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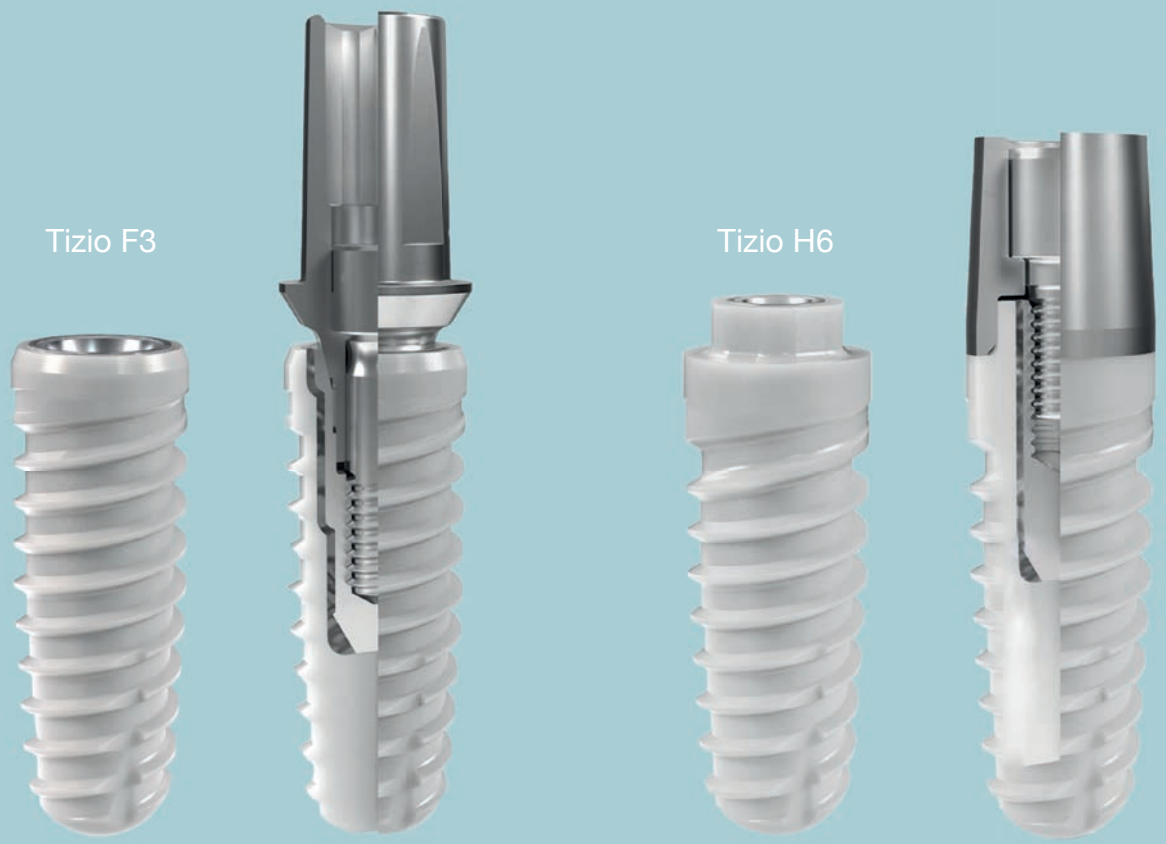

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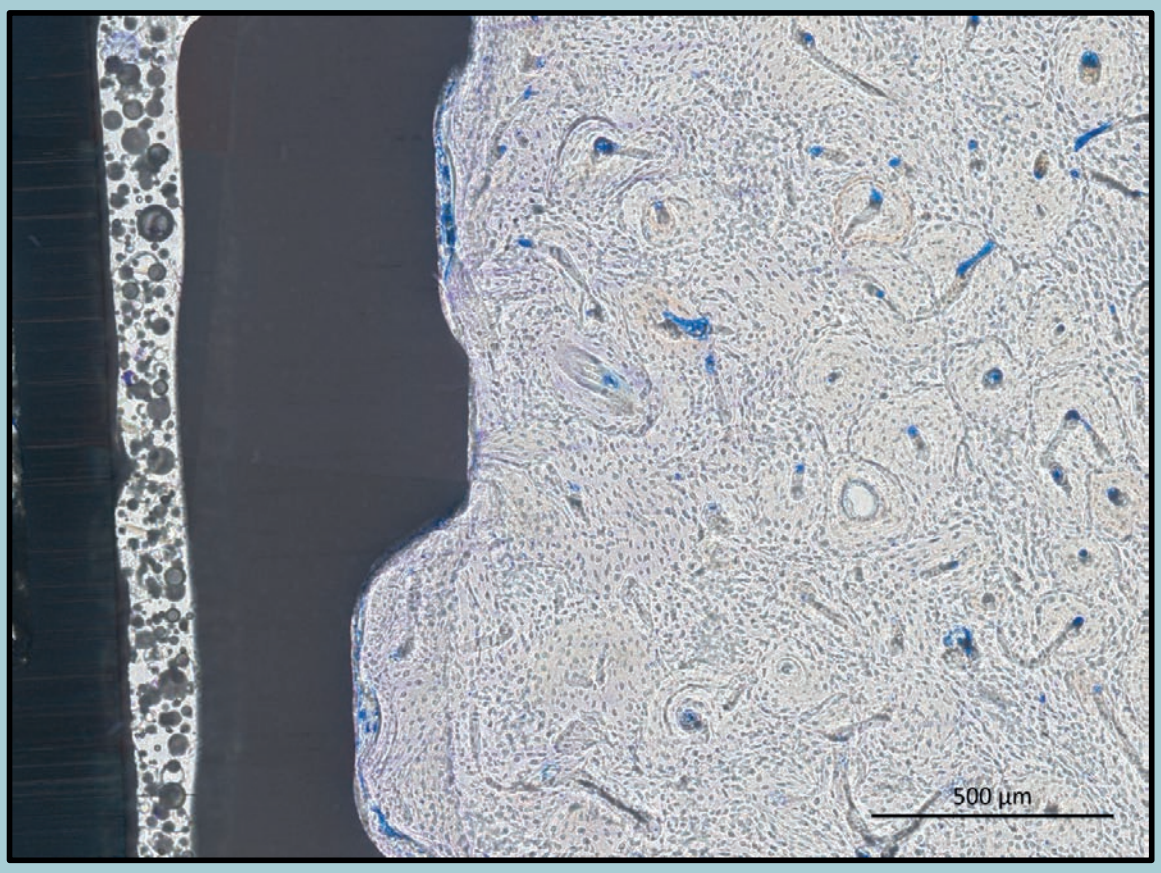

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Bild: Universitätsmedizin Rostock, Klinik für Mund-, Kiefer- und plastische Gesichtschirurgie
Image: Rostock University Medical Center, Clinic for Oral, Maxillofacial and Plastic Facial Surgery

** PRODUCT IS IN APPROVAL.*

Hype or Hybrid?

The combination of ceramics and titanium seems to be emerging as the next big material technology leap in dental implantology, by exploiting the mechanical-physical and biological advantages of two worlds. How practical are these concepts nowadays and where will the clinical advantages lie?

Interview with Prof. Dr. med. Dr. med. dent. Ralf Smeets

Deputy Clinical Director and Head of the Section "Regenerative Orofacial Medicine" of the Department of Maxillofacial Surgery of the University of Hamburg-Eppendorf.

To what extent are hybrid concepts still in their infancy or laboratory shoes?

In my opinion, this stage has already been left behind. Research, progress and scientific studies of the last few years have raised the project or, in the meantime, the finished product to another level that can be used on patients.

Can we already draw on meaningful studies?

Various data of in vitro-studies are already available, including the works by Mick et al. in 2013 and 2015 and Markhoff et al. in 2014. In vivo trials and animal studies are currently underway at Rostock University Hospital under Prof. Bernhard Frerich, and here in Hamburg as part of a government-funded research project by the BMWi (Federal Ministry of Economics and Technology).

Doesn't the joining of two such different materials in such a demanding oral medium harbour potential problems at the joint?

From my point of view, there are no problems at all. The innovative approach of joining the two materials using glass soldering technology has led to a very satisfactory product development. With the aid of this technology, in which titanium and ceramics are joined by means of glass solders at high temperatures, it has been possible to achieve a new type of completely cohesive bond between the two materials. The glass solder literally diffuses into the materials.

Where do you see the clinical advantages of this concept?

In my opinion, the idea of a ceramic covering with an insert, made of pure grade 4 titanium offers various advantages. For example, the ATZ ceramic brings advantages in terms of aesthetics due to its 'natural' white colour. In addition, the implant comprises a high fracture resistance and is more resistant to shear forces than an implant made of pure ceramic. During production, the implant surface is not roughened by any substance removal process, as is the case with sandblasting of conventional ceramic implants. Since the glass applied instead is very biocompatible, the implant could possibly even lead to better and faster osseointegration in older patients or in patients with compromised bone metabolism. It should also be noted that the implant is easier to handle than a pure ceramic implant. Due to the titanium insert, advantages can also be expected with regard to potential loosening of prosthetic superstructures. Furthermore, angulation problems can be compensated with angulated abutments, which simplify the prosthetic restoration and make it more flexible. Although it is important that the torque is not too high during insertion of the implant, the hybrid implant could certainly offer significant advantages over pure ceramic implants, particularly for immediate implantation and immediate restoration. One problem is currently still the reduction of the implant dimensions, in order to enable application of hybrid implants in all possible anatomical situations. With regard to the restoration of narrow interdental spaces with reduced-diameter implants, technical hurdles still have to be overcome at present. However, a hybrid implant with a diameter of 3.6 mm is currently being tested.

... and where do you see the biological advantages?

The ceramic surface provides better biocompatibility than pure titanium implants. A glass layer is applied to the outer implant surface, which is subsequently followed by a firing process. This technology leads to a roughening of the surface, which in turn favours the osseointegration of the implant. The glass matrix does not detach during placement and is very tissue-friendly and biocompatible.

Will the handling of hybrids, analogous to ceramic implants, require special training and a changed approach?

No, I don't generally see it that way. That's what makes the whole thing even more attractive: in terms of handling, the new hybrid implant can be regarded like a titanium implant.

Thank you very much for your time and for the interview. ●

Great potential for tooth-coloured Implant bodies

Biomechanical and material specific properties of the Tizio hybrid implant were investigated at the University of Rostock. Thus, we were interested on the previous results of ongoing animal studies at the University, asking for any forecasts for transferability into clinical application

Interview with Prof. Dr. med. habil. Dr. med. dent. Bernhard Frerich

Director of the Clinic of Maxillofacial Surgery, University of Rostock, Germany

Can you briefly describe the design of your studies?

In one of the studies healing of hybrid-implants and two commercially available implant systems – made of titanium or zirconia – was compared. This is the pre-clinical comparison to what you can nowadays consider as the 'standard of care'. We investigated implant healing after insertion in the mandible of adult mini-pigs. The study deals with the amount and the rapidity of osseointegration and bone apposition on the implant surface, as well as with bone building and potential peri-implant inflammation/tissue reaction.

What expectations did you have in the animal studies?

Surely we will be able to find healing results, being comparable to that of titanium implant surfaces. Major advantage of hybrid implants is the colour of the implant body in conjunction with the stability and the mechanical properties of titanium implants. In this respect, hybrid implants have already an advantage over titanium implants, because they demonstrate similar healing characteristics. This is true, as displayed by the recent results.

Can you already give us any sound study results?

Up to now, preliminary data of the early and intermediate study groups are available. We observed an utmost equal healing around hybrid and titanium implants, with a possibly slight advantage for hybrid implants compared to implants made of zirconia. Handling during implant insertion is the same as with titanium implants. To date, we didn't observe any implant failures or signs of inflammation.

Do these results allow any forecasts for an expected clinical performance in humans?

If our results will be confirmed in the further course of the experiment, we expect that hybrid implants may provide benefits for certain clinical constellations. It may be expected that their performance complies with currently available titanium implants concerning variability of treatment modalities, concomitantly being superior with regard to aesthetics. In particular, they are of course suitable in case of restrictions against titanium as implant material – whether justified or not. Actually, if at all existent, titanium intolerance is a very rare event.

Is there a parallel cooperation with other centres and projects, eventually leading to promising further insights in the future?

In fact, we are about to start a clinical trial in cooperation with other centres. This is the only occasion to generate sound scientific statements concerning the effects on peri-implant soft tissue. We are expecting superiority over titanium implants regarding plaque accumulation and subsequently concerning development of peri-implant inflammation. Though these are merely speculative assumptions and shall be subject of further investigations.

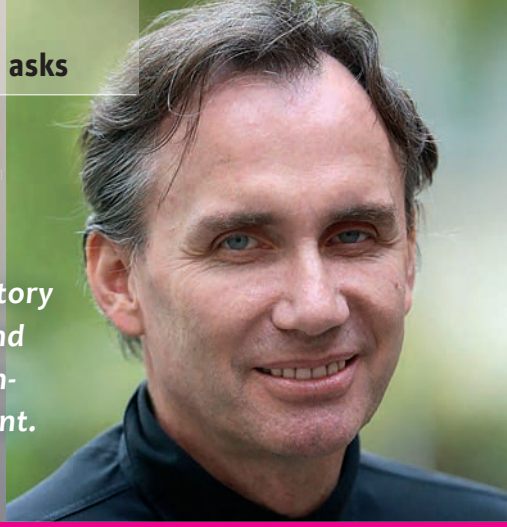
How is your personal view on hybrid implants in implantology, and in what respect would your clinical routine be influenced by well-functioning hybrids?

The use of a tooth-coloured implant body is not only from a surgical point of view highly attractive. This is in particular advantageous in the aesthetic zone, especially in patient cases with a thin gingival biotype. I see them absolutely in the 'forefront', because they combine the advantages of titanium and ceramic implants. Possibly there are also benefits concerning the implant surface, in particular with regard to plaque accumulation. Altogether there is great potential, and the question remains exciting.

Thank you very much for your time and this interview.

Hybrid implant technology is not trivial

Prof. Dr. med. habil. Dipl.-Ing. Rainer Bader from the Research Laboratory for Biomechanics and Implant Technology at the Orthopaedic Clinic and Polyclinic of the University Medical Center Rostock was significantly involved in the preliminary investigations of the new Tizio Hybrid Implant. Quantum leap or gimmick, pip wanted to know.



Interview with Prof. Dr. med. habil. Dipl.-Ing. Rainer Bader
Professor of Biomechanics and Implant Technology, University of Rostock, Germany

What was your first reaction at the presentation of a hybrid implant?

Immediately I realized that we were not talking about a trivial technological approach. From the very beginning, I excluded the possibility of a bond between the two materials ceramic and titanium due to their differences with respect to their material-specific behaviour and reactivity. So the first exciting question was how to achieve a stable bonding in the interface of these two materials. Concomitantly, we are conscious about the enormous responsibility of these advancements: You always have the patient in mind that will be treated one day with such a concept in dental implantology or orthopaedic surgery.

So the biggest challenge was the joining of the two materials?

By means of glass solder, different materials are joined in a firmly bonded compound. Whereby, you need to know, that glass soldering is not suitable for every material.

Ceramic and metallic materials need to have specific characteristics. Thanks to a specific surface treatment of the Tizio implants, the glass solder literally diffuses into the materials. The challenge was to ensure an even distribution of the glass solder. It must be neither too liquid nor too viscous, and it requires a certain grain size. Even if glass soldering was successfully achieved in the laboratory, the challenge remains for the implant manufacturer to transfer this principle into an automated process.

Does the compound of two different materials not give rise to specific risks in a thermally and mechanically demanding environment?

This is exactly where the advantages of the principle become apparent: By glass soldering, the ceramic becomes more elastic than a pure ceramic. Moreover, as demonstrated by aging tests, performed in cooperation with colleagues of the University of Heidelberg, glass solder is ageing-resistant. Even if you eat an ice cream and drink hot tea with it, the thermal stress in the mouth is not critical for the glass solder joint, it is rather the mechanical stress during chewing and the aggressive environment of saliva with enzymes, acids and bases.

Real environmental conditions of the mouth cannot be reproduced one hundred percent with implant testing in vitro. Thus, animal studies or initial clinical investigations surely will give first insights.

So, in particular the secret is the glass solder?

Yes, it is one of the significant components. Though, it is not only the know-how that makes it difficult for others to emulate the principle of the hybrid implant. Methods, aligned with the material, i.e. the adequate design of the individual components, are of particular importance. This is not only of importance for the achievement of an ideal joint gap, but also for force transmission: where do peak loads emerge, and how they can be distributed within the implant. Inherently, components of hybrid implants can be constructed thinner than a solid-body implant, made of one material – the weakening that comes along with it, must be compensated with the glass solder. After initial fatigue strength tests with simple mouldings, transformation of these results on the much more complex design of the dental hybrid implant, was the next big challenge – this too, anything but trivial.

What results do you expect from the current ongoing animal studies and subsequent clinical trials?

We are very happy upon the fact, that the Rostock-based company Tizio Hybrid Implants will assume responsibility for the marketing of the novel dental hybrid implant. Currently, animal experiments, performed by the research group of Prof. Bernhard Frerich of the Centre of Maxillofacial Surgery of the University of Rostock, are on the verge of completion.

Thank you very much for your time and this interview. ●

Ex oriente lux!

Since 1992, a specialist manufacturer for innovative surface treatment and medical technology has evolved in Rostock. With almost 400 employees, it now produces top products in orthopaedics and dentistry for the benefit of patients worldwide. Tizio also relies on DOT.

Interview with Prof. Dr. sc. nat. Hans-Georg Neumann

Physicist, managing partner of DOT GmbH

How did the company get started – at the beginning of the 1990s, more was shut down in the East of Germany than built up?

Unfortunately, in that course also some technologies were shut down in which the East was actually a leader. An essential cornerstone of our success story lies in the founding team's industrial and scientific experience in coating and material technology over many years. In February 1992, initially two engineers and two physicists founded "Dünnschicht- und Oberflächentechnologie GmbH" as a contract coating company in Rostock. In 2001, the company was renamed into DOT GmbH, and is now comprising four production sites, and employing 400 staff members.

Did the contact with Tizio arise due to the local proximity?

The local proximity certainly supported our coming together. We have a close local scientific interconnection with the University, which led to collaborations in various research and development projects with Prof. Dr. Rainer Bader from the Orthopaedic Clinic and Prof. Dr. Dr. Bernhard Frerich, Director of the Clinic for Maxillofacial Surgery at Rostock University Hospital. In a conversation with Prof. Dr. Bader, I heard that something really new and interesting was in progress here directly on site. This novel development was based on a new type of glass solder technology – DCMhotbond – which enables a solid bonding between ceramic and metallic materials, and which was representing the realization of a long envisioned hybrid implant. For me as a glass physicist, this was of course an immensely exciting topic, as I could guess what kind of high potential this unique technology could involve. In the meantime, we have been accompanying research and development very closely for more than three years. By the way, I may remark that we are also dealing with an established Eastern tradition here: We pervade a problem scientifically in a very close cooperation and ground work with researchers and university institutions, but at the same time we are maintaining a very close contact with the industry, in order to keep an eye on the goal and the practical solution to the problem.

How can technological precision be transferred into individual practice and into a validated production?

This is where our experience and know-how are ideally paired with our industrial capabilities. Regarding the Tizio hybrid implants, the special technology lies in the glass soldering, which is joining two different materials, as well as in the surface coating of the implant. The osseointegration of endosseous implants is known to be largely dependent on the implant's surface in addition to the macroscopic design of the implant body and the implant material as well. In the case of the Tizio implant, details such as the correct temperature, in order to preserve both materials, which have to be soldered, as well as the spraying technique for the surface coating are real challenges. I certainly can state that only a few companies can offer this combination of material science and manufacturing know-how from a single source as we do. The titanium components are manufactured in close cooperation with FMZ GmbH, whose core competence lies in the production of high-precision medical devices as well as smaller precision components for orthopaedics and dental implantology. The know-how and innovative inventiveness of the Tizio developers are thus combined with the know-how of renowned specialized industrial partners

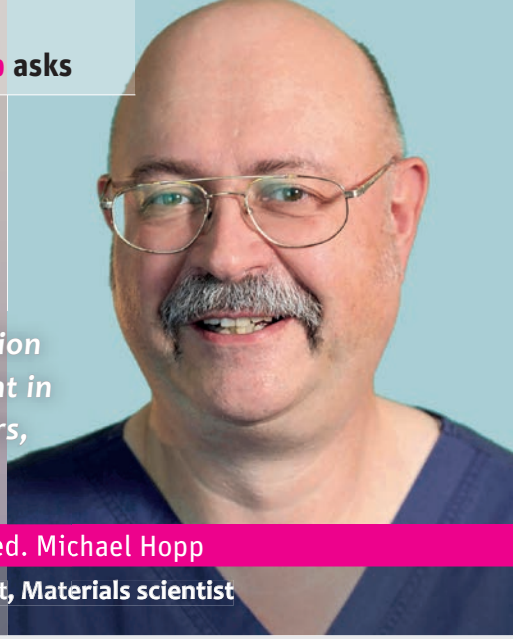
Are there any visions or further collaborations that you hope will lead to further developments based on this technology in the future?

If our results will be confirmed in the further course of the experiment, we expect that hybrid implants may provide benefits for certain clinical constellations. It may be expected that their performance complies with currently available titanium implants concerning variability of treatment modalities, concomitantly being superior with regard to aesthetics. In particular, they are of course suitable in case of restrictions against titanium as implant material – whether justified or not. Actually, if at all existent, titanium intolerance is a very rare event.

Thank you very much for the interview. ●

Implant hybrid technology and prosthetics from the same mould

Long gone are the days when implant surgeons discussed classification of bone quality, augmentation techniques or soft tissue management in isolated circles. Today, a team of material and technology developers, biologists, surgeons, prosthodontists and dental technicians are at eye level behind the most successful implantological treatments.



Interview with Dr. med. Michael Hopp

Dentist, Implantologist, Materials scientist

Where do you see the surgical and prosthetic advantages in the innovative hybrid technology of the Tizio system?

The advantages are actually obvious for the dental practitioner: on the bony side, zirconium oxide ceramics are used. By modifying the outer surface of the implant, structured healing is promoted by an osteosynthesis layer, which can be loaded at an early healing stage. Thus, implant placement can be performed optionally in a single- or a two-stage procedure. Thanks to the soldered titanium ingot, the advantages of the ductility, self-retention and reduction of the construction thickness of screwed metallic connections as well as an additional improvement in stability can be used concomitantly. In addition, production of a well-structured surface on the zirconia implant bodies by an appropriate glass soldering procedure is very crucial, leading to a decisive improvement of former uncertainties concerning the healing behaviour of zirconia implants.

What role does bonding by means of glass soldering play?

Hybrid materials and material hybrids are increasingly being used with great benefit in industry and medicine. For this reason, research on these materials has been supported by the government for some time. Due to the joining procedure, hybrid implants combine the advantages of modern implant materials with an increase in stability. In this process, the two functional areas of zirconia in the bone as well as titanium and titanium alloys in the prosthetic interface are joined by glass soldering. This connection results in a technically and immunologically stable and secure joint over many years. The principle of a connecting glass layer is already part of dental implantology. A predicted stability of 30 years has been demonstrated in various studies. It is precisely the micro-tensions in the bonding layer and the sum of the individual compartments that ultimately lead to a higher stability of the product.

With your background knowledge in materials science, how do you feel about the idea of combining two such different materials?

We have already learned from adhesive bonding that almost anything is possible. You just have to figure out how! Melting and bonding of metals or alloys into glasses and ceramics is around 100 years old. Limiting factors are mainly melting ranges, oxide formations, and solubility of the glasses as well as the material-specific coefficient of thermal expansion -CTE. In the medical field, biocompatibility is also a limiting factor. For more than 15 years, the efficiency of glass solders has been proven and applied in joining connections between similar or different materials in dental technology. The production of brazed hybrid implants made of zirconia and titanium, titanium alloys respectively, is a consistent result of the requirements in implantology and current research. Incidentally, the development of hybrid hip implants is already much more advanced.

The prosthetic limitations of conventional ceramic implants were often criticized – what is the difference here?

Due to the possibility to deploy conventional, as well as multi-unit abutments with the Tizio F3, the well-known wide range of applications is possible with this implant system. Enthusiasts of implants made of pure ceramic should even though accept the use of titanium parts in the oral cavity, but should take concomitantly into account, that titanium will not be in direct contact with bone tissue. With the H6 implant, the titanium core is completely cov-ered by ceramic, the tissues of the oral cavity are not in direct contact with titanium. And you are no longer limited prosthetically in any way.

Do I have to say goodbye to my existing and often successful prosthetic concepts in order to use the new technology?

That is precisely the advantage of this new technology. The dental practitioner does not have to change neither his prosthetic concepts nor his well-established clinical procedures. There are merely minor restrictions in the use of the multi-unit abutments with the H6 implant. But independently from analogue or digital planning, prosthetic procedure or digital workbench based on CAD/CAM – everything is possible.

Thank you very much for the interview. ●

„Das ideale Implantat“

„The ideal implant“

Dr. med. dent. Morten Reimer
Zahnarzt / Dentist

Vor allem aufgrund seiner hohen Stabilität und des schnellen Einwachsverhaltens galt Titan lange Zeit als Standardmaterial in der Implantologie. Als Behandler beobachtete ich jedoch im Laufe der Jahre zunehmend, dass für immer mehr Patienten Aspekte wie Biokompatibilität und Ästhetik ein entscheidendes Kriterium bei der Auswahl des Implantatsystems darstellten und so Keramikimplantate einen deutlichen Aufschwung als Alternative zu den millionenfach bewährten Titan-Implantatsystemen erlebten. Währende meiner beruflichen Laufbahn musste ich mich daher sowohl als Behandler als auch mit Blick auf den Patientenwunsch immer wieder der Entweder-oder-Frage stellen: Titan- oder Keramikimplantat. Beide Materialien bieten für sich ihre spezifischen Vor-, aber auch Nachteile, die bei der Entscheidung für einen der Werkstoffe als gegeben in Kauf genommen werden mussten. Im Jahr 1992 hörte ich, wie der renommierte Dr. Günter Heimke auf einem Implantologie-Kongress in Hamburg seine Vision des idealen Implantates formulierte: „Das Ziel wird sein: Ein Implantatkörper innen aus Titan, Hals und Gesamtform außen aus Keramik.“ Die Idee, somit ein völlig neuartiges Implantatsystem zu schaffen, dass die Vorteile beider Materialien miteinander vereint und die jeweiligen Nachteile ausschließt, hat mich von Beginn an in den Bann gezogen und seitdem nicht mehr losgelassen. Im Sinne der bereits vor 30 Jahren formulierten Vision verbinden sich nun zwei in der Dentalmedizin bewährte Werkstoffe dank einer einzigartigen Technologie, dem Glaslotverfahren, zu einem innovativen Hybriden: dem Tizio Hybrid Implant. Das ist es, was ich mir für meine Patienten immer gewünscht habe – ein Hybridimplantat, das für den Patienten wie Behandler das Optimum beider Werkstoffe miteinander in einem einzigen Implantattyp kombiniert.

Auch wenn ich von dieser Entwicklung innerhalb meiner Berufslaufbahn nicht mehr profitieren konnte, erfüllt es mich mit Freude und großer Genugtuung, dass meine langjährigen Mitstreiter und Weggefährten Dr. Thomas Hirt sowie Dr. David Winkler nun an der geplanten Anwendungsbeobachtung der einmaligen Tizio Hybrid Implantate teilhaben können. ●

Dr. Thomas Hirt

For a long time, titanium was considered the standard material in implantology, primarily because of its high stability and rapid ingrowth behaviour. However, as a practitioner, I was increasingly observing over the years that aspects such as biocompatibility and aesthetics were a decisive criterion in the selection of the implant system by a continuously increasing number of patients. For this reason, ceramic implants experienced a significant upswing as an alternative to the millions of times proven titanium implant systems. During my professional career, I have had to face the either or question again and again, both as a practitioner and with regard to the patient's wishes: Implant made of titanium or ceramics. Both materials offer their own specific advantages, as well as their disadvantages, which had to be accepted when deciding on one of the materials. In 1992, I heard the renowned Dr. Günter Heimke formulating his vision of the ideal implant at an implantology congress in Hamburg: "The goal will be: an implant body made of titanium in its inner side, while its neck and outer surface made of ceramic." The idea of creating a completely new type of implant system, being able to combine the advantages of both materials, thus eliminating the respective disadvantages, captivated me from the very beginning and has not let go since. In the spirit of the vision formulated 30 years ago, two materials proven in dental medicine are now combined thanks to a unique technology, the glass soldering process, to form an innovative hybrid: the Tizio Hybrid Implant. This is what I have always wanted for my patients – a hybrid implant that combines the optimum of both materials in a single implant type for the patient and the practitioner as well.

Dr. David Winkler

Even though I was no longer able to benefit from this development within my professional career, it fills me with joy and great satisfaction that my long-time comrades in arms and companions Dr. Thomas Hirt as well as Dr. David Winkler can now participate in the application monitoring of the unique Tizio Hybrid Implants. ●

HYBRID DENTAL IMPLANTS

Foto: ulrich-fotodesign

Gefördert durch:

Bundesministerium für Wirtschaft und Technologie

aufgrund eines Beschlusses des Deutschen Bundestages

„Neuartige bioaktive Beschichtung keramischer Implantate mittels Glaslottechnologie“

„Novel bioactive coating of ceramic implants using glass solder technology“

Europäische Fonds EFRE, ESF und ELER in Mecklenburg-Vorpommern

„Stoffschlüssige Verbindungen keramischer und metallischer Implantatwerkstoffe durch Glaslot“

„Bonded connections of ceramic and metallic implant materials through glass solder“

SCIENTIFIC PUBLICATIONS

Mick, E.; Markhoff, J.; Mitrovic, A.; Jonitz, A.; Bader, R.; New coating technique of ceramic implants with different glass solder matrices for improved osseointegration-mechanical investigations. Materials **2013**, 6, 4001-4010.

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Materials, **2015** Jul 14;8(7):4287-4298. doi: 10.3390/ma8074287.

European patent No:

- 3646812
- 2742905
- 2688509
- 2688510
- 3187145

Übersicht über den aktuellen Stand der Forschungs- und Entwicklungsprojekte, sowie der internationalen Patente bei Tizio Implants.

Overview of the current status of research and development projects, as well as international patents at Tizio Implants.

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DIE WURZEL DER ZUKUNFT

Eine neue Generation in der Endoprothetik?

A new generation in endoprosthetics?

Jürgen Schlebrowski
Geschäftsführer / Managing Director
Procelsio Clinic GmbH, Essen

... verbrachte die ersten zehn Jahre seines Berufslebens bei Procter & Gamble. Danach lange Zeit im Senior Management von multinationalen Konzernen. In den letzten Jahren vor allem im Gesundheitsmarkt (behandelnde Medizin und Medizintechnik) als CEO/GF tätig. Seit 2017 u. a. Geschäftsführer der Procelsio Clinic, einer Privatklinik, die sich auf minimalinvasive Eingriffe an Gelenken und Wirbelsäule, ganz besonders Hüft- und Kniegelenke, spezialisiert hat.

Um als Privatklinik erfolgreich im Markt agieren zu können, ist es heute mehr denn je notwendig, eine überzeugende Unique Selling Proposition (USP) zu entwickeln und sich damit deutlich vom Wettbewerb zu differenzieren. Wir haben uns vor einigen Jahren entschieden, diesen Weg konsequent zu gehen. Das hieß, Spezialisierung auf wenige Indikationen sowie innovative Behandlungsmethoden verbunden mit stärkerer Patientenorientierung und deutlich besserem Service. Heute gehört die Procelsio Clinic zu den führenden Kompetenzzentren für Hüftarthroskopie, individuellen Gelenkersatz und Knorpelzelltransplantationen. Die Ärzte der Klinik verfügen über langjährige, fundierte Erfahrungen in der orthopädischen und Neurochirurgie. Sie arbeiten kontinuierlich sowohl an der Entwicklung neuer als auch an der Verbesserung bestehender Therapiemöglichkeiten. Das ist besonders in der Endoprothetik, dem für uns wichtigsten Segment, relevant. Daher verfolgen wir mit großem Interesse die Entwicklung der orthopädischen Implantate bei Tizio Hybrid Implants in Rostock. Die Idee dazu ist aus einer zunächst nur für Dentalimplantate angedachten und patentierten Technologie entstanden. Inzwischen sind auch Patente für in der Orthopädie anwendbare (Teil-)Prothesen erteilt worden. Diese Implantate stellen aus unserer Sicht eine absolute Innovation dar. Erste Studien und Tests bestätigen u. a. eine erheblich höhere Belastbarkeit und bessere Biokompatibilität, was auch dazu beitragen könnte, die Revisionszahlen in der Endoprothetik deutlich zu reduzieren.

Wir werden den Informationsaustausch definitiv fortsetzen und sind gespannt auf die weiteren Ergebnisse!

... spent the first ten years of his professional life at Procter & Gamble. Afterwards he was working long time in senior management of multinational corporations. In recent years, he was mainly active in the healthcare market (practical medicine and medical technology) as CEO/GF. Since 2017, among other things, he is working as Managing Director of the Procelsio Clinic, a private clinic specializing in minimally invasive surgeries on joints and spine, particularly hip and knee joints.

In order to operate successfully in the market as a private clinic, it is now more than ever necessary to develop a convincing Unique Selling Proposition (USP) and thus clearly differentiate yourself from the ongoing competition. We decided to follow this path consistently already a few years ago. This decision was associated with a specialization in a few indications and innovative treatment methods combined with stronger patient orientation and significantly better customer service. Today, the Procelsio Clinic is one of the leading centres of excellence for hip arthroscopy, individual joint replacement and cartilage cell transplantation.The centre´s physicians have many years of in-depth experience in orthopaedic and neuro surgery. They continuously work on both the development of new therapeutic options as well as on the improvement of existing therapeutic procedures. This is particularly relevant in endoprosthetics, which is our most important segment. For this reason, we are following the development of orthopaedic implants at Tizio Hybrid Implants in Rostock with high interest. This idea arose from a technology initially conceived and patented only for dental implants. In the meantime, patents have also been granted for (partial) prostheses applicable in orthopaedics. In our view, these implants represent an absolute innovation. Initial studies and tests confirm, among other things, a significantly higher load-bearing capacity and better biocompatibility, which could also help to significantly reduce the number of revisions in arthroplasty.

We will definitely continue the exchange of information and we are looking forward to the further results!

Mechanik und Ästhetik

Nicht nur von Patientenseite wird der Ruf nach metallfreien Versorgungen lauter, auch Zahnärztinnen und Zahnärzte schätzen die Vorteile moderner Keramiken. pip erfragt eine Stellungnahme von ZTM Otto Prandtner aus München: Kaufe ich mir zugunsten der Ästhetik Nachteile bei Mechanik und Stabilität ein?

Otto Prandtner
Zahntechnikermeister / Master Dental Technician

Genau über diesen Punkt habe ich mir sehr viele Gedanken gemacht und kann die Frage daher mit einem klaren ‚Nein' beantworten. Allein für die Ästhetik finde ich den Verbund zu Lithium Disilikat großartig, da die Qualität dieser Keramik durch eine individuelle Schichtung im Seitenzahnbereich seitens des Zahntechnikers nicht erreicht werden kann. Für die Mechanik kann man verschiedene Materialien verbinden, um zum Beispiel ein gewünschtes biologisches oder mechanisches Abriebverhalten zu erzielen. Die Stabilität im Verbund mit verschiedenen oder gleichen Materialien wurde in Untersuchungen in beeindruckender Weise bestätigt.

Es kommen sogar noch biologische Vorteile der Glasmatrix hinzu welche ich in einem speziellen Tutorial mit Freude zeige. Es gibt aussagefähige Daten der hier angeführten Studien und im Weiteren deren wissenschaftliche Interpretation und Exploration. Am Ende muss auch ich als Zahntechniker mir eine Meinung bilden, wie ich die Ergebnisse dieser Daten in meinem zahntechnischen Alltag umsetzen kann. Mein Ziel ist erklärtermaßen, eine Bereicherung für den Patienten, den Zahnarzt und natürlich auch für mich selbst zu erreichen. Wie ich diese Bereicherung aller Beteiligten erziele, können Sie sich in einem kurzweiligen und, ich denke, sogar unterhaltsamen elfminütigen Tutorial auf der Internetseite www.rezotto-production.com anschauen (siehe QR-Code zur direkten Einwahl). Dort gehe ich auf die Details und dieser materialwissenschaftlichen, biologischen, mechanischen und funktionellen Studienlage ein. Natürlich werden auch die ästhetische Eigenschaften anhand von Patientenfällen beschrieben. Wenn Sie nach dem Video-Tutorial das Konzept gleich in mehr als einer Hinsicht bereichernd in ihr Tagesgeschäft einbeziehen können, freue ich mich. ●

I have given a lot of thought to this very point and can therefore answer the question with a definitive ‚no'. For esthetics alone, I think the bond to lithium disilicate is great, because the quality of this ceramic cannot be achieved by individual layering in the posterior region by the dental technician. For the mechanical aspects, it is possible to combine different materials, for example, to achieve a desired biological or mechanical abrasion behavior. The stability in combination with different or the same materials has been convincingly verified in studies. There are even biological advantages of the glass matrix which I will be happy to show in a special tutorial.

There is conclusive data from the studies cited here and, furthermore, their scientific interpretation and exploration. In the end, I as a dental technician must also form an opinion as to how I can implement the results of these data in my everyday dental work. It is my declared goal to enrich the patient, the dentist and, of course, myself. You can see how I achieve this enrichment of all parties involved in a short and, I think, even entertaining eleven-minute tutorial on the www.rezottoproduction.com website (see QR code for direct access). In the tutorial, I discuss the details of the material-scientific, biological, mechanical and functional aspects of the study. Of course, the esthetic properties are also described based on patient cases. I would be delighted if you can incorporate the concept into your daily business in more than one way after watching the video tutorial. ●

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