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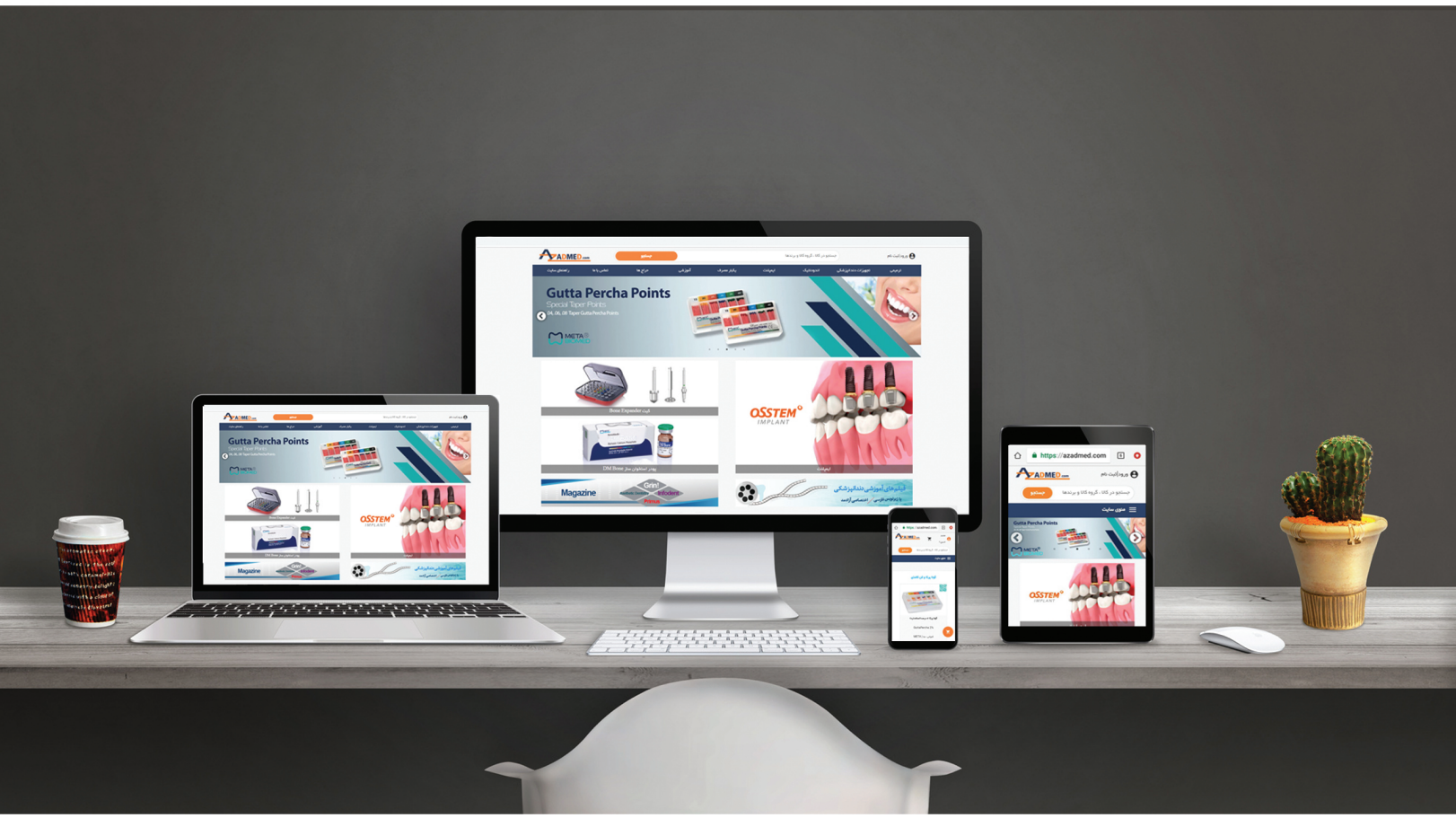

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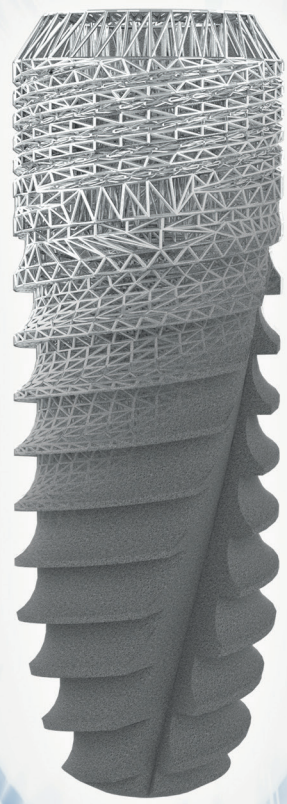

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Implantology— globally recognized

Dear Readers,

Germany, Spain, Poland, Italy, USA, Mexico, France, Morocco, and many more—The first months of summer were clearly dedicated to the international exchange of good practices as well as numerous advancements in the field of implantology. A great number of globally operating implantology companies held symposiums and workshops for thousands of implantologists. Equally, the DGZI also travelled over the past few weeks in order to carry out quality assurance in various international DGZI study groups, perform exams, support partner events and extend networks (see reports on pages 36 & 37 and in our next edition of implants magazine).

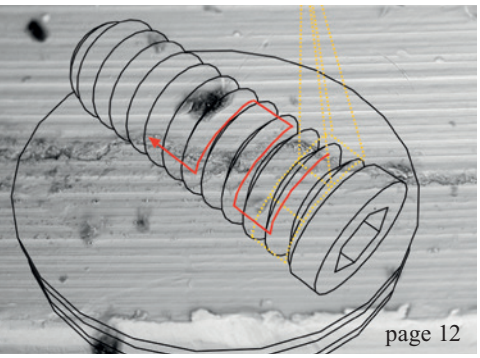
Once again, this activity has shown that dental implantology constitutes an internationally recognized therapy option, whose quality assurance must be guaranteed by constant training and further education. On the one hand, the industry itself ensures a high level of training standards within its sector; on the other hand, societies of dental implantology such as our association are more than ever before called upon to offer independent, innovative, and validated curricula and advanced training sessions. Because as we all know: Not only products and services of manufactures are subject to change, the dental profession itself is undergoing a period of demographic transition which requires new and flexible training offers.

As Europe's oldest specialist association of dental implantology, DGZI has always considered itself as truly international in its scope and orientation. Hosting the 46th International Annual Congress (30 September–1 October, Munich) and providing freely combinable education modules and e-learning items, it offers a wide range of suitable education options and audit tools. In addition, we have two renowned and widely circulated titles at hand—the *Implantologie Journal* as well as implants **international magazine of** oral implantology—which due to their market penetration and high quality demands, set standards in the distribution of practical and relevant knowledge in the field of implantology.

As always, I wish you an enjoyable and informative read with the present edition of implants **international magazine of** oral implantology.

Warm regards,

Dr Rolf Vollmer
First Vice President and Treasurer of the German Association of Dental Implantology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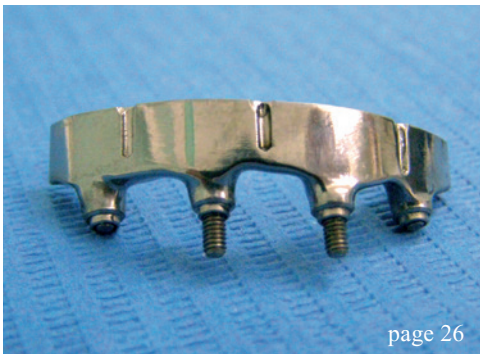
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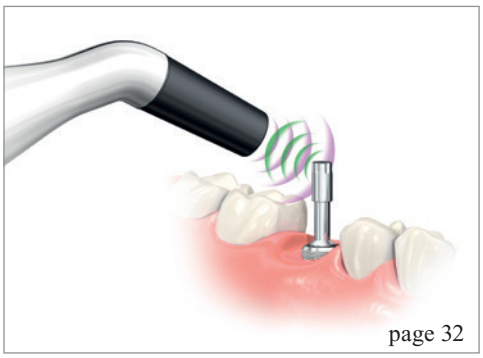
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The effects of professional education on oral-health awareness

A survey among UAE prisoners on implant treatment

Authors: Dr Souheil Hussaini, Dr Elham Yagoobi, Dr Maryam Khalili & Prof. Dr Saul Weiner, USA/UAE

Introduction

There is an increasing awareness of the importance of oral and dental health. Its value is being increasingly accepted not only with regard to preventing or alleviating pain, but also with regard to nutrition and local and systemic diseases. In addition, an aesthetic appearance and a healthy smile are given special attention today. As a consequence, the options for tooth replacement have become of importance to the population.[1]

With the development of technological improvements in implant dentistry, the options for treatment have been expanded considerably. The long-term predictability of dental implants, as they are not vulnerable to dental caries, appears to have improved, especially in relation to that of the natural dentition. Thus, fixed prostheses supported by implants may have an excellent prognosis. In addition, implants provide further stability for removable prostheses.

It is important, however, that the public receive appropriate information regarding the advantages of the available options for tooth replacement. Today, the internet is an important form of education, which much of the lay public utilises for information and communication.[3] It offers opportunities to learn about prosthetic options, including implants. However, this medium is more likely to be used by individuals in middle to higher socioeconomic strata.[4] The public sector with lesser economic re-

sources, who often are in greater need for prosthetic treatment, are less likely to avail themselves of these services because of a lack of education and limited finances.[5]

Other means of education may be employed. One possibility is education by dental professionals. Often, introductory explanations by dental health care professionals can allow the patients to seek further knowledge either from friends or via the internet. This approach will be most successful if the initial presentation or contact with the dental health care professional significantly increases the understanding and awareness of the patient.[4]

This study examined the usefulness of a presentation by a prosthodontist/implantologist and a general dentist team to a prison population to increase their awareness and motivation in seeking further dental care for missing teeth.

Methods

A cohort of 500 male prisoners of the Sharjah Central Prison (United Arab Emirates) was randomly selected to participate in the study. The cohort was not segregated by age, educational background, or reason for incarceration. All subjects agreed to participate in the study. The population was administered a questionnaire designed to identify:

1. The patient's interest in tooth replacement for missing teeth.
2. The patient's preferred treatment modalities.
3. The patient's perceived obstacles to the preferred treatment.

Appendix: Questionnaire

Name: _____ Age: ☐ 20–39 ☐ 40–59 ☐ +
Gender: ☐ Male ☐ Female

1. Do you have any missing teeth? ☐ Yes ☐ No
2. If yes, are you interested to replace the missing teeth? ☐ Yes ☐ No
3. If yes, which treatment option do you prefer? ☐ Bridge ☐ Removable ☐ Implant
4. If implant, are you aware of implant therapy? ☐ Yes ☐ No
5. If yes, what is the most probable obstacle? ☐ Very costly ☐ Fear of Surgical procedure ☐ Not clear about the procedure

		Before	After	Significance level
Interested in replacing missing teeth	Yes	87.2 %	97.6 %	0.000 sig
	No	12.8 %	2.4 %	

Tab. 1: Percentage of interest in replacing missing teeth before and after informative lectures.

		Before	After	Significance level
Preferable treatment option	Bridge	30 %	21.2 %	0.000 sig
	Removable P.D.	17.2 %	0.0 %	
	Implant	52.8 %	78.8 %	

Tab. 2: Percentage of each treatment option selected.

		Before	After	Significance level
Awareness of implant therapy	Yes	57.6 %	95.2 %	0.000 sig
	No	42.4 %	4.8 %	

Tab. 3: Percentage of public awareness about implants.

		Before	After	Significance level
Most probable obstacle	cost	52.4 %	54 %	0.077 N.S.
	fear	9.6 %	9.6 %	
	unclear	34 %	10.8 %	
	cost and fear	4 %	25.6 %	

Tab. 4: Percentage of obstacle effecting implant selection.

This questionnaire (Table 1), which was available in five languages, was administered both before and after one hour of standardised presentations by a dentist in the language that the prison cohort understood. The subjects of the presentation included general principles of oral health, the value of tooth replacement, the options for tooth replacements and the advantages of each restorative option. The questionnaires were scored and a cross tabulation test performed for the group using SPSS.[6]

Result

The interest of the cohort in replacement of missing teeth was significantly increased after attending the educational lecture (Table 2, $p < 0.001$). The preferred method of replacement was influenced by the presentation. Before the lecture, 30 % of the patients chose a bridge, 17.2 % a removable partial denture and 52.8 % an implant. After the lecture, there was a significant change in the preferences of the subjects (Table 2). Only 21.2 % of patients chose the bridge option while the rest, 78.8 %, chose an implant as their preferable replacement option ($p < 0.001$). Before the lecture, 57.6 % of the patients had received information about implant therapy. This significantly increased to 95.2 % after the lecture (Table 3, $p < 0.001$). However, both before and after the lecture, the cost was the main reason for patients not selecting implants (Table 4). Before the lecture, 34 % of the patients chose insufficient information about implant procedure as an obstacle to treatment. After the lecture, this number decreased to 10.8 %.

Discussion

The opportunity to obtain further information and become aware of new options and opportunities for health improvement frequently has a significant impact both on attitudes and dental healthcare decisions. In general, the internet is utilised by individuals of higher economic class who frequently are better educated. Individuals who are economically or educationally disadvantaged are less likely to apply these opportunities to gain information for dental healthcare decision-making[7,8] and thus other means of information surfing are needed. This study, utilising a prison population, demonstrated the effectiveness of a presentation by a dental professional. The presentation to the population changed the perception of the group and motivated a significant number of the subjects to consider implant treatment as an option to improve their oral health and their appearance. In a similar study, Alani et al. showed that discussion as well as the opportunity to review options and reflect upon the discussion resulted in a number of subjects reconsidering their original treatment decisions.[9] The utilisation of advanced technologies in health care in countries with large uneducated populations, is challenging. In studies by Chowdhaty[10], Al-Omiri[11] and Shigli[12], lack of knowledge and the perception that implants were extremely costly was common and prevented third-world populations from considering dental implants as a treatment option. However, even in more affluent countries, e.g. Swedish, Japanese, and American people, reported that dental implants were too costly.[13] However, a relationship of trust between patient and dentist can improve the receptivity of patients to implant treatment.[14]

These results are similar to those of Alani et al. who reported that reflection and discussion can make in-

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dividuals reconsider their initial treatment decisions.[9] As it relates to patient awareness of implant treatment options, almost half of the patients in this study were unaware of the nature of implant procedures and their prognosis prior to the presentation. Pragati reported that, although about one million dental implants are inserted each year worldwide, the information available to the patients regarding the procedure and its success is often fragmentary.[15] Chowdhary et al.[10] reported that only 23.24 % of the Indian urban population had heard of dental implants as a treatment option for replacing missing teeth.

> "This is the first report in dentistry showing that prisoners, whom we think we cannot educate, have the potential to do so."
>
> Author Dr Souheil Hussaini

A further issue that requires consideration is the quality and accessibility of the information available to the consumer.[5] A variety of tools have been prepared by healthcare constituencies, but they vary in quality, i.e. the clarity and organisation of the information. In addition, the accessibility of these tools may vary. Finally the education and background of the consumer may limit the opportunity to utilise these tools.[4] Literacy may also be limited and thus the ability to read brochures and fact sheets may be lacking. While labour-intensive, personal interactions between healthcare personnel and the patient may be appropriate to assist many of these individuals.

However, the interaction between the healthcare provider and the patient also requires some examination.[4] Charles described three different types of medical decision-making. In the doctor-centred model, the healthcare provider has established credibility with the patient and makes the significant decisions. In the second type, patient-centred, the patient acquires sufficient information to become confident in his or her decision-making abilities. The third type, a combination of the first two, is one in which the healthcare provider and the patient jointly make the medical decision. This model appears to have been effective in this study.

Dental care, as most health-related issues, requires patient commitment to complement the dental care provided by the clinician to be most effective. The increased awareness demonstrated by the subjects in this study suggests that the hour-long lecture was effective in providing the subjects with useful quality information that could influence the subjects' decision-making process. Indeed, a number of the subjects in the study subsequently volunteered to be treated in the prison with dental implants as part of an implant training program for dentists.

However, more than half of the patients reported cost to be significant. This result is comparable to several other studies. Van der Wijk et al. observed that the high cost of the implants is one of the major limiting factors in the willingness of patients to undergo treatment.[16] This clearly indicates the necessity for dentists and the implant industry to reduce costs and thus create opportunities for treatment. In conclusion, it would seem that personal interactions with health-care professionals may be an effective way to motivate individuals whose opportunities to independently seek improved health are limited. While this approach is more resource-intensive, these initial contacts can motivate individuals to seek further information and opportunities for improved health care._

Conclusions

1. Information delivery was helpful in the dental healthcare-decision processes for a prison population.
2. Financial factors are perceived as a significant obstacle in the subjects' choice of implant treatment.

Editorial note: A list of references is available from the publisher.

contact

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DENTSPLY IMPLANTS

Quality assessment of dental implants by SEM and EDX analysis

A comparison of five one-piece implants

Authors: Dr Dirk U. Duddeck & Dr Franz-Joseph Faber, Berlin & Cologne

Dental implants are supposed to be clean when delivered in a sterile packaging. Implant surface pollution with organic particles and/or major inorganic residues originating from the production process are suspected to cause insufficient or missing osseointegration of dental implants. Unintended micrometer-scale particles may induce a foreign-body reaction with a loss of bone in the early stages of osseointegration. In cooperation with the University of Cologne and the Charité-University Medicine Berlin, the Medical Materials Research Institute Berlin analysed the quality of dental implants in three consecutive studies since 2008.[1,2] In 2015, extensive material contrast images were obtained and qualitative and quantitative elemental analyses were performed on 135 dental implants using the same study protocol. Results of the recent study and comparison with previous analyses showed an increasing spread of quality in the market.

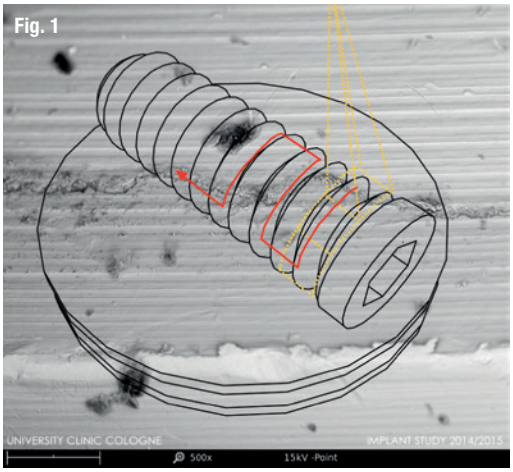

Fig. 1: Systematic scanning of the sample reaching approx. one third of the implants surface in the SEM. Organic contaminants appear darker than titanium.
Fig. 2: MDI (3M ESPE), x500.
Fig. 3: MDI (3M ESPE), x2,500.
Fig. 4: Qualitative elemental area analysis at x2,500.

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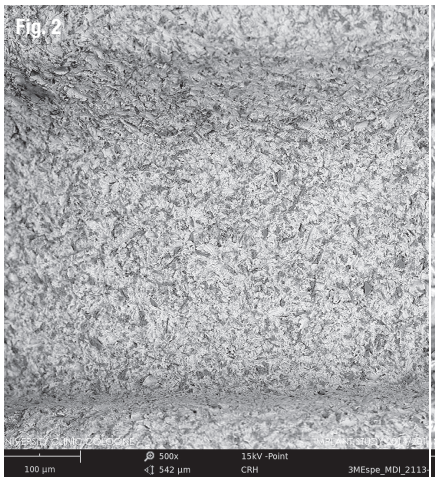

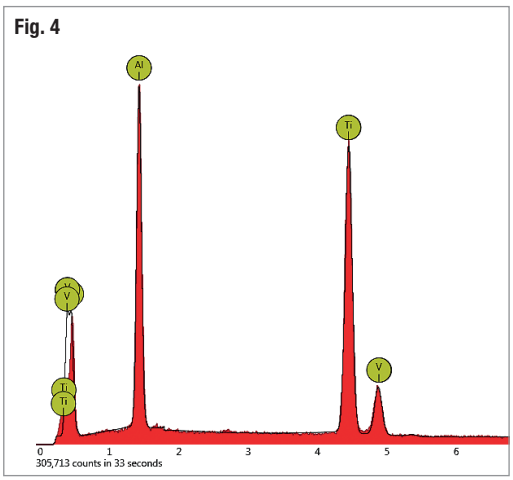

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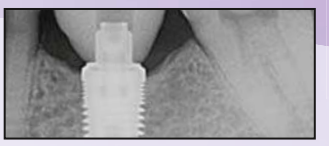

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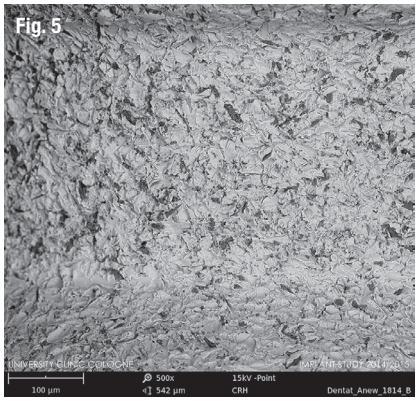

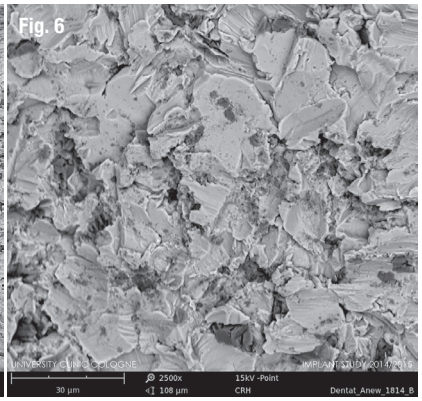

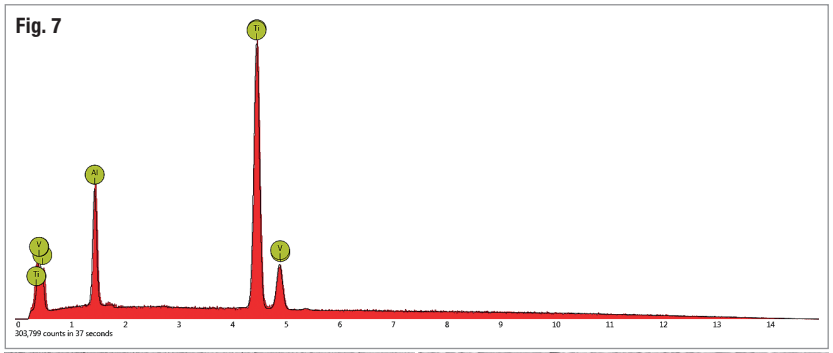

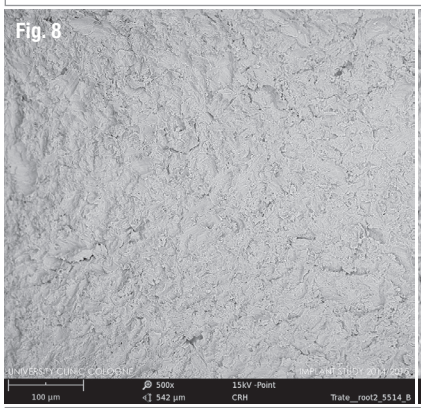

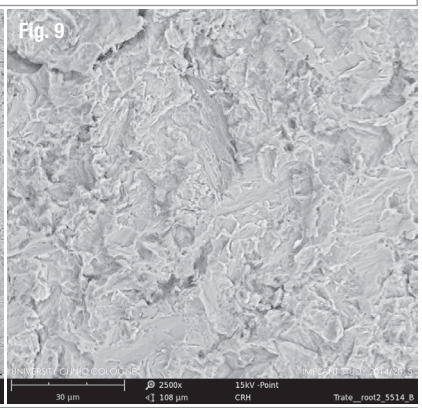

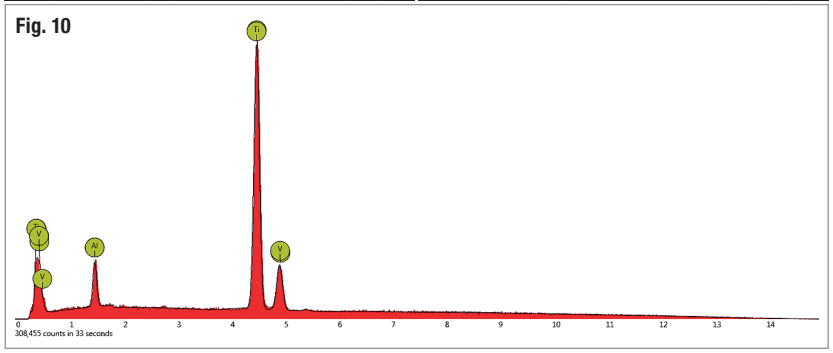

Fig. 5: ANEW (Dentatus), x500. – **Fig. 6:** ANEW (Dentatus), x2,500. – **Fig. 7:** Qualitative elemental area analysis at x2,500. – **Fig. 8:** ROOTT (TRATE), x500. – **Fig. 9:** ROOTT (TRATE), x2,500. – **Fig. 10:** Qualitative elemental area analysis at x2,500.

become the globally established treatment alternative to purely prosthetic solutions for tooth loss. And with the variety of implant systems offered, it has become ever more difficult for the dentist to choose just the right system for his or her practice and patients. Specific surface topographies, material properties that promote osseointegration or surface treatments are often emphasised in advertising as significant advantages to distinguish a given system from its many competitors.

Background and aim

The surface of a dental implant determines the initial phases of the biological response to the implant and affects its ability to integrate into the surrounding tissue.[3] The surface structure should support the process of osseointegration, especially when using highly sophisticated surgical augmentation techniques such as those required in the highly atrophic maxilla.

In recent years, therefore, several working groups and implant manufacturers have presented a multitude of techniques for micromorphological structuring of implant surfaces in order to improve success rates.[4-6] To a large extent, osteoblast proliferation and differentiation at the implant surface will depend on the microstructure of that surface.[7,8] Surface modifications are realised through additive or subtractive treatment of the titanium-implants. Sandblasting and etching procedures in combination or as a single treatment are established as state-of-the-art manufacturing processes. Since the early 1990s, endosseous titanium implants have been examined for residue[9] that may be related to the manufacturing process or to product-specific handling subsequent to the production process.[10] The aim of this study was to present topographic effects of the different manufacturing processes and to analyse potential impurities on implants made of titanium and its alloys.

Methods and materials

Among the group of 135 implants from 95 different manufacturers and suppliers, a few samples were one-piece implants which set the focus on this article. All implants were analysed by means of different techniques: Scanning electron microscopy (SEM) enabled topical evaluation, backscattered electron imaging (BSE) allows the drawing of conclusions about the chemical nature (density) and allocation of the different residues and contaminations on the sample material. Elements with an atomic number lower than that of titanium (and, hence, less electron backscattering) appear darker in the material contrast image (Fig. 1). The qualitative and quantitative elemental analysis of the implant surfaces, the energy-dispersive X-ray spectroscopy (EDX), uses the X-rays emitted by a sample to determine its elemental composition. The implants were fixed on the sample holder to allow a systematic scan reaching approximately one third of the implants surface in a viewing angle of 120 degrees (Fig.1).

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A surface-area analysis and one or more spot analyses were performed for each implant.

Results

The implants MDI (3M ESPE) and ANEW (Dentatus) showed a homogenous distribution pattern of numerous aluminium oxide particles (Al_2O_3) as remnants of the blasting process. These aluminium oxide particles appear in the material contrast image darker than titanium which can be seen in Figs. 2–3 and 5–6. The MDI sample showed very rare additional organic particles (10–50 µm), partly with embedded metal particles (500 nm) containing traces of iron and chromium. The ANEW implant showed up to three organic particles (30–40 µm) and traces of silicon (6–8 µm).

The implant ROOTT (TRATE) was the only one-piece implant in the sample group with no organic contaminants or inorganic residues (Figs. 8–10, Tab. 3). The blasting material HA/TCP left no measurable traces on the implant. All three implants as mentioned above are made of titanium grade 5, which is an alloy of titanium, aluminium and vanadium. The higher concentration of aluminium in the elemental analysis of the implants MDI and ANEW (Tab. 1 and 2) is probably a consequence of the blasting material, which remains mechanically interlocked on the implants surface.

	Atomic percentage	Certainty
Ti	51.5 %	1.00
Al	46.3 %	0.99
V	2.1 %	0.96

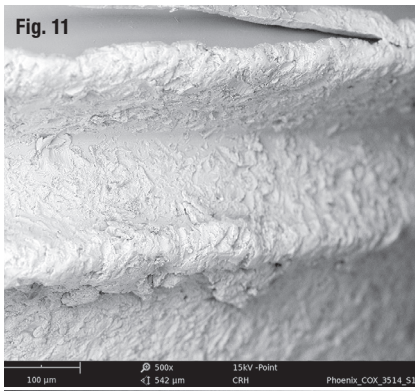
Tab. 1

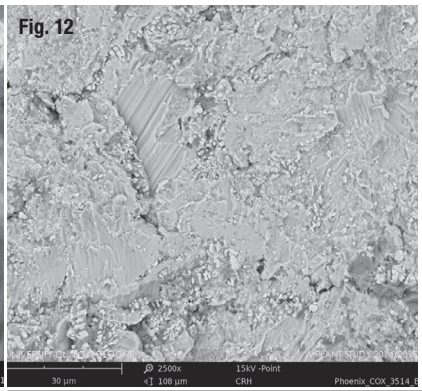
	Atomic percentage	Certainty
Ti	70.2 %	1.00
Al	26.6 %	0.99
V	3.2 %	0.97

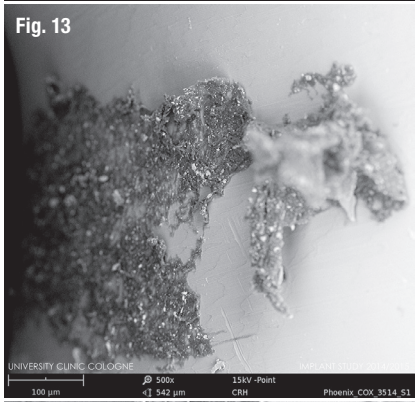
Tab. 2

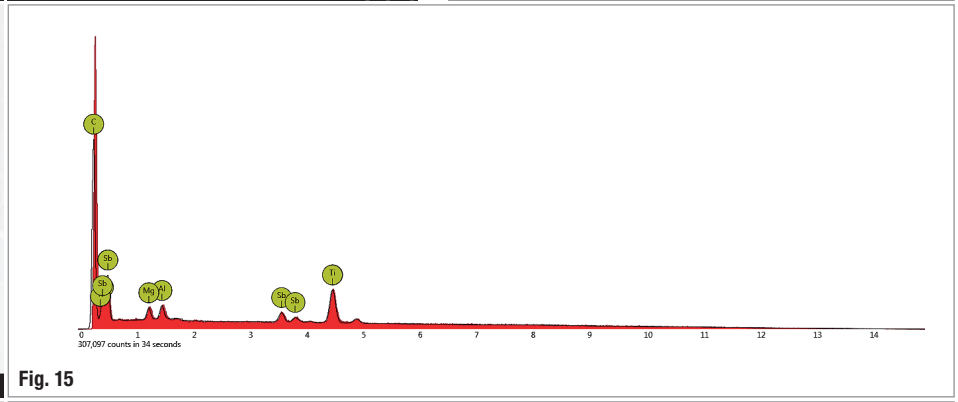
	Atomic percentage	Certainty
Ti	83.1 %	1.00
Al	13.0 %	0.99
V	3.9 %	0.95

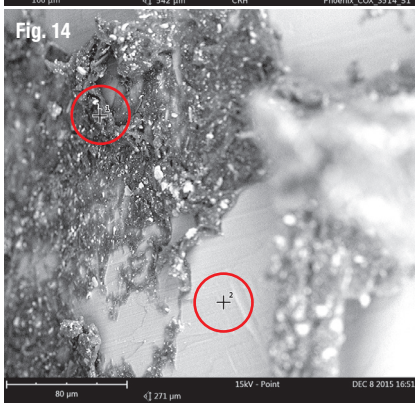
Tab. 3

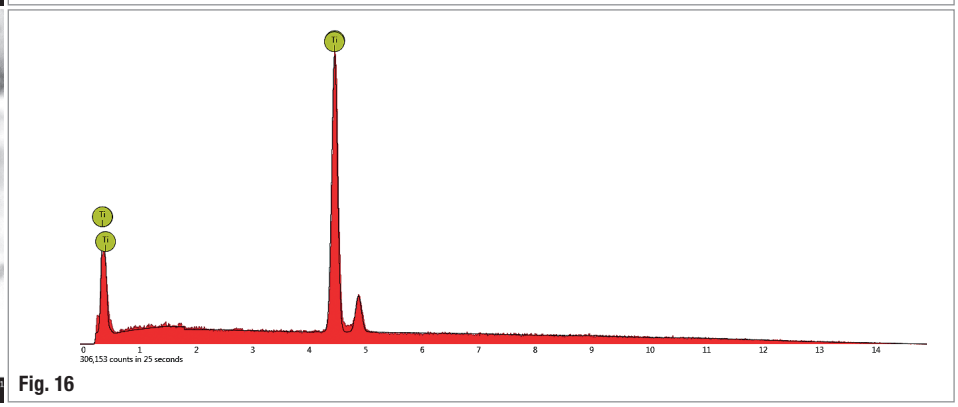












Tab. 1: Quantitative elemental analysis (titanium grade 5). – **Tab. 2:** Quantitative elemental analysis (titanium grade 5). – **Tab. 3:** Quantitative elemental analysis (titanium grade 5). – **Fig. 11:** CO-XG (PHOENIX) titanium bur, x500. – **Fig. 12:** CO-XG (PHOENIX), x2,500. – **Fig. 13:** CO-XG (PHOENIX) implant neck, x500. – **Fig. 14:** Major organic contamination, x1,000. – **Fig. 15:** Qualitative elemental analysis of spot # 1 in Fig. 14. – **Fig. 16:** Qualitative elemental analysis of spot # 2 in Fig. 14.

	Atomic percentage		Certainty
C	69.2 %		0.99
O	25.3 %		0.99
Ti	3.0 %		0.99
Mg	0.9 %		0.97
Al	0.8 %		0.97
Sb	0.8 %		0.97

Tab. 4

Tab. 4: Quantitative elemental analysis of spot # 1 in Fig. 14.

	Atomic percentage		Certainty
Ti	100.0 %		1.00

Tab. 5

Tab. 5: Quantitative elemental analysis of spot # 2 in Fig. 14.

The titanium grade 4 implant CO-XG (PHOENIX) had a rough implant body and a machined implant neck. In contrast to all other one-piece implants in the cohort, the CO-CG showed large burrs on some outer threads that may lose the remaining contact with the implant during insertion (Fig. 11). Whereas the implant body was mainly free of residues (Figs. 12 and 16), the machined area of the implant neck revealed a massive organic contamination with large particles (100–300 µm) containing not only carbon, but also significant traces of magnesium, aluminium and antimony (Figs. 13–15, Tabs. 4 and 5).

The implant Allfit KOS presented an inhomogeneous distribution pattern of remaining aluminium oxide particles on the rough implant body as remnants of the blasting material with different sizes from 5 to 50 µm (Figs. 17–18). The machined threads at the implants neck that are exposed to the cortical bone showed organic material in the narrow grooves (Figs. 19–20). The correspondent EDX analysis revealed a significant amount of carbon inside these gaps (Fig. 21, Tab. 6) and showed the typical signals of titanium grade 5 in the neighbourhood of these contaminants (Fig. 22, Tab. 7).

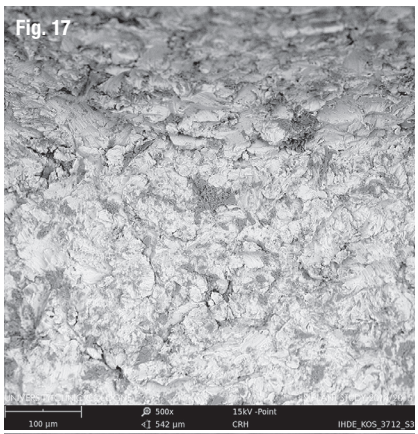
Discussion

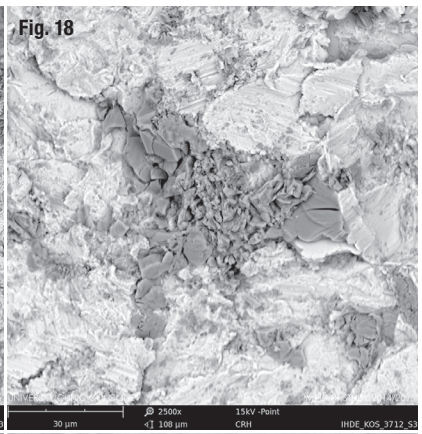
There is an ongoing discussion, as to whether organic residues or major amounts of blasting material have a clinical impact on the process of osseointegration.[11,12] Even the manufacturers of implants on whose implants more or less large amounts of organic or inorganic contaminants were found in our analyses have reported statistical success rates that are not different from those of other implants, proving their point with specially conducted studies.

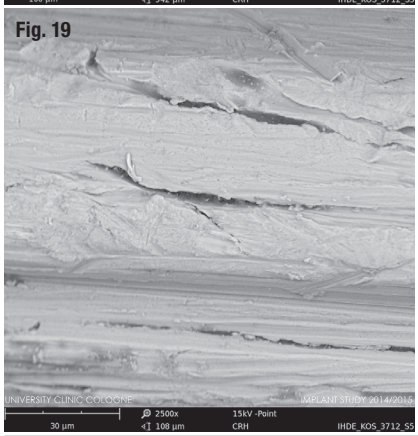
But how does the human body handle organic particles or minor particles with traces of iron, chromium, nickel or even antimony? This question should actually not arise in the first place, because impurities are preventable, as this study clearly shows. Even if these particles are relatively firmly attached to the implant surface, they are likely to become detached by the resulting frictional forces in the bone bed as the implants are inserted at torques in the double digits to achieve the desired level of primary stability. Particles with a diameter of less than 10 µm are susceptible to uptake by macrophages through phagocytosis,[13] so that questions related to the clinical relevance of such impurities cannot simply be brushed aside.

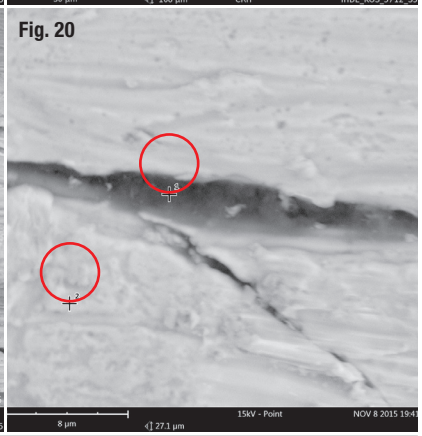
If we follow the shift in paradigm and understand that osseointegration is the consequence of a dynamic foreign body equilibrium, rather than a static situation, every additional and avoidable foreign body on a sterile packed implant renders activation of the immune system and may be the reason for a periimplantitis.[14,15] Especially in the early phase of osseointegration, a particle-induced macrophage activation is associated with an increased osteoclastogenesis and may therefore cause increased bone resorption.[16]

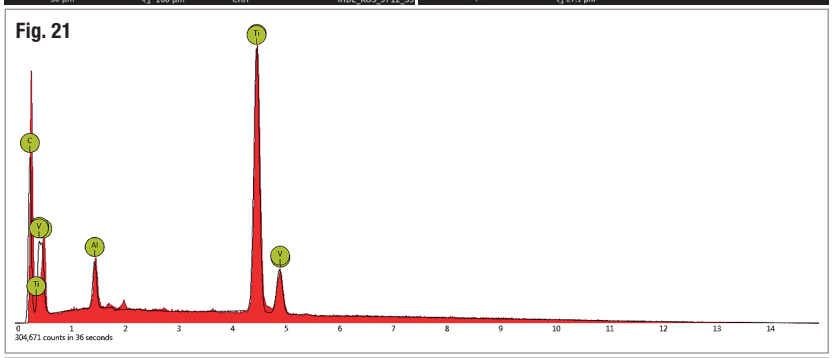
According to Albrektsson, we should abide by his fundamental guiding principle that we have to know, not to believe, that a specific implant will do no harm to our patients.[17] To cut a long story short: Concern-

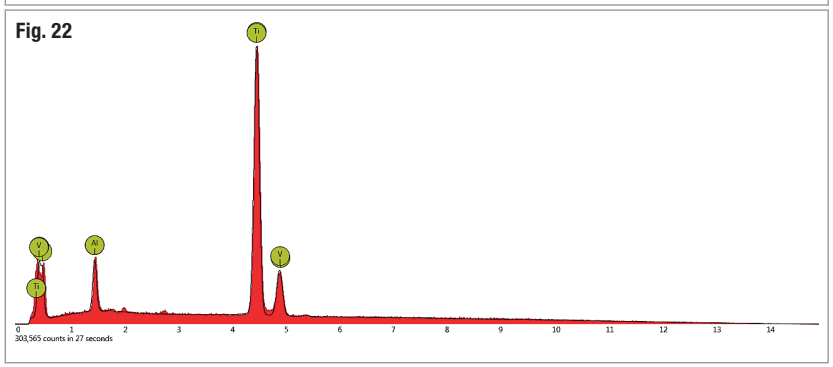












	Atomic percentage	Certainty
C	74.4 %	0.99
Ti	21.8 %	1.00
Al	2.9 %	0.98
V	0.9 %	0.97

Tab. 6

	Atomic percentage	Certainty
Ti	81.7 %	1.00
Al	14.5 %	0.99
V	3.8 %	0.95

Tab. 7

Fig. 17: Allfit KOS, x500. – **Fig. 18:** Major aluminum oxide particle, x2,500. – **Fig. 19:** Allfit KOS, machined thread, x2,500. – **Fig. 20:** EDX analysis of organic material, x10,000. – **Fig. 21:** Qualitative elemental analysis of spot # 1 in Fig. 20. – **Fig. 22:** Qualitative elemental analysis of spot # 2 in Fig. 20. – **Tab. 6:** Quantitative elemental analysis of spot # 1 in Fig. 20. – **Tab. 7**: Quantitative elemental analysis of spot # 2 in Fig. 20.

ing dental implants, dentists, not only in Europe, should act in accordance with what is said to be a Lenin citation which claims that trust is good, but control is a lot better.

The CleanImplant Foundation, an international non-profit organisation, will continue and extend the periodic analyses of dental implants all over the globe in order to provide dentists with independent research results and evaluate improvements in the manufacturing process of previously analysed implants. More information and a correspondent newsletter is available at the project´s homepage www.cleanimplant.com_

Literature available from the author.

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PRIME MOVER IN IMPLANTOLOGY

An indirect method for provisionalisation

The team approach in a complete mouth hybrid reconstruction

Authors: Dr Robert A. Levine & Dr Harry Randel, USA

Initial situation

A periodontist and ITI colleague whose office is two hours from our practices referred this patient to our team. Initially, she was seen by the prosthodontist, Dr Harry Randel, and subsequently referred to the periodontist, Dr Robert Levine, for a team approach to solve her failing dentition. The patient presented at our office as a 65-year-old non-smoking female (ASA 3: Illnesses under treatment: anxiety/depression, osteoarthritis, fibromyalgia, hypothyroidism and history of myofacial pain dysfunction, Figs. 1–3). There was a history of TMJ issues (i.e. clicking and pain with her right side TM joint) which presently is under control and pain-free.

Figs. 1–3: Initial situation.


Fig. 1


Fig. 2

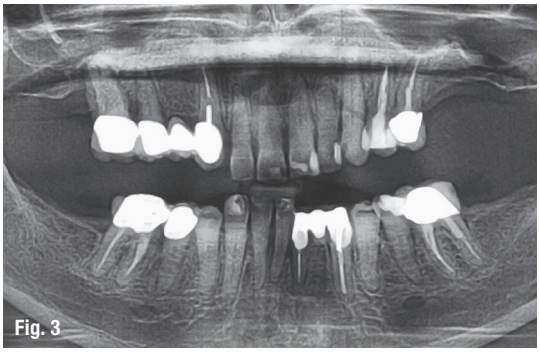
Fig. 3

Her chief complaint was to improve her aesthetics and comfort with a desire for a permanent and quick solution to replace her failing dentition. She also desires a reduction of her maxillary anterior gummy smile in the final prosthesis. She arrived at our office for a third surgical consult for an immediate load maxillary and mandibular hybrid restoration using the Straumann® Pro Arch treatment concept (tilting of the distal implants to avoid anatomic structures of the maxillary sinus, mandibular mental foramina). This treatment concept reduced the need for additional surgeries and number of implants needed to provide a fixed hybrid restoration with a first molar occlusion. A medium to high lip line was noted upon a wide smile with a bi-level plane of occlusion. Also noted was supraeruption of her maxillary and mandibular anterior teeth (FDI: #12, 11, 21, 22 and #41–43, US: #7–10 and #25–27) creating a deep bite of 6 mm (Fig. 2). A Class I canine relationship was recorded with 6 mm overjet & 6 mm overbite. Due to her medication-related dry mouth issue, generalised recurrent caries were noted. Periodontal probing depths ranged generally from 4–7 mm in the maxillary jaw and from 4 to 6 mm in the mandibular jaw with moderate to severe marginal gingival bleeding upon probing in both jaws. Tooth #6 (FDI: #13) was

noted to have a vertical fracture clinically. There was generalised heavy fremitus in her maxillary teeth and mobilities ranging from 2–3 degrees on the following teeth: #3, 7 thru 13, 20–26 and 29 (FDI: #16, 12, 11, 21–25, 31–35, 41–42 and 45). Her compliance profile was good with her previous dentists, however, she states that she has always had "issues with my gums."

The tentative treatment plan discussed at the initial visit with the patient and her husband included the following diagnosis: generalised moderate to advanced periodontitis; generalised recurrent caries related to medication-related dry mouth; posterior bite collapse with loss of occlusal vertical dimension ("mutilated dentition"). Prognosis: all remaining teeth are hopeless.

Treatment plan

1. Obtain a CBCT of both arches to evaluate bone quality, bone quantity, and anatomical limitations (Fig. 4).
2. Articulate study models with fabrication of diagnostic full upper denture (FUD), full lower denture (FLD) and surgical guide templates.
3. Team discussions to develop the final surgical and prosthetic treatment plan for hybrid restorations using the Straumann® Bone Level Tapered Implant (BLT) with a first molar occlusion. Utilisation of an indirect technique will be used to fabricate the converted fixed laboratory metal-reinforced provisionals in one day.
4. Coordination of the surgical visit (Dr Robert Levine) with the prosthodontist's office (Dr Harry Randel), dental laboratory (NewTech Dental Laboratory, Lansdale, PA), and the dental implant company representative (Straumann USA, Andover, MA). The patient is aware of the possible need to wear one or both dentures during the healing phase if the insertion torque values are inadequate for immediate loading. This may be due to bone quality, bone quantity, or need for extensive bone grafting requiring a membrane technique for guided bone regeneration (GBR) and a two-stage approach. This is very important to review with all patients, especially when only four implants are planned in the maxilla, as the distal implant(s) may record poor insertion torque values due to bone quality and quantity. The ability to use longer, tapered (BLTs), and tilted implants—as in the present case—with adequate buccal bone available for the anticipated 4.1 mm implants help to reduce this possibility significantly.
5. Delivery of the fixed provisionals in one day in the prosthodontist's office.
6. Post-operative visits every two to three weeks with the periodontist's office for deplaquing, review of plaque control techniques and delivery of a water irrigation device at six weeks. An occlusal adjustment to be completed at each post-operative visit with the surgical and restorative offices, because the occlusion is very dynamic as the patient's musculature continues to accept her newly restored occlusal vertical dimension (OVD). Time is also needed to stabilise her TMJ symptoms.
7. Completion of final case at least three months post-surgery. Since the patient will be spending the winter in Florida, she will commence her final treatment when she returns in the spring.
8. Periodontal maintenance every three months alternating between offices.

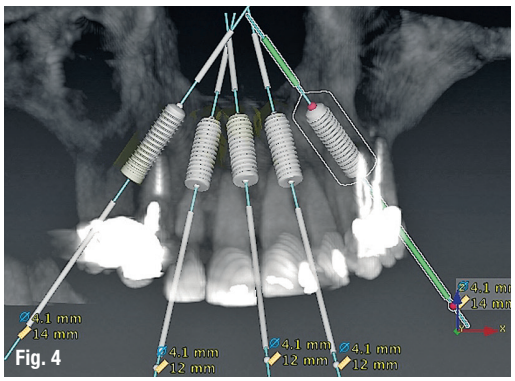

Fig. 4

Fig. 4: CBCT of both arches to evaluate bone quality, bone quantity, and anatomical limitations.

Based on CBCT analysis it was decided to place five implants in the upper jaw at the following sites: #4 (FDI: #15) (tilted), #7 (FDI: #12), between #8 & #9 (FDI: #11 & #21) (midline), #10 and #12 (FDI: #22 and #24) (tilted) after vertical bone reduction for prosthetic room. Four implants were anticipated to be placed in the lower jaw at sites #21 (FDI: #34) (tilted), #23 (FDI: #32), #26 (FDI: #42), & #28 (FDI: #44) (tilted). The anticipated position of each implant is ideally palatal in the maxilla to the original teeth and lingual to the original mandibular teeth. This is to allow for screw-access holes exiting away from the incisal edges anteriorly, and if possible, lingually to the central fossae in the posterior sextants. An additional benefit of palatal and lingual placement of each implant is that their final position will be at least 2–3 mm from the anticipated buccal plates, which is beneficial for long-term bone maintenance and implant survival. If the necessary 2 mm buccal bone to the final implant position is not available, then contour augmentation (bone grafting) is recommended to create that dimension. The goal is to prevent buccal wall resorption over time using slowly resorbing inorganic bovine bone and a resorbable collagen membrane. This membrane allows easy contouring and flexibility over the graft material when wet. It is also important to evaluate tissue thickness. It is ideal to have at least 2 mm of buccal flap thickness over each implant as thin tissues are associated with bone loss and recession over time. Either connective tis-

Figs. 5 & 6: Extension of the cuts beyond the anticipated cantilever length to create adequate strength and thickness of the final prosthesis in unsupported cantilever areas.


Fig. 5

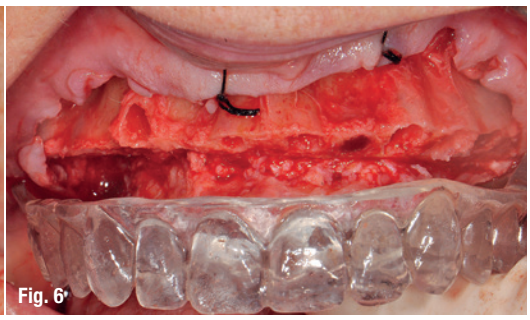
Fig. 6

sue grafts from the palatal flap or tuberosity can be harvested and sutured under the buccal flap. Alternatively, an allograft connective tissue or a thick collagen material can be used to thicken the buccal flaps when necessary.

Surgical appointment

The patient was pre-medicated with oral sedation (triazolam 0.25 mg), amoxicillin, a steroid dose pack and chlorhexidine gluconate (CHG) rinse, all starting one hour prior to surgery. The patient's chin and nose were marked with indelible marker, and the OVD was measured using a sterile tongue depressor with similar markings while the patient's mouth remained closed. The patient was then given full mouth local anaesthesia.

Fig. 7: All implants were 4.1 mm in diameter and 14 mm in length except FDI: #12, #11, #21, and #23/US: #7, #8-9, and #11, which were 12 mm in length.
Fig. 8: Placement of tall protective healing caps.
Fig. 9: Application of bite registration material to confirm there was no contact.

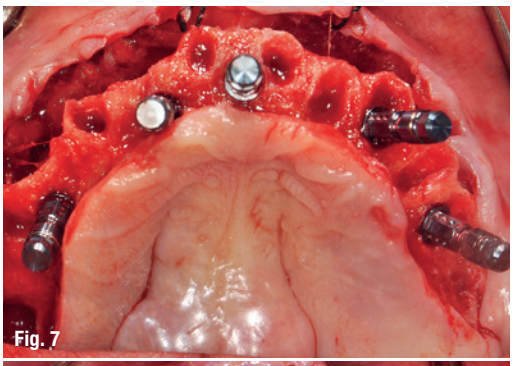
Fig. 7

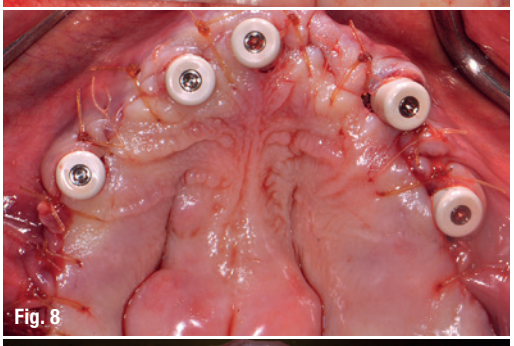
Fig. 8

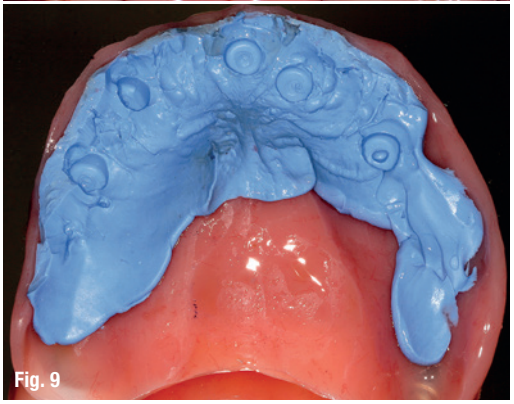
Fig. 9

Starting with the maxillary arch, full-thickness flaps were raised and sutured to the buccal mucosa with 4-0 silk to provide improved surgical access and vision. The teeth were removed with the goal of buccal plate preservation using the PIEZOSURGERY® (Mectron: Columbus, OH) for bone preservation (tips EX 1, EX 2, Micro saw: OT7S-3). The sockets were degranulated with PIEZOSURGERY® (tip: OT4) and irrigated thoroughly with sterile water.

With the anatomically correct surgical guide in position and firmly held in place by the surgical assistant, measurements were made from the mid-buccal of each tooth. Surgical cuts were made going from the anticipated cantilever of site #3 (FDI: #16) to site #14 (FDI: #26) using the PIEZOSURGERY® saw (tip: OT7). Our team goal was to create the prosthetic room necessary for a hybrid restoration i.e. 10–12 mm. The cuts were intentionally extended beyond the anticipated cantilever length to create adequate strength and thickness of the final prosthesis in these unsupported cantilever areas (Figs. 5–6). The mandibular arch was treated in a similar manner. Additionally, bilateral mandibular tori reduction was accomplished with the aid of the PIEZOSURGERY® saw (tip: OT7) after the extractions and prior to the vertical bone reduction of the mandibular ridge. Subsequently, the implants were placed.

The implant sites were prepared per the manufacturer's protocol (except for bone tapping) for the Straumann® BLT implant. The implants were placed using the surgical guide template with the following insertion torques measured: site: FDI: #15, #12, #11, #21, #23, #25, #34, #32,#42/US: #4, #7, #8-9, #11, #13, #21, #23, #26. All torques were >35 Ncm with #28 (FDI: #44) recording 20 Ncm insertion torque values. All implants were 4.1 mm in diameter and 14 mm in length except FDI: #12, #11, #21, and #23/US: #7, #8-9, and #11, which were 12 mm in length (Fig. 7). All 17 and 30 degree-angled implants

were bone profiled prior to SRA abutment placement. This allowed the complete seating of the SRA abutment at the recommended 35 Ncm torque. Using the available Straumann® bone profilers with the appropriate Narrow Connection (NC) or Regular Connection (RC) inserts was a critical step for an abutment to fit correctly. The following SRA abutments (all were 2.5mm gingival heights) were then chosen: straight: FDI: #32, #42/US: #23, #26; 17 degrees: FDI: #15, #12, #11, #21/US: #4, #7, #8–9; and 30 degrees: FDI: #23, #25, #34, and #44/US: #11, #13, #21, and #28. Tall protective healing caps were then placed (Fig. 8), and the dentures were checked to evaluate that there was adequate space for the pink acrylic to allow for bite registration material thickness. All sockets and buccal gaps to the immediately placed implants were bone grafted. Prior to suturing, the tissue flaps were scalloped with 15c blades to reduce overlap of the flaps over the protective caps. This not only aided in post-operative healing, but also aided in the visualisation of the abutments by the restorative dentist for the provisional insertion. The patient was sutured with resorbable 4-0 chromic gut and 5-0 Vicryl™ sutures (Ethicon: Johnson & Johnson) and was released to be seen immediately by Dr Randel for the coordinated restorative visit.

As discussed below, his responsibilities included: bite registration, impressions, and the dental lab conversion of the complete denture to a metal-reinforced fixed transitional prosthesis (indirect provisionalisation technique). Our team of restorative dentists have been treating full-arch immediately loaded cases on 5–8 implants (depending if restoration is a hybrid or C&B) since 1994. Our earlier experiences, for approximately the first two years (1994–1996), have resulted in us all presently using the indirect technique, which in our hands is easier for everyone involved (especially the patient). We handle these coordinated visits between offices, the dental lab, and our Straumann representative weeks in advance so we are all on the same page with timing. These coordinated efforts could be compared to a symphony orchestra, where each musician knows their specific part and when and where they are expected to be. Many of our patients have described this fluidity as a seamless experience that they witness first hand and greatly appreciate.

Same-day restorative appointment

The patient was seen in Dr Robert Levine's office for restorative records with Dr Randel (prosthodontist) in preparation for immediate load protocol. The previously processed dentures were first checked with pressure paste to ensure the absence of contact between the intaglio surface and the tall healing caps. Bite registration material was then used to confirm there was no contact (Fig. 9), and later will be used by the lab to articulate the models. Efforts were made to confirm the OVD (with the marked tongue depressor provided by Dr Levine), incisal position, midline, plane of occlusion, and centric position with the prosthesis in place. Adjustments were made as needed. Photographs were acquired to document and relay information via e-mail to the lab technician. The lab will use the registration material left in the intaglio surface of the prostheses, as healing caps will be placed on the newly fabricated models. This allows the index to transfer the OVD and centric relationships with contact just on the healing caps. The soft tissue plays no role in this relationship. A bite registration was made to confirm centric relation. Healing caps were then removed and open tray impression copings were placed. If the connection between the implant abutments and the impression copings are not visualised, then X-ray confirmation of the connection is needed. Transfer impressions were made using a custom tray and rigid impression material of choice, in this case polyether was used.


Fig. 10

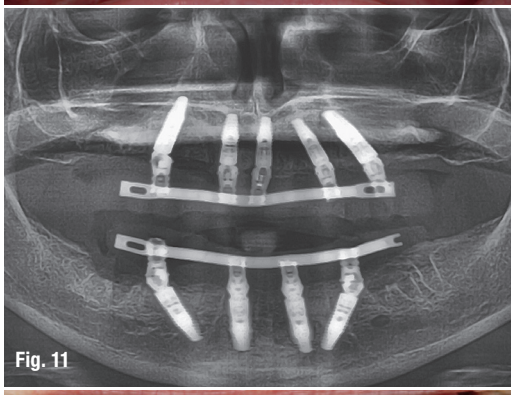
Fig. 11


Fig. 12

Fig. 10: Insertion of the prostheses.
Fig. 11: Panoramic radiographic confirmation of proper seating.
Fig. 12: GC verification jigs.

Fig. 13: Custom trays to transfer the relationships.
Fig. 14: OVD and centric relations were obtained, and the wax try-ins were confirmed for aesthetics, phonetics, and occlusion prior to the milling of the framework.
Figs. 15–18: Completed case.

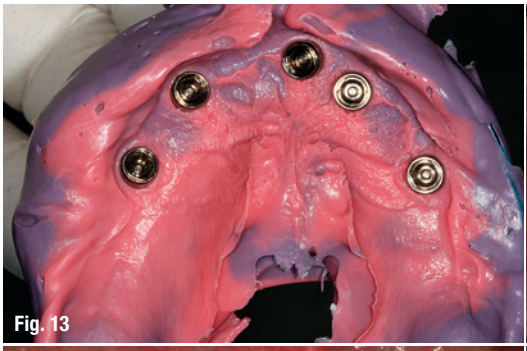
Fig. 13


Fig. 14

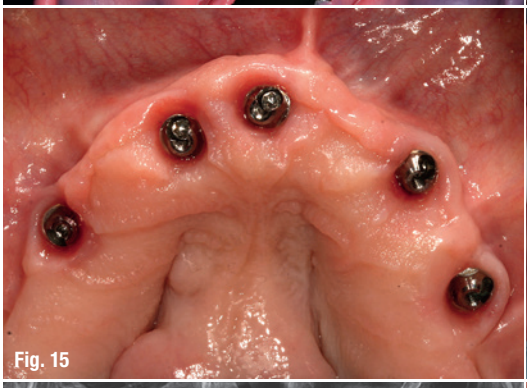
Fig. 15


Fig. 16

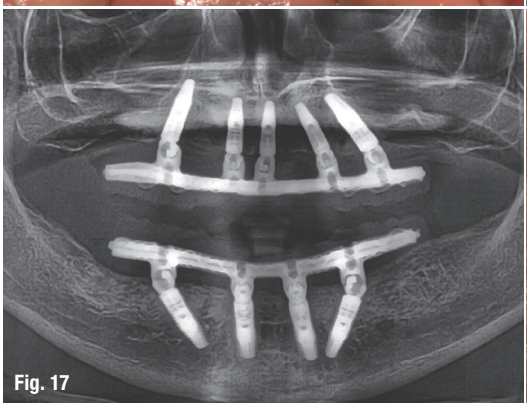
Fig. 17


Fig. 18

Our lab courier delivered the dentures and impressions to the lab for the conversion to metal-reinforced, screw-retained provisionals, which were delivered back to the restorative office within 24 hours. The next afternoon, the prostheses were inserted (Fig. 10) and panoramic radiographic confirmation of proper seating was obtained (Fig. 11). Any necessary occlusal adjustments were then completed. The patient was then seen every two to three weeks for deplaquing and plaque control review per our earlier discussed protocol. The occlusion was also refined as needed. The patient's TMJ symptoms were significantly reduced within the first three weeks. A water irrigation device was given and reviewed at six weeks post-surgery. As the patient was in Florida for the winter, and unable to come in after the typical 3 month protocol, she was seen 4 1/2 months after the surgery. At that time, periapical X-rays of each implant were done to confirm bone healing. The prostheses were removed and cleaned. GC verification jigs (Fig. 12), made on the original models and fabricated prior to the appointment, were tried in. If passivity is not confirmed, then the GC jig can be cut and re-indexed.

Once the fit of the verification jigs was confirmed, custom trays were used to transfer the relationships (Fig. 13). During the following appointments, OVD and centric relations were obtained, and the wax try-ins were confirmed for aesthetics, phonetics, and occlusion prior to the milling of the framework (Fig. 14). It is important to confirm tooth location prior to milling the framework so that the framework was designed within the parameters of the acrylic/tooth borders. At the insertion appointment, the healing caps were removed and cleaned with chlorhexidine. Figure 15 demonstrates the excellent healing of the soft tissue prior to insertion of the prosthesis. Once inserted, aesthetics, phonetics, and OVD of the prosthesis were confirmed. The occlusion was adjusted as needed. Screws were tightened to 15 Ncm, screw access openings were filled with Teflon tape to within 2 mm of the surface, and a soft material such as Telio or Fermit was used to seal the

access. A maxillary acrylic nightguard was fabricated to help protect the occlusal surfaces from wear and reduce any parafunctional habits. The completed case is shown (Figs. 15–18). At subsequent appointments, the prostheses were evaluated to determine if they needed to be removed to assess the soft tissue or if any contouring of the acrylic was necessary. Eventually, the soft material used to close the access can be replaced with a hard composite material.

Conclusion

A Complex-SAC Straumann® Pro Arch Case was presented. Management of this treatment utilised the advantages of the team approach for maximising our combined knowledge to benefit the patient, consistent with ITI doctrine. The use of the BLT implants, due to excellent initial stability, gave us the confidence in our ability to not only use immediate extraction sites (Type 1 implant placement), but also to increase avoidance of anatomic structures. In this case, the structures include the maxillary sinuses, nasopalatine and mental foramina, as well as the inferior alveolar nerve canals. In addition, with the tapered design of the BLT implant, maxillary anterior areas could be utilised by the surgeon to avoid apical fenestrations where undercuts could become problematic using straight-walled bone level implants. The coordinated appointments, along with the symphony-like steps in the procedure, created a positive, "seamless" experience for the patient._

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Augmentation and implant treatment

Two-stage surgery in the severely resorbed edentulous mandible

Author: Dr Marko Nikolic, Croatia

Introduction

An adequate bone volume at the future implant site is a prerequisite for ideal implant placement and implant success. A residual bone with a vertical dimension less than 5.0 mm indicates a cut-off point and implies the need of additional augmentation procedures in connection with implant insertion, whereas higher values of the alveolar crest ≥ 5.0 mm are considered to be sufficient for treatment with standard-diameter implants without the urgent need of any horizontal bone augmentation.[1]

Fig. 1: Pre-operative panoramic X-ray: poor periodontal and prosthetic conditions.

Figs. 2a and b: Pre-operative CBCT: aspect of the extremely horizontally resorbed alveolar ridges of the anterior part of the mandible.

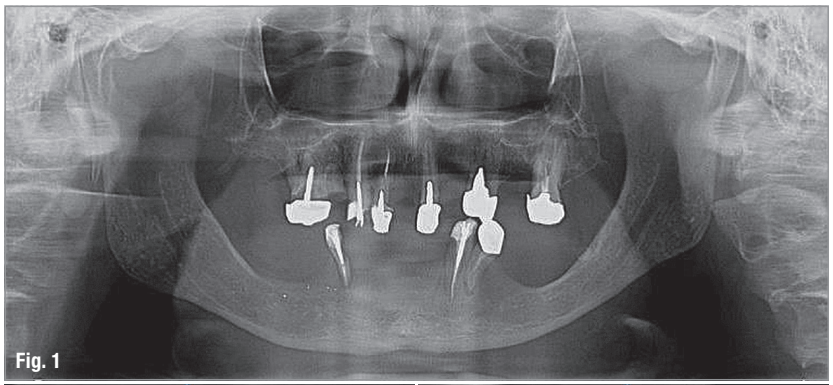


Fig. 1

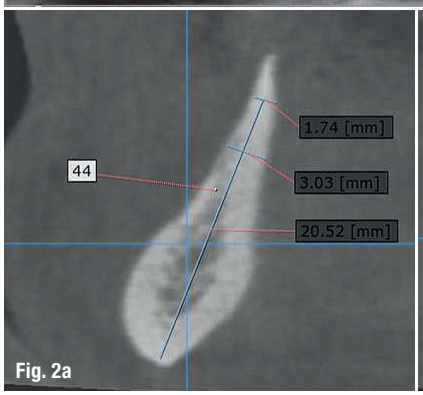


Fig. 2a

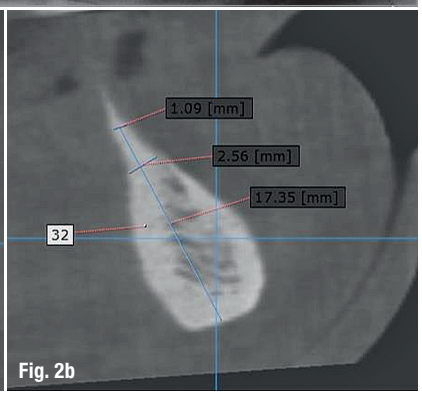


Fig. 2b

Distant donor sites like the anterior and posterior iliac crest and intraoral areas like the retromandibular and the interforaminal region of the chin are common sources for harvesting autogenous bone-grafts. Depending from the donor site, patient and surgeon should be aware of the possible confrontation with various advantages but also disadvantages when harvesting the bone. Harvesting bone from the iliac crest requires patient hospitalisation, and surgery under general anaesthesia, whereas intraoral bone harvesting can be performed ambulatory and under local anaesthesia.[2,3] The main problem with autogenous bone grafting is represented by the high risk of patient morbidity, causing pain, swelling, and healing problems at the donor site.[3]

The aim of this case presentation is to demonstrate a predictable, two-stage operating protocol for the horizontal augmentation of the severely resorbed, edentulous anterior mandible with an autogenous bone graft, harvested from the crestal alveolar ridge at implant site, in order to create a sufficient bone volume for the later implant therapy, without donor morbidity for the patient.

Patient data

The 47-year-old male patient visited our dental office in order to renew his old and poor fitting prostheses in the lower and in the upper jaw. The remaining five teeth 32–43 in the front of the lower jaw had been removed three months previously due to a chronic periodontitis in our dental practice. Nearly all remaining teeth in the upper and the lower jaw showed significant signs of progredient chronical periodontitis, insufficient root treatments and prosthetic suprastructures as well (Fig. 1). The medical history of the patient was without any significant pathological findings.

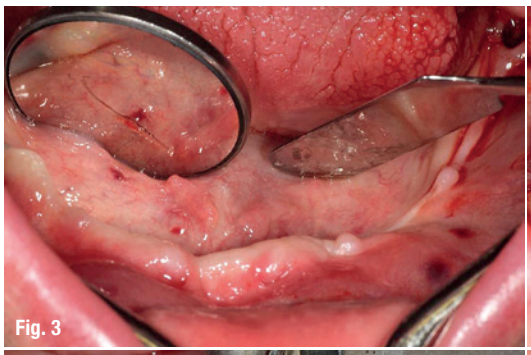


Fig. 3

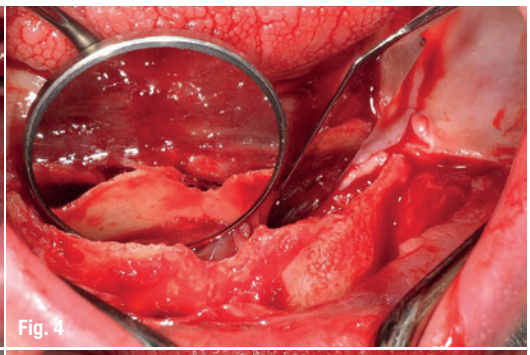


Fig. 4

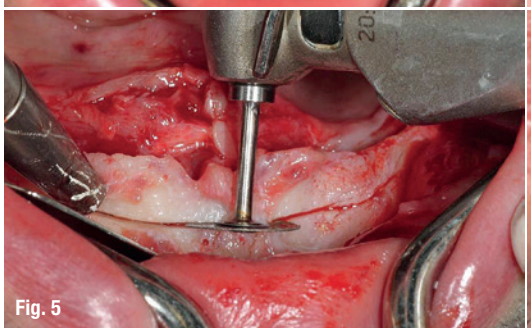


Fig. 5

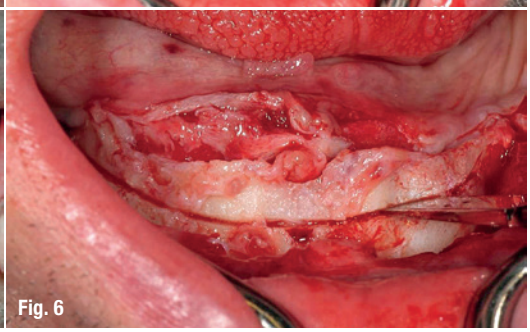


Fig. 6

Fig. 3: Pre-operative clinical aspect of the anterior alveolar ridge.
Fig. 4: After elevation of the mucoperiostal flap, the sharp-edged alveolar ridge becomes visible.
Fig. 5: Preparation of the osseous graft with the microsaw.
Fig. 6: Detachment of the graft with a chisel.

Diagnostic procedures

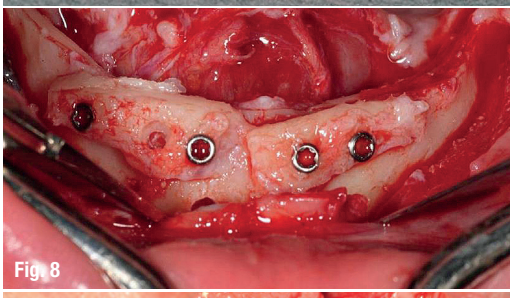
In cases of long-term edentulism, the dental surgeon is almost always confronted with a reduced bone volume, representing both a major challenge and a significant demand for the use of diagnostic imaging methods prior to augmentation and implant treatment. Conventional X-ray images contain only a two-dimensional information concerning the vertical height of the alveolar bone. Therefore, they represent an insufficient method for the appreciation of the horizontal bony dimensions.[4] In comparison, three-dimensional (3-D) diagnostic tools like cone beam computed tomography (CBCT) offer the advantage of the visualisation of the so called 'z-axis', representing the bone volume in the horizontal, i.e. bucco-lingual dimension of the alveolar crest respectively. A proper treatment planning and the use of 3-D diagnosis are therefore crucial parameters for a predictable and sustainable final treatment outcome in implant therapy, especially in patient cases with severe resorption of the jawbone, like in our presented patient case.

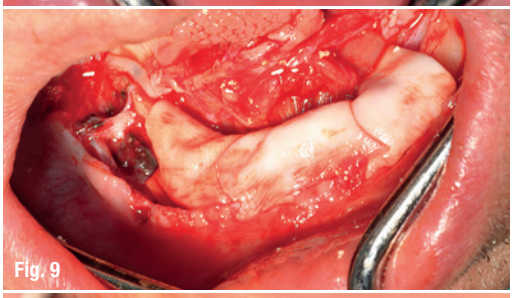
The oral examination and the CBCT-Scan (SCANORA, SOREDEX, Schutterwald, Germany) revealed a distinct bone resorption in the lower jaw, showing a more pronounced horizontal atrophy in the anterior part of the mandible (Figs. 2 & 3). According to the clinical measurements and the values of the 3-D CBCT scan, the interforaminal vertical bone height was between 22.0–25.0 mm. The horizontal bone volume amounted to between 1.0–3.0 mm in the implantation zone. The CBCT-Scan revealed a horizontal crestal bone thickness of 1.09 mm in region 32, and 1.74 mm in region 44.

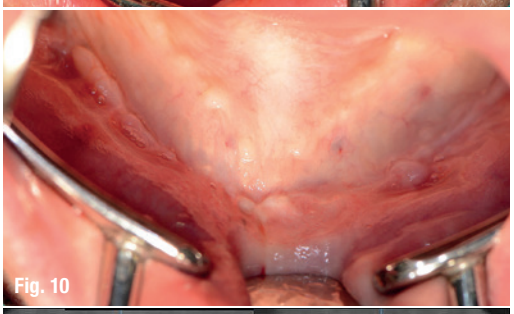
Treatment planning and augmentation procedure

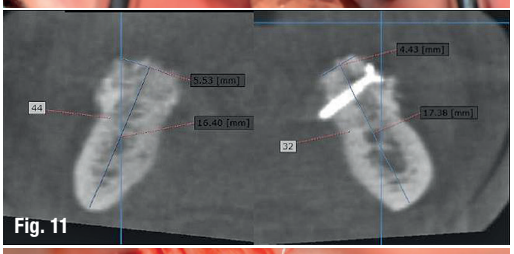
After patient-consultation, we opted for a two-stage surgery with an intraorally harvested autogenous bone-graft and a delayed implant treatment after a healing period of at least four months. As the vertical dimension of the implant region appeared to be sufficient enough for placement of implants with a standard length, we decided to cut off 5.0 mm of the thin and sharp-edged alveolar ridge by osteotomy, in order to create an autogenous lateral onlay bone-graft for horizontal augmentation in the anterior alveolar ridge. This protocol comprised in our view the advantage of the avoidance of donor morbidity, because the donor site was the receptor site as well. After creation and mobilisation of the mucoperiostal flap, the very thin and sharp edge of the atrophied alveolar crest became visible (Fig. 4). The osteotomy of the bone was performed with a saw (Bone splitting system, Helmut Zepf Medizintechnik GmbH, Seitingen-Oberflacht, Germany; Fig. 5). Subsequently, the graft was detached from the anterior mandible with chisel (Bone splitting system, Helmut Zepf, Medizintechnik GmbH, Seitingen-Oberflacht, Germany; Fig. 6) and a cortico-cancellous bone block was obtained (Fig. 7). The bone graft was fixed at the buccal side of the anterior mandible (region 34–44) with four 8.0 mm long titanium microscrews (Storz am Mark GmbH, Emmingen-Liptingen, Germany; Fig. 8). A combination of autogenous bone chips and particulated xenograft (BEGO OSS, BEGO Implant Systems, Bremen, Germany) was placed in the small remaining space between the bone block and the alveolar processus, as well as around and on the bone graft. The augmented site was covered with a platelet rich in

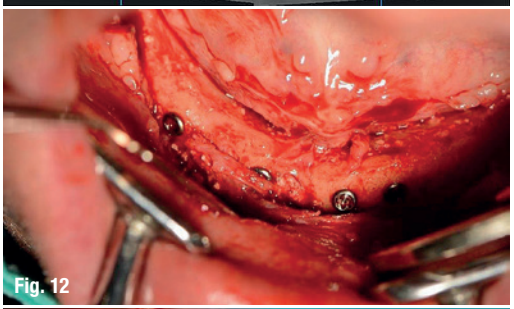
Fig. 7: Aspect of the bone harvest.
Fig. 8: The graft was fixed with four miniscrews.
Fig. 9: The osseous graft was covered with a PRGF membrane and a barrier membrane for GBR.
Fig. 10: Sufficient horizontal ridge dimensions after a healing period of four months.
Fig. 11: The CBCT shortly before re-entry demonstrated a significant gain of bone volume after augmentation.
Fig. 12: After flap elevation, a good osseointegration and stabilisation of the autograft was noticed.
Fig. 13: After the fixation screws were removed, the four implants with a diameter of 3.75 mm and a length of 11.5 mm were inserted epicrestally without a surgical guide.

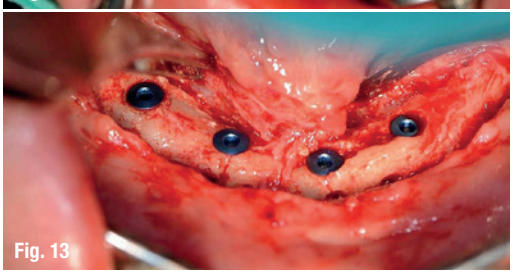












growth factors (PRGF) membrane (BTI Biotechnology Institute, Blue Bell, USA) and additionally with a barrier membrane for guided bone regeneration (GBR, Bio-Gide, Geistlich Biomaterials Vertriebsgesellschaft mbH, Baden-Baden, Germany; Fig 9). The healing of the graft was uneventful and without any complications, like membrane exposure, being classified as a frequent post-operative complication.[5] The patient was provided with a removable provisional prosthesis.

Re-entry and implant surgery

The re-entry for the delayed implant placement protocol was planned after a healing period of four months. With regard to the soft aspect of the augmented area of the anterior mandible, the dimensions of the alveolar ridge appeared sufficient enough for implant placement (Fig. 10). The CBCT data confirmed the assumption, demonstrating a significant gain of bone volume in the interforaminal region of the mandible after augmentation. The horizontal thickness of the crestal alveolar bone was 5.53 mm in region 44 and 4.43 in region 32. The augmentation procedure resulted in a horizontal bone gain of about 3.9 mm in region 44 and 3.3 mm in region 32 respectively, representing a mean bone gain of 3.6 mm (Fig. 11). After elevating the flap, an apparently good osseointegration and stabilisation of the autograft with the underlying pristine bone could be noticed (Fig. 12). Prior to implant placement, the fixation screws were removed. The four implants with a diameter of 3.75 mm and a length of 11.5 mm (BEGO Semados® RSX, BEGO Implant Systems) were inserted epicrestally in regions 33, 31, 41 and 43 using the freehand-method without a surgical guide (Fig. 13). The insertion torque of the implants was 35 Ncm with good primary stability.

Pre-prosthetic surgery and prosthetic rehabilitation

After three months of uneventful submerged healing, the panoramic X-ray showed a successful implant osseointegration without any signs of bone resorption (Fig. 14). Due to a lack of keratinised gingiva, we decided for an enlargement of the ratio between attached and free gingiva by performing muco-gingival surgery with the Edlan-Mejchar method (Figs. 15, 16 & 17). After an additional healing period of one month, the final bar retained, a removable acrylic overdenture was incorporated. The bar was constructed with bar abutments (PS TiBA, BEGO Implant Systems) and a non-precious alloy (Wirobond®, BEGO Dental, Bremen) and was screw-retained on the four implants (Figs. 18, 19 & 20).

Discussion

In our case presentation, the patient suffered from an extremely horizontal bone resorption, resulting in

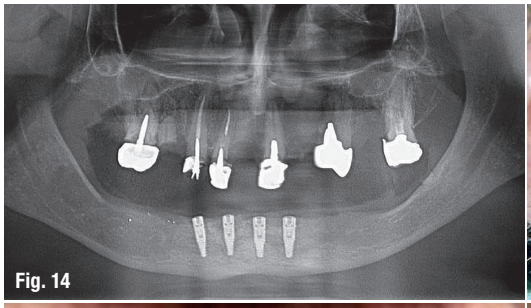


Fig. 14

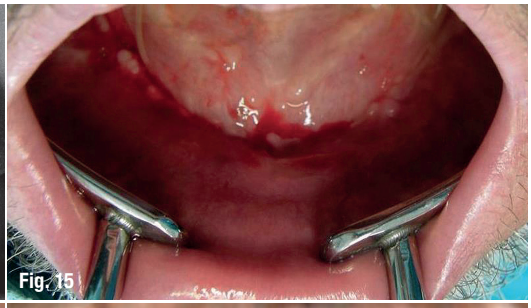


Fig. 15

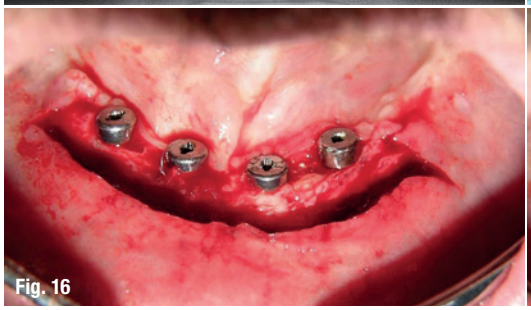


Fig. 16

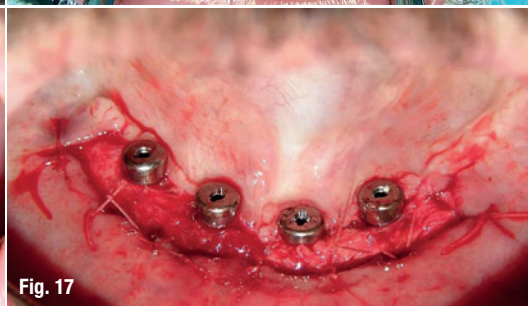


Fig. 17

Fig. 14: After three months of submerged healing, a successful implant osseointegration without bone resorption was visible on the panoramic X-ray.
Fig. 15: Soft-tissue condition of the anterior alveolar crest at the time of implant-uncovering: lack of keratinised gingiva.
Fig. 16: After uncovering the implants, an Edlan-Mejchar plastic surgery was performed to deepen the vestibulum.
Fig. 17: Aspect after plastic surgery.

a 1.0–3.0 mm thin, and knife-edged alveolar crest. Since standard diameter dental implants need a certain crestal bone volume for an adequate stabilisation and a good and predictable osseointegration, augmentation procedures had to be performed prior to implant treatment.[6]

A recently published meta-analysis showed that dental implant survival has probably to be seen independently of the biomaterial used in augmentation procedures.[7,8] Since this evidence is limited by the fact, that defect size, augmented volume, and regenerative capacity are scarcely well described in literature, autogenous bone is still recommended as the 'gold standard' for augmentation in the deficient alveolar ridge. Simultaneous grafting and augmentation is the standard procedure in ridge augmentation, resulting in an extended operating time.[3]

Fortunately, as the vertical dimension of the anterior mandible was high enough in our clinical case, we were able to harvest an adequate autogenous bone block from the thin alveolar crest, in order to use it as an onlay graft for the horizontal augmentation of the anterior mandible. This procedure avoided donor site morbidity, and resulted in less operating time and a reduced patient discomfort. The dimensions of the graft were ideal for lateral augmentation, so that there was no need for any additional carving of the bone block. As mean bone gain after healing of the autogenous graft was 3.6 mm in our patient, it was slightly smaller compared to the average bone gain of 4.3 mm, as reported in a systematic review by Jensen and Terheyden in 2009,[5] but was comparable to the findings of a recent review by Sanz-Sanchez et al., showing a mean bone gain in horizontal defects of 3.9 mm in a staged approach.[9] Nonetheless, we

Fig. 18: Facial view of the bar construction and PS TiBA abutments.
Fig. 19: Oral view of the bar.
Fig. 20: After an additional healing period of one month after muco-gingival surgery, the bar was inserted.
Fig. 21: Final prosthetic restauration of the upper and lower jaw.


Fig. 18


Fig. 19


Fig. 20


Fig. 21

gained enough bone volume for insertion of four standard diameter implants. Considering the fact that the fixation screws had to be removed, and with regard to a number of benefits of a delayed implant placement in augmented deficient alveolar ridges, we opted for a two-stage protocol. Even though delayed implant placement with flap elevation required a second surgical intervention and therefore an additional burden for the patient, it comprised the additional advantage of a visual and tactile assessment with respect to the osseointegration of the autograft in our patient case. Another crucial advantage of the staged approach comprised inter alia the possibility for an implant placement in an ideal position for the later prosthetic restoration under visual control.[5] Another reason for open access for implant placement was the use of non-resorbable microscrews for the stabilisation of the bone graft. The decision to utilise non-resorbable titanium screws in favour to resorbable screws out of poly (D, L-lactide) acid, was supported by the findings of a systematic review of the Cochrane Collaboration.[6] Thus, resorbable screws seem to have a high susceptibility for fracture during fixation of onlay grafts. As the combination of autogenous grafts with guided bone regeneration (GBR) is apparently associated with superior outcomes, we decided to use a barrier membrane.[9] With the additional application of a PRGF membrane, we aimed to utilise the beneficial effects of platelet-derived rich plasma for an advanced wound therapy, and the reduced risk of post-operative infection.[10] The vestibuloplasty with the Edlan-Mejchar method was performed for two purposes. Firstly it was done in order to create a sufficient amount of keratinised mucosa. According to findings of a systematic review, published by Lin et al., a lack of keratinised mucosa around implants fosters plaque accumulation, inflammation, and soft-tissue recession.[11] Secondly we aimed to create enough space for the final overdenture.

Conclusion

The staged approach with the use of an autogenous bone graft, harvested from the surgical site in the anterior mandible, resulted in a significant horizontal bone gain, and took to a good osseointegration of both, autograft and implants. Obviously, the described grafting procedure has not been previously reported in literature. Despite the lack of any experience reports, our method revealed nonetheless a successful rehabilitation with an implant-supported, screw-retained prosthetic rehabilitation, and is still in function without any biological or technical problems after a three-year follow up._

Special thanks to Dr Pantelis Petrakakis.

Editorial note: A list of references is available from the publisher.

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Introducing Nouvag AG

We talk implantology

For over 40 years, Nouvag AG has committed itself to the development and manufacturing of medical devices and instruments and is famous throughout the world for its legendary Physio-Dispenser. The device was the first equipped with a peristaltic pump to deliver a sodium chloride water solution for the cooling of the rotating instruments to eliminate the feared necrosis of bone and its surrounding tissues. By constant further development and the implementation of new technologies and materials, great progress was achieved in many medical branches.

Our latest development in the field of Implantology is the motor system MD11 that is now available in version 2.0. We have now implemented the function of thread cutting and made the device handling even easier than it already was. During its development, much attention has been given to a quiet, low-vibration motor running, which is the most likely perceived feature for the patient and the surgeon as well. The insertion of the tubing set is done with very little effort due to the great visibility of the mounting bracket and easy-to-reach notches in the bracket. To be able to fully concentrate on the job and for not having to give the instrument out of your hand, the display shows all information at a glance, no key pressing necessary. Even the activation of the cooling pump and the changing of the pump speed is conveniently done with a foot press on the switches of the pedal. Also the rotation direction of the motor is directed by a foot switch.

And it goes without saying that the motor speed is varied by the tread plate at the pedal as well. To make the MD11 set complete, we offer all required contra angles such as the 1:1, 16:1, 20:1, 32:1 and 70:1.

Further information can be obtained from the Nouvag website, www.nouvag.com, where you will find technical data, pictures, accessories and even the user manual. In the online-contact form at our website you can ask our sales representatives any question about the MD11 and you will soon get a detailed answer with a quote and the address of a local dealer in any country of the world. We will be more than happy to help you with any solution for your needs. With any Nouvag device and accessory comes a piece of safety, precision and reliability, made in Switzerland._

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"Help clinicians to make an excellent treatment even better"

Interview with Integration Diagnostics Sweden

Fig. 1: Anders Petersson, President of Integration Diagnostics Sweden.

Resonance frequency analysis (RFA) and ISQ were introduced into the dental implant industry in 2001. Now, 15 years later, they have become established methods of measuring implant stability and osseointegration. Anders Petersson, President of Integration Diagnostics Sweden, has been among the pioneers of RFA, developing its early prototypes as well as the commercial product in 2001. For implants: international magazine of implant dentistry, Anders has taken the time to talk about the beginnings of his company, product philosophy, the principles behind RFA and future developments.

Integration Diagnostics Sweden AB (IDSAB) was formed in 2015. What was your impetus for its foundation? Which goals did you want to achieve?

We wanted to be able to offer an uncomplicated and affordable "RFA" system for the measurement of implant stability, a system that did not require the dentist to purchase disposables to use. Our goal is to make it possible for all dentists to have their own Penguin RFA.

One year later, what is your résumé so far? What are your milestones?

The market response has been fantastic so far, both from users and distribution partners. The sales has actually surpassed all our initial expectations. Some important milestones until now were to develop MulTipegs for all major implant systems, to get FDA clearance for the US and also certify the company according to ISO 13485. Another important strategic issue has been to develop our distributor network and we are extremely happy that so many want to become our business partners.

What are the clinical benefits of your product?

To assure enough implant stability and osseointegration to be able to load the implant with a prosthetic solution. Especially in situations with compromised bone or with other risk factors and also when you want to use shorter treatment time.

Can you describe how measuring implant stability is achieved? What does it correlate to?

The MulTipeg is screwed onto the implant and the instrument tip is held close to the top of the peg—the reading will then appear in a second. In technical terms, the instrument measures the resonance frequency of the MulTipeg, which correlates to the stiffness of the implant-bone interface.

The technique is non-contacting and cannot be sensed by the patient. The measurement unit is ISQ (implant stability quotient) which correlates to the micro mobility of the implant.

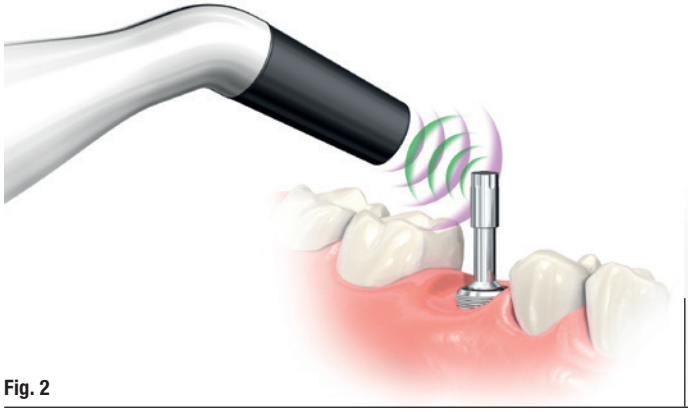

Fig. 2

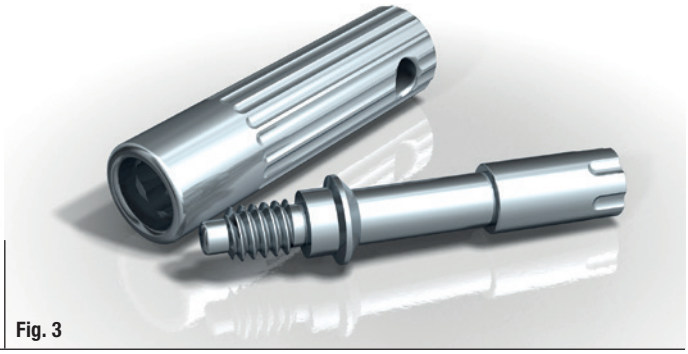

Fig. 3

Can you also measure osseointegration? How does it work? What values should the user go for?

Yes, it can be measured by taking at least two measurements with some time in between, and monitor the change in ISQ. Research has showed that 70 ISQ or above corresponds to a stable implant. It is recommended to measure at two occasions, at installation and before loading, to see the trend in the ISQ-value.

Do you plan to be present at the EAO Congress 2016?

Yes, we are at the EAO meeting in Paris, and you are most welcome to visit us at booth no. 53.

Excellent, can you already give us a preview on what you will present at the EAO?

We will exhibit the Penguin RFA instrument, and demonstrate how it works. We use demo implants with adjustable stability, so there is an opportunity to test it hands-on. We will also have clinical expertise in the booth on at least one occasion during the exhibition. The people in the booth have extensive experience in the field of implant diagnostics and especially ISQ, so I hope many take the opportunity to be there and meet with us.

What can we expect from you in the future?

We will continue to build our distributor network globally to make Penguin RFA available everywhere in the world. We will also continue our research in implant diagnostics and associated areas. Hopefully, it will lead to other valuable tools that will help clinicians and patients to make an excellent treatment even better.

Anders, thank you very much for the interview._

Fig. 2: Penguin^{RFA} measures the resonance frequency of the reusable MulTipeg™ with a non-contacting technique. The frequency is displayed as an ISQ-value (implant stability quotient) from 1–99. The ISQ-value correlates strongly to the micro mobility of the implants.
Fig. 3: The Penguin^{RFA} system consists of a hand-held instrument and a reusable, tissue-friendly and autoclavable MulTipeg™. A charger is delivered together with the instrument as well as a stainless steel driver for attaching the MulTipeg™ to the implant.

contact

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416 54 Göteborg, Sweden
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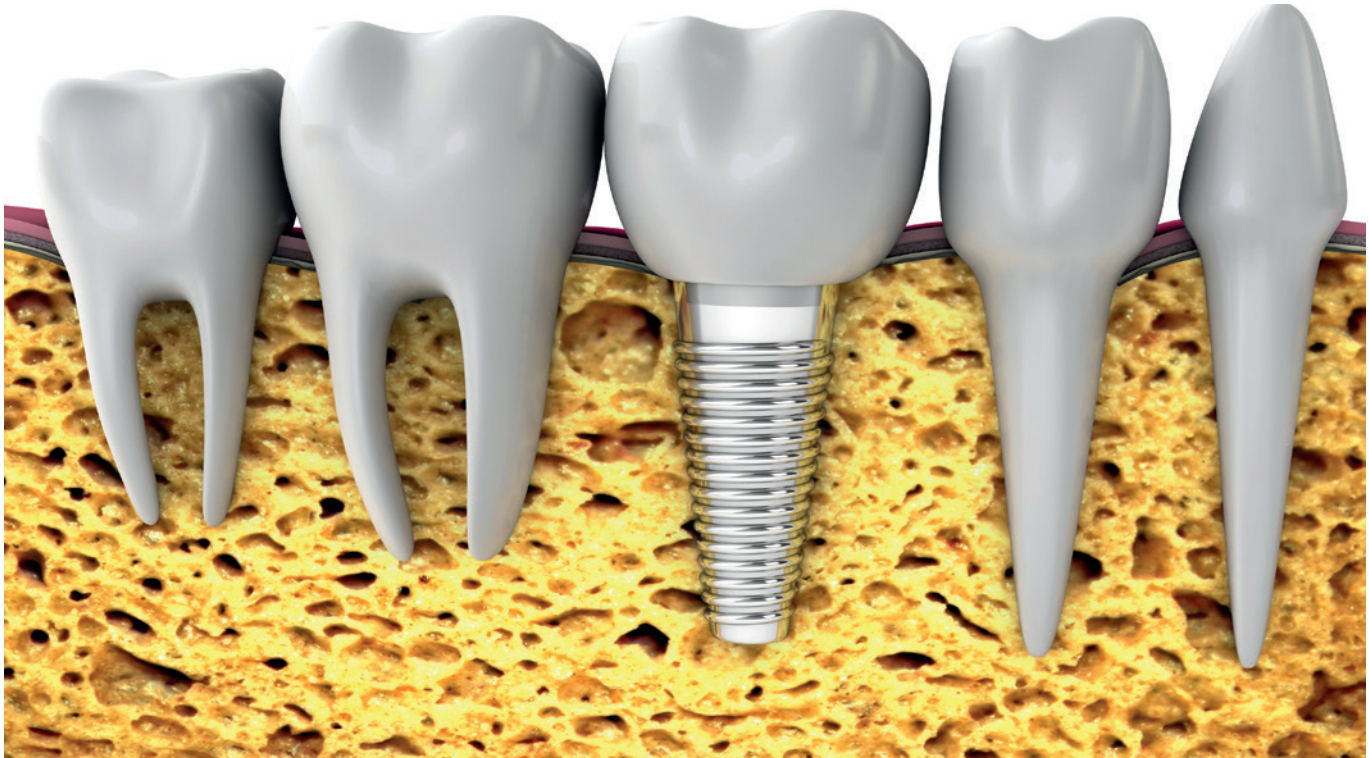


CAMLOG

Comfortable for both user and patient

COMFOUR™ is CAMLOG's new system for occlusally screw-retained restorations in edentulous or partially edentulous jaws. Due to its many technical highlights, COMFOUR™ allows the realisation of several treatment concepts, such as occlusally screw-retained bridges for immediate and delayed restorations, as well as bar and single-tooth restorations on straight and angled bar abutments. Locator® abutments screwed on straight or angled bar abutments offer further treatment options within the COMFOUR™ System. They are used to stabilise an overdenture under chewing pressure, horizontal shear forces and tilting movements. The COMFOUR™ abutment system is available for the CAMLOG® and CONELOG® implant system.

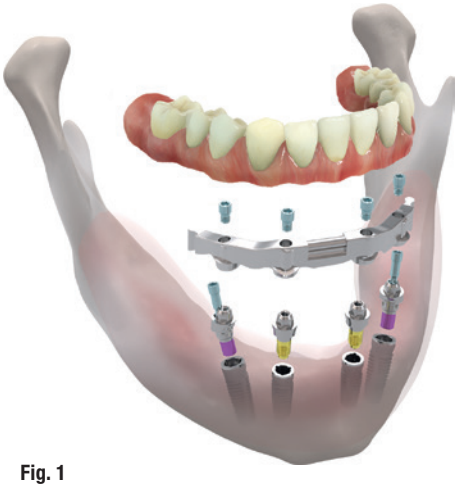


Fig. 1

Fig. 1: COMFOUR™ restoration in the mandible on four interforaminal inserted implants with milled DEDICAM bars.

COMFOUR™ offers a range of options to master the challenges in practice routine easier and with less time. The COMFOUR™ Abutments excel through their versatility and slim design. All components are of delicate and compact design, which simplifies prosthetic restorations considerably for dentists and dental technicians and increases the wear comfort for patients.

CAMLOG Biotechnologies AG
Margarethenstr. 38
4053 Basel, Switzerland
www.camlog.com

Dentsply Sirona

Dentsply Sirona acquires MIS Implants

Dentsply Sirona announced a definitive agreement to acquire all of the outstanding shares of privately held MIS Implants Technologies Ltd., Barlev (Israel), a dental implant systems manufacturer headquartered in northern Israel. The agreement opens up many new opportunities of growth and services for both parties, which benefits customers and patients around the globe.

For over 30 years, Dentsply Sirona has accumulated unique industry knowledge and experience in the field of dental implants. The basis for this is a thorough scientific approach and dedication to long-term clinical evidence. To achieve perfect results, clinicians need predictable solutions. Dentsply Sirona delivers individual and strongly tested products for every stage of implant therapy. The addition of MIS, a leading value implant company, will extend the range of therapy concepts to additional market segments. The company has a strong presence in the value segment, selling its products in more than 65 countries worldwide. MIS (Make It Simple) aims to simplify implant dentistry through innovation and clinical education.

Dentsply Sirona Global Headquarters
Susquehanna Commerce Center
221 W. Philadelphia Street
Suite 60W
York, PA 17401, USA
www.dentsplysirona.com

NucleOSS

Effective treatment Solutions

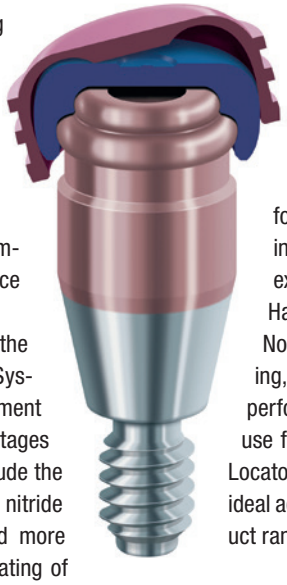
NucleOSS Dental Implant is a user friendly system that offers effective solutions for dentistry with high-quality and user friendly products. Therefore, the modern design of the new T6 implant is based on tissue management. The NucleOSS T6 Implant is produced of reinforced GR4 pure titanium which is 30% more durable. The deep and straight internal design provides equal distribution of the forces accumulated around the neck zone to abutment and metric screw. Two angled abutment-implant contact surfaces are positioned at different levels. This secondary barrier is a design feature for additional safety. The internal bevel provides a distinct platform-switch effect. Double thread and reverse buttress design of the NucleOSS T6 implant allows for easier insertion, which prevents stress.

The unique and clinically tested surface, with its macro-surface anatomy, provides full osseointegration to the bone. The Maxicell® surface has been proven as a residual-free surface by an independent German science institution. The wide range of superstructures provides alternative solutions for all type of prosthetic treatments with three different prosthetic platform options (4.3/5.0/6.0). For more information about our company and products, please visit us at EAO Congress/Paris, at the booth S03A from 28 September to 1 October 2016.

NucleOSS Europe GmbH
Floßhafenstr. 6
41460 Neuss, Germany
www.nucleoss.com

Nobel Biocare

New attachment system enhances edentulous solutions



Nobel Biocare is further advancing its comprehensive product range for edentulous treatment with the Locator R-Tx™ Removable Denture Attachment System. Locator R-Tx™ was officially launched for Nobel Biocare implants at the company's Global Symposium in New York, which took place June 23–26, 2016.

Locator R-Tx™ is an evolution of the successful Locator® Attachment System. This next-generation attachment offers clinicians a number of advantages versus its predecessor. These include the new DuraTec™ titanium carbon nitride coating. DuraTec™ is harder and more wear-resistant than the nitride coating of the legacy Locator® and is designed to reduce roughness. The Locator R-Tx™ system eliminates the need for pre-angled abutments. Its redesigned attachment housing can pivot up to 30° over the seated Locator R-Tx™ nylon retention inserts, allowing up to 60° convergence or divergence between implants. The Locator R-Tx™ attachment system is available for Nobel Biocare implants with internal conical, tri-channel and external hex connection.

Hans Geiselhöringer, President, Nobel Biocare and Dental Imaging, said: "By combining improved performance, aesthetics and ease of use for both clinician and patient, the Locator R-Tx™ attachment system is an ideal addition to the Nobel Biocare product range."

Nobel Biocare Services AG
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www.nobelbiocare.com

Bioimplon

Hypro-Sorb® M Matrix

The Hypro-Sorb® M Matrix is a multilayer tissue matrix of pure, crystalline Atelo-Collagen Type I derived from the bovine Achilles tendon for GTR in periodontology and GBR in maxillofacial surgery. The Hypro-Sorb® M Matrix has a bacteriostatic effect; it supports rapid neovascularisation and controlled soft-tissue integration and is a safe alternative to the patient's own tissue grafting material. In addition, the matrix has an excellent barrier function due to the solid collagen structure and long resorption time of six months after which it is completely remodelled into the patient's own tissue. Furthermore, it can be trimmed to the shape of the wound site which allows perfect adherence and positioning.

The Hypro-Sorb® M Matrix is made of 99.9 per cent Atelo-Collagen (telopeptides-free collagen) which ensures the highest degree of biocompatibility.

Bioimplon GmbH
Friedrich-List-Str. 27
35398 Giessen, Germany
www.bioimplon.de

Straumann

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Straumann® Pro Arch offers a safe, reliable and less complex treatment option for patients requiring full-arch treatments. Patients and clinicians benefit from the combination of the individualised prosthetics and the surgical advantages of the Straumann® SLActive® surface as well as the unique material properties of Roxolid®.

Straumann® Pro Arch is a fixed rehabilitation solution which encompasses the whole procedure from removal of hopeless teeth, immediate placement of four implants and immediate loading of the implants with a temporary bridge. It also includes the treatment planning steps before surgery and afterwards when converting the temporary bridge to the final full-arch prosthesis. Straumann® Pro Arch uses Straumann® Bone Level Tapered implants from Roxolid®—a unique metal alloy with biocompatibility and fatigue strength superior to titanium—and Straumann® SLActive®, a chemically modified hydrophilic surface which is proven by clinical evidence to accelerate the osseous healing.

Institut Straumann AG
Peter-Merian-Weg 12
4002 Basel, Switzerland
www.straumann.com

UNAM Congress 2016 in Mexico City

Author: Dr Rolf Vollmer, Germany

DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

With the theme "Maintaining and extending long-standing friendships", many DGZI members of the board were invited to this year's congress of the National Autonomous University of Mexico in May. The university is among the oldest and greatest universities of the American continent. Members of the board Dr Rolf Vollmer, Dr Rainer Valentin, Dr Navid Salehi and international DGZI representative Dr Mazen Tamimi form Jordan followed the invitation to Mexico.

Already for the second time was the DGZI present at the UNAM Congress in Mexico City. This is one of the largest dental congresses in the Americas. More than 8,000 participants, among them students, dentists, dental technicians and dental assistants attended this year's event. The congress was paralleled by an extensive dental exhibition.

Fig. 1: Speakers of the UNAM Congress.
Fig. 2: Mexico's culture was explored for leisure.

Implantological aspects were mostly covered by DGZI speakers. Mexico's DGZI Representative Dr Mario Rodrigues had organised an excellent programme. A special highlight awaited the participants at the first congress night. More than 100 participants and guests gathered to inform themselves about the DGZI. During the evening event, UNAM dean of the dental faculty José Aturo Fernández Pedrero thanked the DGZI for their impressive speeches. These gave insight to the latest implantological techniques and research projects, for example finite elements investigations at the University of Bonn, Germany, which had been funded by the DGZI.

The DGZI speakers agreed on supporting their Mexican colleagues in the future. Next year, a congress especially designed for younger members will take place in Cancun. Member of the board Dr Navid Salehi, who is among the representatives of the DGZI young implantologists, will be responsible for the congress organisation. Overall, the event illustrated the good positioning and scientific recognition of the DGZI worldwide._

Cooperation with partner university Universiapolis in Agadir

Author: Dr Rolf Vollmer, Germany


Fig. 1


Fig. 2

DGZI members of the board followed the invitation by the Moroccan Private University Universiapolis in Agadir and took part in an information event from 19 to 20 May 2016. The university showed great interest in a cooperation with the German Association of Dental Implantology e.V. (DGZI) regarding postgraduate education. Roughly 30 Moroccan dentists attended the event, among them residential dentists or dentists engaged in the dentist's association. Specialist speeches were held by Dr Rolf Vollmer, Dr Rainer Valentin and Dr Mazen Tamimi and lead to interesting discussions. Due to his fluent Arabic, Dr Mazen Tamimi ensured that there were no communication problems.

Both President and Vice President of Universiapolis emphasised in their speeches that a dental faculty will be established within the next two years and that they were hoping for advice and support from abroad. This entails their strong interest in the DGZI postgraduate education programmes.

Conversations with the Moroccan DGZI representative Dr Ali resulted in the announcement of a joint congress in Morocco in the beginning of next year, including the so-called Maghreb countries Morocco, Algeria, Tunisia and Libya. Furthermore, there is hope that visa problems with Libya will be solved until then, which would result in improved travel opportunities to Morocco. The joint congress is going to be named the "10th Arabian-German Implantology Congress". Colleagues who want to join the congress either as speakers or participants may contact the DGZI 1st Vice President Dr Rolf Vollmer or the organisational manager Dr Rainer Valentin for further details.

In conclusion, there is a high demand for education opportunities on an international level in this region.

Fig. 1: Dr Mazen Tamimi, Dr Rolf Vollmer, Dr Elias (Vice President of Universiapolis), Dr Rainer Valentin and Aziz Bouslikhane (President of Universiapolis) at the presentation of certificates (from left to right).
Fig. 2: DGZI representatives with members of the Private University Universiapolis.

contact

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DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

Fig. 1


Fig. 2

Nobel Biocare Global Symposium 2016

Innovation comes to life

Source: Nobel Biocare

Nobel Biocare welcomed dental professionals from around the world to the iconic Waldorf Astoria hotel in New York City, US, for the Nobel Biocare Global Symposium 2016. The programme for the sold-out event, held June 23–26, featured lectures, hands-on training and master classes from the world's leading experts in implant dentistry. Under the banner "Where innovation comes to life", Nobel Biocare unveiled a number of innovative new products and solutions at the event. Each is designed to help dental professionals treat more patients better and many are so unique they are either patent protected or in the patent process.

Enhancing workflows for shorter time-to-teeth

The Nobel Biocare Global Symposium showcased the role that digital technology plays in increasing the efficiency and accuracy of diagnostics, treatment planning and guided surgery. Attendees were invited to visit a digitally enabled practice exhibit featuring current technology as well as potential future innovations designed to increase integration, collaboration and efficiency. Participants were shown how Nobel Biocare's leading integrated workflow can accelerate, combine or even eliminate treatment steps.

Nobel Biocare is also advancing the restorative workflow in terms of componentry. An important new addition to Nobel Biocare's assortment of com-

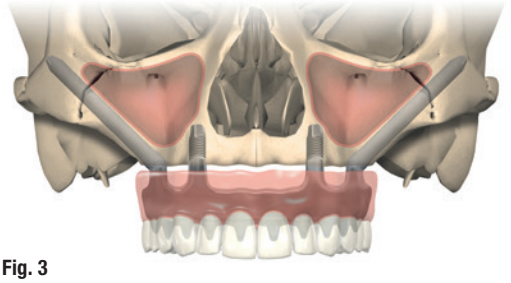
Fig. 3

Fig. 4

Fig. 1: Busy as usual: New York Times Square.
Fig. 2: New York Public Library, venue of the dinner party on Friday evening.
Figs. 3 & 4: Under the banner "Where innovation comes to life", Nobel Biocare unveiled a number of innovative new products and solutions at the event, among them the NobelZygoma implant system (Fig. 3) and the creos xenogain bone substitutes (Fig. 4).


Fig. 5


Fig. 6

ponents is the On1 concept.[1] This innovative modular solution bridges the gap between the surgical and prosthetic workflows. The On1 Base connects to the implant at surgery and then remains in place throughout the healing process, prosthetic work and then the lifetime of the restoration. This leaves the soft tissue undisturbed without compromising on restorative flexibility, leaving the biological seal it creates in place for optimised healing. As the On1 Base is seated at implant placement, the concept offers the surgeon peace of mind that only precision-engineered Nobel Biocare components are used with the implant, removing risks associated with ill-fitting third-party abutments. It also eliminates the risk that non-biocompatible, unclean or reused components come into contact with the soft tissue.

Nobel Biocare also presented the evolution of NobelProcera. This includes the launch of the new NobelProcera Crown, the first in a series of options in a new high-translucency multilayered full-contour zirconia material. This new material possesses exceptional properties, combining high strength and durability with excellent aesthetics. The multilayered nature of the restorations and the realistic occlusal detail mirror the appearance of a natural tooth and help save time, as the technician need only apply final touches before delivery to the dentist.

Advancing edentulous solutions

Nobel Biocare is committed to further advancing the standard of care for edentulous patients. NobelSpeedy, the original and widely documented implant for the All-on-4® treatment concept, is now available in more lengths and diameters for increased surgical flexibility. With new shorter 7 mm, longer 20, 22 and 25 mm implants and a wider 5.0 mm implant variant, this expanded range is designed to further help clinicians utilise a graftless approach and achieve cortical anchorage where bone quality and quantity are limited. The new Multi-unit Abutment Plus[1] is an enhancement of the Nobel Biocare Multi-unit Abutment. It is designed to significantly reduce the chair time required to perform a denture conversion—a procedure commonly used for the All-on-4® treatment concept. Building on 25 years of success with Nobel Biocare's zygomatic implants, the new NobelZygoma implant launched at the event provides greater surgical and prosthetic flexibility when treating severe maxillary resorption without grafting.

Comprehensive regenerative assortment

Under the brand creos, Nobel Biocare offers an outstanding regenerative solutions portfolio, which is now expanded further with creos xenogain, a deproteinised bovine bone mineral matrix for guided bone and guided tissue regeneration procedures. Unique processing methods remove the bovine proteins and lipids.[2,3] The natural bone matrix characterised by micro- and interconnected macropore structures is preserved.[2,3] Bone substitutes in the creos xenogain range have a slow resorption rate and act as a long-lasting scaffold, maintaining space for bone regeneration.[4] The new creos xenogain biomaterials build on the success of the non-cross-linked resorbable collagen membrane creos xenoprotect, which is scientifically proven to be the strongest membrane when hydrated[5] and offers excellent vascularisation behaviour and tissue compatibility as well as a prolonged protection of the graft site.[6] An extensive range of allogenic creos regenerative solutions is also available.[7]

Hans Geiselhöringer, President, Nobel Biocare and Dental Imaging, said: "The innovations we are presenting at the Nobel Biocare Global Symposium 2016 have all been created to address the specific needs of today's dental professionals as they strive to improve care for patients."_

Fig. 5: Hans Geiselhöringer, President, Nobel Biocare and Dental Imaging.
Fig. 6: The Grand Ballroom during the Nobel Biocare Global Symposium 2016 in the Waldorf Astoria hotel in New New York City.

contact

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www.nobelbiocare.com

Literature


Fig. 1


Fig. 2

6th International CAMLOG Congress in Krakow

Source: CAMLOG

Fig. 1: More than 1,000 participants attended the three-day congress.
Fig. 2: Dr. Karl-Ludwig Ackermann, Michael Ludwig und Jürg Eichenberger (from left to right).

With the theme "Tackling Everyday Challenges", the 6th International CAMLOG Congress took place in Krakow/Poland from 9 to 11 June 2016. Renowned experts from Europe and the US presented the latest findings in research and clinical applications.

Practical workshops were held already on Thursday, 9 June. Four full-time and two part-time workshops introduced contemporary topics such as 3-D planning, bone augmentation, sinus lift and suture techniques to small groups which were led by competent speakers. Hands-on exercises enhanced the workshops' practical relevance. Parallely, a Digital Dentistry pre-congress was held for the first time.

Friday continued with practical aspects, but also featured a presentation on "Challenges and handling of the posterior zone". Successful teams introduced their practice-oriented concepts and invited the auditorium to actively participate in the discussion. The day was concluded by a special guest lecture: Markus Gross is Professor of Computer Science at the ETH Zurich and Vice President of Research, Disney Research, and the Director of the Disney Research Zurich lab. His presentation of the "virtual man" transfixed the auditorium with future-oriented images and technologies.

Science was the dominating element for the programme on Saturday. Seven short speeches informed about current research projects and were followed by a session about the transmukosal zone. After the lunch break, the winners of the CAMLOG Foundation Research Award were announced. The congress programme was completed by controversial topics which were introduced and discussed by speakers with differing points of view. The auditorium was also included in this scientific debate and given the chance to pose questions or make statements at any point during the discussion._

contact

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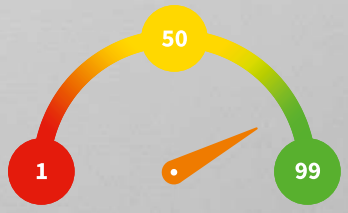

The ISQ-scale is from 1–99 and tells you how stable your implants are.

PenguinRFA.com

MIS Global Conference in Barcelona

Source: Dental Tribune International


Fig. 1


Fig. 2

Fig. 1: Introducing MIS product innovations: Elad Ginat, MIS Products Manager, Idan Kleifeld, CEO MIS und Doron Peretz, Senior V.P. Marketing & Products Development MIS.
Fig. 2: The conference was attented by about 2,500 dental surgeons and implantologists from around the world.

On 26 May, the third Global Conference of Israeli dental implant manufacturer MIS Implants Technologies opened its doors to dental professionals from all over the world at the Barcelona International Convention Centre (CCIB). Until Sunday, about 2,500 attended the event to learn more about the latest scientific research and developments in implant dentistry and MIS's VCONCEPT and V3 implant in particular.

On the morning of 26 May, the conference kicked off with 100 runners participating in the MIS RUN. Just in time for the morning sun, the starting pistol was fired at 7.30 am at the CCIB and participants ran 3, 5 or 10 km along Barcelona's charming beaches.

In the afternoon, clinicians younger than 40 had the opportunity to present their own cases, focusing on challenging situations in implantology, to an international audience in the Young Clinicians' Session. Parallel to this, a number of Master Clinicians' Sessions and workshops held in English and Spanish provided participants with the opportunity to learn from experts in various fields, such as 3-D concepts in oral implant rehabilitation, dental photography, biomaterials and bone grafting, as well as soft-tissue management.

The first day of the conference concluded with a spectacular opening gala dinner organised on the pitch of Camp Nou, the stadium of the FC Barcelona football club.

On 27 May, the main programme opened with a packed auditorium. Throughout the day, many key opinion leaders in implant dentistry held lectures focusing on restorative concepts, the VCONCEPT and clinical solutions with the V3 implant, which was launched last year at EuroPerio in London in the UK.

In addition, MIS' new 4MATRIX was launched, an innovative, FDA and CE certified bone-graft cement-developed to simplify dental bone grafting procedures. Composed of pure biphasic calcium sulfate & hydroxyapatite and characterised by a predetermined setting time and resorption rate, 4MATRIX is the preferred augmentation product for a wide variety of dental bone grafting procedures._

contact

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32423 Minden, Germany
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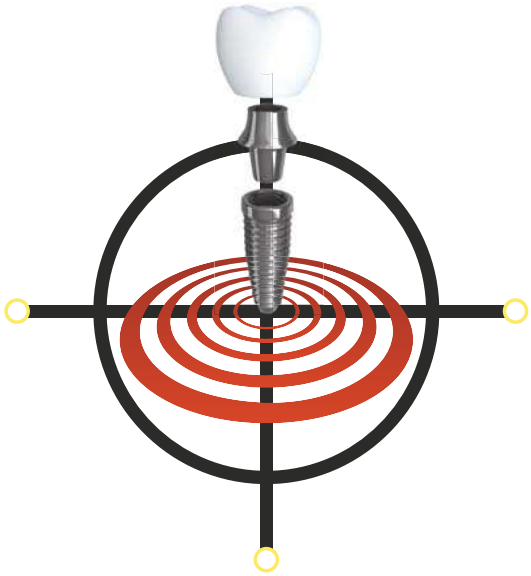
Navident

Targeting Perfection



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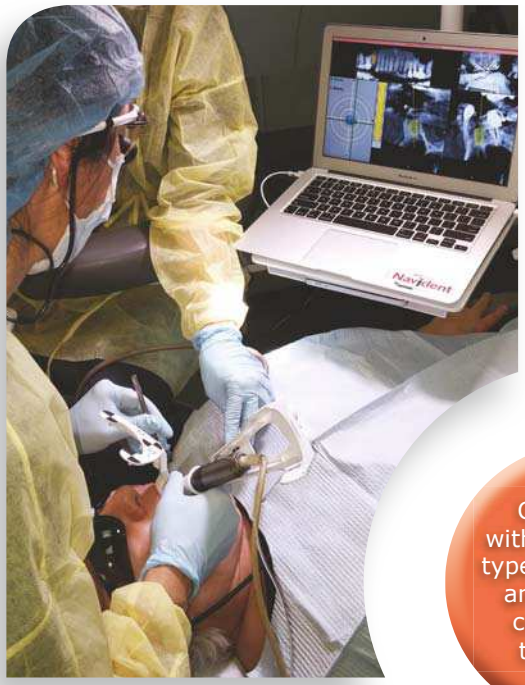

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*Average error of 0.4mm in internal bench tests with a range of operating conditions.

1st European Forum on Ultra-Short Implants

Author: Georg Isbaner, Germany


Fig. 1

Fig. 1: Renowned speakers presented their findings on Ultra-Short Implants.

More than 200 participants attended the 1st European Forum on Ultra-Short Implants in Ferrera/Italy from 17 to 18 June 2016. The forum was organised by the Implant Dentistry Center (IDC) in Italy and themed "Ultra-Short Implants". The scientific committee was led by co-presidents by Prof. Dr Dr Rolf Ewers and Prof. Dr Mauro Marincola and consisted of renowned experts who combined the latest research developments with practical aspects. Bone regeneration formed the focal point of the event, in addition to biomechanical processes during the placement of Ultra-Short Implants while preventing bone augmentation.

The congress gained further significance by the 11th European Consensus Conference in Cologne/Germany earlier this year. Lead by Dr Jörg Neugebauer, a joint paper about short, angulated and diameter-reduced implants was endorsed. The impact of the consensus paper, which illustrates various indications for Ultra-Short Implants in combination with preventing augmentation procedures, cannot yet be predicted. However, many surgeons, especially in Germany, are prone to prick up their ears, as from now on patients will have to be informed about this alternative to standard implantation and augmentation techniques. Per definition, all implants shorter than 6 mm are Ultra-Short Implants.

Friday formed the pre-congress with renowned speakers, hosted by the company Automobili Lamborghini Holding S.p.A. in Sant'Agata Bolognese between Bologna and Modena. The company invited participants to a guided tour of the museum as well as production facilities and thus provided exclusive insights to the Lamborghini manufactory. Already in the Lamborghini headquarters, two opening speeches were held for the German-language participants: Dr Alfons Eißing and Prof Dr Dr Rolf Ewers gave their introductory lectures to the key congress topics, followed by animated discussions with Prof. Mauro Marincola, Dr Frank Kistler and Dr Stefan König, among others. A grand dinner at the patio of Castello Estense formed the finale of this first congress day.

On Saturday, 18 June, the international congress was held at the Theatro Ferrera (established in 1798). Speakers of the 1st European Forum on Ultra-Short Implants highlighted that Bicon Ultra-Short Implants posed a genuine alternative to standard implantology and augmentation, featuring a unique geometry and thus prompting a special surgical conduct. This was illustrated by Dr Rainer Urdenta's speech on bone remineralisation after implant restoration by Ultra-Short Implants.

The congress weekend proved a thrilling and diversified event which showed that, sometimes, less length can be more. Ultimately, this is good news for all patients who are going to be spared invasive surgical procedures in the future._

contact

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Practice makes perfect

The Dynamic Navigation Society

The Dynamic Navigation Society is the new educational division of ClaroNav, who are among the leaders in surgical navigation solutions. Interested dental clinicians can attend Navident training sessions and hands-on courses. "The Society has been designed to expand knowledge and introduce real innovation by creating a collaborative environment for learning and shared experience around the world," explains Luca Casalena, Regional Manager for ClaroNav. "The Society organises high-quality courses all over Europe, Canada and soon the United States and Asia," states Tom Tilmans, Sales Director EMEA for ClaroNav. Initial courses will be offered in Rome, Ghent, Amsterdam, Sofia, Stockholm, London, Marseille and Toronto.

Navident courses are offered in a variety of formats to accommodate any schedule, incorporating education on demo models and live surgery. "First feedback has been extremely positive, as clinicians discover the way from a great treatment plan to an excellent surgical outcome," added Tilmans. The Society also certifies a number of third-party educational courses. For more information, please contact info@claronav.com.

Source: ClaroNav Inc.

The comprehensive dental system

Powerful and, yet, gentle to the bone

Alpha-Bio Tec presents its newly-developed NeO dental implant system. NeO presents a range of advanced design features, including a unique coronal cutting flute, innovative shape of variable threads combined with two micro threads and a patent-pending centering feature of the apical part.

The implant's distinct clinical benefits are: high and firm primary engagement, high primary stability in complex cases, and reduced pressure on the cortical plate, easy penetration and long-term aesthetic results. With primary-stability enhancers matched with bone stress reduction elements, NeO is powerful and, yet, remarkably gentle to the bone. NeO includes two smart choice platforms: a narrow Conical Hex Connection (CHC) for Ø 3.2 mm and Ø 3.5 mm and a standard Internal Hex Connection (IH) for Ø 3.75 mm, Ø 4.2 mm and Ø 5 mm, both ideal for a wide variety of clinical indications. "Alpha-Bio Tec has once again gone one step further by developing the next sensation in implantology: the NeO implant system. As always, our innovative product guarantees state-of-the-art technology, reliability, simplicity and fair pricing. I truly believe that NeO will be the next sensation and I invite you to be a part of this success," said Mr. Yuval Grimberg, General Manager, Alpha-Bio Tec. For more information, visit the website at: www.alpha-bio.net.

Source: Alpha-Bio Tec.

International dental industry meets at

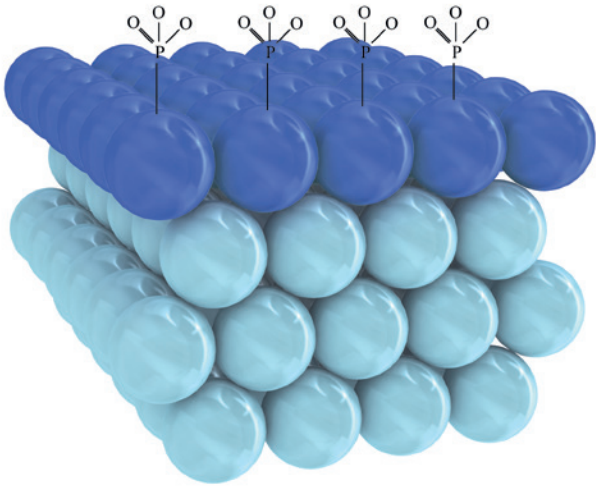
Japan Dental Show

At the invitation of the Japan Dental Trade Association, the Tokyo Dental Association and the Tokyo Dental Hygienists' Association, the international dental industry met at Tokyo Big Sight. Over 190 local and international manufacturers and dealers assembled at Tokyo's international exhibition centre to celebrate new paradigms in dental medicine now and in the future. Among the many exhibiting companies presenting their products and services to 30,000 attendees were Asahi Roentgen, Dentsply Sirona, GC, Ivoclar Vivadent, KaVo Kerr Group, Kuraray Noritake Dental, LION, Mokuda, Morita, Nishika, NSK, Planmeca, Osada, SHOFU, Sunstar, Takara Belmont, Tokuyama Dental, Tokyo Giken and Yoshida.

How to make

Ceramic-based dental implants truly biocompatible

Treating your ceramic-based implants with SurfLink® results in a nano-meter thin layer of phosphorous-rich molecules, which is perceived as bone-like by the body. It is the first product to permanently create bone fixation on ceramic implants. SurfLink® is the exclusively chosen surface treatment by MIS Implants Technologies for their Titanium implants. Ceramic material treated with SurfLink® in vitro and in vivo showed a promotion of bone cell proliferation and in biofilm tests a substantial reduction in biofilm adhesion to the surface was observed.



SurfLink® characteristics

Hydrophilicity: SurfLink® is inherently hydrophilic. This enables quick cell adhesion and fast bone matrix formation.

Osteoconductivity: SurfLink® increased new bone formation (+ 44 %) as early as two weeks after implantation in a sheep study.

Implant fixation: after only two weeks, SurfLink® showed a 32 % increased implant fixation compared to the control.

Chemical bonding: Torque testing after 52 weeks in sheep showed that bone fixation to the treated implant surface is stronger than bone, leaving a thin layer of mineralised bone on the implant surface.

In addition, the production of SurfLink® treated implants has been validated. Very little, if any, extra equipment is necessary for most manufacturers. No specially trained personnel are needed and all standard logistics can be used. SurfLink® is now available to a select number of ceramic dental implant manufacturers via a license and supply agreement.

Source: www.nbmolecules.com

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46TH INTERNATIONAL ANNUAL CONGRESS OF THE DGZI

UP TO 16 CREDIT POINTS/HOURS VERIFIABLE CPD

September 30 and October 1, 2016
Munich
The Westin Grand Munich
How much aesthetics needs the implantology?

ONLINE CONGRESS PROGRAMME

www.dgzi-jahreskongress.de

PROGRAMME FRIDAY
September 30, 2016

08:30 – 10:00 **1ST ROUND COMPANY WORKSHOP**

1.1 Dr. Henrik-Christian Hollay/DE
Barrier function and resorption protection.
An overview of membrane techniques with synthetic materials

1.2 Christian Hebbecker/DE
The MGuide procedure in dental implantology.
Planning, navigation, implantation
Dr. Thilo Damaskos/DE
Digital solutions with V3 implants. Implant design as factor for enhanced osseointegration by increased bone volume.
(including Hands-on)

1.3 Prof. Dr. Mazen Tamimi/JO
Aesthetic complications in the premaxilla
(Workshop will be held in English.)

10:00 – 10:30 Break/visit of dental exhibition

10:30 – 12:00 **2ND ROUND COMPANY WORKSHOP**

2.1 Prof. Dr. Herbert Deppe/DE
Prof. Dr. Thomas Weischer/DE
Safe treatment options for high-risk patients: How to prevent complications. Surgical, prosthodontic and inflammatory problems and their solutions will be addressed at the workshop.

2.2 Dr. Daniel Ferrari, M.Sc./DE
The basics of internal and external sinus lift via short screw implants or implants with a porous surface of the latest generation with identical internal connection (including hands-on).

2.3 Dr. Stefan Neumeyer/DE
Tissue Master Concept – Soft- and hard-tissue management according to biological principles
(Workshop will be held in English.)

2.4 Prof. (Jiaoshou, Shandong University, China)
Dr. Frank Liebaug/DE
Fascination hyaluron – Stimulation of the biological regeneration of the periodontium and periimplant tissues according to the LHA concept
(including live demo)

12:00 – 13:00 Break/visit of dental exhibition

MAIN PODIUM (Simultaneous translation German/English, English/German)
Chairmen: Prof. Dr. Herbert Deppe/DE, Prof. Dr. Thomas Weischer/DE

13:00 – 13:15 Congress opening
Prof. Dr. Herbert Deppe/DE, Prof. (CAI) Dr. Roland Hille/DE

13:15 – 13:45 **Prof. Dr. Dr. Ralf Smeets/DE**
Implantology in the aesthetic zone – Reasons for success and failure

13:45 – 14:15 **Prof. Dr. Suheil M. Boutros/US**
Replacing the Maxillary Central Incisor. The most demanding restoration in dentistry

14:15 – 15:15 **Dr. Nick Caplanis/US, Dr. Glenn W. Bickert/US**
Team California – Esthetic management of full arch reconstruction

15:15 – 15:30 Discussion

15:30 – 16:00 Break/visit of dental exhibition

16:00 – 17:45 **Participation possibilities**
1. Main Podium
2. International Podium
3. Corporate Podium
4. Podium Munich forum for innovative implantology

2 INTERNATIONAL PODIUM
Chairmen: Prof. Dr. Amr Abdel Azim/EG, Prof. Dr. Suheil M. Boutros/US, Dr. Rolf Vollmer/DE

16:00 – 16:25 **Prof. Dr. Jeff Johnston/US**
Management of implants complications and failures

16:25 – 16:50 **Prof. Dr. Suheil M. Boutros/US**
Management of sinus lift complications

16:50 – 17:15 **Dr. Edward B. Sevetz Jr./US**
Treatment of the severely atrophic edentulous maxilla without grafting

17:15 – 17:35 **Prof. Dr. Shoji Hayashi/JP**
A Study of Deposition coatings formed on the Electroformed metal by Replating for a super-aging society of Doppel Krone telescopic prosthesis

17:35 – 17:45 Discussion

from 18:30 **EVENING EVENT**

PROGRAMME SATURDAY

October 1, 2016

MAIN PODIUM (Simultaneous translation German/English, English/German)
Chairmen: Prof. (CAI) Dr. Roland Hille/DE, Prof. Dr. Dr. Knut A. Grötz/DE

09:00 – 09:25	**Prof. Dr. Herbert Deppe/DE** Surface morphology of dental implants after insertion to the jawbone – an in vitro study
09:25 – 09:50	**Dr. Stefan Röhling, DDS/CH** Ceramic implants – Temporary fashion or alternative to titanium
09:50 – 10:15	**Prof. Dr. Dr. Knut A. Grötz/DE** Differential implant-design indications with regard to aesthetics and function
10:30 – 10:50	Presentation of the DGZI Implant Dentistry Award Presentation of the Poster Award
10:50 – 11:30	Break/visit of dental exhibition
11:30 – 11:55	**Prof. Dr. Werner Götz/DE** Socket Healing and Preservation: Biological requirements for success
11:55 – 12:15	**Priv.-Doz. Dr. Michael Stimmelmayr/DE** Effort and limits of ridge preservation in the aesthetic zone
12:15 – 12:45	**Priv.-Doz. Dr. Dietmar Weng/DE** Simplify your augmentation – Auffüllen statt Anbauen
12:45 – 13:30	**DGZI CONTROVERSIAL** "The right and wrong of Alveolar Ridge Preservation"
Discussion leader	**Prof. Dr. Herbert Deppe/DE**
Participant	**Priv.-Doz. Dr. Michael Stimmelmayr/DE** **Priv.-Doz. Dr. Dietmar Weng/DE**
13:30 – 14:30	Break/visit of dental exhibition

Chairmen: Prof. Dr. Herbert Deppe/DE, Prof. (CAI) Dr. Roland Hille/DE

14:30 – 14:55	**Prof. Dr. Dr. Kai-Olaf Henkel/DE** Complications in implantology
14:55 – 15:20	**Prof. Dr. Mario H. Rodrigues-Tizcareño/MX** Manage of implants placed into extraction sockets: Periodontal, restorative and esthetic interrelationships
15:20 – 15:45	**Priv.-Doz. Dr. Armin Nedjat/DE** Metal- and zirconium-free WIN-PEEK implants: Indication, function, aesthetics, tips and tricks
from 16:30	General meeting of the DGZI

ORGANISATIONAL MATTERS

Congress fees

Dentist/Dental Technician DGZI-Member	275,00 €*
Dentist/Dental Technician Non-member	325,00 €*
Assistants (with verification) DGZI-Member	120,00 €*
Assistants (with verification) Non-Member	135,00 €*
Students (with verification)	conference charge only
Conference charge**	109,00 € (plus VAT)

Teamprice

Dentist + Dental Technician DGZI-Member	375,00 €*
Dentist + Dental Technician Non-member	450,00 €*
Dentist + Assistants DGZI-Member	350,00 €*
Dentist + Assistants Non-Member	380,00 €*
Conference charge per person**	109,00 € (plus VAT)

* The 1st item is calculated incl. 7 % tax in the name and for the account of the DGZI e.V.

** The Conference charge is to be paid by each participant and includes coffee breaks, conference drinks and lunch.

Evening Event 47,00 € (plus VAT)

Included is the transfer from The Westin Grand Munich to the location (no return) and a voucher in the amount of 19,00 € for individual consumption.

The evening event takes place at "Wiesnzelt", Stiglmeierplatz (Löwenbräukeller), Nymphenburger Straße 2, 80335 München. There is a bus shuttle to the location. Seats at "Wiesnzelt" have to be taken by 19.15 o'clock.
(Please note: The location is NOT part of the OKTOBERFEST!)

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www.oemus.com

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www.westin.com/muenchen

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46th International Annual Congress of the DGZI

Please fax this form to
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or send it via post to

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04229 Leipzig
Germany

I hereby register the following persons for the 46th International Annual Congress of the DGZI on September 30 and October 1, 2016 in Munich, Germany: (Please fill out/tick as appropriate) NOTE: Please note that you can only participate in one workshop each period (resulting in a maximum of two workshops in total). Please write down the selected workshops on this registration form.

Online-Registration: www.dgzi-jahreskongress.de

Title, Surname, Name, Job Title	DGZI-Member	Podium	Workshops (insert no.)
	❑ yes ❑ no	❑ 1 ❑ 2 ❑ 3 ❑ 4	1st Round: ___ 2nd Round: ___
	❑ yes ❑ no	❑ 1 ❑ 2 ❑ 3 ❑ 4	1st Round: ___ 2nd Round: ___

Evening Event Friday, September 30, 2016: ____ (Please put down personal number.)

Stamp/Address

I hereby accept the terms and conditions of the 46th International Annual Congress of the DGZI.

Date/Signature

E-mail address

Congresses, courses and symposia

Dentegris IIDES 2016
International Implantology Dental Expert Symposium

16–17 September 2016
Venue: Llucmajor, Mallorca
www.iides2016.de

46th International Annual DGZI Congress

30 September–1 October 2016
Venue: Munich, Germany
www.dgzi-jahreskongress.de

3. Hamburger Forum für Innovative Implantologie

7–8 October 2016
Venue: Hamburg, Germany
www.hamburger-forum.info

Implantologieforum Berlin 2016

4–5 November 2016
Venue: Berlin, Germany
www.implantologieforum.berlin

4. EURO OSSEO 2016

18–19 November 2016
Venue: Hamburg, Germany
www.euro-osseo.com

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international magazine of oral implantology

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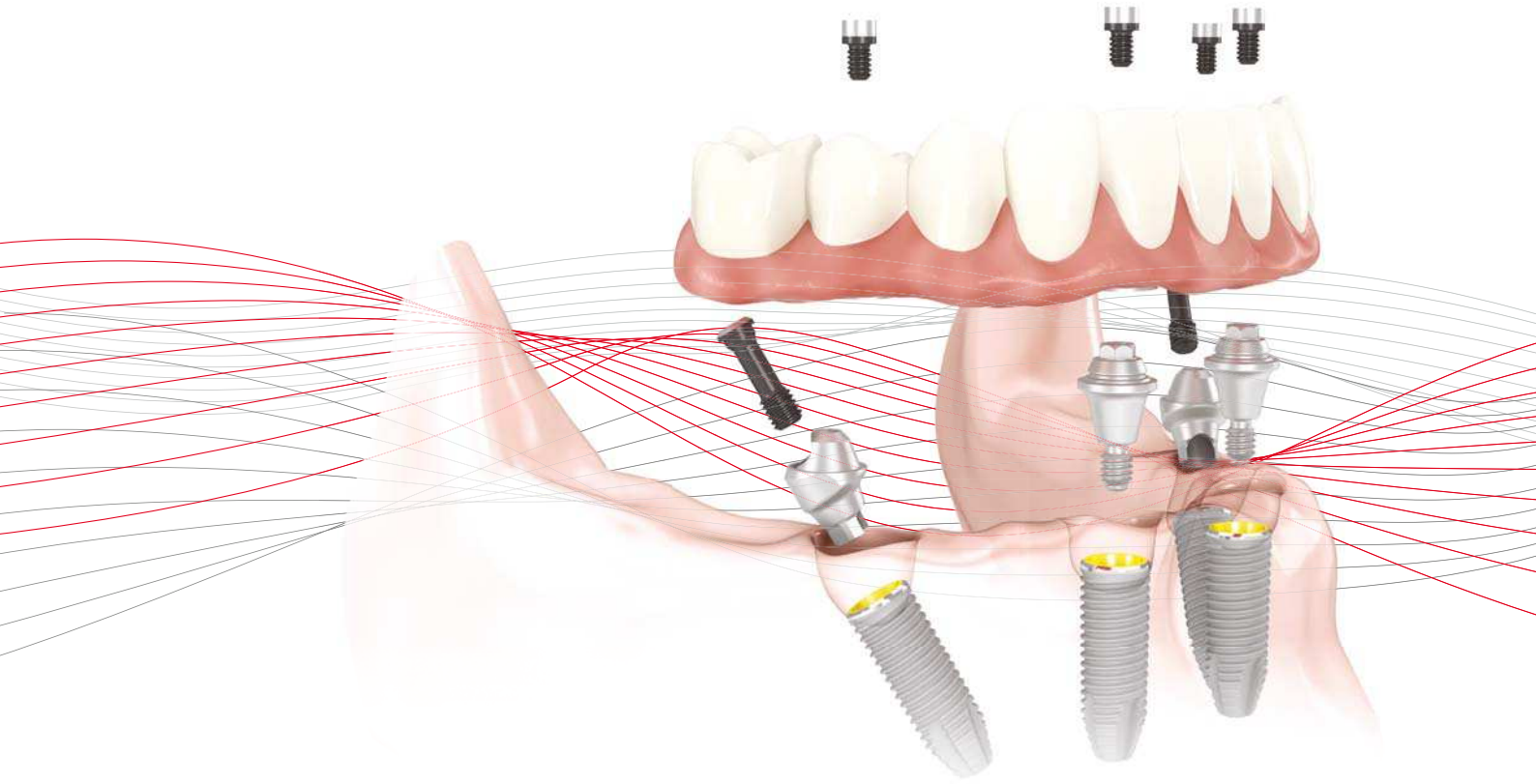

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