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38th Annual International Congress of DGZI

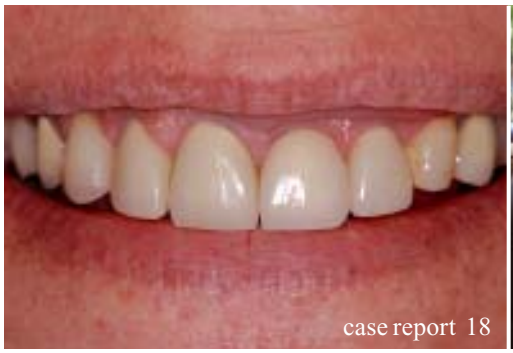
Friedhelm Heinemann
President of DGZI

Dear colleagues,

many factors play a leading role in giving a positive long-term prognosis for implant restorations. Albeit the progresses in implant design, surfaces or materials, computer aided diagnosis and planning methods, the practitioner's implantological know-how is still one of the most important reasons for successful implantology. Even though, at the moment, the constructive aspects of implants (micro gap) are in the center of interest as far as the efforts of optimizing the bone-implant interfaces are concerned, but the conditions of those factors influencing long-term success of implants is much more complex than generally described. We believe that it is beyond doubt, that apart from the reserves of the implant itself, functional, parodontological, surgical and prosthetic aspects should be stated more thoroughly in their complexity and interaction. One should take the advantage and benefit from interdisciplinary approaches more often. Our Expert Association will discuss this exciting issue on the occasion of our 38th Annual International Congress in Bremen (September 10—11, 2008). The topic "Interdisciplinary Concepts for Implantological Rehabilitation" will treat and discuss developmental tendencies between science and clinical practice. In this context, I am proud to say, that once again we could gather a team of high class international speakers. Well-known speakers from the USA, Italy, Austria, Switzerland, Lebanon, Jordan, Saudi Arabia and Germany will take the chance to discuss, together with the congress participants, during both congress days, proven methods and innovations in the frame of speeches, workshops and in an ample panel discussion themed "Treatment of the Posterior Maxilla".
It would give me great pleasure to welcome you on October 10th and 11th at the Congress Centrum of Maritim Hotel in the Free Hanseatic City of Bremen.

Yours,

Dr Friedhelm Heinemann
President of DGZI



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Bone resorption in periimplantitis: The role of the RANK/RANKL system

authors_Werner Götz, Michael Le, and Friedhelm Heinemann, Germany

Fig. 1_ Periimplantitis, regio 24, implant loosening, female, 60 years.
Fig. 2a, b_ Pyogenic periimplantitis, regio 46, implant loosening, male, 58 years, heavy smoker.

_**Periimplantitis** is an inflammatory process occurring in tissues around an osseointegrated and functioning implant. It is the main reason for implant loss at a later stage, due to the loss of the supporting bone.[1, 2] Detailed epidemiological studies have not been carried out yet. Roos-Jansaker et al.[3] could show a prevalence of 16% in their prospective study based on 294 patients. Warning experts forecast a dramatic increase of this complication for the next years, as a result of the demographical development and the increase of the number of implantations. A periimplantitis can develop from a reversible, plaque induced mucositis together with redness and swelling, which is restricted to periimplant soft tissues.[2, 4-6] Then, additional progressive bone resorption and clinical inflammatory parameters like deep probing depth, bleeding on probing and pus can be found. The primary etiological factor is a bacterial infection via oral plaque caused by bad oral hygiene. Proved co-factors are marginal parodontopathies, smoking, genetic risks or minimal keratinized periimplant mucosa. [7, 8] There is no evidence for the involvement of further factors like systemic diseases, fractures of implants or the role of prosthetic components, alveolar ridge defects or pre-implantological augmentative procedures.[8] The known structural characteristics of the periimplant subepithelial soft tissue (e.g. scarring, collagen fibers which do not insert and run parallel to the implant surface, lack of vessels), which favor transmigration of pathogens and inflammation also play an important role in pathogenesis. It is still a subject of controverse discussion, whether biomechanically induced functional factors, e.g. occlusal overloading or parafunction can be seen as independent causes, or only as co-factors of the inflammatory process.[7] Animal experiments have shown that periimplantitis can be induced around implants even without prosthetic components. Experiments in a dog model proved that under inflammatory conditions a significant periimplant loss of bone occurred with or without occlusal loading. However, after intense loading bone loss was increased.[9] Bone loss can be observed in patients as horizontal or vertical bowl-, funnel- or cleft-like defects (Figs. 1, 2). Schwarz and

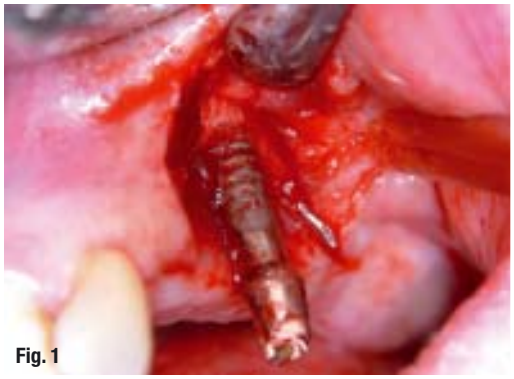
Fig. 1

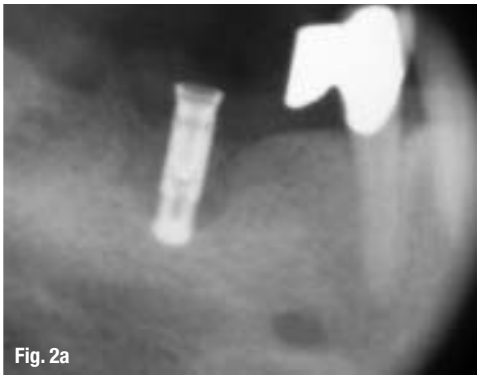
Fig. 2a

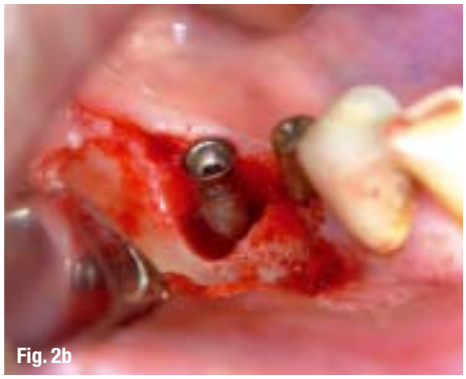
Fig. 2b

Becker[8] were the first, who tried to establish a clinically relevant defect classification. Direct interactions between resorption patterns and etiological factors are not known yet.

_Periimplantitis and periodontitis

Apparently there are parallels between periimplantitis and periodontitis around natural teeth, especially in view of the clinical appearance. The occurrence of plaque induced pathogens, the spectrum of which corresponds to a chronic progressive periodontopathy, is also present in periimplantitis. In patients with remaining teeth the spectrum is similar to those of natural teeth in the implants´ vicinity. Gram negative anaerobs and spirochetes are dominant. Mainly *Porphyromonas gingivalis, Actinobacillus actinomycetemcomitans, Tannerella forsythensis, Treponema denticola, Prevotella intermedia*, but also *Fusobacterium nucleatum, Campylobacter recta* and opportunistic pathogens can be found.[8, 10, 11] Like in periodontitis the release of proinflammatory mediators like prostaglandins, interleukins, elastase or tumor necrosis factor alpha (TNF-α) are considered to be a central process in the immune response. In periimplantitis such factors can be found in the periimplant gingival crevicular fluid.[12] Even though the histopathological changes in the soft tissues have not been characterized in detail for periimplantitis, the histological similarities with periodontitis are astounding. Inflammatory infiltrates (Fig. 3) consisting of T-lymphocytes, plasma cells and polymorph nuclear neutrophile leukocytes[6, 13, 14] can be proven. Intensified vascularization[14, 15] and changed composition of the extracellular matrix of the periimplant connective tissue[16] are also described as histological findings similar to those detected in periodontitis.

_Bone resorption due to inflammatory processes: osteoimmunology

Early investigations concerning periimplantitis have already shown that there is a correlation between the resorption of the alveolar bone and inflammatory processes. It is a well known pathogenetic principle, that bone resorption can be induced and maintained by inflammations. It is a central mechanism in diseases with osteolytic lesions and bone resorption e.g. in rheumatoid arthritis. Thus, the pro-inflammatory substances mentioned above, which are formed and released by inflammatory and local cells, stimulate the development and activation of bone resorbing osteoclasts. After being activated, osteoclasts start the resorptive degradation of the bone substance. These correlations are defined as "osteoimmunology". [17]

In dentistry orthodontically induced tooth movement and periodontitis are typical examples for immunologically controlled bone resorption. In the first case proinflammatory substances on the pressure side of a moved tooth induce the activation of osteoclasts, which resorb the alveolar bone at the direction of the movement, but can also trigger the activation of odontoclasts, which attack cementum and dentin and cause root resorptions.[18-20] Especially in parodontites the connection between immune response and bone resorption by such mediators is proven.[21] These mediators can be well detected not only in the gingival tissues but also in patients gingival crevicular fluid. Due to similarities between periodontitis and periimplantitis it seems to be probable that in periimplantitis bone resorption (Fig. 4) can also be triggered by resorptive mediators. Until now, no examinations have been carried out to provide evidence of these factors in inflammatory periimplant tissues. It is already known that the level of interleukin-1, is elevated in the gingival crevicular fluid of patients with periimplantitis.[22, 23] Collagen degradation products, so called "CrossLaps", which might originate from bone resorptions, can also be detected in the gingival crevicular fluid of periimplantitis patients.[24] Since there are no exact histological figures at hand, which might show bone resorption in periimplantitis, the topographical correlations between the extension of periimplant infiltration and bone surface is unknown. Infiltrates may reach much further apically to the junctional epithelium[13] and may thus get spatially close to the crestal bone.

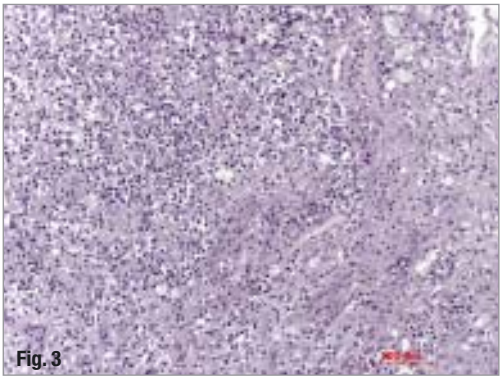
Fig. 3

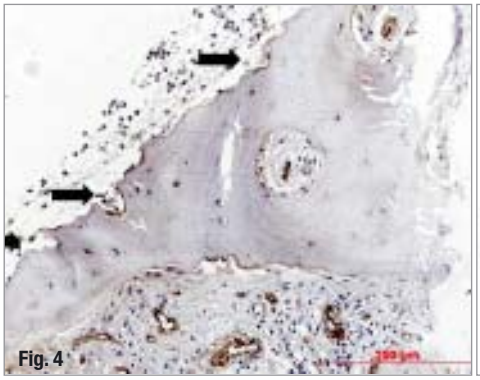
Fig. 4

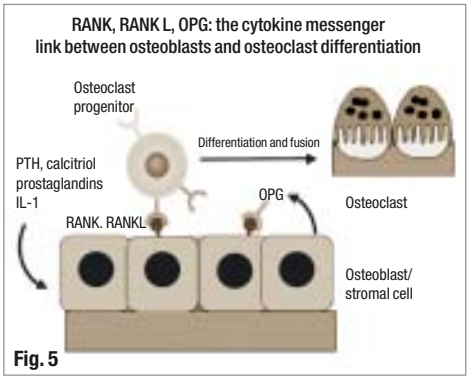

Fig. 5

Fig. 3_ Periimplantitis: Inflammatory infiltrate (left side of the figure) with epithelial proliferations (right sideof the figure); regio 21, female, 37 years, HE staining.

Fig. 4_ Periimplantitis: Biopsy with alveolar bone fragments, lacunes (arrows) indicate resorption; brown marked structures: Blood vessels; regio 27, female, 64 years, immunohistochemical staining for blood vessel marker.

Fig. 5_ Interactions in the RANK/RANKL system: RANKL on e.g. osteoblasts binds to RANK on osteoclast precursor cells (macrophages) and thus induces their further development into osteoclasts, OPG can impede RANK binding and inhibit osteoclast development.

_The RANK/RANKL system

New investigations have shown that an osteoimmunological coupling, as can be found in periodontopathies, is linked to other factors. These factors are related to known cytokines, but interfere as an independent and potent system with the process of bone remodelling. They were detected for the first time at the end of the nineteen-nineties and belong to the most important regulating system of bone remodelling, the RANK/RANKL system.[17,25,26] RANKL ("receptor activator for nuclear factor kappa ligand") can be localized on osteoblasts, fibroblasts, lymphocytes, vessel endothelia and other cell types. It interacts with its physiological receptor RANK, which is located in the cell membrane of osteoclasts and their precursor cells (monocytes/macrophages). RANKL's binding to this receptor leads to an increased differentiation of osteoclast precursor cells and the activation of mature osteoclasts. The biological activity of RANKL is regulated through a decoy receptor secreted by osteoblasts, OPG (osteoprotegerin), which binds and inactivates RANKL.

Bone resorption and apposition are therefore linked via regulation of osteoclast differentiation and activity by osteoblasts and other cells, and thus, a local regulatory mechanism for bone remodelling can be formed (Fig. 5). The relation between RANKL and OPG is of great importance for the presence of bone resorption or apposition. Research carried out in the last few years, has shown that this system not only controls the physiological bone remodelling, but also may be involved in the pathogenesis of local and systemic diseases of the musculoskeletal system. In many cases, the overbalance of RANKL leads to an increase in resorption. The influence of the RANK/RANKL system e.g. in osteoporosis, rheumatoid arthritis, Morbus Paget, genetic bone diseases and in the formation of skeletal metastases in different kinds of cancer, like breast or prostate cancer[27,28] are proven. It could also be demonstrated, that this system interacts in different manners with other catabolic and anabolic factors, like growth factors, hormones or cytokines. Therefore, it is involved in a network, which connects immune reactions and bone pathology in manifold ways.[25] It is obvious that the manipulation of the RANK/RANKL system allows therapeutic interventions into pathological resorption processes. Various possibilities have been tested for the last few years in cell culture and animal experiments. Among them are the developments of a RANKL antibody or the systemic administration of OPG. A RANKL antibody (Denosumab) for postmenopausal osteoporosis treatment is already being tested in a clinical trial.[29] A local application of OPG in rats, which were scheduled for an experimental orthodontically induced tooth movement, inhibits the formation of osteoclasts in the alveolar cleft and herewith tooth movement as well.[30]

_RANK/RANKL system in dentistry

The evidence of RANK/RANKL system components in healthy and diseased oral cavities in animals and

Fig. 6_ Periimplantitis, 66 years, regio 21, immunohistochemical detection (brown staining) of typical inflammation markers: Elastase **(6a)**, plasma cells **(6b)**, T-lymphocytes **(6c)**.

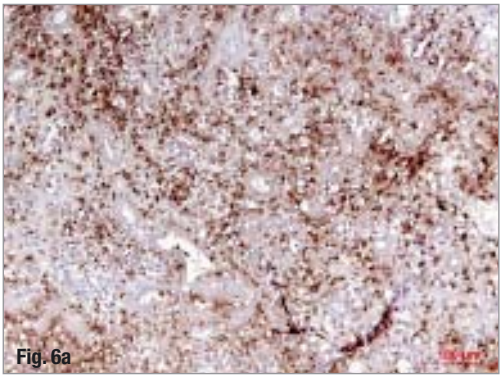
Fig. 6a

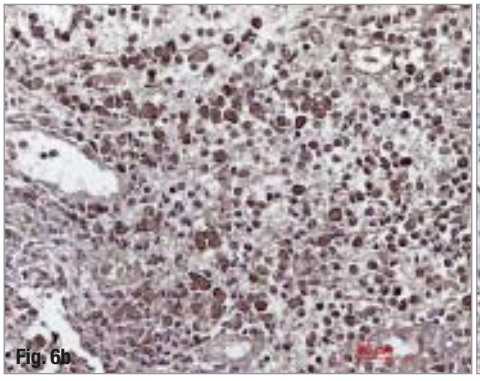
Fig. 6b

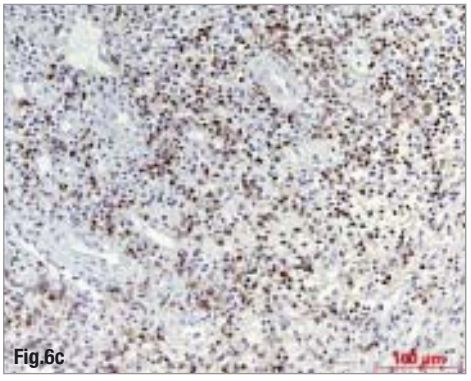
Fig.6c

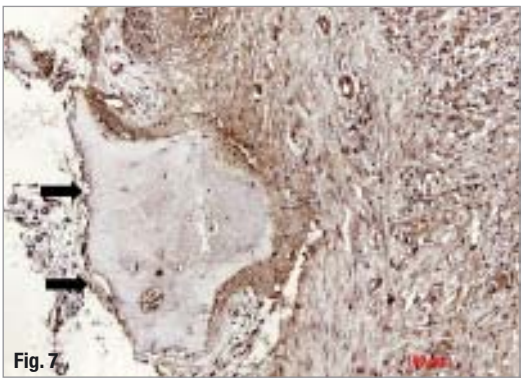

Fig. 7_ Periimplantitis: Biopsy with alveolar bone fragments (arrows: resorption lacunes), immunohistochemical detection of TNF-α (brown staining) in the connective tissue, 66 years, regio 23, 12 mm bone loss.

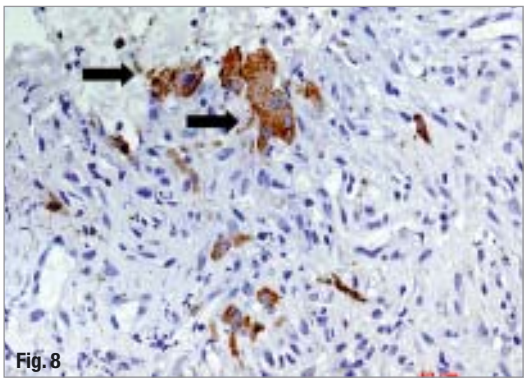

Fig. 8_ Periimplantitis: Macrophages as mononuclear precursor cells (marked brown) in the lower part of the figure fuse into multinuclear osteoclasts (arrows); male, 59 years, regio 46, 8 mm bone loss, immunohistochemical staining for ED1 (macrophage marker).

humans underlines the importance of these factors. In the case of dentition it is probably involved in creating an eruption pathway[31] and in the case of deciduous tooth shedding it favors the resorption of the dental hard substances.[32, 33] Their components can also be detected in healthy periodontium.[34, 35] The main task in this region might be the participation in bone remodelling processes, like those observed in physiological drift and occlusion. Cells of the desmodontium react with an increase in RANKL production[35] when under biomechanical stress. Hence, it is not astonishing that also orthodontically induced tooth movement can be regulated by RANK/RANKL. Additionally, it plays a role in the formation of root resorption as a side effect of orthodontic treatment.[36] Finally, pathological resorption processes in jawbone in case of osteolytic lesions associated with cysts and malignancies, are also controlled by RANK/RANKL.[37, 39] The tremendous importance of the RANK/RANKL system in the bone loss in periodontopathies has been proven in numerous cell biological, animal experimental and human studies.[21, 39] Lipopolysaccharides of gram-negative bacteria or pathogens themselves induce the increased expression of RANKL by T-cells in the gingiva.[39] Osteoclasts are being recruited via direct interaction with osteoclast-precursor cells, or the mediation of proinflammatory cytokines like IL-1. Components of the RANK/RANKL system can be detected in periodontitis in the inflammed gingival tissue and in the gingival crevicular fluid as well.[40, 41] Various experimental therapies to manipulate the RANK/RANKL system are being tested. Animal experiments showed that under systemic administration of OPG or substances, which inhibit RANKL, the periodontal inflammatory situation and the alveolar bone resorption could be improved.[21, 39]

_RANK/RANKL system in oral implantology

In surgical and orthopedic endoprosthesis, RANKL, which is formed by periprosthetic fibroblasts, is said to be responsible for the induction of osteoclasts, which, as a consequence, provoke loosening of prostheses.[43, 44] As shown in animal experiments, even a slight debris caused by titanium implants can lead to RANKL induced osteolysis.[45] RANKL and OPG are detectable in the periimplant gingival crevicular fluid of dental implants.[46] Investigations of the RANK/RANKL system in view of osseointegration and the survival of implants are in a very early stage at the moment. A coordinated activity of osteoblasts and osteoclasts in periimplant bone is of eminent importance for an optimal integration of implants by bone remodelling. The latest experimental study of Kim et al.[47] showed, that this system is important during osseointegration of titanium implants in rats. RANK/RANKL and OPG were found during the whole healing phase in the bone. The application of a low level diode laser in the animals provoked an increase of the protective OPG. OPG probably does not only fulfill its protective function against resorptive influences together with other

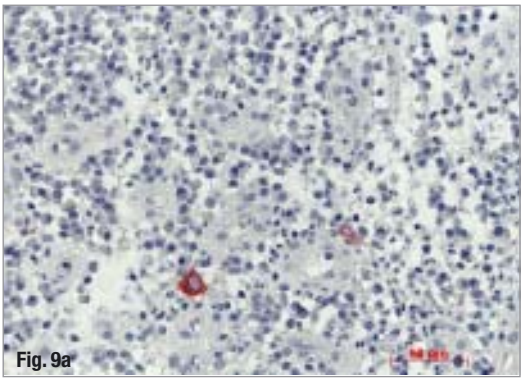

Fig. 9a_ Periimplantitis with different bone loss: Correlation with the number of osteoclast-like cells and their precursor cells in the inflammatory infiltrate (red staining); 2 mm bone loss.

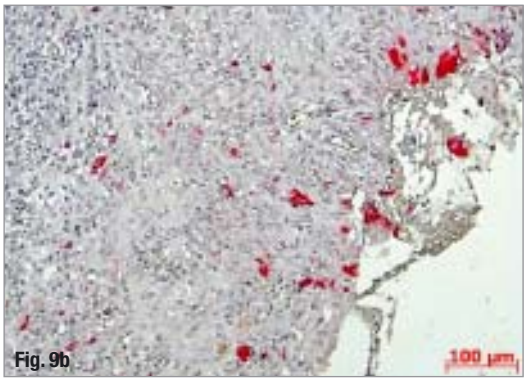

Fig. 9b_ 8 mm bone loss; TRAP staining used for osteoclast identification.

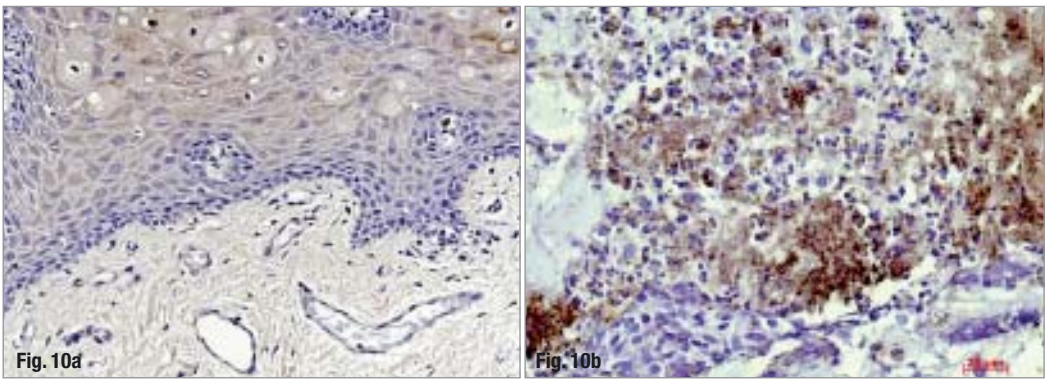

Fig. 10a_ Healthy gingiva: Immunohistochemical detection of RANKL (brown staining) in some epithelial cells (upper part of the figure), female, 20 years; immunohistochemistry.

Fig. 10b_ Periimplantitis: Immunohistochemical detection of RANKL (brown staining) in inflammatory infiltrate; regio 26–28, female, 52 years, immunohistochemistry.

protective, anti inflammatory and anabolic factors, e.g. growth factors[48] in a healthy periimplant environment, but it can also be stimulated during osseointegration. Cell culture studies have shown that the microtopography of implant surfaces may definitely influence the formation of OPG.[49]

_RANK/RANKL and periimplantitis?

According to the explanations above, we can assume that inflammatory factors and especially the RANK/RANKL system also play an important role in bone resorption in periimplantitis. Monov et al.[50] were the first to detect soluble RANKL in the gingival crevicular fluid of 16 patients suffering from periimplantitis. However, the amount did not correlate with the collected clinical data. In contrast, OPG could not be found, this might be a sign for its downregulation under inflammatory conditions and representing the loss of a periimplant protective mechanism. A study supported by the DGZI Research Fonds will thoroughly examine the role of RANK/RANKL system in periimplantitis bone resorption. At first biopsies, which can be obtained when implants are removed, will be examined histologically and immunohistochemically. The focus of this study is the exact histopathological characterization, the proof of macrophages and osteoclasts and various inflammatory factors, including the components of the RANK/RANKL system. These data will be correlated with clinical and probably microbiological parameters. In a second step, a multicentric study is planned. Its aim is to obtain gingival crevicular fluid and tissue samples from periimplantitis patients, which will then be examined by means of biochemical and molecular biological methods. We already have first results from biopsies at our disposal taken from 25 patients. The samples proved a certain diversity of histopathological findings. Polymorph nuclear leucocytes and plasma cells were predominant in inflammatory infiltrates, but the distribution and appearance of the various lymphocyte species differed in each case (Fig. 6a–c). As expected, miscellaneous inflammatory mediators could be detected in inflammatory tissues (Fig. 7). The detected number of osteoclasts and their precursor cells correlated with the amount of alveolar bone resorption (Figs. 8, 9a, b). Compared to the samples taken from healthy control tissue, e.g. gingiva, RANKL (Fig. 10a, b) and RANK were increased. If this study will confirm the involvement of the RANK/RANKL system in the development of bone resorption, this would be another indicator for the importance of these factors in periimplantitis (Fig. 11). Perhaps it will be possible in the near future to predict the risk of a probable bone resorption in cases of periimplant mucositis or periimplantitis via RANK/RANKL system components in gingival crevicular fluid or in tissue specimens. The relation between RANKL and OPG in gingivia biopsies of patients with periodontopathies showed diagnostic evidence for the presence of gingivitis or chronic or aggressive periodontitis.[51] In view of the mentioned experimental and pre-clinical studies in order to influence bone resorption via interventions affecting the RANK/RANKL system, suitable treatments for periimplantitis may be possible. This could be done by means of local application or administration of RANKL inhibiting substances and antibodies respectively, OPG, or systemic administration of RANK/RANKL modifying substances._

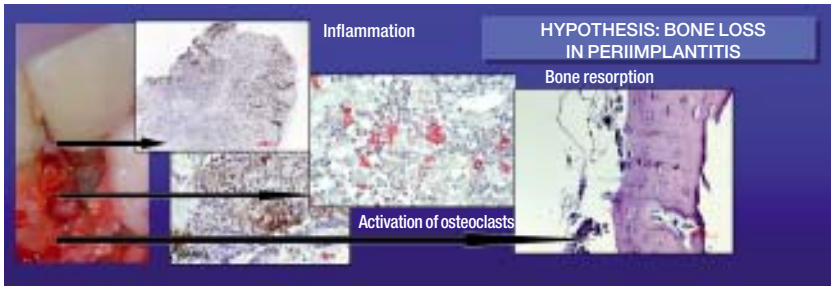

Fig 11_ Hypothesis considering the development of an inflammatory mediated bone loss: Periimplant inflammation activates the RANK/RANKL system, which then activates osteoclasts that perform crestal bone resorption.

_contact implants

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Using Dental Implant and Guided Bone Regeneration for the Closure of Oroantral Communication

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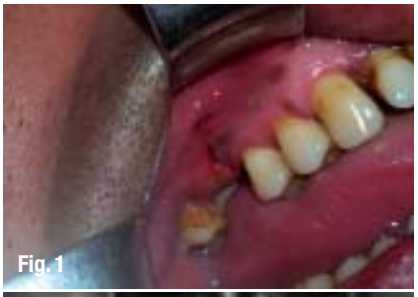
Fig. 1

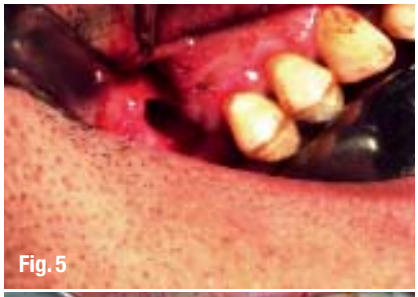
Fig. 5

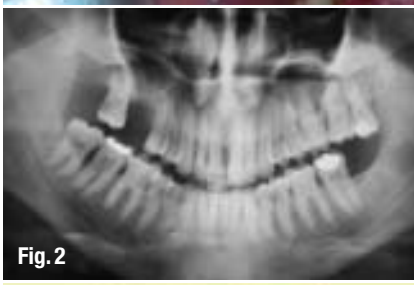
Fig. 2


Fig. 6

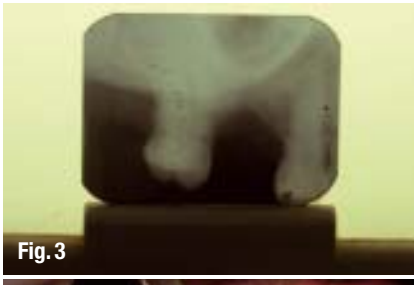
Fig. 3


Fig. 7

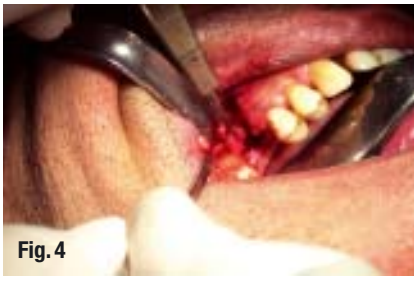
Fig. 4

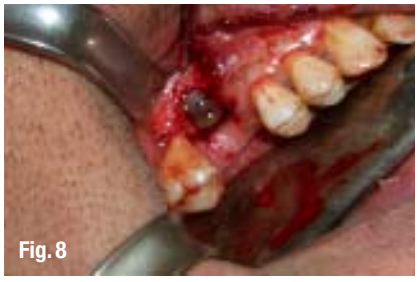
Fig. 8

_Abstract

Several methods have been recommended for the late closure of oroantral fistulas; including different types of mucosal flaps and monocortical bone graft. This report introduces a promising and unique method for the immediate and delayed closure of chronic oroantral communications by using a tapered screw-vent implant with guided bone regeneration (Fisiograft) for closure of the oroantral communication. Six month postoperatively, a stable osseointegrated implant developed and a complete closure of the bony defect was established.

_Introduction

Oroantral fistula, a pathological communication between the maxillary sinus and the oral cavity, may occur as a result of tooth extraction, trauma, osteomyelits and syphilis, with tooth extraction being the most common etiologic factor.[1] Sinus perforation will heal spontaneously if treated adequately at the time they occur. If the patient has healthy sinus, an oroantral communication of less than 4–5 mm will most likely heal spontaneously.[1,2] Prescribing systemic antibiotics and topical decongestants is imperative at the time of acute injury. Maxillary sinusitis is present when an untreated communication has persisted for more than 48 hours.[1] Surgical closure of an antral communication is indicated if the opening is over 4–5 mm in size at the time of injury. If the opening has a history of sinus disease, closure of the perforation is indicated even the opening is less than 4 mm.[1,2] The aim of management is not only to close the opening, but also to treat the underlying sinus pathology.

Several surgical procedures have been recommended for primary and late closure of oroantral communication using buccal or palatal mucosal flaps.[1–3] The recurrence of the fistula after primary closure, especially in patients who had multiple surgical interventions, drew the interest for using an alternative method: other than the use of mucosal flaps for the late closure of oroantral fistulas. This article report on closure of a chronic oroantral fistula using an osseointegrated dental implant and a biosynthetic bone regenerations product.

_Case report

Patient

A 37 year old male, present to the department of oral and maxillofacial Surgery, Specialized Military Dental Hospital, Cairo, on April 2003 with symptoms related to an oroantral communication in the site of extracted right maxillary first molar region following the extraction procedure before two years.

History

The patient developed the fistula and the associated symptoms following the extraction of the maxillary right first molar tooth two years earlier. Since then, he underwent three operations in an attempt to close the fistula by mucosal flaps all ended unsuccessfully.

Clinical Examination

Clinical Examination revealed the missing of the maxillary right first and third molars. The mandibular left 3ed molar were also missing. An oroantral fistula (about 5 mm in diameter) was detected in the region of the missing maxillary right first molar tooth (Fig. 1).

Radiographic Examination

Pantomography (Fig. 2) and periapical (Fig. 3) radiography confirmed the diagnosis of oroantral fistula in the region of the maxillary right first molar tooth.

Medical evaluation

The patient was in good health. All laboratory findings were within the normal limits of value. The patient was referred to the ENT clinic for evaluation of his sinus condition. A diagnosis of subacute right maxillary sinusitis was made and a treatment regimen of antibiotics and nasal decongestants was given. After one week, the symptoms of sinusitis improved, but the dimensions of the fistula remained the same. Surgical closure of the fistula with a different procedure other than the use of mucosal flaps was planned, and the patient was admitted to the hospital for operations.

Operative Procedures

Under nasoendotracheal general anaesthesia, with No. 15 blade; two vertical incisions were made, extending at 45° angle from the mucobuccal fold to about 2–3 mm mesial and distal to the edges of the fistula. Both the buccal mucoperiosteal flap and the palatal mucosa were reflected to expos the alveolar ridge around the defect. The mucosa around the edges of the fistula was excised, and the fistulous tract up to the floor of the maxillary sinus was traced and thoroughly curetted (Fig.4). This showed that the bony defect about 5 mm in diameter (Fig. 5).

Preparation of the site for implant

The bony defect site (bony fistula) was prepared for the implant by using the trephine drills recommended by the manufacture according to the type of implant used and suitable with the 6 mm diameter implant and the available bone high (Fig. 6).

Obturation of the bony defect

Selection of the implant based on the size, shape and location of the defect. The 5 mm diameter of the bony fistula allowing us to use at least 6 mm diame-


Fig. 9


Fig.13


Fig. 10

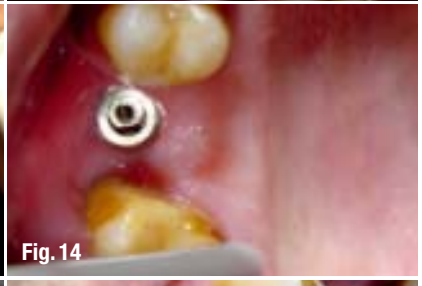
Fig. 14

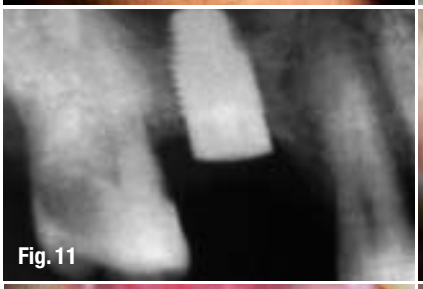
Fig. 11


Fig. 15

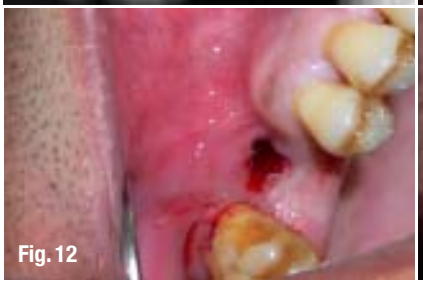
Fig. 12


Fig. 16

ter implant to insure intimate contact between the implant surface and the surrounding bony tissue. On the other hand, the length of the implant is determined by the vertical thickness of the bone between the alveolar ridge and the base of the maxillary sinus. Generally we need at least 7 mm vertical bone thickness to insure primary stability for the implant. Otherwise bone augmentation is recommended to increase the vertical high before implant insertion. The selected implant inserted in the prepared bone site as usual (Fig. 7 and 8). Fisiograft mixture of gel and granules was used to fill any spaces between the implant surface and the surrounding bone and also to surround the coronal part of the implant in order to treat the bony resorption of the alveolar ridge. Before application of the Fisiograft; the bone around the defect was curetted until bleed to facilitate bone regrowth and resorption of the product. The thick mixture was applied with the applicator and modelled with a spatula (Fig. 9).

Wound Closure

The mucoperiosteal flap was replaced and the wound closed with 000 vycril without tension (Fig. 10). A periosteal incision may become necessary prior to suturing; this is dependent on the operation site. The periosteal incision should be vestibular. The flap was sutured back into place ensuring complete coverage of the implant and Fisiograft.

Hospital course

The patient received antibiotics for 5 days. The stitches were removed after 7 days and the patient was discharged to be followed up monthly for six months. No reopening was evident 6 months postoperatively.

Subsequent Course

After 6 months of regular monthly follow up clinically and radiographically, the patient was totally free from symptoms. Radiographic examination (Fig. 11) revealed sufficient new bone formation around the implant.

Under local infiltration anaesthesia, with No. 15 blade; a round incision was made around the coronal part of the implant to cover it and remove the overlaying mucosa (Fig. 12), followed by insertion of the healing cap (Fig. 13). After one week, the healing cap was removed (Fig. 14) and the abutment was inserted and prepared (Fig. 15) for the insertion of the final porcelain crown (Fig. 16).

_Discussion

A number of procedures for the primary and delayed closure of oroantral fistulas have been attempted to overcome the complications and recurrence that is some times met with the use of mucosal flaps. Janas et al[4] recommended laser biostimulation as an effective method for treatment of oroantral fistulas. Complete closure of the fistulas occurred after 4 days of laser therapy in all the 61 patients treated by this method. Kitagawa et al[5] reported on 2 cases in which the fistula was closed immediately after tooth extraction by using a transplanted third molar with complete root formation.

In the case presented here; the fistula was closed using an osseointegrated dental implant together with a bone regenerating material (Fisiograft) for guided bone regeneration. Several studies using bone regenerating materials have shown significant new bone formation around implants. In a study by Dahlin et al[7], fixture fenestrations treated with guided bone regeneration showed more new bone formation than control sites of fenestration defects. Coverage of exposed implant surfaces by newly formed bone has been reported in many studies by using this method (6–12). The bone regenerating material used in this case (Fisiograft®, GHIMAS) is a biosynthetic product based on synthetic co-polymer of polyglycolic acid and polylactic acid. This material stimulates the formation of new bone by osteoinduction. The texture of this material serves as an osteoconductive scaffold for osteoblastic cells and stimulates deposition of bone matrix. Particles are osseointegrated and the resorped biomaterial is slowly replaced by newly formed bone.[12] Although bone regeneration materials have been used extensively to facilitate the insertion of dental implants, bone augmentation and correction of defects at the implant site[6–11], there are no reports in the literature about the use of a similar technique in the closure of oroantral communications. Thus, until replicated; this report will stand alone.

_Conclusion

The use of an osseointegrated dental implant together with a bone regeneration material in the closure of a chronic oroantral fistula is a simple and excellent method because the implant does not only close the communication to the maxillary sinus, but also satisfactorily restores the function of mastication after fixation of the superstructure._

The reference list can be requested from the editorial office.

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Immediate Certain-Prevail implant placement in the esthetic zone using a flapless Approach

author_ Suheil M. Boutros, USA


Fig. 7

Case 1

Fig. 1_ Preoperative appearance of right maxillary central incisor.

Fig. 2_ Preoperative radiograph of failing root canal therapy.

Fig. 3_ Flapless extraction and implant placement.

Fig. 7_ Restoration one year post placement.

_Abstract

Endosseous implants have been traditionally placed using a two-stage surgical approach with a 6–12 month healing period after tooth extraction. In order to decrease healing time, surgical protocols were introduced to allow immediate implant placement and in certain cases immediate non-functional loading following tooth extraction.

Although survival rate for this technique is high, and predictable, post treatment gingival recession and bone resorption in the aesthetic zone are potential limitations. These case reports present different surgical techniques for the preservation and augmentation of anterior aesthetics that combine minimally invasive extraction, immediate implant placement, and the use of an implant system that allows platform switching to preserve buccal bone.


Fig. 1

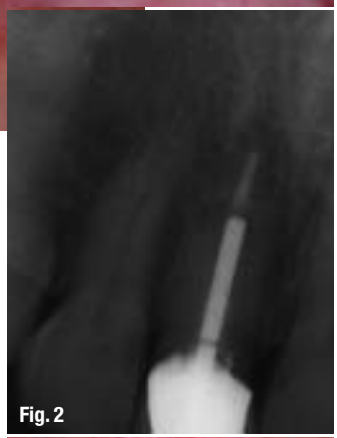


Fig. 2


Fig. 3

Dental implants have been successfully used for the last 35 years to restore partially and fully edentulous patients (Fig. 1, 2). Prior to implant placement, the traditional protocol recommended a 6–12 months healing of the alveolar bone following tooth extraction. In addition, a load-free healing period of 3–6 months was recommended for osseo-integration to occur (Fig. 2). In an attempt to decrease the long healing period, protocols were developed to increase the viability of implant placement immediately following tooth extraction. Thus, there has been an increasing interest in implant placement into a fresh extraction socket, because this procedure has been shown to be a predictable treatment method (Fig. 3, 4). The advantages of immediate versus delayed placement include a reduction in

treatment time, fewer surgical procedures (Fig.5), and a decrease in surgical trauma to the soft and hard tissue at the implant site (Fig. 6). The disadvantages of immediate implant placement in an extraction socket in the aesthetic zone are the unpredictable gingival recession and crestal bone resorption that might occur. Continued bone and soft tissue loss may cause the exposure of the implant surface, resulting in a compromised aesthetic outcome (Fig. 7).

_Case Presentations

Case 1

A 35-year old non-smoking male patient in good health with no contraindications to treatment presented with a questionable maxillary right central incisor 15 years following a traumatic injury that resulted in root canal therapy post and crown. The tooth had Class I mobility (Fig. 1). Clinical evaluation revealed no signs of infection but there was an internal root fracture, and the tooth was given a hopeless prognosis (Fig. 2). Treatment options were given and informed consent was signed. A preliminary impression was taken and an interim removable partial denture was made.

Surgical Protocol

Following administration of local anesthetic (lidocaine with epinephrine 1:100,000), atraumatic tooth extraction with periotomes was performed without flap reflection to preserve the interproximal papillae and the buccal plate of bone. Following socket debridement, the implant (5 x 13 mm, Nano, Certain, BIOMET *3i*, Palm Beach, Florida) was placed according to the manufacturer's protocol. The implant was stable at 20 Ncm. The implant was placed 2 mm mesiodistally from the adjacent teeth (Fig. 3), lingual to the buccal plate, toward the cingulum (Fig. 4). Since the jumping distance (the space between the implant top and the walls of the extraction socket) was less than 1 mm no bone grafting was done. A collagen plug was placed to promote initial clot formation and 5-0 chromic gut suture was used to hold the plug in place. No attempt was made to achieve primary closure over the implant.

Restorative Phase

Three months following implant placement, the implant was uncovered and a healing abutment was placed. Two weeks later, a fixture level impression was taken. The final abutment was 4 mm in diameter and the concept of platform switching was used to preserve the buccal plate of bone and prevent bone loss and gingival recession. The final restoration was cemented on a porcelain fused to metal crown (Fig. 5, 6). The buccal gingival height remained stable after the placement of the final restoration. Moreover, the height of the buccal gingival margin remained the same more than a year post loading (Fig. 7, 8).

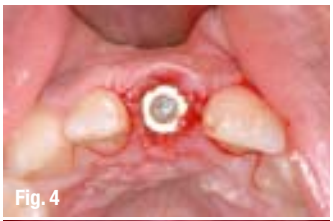
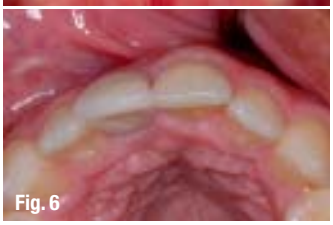


Fig. 4


Fig. 5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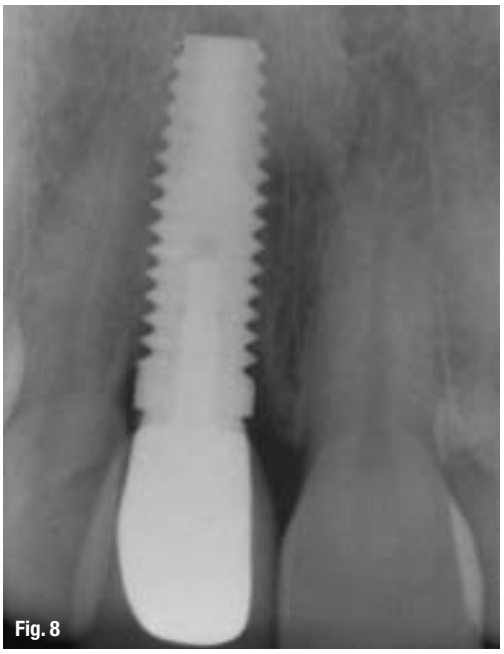
Fig. 8


Fig. 9

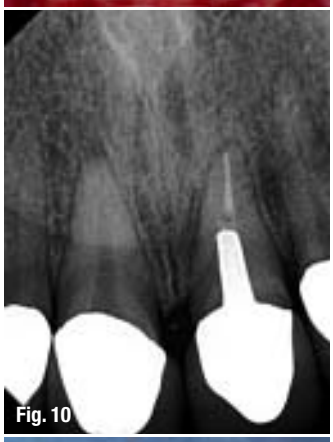
Fig. 10

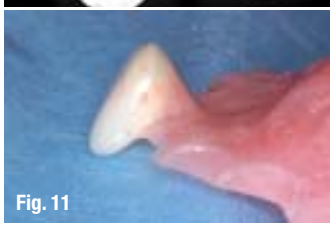
Fig. 11

Fig. 4_ Buccal-Lingual position of the implant.
Fig. 5_ Final restoration. Note the even gingival margin of the implant restoration with the adjacent natural left incisor.
Fig. 6_ Buccal lingual vie w of the final.
Fig. 8_ Radiograph one year post restoration with platform switching.

Case 2
Fig. 9_ Preoperative view of left maxillary incisor.
Fig. 10_ Pre-operative radiograph.
Fig. 11_ Interim ovate pontic removable partial denture to promote soft tissue healing.

Case 2

A 40 year old female smoker in good health with no contraindications to treatment presented with a questionable maxillary left central incisor following a traumatic injury that resulted in root canal therapy post and crown. The tooth had no mobility (Fig. 9).

Clinical evaluation revealed no signs of infection but there was an internal/external root fracture, and the tooth was given a hopeless prognosis (Fig. 10).

Treatment options were given and informed consent was signed. A preliminary impression was taken and an ovate interim removable partial denture was made (Fig. 11).

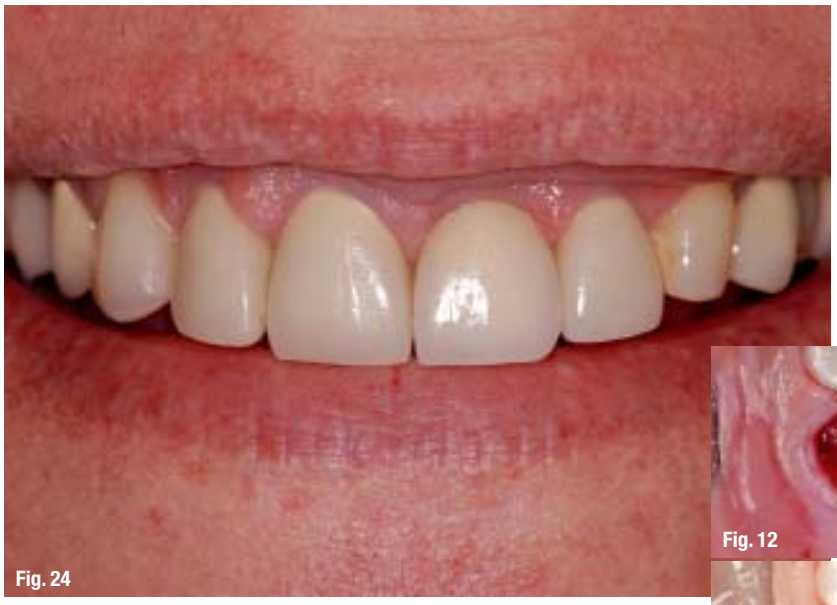
Fig. 24

Fig. 12_ Osteotomy site preparation.
Fig. 13_ Implant in place note the large gap to the buccal plate.
Fig. 14_ Collagen membrane trimmed like an ice cream cone.
Fig. 15_ Bone Graft to fill the gap between the fixture and socket.
Fig. 16_ Collagen membrane place between the buccal gingival and against the buccal plate.
Fig. 17_ Mattress suture to hold the membrane and graft material in place ovate pontic.
Fig. 18_ Interim removable partial denture with ovate pontic to promote soft tissue healing.
Fig. 19_ Second stage surgery.
Fig. 20, 21_ Fixture position in the coronal apical direction and the adjacent teeth relation ship.
Fig. 22_ Final restoration 6 weerks post placement.
Fig. 23_ Radiograph 18 months post restoration.
Fig. 24_ Final restoration 18 months post placement.

Surgical Protocol

Following administration of local anesthetic (lidocaine with epinephrine 1:100,000), atraumatic tooth extraction with periotomes was performed with a flapless approach to preserve the interproximal papillae and the buccal plate of bone. Following socket debridement (Fig. 12), the implant (4/5/4 x 13 mm, Nano, Prevail Certain, Biomet *3i*, Palm Beach, Florida) was placed according to the manufacturer's protocol. The implant was stable at 20 Ncm. The implant was placed 2 mm mesiodistally from the adjacent teeth, lingual to the buccal plate, toward the cingulum (Fig. 13).

Since the jumping distance was more than 1 mm, a collagen membrane (BioMend Extend, Zimmer Dental, Carlsbad, CA) was used between the buccal flap and the buccal plate (Fig. 14).

The gap was filed with Bovine bone (Bio-Oss, Osteohealth, Shirley, NY) (Fig. 15). A 5-0 Vicryl suture was used to keep the collagen membrane in place and no attempt was made to achieve primary closure over the implant (Fig. 17). The interim partial denture was delivered (Fig. 18).

Restorative Phase

Four months following implant placement, the implant was uncovered and a healing abutment was placed (Fig. 19). Two weeks later, a fixture level impression was taken. The final abutment was 4 mm in diameter and the concept of platform switching was used to preserve the buccal plate of bone and prevent buccal bone loss and gingival recession. The final restoration was cemented on porcelain fused to a metal crown. The buccal gingival height remained stable after the placement of the final restoration (Fig. 22, 23). Moreover, the height of the buccal gingival margin


Fig. 12


Fig. 18


Fig. 13


Fig. 19


Fig. 14


Fig. 20

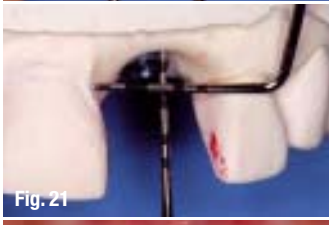
Fig. 21


Fig. 15


Fig. 22


Fig. 16

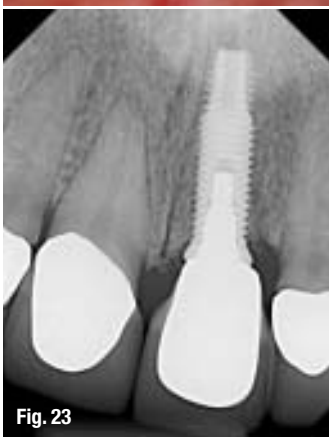
Fig. 23


Fig. 17

remained the same more than a year post loading (Fig. 24).

_Conclusion

These two case reports describe a surgical technique to preserve and augment anterior aesthetics by combining minimally invasive surgery, atraumatic tooth extraction, grafting of the buccal space with bovine bone and collagen membrane without primary coverage, using the platform switching concept to preserve the buccal plate, and using a nano (calcium phosphate CPA) surface to speed up the osseointegration process . In both cases presented, the gingival tissue surrounding the implants has remained stable with no recession 1.5 years following final crown placement. Additional prospective clinical and histological studies are required to determine if this protocol using different coronal designs and prosthetic components with and without grafting can maintain the soft and hard tissue levels over time._

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Use of a Bone Regeneration Cement for the Management of Gingival Margin in Tooth Extraction Areas

author_ Sérgio Alexandre Gehrke, Brazil

_Abstract

The procedures for guided bone regeneration (GBR) in tooth extraction areas favour the maintenance of anatomical contours and increase the predictability of aesthetic success. Nevertheless, the complex handling of the flap associated with these techniques can compromise the aesthetic and functional results. Aiming at better and more predictable results the use of an injectable calcium phosphate cement is suggested in this work. A bone regeneration cement called PD VitalOs Cement® (Produits Dentaires SA, Vevey, Switzerland) was used to fill and cover the extraction areas, with or without immediate placement of implants. The technique used does not require the raise of a flap nor an additional surgical site to harvest a graft. Twenty patients divided into two groups were followed up clinically and radiographically. In the test group the patients were treated with PD VitalOs Cement®, whereas the sites of the control group were left empty. The tissues dimensions around the extraction sites were measured up to 90 days after surgery. The results show better management of the buccal gingival margins of the patients treated with PD VitalOs Cement®, which is of prime importance for the final aesthetic results, especially for single-tooth extractions.

_Introduction and Literature Review

Preservation of alveolar margins becomes a critical issue when a tooth is extracted, since the height and width of the margins are major factors influencing the success of the treatment, with implant or with fixed prostheses. The regeneration of buccal bone lost following trauma or disease can bring therapeutic issues in the dental clinic: after a regenerative surgery the osseous defects generally don't heal, or heal with a tissue that differs from the original one, with respect to morphology and function.[1] For instance, the lesions in the alveolar processes heal often with fibrous instead of bony tissue, provoking gingival recession and alteration of the buccal gingival margin.[2] Buccal alveolar bone resorption after tooth extraction results in an important reduction in bone height. The conjunctive tissue can have a strong influence on osteogenesis during alveolar healing, which results in a narrowing of the socket one month after extraction due to local bone resorption. This leads to aesthetic and restorative problems like the decrease of the volume available for implant placement.[3] Guided Bone Regeneration (GBR) is a surgical technique that aims at reducing a bone defect by promoting the formation of new bone. It consists in excluding soft tissues from the bone defect through the use of a barrier allowing only bone cells to be present in the space to be regenerated. This principle is based on the findings of Melcher in 1970,[4] who stated that a type of tissue developing in a given space depends on the type of cells present in the site. The regeneration of periodontal tissues and bone margin using physical barriers is a well-established procedure in reconstructive surgery. However, the characteristics of the biomaterial as well as the design of the barrier membrane have a strong influence on the results.[5] Membranes are used as mechanical barriers protecting the blood clot from the migration of epithelial tissue into this space, thus allowing the selection of bone cells to repopulate the defect.[3] The first membranes for GBR were not resorbable. Therefore, a subsequent surgery was necessary to remove them. These membranes were often

Fig. 1_ Syringe of PD VitalOs Cement®.

Fig. 1

Fig. 2_ Plastic model for measurement of margin recession.

exposed in the oral cavity during the healing phase, which resulted in a significant decrease in bone tissue regeneration,[7–10] consequently jeopardizing the clinical success.[6] The resulting inflammatory reaction requires often early removal of such membranes.[8] Later on, resorbable membranes were developed, based on polymeric materials like collagen, polylactic acid, copolymers of polylactic and polyglycolic acids, or based on minerals like calcium sulfate[11] or calcium phosphate.[12] The most common ones, based on synthetic polymers, degrade through a hydrolysis process, producing chemical substances that are involved in the normal metabolic processes. However, these materials lose their mechanical integrity during hydrolysis and break up into pieces. The quantity and physical nature of fragments can have a significant effect on the local tissue response, leading to bone resorption.[13] The resorption time seems to vary even when primary closure of the wound was achieved. However, depending on the size of the extracted tooth, primary closure is not always achievable, thus leaving the area partially exposed. Membranes must fulfill the following requirements to act as passive physical barriers: they must be biocompatible, possess occlusive properties, be able to create and maintain space and allow tissue integration. In addition to that, they should be easy to handle, affordable and offer predictable success.[14] PD VitalOs Cement (Figure 1) is a ready-to-use resorbable bone regeneration material claimed to act both as a bone filler and as a membrane. This injectable calcium phosphate cement was used in this work to assess its clinical success in GBR procedures after tooth extraction with flapless surgery. The objective of this work was to evaluate the healing and preservation of periodontal tissues after tooth extraction. Sites filled with PD VitalOs Cement were compared to those left empty.

_Material and Methods

Twenty patients requiring tooth extractions were selected for evaluation. The corresponding 23 sites were divided randomly into two groups. In the test group (TG) the extraction sites were filled with PD VitalOs Cement, whereas the sites of the control group (CG) were not filled at all. Among the 20 patients treated, only two did not get immediate implantation because this would have been contra-indicated. They got delayed implantation, with implant placement three months later. To be included in the study the extraction sites had to present a gingival architecture similar to that of the adjacent teeth. Smokers and patients with systemic diseases known as contra-indications for surgery were excluded from the study. The patients were informed about the different treatment options, received detailed information related to the elected treatment as well as its risks and benefits. They all signed an informed consent form before actual inclusion in the study (i.e., before tooth extraction). The mean age of the patients was 39.5 years, with minimum and maximum ages of 28 and 68 years respectively. 65% of the patients were women. The reasons for extraction were the following: vertical root fracture (n = 14), external root resorption (n = 1), extensive caries jeopardizing the biological distance (n = 6), periodontal disease (horizontal bone loss) with insufficient bone to support a prosthetic crown (n = 2) (Table 1). After extraction, the remaining alveolar walls situation was carefully evaluated and only type 1 sites (classification of Salama and Salama)[15] were actually included in the study (Table 1).

The implants used were cylindrical, with diameters matching as much as possible the root diameter of the extracted teeth,[16] to make sure that the platform

Etiology	Nr. of sites	Percentage
Vertical root fracture	14	61%
Extensive caries	6	26%
Periodontal disease	2	8.5%
Root resorption	1	4.5%
TOTAL	23	100%

Table 1_ Etiology of the extraction cases.

Fig. 3a_ Pre-op situation.
Fig. 3b_ Placement of implants and PD VitalOs Cement.
Fig. 3c_ Suture.

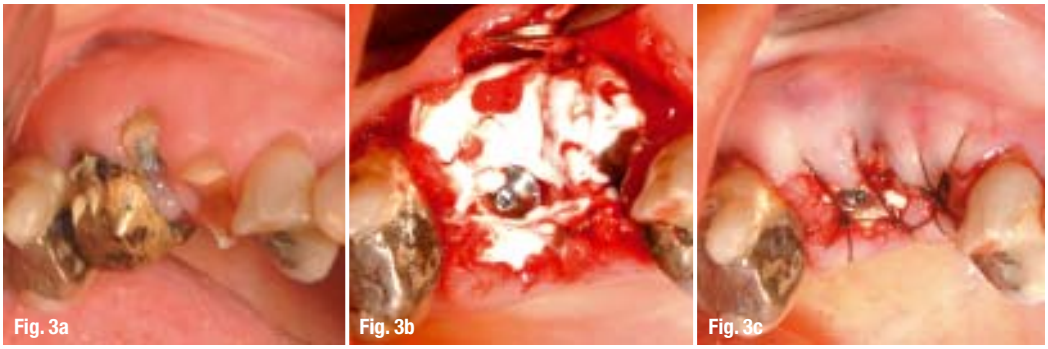
Fig. 3a

Fig. 3b

Fig. 3c

Table 2 _ Gingival margin recession in the Control Group (CG).

Pat. Nr.	Tooth Nr.	MW (pre-Op)	MW (7 days)	MW (30 days)	MW (90 days)	Margin Recession MR (90 days)
CG 1	16	12.0	12.0	11.0	9.5	2.5
CG 2	24	9.5	9.0	9.0	8.0	1.5
CG 3	25	10.5	10.0	9.5	9.0	1.5
CG 4	14	11.0	10.5	10.0	9.0	2.0
CG 5	11	8.5	8.5	8.0	7.7	1.0
CG 6	12	7.5	7.0	7.0	6.0	1.5
CG 7	21	9.0	8.5	8.5	8.0	1.0
CG 8	22	8.5	8.0	8.0	7.5	1.0
CG 9	46	12.0	11.0	10.5	10.0	2.0
CG 10	13	10.0	9.5	9.0	8.0	2.0

MW–Margin Width (mm),
MR–Margin Recession (mm) = MW (X days) – MW (pre-op)

diameter is slightly smaller than the diameter of the alveolus and to provide a minimum distance of 2 mm between the implant and the neighboring tooth.[17]

_Clinical, radiographic and laboratory evaluation

The cases were evaluated clinically, radiographically (periapical radiographs) and in the laboratory (measurement of plaster models). These evaluations took place pre-operatively and 7, 30 and 90 days after tooth extraction. The margin widths on the plaster models were measured with a Starrett® caliper in the bucco-lingual direction at the mid-point of the extraction site. For each patient, a plastic guide was molded on the pre-op plaster model. It was then placed onto the post-operative models to ensure precise and reproducible measurement location for assessment of margin recession (Fig. 2). Periapical radiographs extended between the mesial and distal edges of the extracted root and allowed assessment of marginal bone resorption. One case of the Test Group is shown in Figure 3: extraction of two teeth, placement of two implants and defect filling with PD VitalOs Cement. Figure 4 shows one case of the Control Group: extraction of a molar, placement of implant and suture without filling the bone defect.

_Results

PD VitalOs Cement was very easy to apply into the post-extraction bone defects. The tip of the syringe allows fast and accurate product injection. The defects were always completely filled, up to the margin level. Data collection is still on-going and more results will be published with a longer follow-up period. The radiographs have confirmed usual clinical findings and showed vertical bone loss in the usual range[18] (almost 2 mm), with slightly more loss in the control group. The mean buccal margin recession was assessed through measurements of models made at each follow-up step (Tables 2 and 3, Graph 1). The measurements under 0.25 mm were rounded down to zero and those between 0.26 and 0.49 were rounded up to 0.5 mm. The mean gingival margin recession at 90 days after surgery was 1.6 mm in the control group and 0.4 mm in the test group. In the control group, one site presented a recession of 2.5 mm, three of 2 mm, three of 1.5 mm and three of 1 mm. In the test group, one site showed a recession of 1 mm, ten of 0.5 mm. In two sites, the original anatomical contours were unchanged, which means the dimensions were the same before and after surgery.

_Discussion

Most of the single tooth losses are related to endodontic or periodontal diseases, trauma or root fractures. They can induce resorption of the alveolar bone walls,[19] resulting in a reduction of buccal volume.[2] To minimize this alveolar bone resorption, the placement of an implant immediately after extraction is considered to have the potential to preserve the osseous architecture and the peri-implant gums in a predictable way.[20,21] Recently, new surgical techniques have been developed for immediate

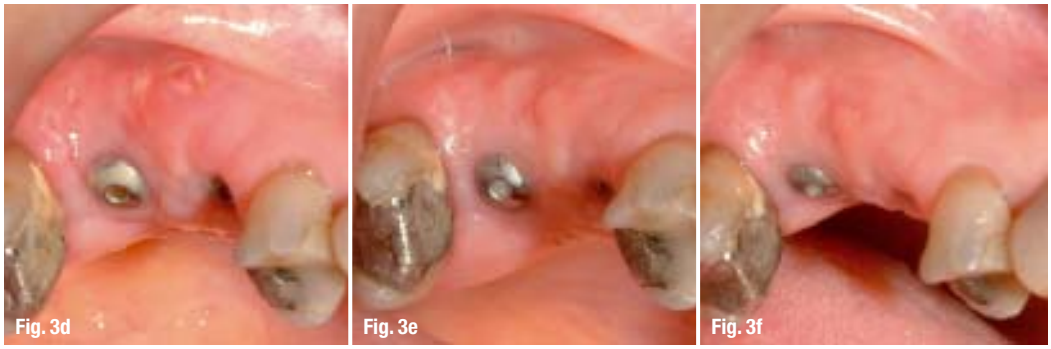

Fig. 3d_ 7 days after surgery.
Fig. 3e_ 30 days after surgery.
Fig. 3f _ 90 days after surgery.

Table 3 _ Gingival margin recession in the Test Group (TG).
Graph 1 _ Distribution of the margin recession for the Test and Control Groups (in mm).

single implant placement. They avoid the raise of flaps and use of membranes and seem to preserve better the gingival architecture, mainly at the level of the interproximal papillae.[22,23,24] However, beyond the knowledge of the surgical techniques to minimize gingival atrophy and papilla height loss, it is necessary to understand the dynamics ruling gingival and bone tissues after implant exposure in the oral cavity as well as their interrelation with the tissues supporting the adjacent teeth.[25] The existence of a biological distance around the implants was evidenced and seems to take place with all types of implants after their exposure.[26] The implants are generally placed close or at the level of the crestal ridge. Once exposed in the oral cavity, the interface between the implant and the healing abutment becomes colonized by bacteria and bone resorption takes place, extending almost 2 mm apically around the implant platform.[19] A biological explanation is that the bone exposed to the oral cavity or close to the union line between implant and abutment (colonized by bacteria) should always be covered by periosteum, conjunctive tissue and epithelium. So, the bone has to resorb to get away from this area chronically exposed and irritated. This way, it ensures that the periosteum, the conjunctive tissue and the sealing provided by the epithelial tissue can form themselves[31] to favour the osseointegration process.[19] It has been shown[28] that at least 2 mm of buccal plate is necessary to avoid that this horizontal component combined with insufficient bone volume lead to a bone dehiscence exposing the implant surface. The loss of support by the peri-implant soft tissues is observed clinically as a margin recession,[2,28] often combined with the observation of a grayish shade under the gingival tissue.[30] A longitudinal study of the behavior of soft peri-implant tissues on the buccal side concluded that, in the first 3 months after implant exposure and healing abutment installation, 80% of the sites showed gingival recession of approximately 0.75 mm. These results suggest that final restorations in aesthetic areas should be placed only after a minimum period of 3 months after implant exposure, i.e. when this anatomical modification has taken place and a stable margin height of the peri-implant tissues is obtained.[31] Var-

Pat. Nr.	Tooth Nr.	MW (pre-0p)	MW (7 days)	MW (30 days)	MW (90 days)	Margin Recession MR (90 days)
TG 1	26	13.0	13.0	12.5	12.5	0.5
TG 2	37	12.0	12.0	11.5	11.5	0.5
TG 3	24	10.0	10.0	10.0	10.0	0
TG 4	15	9.0	9.0	8.5	8.5	0.5
TG 4	16	14.0	14.0	13.0	13.0	1.0
TG 5	12	8.5	8.5	8.0	8.0	0.5
TG 6	11	9.5	9.5	9.5	9.0	0.5
TG 7	21	9.0	9.0	9.0	9.0	0
TG 7	22	8.5	8.5	8.0	8.0	0.5
TG 8	11	10.0	10.0	9.5	9.5	0.5
TG 9	12	9.0	9.0	9.0	8.5	0.5
TG 9	14	9.0	9.0	8.5	8.5	0.5
TG 10	14	9.5	9.5	9.0	9.0	0.5

MW – Margin Width (mm),
MR – Margin Recession (mm) = MW (X days) – MW (pre-op)

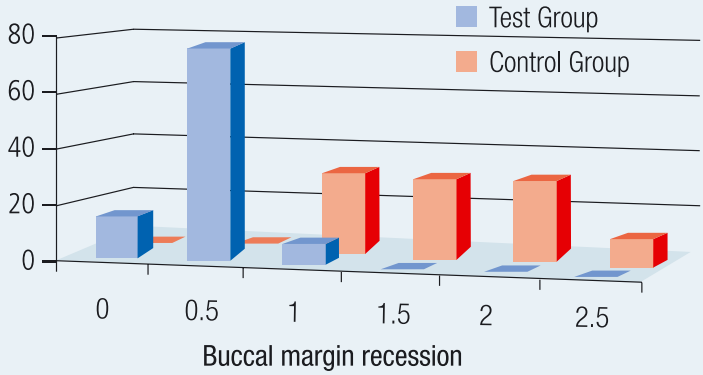

Fig. 4a_ Pre-op situation.
Fig. 4b_ Implant placement.
Fig. 4c_ Suture.

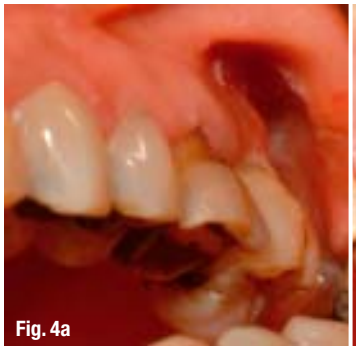
Fig. 4a

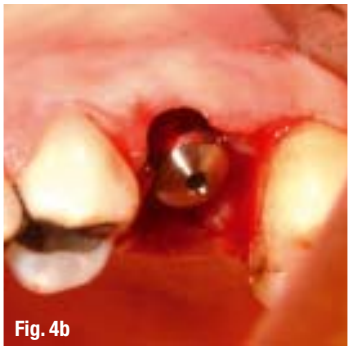
Fig. 4b

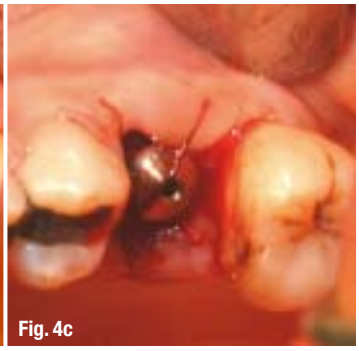
Fig. 4c

ious studies showed similar mean buccal resorption values after one year: 0.88 mm,[32] 0.6mm[32] and 0.7mm.[29] It is therefore expected that almost 1 mm of buccal gingival margin recession occurs after a surgery of implant exposure and installation of abutment.[31] In the present work, results fairly similar to those of Small and Tarnow[31] were obtained in the Control Group (CG), since 100% of the sites presented buccal gingival margin recession, with a mean resorption value of 1.6 mm compared to the pre-op value. In the test group (TG) the mean value was 0.4 mm, remaining closer to the initial anatomical aspect and measurements. Most of the techniques aiming at preserving sufficient bone height to support the papilla require a second surgical site to harvest a gum graft, which is source of post-operative discomfort for the patient. The use of the injectable PD VitalOs Cement allowed adequate gingival tissue growth on top of the cement although it was left exposed in this work. This allowed maintenance of anatomical peri-implant tissue contours, as was shown through measurement of the buccal margin width. PD VitalOs Cement brings therefore reliable and predictable results for this type of surgery.

_Conclusions

Based on the methodology employed in this work and on the results obtained, we can draw the following conclusions:

1. The use of PD VitalOs Cement associated with careful tooth extraction and implant placement allows preservation of the gingival architecture around an implant during the whole observation period (three months). This ensures a good aesthetic result and facilitates the management of the final restoration.

2. The use of PD VitalOs Cement allows preservation of the gingival margin through minimally invasive single-stage surgery, without flap and without additional surgical site.

3. The cement exposed to the oral cavity was not subject to infection during the whole healing period of the gum.

4. Gingival tissue was found to grow onto the cement surface, preserving this way the interproximal papillae and the gingival free margin.

5. PD VitalOs Cement acts as an efficient barrier to avoid migration of soft tissues into the extraction sites and fills up adequately the treated defects.

6. A mean buccal gingival recession of 1.6 mm was measured after 90 days in the control group, whereas only 0.4 mm recession took place in the sites treated with PD VitalOs Cement._

The literature list can be requested from the author.

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Fig. 4d_ 7 days after surgery.
Fig. 4e_ 30 days after surgery.
Fig. 4f_ 90 days after surgery.

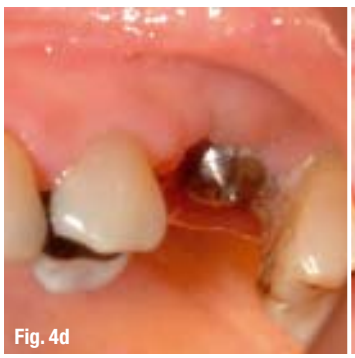


Fig. 4d

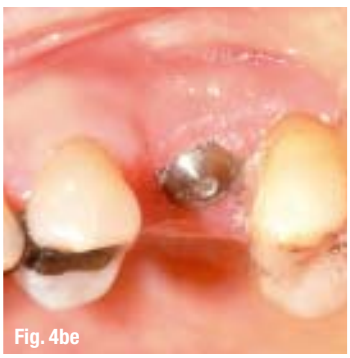


Fig. 4be

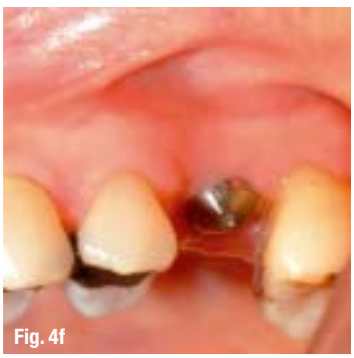
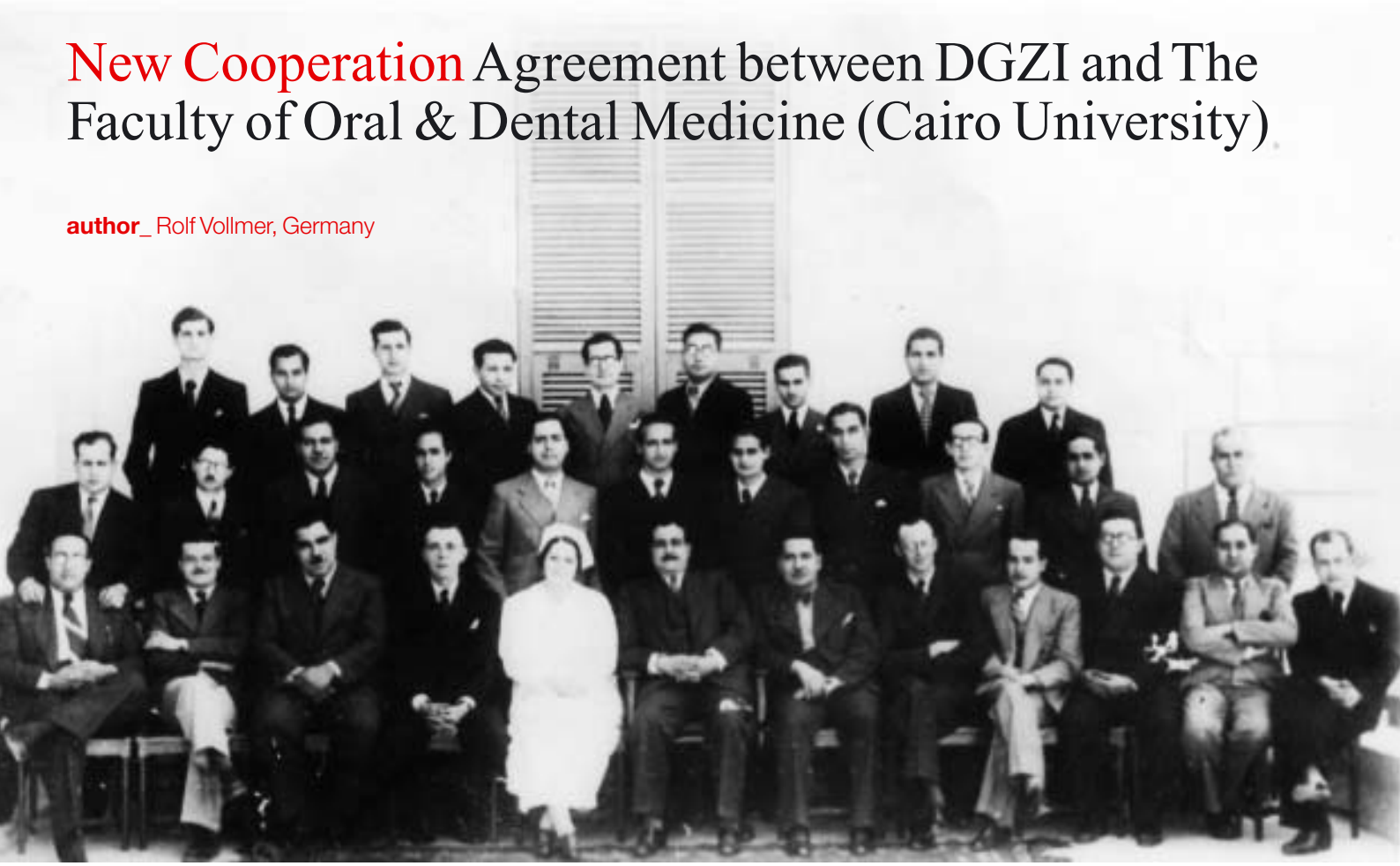


Fig. 4f

Welcome aboard!

New Cooperation Agreement between DGZI and The Faculty of Oral & Dental Medicine (Cairo University)

author_ Rolf Vollmer, Germany



_DGZI (German Association of Dental Implantology) represented by its Vice President Dr Rolf Vollmer (Germany) and the President of the International Section Dr Mazen Tamimi (Jordan) met in Alexandria (Egypt) with Prof Khaled Abul Fadl, present Dean of Dental Faculty, and Prof Amr Abdel Azim, present Director of the Continuing Dental Education Center of the Faculty, to discuss and have a dialogue about education, advancement and improvement of all aspects of dental specialities. Prof Khaled Abul Fadl in his speech emphasized the importance of a professional development in education with national and international renowned associations and universities in the field of latest dental technologies like oral implantology. Subsequently an agreement between DGZI (German Association of Dental Implantology) and Cairo University was signed between the parties. In order to advance implant dentistry and scientific and technological transfer, Cairo University and DGZI agreed to cooperate under the provisions of an cooperation agreement.

The objectives of that cooperation are

_ the advancement of science and research in the area of implant dentistry through mutual transfer of knowledge about latest scientific developments and technologies;

_ the promotion of further development of dentists through specialization in the area of implant dentistry, and this particularly by conventions, workshops, exchange of experts for congresses, colloquiums or by comparable events;
_ enabling cooperating memberships for all members of the cooperating partners especially for students;
_ cooperation in scientific projects;
_ the distribution of professional magazines;
_ mutual acceptance and accreditation of certificates of qualification and other certifications.

The meeting and the New Cooperation Agreement between DGZI and The Faculty of Oral & Dental Medicine (Cairo University) was very well prepared by Dr Mazen Tamimi (Jordan) and Prof Amr Abdel Azim (Egypt).

DGZI says many thanks to both of them for their great efforts.

_Portrait and Facts about

The history of The Faculty of Oral & Dental Medicine (Cairo University)

_ Cairo University was established on the year 1908.
_ In the year 1925, the first dental school in Egypt and the whole Middle East area was established in Cairo by The Egyptian Ministry of Education.
_ In the year 1928, it was joined to the School of Medicine (Kasr Eleiny).
_ In the year 1929, the first group of dentists graduated from the Cairo Dental School.
_ In the year 1934, the school was moved to the Cairo University Educational Hospital.
_ In the year 1955, it was announced as an independent Faculty as a part of Cairo University.
_ In the year 1961, it was moved to a new building which is known now as the old one.
_ In the year 1981, its name was changed to The Faculty of Oral and Dental Medicine, Cairo University.
_ In the year 2005, the new building and modern dental educational hospital were opened with 10 floors having well equipped clinics and laboratories for all dental specialties and 4 fully equipped GA theatres, meeting rooms, lecture rooms, a huge conference theatre and a digital library in addition to a special separate 5 floors building for paedodontics with all necessary preparations including general anesthesia.
_ The Faculty has a leading role in the development of Dental Science in the Middle East area with 400 members of the excellently qualified teaching Staff and their assistants, 2,489 students at all grades, 670 Internship dentists for their training year and about 1,000 post-graduate students for Diplomat, Masters Degree and PhD from Egypt and Arab countries.
_ Prof Khaled Abul Fadl is the present Dean of Faculty and Prof Amr Abdel Azim is the present Director of Continuing Dental Education Center of the Faculty._

Annual Congress of the University of Zagreb

author_ Rolf Vollmer, Germany

The Annual Congress of the University of Zagreb, the eldest and largest university in South Eastern Europe, was held from June 5 to 7, 2008. It was organized by Stomatološka Fakulteta in cooperation with Viskongres Organisation.

_**The two day** scientific program handled general dental topics as well as implantology issues. Croatia is an upcoming country and thus the significance of implantology is constantly increasing. DGZI was represented by the members of the executive board Dr Rainer Valentin and Dr Rolf Vollmer. In particular, the implantology issues were of excellent quality. Dr Istvan Urban from Budapest/Hungary, reported on implants of the esthetic zone. Dr Rainer Valentin from Cologne/Germany, held a lecture on a new system for bone harvesting via especially developed hollow cylinder osteotomes. An outstanding highlight was the live video conference to Dr Sascha Jovanovic in Los Angeles/USA, who reported on new augmentation techniques. Afterwards he presented a new curriculum based on e-learning. Altogether, this congress in a relaxed atmosphere was recommendable.

Our thanks go to our colleagues Dean Prof Dr sc Dragutin Komar, Prof Dr sc Ivica Aniç, Mr sc Matko Božiç Dr stom, and Dr stom Željko Feriç, who did a great job in professional organization. Our special thanks also go to the simultaneous interpreter Doc. Dr sc Hanzi Predaniç-Gašparac._

The CAMLOG Implant Festival 2008 — a rewarding meeting of science and practice

_**Neither the glorious sunny weather** nor the imminent Whit weekend had stopped 800 experts in implant dentistry and dental technology from more than 20 countries attending the CAMLOG Implant Festival 2008 in Basel, Switzerland, from May 9th to 10th. The Implant Festival 2008 was opened by a rousing drum roll from a Basel Mardi Gras band, that right from the start set the tempo to be characteristic for the whole Congress.

Under the joint presidency of Prof Jürgen Becker, Düsseldorf, and Prof Robert A. Sader, Frankfurt/Main, about 50 internationally renowned speakers presented a diverse, high-quality program at the Congress Center Basel, focusing on a wide range of subjects in the discipline of implant dentistry.

Particular emphasis was placed on diagnosing and treating periimplantitis, the effects of implant hardware on bones and soft tissue, the long-term results with the CAMLOG® Implant System, and computer-assisted implant dentistry.

Brief insights into the future were given by presentations on tissue regeneration by growth factors and adult stem cells, as well as minimally invasive bone preparation using gas-cooled lasers.

It goes without saying that the subjects covered included such implantological "perennials" as red-white esthetics, immediate implantation, immediate loading and bone augmentation, subjects which were discussed in plenary after they had been expounded in detail by the experts.

During the poster exhibition, which attracted keen interest during the coffee and lunch breaks, high-quality, practice-relevant research results, clinical studies, and case documentations, as well as dental technology techniques were demonstrated. These posters reproduced pictorially in the truest sense of the word the motto of the Congress, "Science meets practice – practice meets science".

The CAMLOG Party held from the evening of the first day until the small hours of the second day provided every opportunity for participants either to dance the night away or to socialize with friends and colleagues, according to their individual preferences.

On the morning of the second day of the Congress,





the President of the camlog foundation, Prof Rolf Ewers, Vienna, presented the camlog foundation Research Award, to be awarded for the first time, and invited the up-and-coming generation from universities, surgeries, and dental laboratories to enter into competition with each other.

The international CAMLOG Congress 2008 concluded with lectures on 3-D imaging techniques for planning the implant position as well as template-guided implant bed preparation and implant insertion.

These techniques will contribute increasingly in the future to enhancing reliability in planning, prognosis, execution and reproducibility of the implant therapy.

In a closing address that attracted a great deal of interest, the newly developed CAMLOG® Guide System was demonstrated with its functional principles and its detailed modus operandi in situ. In this innovative method, the implant positions are planned on the computer, in a similar way to conventional surgical navigation systems. A simple-to-handle, high-precision drill template is then produced in the dental laboratory, which greatly simplifies the process of placing the implants for the surgeon. The technique is so accurate that the restoration can be used even before the operation and can be inserted into the patient's mouth immediately after the operation. One striking advantage of the CAMLOG® Guide System is that the template used is bone-/tooth-supported thus eliminating possible sources of error arising from gingival support.

The CAMLOG® Guide System is expected to be launched on the market in the fourth quarter of the year.

In his short résumé at the end of the CAMLOG Implant Festival 2008, Jürg Eichenberger, CEO of CAMLOG Biotechnologies AG, Basel, had every reason to express his satisfaction and to thank everybody for the smooth running of the International CAMLOG Congress 2008 and the substantial scientific and practice-related contents, that had been presented.

He closed this rewarding meeting of science and practice in Basel with the words: "I now look forward to welcoming the CAMLOG Family to our next Implant Festival in two years."_

13th DENTSPLY Friadent World Symposium in Berlin "We concentrate on your success"

_More than 2,300 participants from 67 countries met in Berlin on April 18 and 19 to explore the many factors involved in the success of implantology in the dental practice. What is the role of tested and proven treatment concepts, computer-guided implant placement systems, dental competence or a professional dental practice interior design? The program of the 13th World Symposium presented by DENTSPLY Friadent with the slogan "Focus on your practice success" was a great success with a wide variety of topics, dense content, and practice-oriented scientific presentations from more than 50 internationally known lecturers and, not least, outstanding organization.

"We concentrate on your success." DENTSPLY Friadent Managing Director Dr Werner Groll greeted participants in the Congress with these words to emphasize the importance of a competent and reliable partner in the success of implantology in the dental practice. DENTSPLY Friadent offers holistic support, which includes not only proven implant systems and innovative treatmet concepts but also professional practice marketing and management with the stepps customer success program.

_Proven concept for retention of bone and tissue

It is essential to retain bone and tissue if implant treatment is to be successful. Dennis Tarnow, Professor of Periodontology and Implant Dentistry at New York University, recommends not delaying extractions for too long. This is important, for example, for advanced attachment loss in the front. Peri-implantitis is a problem with many systems, but not with ANKYLOS and XiVE: "These implants have proven resistant to periimplantitis." Dr David Garber und Dr Henry Salama, Atlanta, Georgia, USA, emphasized the particular value of the ANKYLOS TissueCare system. The team used computer-guided planning to re-

store an immediate implant with a final CERCON Balance abutment and temporary crown in only one session. The combination of tapered connection and microrough surface up to and over the face of the implant ensures that the bone grows above the level of the implant-abutment connection, according to Professor Adriano Piattelli, University of Chieti, Italy. Piattelli says: "This is very unusual."

_Preparation with only one template

ExpertEase was introduced in Berlin, a system developed by DENTSPLY Friadent for computer-guided implantology, the software for which is based on the proven SimPlant software from Materialise Dental, the world leader in dental software. Dr Michael Stiller, Berlin, Germany, demonstrated in a live operation that only one template is required for the complete bone preparation and placement of the implant. The drills are guided by the unique sleeve-on-drill system and the drilling depth is limited by integrated stops. Similar drill sets will be available for XiVE at the end of May.

_Small diameter for XiVE

According to Dr Marco Degidi, Bologna, Italy, the wide range of options offered by the XiVE systems have been extended with addition of the 3.0 mm diameter implant. It is one of the smallest implants available in the world and is the best solution for small single-tooth gaps. The special thread design, the highly osteoconductive FRIADENT plus surface, and the user-friendly temporary components ensure high primary stability and a high probability of success for immediate restorations.

_New ANKYLOS generation with the option of indexing

The newly developed ANKYLOS C/X system gives implantologists an implant system with a choice of non-indexed (C/.) or indexed prosthetics (./X) for the first time. Professor Paul Weigl, University of Frankfurt, emphasized that the abutment remains rotation-locked with both options. ANKYLOS /X abutments also offer a complete, keyed and rotation-locked TissueCare Connection. Unlike other—including other tapered—connection types, it prevents micromovements, bacterial contamination, and therefore atrophy of bone and soft tissue. Weigl also presented the new DENTSPLY Friadent packaging system, the implant shuttle, which will be supplied in future in a double-sterile blister. The implant is removed easily and safely by bending the two plastic wings at the side slightly.

_More interaction

This year DENTSPLY Friadent successfully introduced greater interaction among more than 50 presenters and participants. TED consultations, expert talks, panel discussions, opportunities to test new products and systems, and visits to the integrated exhibition f more than 120 posters offered many opportunities for dialog. The midday sessions, which were described as Lunch & Learn, were also very successful. The Young Implantologists Forum, in which young presenters from the DENTSPLY Friadent p3 development program present their work in short concentrated lectures, was also very popular.

_Groove and string power at the parcel post office

On the evening of the first day of the congress DENTSPLY Friadent invited all 2,300 guests to relax and celebrate at the old Berlin parcel post office, THE STATION. Soul singer Della Miles and the cult band Scenario with power violinist Christoph Broll generated an exciting atmosphere in the two huge halls in the old brick building after a delicious dinner. Anyone who wanted to move around could go into the other hall and enjoy cocktails and watch acrobats and break dancers until late into the night. And the fact that any participants want to register for the 14th DENTSPLY Friadent World Symposium a Barcelona on May19 and 20, 2010, speaks for itself._

Cuba Marathon

author_ Dr Rainer Valentin, Germany

Quality management is a dynamic process which has to be adapted constantly on expert and scientific level in accordance with permanently altering general conditions. The aim should be to improve its total quality. Among others, education, advanced studies and curricula can be considered as structural improvements. Nevertheless, nobody really asks the question of how theoretical knowledge is practically applied, or how to put the recently learnt knowledge into practice. In this respect the trainee is often left alone. Where is room for chairside teaching? At least during the clinical studies at the university patients are involved. As we already know, this is of great importance in order to achieve, enhance and complete one's know-how. Many curricula e.g. in implantology even up to master studies congest the market. It is astonishing that the versatile and in part very comprehensive implantological education almost omits practical training and leave trainees on their own. Good training concepts, courses, advanced studies, curricula etc. but no chairside teaching programs are offered in Europe, USA and Asia. Trinon company, and recently the German Association for Dental Implantology (DGZI), the oldest association for implantology in Europe, became aware of this educational deficit. Prof. Dr. Marquez Roncan and Dr. Eduardo Valencia are also committed advocates for the practical training concept "Theoretical and clinical learning—to implant with professional experts for the well-being of patients". Now, the 16th Trinon Marathon, which has been a successful practical course since 2003, will take place in Cuba. During the many courses, international implantologists have implanted more than 13.000 implants free of charge for the patients. The implantologists learnt how to put into practice the theoretical knowledge for the benefit of the patients. This is quality management from start to finish!

4th Arab-German Implantology Meeting of DGZI

Selection of Abstracts

INTRALIFT – the replacement of classic sinus-floor-elevation-methods by a new atraumatic ultrasonic hydrodynamic procedure

_ DDr Angelo Troedhan, Austria, Dr Andreas Kurrek, Germany, Dr Marcel Wainwright, Germany

DDr Angelo Troedhan

_Abstract

On the basis of classic internal sinus-floor-elevation-methods ("Summers"-technique, BASS-technique) the TKW-Research-Group evaluated the pneumatic and hydraulic pressure needed to atraumatically seperate the sinus-membrane from the bony sinus cavity. In an experimental series on 100 half sheep-heads the mean pneumatic pressure was 30 mbar +/- 6 mbar, the hydraulic pressure 20 mbar +/- 6 mbar. Applying the pressure in pulses improved the speed of detachment. Contrary to a mechanical detachment of the sinus-membrane with surgical instruments ("open" sinuslift with lateral approach, "Summers"-technique, BASS-technique) no tearing forces work on the membrane when using mere pneumatic and hydraulic pressure according to the basic physics-law of equal distribution of pressure in gasses and liquids. While pneumatic pressure results in a higher pressure-gradient necessary for detachment of the membrane because of compressibility of gasses and gaseous permeability of tissues, hydraulic pressure behaves superior with lower necessary pressure gradients and easier application according to the experimental series. Thus the TKW-Research-Group decided to develop the new atraumatic procedure on the basis of hydraulic pressure. To prove the superior safety of hydraulic detachment of the sinus-membrane a second experimental series on half sheep-heads was set up. After experimental puncture of the sinus membrane as it could occur with pilot-drills or surgical instruments the elevation procedure was continued using typical surgical-instruments ("Summers"-instruments, BASS-instruments) and hydraulic pressure. While a ripping of the membrane with lengths between 5–12mm occurred with conventional surgical instruments ("Summers", BASS) in 80% of the cases because of the tearing forces applied to the membrane no single ripping occurred using hydraulic pressure. In case of iatrogene puncture of the membrane the puncture represents a "locus minoris resistentiae" working as the starting point of large ruptures when tearing forces are applied to the membrane in the mechanical detachment process while the same puncture works as a simple ventile when correct membrane-specific hydraulic pressure is applied missing any tearing forces on the membrane. According to the results of the experimental series computer-aided simulations were performed in cooperation with the Technical University Vienna. These simulations revealed a further improvement and safety of the procedure when hydrodynamic pressure is applied to the sinus-floor-membrane in pulses exceeding the mean relaxation-time of the various tissues forming the sinus-floor-membrane (respiratory epithelium, connective tissue, vessels, periost-like membrane). The necessary frequency was determined > 20 Mhz and < 50 Mhz achieving a microcavitational effect in watery liquids that further enhances the effectivity and atraumaticity of the detachment of the sinus-membrane from the bone. After successful experiments on half sheep-heads with various available oral-surgical ultrasonic devices and demonstration of the superiority of an ultrasonic hydrodynamic method for sinus-membrane detachment SATELEC-ACTEON agreed in manufacturing series of prototypes for the Piezotome according to the design developed by the TKW-Research-Group. The now "INTRALIFT-Tips" called prototypes were evaluated in various experimental series on half sheep-heads inviting general dentists to perform the INTRALIFT-procedure on sheep-heads without prior training to improve the design to an almost "fail safe" tool in the hand of the oral surgeon. In a worldwide series of Hands-on Workshops 143 dentists performed their very first INTRALIFT-procedure without a single perforation of the sheeps sinus-membrane. In an international multicenter study 132 patients were treated with the INTRALIFT-method with a complication rate of less than 1% (actually one patient due to a fracture of the TKW1-INTRALIFT-tip-

PROTOTYPE, design afterwards changed). The mean time of the entire procedure is 30 minutes, the average use of anesthics 4–6 ml, in 85–90% with minimal invasive approach (6mm crestal punch or minimal crestal flap) no post-surgical swelling or pain occurs. The achievable augmentation volumina are 1–6 ml with augmentation heights up to 18 mm.

_Conclusion

The ultrasonic hydrodynamic sinus-floor-elevation procedure (INTRALIFT) has the potential to replace common sinus-floor-elevation techniques as an atraumatic, cost-effective and time-sparing procedure giving superior safety in the oral-surgeons hand.

All around the Sinus

_ Dr Rolf Vollmer, Germany

_Abstract

Sinus lifting techniques are known since more than 20 years and accepted as a standard technique not on an experimental stage. The lecture demonstrates the development from the history explains the indirect and direct methods and gives hints for different indications. A special crestal technique using bone block grafts is shown and critically judged. Future possible treatment modalities of minimal invasive procedures are described

Clinical outcomes of flapless implant surgery using a handpiece driven stereolithographic surgical guide

_ Z.Cuneyt Karabuda, Volkan Arisan, Turkey

Z. Cuneyt Karabuda

_Abstract

Introduction

Alveolar bone atrophy and absence of missing teeth challenges the proper positioning of implants in total edentoulus patients. Maxillofacial computerized tomography and three-dimensional (3-D) reconstructions enable to virtualize the surgery on the computer screen. Stereolitographic surgical guides allow to transfer planned implant positions to the patient. A new surgical guide is investigated from the perspective of positional accuracy and clinical applicability.

_Material and Methods

Computerized tomography examination and using a cone beam tomography was performed on selected 5 total edentulous patients. Following the 3-D reconstruction and planning Stent Cad® software a special surgical guide is manufactured (Ötede®, Aytasarim, Ankara, Turkey). A triangular key lock attached on the guide and hand piece instrument drives the hand piece as it was planned on the computer. A total of 72 implants were placed with the aid of the surgical guide. After a transmucosal healing period of 2–4 months new homographic images were projected on pre-op images for determining vertical, axial and angulation deviation. Surgeons were surveyed for the benefits and difficulties about the guide used.

_Results

One implant was lost during the osseointegration period. No pathologic lesions or bone resorption were noted in the rest of implants. Deviation rates were 2,42 (± 1,54), 2,15 (± 2,44) and 3,65 (± 2,88) mm for vertical, coronal and apical regions respectively. Mean axial deviation was 13,45° (± 5,11). Fixation via occlusal table in the guide, reduction of the surgical time ad bleeding, were reported to be the benefits and manipulation of the triangular key-lock mechanism, risk of overheating and difficulty of access to posteior areas were described as disadvantages about the guides.

_Discussion

Utilization of a stereolitographic guide enables clinician to plan and place implants without the need of an exposed flap in selected cases. However unacceptable deviation rates seen in some implants in our study reveals the need of further improvement and support for exact positioning of implants with flapless surgery.

CAD/AM superstructures of implants from titanium and irconiumoxid in the tootleth jaw

_ Dr Joachim Eifert, Germany

_Abstract

The speaker reports on his experience with CAD/CAM manufactured Superstructures from titanium and zirconiumoxid of implants in the toothless jaw. Most of complications in implant dentistry are complications at the prosthesis superstructures for exempel loss of retention or ceramic fractures. The cause of complications are imperfect fit and framework design. The solution can be CAD/CAM manufactured superstructures direct screw retained of dental implants.

_info implants

We will continue the publication of the abstracts in the next issue of implants.



Selected Events 2008/2009

SEPTEMBER 2008

September 5–6	*5th Forum of Innovations in Dentistry*	Leipzig, Germany	Web: www.fiz-leipzig.de
September 24–27	*FDI Annual World Dental Congress*	Stockholm, Sweden	Web: www.fdiworldental.org

OCTOBER 2008

October 10–11	*38th International Congress of DGZI*	Bremen, Germany	Phone: +49-3 41/4 84 74-3 08 Fax: +49-3 41/4 84 74-3 90 Web: www.oemus.com
October 29–November 2	*AAID 57th Annual Meeting*	San Diego, California	Web: www.aaid.com

NOVEMBER 2008

November 28–December 3	*GNYDM Greater New York Dental Meeting*	New York, USA	Web: www.gnydm.com

FEBRUARY 2009

February 13–14	*Unnaer Days of Implantology*	Unna, Germany	Phone: +49-3 41/4 84 74-3 08 Fax: +49-3 41/4 84 74-2 90 Web: www.oemus.com
February 26–28	*Academy of Osseointegration–Annual Meeting*	San Diego, California	E-mail: academy@osseo.org Web: www.osseo.org

MARCH 2009

March 10–12	*UAE International Dental Conference & Arab Dental Exhibitions*	Dubai, UAE	E-mail: office@dgzi-info.de Web: www.aeedc.com
March 24–28	*33rd IDS – International Dental Show*	Cologne, Germany	Web: www.koelnmesse.de

APRIL 2009

April 8–10	*5th Arab-German Implantology Meeting of DGZI & 1st Joint Syrian-German Implantology Meeting*	Damascus, Syria	E-mail: alkubaissy@hotmail.com (for Syria) E-mail: drtamimi@dgzi-international.com (for other countries) Web: www.dgzi-international.com Web: www.drtamimi.com

NOVEMBER 2009

November 4–7	*AOS 7th Biennial Conference*	Queensland, Australia	Web: www.aos.org.au



Congratulations and Happy Birthday to all DGZI-members around the world

JULY 2008

70th Birthday
Dr. Miroslav Sekal (17.07.)

65th Birthday
Dr. Dagmar-Ulrike Spiller (07.07.)
Dr. med. dent. Jörg Junker (14.07.)
Dr. Franz Brandt (26.07.)

60th Birthday
Dr. med. habil. Peter Schelhorn (02.07.)
Dr. Detlef Schock (08.07.)
Dr. Bernard Quetin (09.07.)
Dr. med. dent. Klaus Heerklotz (11.07.)
Dr. Alfred Hoyer (14.07.)
Dr. Hans-Dieter Werk (21.07.)
Dr. Fritzgeorg Martin (23.07.)
Dr. Ken Itoh (27.07.)
Michael Mehring (29.07.)
Dr. Masanori Nashimoto (29.07.)
ZA Konrad Jacobs (30.07.)

55th Birthday
Dr. Zoltan Nagy (05.07.)
ZA Matthias Hemmerling (15.07.)
Dr. Martin Weber (29.07.)
Dr. med. dent. Klaus Udo Lotzkat (31.07.)

50th Birthday
Prof. Dr. Abed S. Al-Jahab (01.07.)
Dr. Ralph Hesse (10.07.)
Dr. med. dent. Gerd Rosenkranz (12.07.)
ZA Dirk Mario Naucke (20.07.)

45th Birthday
Dr. Toralf Kömmling (05.07.)
Dr. Antje Tjaden (17.07.)
ZA Frank Stryga (20.07.)
Dr. Jörg Böllinger (31.07.)

40th Birthday
ZÄ Andrea Klam (05.07)
Dr. Fakher Aldin Abd Almajad (11.07.)
Dr. Sukhem Aldin Abd Al Majeed (11.07.)
Dr. med. Dent. Oliver Hugo (15.07.)
Dr. Julia Alberts (18.07.)
Dr. Torsten W. Bartmann (24.07.)
Dr. Hatem Totah (24.07.)
Dr. Axel Mantel (27.07.)
Dr. Torsten Jensch (28.07.)
Dr. Ansgar von der Haar (29.07.)
Dr. Jan Tobias Zimmermann (31.07.)

AUGUST 2008

65th Birthday
Dr. med. dent. Franz-Jochen Kempter (02.08.)

60th Birthday
Dr. Renate Casson (10.08.)
ZA Gerhard Knoblach (12.08.)
ZA Gerd Sperling (16.08.)
Dipl. Sportmediziner Joachim Braun (26.08.)

55th Birthday
ZA Ralf Bannuscher (06.08.)
Dipl.-Stom. Günther Mika (16.08.)
Dr. med. dent. Uwe Ryguschik (21.08.)
Dr. Ryo Kitamura (22.08.)

50th Birthday
Dr. Clemens Frigge (16.08.)
Dr. Rüdiger Waechter (29.08.)

45th Birthday
Dr. Frank Drebka (01.08.)
Dr. Claudia Heid (01.08.)
Dr. Thomas Nordloh (02.08.)
Dr. Kai Zöllner (06.08.)
Dr. Meinolf Günther (08.08.)
Dr. Martin Münnighoff (18.08.)
Dr. Stefan Ramstöck (18.08.)
Dr. Kai Beermann (20.08.)
ZÄ Monika Truckenmüller (22.08.)
Dr. Mehrdad Arjomand (23.08.)

40th Birthday
Dr. Meno Klein (03.08.)
Dr. Julia Bühner (12.08.)
Dr. Hussein Al-Ali (13.08.)
Dr. Christos Kalotas (13.08.)
Dr. Armin Nedjat (28.08.)

SEPTEMBER 2008

65th Birthday
Dr. Dieter Hartloff (05.09.)

60th Birthday
Prof. Dr. Dr. Peter Stolle (04.09.)
Dr. Vassilos Drosos (05.09.)
Dr. Manfred Sontheimer (07.09.)
Dr. Yasumasa Miyake (20.09.)
Dr. Günter Philipp (30.09.)

55th Birthday
Dr. Thomas Komischke (01.09.)
Dr. Wolfram Schulte (05.09.)
Dr. Hartwin Rill (25.09.)
Dr. Michael Riese (29.09.)

50th Birthday
Dr. Houssam Fores (05.09.)
ZA Fritz Riechmann (08.09.)
Dr. Wolfgang Schmehl (12.09.)
Dr. Detlef Haak-Rasche (20.09.)
Dr. Marcos Jaslowitzer (20.09.)
Dr. Ingolf Böttcher (21.09.)
Dr. Jörg Schmidt (30.09.)

45th Birthday
Dr. Faris Elia Matloob (01.09.)
Dr. Ayman Al-Madani (01.09.)
Dr. Stephan Lindner (04.09.)
Dr. Joachim Heimbach (05.09.)
ZA Gustav Savenije (23.09.)
Dr. Patrick Schmelzer (23.09.)

40th Birthday
ZA Oliver Kraushaar (06.09.)
ZA Andre Reingen (08.09.)
ZA Mark Tesche (10.09.)
Dr. Thomas Bohne (13.09.)
Ralph Rainer Leitzbach (15.09.)
Dr. Boris Peter (20.09.)
Dr. Thilo von Samson-Himmelstjerna (21.09.)
Dr. Ulrike Schaarschmidt (23.09.)
Dr. Torsten Schnell (24.09.)

Manufacturer News

Omnia

Simple Management of the Operating Field with Dental Implant Procedure Sets by Omnia

Medical devices with widely divergent functions and applications are used during implant surgery. Diligent, rigorous and correct preparation of the surgical environment, according to a fixed procedure, is

an essential element of success. Choosing, checking, preparing and ensuring the availability of the products necessary for the surgical procedure is an important task requiring a lot of time on the part of the professionals working in the operating theatre. To fully meet their requirements, Omnia has developed an innovative and effective solution: its Procedure Sets, consisting of smartly selected devices normally used for the preparation of operating theatres in a single surgical pack. On the basis of extensive experience and diligent collaboration with internationally renowned dental surgeons, Omnia has developed two lines of procedure sets: Standard Sets and Personalized Sets. Standard Sets contain an ample choice of devices pre-selected by Omnia product specialists, ranging from the simplest sets of textiles for operators and patients to more complete sets for complex implant and other oral-surgery procedures.These sets include everything necessary to prepare an operating theatre for these interventions: fabrics with self-adhesive appliqués, sheets to keep moisture away from the patient's skin, barrier sleeves, adhesive films for keyboards and physiodispensers, patient disinfection kits, Mayo-table pillowcases and operator gowns. Personalized Sets are compiled directly on the basis of the specific requirements and needs of surgical teams. This helps improve quality and simplifies the management of the operating field by optimizing each preparatory step, saving time and management cost—often not so evident to professionals. Moreover, set personalization includes the name of surgical team printed on each product. Sterilized sets furnish all the information required by European regulations on the traceability of medical devices—date and production lot as well as the expiry date are displayed on removable labels that facilitate recording the data related to the products used for each patient.Traceability means that a product can be reliably followed through all the phases of its useful life, from the manufacturing process to the final use on the patient, by recording the relevant data correctly and durably. Personalized Procedure Sets are meant to improve operating theatre efficiency by significantly reducing preparation times and workloads, contributing to improved performance and treatment quality. Advantages of procedure sets include: guaranteed preparation results for each procedure, availability of disposable medical devices in a handy sterilized pack and a reduced risk of infections. Moreover, fewer manipulations imply a lower contamination risk, reduced preparation times, the effective and efficient management of emergencies, better patient care—and optimized resource management and traceable set components.

Omnia S.p.A.
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43036 Fidenza - Parma (PR), Italy
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Web: www.omniasrl.com

Nobel Biocare

Nobel Biocare launches new dental implant—NobelActive™ — with an advanced design

Nobel Biocare announced today the worldwide launch of its new, innovative implant, NobelActive. Designed together and tested by experienced clinicians, NobelActive will expand the possibility for implant treatment therapy to more dental patients. With its unique tip and double-variable thread design, NobelActive condenses bone during insertion unlike conventional self-tapping implants. This bone-condensing capability delivers high initial implant stability, even in compromised bone situations, and can eliminate the need for time-consuming and unpleasant implant procedures for patients, such as bone-grafting.

The bone-condensing property and apical drilling blades also allow the experienced user to "actively" change direction during insertion to gain optimal orientation of the prosthetic connection, thereby facilitating the esthetic restoration process.

The unique dual-function conical prosthetic connection, with hexagonal interlocking, supports a wide range of prosthetic options, including individually designed Procera® abutments and Procera® Implant Bridges Zirconia and Titanium.

As with all Nobel Biocare products and solutions, NobelActive has undergone intensive mechanical and clinical testing:

- Mechanical testing has validated that NobelActive possesses the strength to withstand the rigors of occlusal loads.
- Nobel Biocare is currently running three consecutive prospective multi-center studies involving 19 centers, more than 300 patients, and more than 300 NobelActive implants. One-year results support the effectiveness of NobelActive.
- Prior to this launch, Nobel Biocare subjected NobelActive to an eight-month, intensive worldwide pre-launch with 2,000 experienced clinicians, with positive response from doctors involved.

Nobel Biocare AB
Box 5190
40226 Gothenburg, Sweden
E-mail: info@nobelbiocare.com
Web: www.nobelbiocare.com

Sybron Implant Solutions

For a natural smile

The Pitt-Easy implant system now offers a new abutment: the CAD/CAM-Base for preparing individual zirconium abutments. Especially in cases of anterior restorations, the demands of modern patients for a high-quality implant-supported denture can be met. The abutment consists of two parts. The custom-made zirconium part can be cemented onto the titanium base. To facilitate the individual wax-up, the titanium base is provided with an acrylic mount as base for the wax-up. A case presented shows the restoration of region 12 and 22 with CAD/CAM-Base abutments. As an option, a scan screw is available for positioning of the screw channel to be prepared. The screw is used for scanning the internal contours of the titanium base. Another option is the preparation according to the copy drilling process

Sybron Implant Solutions GmbH
Julius-Bamberger-Str. 8a
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E-mail: info@sybronimplants.de
Web: www.sybronimplants.de

CAMLOG

CAMLOG announces collaboration with Sirona

CAMLOG Biotechnologies AG in Basel, Switzerland, is to collaborate with Sirona Dental Systems GmbH in Bensheim, Germany, in the computer-assisted manufacture of individual abutments for CAMLOG® implants. A cooperation agreement to that effect was signed at the end of April. The proposed solution envisages a two-part abutment, with the high precision fit to the implant being ensured by an industrially prefabricated titanium connection manufactured by CAMLOG. This connection is adhesively connected to an individually constructed ceramic material, which is subsequently ground in a Sirona CAD/CAM grinding machine. A special inCoris zirconium oxide block is used in this process. CAMLOG Biotechnologies AG brings to this project its extensive know-how both in the field of research and development and in the production of dental implants, and Sirona, for its part, contributes many years of experience in the field of dental CAD/CAM. Thanks to the joint CAMLOG/Sirona development, dental laboratories using Sirona's inLab-System will soon be producing CAMLOG® implants with individual zirconium oxide abutments, meeting the highest standards in terms of quality and esthetics.

CAMLOG Vertriebs GmbH
Maybachstraße 5
71299 Wimsheim, Germany
E-mail: info@camlog.com
Web: www.camlog.com

W&H

W&H surgical instruments with LED and generator

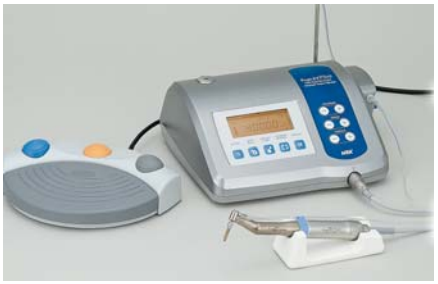
Excellent lighting conditions facilitate perfect treatment results. That is why W&H has developed a new generation of surgical instruments that enable you to operate with daylight quality light and with light sources that are self-sufficient. The perfect white LED light is completely self-generated. This is down to the integrated generator that supplies energy to the light-emitting diodes. En clair: Independant of the operation unit—with or without light—the new surgical instruments with integrated generator allow operations with best possible LED illumination. Another impressive addition to the W&H product range—surgical instruments that provide daylight-quality light in the treatment area, independent of the respective drive system. Both the SI-11 LED G straight handpiece and the WI-75 LED G contra-angle handpiece are compatible with any motor with ISO coupling. As soon as the straight or contra-angle handpiece is operated, the generator independently produces electricity for the LEDs. An additional, separate electricity supply is not necessary. Light emitting diodes are based on semiconductor connections that convert electricity directly into light. This results in robust light sources that barely heat up, that are shock-resistant and that do not emit any harmful IR or UVA rays. Furthermore, LEDs have a much higher durability than conventional light sources. Due to the colour temperature, the LED light colour corresponds to neutral white light. This light creates a sharp visual contrast, which gives significant support to the user's vision and means that their own eyesight is not damaged. Both instruments have a tried and tested construction and are thermodisinfectable and sterilizable at 135 °C.

W&H Deutschland GmbH
Raiffeisenstraße 4
83410 Laufen, Germany
E-mail: office.de@wh.com
Web: www.wh.com

NSK

SurgicXT plus with illumination

The new SurgicXT Plus from NSK is a smart surgical micromotor with illumination. The SurgicXT Plus is equipped with an automatic torque adjustment (Advanced Torque Calibration, ATC). The micromotor provides optimum visualisation conditions for oralsurgical procedures. To work accurately, the NSK SurgicXT Plus system calibrates the r.p.m. and the torque of the micromotor to match the contra-angle handpiece used, as soon as it is coupled to the micromotor. This ensures the accuracy of the speed and of the torque. The smart, programmable electronic system reacts immediately to user inputs. The SurgicXT Plus can be operated for extended periods without the occurrence of significant overheating phenomena. In addition, it has an ergonomic design which is comfortable in any hand. The new illumination function on the handpiece of the SurgicXT Plus provides good illumination of the work field and facilitates, accelerates and fine-tunes the procedure. The micromotor is the shortest and lightest in its class and has good balance, which prevents fatigue in the hand and the wrist, especially in long, complex procedures. It is perfect for all hand sizes and operates extremely quietly in comparison to other motors. The micromotor has a solid titanium body which ex-



plains its light weight and extends its service life. The equation of high power (210 W), high torque (50 N x cm) and the extensive speed selection (200 to 40,000 min^{-1}) provides the flexibility necessary for satisfying all of the requirements of oral-surgical procedures. Every handpiece and contra-angle handpiece has its individual force transmission ratio characteristic, in order to ensure absolutely precise speed and the right torque for complicated oralsurgical procedures. NSK SurgicXT Plus calibrates the micromotor, in order to set the correct force transmission ratio for every contra-angle handpiece for the relevant application. The system provides high speed, precise torque and reliable safety

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Thommen Medical

Thommen Medical's Satellite Industry Symposium

Thommen Medical announces its Satellite Industry Symposium session that takes place during the course of the 17th Annual Scientific Meeting of the European Association for Osseointegration (EAO) in Warsaw on September 19, 2008, 5 p.m to 7 p.m. The participants can expect an outstanding scientific program with excellent speakers. The moderator of the program will be Professor Maurizio S. Tonetti, Italy.

The scientific program in detail:

Session I:
Immediate vs. delayed implant placement
First experiences & clinical cases with the SPI®System, Dr. Siegfried Marquardt (Germany)

Session II:
Talking implant surfaces—What makes the difference?

- Immediate placement, effect of titanium implant surfaces treatment on bone formation—an experimental study in the dog mandible & maxilla, Prof. José Luis Calvo, Univ. of Murcia (Spain)
- Evaluation of new titanium surface treatment concept of dental implants—an animal study. Dr. Bernd Stadlinger, Univ. of Dresden (Germany)
- Performance of new ceramic surface treatment in the mini pig mandible, Prof. Henning Schliephake, Univ. of Göttingen (Germany) Register now under www.eao.org for this session—win one of the three iPods touch that will be drawn among all participants onstage Friday evening.

Thommen Medical Deutschland GmbH
Am Rathaus 2
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E-mail: info@thommenmedical.de
Web: www.thommenmedical.com

Dr. Ihde Dental

SSO® Implants with Osmoactive® Surface

More protection against early implant loss and consistently high primary stability—these are the most important ones among the many advantages of the new Dr. Ihde Dental SSO® implant surface—now with a three-year track record. At the core of this significant innovation is an ultra-thin NaCl coating. It exerts a biocidal effect while returning to the bone a fair share of the mineral salt that is invariably lost during preparation of the implant bed. Dr. Ihde Dental breaks new ground when it comes to ensuring primary implant success. To date, it has not been possible to avoid or compensate for the loss of salt that occurs in the bone during implant-bed preparation—not even by using a physiological saline solution or Ringer's lactate for irrigation. Sometimes implants are delivered "wet" by the manufacturer, i.e. soaked in saline solution—but that does not eliminate the problem, either, because saline solution as a storage medium makes for a great environment for bacterial survival while doing nothing to support osteoblasts. The Osmoactive® surface proactively tackles the salt-loss problem while at the same time creating the best possible environment for osteoblasts to develop. A recent study conducted at the University of Würzburg, Germany (to be published shortly) has shown that implants with an Osmoactive® surface have bactericidal properties yet do not inhibit osteoblast growth—and all

that without requiring the use of antibiotics or other unwanted chemicals. This surface technology is already being put to successful use by several thousand dentists from around the world. They are particularly impressed by the high quality of the Dr. Ihde Dental systems—and highly pleased by their very reasonable price. This means that more patients can receive implants—and more patients will be highly pleased. Dr. Ihde Dental manufactures 16 crestal and basal implant systems. The product catalog is available in German and in English.

Dr. Ihde Dental AG
Lindenstrasse 68
8738 Uetliburg/SG, Switzerland
E-mail: info@implant.com
Web: www.implant.com

"It's time for a Rethink– high quality at factory-direct prices"

In the early 1980s, implant dentistry was still seen as a speciality reserved for oral and maxillofacial surgeons. The development of the Core-Vent implant by Dr Gerald Niznick, USA, contributed toward popularizing this new and promising treatment modality among general dentists. It is therefore highly justified to call Gerald Niznick one of the Godfathers of implant dentistry. Now the Godfather has returned to the European market.

Dr. Niznick, You are referred to as one of the pioneers in oral implantology in the United States. What are your personal milestones in your professional career?

1982: Introduction of the the Core-Vent System. This implant had a threaded neck and a hollow basket on the bottom for insertion with a trephine drill that that left a core of bone projecting into the basket. The Core-Vent System introduced the concept of implant prosthodontics by providing a multiple of abutment options that varied based on clinical applications.

1986: Introduction of the Screw-Vent System. This self-tapping implant had an internal connection that combined an internal hex with internal threads (US Pat. No. 4,960,381) that became the cornerstone of modern implant design, eventually licensed to 9 implant companies and copied by many more.

1990: Introduction of the Spectra-System of implants with Fixture-mount, sterile packaging. The packaging of the implant suspended on a fixture-mount (US Pat. No. 5,062,800) simplified and standardized the surgical insertion procedures, and providing the implants in a sterile vial eliminated the need for dentists to clean and sterilize the implant before placement. The fixture mount design evolved in 1997 to allow its use as as a transfer and by 1999, to allow its use as a final abutment, reducing the need to purchase additional components.

1998: Development of the Paragon implant System with implant designs and packaging for one-or two-stage surgery (US. Pat. # 5,622,500)

1999: Development of the Tapered Screw-Vent for insertion into a socket prepared with a straight drill. This allowed for a soft-bone surgical protocol providing increased stability by bone expansion, and for a hard-bone surgical protocol allowing insertion in dense bone without the need for bone taps.

Implant Direct™

simply smarter.

2006: Introduction of the Implant Direct's Spectra-System of Application Specific Implants providing all-in-one packaging for 5 implants, each with the same body but with different platforms and packaged components for different clinical applications.

What was your prime motive to start all over again, after the sale of your company Paragon?

Zimmer Dental made the decision to move its manufacturing 130 miles south of Los Angeles , leaving me with an empty building and 90 of there former employees out of work. These employees, many of whom had worked for me for years prior to the transition to Zimmer, were engineers, machinists and Quality Control experts with the key knowledge to make high quality dental implants, developed over 15 years of implant manufacturing. In the years between 2000 and 2004, the implant industry had expanded at a rapid rate and the prices of dental implants had also increased substantially. I saw a business opportunity to re-enter the field, spend the remaining 2 years of my non-compete developing a new system and re-enter the market with a broad product line incorporating the best and most popular features at reasonable prices. The concept of Application Specific Implants with All-in-one packaging grew out of that development process.

Which philosophy does Implant Direct follow and what are the USP's of your products?

Implant Direct's philosophy is explained in our Mission Statement, "Provide experienced implant dentists with high quality, innovative implants and abutments through internet sales at factory-direct prices". Our Unique Selling Proposition is that we offer the industries broadest product line with surgically and/or prosthetically compatible with the top selling implant systems., providing all-in-one packaging for ease of ordering, inventory control and cost savings.

Which services do you offer to your customers in the field of implantology? Are you also providing support in the field of practice organization and cost management in practice?

Implant Direct has focused on developing on-line customer support with an extensive library of 3-D graphic videos to explain clinical procedures for each of our systems. In the US and Europe we have developed technical support departments to assist with product use and ordering. Implant Direct offers the most comprehensive and intuitive on-line ordering system in the implant industry, simplifying the selection of compatible parts for the various systems we offer. In the US, we have a customer support department with 24 well trained people backed up by several laboratory technicians and have started to build an outside sales force. By the end of 2008, there will be 32 inside customer service people each partnered with on of the 32 outside sales people. In Europe, we are starting to follow this same model but we also have distributors in several European Countries who are knowledgeable and able to provide education and technical support.

Which significance does Implant Direct have in the market today and what are your goals for the coming years?

In the first 18 months of sales, Implant Direct has grown to the level of sales that Core-Vent/Paragon Implant Company had achieved after 18 years. We are not only converting customers from the big companies, we are driving down their prices as they struggle to retain their customers in the face of what Merrill Lynch called a "Price-Point Shift in the Dental Implant Industry" caused by Implant Direct's "unprecedented low dental implant prices." While there are other companies selling at prices substantially lower than the top companies, none offer such a wide variety of two-stage, one-stage and one-piece implants of such high quality and innovations. This was made possible by my investing $30,000,000 before selling my first implant with 2.5 years of development and production being spent before the initial product launch in October 2006. This is discussed in an interview video available on the home page of www.implantdirect.com. My goal for the coming years is to make implant dentistry accessible and affordable to as many dentists and their patients as possible, by offering the highest quality products at cost effective prices with readily available technical support and simplified ordering through the Internet.

Which are the most important markets to you—today and in future?

Undoubtedly the North American Market is the easiest for me to penetrate quickly because of the high prices maintained by all the major implant companies and because I have trained or lectured to thousands of dentists in this market over the last 25 years. The second most important market is Europe and here I have invested in building an experienced team, headed by two former executive Straumann marketing, sales and product managers, and establishing a distribution center in Zurich for fast, efficient delivery of products throughout Europe, either directly or through distributors. We have made significant impact in the middle east markets though establishment of an Israeli Corporate office and with renewed relations with former distributors who switched from Zimmer product to Implant Direct. Korea similarly is poised for rapid growth again with two former Zimmer Dental distributors switching to Implant Direct. Our focus is to continue to expand our web sites to include all European country languages._

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