Geistlich
Biomaterials

GEISTLICH NEWS

Osteology Monaco
Current science and a very special birthday celebration

Geistlich online
Operation videos, eLearning and more on the Internet

Gain attachment
Periodontal regenerative surgery step by step

Prof. Christoph Hämmerle, President of the Foundation, explained in the opening ceremony what the Osteology Foundation has achieved in ten years.

Publishing information

GEISTLICH NEWS
Magazine for customers and friends of Geistlich Biomaterials

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Editorial

Dear readers,

At Geistlich Pharma AG we take into consideration the fact that life in the dental community is becoming increasingly more networked and complex. Consequently, two departments "International Product Management" and "International Marketing Services" have existed since the beginning of April in place of a single marketing group. This is how we wish to meet our customers' high demands in the future too.

This also means that as a Geistlich Pharma customer, you can expect only the best documented products in outstanding quality. New product developments and advancements are not immediately commercialised after receiving the CE mark, but only once the new product can show clear added value for our customers and their patients.

However, Geistlich Pharma's achievements go beyond the provision of products. As the market leader for dental regenerative therapies, the company also takes a leading role in the relevant topics. Channelling the increasing information flow and preparing information in a modern way to render benefit are some of Geistlich Pharma AG's key concerns.

Furthermore, continuing education and advanced training plays a major role. Today Geistlich works with well over 100 universities worldwide. But Geistlich is also a sponsor of qualitatively prominent training programmes in the realm of private practice around the world. With our own events – whether congresses, symposia, round tables or other events, we endeavour to set standards and only measure ourselves against the best.

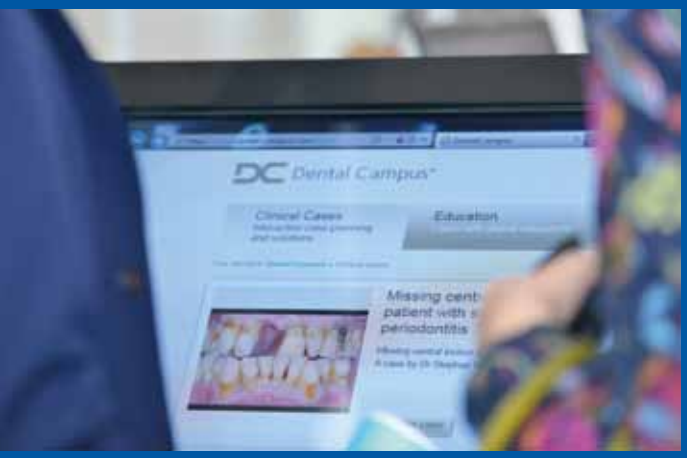
What these standards are and how we unify scientific work and routine clinical practice is particularly illustrated in the *Leading Regeneration* section. Crucial questions on the socket sealing technique were discussed and answered at an expert meeting. If periodontology is one of your main fields of interest, we would urge you take a look at the article on therapy concepts for periodontology. And if you wish to know why leading experts consider the Geistlich Combi-Kit Collagen as "The Master's Choice", you can also read up on this.

In *Leading Research* you will find an excerpt from the currently most acclaimed clinical studies in dental regenerative medicine. And finally in the section *Leading Education* you will find out more about the highlights of the past major events IDS (Cologne) and AO (Tampa). In the first pages of this issue we take a look back over the most important big occasion for us, the International Osteology Symposium in Monaco, with the celebration of the tenth anniversary of the Osteology Foundation.

We wish you exciting reading!

Mirko Zingg, Director
Int. Product Management

Reto Falk, Director
Int. Marketing Services



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Birthday symposium in Monaco

Three days full of inspiration and information: The tenth anniversary of the Osteology Foundation was celebrated at the International Symposium in Monaco.

OSTEOLOGY FOUNDATION

Osteology Monaco will long be remembered

Osteology Monaco was in many respects a congress of superlatives – radiant springtime on the Côte d'Azur, the Grimaldi Forum as a glistening crystal on the coast, the multifaceted scientific programme with top speakers from 14 countries, practical training on almost 600 pig jaws and many surprises on the tenth birthday of the Osteology Foundation, were the icing on the cake.

Leading role in regenerative dentistry

2,700 participants enjoyed the congress to the full. The unanimous opinion: With its birthday symposium, the Foundation affirmed its leading role in regenerative dentistry, both in terms of advanced training, as well as in promoting research. The most important highlights from the scientific programme, from the workshops and from ten years of Osteology are summarised on the following pages.

Highlights from the scientific programme

Osteology Monaco was a milestone. The multifaceted programme illuminated all aspects of regenerative dentistry. There were presentation blocks on periodontal regeneration, on simple and complex GBR measures, on soft tissue management, on medically compromised patients and many other topics besides.

A topic in focus: peri-implantitis

The prevention, diagnosis and therapy of peri-implantitis formed the focus, which filled two complete presentation blocks. The hard-to-treat infection around the implant currently causes deep concerns among practitioners. “The frequency of peri-implantitis is difficult to estimate”, explained Prof. Björn Klinge, Sweden. Because various definitions of the disease and partly contradictory information on prevalence have appeared in the literature so far. A new systematic literature analysis shows that after five to ten years 10% of implants and 20% of patients are affected by peri-implantitis.

The spectacular 3D videos were a real attraction, because they make operations more vivid than ever before.

Although the infection around the implant resembles periodontitis in many respects, there are still relevant differences. The periodontal ligament in periodontitis acts like a natural barrier. The infection is enclosed in the connective tissue and is shielded from the bone. On the contrary, according to Prof. Tord Berglundh, Sweden, peri-implantitis lesions are insufficiently encapsulated, advance aggressively and expand to the bone, which in turn is resorbed.

Prof. Andrea Mombelli, Switzerland, summarised the factors that favour peri-implantitis: an insufficient quantity of keratinised mucosa, too low bone volume, a small distance between implants and an unfavourable three-dimensional implant position. Prof. Lisa Heitz-Mayfield, Australia, pointed out that surplus cement residues in cemented reconstructions also represents a risk and can cause inflammation. In order to monitor the implant, the dentist should take peri-apical X-rays at the time of the permanent prosthetic restoration and again in the annual follow-up examination. Besides the X-rays, implant mobility, pocket depth and signs of clinical inflammation are important parameters.

Which therapy has prevailed?

Prof. Giovanni Salvi, Switzerland, and Prof. Frank Schwarz, Germany, presented the current state of science of peri-implantitis therapy. Following a preparatory phase in which the risk factors, such as poor oral hygiene or hard-to-clean restorations, are eliminated, non-surgical treatment follows with removal of the biofilm and antimicrobial therapy. Systemic or local antibiotics, laser, but also photodynamic therapy can be deployed with good success.

One to two months later the defect is reevaluated and surgery is performed, as required, that entails removal of the granulation tissue and decontamination of the implant surface. Antibiotics can then also be administered. Subsequent implantoplasty can prevent renewed colonisation of the implant surface. Prof. Schwarz presented the technique in more detail. The screw profile of the implant is ground off and the implant then heals covered. Proven products should definitely be used if lost tissue is to be replaced by regenerative measures.

For many, the fact that the development of periimplantitis is promoted in periodontally compromised dentition serves as an argument for also preserving teeth with severe bone loss and furcation problems. For this reason, in the first session of the symposium Prof. Niklaus P. Lang, Switzerland, presented a decision-making tree for deciding between tooth preservation and tooth extraction in case of periodontally compromised teeth. The speakers then went on to present encouraging data on the management of intraosseous defects and furcation problems.

It's worth intervening early on

The optimal therapy starts early. One presentation block in Monaco centred on the decisions that are faced even before or just after dental extraction. What resorption should one expect due to the collapse of extraction sockets? Can the volume still be maintained? What does the dentist have to consider in the aesthetic zone? Prof. Mariano Sanz, Spain, presented histological data from a preclinical study on the course of early healing after dental extraction. Lingually the bone conditions remain almost unchanged; however, the buccal bone lamellae were resorbed strongly in the horizontal dimension. In a clinical study that included 120 edentulous patients, the results of preclinical studies on bone resorption with spontaneous healing were confirmed. Prof. Jan Lindhe, Sweden, presented unpublished data on this in his keynote lecture.

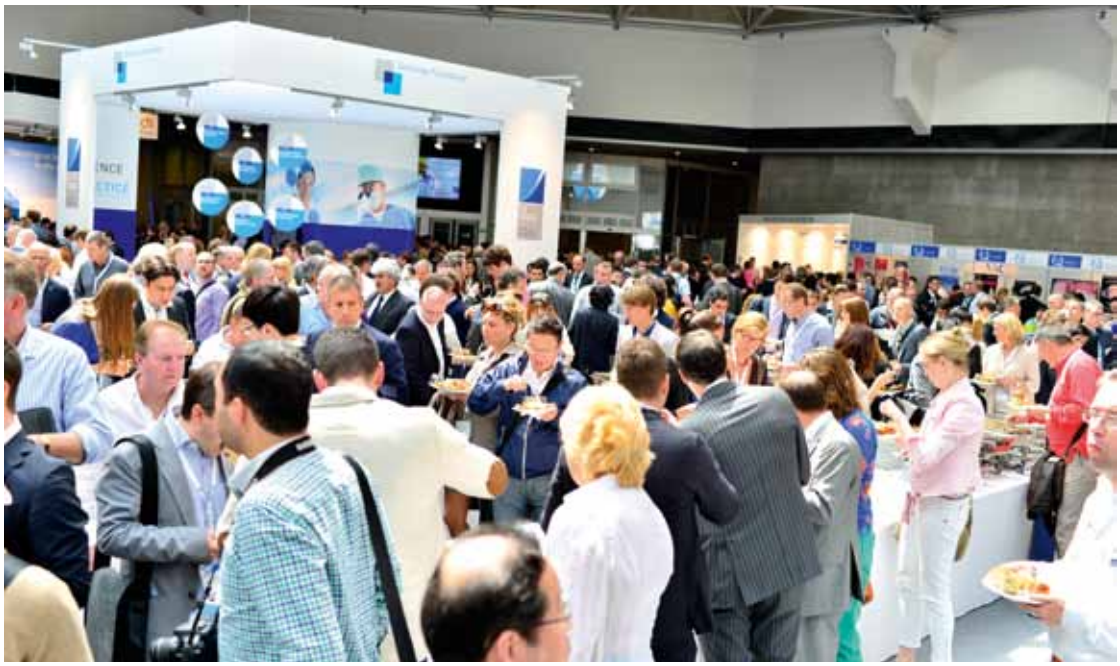
Dr. Ronald E. Jung, Switzerland, then went through the advantages and disadvantages of immediate implantation, later implantation in combination with ridge preservation and spontaneous healing. If the implant cannot be placed within three months after extraction, the extraction socket should be filled with a biomaterial and covered with a membrane. If the dentist wishes to further improve the quality of the soft tissue, he/she can make a socket seal with soft tissue grafting from the palate (prepared with the punch) or with a collagen matrix.

Dr. Dietmar Weng, Germany, addressed the advantages of ridge preservation following tooth extraction. The necessity of later performing larger augmentations thus reduces by a factor of five. The biomaterial used should be slowly resorbed such that the volume remains stable. This allows the bone sufficient time for healing prior to placing the implant. But also in the case of immediate implantation in order to counteract unavoidable resorption, the speaker fills the gap between the implant and the buccal bone lamellae with biomaterial.

Clear guidelines for larger augmentations

Besides "early regeneration" immediately after tooth extraction, classical bone regeneration was also in focus – for example the question of how GBR techniques have changed over the years. Prof. Daniel Buser, Switzerland, emphasised the great progress resorbable membranes in combination with bone substitute material have made in daily practice. A well-proven protocol is early implant placement (after 4–8 weeks) in combination with simultaneous contour augmentation for which biomaterials and autologous bone chips are used. For Prof. Buser, scientifically proven biomaterials represent an essential factor for therapy success. Prof. Massimo Simion, Italy, described the development of horizontal and vertical augmentation techniques over the years. According to his descriptions, it is now a matter of simplifying the established techniques. Nonetheless, technically demanding augmentations should still only be undertaken by specialists.

Prof. Jan Lindhe's opening presentation already filled the lecture theatre in the morning.



The exhibition drew many visitors in the breaks. At the centre: the campaign for the tenth birthday of the Osteology Foundation.

Soft tissue management – evermore important for aesthetics and function

Not only the patients' elevated aesthetic demands make soft tissue management such an important matter. Sufficient keratinised mucosa around the implant also appears to protect against peri-implantitis. For this reason, the speakers at the Osteology Symposium in Monaco introduced various methods of soft tissue management.

A main question was in which cases biomaterials can be used in place of connective tissue grafts or free gingival grafts. Soft tissue "straight from the can" saves both operation time, as well as pain, as no tissue has to be taken from the palate. Measuring patient satisfaction, or the "patient reported outcome", this advantage is shown in greater patient satisfaction, as Dr. Todd Scheyer, USA, demonstrated in a study.

Prof. Anton Sculean, Switzerland, and Prof. Giovanni Zucchelli, Italy, focused on recession coverage in their presentations. If only a coronally advanced flap is formed, complete root coverage occurs less frequently than if a connective tissue graft or Emdogain® is used additionally. The modified tunnel is an alternative to the coronally advanced flap. Here a connective tissue graft from the palate or a comparable biomaterial is pulled in a tunnel under the gingiva where it is sutured. The advantages of this technically demanding technique: hardly any scar formation, improved perfusion, perfect shade matching. The technique is especially well suited for multiple recessions of Miller classes I and II.

Oral regeneration in medically compromised patients

A session chaired by Prof. Friedrich W. Neukam, Germany, dealt with oral regeneration in medically compromised patients. For instance, diabetes mellitus is associated with reduced bone density, delayed bone and wound healing, as well as an elevated risk of complications. Kept well under control, the disease does not represent a contraindication for regenerative measures or implant placement. However, as healing takes a long time, the waiting time should be at least two months longer than normal after GBR measures before an implant is set, said Prof. Nikos Donos, England.

Prof. Dr. Wilfried Wagner, Germany, discussed a serious condition: necrosis of the jaw. It occurs predominantly after dental procedures in patients treated intravenously with bisphosphates as part of tumour therapy. Patients with prostate cancer are affected more often than patients with multiple myeloma or breast cancer. "The risk is not of losing an implant, but rather parts of the jaw", the speaker clearly stated the risk. Given a malignant primary disease, intravenous, highly potent bisphosphonates applied over a long period and additional chemotherapy or cortisone therapy mean that augmentations and implant placement should definitely be avoided. Even if the risk is significantly lower, the administration of oral bisphosphonates can still lead to necrosis of the jaw.

Verena Vermeulen, Dr. Birgit Wenz

Practical training in abundance

Practical training has always been part of the concept of the Osteology Symposium Series. In Monaco, cutting, preparing, filling and suturing were particularly emphasised. Almost 600 pig jaws were available for this purpose. The workshop instructors took plenty of time for the participants to explain and to address questions.

The Osteology Foundation alone organised seven practical workshops and two theoretical workshops on the Pre-congress day. Then there were three practical workshops from Geistlich Pharma, two workshops apiece from Dentsply Implants, Nobel Biocare and Straumann and one from Camlog and Biohorizons respectively. On account of the big demand, some of the workshops were staged twice.

Broad spectrum of topics and exercises

The contents covered recession coverage, widening of the keratinised tissue, cutting and suture techniques, peri-implantitis, ridge preservation following dental extraction, vertical and horizontal bone augmentation and sinus floor elevation.

The focus was always on interaction. Some speakers had recorded their own demonstrations on video in advance so they could fully devote themselves to the participants' questions during the teaching time. Others posted videos of their demonstration on the Internet so the participants could look again in peace and recap on the individual steps. In a nutshell: Personal exchange was the key to learning success.

Those who were more interested in information of products and treatment approaches rather than in practical training had the opportunity on the afternoon of the Pre-congress day in the Implant Forum to also bring themselves up-to-date through the excellent speakers from the various Gold Partners.

The training on the pig jaws taught the participants valuable expertise.

News from regeneration research in Monaco

In Monaco there were plenty of highlights for all of those who wanted to catch up on regeneration research: workshops for researchers, a big scientific poster exhibition and a forum with presentations on research projects.

Two workshops especially for researchers

On the Pre-congress day, four experts offered workshops on research topics. These originated from the intensive course on research methods of the Osteology Research Academy and from the series of books for regeneration researchers – the Osteology Research Guidelines.

Prof. Dieter Bosshardt and Prof. Reinhard Gruber, both Switzerland, revealed how the use of biomaterials is investigated today by means of histology, cell and molecular biology in clinical and preclinical research. Dr. Michael Bornstein, Switzerland, and Dr. Isabella Rocchietta, England, discussed in their workshops the criteria according to which suitable models for translational research are to be selected.

The workshops were not only directed towards researchers. Practitioners were also able to gain an insight into today's research methodology. The speakers outlined the benefits of fundamental and clinical research in practice and explained how data is to be read and interpreted in publications.

There were many important tips on how you best organise and advance your own research. The speakers especially emphasised two suggestions: You should attend a high quality advanced training course in research methods, such as the Osteology Research Academy, and take the opportunity to network and make contact with researchers worldwide – because research only works in a team.

Osteology Poster Exhibition – news from research and practice

Researchers and clinicians in the field of regenerative dentistry were invited to submit abstracts for their current research projects and to have these evaluated by the Osteology Poster Committee. More than 200 abstracts were submitted for the Osteology Poster Exhibition. 199 posters from 43 countries were selected and were presented in Monaco in the four categories Case Studies, Clinical Studies, Fundamental Research and Translational Research.

There were lively discussions at the posters on all three days of the symposium. Established researchers met young clinicians and discussed techniques of regenerative dentistry that could soon find their way into practice. Exchange of knowledge par excellence.

In collaboration with Quintessence Publishing, the participants in the Osteology Poster Exhibition were offered that their posters could be published after the symposium online in the Osteology Monaco Supplement of the *International Poster Journal of Dentistry and Oral Medicine*. More than 50 participants followed this call. So those who are interested can still see the poster after the exhibition and also contact the authors. You can find the posters at **ipj.quintessenz.de.**

Well visited: Almost 200 posters were to be seen at the Poster Exhibition.

Prof. William V. Giannobile presented the two first prizes to Dr. Elena Martinez-Sanz and Dr. Mario Roccuzzo.

Short presentations in the Osteology Research Forum

On the second day of the symposium, a full-day session was devoted to research into regenerative dentistry. The Osteology Poster Committee invited the authors of the six best poster abstracts from Clinical Research and Fundamental Research respectively to introduce their work in short presentations in the Osteology Research Forum.

Prof. William V. Giannobile, USA, Prof. Gruber and Dr. Daniel Thoma, Switzerland, evaluated the six presentations in the Fundamental Research category. Topics from cell therapy, cleft palate surgery, bone regeneration, osseointegration and biomaterial research were presented. Each of the six speakers had the chance at the end of their presentation to give the three facilitators a deeper insight into their work in a brief round of Q&A.

In the Clinical Research category, Prof. Frank Schwarz, Germany, Dr. Rocchietta and Dr. Bornstein took the chair. The six speakers presented studies on the following topics: regenerative measures with intraosseous defects, soft tissue augmentation with ridge defects, the use of collagen matrices in vestibuloplasty, extraction socket management and evaluation of implant stability following sinus floor elevation.

All twelve presentations were based on sound scientific data and showed how broad-based research into regenerative dentistry is today. Prof. Giannobile stressed the importance of symposia such as Osteology Monaco, at which fundamental researchers and clinicians can discuss in order to work jointly on new therapy options.

Osteology Research Prize

The four best presentations from the Osteology Research Forum were honoured with the Osteology Research Prize.

The first prize in the Fundamental Research category went to Dr. Elena Martinez-Sanz from Spain. Her work, sponsored by the Osteology Foundation on minimal-invasive cleft palate surgery with a hydrogel, was already convincing in the pre-evaluation phase. She underpinned her pioneering work with enormous expert knowledge in the round of Q&A and offered the audience the latest insights and information in this field of bone regeneration. The second prize in the Fundamental Research category went to Dr. Adelina Plachokova from the Netherlands.

In the Clinical Research category the first prize was awarded to Dr. Mario Roccuzzo from Italy. His study on soft tissue stability around implants after dental extraction and ridge preservation by means of Geistlich Bio-Oss® Collagen convinced both with its study design as well as with ten-year data. With a masterly presentation of the study, which he initiated and financed himself, he impressed the facilitators and thus earned the first prize in this category. The second prize in the Clinical Research category went to Dr. Ulrike Kuchler from Switzerland.

Dr. Kristian Tersar

Regenerative Dentistry without Osteology is like...

The Osteology Foundation celebrated its tenth birthday at the congress with a big campaign. The campaign was intended to illustrate that the Osteology Foundation has developed into an indispensable institution in regenerative dentistry over the last ten years. Without Osteology the regenerative dentistry would be like... a smile without teeth.

Inspiration for the participants

Prof. Christoph Hämmerle, Switzerland, introduced the campaign in his opening presentation, and as the attendees left the two congress halls for the first coffee break, the entire Grimaldi Forum was decorated with logos, roll-ups and banners. Many followed the invitation to become inspired by the campaign and to develop their own slogans for "Regenerative dentistry without Osteology is like...". Over 300 slogans were submitted at the Osteology stand and entered the competition to win two iPad Minis. You will find many of the slogans online at **www.osteology-monaco.org.**

Fireworks rounded off the night of celebration

To celebrate the tenth anniversary there was not only the campaign, but also a magical opening ceremony with acrobats from the Cirque du Soleil, a birthday drink on the sunny terrace of the Grimaldi Forum and the mesmerising Osteology Celebration Night in the Salle des Etoiles, where the roof opened at 10 pm to reveal a sparkling firework display – a celebration worthy of the ten-year success story of the Foundation.

“Our aim is improved networking of science and practice”

Ten years of Osteology – what does this means for regenerative dentistry? Prof. Christoph Hämmerle is President of the Foundation and has been there from the beginning. In an interview he provides insights into the most important projects concerning research promotion and advanced training.

Professor Hämmerle, when you look back over the anniversary congress: What were your personal highlights?
Christoph Hämmerle: For me it was important to take time and look back over the last ten years. We have achieved a great deal with the Foundation in this period. Regarding the congress itself, the complete package was simply perfect: the programme, the atmosphere, the celebrations, even the weather. Osteology Monaco was one of the best congresses I have ever attended.

Have you received any feedback from other attendees?
Christoph Hämmerle: Very many in fact and all positive. Most related to the multifaceted programme and the excellent selection of speakers. The presentations perfectly combined scientific evidence with clinical relevance and that is, of course, just what we wish to achieve.

After all, the motto of the Osteology Foundation is “Linking Science with Practice in Regeneration”. Why is “linking” important?
Christoph Hämmerle: In principle, research is aimed towards influencing practice. Nevertheless, the one does not follow the other seamlessly. As the Osteology Foundation, we have the aim of closing the gap between research and clinical practice in our field. We wish to bring both sides closer together. Above all, we want to see knowledge from research translated into clinical concepts.

From the practitioner’s perspective for once: What are the most important contributions of the Foundation?
Christoph Hämmerle: Osteology organises symposia on oral tissue regeneration of a national and international level. The Foundation is well known for this among practitioners. The congress series has become established as a brand on the market over recent years – in evermore countries on almost all continents. Osteology Monaco 2013 was the highlight of a ten-year success story.

Foundation President Prof. Christoph Hämmerle looks back proudly at 10 years of Osteology at the press conference.

What characterises the congress series overall?
Christoph Hämmerle: The multifaceted field of oral tissue regeneration is presented to its full extent at the symposia. For example, this covers horizontal and vertical ridge augmentation, therapies for periodontally compromised teeth, peri-implantitis treatment or the improvement of soft tissue aesthetics.

There are many presentations always clearly focussed on scientific evidence, on the one hand. We also organise extensive practical training courses, on the other. This balance is important. The participants also very much appreciate the opportunity to exchange views with experts – in the discussions, the interactive case discussions or in the breaks.

Does research also play a role in the symposia?
Christoph Hämmerle: Yes, in various ways. That was also apparent in Monaco. The presentations always addressed the current research situation. There was also the Poster Exhibition with almost 200 scientific projects, a research forum in which current studies were introduced and two special workshops for researchers. That all made the congress interesting for scientists. An International Osteology Symposium always provides a very good overview of what happens to be going on in tissue regeneration research.

Besides organising advanced training, the promotion of research is an important aim of the Osteology Foundation. What does the Foundation mean for researchers?

Christoph Hämmerle: Anyone planning a study on tissue regeneration can apply for a grant from the Osteology Foundation. We have designed the application process such that the workload for the applicant is as low as possible. Firstly you only have to submit a brief description of your project and a detailed application only after the invitation to the main round. This can save the applicants a lot of time.

Osteology has sponsored 43 studies worldwide so far. What comes next?

Christoph Hämmerle: Our concern is not only to support certain projects financially. We also want to contribute something to improving the quality of research in oral regeneration.

That is why we brought the Osteology Research Academy into being. This is a one-week intensive course in research methodology which takes place each year in September in Lucerne. The idea for this course came about as there is otherwise hardly any other structured introduction to research methodology. Young researchers often have to learn by trial and error how to plan and implement a study, what is to watch out for in procuring research funds and how to write a publication. The course closes a gap in the academic curriculum.

Also since 2011 there is Volume 1 of the Osteology Research Guidelines for all who conduct clinical studies in the field of oral tissue regeneration. The book contains helpful examples of study protocols for many research questions and therefore contributes to avoiding errors in planning and evaluating studies. I wish I had had such a book at the beginning of my scientific career.

Enjoy the Osteology-Monaco feeling once again? On the congress homepage www.osteology-monaco.org everyone who wishes to take a look back over the congress will find what they are looking for. Among other things, there is:

- A short **congress film with impressions** of the presentations, workshops and social events
- The **"10 years of Osteology" image film**, in which researchers and practitioners talk about how they experience the Osteology Foundation
- Plenty of **photos** from the congress
- A list of the **slogans** submitted for the birthday campaign

And whoever wants to take a look at the **scientific posters** from the congress will find these online in the Osteology Monaco Supplement of the *International Poster Journal of Dentistry and Oral Medicine*: **ipj.quintessenz.de.**

When you look back over ten years of Osteology as the Foundation President, what are you proud of?

Christoph Hämmerle: I am pleased to see researchers sponsored by Osteology winning a prize. This shows that we support important research. But the development of the Foundation as a whole makes me proud. Osteology has developed into a worldwide acknowledged institution in regenerative dentistry. Quality and professionalism were important for us from the outset and that is how our accomplishment is also perceived from the outside. Many dedicated experts who are behind what they do and wish to positively influence the field have contributed decisively.

Interview: Verena Vermeulen

Three new members of the Osteology Foundation Board

According to the Foundation Rules, membership of the Foundation Board of the Osteology Foundation is only for a limited time. Three founder members therefore "went into retirement" in June 2013 and have been replaced by new members of the Foundation Board.

Prof. Niklaus P. Lang, Prof. Wilfried Wagner and Prof. Georg Watzek were members of the Osteology Foundation Board since its establishment. With their great expertise and often at times controversial views, they shaped and enormously enriched the Foundation both in terms of promoting research, as well as in organising advanced training. With great thanks and the wish for good collaboration beyond the Foundation Board, they were bid farewell at the meeting of the Foundation Board in June. At the same time, Foundation President Prof. Dr. Christoph Hämmerle was able to greet three new members of the Foundation Board.

Prof. Christer Dahlin – pioneer of GBR

"Generation of new bone around titanium implants using a membrane technique" is the first publication on Guided Bone Regeneration. Its first author, Prof. Christer Dahlin from the University of Gothenburg, is therefore justly described as a pioneer of oral regeneration. He is particularly dedicated to the development of innovative biomaterials for bone regeneration, but also has a great deal of experience in training. Among other achievements, he set up a curriculum for oral implantology at University College in Dubai. He is also a member of the editorial boards of various journals.

As a member of the Osteology Expert Council, Prof. Dahlin has contributed a chapter to the "Osteology Guidelines for Oral & Maxillofacial Regeneration".

Prof. Reinhard Gruber – scientific expertise

A proper full-blooded fundamental scientist had so far been missing in the international and multidisciplinary Osteology Team. Prof. Reinhard Gruber of the Bern School of Dental Medicine (ZMK) is therefore the perfect addition. For over ten years, the Austrian has researched in the field of bone biology, in particular on the fundamental biological processes of bone regeneration. On the one hand his research deals with influencing factors, such as age and diabetes, on the other hand he invastigates how to improve bone regeneration in compromised situations.

As a former member of the Osteology Expert Council, Prof. Gruber has supported the Foundation for many years now. He is one of the masterminds behind the Osteology Research Academy. Since the course was founded in 2011, he has brought his expertise to bear in planning the contents and supervising the participants. His classical call at the end of a presentation – "firstly say what you *liked* about the presentation" – makes him a popular instructor, his enormous knowledge of analytical methods a sought-after advisor.

Dr. Franck Renouard – focus on risk minimisation

The private practitioners were also not really represented on the Osteology Board until now. So the nomination of Dr. Franck Renouard, Paris, represents very good compensation to the otherwise more academically oriented Board. Periodontology and oral surgery is intensively involved with risk factors in implantology and means of risk minimisation. His book on the subject has been translated into ten languages.

The courses in regeneration and implantology that he offers at his vineyard in the South of France are well known and popular. His interest in innovative training methods will very much benefit the Foundation in planning advanced training.

Dr. Kay Horsch

LEADING REGENERATION

Geistlich Biomaterials has its own lounge on the Dental Campus

The first public appearance was a success. The Dental Campus Internet platform was presented as part of the International Osteology Symposium from 2 to 4 May 2013 in Monaco. Geistlich Biomaterials had a lounge on the platform.

The Dental Campus was introduced at the International Osteology Symposium in Monaco.

The Dental Campus is an Internet platform with the declared aim of training and networking experts and prospective experts in dentistry. The platform was set up by a group led by Prof. Christoph Hämmerle and Dr. Ronald E. Jung, both Zurich. As the Dental Campus is very scientifically orientated, only a few selected industry partners receive the privilege of presenting themselves on the platform and shaping their own area.

Learn from experts, discuss with colleagues

Generally the platform is divided into four main areas: Training, Clinical Cases, Discussion Forums and Partner Lounges. In the Training area, internationally renowned experts present all aspects of dentistry in eLearning lessons. The special didactic concept: All treatment steps are covered – from taking the medical history through to the final restoration. In the Clinical Cases area there are many case studies, including medical history, treatment options, decision-making criteria, therapy results etc. Dentists can discuss these cases, but at the same time also publish their own cases and discuss these in the user community. The Discussion Forums area is designed to be just as interactive. Here users can ask questions, give answers or simply observe other colleagues' discussions.

Geistlich Lounge with cases, videos etc.

The Partner Lounges provide the industry partners a space to contribute to the dental world and to present their own contents. Geistlich Biomaterials is glad to take this opportunity. Information is provided on the various therapeutic areas – sinus floor elevation, large and small augmentations, periodontal regeneration, extraction socket management, soft tissue regeneration or peri-implantitis. There are eLearnings, operation videos, illustration videos for patients, valuable background information and instructive case studies. The various products are explained in detail too. In a nutshell: The Geistlich Lounge offers multifaceted training in all areas of regenerative dentistry.

Entry into the digital world

By providing a soundly structured platform supported by international experts, an important step is taken into the digital world. Electronic networking makes distances shorter and allows for greater exchange. We at Geistlich are proud to contribute to this development.

You will find the Dental Campus online at:
www.dental-campus.com

Dr. Nikolas Epp

The centrepiece of the Geistlich Lounge is information on the therapeutic areas. Here there are case studies, operation videos etc.

Panel of experts advocates Geistlich Mucograft® Seal

A palatal graft is standardly used to create a sufficient soft tissue cover for early implantation. In the past year, Geistlich Mucograft® Seal in combination with Geistlich Bio-Oss® Collagen was used as an alternative for the Socket Seal technique following dental extraction with the aim of early implant insertion. Twelve specialists from the field of oral regeneration, who jointly form the Geistlich Mucograft® Seal Advisory Board, gathered on 23 February 2013 in Geneva for the Geistlich Round Table. They shared their clinical experiences and created the basis for a detailed treatment protocol.

Dental extraction is a routine task for dentists and oral surgeons. Nonetheless, measures for preserving the ridge contour after dental extraction have only recently become an issue. As dental extraction leads to alveolar ridge atrophy and patients place more and more importance on aesthetic results, dentists are increasingly relying on techniques of soft and hard tissue regeneration to counter atrophy after extraction.

Clinical demand and treatment concept

In many cases, the wish for restoration as early as possible can be met with early implant insertion approx. eight to twelve weeks after extraction. Previously, the soft tissue required for primary coverage could only be obtained if the deficit over the socket was covered by a mobilised flap or a palatal graft. In the first case, this means a coronal shift of the red-white margin, in the second case considerable stress for the patient.

What speaks in favour of the combined use of Geistlich Mucograft® Seal and Geistlich Bio-Oss® Collagen in this indication is that the patients want the least painful treatment possible. The Advisory Board Meeting therefore investigated if the combined use of Geistlich Mucograft® Seal and Geistlich Bio-Oss® Collagen, already proven successful in late implant placement (Jung 2012), could be adopted for early implant placement. The experts concentrated on this topic under the leadership of Prof. Mariano Sanz, Spain.

Protocol with ridge preservation and early implant placement investigated

The protocol under evaluation by the Advisory Board consisted of coverage of the socket with Geistlich Mucograft® Seal, supported by Geistlich Bio-Oss® Collagen, and early implant insertion (8–12 weeks after extraction). Geistlich Bio-Oss® Collagen is the first biomaterial to be used systematically for ridge preservation. The shapeability of the material simplifies handling during the operation. In the extraction socket, Geistlich Bio-Oss® Collagen represents a framework for bone regeneration with proven osteoconductivity.

The participants at the meeting: Tobias Künzler, Theresa Visarius, Beat Wallkamm, Javier Sola, Mario Mucha, Markus Bechtold, Agnieszka Laskus, Stefan Fickl, Mariano Sanz, Carla Saraiva, Nikos Donos, Luca Ramaglia, Raffaele Cavalcanti, Federica Bragantini, Ignacio Sanz, Nikolas Epp, Hadi Antoun, Daniel Thoma and Mirko Zingg.

The new Geistlich Mucograft® Seal, a round matrix with a diameter of 8 mm to seal the filled extraction socket, is applied on the bone substitute material. Soft tissue cells can easily migrate into the matrix and build up new tissue. Geistlich Mucograft® Seal is thus intended to protect the fresh extraction site and to promote soft tissue regeneration through good wound healing.

Recommendations of the Advisory Board

Filling and sealing of sockets following dental extraction was expressly recommended by the Advisory Board. The participants came to the conclusion that Geistlich Mucograft® Seal with support from Geistlich Bio-Oss® Collagen can build up a sufficient soft tissue coverage up to the time of implantation after eight to twelve weeks (Round Table). The technique led to a predictable soft tissue quality that allowed the formation of a flap and reliable primary implant coverage without an elevated risk of complications.

In the opinion of the participants, Geistlich Mucograft® Seal can substitute for a free gingival punch graft, but should generally heal two weeks longer than a palatal graft. Harvesting of autologous soft tissue from the palate and the associated morbidity at the donor site can therefore be avoided. Provided that the other parameters for early implant insertion are fulfilled, Geistlich Bio-Oss® Collagen and Geistlich Mucograft® Seal can be used for alveolar ridge preservation with early implant insertion after eight to twelve weeks.

An evidence-based benchmark

Evidence-based assessment of new treatment concepts plays a key role in the Geistlich philosophy. Through thorough scientific and clinical research, new products should produce a high level of predictability of results prior to their market launch, such that the risk of complications for the doctor and patient is low. This is also reflected in the activities in preparation for the market launch of Geistlich Mucograft® Seal. Extensive tests, determination of correct indication and identification of parameters leading to treatment success – these are all essential components.

Based on the previous clinical investigation of the treatment concept, the participants assess Geistlich Mucograft® Seal as predictable and recommendable.

Carla Saraiva

Literature:

Jung RE, et al.: Radiographic evaluation of different techniques for ridge preservation after tooth extraction: a randomized controlled clinical trial. J Clin Periodontol 2013; 40(1): 90–98. Epub 2012 Nov 19.

Experts put their trust in Geistlich Combi-Kit Collagen

What does a 100 meter sprint have to do with implantology? Even small differences can mean success! In a sprint often milliseconds decide on victory and defeat, in implantology every millimetre of bone counts. A stable, durable bony foundation is imperative for optimal long-term results. That is why regeneration experts explain why Geistlich Combi-Kit Collagen has earned its reputation as "The Master's Choice" in their opinion.

What was only considered to be an option in earlier times is today considered as an acknowledged technique for leading oral surgeons and implantologists – ridge preservation is an important therapeutic element. If a tooth is extracted, the alveolar ridge subsequently atrophies (Araujo & Lindhe 2005, Schropp 2003). Ridge preservation measures in the course of dental extraction prevent or minimise bone loss and are clearly advantageous, especially in the aesthetic zone or if an implant is planned.

Evidence and long-term data

Filling and sealing of the extraction socket with biomaterials with proven efficacy leads to excellent bone regeneration and alveolar ridge preservation (Cardaropoli 2005, Vignoletti 2012, Perelman-Karmon 2012). But what material should you choose? A slowly resorbing bone substitute material together with a collagen membrane is the preferred combination in many cases. "I trust Geistlich biomaterials", says Prof. Dr. Maurício Araújo from Brazil, "because they are backed up by scientific evidence and many years of successful clinical experience."

The practical Combi-Kit

The Geistlich Combi-Kit Collagen contains both Geistlich Bio-Oss® Collagen as well as Geistlich Bio-Gide® and thus represents an all-in-one solution. "I routinely perform ridge preservation after dental extraction", says Dr. Daniele Cardaropoli from Italy. "I firstly fill the socket with Geistlich Bio-Oss® Collagen. Then Geistlich Bio-Gide® is cautiously inserted into the sulcus without reflecting a flap and is fixed with a mattress suture." Prof. Mariano Sanz from Spain has discovered the improved handling. "Geistlich Bio-Oss® Collagen is easier to shape and faster to apply." Convenience that is now generally considered to be advantageous. In the aesthetic region Dr. Ronald E. Jung from Switzerland uses Geistlich Combi-Kit Collagen to correct buccal defects: "Geistlich Bio-Oss® Collagen is trimmed into an L shape and is adapted to the defect. This is the best way to preserve the contour." "We routinely use Geistlich Bio-Oss® Collagen in the pontic region", says Prof. Daniel Buser, also from Switzerland. Autologous bone chips and a collagen membrane are layered above the Geistlich Bio-Oss® Collagen to optimise the soft tissue aesthetics.

Convincing data, long-term successes

Leading experts in regenerative dentistry put their trust in Geistlich biomaterials to achieve the clinical results they expect. The convincing scientific evidence and the long-term proven clinical success together with the user-friendly handling make Geistlich Bio-Oss® Collagen and Geistlich Bio-Gide® a natural choice. Would you like to take a closer look at Geistlich Combi-Kit Collagen? **www.combi-kit-collagen.com** is your first step to do this.

Natalia Bruenisholz

Literature:

[1] Araujo MG, Lindhe J: Dimensional ridge alterations following tooth extraction. An experimental study in the dog. J Clin Periodontol 2005; 32: 212–218.

[2] Schropp L, et al.: Bone healing and soft tissue contour changes following single-tooth extraction: A clinical and radiographic 12-month prospective study. Int J Periodontics Restorative Dent 2003; 23: 313–323.

[3] Cardaropoli D, et al.: Socket preservation using bovine bone mineral and collagen membrane: a randomized controlled clinical trial with histologic analysis. Int J Periodontics Restorative Dent 2012; 32(4): 421–430.

[4] Vignoletti F, et al.: Surgical protocols for ridge preservation after tooth extraction. A systematic review. Clin Oral Implants Res 2012; 23 Suppl 5: 22–38.

[5] Perelman-Karmon M, et al.: Socket site preservation using bovine bone mineral with and without a bioresorbable collagen membrane. Int J Periodontics Restorative Dent 2012; 32(4): 459–465.

Case study from Dr. Ronald E. Jung, Switzerland

Peri-implant defects can be treated very effectively with Geistlich Combi-Kit Collagen

For buccal, peri-implant defects in the aesthetic region, Geistlich Combi-Kit Collagen offers the possibility of building up volume and of imitating the natural root prominence. Geistlich Bio-Oss® Collagen is cut into an L shape and is adapted to the defect. This supports the peri-implant soft tissue and produces an optimally constructed contour. The 10 % collagen component probably supports stabilisation of the of the blood coagulum and keeps the Geistlich Bio-Oss® particles together.

1 Dehiscence due to bone resorption at the implant in region 11 leads to a defect with a missing bone wall.

2 After introducing Geistlich Bio-Oss® particles into the defect, Geistlich Bio-Oss® Collagen is cut into an L shape and is used for volume contouring.

3 Geistlich Bio-Oss® particles are used to smooth the contour.

4 The defect is covered with a Geistlich Bio-Gide® membrane.

5 An optimal result for the ridge contour after ten months.

The new brochure “Treatment Concepts for Periodontal Regenerative Surgery”

How do you achieve long-term stable results in periodontal regeneration? In a new brochure which is now available, eleven experts introduce their cases and explain detailed techniques and materials for regenerative periodontal surgery.

It is every dentist’s aim to help periodontitis patients achieve good oral health, function and aesthetics. But which path leads to the goal – tooth preservation including periodontal regeneration or dental extraction? This choice was long regarded as one of the most complex and controversial decisions a dentist had to make in daily practice (Donos 2012). There is increasing evidence that periodontal regeneration can lead to long-term preservation of teeth that originally had deep pockets due to intraosseous defects (Cortellini 2011, Cortellini 2004, Sculean 2008, Kinaia 2011).

Rely on tried and trusted protocols and materials

In order that periodontal regeneration succeeds, tried and trusted and carefully selected biomaterials have to be used. Guided tissue regeneration with Geistlich Bio-Oss® and Geistlich Bio-Gide® Perio leads to better results in the treatment of intraosseous defects than with open curettage alone. This is shown, for example, in five-year results. There is a consistently greater increase in the clinical attachment levels and a more marked reduction in pocket depth (Sculean 2007).

Techniques and instruments

In the brochure “Treatment Concepts for Periodontal Regenerative Surgery” now available, eleven leading periodontologists present step-by-step clinical cases in which stable results have been achieved. The aim of the brochure is to demonstrate dentists techniques and instruments for periodontal tissue regeneration. On this basis they can offer optimised treatment and as a result attain greater long-term patient satisfaction.

For further information and ordering, please contact your local Geistlich partner:
www.geistlich-pharma.com/mycontact

Claudia Bühlmann


Dr. Frank Bröseler


Dr. Diego Capri


Prof. Michael Christgau


Prof. Anton Sculean


Dr. Syed Mahnaz


Dr. Giulio Rasperini


Dr. Sandro Cortellini


Dr. Daniel Etienne


Prof. Marc Hürzeler


Dr. Beat Wallkamm


Prof. Giovanni Zucchelli

Literature:
[1] Donos N, et al.: Periodontol 2000 2012; 9(1): 89–110.
[2] Cortellini P, et al.: J Clin Periodontol 2011; 38(10): 915–924.
[3] Cortellini P, Tonetti MS: J Periodontol 2004; 75(5): 672–678.
[4] Sculean A, et al.: J Clin Periodontol 2008; 35(9): 817–824.
[5] Kinaia BM, et al.: J Periodontol 2011; 82(3): 413–428.
[6] Sculean A, et al.: J Clin Periodontol 2007; 34(1): 72–77.

LEADING RESEARCH

New scientific studies in summary

Filling large mandibular bone defects after osteotomy

In orthognathic surgery, defects after maxillo-mandibular osteotomies are filled with suitable materials. This ensures bone regeneration of the defect and long-term stability of the surgically improved anatomical situation. In a prospective study, an Italian working group investigated whether Geistlich Bio-Oss® Collagen (GBOC) is a suitable material for filling such large defects.

20 patients were included in the study with dentoskeletal class II deformations which required bimaxillary procedures with a mandibular advancement of at least 8 mm. The mandibular bone defects following osteotomy were completely filled with Geistlich Bio-Oss® Collagen (500 mg blocks) to reconstruct the mandibular contour as completely as possible. Fixation plates ensure the stability of the augmentation material. The practitioners dispensed with additional coverage with a collagen membrane.

Healing progressed without problems and radiologically there were no signs whatsoever of remaining bone defects. The histologies eight months after augmentation showed full integration of the GBOC in new bone.

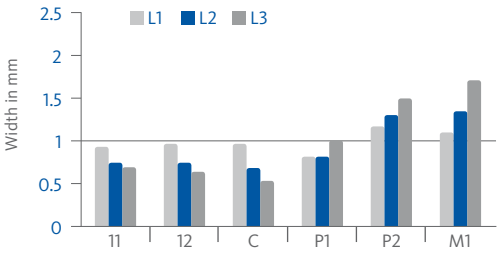
The authors concluded that GBOC is a suitable material for these kinds of orthognathic procedures, as it shows a certain stability and can be easily fitted in the defect. In addition, the material consistency does not pose a risk of injuring the alveolar nerve during the application. However, the authors see limitations in the absence of the material's stability, as well as in the impossibility of fixing GBOC with screws or plates.

Trevisiol L, et al.: Grafting of large mandibular advancement with a collagen-coated bovine bone (Bio-Oss Collagen) in orthognathic surgery. J Craniofacial Surg 2012; 23(5): 1343–48.

Thin buccal walls in the majority of patients

The buccal bone wall of extraction sockets should be at least 2 mm thick to prevent significant bone resorption after extraction with immediate implantation. This bone thickness only exists in a few patients, as a new study on a representative Asian patient cohort shows. With the aid of retrospective image analysis of cone-beam computed tomography, the buccal wall thickness of 3,618 teeth was determined at three defined points in 200 patients. In addition, the bone height was measured as the distance between the cementoenamel junction and the bone ridge. Teeth with bone defects > 4 mm were excluded from the analysis. Only 0.6 to 1.8 % of anterior teeth and 0.7 to 30.8 % of posterior teeth showed a bone wall thickness of 2 mm or more. The average bone thickness of the anterior teeth was 0.9 mm and increased towards the posterior region. In the anterior region the thinnest bone site was found to be 5 mm beneath the bone ridge. Dehiscences occurred in 9.9 to 51.6 % of teeth in the anterior region and in 3.1 to 53.6 % of teeth in the posterior region. The bone wall thickness and height tended to drop with increasing age.

This study shows that most patients have a very low bone wall thickness. Therefore, additional augmentative measures must be adopted in these patients to reduce bone resorption following extraction if implants are to be inserted in the aesthetically relevant region.



Mean width of the facial bone wall in the maxilla, measured at each of the three defined points (L1, L2, L3) from the incisor to the first molar (C: canines, P: premolars, M: molars)

Zekry A, et al.: Facial alveolar bone wall width – a cone-beam computed tomography study in Asians. Clin Oral Impl Res 2013 Jan 7. doi: 10.1111/clr.12096. [Epub ahead of print]

After six months, new blood vessels and bone cells in Geistlich Bio-Oss® particles

Can the pores in Geistlich Bio-Oss® (GBO) be colonised by new blood vessels and bone cells? A Spanish research group investigated this in a study with 50 patients. Tissue samples were taken and histologically investigated six months after sinus floor augmentation with a mixture of autologous bone and GBO. On average, the tissue in the biopsies consisted of 35.44 ± 16 % vital new bone, 32.72 ± 25 % GBO particles and 31.66 ± 15 % non-mineralised tissue. In 46.3 % of the biopsies the authors found new blood vessels within the pore system of the GBO particles. This neovascularisation within the particles increased with the osteoclast density and decreased with the age of the patients.

With the help of immunohistological determination of marker CD44 and osteopontin, the authors investigated whether osteocytes and osteoblasts could also recolonise the GBO particles. In 74 % of the biopsies they detected osteocytes (CD44-positive cells) in pores within the GBO particles. They found more osteocytes the more blood vessels were in-grown into the particles ($r=0.624$, $p<0.001$). On the basis of the marker osteopontin, which is predominantly formed by osteoblasts, the scientists found indications of intensive bone reformation at the junction between GBO and the new bone, as well as in osteocyte lacunae and in fine canaliculi within the GBO particles.

The evidence for new blood vessels and bone cells within the pore system of the GBO particles six months after augmentation illustrates the material's extraordinarily good bone integration. The authors attribute this to the special architectural structure and porosity of GBO.

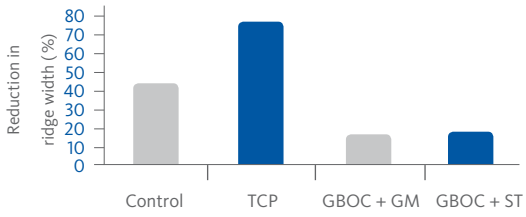
Galindo-Moreno P, et al.: Morphological evidences of Bio-Oss® colonization by CD44-positive cells. Clin Oral Implant Res 2013 Jan 28. doi: 10.1111/clr.12112. [Epub ahead of print]

Radiographic study confirms effective ridge preservation with socket coverage

Jung et al. from the University of Zurich investigated various ridge preservation techniques in a randomised, controlled clinical study with 40 patients: After dental extraction the extraction socket was filled with a polylactide-coated β-TCP or with Geistlich Bio-Oss® Collagen (GBOC). GBOC in turn was either covered with the Geistlich Mucograft® collagen matrix or with a punched palatal soft tissue graft. Spontaneously healing extraction sockets served as controls. The ridge height and width was determined radiologically immediately after treatment and also six months later.

The greatest horizontal changes were measured 1 mm below the ridge. Here the ridge width reduced by 43.3 % in the control defects. With 77.5 % this loss was significantly higher in the β-TCP treated sockets than in the controls. On the other hand, the loss of ridge width in both GBOC groups was far lower than in the untreated controls (reduction of the ridge width: GBOC + collagen matrix 17.4 %, GBOC + soft tissue graft 18.1 %). Both GBOC groups also showed better preservation of the ridge height than the controls and the β-TCP group after six months.

The authors conclude that ridge preservation with GBOC and Geistlich Mucograft® or a soft tissue graft reduces the vertical and horizontal changes in ridge dimensions six months after dental extraction compared with spontaneous healing.



Reduction in ridge height after dental extraction with and without ridge preservation (TCP: Tricalcium phosphate, GBOC: Geistlich Bio-Oss® Collagen, GM: Geistlich Mucograft®, ST: soft tissue)

Jung RE, et al.: Radiographic evaluation of different techniques for ridge preservation after tooth extraction: a randomized controlled clinical trial. J Clin Periodontol 2013; 40(1): 90–8. doi: 10.1111/jcpe.12027. Epub 2012 Nov 19.

Recession coverage – only with advancement flap or additionally with collagen matrix?

Can the collagen matrix Geistlich Mucograft® (GM) improve the results of recession treatment with the coronal advanced flap? In a multi-centre study with six centres in four countries, 45 patients with a total of 90 localised gingival recessions of Miller Class I and II were treated. Either the recession was covered only with the help of a coronal advancement flap (control group) or GM was additionally used (test group).

After six months, the gingival thickness in the test group had increased significantly more (0.59 mm) than in the control defects (0.34 mm). The width of the keratinised tissue was improved if the biomaterial was used (with GM: from 1.97 to 2.90 mm, only with advancement flap: from 2.00 to 2.57 mm).

However, the two groups neither differ significantly in the recession coverage achieved nor in the proportion of defects with complete root coverage. This result changes if only the coverage of larger defects with a recession depth of > 3 mm are analysed (35 patients). In these cases, the recession coverage is far better if it is not only treated with the aid of the coronal advancement flap, but also with GM – then complete root coverage is achieved in 72.03 % rather than in just 66.16 % of cases.

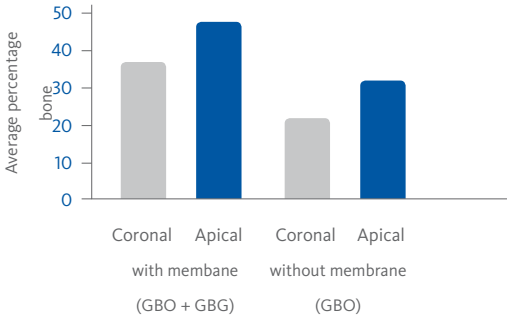
The authors concluded that the combined use of GM and a coronally advanced flap can be indicated if the gingiva thickness and width of the keratinised tissue are to be improved or if recession defects ≥ 3 mm are to be treated.

Jepsen K, et al.: Treatment of gingival recession defects with a coronally advanced flap and a xenogeneic collagen matrix: a multicenter randomized clinical trial. J Clin Periodontol 2013; 40(1): 82–9.

Ridge preservation: Membrane results in improved bone formation

Does a membrane improve the result of ridge preservation measures following dental extraction? In a study with 23 patients, the practicing dentists filled fresh extraction sockets with Geistlich Bio-Oss® (GBO) and in 12 patients also covered these with Geistlich Bio-Gide® collagen membrane in a double layer. They applied a full soft tissue wound closure for all sockets. Wound healing progressed very well in all patients.

In the biopsies taken after nine months, both treatment groups showed significantly more bone in the apical area than in the coronal area. Those sockets that had additionally received a membrane cover showed a significantly higher proportion of bone (35.2 % coronal to 47 % apical) than those only treated with GBO (22.8 % coronal to 36.3 % apical). The average quantity of newly formed bone in the biopsies was 40.8 ± 10.61 % with membrane and 29.7 ± 7.21 % without membrane.



With Geistlich Bio-Gide® more bone forms in ridge preservation (GBO: Geistlich Bio-Oss®, GBG: Geistlich Bio-Gide®)

These results illustrate that the additional application of a collagen membrane can significantly improve bone formation with regard to future implantation.

Perelman-Karmon M, et al.: Socket site preservation using bovine bone mineral with and without a bioresorbable collagen membrane. Int J Periodontics Restorative Dent 2012; 32: 459–65.

Periodontal regeneration: Resorbable membranes in comparison

Are resorbable membranes different in their effectiveness in periodontal regeneration? An Iranian working group compared three collagen membranes (Geistlich Bio-Gide®, BioMend®, Cytoplast® membranes) in a dog study in standardised periodontal dehiscence defects. Untreated defects served as controls. Histologically, all three membranes showed good compatibility and allowed formation of an organised periodontal ligament. At the four weeks time point the membranes already

appeared to be fully degraded. Histomorphologically, the membrane groups differed significantly from the controls after four and eight weeks concerning the quantity of newly formed bone and also in the apical height of the long junctional epithelium. The Geistlich Bio-Gide® and the Cytoplast® membrane showed the greatest bone thickness and height. The maximum bone thickness was achieved by Geistlich Bio-Gide® at the eight week time point. The authors concluded that this difference between the membranes in regenerative formation of periodontal defects should be considered.

Table: Bone height and thickness after eight weeks

	Bone height	Bone width
Control	0.32 ± 0.52	0.13 ± 0.16
Geistlich Bio-Gide®	1.78 ± 0.56	0.61 ± 0.08
BioMend®	1.39 ± 0.09	0.5 ± 0.21
Cytoplast®	1.74 ± 0.24	0.39 ± 0.16

Behfarnia P, et al.: Histological and histomorphometric analysis of animal experimental dehiscence defect treated with three bio absorbable GTR collagen membrane. Dent Res J (Isfahan) 2012; 9(5): 574–581.

Ridge preservation: Geistlich Bio-Oss® better suited than NanoBone®

Not all bone substitute materials are suitable for ridge preservation, as a new clinical study shows: Ten patients each had two fresh extraction sockets filled with Geistlich Bio-Oss® (GBO) or synthetic NanoBone® and were covered with a gelatin sponge in a split mouth design. The third socket in each case was filled only with the gelatin sponge as a control. After 12 to 14 weeks, the ridge dimensions with GBO sockets were significantly better than with NanoBone® or the controls. The clear ridge volume loss with NanoBone® and the controls has a negative effect on the subsequent implant positioning: As a result, only five implants (Ø 3.3–3.8 mm, length 9–11 mm) could be placed in the sockets treated with NanoBone®. In the control sockets the practitioners could only insert three implants without additional bone augmentation. In contrast, all nine GBO sockets received implants (Ø 3.8–4.3 mm, length 11–13 mm).

In other measurement parameters too, there were significant differences between the treatment groups: GBO showed the best results for bone density (GBO 699 + 13.3 HU, NanoBone 399 + 15.6 HU, control 352 + 29.3 HU). GBO particles were fully osseointegrated in almost all patients, the crestal gingiva was keratinised and completely closed. In contrast, down to a depth of 3 to 4 mm NanoBone® was not integrated in the crestal bone and had to be removed in this region. The gingiva was also not fully keratinised.

The author concluded that the choice of bone substitute material plays a key role for the success of the therapy: GBO is – probably as a result of its slow resorption – considerably superior to NanoBone® in ridge preservation.

Shakibaie B: Comparison of the effectiveness of two different bone substitute materials for socket preservation after tooth extraction. A controlled clinical study. Int J Periodont Rest Dent 2013; 33(2): 223–228.

Treating peri-implantitis – does accompanying soft tissue augmentation improve aesthetics?

Mucosal recessions often occur following surgical treatment of peri-implantitis and impair the aesthetic result. In a case study, a work group investigated whether the results of regenerative peri-implantitis therapy could be optimised with accompanying soft tissue augmentation.

Ten patients with 13 implants that had combined supraosseous and intraosseous defects were included in the analysis. After preoperative treatment for reduction of the inflammation, the defects were opened, granulation tissue was removed and the buccal and supracrestal exposed implant surfaces were smoothened and cleaned. The defects were augmented with Geistlich Bio-Oss® (GBO) and Geistlich Bio-Gide® (GBG) and then covered with a palatal subepithelial connective tissue graft.

After six months, a significant reduction of the bleeding index of 74.39 ± 28.52 % and of probing depth by 2.53 ± 1.80 mm and of clinical attachment by 2.07 ± 1.93 mm was ascertained. In addition, a slight improvement in the buccal mucosa height of 0.07 ± 0.5 mm was observed. The authors concluded that this combined treatment with soft tissue agmentation may represent a suitable therapy for controlling advanced peri-implantitis. The recessions frequently observed after surgical peri-implantitis treatment did not occur in the period of observation.

Schwarz F, et al.: Combined surgical therapy of advanced peri-implantitis lesions with concomitant soft tissue volume augmentation. A case series. Clin Oral Implant Res 2013 Jan 27. doi: 10.1111/clr.12103. [Epub ahead of print]

Dr. Birgit Wenz

LEADING EDUCATION

Successful launch of Geistlich Bio-Oss Pen® on the US market

Geistlich Pharma North America had the opportunity of participating at the Second Annual Meeting of the Academy of Osseointegration (AO) from 7 to 9 March in sunny Tampa, Florida. The centrepiece of the Geistlich presence was the market launch of the latest member of the Geistlich product family, the Geistlich Bio-Oss Pen®.

Many wanted to try out the Geistlich Bio-Oss Pen® on the Geistlich stand.

The Academy of Osseointegration is one of the scientific associations with which Geistlich Pharma North America cooperates and at whose meetings the company is pleased to participate each year. "Advancing the Vision of Implant Dentistry" – that is the mission of the Academy that consists of a unique, committed group of dentists and academics. According to its website, after the discovery of osseointegration 1982 in North America, a group of dentists from the New York region participated in a course entitled "Osseointegration in Clinical Dentistry". The group went on to form a study group to share research and information. This small group realised that founding a national organisation was necessary to promote education and development in this area. Thereupon the Academy of Osseointegration was founded. The AO, as it is generally known, includes representatives of oral surgery, periodontology, dental prosthetics and general dentistry.

The theme of the AO 2013 Annual Meeting, at which over 1,600 dentists participated, was: "Moving Forward: Evidence, Experience, Excellence". As a silver sponsor, Geistlich Pharma North America had the opportunity of staging promotion campaigns and educational activities both before and during the meeting.

The Geistlich Bio-Oss Pen® was everywhere

Once again the AO Annual Congress proved to be a successful meeting for the Geistlich Team. The congress started with two outstanding company forums supported by the international opinion leaders Prof. Daniel Buser and Dr. Ronald E. Jung, both from Switzerland. Geistlich Pharma's leading position was affirmed in these forums and the growing product family of predictable and proven biomaterials was emphasised. The room was filled to the last seat during the sessions and many wanted to try out the product afterwards on the stand. Here the Geistlich Bio-Oss Pen® was everywhere to be seen, the film on handling ran continuously.

Geistlich at the New Product Showcase

Geistlich Pharma North America also had the opportunity to participate in the first New Product Showcase of the AO. Only a selected group of exhibitors were invited to this. So the Geistlich Bio-Oss Pen® was exclusively in focus for 1.5 hours. Over 200 visitors came. Closure of the stand then had to be delayed as the visitors simply did not want to go. Instead they wanted to find out about Geistlich Bio-Oss Pen®, to meet old friends on the stand and chat with the Geistlich Team.

Lyn Soloway, Nick Studer

The AO Congress recorded a total of 1,600 participants.

Geistlich at the International Dental Show in Cologne

Spectacular 3D operation videos were the attraction on the Geistlich stand at the International Dental Show. The visitors enjoyed the cinema atmosphere in the middle of the exhibition hall and the opportunity to follow surgical procedures "close up". Another highlight was the Geistlich Bio-Oss Pen®.

Immersion in the treatment: 3D videos attracted many visitors to the Geistlich stand.

The International Dental Show (IDS) takes place every two years on the immense Cologne Trade Fair Grounds. All the big names in the dental business meet up, and, of course, all those who would like to have a big name. Because, alongside the "major players", such as implant companies like Straumann or Camlog, large suppliers like Dentsply or 3M and naturally the market leader in regeneration Geistlich Biomaterials, there are a multitude of small and micro providers.

The time had come again from 12 to 16 March 2013. Over 2,000 companies squeezed onto the 150,000 m^2 of exhibition space, offered established, innovative, creative, amazing or inexpensive products.

Focus on the result

Implantology in the broad sense still plays the major role at the IDS, whereby a development is already apparent. The emphasis is shifting away from individual products or providers towards an overall package for the dentist and ultimately for the patients, of course. The implant screw no longer takes centre stage, but rather the finished tooth and therefore the prosthesis. It is also less and less a matter of product properties, such as surface or design, but far more the result achieved. This starts with the diagnosis, which today takes place fully digitalised with a laser scanner in the mouth, continues to 3D planning on the screen and ends with computer-calculated and automatically manufactured prostheses.

Orientation towards the therapeutic fields

For Geistlich Pharma AG too this obviously all means that it can create and show the doctor and patient a complete package, a benefit. The path is leading away from the simple product advertising towards the therapeutic fields, i.e. solution approaches as part of the complete treatment concept. Correspondingly, an important topic on the Geistlich stand was the treatment of extraction sockets. As bone resorption and volume loss are the natural consequences of dental extraction, experts have long since grappled with the question of how the decay process can be counteracted. For ridge preservation, i.e. to preserve the ridge contour after dental extraction, Geistlich recommends Geistlich Combi-Kit Collagen. This is the tried and trusted combination of 100 mg Geistlich Bio-Oss® Collagen and

125,000 visitors from 149 countries visited the IDS in Cologne.

The next IDS takes place in 2015.

16 x 22 mm Geistlich Bio-Gide®. The treatment of extraction sockets can also include additional measures to improve the soft tissue. This is why materials like Geistlich Mucograft® are also of importance in the treatment concept.

Make it simpler

The focus is also on simplification of the individual treatment steps. With the Geistlich Bio-Oss Pen®, Geistlich has taken an important step and has drawn a great deal of attention. The practical applicator enables the Geistlich Bio-Oss® granulate to be precisely introduced into the surgical site. Hence it simplifies access to defects in the hard-to-reach posterior region. Although biomaterials in syringes have been around for some years now, there was a noticeable sigh of relief among the visitors to the stand now that "there is at last a really good product available in a simple-to-use form of application", according to one customer. The opportunity of trying out a non-sterile Geistlich Bio-Oss Pen® right on the stand and to apply a "Geistlich Bio-Oss® sausage" on artificial tooth models was one many interested dentists were not going to pass up.

Dedicated 3D cinema on the stand

The spectacular 3D films were another eye-catcher. Thanks to the relevant glasses the audience could dive into the patient's mouth during treatment, as it were. Three operation videos were shown, all with Dr. Pierpaolo Cortellini, Italy: the treatment of an intraosseous defect with Geistlich Bio-Oss® Collagen, a recession coverage with Geistlich Mucograft® and treatment of a peri-implant defect including GBR with Geistlich Bio-Oss® Collagen and Geistlich Bio-Gide®.

Numerous visitors surrounded the stand from the start to the finish of the fair, which served to break the ice and led to the stand being strongly frequented practically all the way through. Many very exciting follow-up conversations resulted.

Daniel Recher

Geistlich
Combi-Kit Collagen

The Master's Choice

Geistlich No. 1 Biomaterials* combined in Geistlich Combi-Kit Collagen

› Ideal for Ridge Preservation and Minor Augmentations
› Excellent Biocompatibility
› Scientifically Proven

* iData Research Inc., US Dental Bone Graft Substitutes and other Biomaterials Market, 2011
iData Research Inc., European Dental Bone Graft Substitutes and other Biomaterials Market, 2012

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Four new indication sheets for your collection

The Geistlich indication sheets show in exciting case presentations how renowned dentists worldwide use the biomaterials from Geistlich for the respective indications. You can order all the indication sheets directly from the following website: www.geistlich.com/indicationsheets

Indication “Soft tissue regeneration” from Dr. Sofia Aroca & Dr. Daniel Etienne, France

In their indication sheet, Dr. Aroca and Dr. Etienne show the treatment of a multiple recession (Miller class II) with the tunneling technique and Geistlich Mucograft®.

Indication “Soft tissue regeneration” from Dr. Stefan Reinhardt, Germany

In this indication sheet, Dr. Reinhardt shows an immediate implantation with simultaneous improvement of the marginal mucosal tissue with Geistlich Mucograft®.

Indication “Peri-implant regeneration” from Dr. Christian Ramel, Switzerland

Dr. Ramel shows a single implantation with accompanying alveolar ridge augmentation using Geistlich Bio-Gide® and Geistlich Bio-Oss® Collagen for a double tooth gap in the lower anterior region.

Indication “Peri-implant augmentation” from Prof. Daniel Buser, Switzerland

Prof. Buser shows an early implantation after four to six weeks with simultaneous GBR for contour augmentation to achieve a stable long-term result using Geistlich Bio-Oss® and Geistlich Bio-Gide®.

Which indication sheets are currently available to you?

Chapter/Indication	Description/Authors
1 Extraction sockets	E1 / Prof. Christoph Hämmerle and Dr. Ronald E. Jung, Switzerland
	E2 / Prof. Myron Nevins, USA
	E3 / Dr. Karl-Ludwig Ackermann, Germany
	E4 / PD Dr. Dietmar Weng, Germany
	IIP1 / Dr. Tiziano Testori and Dr. Matteo Capelli, Italy
	IIP2 / Dr. Peter Randelzhofer and Dr. Gert de Lange, Netherlands
2 Sinus floor elevation	S1 / Dr. Beat Wallkamm, Switzerland
	S2 / Prof. Zvi Artzi, Israel
	S3 / Dr. Pascal Valentini, France
3 Peri-implant regeneration	PIR1 / Dr. Jean-Pierre Gardella and Dr. Christian Richelme, France
	PIR2 / Dr. Christian Ramel, Switzerland
	PIR3 / Prof. Daniel Buser, Switzerland
4 Original augmentation	H1 / Prof. Carlo Maiorana and Dr. Mario Beretta, Italy
	H2 / Prof. Istvan Urban, Hungary
5 Vertical augmentation	V1 / Prof. Massimo Simion and Dr. Isabella Rocchietta, Italy
6 Periodontal regeneration	PDR1 / Dr. Pierpaolo Cortellini, Italy
7 Soft tissue regeneration	STR1 / Dr. Daniele Cardaropoli, Italy
	STR2 / Dr. Michael McGuire and Dr. Todd Scheyer, USA
	STR3 / Dr. Sofia Aroca and Dr. Daniel Etienne, France
	STR4 / Dr. Stefan Reinhardt, Germany
8 Management of failures	X1 / Prof. Anton Sculean, Dr. Georgios Nikou and Dr. Peter Thoolen, Netherlands
	X2 / Dr. Michael Norton, England
	X3 / Prof. Frank Schwarz, Dr. Narja Sahm and Prof. Jürgen Becker, Germany
	X4 / Dr. Jean-Louis Giovannoli, France

ABOUT US

10 years of Osteology: Development of solutions for the benefit of the patient

The tenth anniversary of the Osteology Foundation was celebrated at the International Symposium in Monaco. Geistlich Pharma together with Dr. Peter Geistlich set up the Foundation in 2003 to promote research in regenerative dentistry and make it available to practitioners. Cooperation from research, clinical medicine and industry has since improved therapy strategies for patients.

Besides presentations and workshops, celebration of the ten year anniversary of the Foundation was on the programme at the International Osteology Symposium in Monaco. When Geistlich Pharma, together with Dr. Peter Geistlich, set up the Foundation in 2003, the aim was to bring new techniques and products into hospitals and practices faster and adequately tested. At the same time, therapy strategies were to be improved for patients. The Foundation aimed at promoting scientific exchange and cooperation between universities. The target in setting up the Foundation was to drive forward research in regenerative dentistry.

Basis of new therapy concepts

After ten years work of the Foundation, Paul Note, CEO Geistlich Pharma summarises: "The objectives have been attained, exceeded even. Today the Foundation is one of the important drivers for innovation in oral tissue regeneration. It has also become established as a credible and independent institution." Osteology mediates scientific insights today at its symposia in such a way that practitioners can apply them in their everyday work for the benefit of patients. Through its granting process, the Foundation has revealed gaps, opportunities and potential and has determined where research is really needed. Through its activities to improve research quality, Osteology contributes towards creating sound data. On the basis of this meaningful data, industry can develop scientifically substantiated therapy concepts.

New solutions for the practice

Studies sponsored by the Osteology Foundation have, for instance, enabled patients to be spared from having their own tissue grafted for soft tissue regeneration. This was possible, because rather than the graft, a natural collagen matrix was used as an equivalent substitute. In other studies, clinicians have investigated strategies for treating inflammatory diseases around implants. The results of this have already been implemented in practice. Another study sponsored by the Osteology Foundation demonstrates that in the use of bone blocks, the simultaneous use of bone substitute material and collagen membranes reduces the resorption of the inserted bone block. This approach has since gained acceptance in practice.

Maren Krüger

A key focus of the media conference at the International Osteology Symposium in Monaco was the Foundation's tenth anniversary.

Geistlich
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Nothing changed.
Just improved.

9 out of 10 dentists are convinced the Geistlich Bio-Oss Pen® handles well*

*Geistlich Pharma AG practice test, June 2012

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