partners from the DWOS group, Dental Wings and 3M ESPE. We strongly believe that standardization will considerably simplify processes for dental labs and practices, thus reducing complexity, improving treatment predictability and expanding growth opportunities. By joining forces we aim to create the open dental software platform of the future – and one that will become the preferred choice both for implantology and restorative dentistry.

I truly believe that many of today’s new and exciting digital applications will become standard tools for dental professionals in the near future. And we want these tools to be seamlessly connected – without limitations. This is our mission.

I hope you find this a fascinating read.

Yours sincerely,
Guillaume Daniellot

Guillaume Daniellot
Head Global Sales of Straumann® CARES® Digital Solutions
Digital implantology opens a new and fascinating chapter in dentistry. But the present level of digitalization is only the beginning. The new generation of software and instruments sets new standards.

3M ESPE and Straumann have partnered up to offer a new CADCAM restorative material, 3M™ ESPE™ Lava™ Ultimate Restorative, through Straumann® CARES® Digital Solutions.

Based on the experience to date and the success of Roxolid®, Straumann has developed a new implant line with a reduced diameter: the Straumann® Standard Plus Narrow Neck Crossfit® Implant (NNC).
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INTRODUCTION

A new and fascinating chapter in dentistry
Implant dentistry as innovation driver

Over the past years, implant dentistry has been one of the most important innovation drivers in dentistry and the pace remains high. Digitalization is clearly at the focus of current developments. Intraoral impression making, 3D diagnostics, guided surgery and CAD/CAM-fabricated prosthetics set the trend.

Digital processes: high-precision and efficient

Intraoral scanners record dental and soft tissue with high precision and reliability. Modern CAD/CAM software provides three-dimensional imaging and aids the laboratory in calculating the desired dentures from the data, ranging from abutments, crowns, to multi-component bridges. The dental milling center provides individual restorations at a high industrial standard, ready for finishing in the dental laboratory or use in the patient. Guided surgery allows thinking in terms of the prosthetic result and then planning backwards. Three-dimensional imaging allows direct control on the screen and supports the operator during patient consultation.

Networking opens up new opportunities

The present level of digitalization is only the beginning. The new generation of software and instruments sets new standards. The networking of dental experts continues. This establishes new paths of communication and cooperation. Digital implant dentistry opens up numerous new opportunities which can be integrated easily and usefully into daily practice and laboratory routines and increase efficiency.

Mutual commitment unfolds the greatest potential

For Straumann, “Digital Implantology” means developing solutions in coordination with customer requirements and creating products that meet these needs and where the implant is the first step to beautiful teeth. But even these advanced technologies can only develop their true potential through the professional expertise and personal commitment of dentists and laboratory technicians. In this context, digital implant dentistry opens a new and fascinating chapter in dentistry.
EXPERIENCE REPORT

“As gentle, as perfect, as beautiful and as durable as possible”

A report by Karsten Kamm and Torsten Kamm, owners of the “Zahngesundheit Baden-Baden” practice in Baden Baden/Germany, on their personal experiences with digital tools and methods.

Digitalization affects all aspects in a dental practice

Digitalization is changing dentistry. Intraoral scanning, 3D implant planning and CADCAM prostheses have most certainly become an established part of dental practices. In our opinion, the relevance of these methods is undisputed. So where is the special attraction for implantological-prosthetic dental practices? The opportunities are considerable: state-of-the-art dentistry, new and better products, together with improved cost efficiency. This relates especially to the areas of implantology and implant-prosthetics where both esthetic and exceptionally functional restoration is possible. But digitalization does not stop there, it also has major effects on the organization, management and marketing of dental practices. What is important, is to analyze upcoming developments correctly, to enable operators of dental practices to plan sensibly and invest successfully.

Focus on: “Esthetics and implantology”

In our own dental practice, which specializes in surgery and prosthetic restoration, we take a holistic approach in terms of philosophy and concept, and functional diagnostics play a significant role in this context. Full-ceramic prosthetic solutions are a clear favorite. The motto of our dental practice is “As gentle, as perfect, as beautiful and as durable as possible.” Our experience with digital technologies goes back to 2001. We addressed the opportunities offered by CADCAM technology early on. Meanwhile we have integrated intraoral scanning, DVT, guided surgery and CADCAM as an established part of the workflow in our dental practice. More often than not, intraoral scanning is the starting point for planning and designing conventional as well as implant restorations on the screen.

Digital impressions offer considerable future potential

In future we intend to completely replace the, in our opinion, error-prone and time-consuming process of conventional impression-taking with direct visual acquisition of the tooth and soft tissue situation in our dental practice. We see this as a further step to higher quality and shorter treatment periods. In our opinion, other solid arguments for intraoral scanning include greater patient comfort, improved treatment efficiency, cost-saving potentials, and being able to view the result directly during scanning. Based on these numerous advantages in terms of standardization, quality assurance and patient comfort, we believe that digital impression-taking offers us tremendous potential in the future. The treatment procedure for prosthetic restorations does not differ from current practice up to the point of impression-taking. The new scanner generation – we will be using the iTero™ in our dental practice – offers easy handling and high scanning precision. The technology employed in the iTero™ makes powdering of the tooth surfaces obsolete. Especially in the case of larger restorations, major problems sometimes occur with other systems as the powder must not come into contact with liquids. The iTero™ scan employs laser technology and an optical scanner to digitally record the surfaces and contours of the tooth and gingiva structures, whereby 100,000 laser points are captured at 300 measuring levels at approximate intervals of 50 µm in 0.3 seconds. The result of the preparation can be viewed on the screen immediately and corrected if necessary. Normally this would require making a new impression – with iTero™ further scans are simply added. The new digital
Impressions of the "Zahnklinik Baden-Baden" practice.
scanning methods also present considerable improvement in treatment comfort for sensitive patients. Choking, a bad taste, and perceived breathing restrictions during impression-taking are a thing of the past – this improves confidence in the operator. After scanning, the individual models can be examined on the screen, both mandible and maxilla separately, or their bite relationship. Newly designed bite constellations can be scanned and presented with the aid of jigs. In the laboratory, the intraoral scan data is imported into the CADCAM software and the zirconium framework designed.

Relieves economic strain on the laboratory
We intend our in-house professional laboratory to focus as near to 100% as possible on the optimum utilization of CADCAM technology and the esthetics of the prosthetic products. At present we follow two different avenues when making prosthetic restorations. Smaller items, such as inlays or veneers, are generally produced in our own laboratory to ensure a quick and highly esthetic result. Complex restorations designed in our own laboratory are increasingly being transferred to the Straumann industrial milling center. Cooperation with an industrial partner offers considerable economic benefits as this minimizes the financial strain on the laboratory. This form of cooperation is also most likely to ensure that only the latest technology is employed. This applies both to production and the machines required, but especially to the software which is becoming more and more complex, and which needs to meet considerable challenges, especially for major restorations. There are only few major suppliers who can offer the technical know-how required, together with all the compatible components necessary for making complex restorations. Against a background of cooperation with a competent industrial partner this does not make our own dental laboratory redundant, quite the contrary, it provides economic and workload relief by allowing us to focus on planning, design and esthetics.

Full-ceramic zirconium dioxide restorations as a consequent step towards complete biological restorations
To assist us in our ambition of providing holistic dentistry, tooth filling materials and technical dental materials are of prime concern. Following only average to poor results with crowns and bridges made of aluminum oxide ceramics – as these are...
 prone to fracturing on implants, we today tend to use quality-assured zirconium dioxide (i.e. zerion™ by Straumann) wherever possible. This high performance ceramic is not only the material of choice for esthetic reasons, but also for reasons of biocompatibility. Full-ceramic restoration is the consequent step towards complete biological restoration. This material is distinguished by its exceptional esthetics and excellent adaptation to soft tissue and have made it the material of choice in our treatment. In our dental practice we increasingly use patient-customized abutments for optimum emergence profiles. When designing the abutments, the crown edge is placed at the epigingival level. This reduces the risk of lodging residual cement deep in the sulcus during treatment, which, at worst, could lead to peri-implantitis.

**Excellent experience with quality-assured zirconium dioxide**

In the many years of working with quality-assured zirconium dioxide, the material has proven itself clinically for us on the basis of its excellent mechanical properties. In a comprehensive documentation, the authors have monitored and evaluated 2,526 restorations with zirconium dioxide – tooth and implant supported crowns and bridges – over a period of approx. 7 years for events such as fractures and chipping (see table 1). The result was an extremely low rate of complications with a fracture incidence of 0.3 % and chipping incidence of 3.0 %. The possible indications for zirconium dioxide materials cover nearly the entire range of fixed dentures. Contraindications include non-compliance with the minimum thickness required for full-ceramics and functional problems. Careful preparation is, however, the most important prerequisite for high success rates, whereby the type of preparation needs to be adapted precisely to the zirconium dioxide material used.

### Table 1: Restorations made of zirconium dioxide. Long-term stability of framework and veneering

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Crowns</th>
<th>Bridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of restorations</td>
<td>2,526</td>
<td>2,051</td>
<td>475</td>
</tr>
<tr>
<td>Number of framework fractures</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Probability of events</td>
<td>0.3 %</td>
<td>0.1 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Number of chippings</td>
<td>77</td>
<td>54</td>
<td>23</td>
</tr>
<tr>
<td>Probability of events</td>
<td>3.0 %</td>
<td>2.6 %</td>
<td>4.8 %</td>
</tr>
</tbody>
</table>

3D planning and implantation system

For larger implant-supported restorations we regularly use a 3D planning and implantation system (coDiagnostiX® by Straumann), which is optimally compatible with the implant hardware. The performance and costs are well accepted. The use of guided surgery covers all important steps for prosthetic-oriented planning. In future, digital images of the current situation will be recorded with iTero™ prior to extractions. The resulting data will then be included in digital prosthetic planning to obtain an optimal result following implantation.
Based on the template plan provided by the program, which includes four parameters for the spatial position of each implant as well as depth information for the drilling sleeve, the drill guide is then produced at the external dental laboratory. The previously generated scan template which the patient wears during radiological examination, can be reworked as a drill template. The totally guided surgical intervention starts with the desired prosthetic result. With the aid of the program, the preferred position of the implant is determined by simultaneous consideration of the bone situation and prosthetic requirements. Determining the final position of the implant prior to the operation provides better predictability of prosthetic requirements. After uncovering, an intraoral scan is performed to determine the relation. Digital function recording acts as basis for the wax-up technique. Larger items are sent to the industrial milling center, as described above, where the computer-supported production of the prosthetic work is performed.

**Outlook: the digitally networked dental practice**

Obtaining optimal results has been a major quality factor, and not only since the digitalization of dentistry. This ensures satisfied patients and a high recommendation rate which in turn contribute considerably to the success of a dental practice. However, the goal of perfect and durable restorations can be achieved far more effectively and quicker when using digital techniques. To benefit long-term from these technological capabilities, one needs to dismiss visions of a largely autonomously operating practice with few external interfaces, which existed during the early days of CADCAM-supported dentistry. In fact, one requires complex, compatible solutions with broad support from external partners. Manufacturers and their milling centers play a major role in this context. Within the network of a practice-supported or external laboratory, all the synergies can be utilized to provide the best possible quality and a guaranteed future. The digital future has already begun. Together with strong partners it will prove successful for all parties.

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**Dr. med. dent. Torsten Kamm**

Torsten Kamm is co-owner of the "Dental Health Practice Baden-Baden" and a trained specialist for implant dentistry. In addition to his specialty, his work focuses on esthetic reconstruction and periodontology. Besides extensive lecturing and publishing activities, he was heavily involved in developing a holistically oriented biohealth concept. He is a member of several dental associations and the Institute of Biological Medicine and Dentistry. He founded the "Institute for Bioesthetics" together with his brother Karsten Kamm.

Since 2010 he is visiting professor for implant dentistry at Hermannstadt University.
INTERVIEW
“The DWOS collaboration is a signal to the dental world”

An interview with Sandro Matter, Executive Vice President and Global Head Products at Straumann about the partnership of Dental Wings, 3M ESPE, and Straumann, the fostering of the open standard software platform, and the new Straumann® CARES® 7.0 system.

How was the feedback of the market to the announcement of the partnership of dental wings, 3m espe, and straumann?
Our collaboration is a clear signal to our customers, in fact it’s a signal to the dental world. Our customers have given overwhelmingly positive feedback. They know digitization is here to stay and standardization is the right way to go. Straumann and 3M have elected the DWOS® platform from Dental Wings, to establish a future open standard software platform. Customers appreciate that it is a move that will be truly beneficial for them and all parties involved in the market.

“Our aim is to offer Straumann processes and elements built on an ‘open’ platform that is the number one in the dental world, providing great advantages for all our customers.” Sandro Matter

How do you think the collaboration of dental wings, 3M, and Straumann will influence the market?
We are convinced that this step could change the industry. The feedback we received from the dental industry participants supports our concept. This collaboration gives the market, as a whole, assurance and confidence. Investment decisions that are made today should be also the right decision tomorrow.

Because of the fast moving nature of technology, this has been one of the big hurdles for our customers facing the introduction of digital technologies. This collaboration opens a world of new opportunities for everyone.

Are there any specific objectives to include other partners?
Yes, our aim is to offer Straumann processes and elements built on an “open” platform that is the number one in the dental world, providing great advantages for all our customers. To achieve this we need and want to bring other partners to join this platform. Negotiations are already on-going but it is too early to disclose anything yet. Collaboration is the result of long-term strategic thinking and in-depth evaluations and such consideration takes some time on all sides.

“CARES® 7.0 – now open” – is this statement correct?
Indeed, with the upcoming CARES® 7.0 system and its DWOS® core, Straumann® CARES® will be built on an open standard software platform. As we all strongly believe in the power of an open system, this is a huge step for our CADCAM system and the digital solutions portfolio in terms of customer benefits and competitiveness. Running on a Windows-based PC environment, the CARES® 7.0 software will have two hearts. The user will be able to use the validated Straumann workflows for restorations as he is used from CARES® Visual 6, but also to work with the open STL file format – a Dental Wings functionality – for sending data to external milling centers. With this package, Straumann offers dental professionals full flexibility and connectivity, and validated workflows with the Straumann manufacturing process. We believe that this is what the market is asking for.
In this standardized DWOS® core, will the company-specific software modules differ from each other?

The DWOS® partners will continue to have their own software offers – only the platform (the DWOS® core), is shared. So although between 70–80% of the functionality will be very similar, there will also be Straumann-specific applications. Straumann is covering the complete digital workflow and sells a high quality, highly proficient final product. We at Straumann will address the two major points for improvements: For one thing, the limited connectivity between the different systems and for another thing, the limited quality and predictability of prosthetic outcomes. We ensure that the product that goes into the patient’s mouth is exactly what has been designed.

Where do you see the specific strengths in this respect?

Just one simple, but in my view, striking example: the connection of CAD to CAM, meaning computer-aided from design to manufacturing. Today, the Straumann® CARES® Visual design software and Straumann manufacturing are validated and highly compatible with each other. Starting with the stringent design control within the design software, Straumann provides high reliability of restorations in Straumann quality and with Straumann service.

What do you consider in brief as the main benefits?

I would like to mention three good reasons. First, increased flexibility and connectivity as the created standard will lead to increased flexibility throughout the entire prosthetic digital workflow and connections to multiple data sources. Numerous production options offer the treatment flexibility customers are looking for. Secondly, reduced investment risks: investing in standard software driven by several strong partners is the right answer against technological obsolescence. It allows participating in the high-class developments the digital dental industry will have to offer in the future. Finally, it is also the capacity for differentiation via digital competencies and the potential to improve the quality and effectiveness of the prosthetic outcome.
Does digitization offer benefits for all dental professionals?

Absolutely. The needs of dentistry are fulfilled via digital implantology and prosthetic digital workflows. In a survey asking dental professionals about the advantages and opportunities of digitization, various aspects were evaluated and ranked as follows: “Higher Quality and Precision” followed by “Faster Workflow”, “Higher Cost Effectiveness” and “Better Esthetics”.

How complete is the current digital workflow of the digital solutions portfolio?

I would say that our company has already reached the complete digital workflow in our offering, in particular with intra-oral impression-taking, scanners and milling centers with a very broad offering on elements in different materials. We have also launched the coDiagnostiX® software where the digital model on screen has exactly the same configuration as the analog model, which means the scan template can be re-worked into the surgical template if desired. For implant restoration this is going to be very important, meaning you have a full digital workflow not only for tooth-borne restorations but also for implant-borne restorations.

The Straumann outlook on the future of digital dentistry?

I personally believe that customers buy a product because it is more efficient and provides them value they can appreciate. They want higher precision or less re-makes of crowns or many other clinical advantages. Today, Straumann offers the software suite coDiagnostiX® for pre-operative planning, and Straumann® CARES® Visual for the prosthetic design. In the medium to long-term the intention is to have an integrated software solution, and the lab and dentist will be using its different elements directly. Straumann’s vision is to have the leanest, most practical and easy to use workflow, where the Straumann product is not only judged by the quality of the final restoration placed in the patient, but also by the process to get there.
A world of new opportunities. Straumann’s vision is to have the leanest, most practical and easy to use workflow, where the Straumann product is not only judged by the quality of the final restoration placed in the patient, but also by the process to get there. Please contact your local sales representative to get more information on Straumann® CARES® Digital Solutions and CARES® 7.0.
A digital workflow to thousands of scanners

Straumann, together with 3M ESPE, have introduced a streamlined digital workflow that connects the Lava C.O.S. Intra-Oral Scanner to the Straumann® CARES® Digital Solutions platform. Parallel to the CADENT iTero® intraoral scanner, dentists using the Lava C.O.S. scanner are now able to transfer digital scan data of the patient’s oral geometry to the dental lab using the Straumann® CARES® system. The CARES® platform offers seamless connectivity to thousands of scanners in dental practices worldwide.

CARES® 7.0: the open standard software platform

Straumann® CARES® Visual 7.0 offers a wide range of benefits: the advantages of a flexible, open software standard – through the DWOS® software core – and the quality and predictability of the validated workflow of Straumann® CARES® – through specific Straumann software applications. Powered by the combined resources of the partners, the CARES® platform strives for the leading role in dentistry and provides you with access to future high-class developments of the digital dental industry.
3. VARIETY OF MANUFACTURING OPTIONS

**VALIDATED STRAUMANN WORKFLOWS**

**Straumann milling centers**

![Image of Straumann milling centers](image)

**EXTERNAL WORKFLOWS**

**Via open STL format**

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4. VARIETY OF PROSTHETIC OPTIONS

**HIGH QUALITY RESTORATIONS**

For modern implant and restorative dentistry:
- Customized Straumann® CARES® Abutments (Ti, ZrO₂)
- Customized Straumann® CARES® Variobase Copings (ZrO₂)
- Straumann® CARES® Screw-retained bars and bridges (CoCr, Ti)
- Copings, crowns and bridges Inlays, onlays and veneers

**Resin nano ceramic:**
- 3M™ ESPE™ Lava™ Ultimate Restorative Ceramics: zerion® (ZrO₂), IPS e.max® CAD, IPS Empress® CAD, VITA Mark II, VITA TriLuxe

**Metals:**
- ticor® (Ti), coro® (CoCr)

**Polymers:**
- polyamide, polycon® ae, polycon® cast²

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**Straumann milling centers: specialists in prosthetics**

Straumann has a strong and long-time expertise in CADCAM manufacturing of prosthetic restorations in industrial-grade precision and quality. The high reliability of these restorations is based on Straumann’s strategy of validated design software and manufacturing that are compatible with each other. Via the Straumann milling centers, design expertise is offered as a service for complex restorations such as screw-retained bars and bridges, and as a scan service for customized abutments¹.

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**A leading material and application range**

The Straumann® CARES® Digital Solutions portfolio provides a leading range of CADCAM materials and applications – according to your needs of serving your customers’ requests and of working cost-effectively without compromising on quality: from single-tooth restorations to 16-element bridges and from well-known to innovative materials like the new 3M™ ESPE™ Lava™ Ultimate Restorative (see p. 40)

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¹ Available in Germany only ² burn out resin, not for clinical use

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DWOS® STANDARD
A great step for digital dentistry

Straumann’s acquisition of a minority stake in Dental Wings Inc. underlines its intention to establish an open software standard in the dental sector. The goal of this commitment is to make processes in dental laboratories and practices considerably simpler and save on costs and time by means of a uniform software standard.

Straumann announced at the International Dental Show in March of this year that it was joining forces with partners Dental Wings and 3M ESPE to form a consortium. The aim of this partnership is to develop a global standard for digital dentistry. The initiative is set to make software solutions more simple, flexible and user-friendly and, as a consequence, reduce time and investment costs and increase productivity.

Strong need for standardization in the industry
Dentists and dental laboratory technicians of today have to come to terms with a complex environment consisting of ever more systems. This reduces willingness to invest and diminishes growth opportunities. Creating an open software standard could help to remedy this problem; it is expected that it could lend considerable impetus to the digitalization of the dental market.

Minority stake in Dental Wings
Straumann announced in July 2011 that it had acquired a 30% minority stake in the company Dental Wings Inc. Headquartered in Montréal, Dental Wings has established itself as the leading systems developer in digital dentistry. The privately owned company specializes in developing construction and manufacturing software and producing 3D scanners. As a result of this acquisition, Straumann is now represented on Dental Wings’ Board of Directors.

Bundling resources to boost development
As digital solutions become more widespread, the requirements placed on software will increase. The funds required for further developments are used by competing companies for individual systems which often serve the same purpose. By bundling the resources of several partners, it is likely that considerably more could be achieved than if each company goes it alone. In light of this, DWOS® has the potential to become the leading software platform in the industry.

“In collaboration with Dental Wings and 3M ESPE, we invite interested parties to contribute to the future design of the platform.” Beat Spalinger, CEO of Institut Straumann AG

The door is open
The investment in Dental Wings underlines Straumann’s commitment to standardizing the dental industry. Beat Spalinger, CEO of Straumann: “Dental Wings is one of the best qualified companies in the sector for pushing ahead with this kind of initiative. The DWOS® platform stands out on account of its functionality, simplicity and user-friendliness. It also offers
manufacturers a joint platform, which they need to open systems and take advan-
tage of new business opportunities. In collaboration with Dental Wings and 3M
ESPE, we invite interested parties to contribute to the future design of the platform
— either through participation or as a licensee of DWOS®.
INTERVIEW

Scanning 2.0: digital impression-taking with iTero™
An interview with Michael Rynerson, Head of iTero™ Sales, on the iTero™ intraoral scanning system.

How do you view the market acceptance for a system such as iTero™?
Interest in digital impression-taking is truly tremendous. In particular, we have experienced this at congresses where the system is demonstrated live. Commercially the iTero™ system with its highly developed 3D technology has gained a leading position in the USA. We also enjoy widespread interest from dentists and dental laboratories across Europe, where we have achieved a leading position in intraoral scanning in some markets. There are a number of good reasons for deciding in favor of iTero™: user-friendliness, precision, and efficiency – also in terms of time and costs. Of course there is an emotional element too – many of our customers are passionate about adopting great new technologies for the benefit of their patients.

What role does iTero™ play in the Straumann portfolio?
Intraoral scanning is an integral part of our digital portfolio because it is the most direct link between the restorative dentist, the laboratory, and our CARES® production centers. Our focus is on solutions which enable our customers to offer their patients the best possible treatment available on the market. The advantages of iTero™ make intraoral scanning a key technology in dentistry and, thus, of interest to all dental professionals.

Are there any innovations especially for implantologists?
As an innovative company, Straumann has developed a complete digital workflow, from intraoral scans to Straumann® CARES® copings and crowns, to customized abutments for Straumann implants. True to the motto of our digital portfolio “Seamless Connections”, Straumann will now take the next step together with our customers. The new digital workflow is the basis for increasing efficiency and quality, and facilitates the cooperation between surgeons, dentists, and dental laboratories significantly. We view digitalization as a pronounced added value for customers at every stage of the workflow.

“The role as a center of digital competence makes the laboratory an important partner for the dentist.”
Michael Rynerson

Can you explain digital workflow for implants in more detail?
Following the recovery period, a so-called “scanbody” is screwed onto the implant. The dentist scans the scanbody and the adjacent teeth in sequence and immediately sees on the screen the completed digital impression. The scanbody provides the necessary data on the position of the implant in the scan. Then the data is forwarded to the laboratory for the design of the customized Straumann® CARES® abutment in CARES® Visual. The laboratory then sends the production data to Straumann in the usual manner for the CARES® custom abutment, Straumann copings or crowns, as well as a precision-milled iTero™ model that accepts Straumann repositionable implant analogs (another Straumann innovation). After completion of the final restoration in the lab, the components are sent to the dentist for placement.

Are dental laboratories also a target group for iTero™?
In most cases modern dental laboratories are already centers of competence for digital technology – with CADCAM
being a top subject for some time now. This role as a center of digital competence makes the laboratory an important partner for the dentist. Thus, the iTero™ system also offers the dental laboratory new service opportunities. This is of special value because cooperation is closely linked via the intraoral scan workflow.

Are there other possibilities for using iTero™ as part of the digital workflow?

We are presently uniting the various workflows to provide optimum compatibility. For example, our surgical planning software, the Straumann® Guided Surgery System, combines the DVT and CT information on the bone situation to a 3D image for implant planning. Even today, we can already combine such data sets with intraoral scanning information to provide better documentation on the bone, soft tissue and tooth situation. This allows improved surgical and prosthetic planning.

CADENT, the manufacturers of iTero™, are part of Align Technology as of April this year. What are the implications?

Align Technology is a heavyweight in the orthodontic industry and includes invisalign™ in its portfolio, a well-known and widely used digital service for orthodontic treatments. Therefore, Align truly understands digital dentistry, as well as knowing the needs of dental professionals, making them an ideal new home for the iTero™ technology. Furthermore, because Straumann is the exclusive distribution partner for iTero™ in Europe, and, since February of this year, also official distribution partner for iTero™ in North America, Straumann is one of the closest and most important partners of Align. Our cooperation to date with Align has been superb and we are enthusiastic about continuing our partnership. Both Straumann and Align have informed their customers that in the short term they can expect “business as usual”, and in the intermediate term iTero™ will gain resources and strength – which is good news for existing and new customers.

OrthoCAD™

OrthoCAD™ is the leading digital orthodontic process for traditional wire and bracket treatments. This tool, together with the iTero™ scanner, allows dentists or orthodontists to digitalize tooth impressions and then plan the orthodontic treatment. They can move teeth to new positions in 3D and are in a better position to predict which teeth need to be extracted for reasons of space. Once the perfect tooth situation has been arrived at digitally, the orthodontist selects the required products from a digital bracket library – which includes virtually all commonly used orthodontic bracket products. The software then calculates the exact position for fitting the brackets. Once planning is completed, it is then up to the orthodontist to continue manually or digitally. Those opting for the digital method are provided with a bracket installation tray which includes the brackets in their initial position. Thus, each bracket is already in the correct position in the patient’s mouth and can be affixed using simple adhesive techniques. The time factor: approx. 20 minutes – the reduction in long chair side times is not only more economical, the patient usually finds this type of treatment preferable to conventional methods.

Align is well known through invisalign™

invisalign™ is an orthodontic technique which moves teeth from the current to the target position over a period of 18 to 24 months by using software planning and a series of invisible “aligners”. If a dentist or orthodontist has iTero™ and
OrthoCAD – an additional application for the iTeo™ Scanner, then he will be able to use the invisalign™ process. invisalign™ is available in many markets and is especially successful in the USA. This makes it a highly interesting extension of the value we bring to our customers through iTeo™, especially in countries where general dentists also perform orthodontic treatment.

What does the future hold in your opinion?
For me it is not a question of will the majority of dentists work predominantly with intraoral scanners, but when will this become reality. We have all seen a similar revolution in photography. Who still uses film cameras these days? Popular smartphones are another good example of how digital impression technology will evolve. iTeo™ is comparable to smartphones in so far as it is a platform for a range of dental services that can be expanded through the installation of new software applications. If you will, iTeo™ is an extremely precise digital 3D camera with which dentists can already cover a wide range of restorative and orthodontic indications today. Future developments of the software and connected services will generate added value. In short: if somebody purchases an iTeo™ scanner today, they should have confidence that it will continue to gain in value through software innovations. the system already generates considerable added value, we are only really at the beginning of this technology – the development potential for the next few years is enormous. For example, in future one could well imagine taking 3D “snapshots” of patients at their first visit and after subsequent treatments. Thus, dentists could not only document tooth situations in a digital manner, but would be better able to assess future developments in the patient’s oral condition. Today, dentistry is still very reactive in many cases – using digital tools dental professionals will be able to be much more proactive.

**INTRA-ORAL SCAN VIA iTeo™**

The highly advanced intraoral scanner iTeo™ utilizes parallel-confocal 3D imaging and is thus 100% powder-free and autofocus. Both features allow the dentist to place the scanning head directly on the teeth to take a series of 3D images which are combined into a precise 3D representation of the patient’s teeth. This provides stable handling as well as high precision and is often more pleasant for the patients than conventional methods. iTeo™ guides the treating professional from tooth to tooth, similar to an automobile navigation system. The scanner is not only easy to operate, but also inspires patients as they can follow every step on the screen.
THE INTRA-ORAL WORKFLOW

The Straumann digital workflow for implant restorations: designed to be simple, accurate and efficient

The conventional prosthetic workflow using traditional impression taking, casting and waxing techniques can lead to inconsistent impression quality due to human errors. This can result in poor clinical and aesthetic outcomes and time-consuming adjustments during seating. Digitalizing these processes can improve this situation from both a professional and business perspective.

From the intra-oral scan to the final restoration

Straumann offers a new and unique complete digital workflow for implant restorations. Starting with an intra-oral scan of the implant site, the customized Straumann® CARES® Abutment or full contour crown is designed to provide accuracy together with time and cost efficiency through the whole restorative procedure.

This kind of digital workflow for implant restorations eliminates cumbersome and time-consuming manual steps in dental practice and in the laboratory. Digital impressions allow immediate quality control by the dentist, and result in an excellent impression being sent to the laboratory. The workflow therefore eliminates or reduces impression retakes and restoration remakes, ensuring that seating appointments are efficient due to the excellent occlusion and contact-points of the restoration.
DENTIST
Scan the scanbody directly on the implant with iTero™ intraoral scanning and send the digital data to your partner laboratory.

LABORATORY
Design the customized Straumann® CARES® Abutment in Straumann® CARES® Visual and send data to the Straumann milling center for production.

LABORATORY
Finalize the restoration using the high-precision Straumann® CARES® Abutment, iTero™ model, Straumann® Repositionable implant analog, and full contour crown.

DENTIST
Serve patient with high-quality customized restoration designed to provide optimal function and esthetics.
INTERVIEW WITH RICCARDO MIGLIOLI

“The change from conventional to digital impressions is only a matter of time”
An interview with Riccardo Miglioli on his experience with digital impression-taking with the iTero® system.

What is the importance of the use of digital technology for dental treatment today?

Where does the future lead? I think the digital world is an established reality in every sector; it simplifies professional life and makes many procedures simpler, more effective, safe and easy to reproduce. Let’s consider refresher courses. Around 10 years ago, we used heaps of slides to present cases. Today, a 4 cm pen drive holds our professional life. You just need to look around a hospital to realize how we have embarked on a journey of modernization and simplification with incredible prospects. Today, we can provide the patient with more rapid and accurate diagnoses by means of technology such as CAT, magnetic resonance imaging directly on the monitor, and image management programs. The professional dentist has a number of applications available. Digital technology plays an increasing role, I’d say, even a decisive role, in the dental sector. Everything in our surgeries is digital today: RVG, orthopantomography, computerization of data, saving images in archives. Thanks to iTero™ impressions have also become digital. The potential of this technology is unimaginable. What seemed like a dream ten years ago is now reality, such as the possibility of interfacing different technologies e.g. digital impressions, 3D simulation programs, guided surgery, CADCAM design, 3D reproduction of patients’ faces. In particular, 3D reproduction of the patient’s anatomy makes it possible to explain the various steps of the treatment to the patient beforehand in a simple manner, and that can’t be bad!

“3D reproduction of the patient’s anatomy makes it possible to explain the various steps of the treatment to the patient beforehand in a simple manner.” Riccardo Miglioli

What have working methods changed generally?

Our work is simpler and technology is increasingly becoming an integral part of professional training: it’s normal now. So it’s not the technology that makes the difference, but, fortunately, the doctor’s skill...
What is the role of the digital impression from this point of view?
The digital impression seen individually is, in itself, a major turning point, with benefits that are easy to understand: less discomfort for the patient, reproducibility of impression and restoration, archiving, immediate checking, correction. I think that digital impressions are a key feature of the new digital era. Today, we have a complete record of data and images for every patient, in our surgery. The patient’s entire dental history is at the click of a mouse.

How did you hear about the iTero™ intraoral scanner?
I heard about digital impressions through the Straumann commercial network with whom I have a great relationship, and the dental technician with whom I work.

What was the determining factor that made you choose this tool?
The Straumann company.

What was your intention while buying it; how far have you succeeded in this intention?
My intention has always been to provide the patient with the best possible solutions, since I have the best technologies available. I like to think that the patient is at the centre of corporate choices, by means of a cost-benefit assessment, improved performance and standardized results.

What advantages in treatment have you found since you started using the intraoral scanner?
There are many advantages: less discomfort for the patient, immediate assessment and correction, reproducibility, storage, image of the analysis.

If we consider the complete treatment, from taking the impressions to inserting the prosthesis, in which areas have you achieved savings?
Time, pollution, space, organization, checking and therefore money as well.

How has iTero™ helped you to develop your business?
It is a form of indirect marketing. Patients themselves ask for this technology now. And that’s an important sign.

How do the patients react?
The patients are happy. Especially young people who are interested in technology – they are astounded by the applications. And surprisingly, even the not-so-young are appreciative and interested.

Do you normally take the time to explain the technique before and during use?
Yes, I always take the time to explain the technique to the patient. It is inevitable that my enthusiasm comes across to the patient. It always has a big effect, and the results are gratifying because of the patient’s enthusiasm. Moreover, I can also check the quality of the impression during the sitting and repeat the procedure if necessary without having to ask the patient to return. That saves time for both the patient and me, and the patient is happy.

How has your team accepted the scanner?
The staff have accepted the procedure with great enthusiasm: they especially like the ordering process and its ease of use. I’m lucky to be able to work with a highly motivated team, so everything has been much easier.
Could you comment on the learning times that were required to obtain the desired results?
The learning curve is relatively fast; as always, it is the heart, the desire, the enthusiasm that makes the difference. Everything is relative. For me, one month was enough.

How has your partnership with the dental laboratory changed since you started using the intraoral scanner?
Our partnership has become more established, enriched and developed.

So you can say iTero™ is a sort of assistant in your daily work?
The iTero™ has made many aspects of our daily work easier. You just have to compare a conventional impression made in gypsum molded by hand, with the image on my monitor and the model sent to me (the cold-milled restoration). I believe that the change from conventional to digital impressions is only a matter of time. The time will come for everyone. For me it is here and now.

Dr. Miglioli, thank you for this Interview.

iTero™ is a trademark of Cadent Ltd. Corporation, Israel.
GUERINO PAOLANTONI AND ATILIO SOMMELLA
Procedural benefits of the digital workflow shown in the case of a highly esthetic rehabilitation

Initial situation
The patient is a 28-year old woman. Three years before the examination in the author’s practice, she received a fixed prosthetic rehabilitation of the upper arch from 13 to 23, while on the lower arch the rehabilitation was extended from 42 to 52 (Fig. 1). The patient’s request was to achieve an improvement in esthetics and function. Due to their imprecise margins, the above-mentioned prosthetic restorations had caused an inflammation of the supporting periodontal tissues, with consequent gingival margin shrinkage and edema of the interdental papilla. Moreover, there were some visible remains from incongruous endodontic therapies on the mandibular teeth. Furthermore, the esthetic quality of the composite resin bridges was unsatisfactory – due to the inappropriate choice of materials used for the fabrication of the prosthesis.

Treatment plan
The proposed treatment plan was accepted by the patient and included: replacement of the existing prosthetic restoration in order to solve the iatrogenic esthetic-functional problems, repreparation of the abutments, creation of a precise marginal line and subsequent reinstatement of an ideal tooth-periodontium relationship to be achieved through correct temporary rebasing of the resin restorations, endodontic retreatment and whitening of the mandibular abutments from 42 to 32, and lastly, reconstruction of the prosthetic crowns using appropriate materials as regards esthetics and functionality.

Clinical procedure
Initial periodontal therapy was carried out which included several scaling and root-planning sessions, and compliance

Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5
Fig. 6
optimization in order to improve the condition of the marginal periodontium and ensure more effective collaboration from the patient. The old prosthetic crowns (Figs. 2–4) were then removed. After an accurate clinical examination, we decided to heal the inflammation of the marginal periodontium by simply reinstating a correct tooth-restoration relationship between the prosthetic restoration and the abutments. The existing prosthetic restorations had caused a minimal invasion of the biological tissue on the portion of the junctional epithelium closer to the crown. After placing a retraction fiber on the gingival sulcus, the maxillary preparations were trimmed on the upper arch. On the lower arch, some endodontic retreatments were performed. After this, whitening and reconstruction of the abutments with composite resin took place (Figs. 5–7). Rebasing of the temporary restoration (Fig. 8) is a very important step – in fact, if this procedure is correctly carried out, it leads to a significant improvement in periodontal health. After a few weeks, the edema was fully healed and the periodontal tissues were mature and stable. Only from this point were we able to proceed with what is probably the most delicate step in the entire rehabilitative procedure: taking the impression and transferring the data to the laboratory. Amongst other benefits (see conclusion), by using a technology as sophisticated as CADENT iTero™, we are able to take an impression in a minimally invasive way. From our experience, a frequent cause of gingival recession after taking the final impression is that the retraction cord is kept in the gingival sulcus for too long. For us, the phenomenon becomes more evident in those cases where an impression of more teeth is required, or where we have to handle thin
and scalloped periodontal tissues. With the iTero™ intraoral scanner (which works in photo mode), we managed to eliminate this risk. This means that we can take single photos and integrate others at any time, allowing us to place the retraction fiber just before we are about to take the impression of the abutments and remove it just after capturing the image (Figs. 9–13). Following digitalization (Fig. 14), the information is sent online to the CADENT Data Center in Israel, specifying the desired kind of restoration (zirconia, lithium disilicate, chrome-cobalt). The CADENT Data Center processes the data and sends them back to the dental lab. Once the data have been approved, they are ready for the fabrication of the polyurethane model (Fig. 15) and are sent to the Straumann Milling Center in Leipzig/Germany.

**Prosthetic procedure**

In this case, we decided to make IPS e.max® CAD lithium disilicate cores (substructures) for all the crowns, except 12. For this tooth, we preferred a zirconia core, because of its greater opposition to color transmission from the gold abutment (Fig. 16). The precision of the copings was checked. They are in an intermediate state (bluish coloring, Figs. 17, 18) and at this point, everything was sent to a laboratory where the layering work was completed with IPS e.max® Ceram ceramics (Figs. 19–23). After evaluating the esthetic and functional output, the restorations were fitted and then cemented (with resin cement) in the oral cavity (Fig. 24).
Discussion

Obtaining and accurately transferring the patient’s oral cavity information to the laboratory is an extremely crucial step in the prosthetic workflow. By using the new technology of three-dimensional digital intraoral scanners such as itero™ from CADENT, traditional procedures become obsolete and we are able to enter a new “impression-free” era. The advantages for dentists: (1) Dentists are able to carry out an immediate check of the scan and an accurate evaluation of the preparation, thus avoiding the need to make further impressions. (2) It is feasible to perform an accurate occlusal check, thanks to the software. (3) The procedure is very fast. (4) It is minimally invasive on the periodontal tissues which support the teeth to be restored. (5) It does not require storage of conventional materials, such as elastomers and alginites. (6) Data transmission is completely electronic, simplifying the workflow with our laboratory. (7) The procedure is extremely safe and comfortable for our patients, who in most cases give very positive feedback. The advantages

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Dr. Guerino Paolantoni

Degree in Dentistry and Dental Prosthetics from the University Federico II of Naples/Italy. From 2005 to 2010, Visiting Professor in Oral Surgery at the Maxillofacial Unit of the University of Naples. Private practice limited to periodontology, prosthetics and implantology in Naples. Member of the ITI and active member of the Italian Society of Periodontology (SIDP).

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for the dental lab: [1] The digital data can be controlled, is foreseeable and available at any time, thus providing the dental technician with enormous procedural advantages. Standardized precision can be achieved, without the variations produced when traditional procedures are employed. [2] The fabrication process is also tremendously simplified and, in fact, fully digital: the lab can import the digital impression taken into the Straumann® CARES® CADCAM system for further processing (restoration, design and fabrication).

Conclusion
Digital impressions carried out with iTero™ assure the dental team of high quality and precision through controlled processes. Moreover, the dentist and dental technician will be able to remarkably improve their performance in their respective disciplines.

Attilio Sommella
Co-founder of Dental Creation SNC in Naples/Italy.
Author and coauthor (together with Dr. Paolantoni) of professional literature on prosthetic topics.

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Pave your way to success. Covering a full product range from temporary restorations up to highly esthetic solutions, Straumann® CARES® Digital Solutions is now featuring:

- new generation scanner
- new CAD software
- new applications
- leading range of materials

Straumann® CARES® Digital Solutions brings modern digital dentistry to dental professionals as a complete system – reliable, precise, and dedicated to your needs.
3M™ ESPE™ LAVA™ ULTIMATE RESTORATIVE
A new dimension for dental materials

3M ESPE and Straumann have partnered up to offer a new CADCAM restorative material, 3M™ ESPE™ Lava™ Ultimate Restorative, through Straumann® CARES® Digital Solutions. The material is based on Resin Nano Ceramic (RNC) technology, defining a new material class that combines the benefits of ceramic based on true nano technology and highly cross-linked resin.¹

Entering the field of nanotechnology
The field of nanotechnology has expanded dramatically as nanostructured materials exhibit unique properties on the macroscale that offer high-potential technological benefits. Typically, the critical properties of nanomaterials are attributable to internal structures between 1 and 100 nanometers in dimension, defining the nano world. In comparison, a human hair is about 200,000 nanometers in diameter, and a typical virus is about 100 nanometers long, a size which is at the outer boundaries of nanotechnology. As size is decreased to nanoscale dimensions, physical properties, e.g. optical characteristics, get altered, especially when size nears the molecular scale, meaning < 5 nm. These unique properties are in the focus when research starts its innovative work to achieve materials with greatest efficiencies. In the dental field, 3M™ ESPE™ Lava™ Ultimate Restorative offers an advanced dental material designed and engineered to be tooth-like and to deliver workflow advances.

¹ 3M™, ESPE™, Lava™, Ultimate Restorative is available with release of Straumann® CARES® Visual 6.2
Straumann® CARES® Restoration made of 3M™ ESPE™ Lava™ Ultimate Restorative. Courtesy of 3M ESPE AG.
MATERIAL DESCRIPTION

3M™ ESPE™ Lava™ Ultimate Restorative is a Resin Nano Ceramic containing approximately 79% surface-modified nanoceramic particles. The ceramic particles are made up of three different ceramic fillers (of silica and zirconia) ranging between 4 and 20 nm that reinforce a highly cross-linked polymeric matrix.

The ceramic fillers are a combination of:
Silica filler: non-agglomerated/non-aggregated, 20 nm
Zirconia filler: non-agglomerated/non-aggregated 4 to 11 nm
Zirconia/silica cluster filler: aggregated, comprised of 20 nm silica and 4 to 11 nm zirconia particles

2 According to 3M ESPE

Banded zirconia/silica nano particles clustered and surface treated in a proprietary process. Courtesy of 3M ESPE AG.
**RNC – A NEW MATERIAL CLASS**

3M™ ESPE™ Lava™ Ultimate Restorative is a new CADCAM material based on Resin Nano Ceramic (RNC) technology, which is defined as a new material class. RNCs consist of nano ceramic components embedded in a highly cross-linked polymeric matrix. The true nanotechnology imparts excellent esthetics, strength and wear resistance. Using RNC technology 3M™ ESPE™ Lava™ Ultimate Restorative is designed to support a streamlined, flexible workflow.

**Brilliant esthetics – Resin Nano Ceramic for lasting polish**

The physical properties of 3M™ ESPE™ Lava™ Ultimate Restorative make this material very similar to the natural translucency and fluorescence of the teeth in its behavior. The Straumann® CARES® Restorations made of it have a glossy appearance when delivered. An easy polishing step taking less than 4 minutes makes the restoration highly brilliant.

**10 Year warranty – Durable for reliable restorations**

The high flexural strength and fracture toughness of the 3M™ ESPE™ Lava™ Ultimate Restorative material make it a strong one-piece restoration. It is not brittle, allowing for chipping-free restorations. The material properties make it possible for the Straumann milling centers to produce very thin and minimally invasive restorations, which also open up new treatment possibilities.

**Maintains functional balance – Tooth-preserving wear and shock absorbent**

The nanoceramic technology makes it very kind to the opposing tooth regarding abrasion. The shock absorbance of 3M™ ESPE™ Lava™ Ultimate Restorative brings a new quality to all single tooth restorations.

**IMPROVED WORKFLOW THROUGH ADVANTAGES IN PREPARATION AND HANDLING**

The high efficiency of the workflow made possible with 3M™ ESPE™ Lava™ Ultimate Restorative, is of special interest for both dental labs and dental practices.

**No further processing or firing.** Once the Straumann® CARES® Restorations made of 3M™ ESPE™ Lava™ Ultimate Restorative are milled and delivered to the dental professional no firing is required before being seated. The restoration can be polished, characterized with light-cured restoratives, and the
anatomy can be changed by adding-on or build-up. The abolition of the firing step specially emphasizes the new material category RNC of 3M™ ESPE™ Lava™ Restorative.

» **Easy adjustment.** Adjustments and customizations can be carried out extra- or intra- orally with light-cured composite, such as 3M™ Filtek™ Supreme XTE Universal Restorative / 3M™ Filtek™ Ultimate Universal Restorative, for excellent esthetic match.

» **Benefits for dentists, dental labs and patients.** Straumann® CARES® restorations made of 3M™ ESPE™ Lava™ Ultimate Restorative deliver esthetics without the requirement of further processing steps. They offer advantages right across the dental workflow which are of true benefit to dentists, dental labs and patients. 3M™ ESPE™ Lava™ Ultimate Restorative offers high control and efficiency, and has the potential to generate new treatment concepts.

**STRAUMANN – SPECIALIST IN CADCAM PROSTHETICS**

The new 3M™ ESPE™ Lava™ Ultimate Restorative is indicated for single tooth restorations and can only be processed by using modern CADCAM technology. 3M ESPE and Straumann have partnered up to offer 3M™ ESPE™ Lava™ Ultimate Restorative, through Straumann® CARES® Digital Solutions. The backing of Straumann as a reliable provider supports the opportunities this material offers through high-level milling expertise and qualitative prosthetic outcomes. New treatment concepts are possible using 3M™ ESPE™ Lava™ Ultimate Restorative via the Straumann milling centers – specialists in CADCAM prosthetics.

3 Please refer to scientific brochure on 3M™ ESPE™ LAVA™ Ultimate Restorative for more detailed information.
3M™, ESPE™, Lava™, Filtek™ are trademarks of 3M or 3M ESPE AG. Used under license in Canada.
## BENEFITS FOR DENTISTS, DENTAL LABS AND PATIENTS

### 1. DATA DIGITALIZATION

**Multiple data sources with Straumann® CARES®**
Digitalization of patient situation with various scanners, the intraoral scanners iTero® or Lava™ C.O.S. and the Straumann® CARES® Scan CS2 desktop scanner.

### 2. DESIGN

**Validated workflow through Straumann® CARES® Visual 7.0**
Quality and predictability of the validated workflow via the specific Straumann software applications.

### 3. PRODUCTION

**Straumann® CARES® restorations in high Straumann quality**
Very thin and minimally invasive restorations made of 3M™ ESPE™ Lava™ Ultimate Restorative via the Straumann milling centers.

### 4. PROCESSING / POLISHING

**No firing required after milling**
An additional polish makes the restoration highly brilliant.

### 5. SEATING

**Easy adjustment**
Adjustments and customizations can be carried out with light-cured composite.

### 6. PATIENT

**Tooth-like wear and shock absorbance**
3M™ ESPE™ Lava™ Ultimate is not brittle, allowing for chip-free restorations. It shows no abrasion or opposite tooth damage.

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### MATERIAL USE

3M™ ESPE™ LAVA™ Ultimate Restorative is indicated for the CADCAM-based production of single tooth restorations, implant or tooth-borne full-contour inlays, onlays, veneers, partial crowns, and crowns. It is available in 12 shades.

![Material use chart](chart.png)

*Courtesy of 3M ESPE AG*
DENTAL EXPLORER 3D
An outstanding new software for patient information and education
Nowadays, modern media are more and more being used for self-information and as educational tools. The new Dental Explorer 3D – a cooperation project of the Quintessence Publishing Group and Straumann – is an excellent multilingual multimedia patient education software.

“Anything, anywhere, anytime”: information in our age
Today’s patients increasingly consult the internet prior to their visit to the physician or dentist. The knowledge they gather may be superficial, making the task of the treatment provider to explain individualized treatment alternatives even more difficult. Dentistry is particularly affected by this online information trend, because the available restorative options cover a broad spectrum with many alternatives.

Covering the complexity of modern dentistry
Dental Explorer 3D was developed to support clinicians explaining this complex situation to their patients by using interactive virtual 3D models and 2D images. Furthermore, its extensive library contains numerous videos with high-end animated sequences. Hardly any medical field can rival dentistry when it comes to the sheer number and complexity of treatment alternatives (AMMAN et al. 2008). This is the result of the multiplicity of possible restorative, prosthetic, and implantological treatment concepts and the wealth of different approaches and solutions available. Dental Explorer 3D offers a vast array of restorative options, but the final therapeutic decision is made by the dentist together with the patient.

High-end 2D and 3D visualization
In order to realize accurate 2D and 3D visualization of the available restorative options, all solutions and treatment steps were initially created using real-life components and models which were then processed for integration in the software. For the implantological part, Straumann not only made the requisite implants and prosthetic components available, but also performed ongoing quality control for implant superstructures and their designs.
More than 20,000 visual elements and 6 presentation languages

The Dental Explorer 3D library contains more than 20,000 visual elements for the illustration of the restorative, prosthetic, and implantological options. With a single click, users can alternate between real-world 2D photographic images and freely rotatable and scalable 3D models rendered in real time. The software also comprises 26 high-quality animated video clips on implant dentistry that demonstrate the various treatment steps and implantological principles and options in an easy-to-understand manner.

By combining such an extensive component library with a comprehensive video archive, Dental Explorer 3D offers practitioners a planning and visualization tool of high quality and scope.
Building competence, trust and communication in the doctor-patient relationship

Dental Explorer 3D is a professional communication tool in terms of information depth, esthetics, and customization. As it can represent the complete range of restorative options, comparisons can be made and illustrated, recommendations visualized, and curiosity aroused, making it much easier for patients to opt for the best possible solution and to appreciate the social and psychological importance of an esthetic and healthy dentition. Integrated into the dental office workflow the Dental Explorer 3D can ensure more effective communication, motivate patients and instill confidence.

Fig. 7 Interface with main menu, functions, controls, picture flow presentation, treatment menu, patient status and preview window
**Saving time with intelligent and professional consultations**

Dental Explorer 3D can visualize treatment options directly chairside, based on clinical findings and available indications, and allows dentists to focus on individual patient needs. Intelligent and professional consultations save time, help coordinate the treatment process, and will frequently motivate the patient to opt for a more sophisticated restoration. In addition to patient education, Dental Explorer 3D extends the consultation competence and professional expertise of the dental team, helping improve service quality and profitability.

**Using the right communication channel**

Chairside communication is becoming increasingly important and benefits from the availability of novel multimedia solutions. Until recently, dentists had to rely mainly on print and audiovisual media such as video clips when communicating to their patients. Today, powerful computer hardware and software tools facilitate solutions with advanced multimedia concepts. This interactivity can be utilized by the dentist to support the consultation effort, by visualizing the treatment plan. [www.dentalexplorer.de](http://www.dentalexplorer.de) (German/English)

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**AWARDS**

Health Media Award 2010  
Section “Patient Communication”  
[www.healthmediaaward.de](http://www.healthmediaaward.de) (German)

Endorsement by the DGI  
German Association for Implantology  
[www.dgi-ev.de](http://www.dgi-ev.de) (German/English)

**LANGUAGES**

Dental Explorer 3D provides all its contents in six languages that can be set individually (English, German, Spanish, French, Italian and Brazilian-Portuguese).

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INSPIRING PATIENT EDUCATION

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DENTAL EXPLORER 3 • DIMENSIONAL

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STRAUMANN® STANDARD PLUS NARROW NECK CROSSFIT® IMPLANT LINE

The latest innovation of the Straumann® Soft Tissue Level Implant line

Roxolid® – the melding of osseointegration and material strength
With Straumann® Roxolid®, an implant material has been made available which opens new possibilities in implantology without compromising on biological response1 or strength2. These unique properties of Roxolid® have now allowed Straumann® to develop a diameter-reduced soft tissue level implant with a 3.5 mm prosthetic platform as known from the proven Straumann® Standard Plus Narrow Neck implant.

New prosthetic options
The internal connection of the implant provides expanded prosthetic options and makes it the preferred choice within the Straumann® Soft Tissue Level implant line whenever space limitations or bone availability indicate a reduced diameter implant. With this implant Straumann further improves the soft tissue level implant offering by leveraging the latest material and surface technologies well known from Roxolid® and SLActive® implants.

With the Straumann® Standard Plus Narrow Neck CrossFit® Implant line Straumann will introduce additional new features to further simplify the surgical and prosthetic workflow.

Learn more about the first clinical experience in our interview with Dr. Giuliano Fragola Arnau and his clinical case report on pages 54–61. This new member of the Straumann® Dental Implant System family will be available in the first quarter of 2012.

Note: Some products may require regulatory approvals and may not be available in all markets.
References: The complete list of scientific references is available in PDF format and can be downloaded from the Straumann website, www.straumann.com/ST311REF.pdf
INTERVIEW

“Technological progress as I see it is developing solutions for situations that were difficult to solve in the past”
Dr. Fragola from Madrid/Spain is member of the Expert Team and contributes feedback to the development of the new Narrow Neck CrossFit® implant system. In this role, he was able to acquire first experience with the NNC components during the (still ongoing) market acceptance test in Europe.

Dr. Fragola, you had the opportunity to work with the new Narrow Neck CrossFit® implant. From your point of view, what specific advantages do NNC implants have to offer?

The NNC closes a gap in the Straumann® Dental Implant System, completing the family of soft tissue level implants. The flexibility offered by the internal CrossFit® connection in small-diameter implant allows for multiple replacements with disparallelism – something that was impossible in the past using Narrow Neck (NN) implants. This new system benefits both clinical professionals as well as lab technicians.

NN implants made it challenging to carry out the prosthodontic restoration because their external connection required more bone mass for ideal implant placement if restoration was to be performed easily and predictably.

The NNC implants offer a range of options that were not feasible with NN implants. These include multiple screw-retained restorations with bars or Locator® systems*, even in cases where there are discrepancies between the angle of the implants and the overdenture.

Today, the NNC system combines the latest innovations developed by Straumann. The endosseous design corresponds to the Straumann® Bone Level implants, has the SLActive® surface and is made of Roxolid®, thus creating an implant offering a symbiosis of high primary stability, fast osseointegration* and high mechanical strength*. I am not aware of any other small diameter implants on the market that combine these technologies with the soft tissue level philosophy. The combination of these features makes it possible to replace teeth having little remaining osseous structure, something which is quite common in periodontal patients. Use of other methods in these cases requires bone grafts, which in turn makes patients reluctant to undergo such treatments.

The NNC covers the needs of these patients with restorations that are predictable from the surgical point of view and aesthetically satisfactory from the restorative point of view. All of this can be achieved with less surgical effort and better control of the gingival treatments.

The NNC system comes with a new implant transfer piece, which can be removed from the implant after insertion without having to release a lock-nut. What was your experience with this tool?

The transfer piece, which was specifically designed for this implant and the development of which I had the pleasure of participating, makes the clinical use of this implant quite easy. It’s very stable, sufficiently stable to allow the placement of the implant in the mouth with the desired torque, either manually or using a hand piece. Once the implant is placed, removal of the transfer piece from the implant is very easy. It can be extracted by hand or using a pair of tweezers. It can also easily be reattached if needed for the subsequent insertion of the implant. In our clinical experience with cases of limited buccal openings, removal of the carrier is much easier and less traumatic for patients. They benefit from not having to overexert themselves when opening their mouth to

*Symbiosis of primary stability, fast osseointegration, and high mechanical strength.
remove the carrier in situations where the implant has been placed in the premolar regions, which have a very narrow mesiodistal distance. On some occasions it is hard to remove a conventional threaded carrier because there is no space for the holding key.

In terms of strength, do you feel comfortable placing a 3.3 mm Straumann® Soft Tissue Level implant with a narrow prosthetic platform and an internal connection?

Before Roxolid® was launched, I rarely used small-diameter implants, and I only used them in cases where strength was not a key factor. This new alloy allows for more custom treatments, and I am no longer worried about strength as long as the implant is placed for any of the approved indications. Since its introduction, we have been working with Roxolid® implants in the most complex situations and not one single implant has fractured.

I feel extremely comfortable using these kinds of implants in my daily practice and have had very acceptable clinical outcomes. Patients greatly value having the option of a minimally invasive, esthetic treatment. For us, this reconfirms the notion that GBR techniques should be reduced, since our patients don’t like them and this limits their acceptance.

How important is it to have a narrow prosthetic platform with an internal connection?

I have always used implants with an internal connection. The usage of implants with an external connection, as is the case with Standard Plus NN, complicates my job significantly. NNC implants allow me to work with a submerged or semi-submerged technique, with multiple restorative options. This makes my day-to-day decision-making process very easy.

Today it is essential to have an internal connection throughout the entire range of implants, whether narrow or wide. The cervical platform also allows for a better adaptation of the prosthetic restorations in areas where sufficient tissue volume is severely lacking.

The availability of this type of platform allows us to create harmonious and natural emergence profiles, without compromising the gingival stability of our treatments, separating the microgap from the osseous tissue and reducing the microinfiltration risks.

What is your practical experience with NNC and what clinical situations do you see as warranting use of NNC implants?

I have been very satisfied with my practical experience. The implant offers a wide range of treatment options which appear in our day to day practice. The internal CrossFit® connection also makes the implant system versatile and complete from the restoration standpoint. We have carried out various treatments ranging from individual crowns in the anterosuperior and anteroinferior region, restoration of complete anterior groups in situations with limited bone availability and narrow crests in patients who refused to undergo bone grafting procedures. The surgical outcomes have been optimal, with excellent bone and gingival stability.

I believe that in standard situations the use of bone level NC implants would be sufficient, but the design of the Standard Plus NNC makes it the preferred option for situations where there are greater hygiene risks, less soft tissue, and separating the gap from the bone crest for non-submerged techniques. It is also satisfactory for dentists who would prefer to continue using soft tissue level implants instead of bone level implants.
In many situations we must use techniques that increase bone and gingival mass in order to achieve esthetically acceptable results, but this is not always welcomed by our patients. This has created a need for implants with small diameters, which can be used in these situations in a routine, predictable manner and with a wide range of restoration components – all of which are characteristics dentists and patients have come to expect from Straumann® dental implant systems.

For this reason, the specific indications for this implant include those requiring small diameters and strength along with the polished emergence profiles to which users of soft tissue level implants have grown accustomed while offering the same primary stability of bone level implants.

“I believe the work in this field is heralding in a new age in which these types of new alloys will allow for increasingly stable structures with smaller diameters.” Giuliano Fragola Arnau

What are the benefits of NNC for the patients?

NNC gives the surgeon a new element to resolve special situations. Patients benefit from NNC implants by avoiding complex, irritating and costly treatments that take longer to perform. The effect is that patients perceive the treatment as less invasive. Technological progress as I see it is developing solutions for situations that were difficult in the past to solve with products from the Straumann portfolio.

I believe the work in this field is heralding in a new age in which these types of new alloys will allow for increasingly stable structures with smaller diameters. The next step is to further develop technology by manufacturing smaller components that can be used to solve even more potentially complex situations.

Dr. Fragola, thank you for this interview.
GIULIANO FRAGOLA ARNAU AND JAVIER PÉREZ LÓPEZ
Repositioning of an upper right lateral incisor using the Straumann® Standard Plus Narrow Neck CrossFit® Implant

Background
Male patient, age 46, showed a missing upper right lateral incisor (#12) at the consultation and requested a fixed, esthetic restoration. The patient wore a Maryland bridge which repeatedly debonded due to a crossbite, making it uncomfortable to wear (Figs. 1, 2). He brought a few older periapical and panoramic X-rays in which the presence of a non-restorable root remnant could be observed. The patient reported that the tooth had been extracted previously due to the fracture of a post and core. After extraction, an implant was inserted immediately. This implant failed during the period of osseointegration and had to be removed (Figs. 3, 4).

Diagnosis
The patient did not have any systemic diseases, was an occasional smoker and had good periodontal health; an anterior crossbite was observed, leading us to believe that these teeth were subjected to a visible occlusal load. This would explain the frequent debonding of the Maryland bridge. Clinical and radiological examinations were carried out and no gingival or bone alterations were observed in the remaining teeth.

Treatment plan
The plan was to place a small-diameter Straumann® Standard Plus Roxolid® Narrow Neck CrossFit Implant (NNC, Ø 3.3 mm,
10 mm SLActive® with a screw-retained Straumann® NNC Gold Abutment. The patient’s Maryland bridge was used as a temporary restoration until full osseointegration was achieved. In a second step, a screw-retained provisional was made in order to create the emergence profile before the final restoration was placed.

**Surgical procedure**
The NNC implant was positioned with a full thickness flap that included the adjacent teeth, without vertical releasing incisions. A wide bone crest was observed without hollows in the vestibular area but with a narrow mesiodistal space. The coronal area of the bone was carefully drilled and prepared for...
placing the implant in the bone. The shoulder of the smooth neck was positioned 2 mm from the amelocemental junction of the neighboring teeth, leaving it in the supracrestal position (Figs. 5–9).

A 1.5 mm-high NNC closure screw was placed, and the site was closed by suturing with simple 4/0 stitches. The patient’s Maryland bridge was cemented to provide a provisional prosthesis (Figs. 10*, 11).

After four weeks, we examined the patient and the 1.5 mm NNC closure screw was replaced by a 3.0 mm NNC Healing Cap. Perfect integration of the soft and hard tissue was observed (Fig. 12–13*).

**Restoration procedure**
Impressions were taken seven days later to produce a working model and make a temporary screw-retained crown with the NNC post for temporary restorations which would be in place for two weeks (Figs. 14–19). Next, the final crown was made using a Straumann® Customized NNC Gold Abutment for crowns. A metal test was carried out to check the correct fit before completing the veneering of the final restoration. The final step was to insert the screw with 35 Ncm and check the occlusion (Figs. 20–23).

**Outcome and conclusions**
Using small-diameter NNC implants offers a predictable restoration of small interdental spaces. The smooth neck ensures
the restoration is reliable in terms of soft tissue healing; the Roxolid® alloy and SLActive® surface treatment give us the necessary performance in terms of strength and osseointegration.

NNC implants present a clear case demonstrating technological innovation for the benefit of our patients. We are able to achieve good results without having to perform additional procedures involving bone or soft tissue grafts. The esthetic advantages are obvious: rapid soft and hard tissue integration. In this case, the number of procedures for the patient was minimized, making it possible to reduce overall treatment time and achieve a stable, predictable treatment outcome in six to seven weeks.

References: The complete list of scientific references is available in PDF format and can be downloaded from the Straumann website: www.straumann.com/ST311REF.pdf

* The closure screws and healing caps used in this case report are yellow color-coded – the final market versions of these components will be colorless (titanium).

Javier Pérez López
Dental technician specialized in esthetic implant-supported restorations. Director of “Técnica Dental Studio VP” laboratory. ITI fellow. Consultation services and collaboration in research projects into implants and ceramic materials. Speaker on esthetics, implants and ceramic materials.

Fig. 22
Fig. 23
Immediate full mouth restoration using implant-supported fixed hybrid prosthetics

Initial Situation
A 49 year old woman with an unremarkable medical history presented for a full mouth extraction. Severe periodontal disease was present in addition to mobile teeth and noted bone loss (Figs. 1, 2). She indicated that she wanted to have an implant-supported fixed prosthesis in order to avoid having to wear traditional dentures long term.

Treatment Plan
A CT scan was performed and converted into implant planning software. Upon examination of the CT scan and consultation with the patient, it was determined that four implants in each arch would be placed to support a fixed prosthesis. Using the converted scan, the implant sizes and locations were planned for both the mandible and the maxilla using the implant planning software. Four Straumann® Bone Level implants1 were planned for the maxilla and four Straumann® Soft Tissue Level implants2 were planned for the mandible (Figs. 3, 4). The posterior implants in the areas of #14 and #25 were angled to avoid the sinus and still provide for first molar occlusion in the final prosthesis. A guided surgical stent was then ordered through the software for the maxilla. The referring office supplied the immediate denture prior to surgery. The patient was scheduled for surgery approximately one month after the second consultation to allow for creation of the stent and immediate dentures.

Surgical Procedure
The initial phase of the surgery involved removing all of the existing teeth with the exception of the #38 and #48, due
to nerve involvement. The patient was sedated and the teeth were extracted as atraumatically as possible. Once the teeth were removed, the maxillary arch was exposed and the surgical stent was secured to the maxilla. The osteotomies were performed through the guide using a Straumann® Guided Surgical Kit with a final drill diameter of 3.5 mm (Fig. 5). Stabilization pins were used to secure the stent while other osteotomy sites were prepared. The four Straumann® Bone Level implants were then placed with primary stability using a hand piece at 35 Ncm (Fig. 6). Sutures were used for ridge closure in a continuous and interrupted fashion.

Attention was then directed to the mandible, where osteotomies were performed in the areas of #36, #33, #43 and #46. The Standard Plus implants were placed in the anterior sites #33 and #43. The Regular Neck Tapered Effect implant was placed in the area of #36 and the Wide Neck Tapered Effect implant was placed in the area of #46 (Fig. 7). All implants were placed with primary stability using a hand piece at 35 Ncm. No sutures were required as the mandibular ridge was not exposed.

Corbin G. Partridge, DMD

cpartridge@neomsindy.com
Prosthetic Procedure

Immediately after the implants were placed, impression posts were attached and impressions of both arches were taken. After the impressions were taken, healing caps were placed on all implants, the impressions and immediate dentures were sent to the lab, and the patient left the office. Using the impressions, the lab converted the immediate dentures into screw retained immediate prostheses, which were heat cured over night (Figs. 8 – 10). The patient returned to the office the next day for placement of the provisional prostheses. The healing caps were removed and the appropriate abutments were placed. The maxillary prosthesis was placed over the abutments and attached using four screws, with the mandibular prosthesis fixed in a similar fashion (Figs. 11, 12). The patient’s bite was adjusted using a handpiece with a denture bur. Once the adjustments were finished and the patient was satisfied with her bite, a temporary filling material was placed in the screw holes of the prostheses and final x-rays were taken (Figs. 13 – 17). The patient was given instructions for post-op hygiene and told not to chew for eight weeks to allow
for proper integration, after which a limited soft-chew diet was recommended. This is recommended due to the limited strength of the provisional prostheses, which serve a more esthetic rather than functional purpose.

**Outcome**

The patient returned to the office for her one week check, and was healing well (Figs. 18, 19). She will wear the provisional fixed prostheses for approximately six months, allowing the ridges to form fully and heal. At this time, she will return to the office for final impressions, which will be used by the laboratory to create the permanent bar retained prostheses. Combining the milled bar-retained prostheses with the splinted Straumann® SLActive implants will result in a strong and permanent alternative to traditional dentures.

1. Straumann® Bone level Implant RC Ø 4.1, 12 mm SLActive. 2. Standard Plus RN Ø 3.3, 12 mm SLActive/1 x Tapered Effect WN Ø 4.8, 12 mm WN/1 x Tapered Effect RN Ø 4.1 x 10 mm)
STRAUMANN® EMDOGAIN


A total of 22 rats were either exposed or not exposed to cigarette smoke inhalation (11 per group). After 30 days, fenestration defects were created in a split-mouth study at the first mandibular molars, which were either untreated or treated with enamel matrix derivative (EMD). Histometric assessment was performed after a further 21 days. EMD increased defect fill and new cementum formation in both groups, and bone density was lower in the group exposed to cigarette smoke inhalation. Tobacco smoke therefore has a detrimental effect on bone healing.


A total of 40 intrabony defects in single-rooted teeth in 40 patients were treated with EMD alone or with a non-resorbable titanium-reinforced membrane. Probing depth and clinical attachment level were evaluated at baseline and after 12 months. Mean gain in clinical attachment level was significantly greater in the EMD + membrane group than with EMD alone, and the probability of increase in clinical attachment level ≥ 4 mm was also significantly greater, while the probability of residual probing depth ≥ 6 mm was significantly decreased. The addition of a membrane to EMD treatment therefore improved clinical outcomes in non-contained intrabony defects.

STRAUMANN® DENTAL IMPLANT SYSTEM


A total of 20 patients received implant-supported crowns on Straumann Bone Level Implants in the aesthetic zone, and clinical radiologic and aesthetic parameters were recorded.
for 3 years follow-up. All implants were successfully osseointegrated and stable, with good peri-implant soft tissues after 3 years. Good results were obtained for the pink and white aesthetic scores, with white aesthetic scores being slightly superior. Mean crestal bone loss was 0.18 mm after 3 years; bone loss from 0.5 to 1.0 mm was observed at only two implants, one of which showed minor recession of the facial mucosa (< 1 mm).


Implants with a 1.8 mm turned neck (test; Straumann Standard Plus) or a 2.8 mm turned neck (control; Straumann Standard) were placed in the posterior jaws of 18 patients with multiple missing teeth; each patient received one of each implant. All implants were placed transmucosally to a sink depth of 1.8 mm. After 6 months and 1 year, no significant differences were observed in soft tissue parameters or mean crestal bone levels between the two implant types, but significantly less crestal bone loss was seen at the test implants after 1 year. The percentage of implants with crestal bone levels 1–2 mm below the implant shoulder was also greater at the test implants (50% versus 5.6%) after 1 year. A reduced height of turned neck may therefore reduce crestal bone resorption and maintain higher crestal bone levels.


Each of 29 patients received a Straumann Standard Plus or Tapered Effect implant immediately following tooth extraction, 13 of the sockets exhibited periapical pathology (test) and 16 did not (control). Clinical and radiological parameters were assessed for 3 years. The implant survival rate was 100%, and no significant differences in clinical or radiological parameters were observed between the test and control groups. The mean distance from the implant shoulder to the first bone-to-implant contact was 1.54 ± 0.88 mm and 1.69 ± 0.92 mm mesially and distally, respectively, in the test group. No retrograde peri-implantitis was observed at the sites with periapical pathology after 3 years. Immediate placement of implants in sites with periapical pathology, with careful debridement of the socket, can therefore be performed.

A total of 30 Straumann SLA and SLActive implants were placed in the tibiae of three sheep. Insertion torque was recorded, and resonance frequency analysis was performed, which was repeated after 3 and 6 weeks. Histomorphometric analysis was then performed. Initial RFA values were 72.27 ± 3.17 and 71.6 ± 2.87 for SLA and SLActive, respectively. RFA values and bone-to-implant contact were significantly higher for SLActive than for SLA after 3 weeks, but no significant difference was observed after 6 weeks. Reverse torque values were similar for both implant types. SLActive implants therefore achieved higher bone contact and stability at earlier time points.


Straumann experimental implants (4 mm long and 2.8 mm diameter) with either an SLA or SLActive surface were placed in the retromolar region of 28 volunteers and retrieved by trephine after 4, 7 and 14 days. RNA microarray analysis was then performed on the tissue. No relevant gene categories were over-represented in those expressed at 4 days, but osteogenesis- and angiogenesis-related gene expression was increased with SLActive after 7 days. VEGF signalling remained up-regulated with SLActive after 14 days, while BMP signalling was up-regulated with SLA. Neurogenesis appeared to be influenced by both surfaces. The pro-osteogenic and pro-angiogenic influence of SLActive may be responsible for the osseointegration properties of the surface.


A total of 18 Straumann experimental implants (4 mm long and 2.8 mm diameter) were placed in the retromolar area of nine volunteers and retrieved by trephine after 4, 7 and 14 days. RNA microarray analysis was then performed. The bone debris:soft tissue ratio was significantly greater with SLActive. The bone debris:soft tissue ratio suggested that bone debris had a significant influence on the initiation of bone deposition.


Nine Straumann experimental SLActive implants (4 mm long and 2.8 mm diameter) were placed in the retromolar area of nine volunteers and retrieved by trephine after 4, 7 and 14 days. RNA microarray analysis was performed to identify differences in the transcriptome. The gene expression profile at day 4 was predominantly associated with proliferation and
immuno-inflammatory processes. In contrast, the predominant change after 14 days was associated with skeletogenesis, especially skeletal system development, bone development and ossification. Most changes occurred between 7 and 14 days. Angiogenesis and neurogenesis were also predominant after 14 days. IκB kinase/NF-κB kinase signalling was predominant at day 4, while TGF-β/BMP, Wnt and Notch signalling were associated with osteogenesis throughout the study.


Straumann experimental implants (4 mm long and 2.8 mm diameter) with either an SLA or SLActive surface were placed in the retromolar region in 49 volunteers and retrieved by trephine after 7, 14, 28 and 42 days. Bone debris was present at all surfaces, and a large fraction of the bone matrix increasingly became covered with newly formed bone. Bone formation began in the first week and increased up to 42 days. Bone-to-implant contact was more pronounced with SLActive versus SLA after 2 and 4 weeks, but no significant difference was observed after 42 days.
SAVE THE DATE

Straumann Corporate Forum and workshop at Europerio 7 in Vienna
June 6 – 9, 2012 in Vienna/Austria at the “Messe Wien Exhibition & Conference Center”

Seven thousand participants from the world of periodontics and implant dentistry are expected to attend this congress, which is held every three years. With the support of all European National Societies of Periodontology as well as over 80 industry partners, Europerio 7 is expected to provide participants with the latest advances in the field and access to the latest technology and products available in dentistry. The scientific programme will consist of Periodontology and Implant Dentistry Sessions as well as Themed Research Sessions and Focused Sessions for Hygienists. As a Diamond Sponsor, Straumann will participate in the commercial exhibition and will also host an industry forum and a workshop. For more information see www.straumann.com/europerio7. Official Europerio 7 website: www.europerio7.com

**STR AU MANN CORPORATE FORUM**

“PROVEN CONCEPTS AND INNOVATIONS IN PERIODONTAL AND IMPLANT DENTISTRY”

**DATE**

Thursday, June 7, 2012

**TIME**

12:15 to 13:45

**LECTURES**

Dr. Stephen Chen, BDS, MDSc, PhD FRACDS – Melbourne, Australia

Prof. Nikolaos Donos, DDS, MS, FDSRCS Engl., PhD – London, UK

Dr. Michael McGuire, DDS – Houston, Texas, USA

**STR AU MANN WORKSHOP**

“RECONSTRUCTIVE PERIODONTAL PLASTIC SURGERY IN THE ESTHETIC ZONE”

**DATE**

Wednesday, June 6, 2012

**TIME**

15:30 to 17:00

**LECTURES**

lecture and hands-on course by Prof. Giovanni Zucchelli, DDS, PhD – Bologna, Italy

**ADMISSION FEES**

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¹ All registration fees are stated in EURO including 10% VAT ² full-time students < 35 years; documentation required ³ and other dental professionals

Please find more detailed information about Straumann’s workshop and corporate forum at Europerio 7 in the next issue of STARTGET.
ANDRÉ SCHROEDER RESEARCH PRIZE

The ITI awards André Schroeder Research Prize 2011 to Nikola Saulacic

Dr. Nikola Saulacic, a PhD dentist, oral surgeon and researcher at the University of Bern, Switzerland, is the winner of the André Schroeder Research Prize 2011. ITI President Professor Dr. Daniel Buser presented the prize at the ITI Congress Benelux in Amsterdam on June 11, 2011.

Dr. Saulacic was selected by the ITI Research Committee in an anonymous evaluation process for his experimental study on “Bone apposition to a titanium-zirconium alloy implant surface”.

The winning research aimed at determining the early healing events of titanium-zirconium (TiZr) implants in comparison with titanium (Ti) implants, both with a modified sand-blasted and acid etched (SLActive) surface, and an implant material with additional strength (TiAl6V4). The study concluded that TiZr implants showed comparably fast early osseointegration as Ti implants. The excellent mechanical properties of TiZr together with the observed fast osseointegration support the use of TiZr implants for more challenging clinical situations, where implants with a reduced diameter are indicated.

About the André Schroeder Research Prize

The André Schroeder Research Prize is an annual award worth CHF 20,000 in cash and today one of the most prestigious awards in implant dentistry. It is awarded to independent researchers for the advancement of dental research and development with the aim to promote new scientific findings in implant dentistry, oral tissue regeneration and related fields.

The award was established almost 20 years ago and is presented in honor of the late Professor André Schroeder (1918–2004), the founding ITI President, who pioneered implant dentistry and whose lifework contributed significantly to modern dentistry.

The André Schroeder Research Prize 2012 will be presented at the ITI Congress Canada in Toronto on September 21 to 22, 2012. Information on the application will be available on the ITI website www.iti.org in January 2012.

Dr. Saulacic graduated as a DDS from the University of Belgrade, Serbia, in 1995, where he also obtained his Master of Science degree and Certificate of Specialization in Oral Surgery. From 2003 to 2004 he was an ITI Scholar at the Clinic for Oral Surgery, University of Bonn, Germany. He received his European PhD from the University of Santiago de Compostela, Spain, in 2005. Since 2007, he has been working at the Department of Cranio-Maxillofacial Surgery, University Hospital of Bern and since 2009 also at the Department of Oral Surgery and Stomatology, School of Dental Medicine, University of Bern. His main fields of research are implant dentistry and bone regeneration.
Dr. Nikola Saulacic with Prof. Dr. Daniel Buser, ITI President
ITI National Congresses

A great year for knowledge and networking
ITI National Congresses represent the best way to combine networking with catching up on the latest in implant dentistry. With plenty of ITI National Congresses in the coming months, there are many opportunities to consolidate your knowledge, earn credit points and meet the top speakers in your region or country.

Find the congress closest to you at the ITI National Congress website www.iticongress.org.

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The International Team for Implantology (ITI) is an independent academic organization dedicated to spreading knowledge and promoting evidence-based methodologies related to implant dentistry. Join this international multidisciplinary network of experts and find out how the ITI can help to broaden your professional horizons.
Do your patients want more?

Implant dentistry has earned its place as one of the standard treatment options available to dental practitioners and, today, patients expect more of oral health and esthetics. It is in the best interests of every practitioner to have a broad range of skills associated with implant dentistry at their disposal. The ITI Education Weeks are offered by leading academic institutions around the world in partnership with the ITI – an independent academic organization dedicated to all aspects of implant dentistry.

ITI Education Weeks offer:
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- top international educators at state-of-the-art facilities
- evidence-based course content
- hands-on and live surgeries/prosthetic sessions.

Get more information about the ITI Education Weeks and our academic partners at www.iti.org/educationweek

Sign up for an ITI Education Week and earn CE credits that really count.

The International Team for Implantology (ITI) is an independent academic organization dedicated to spreading knowledge and promoting evidence-based methodologies related to implant dentistry. Join this international multidisciplinary network of experts and find out how the ITI can help to broaden your professional horizons.
PERFECT FIT BY DESIGN

In combining Soft Tissue and Bone Level implants with a comprehensive prosthetic portfolio, Straumann has devised one system for all indications. The Straumann® Dental Implant System – excellent product quality designed for convincing, naturally esthetic outcomes.

Featuring the SLActive® surface!