In a scientific community, the experiences, convictions and problems of an individual acquire importance and are generally addressed only when shared and analysed in a structured manner through universally accepted methods, and are published to certify their validity.

Following this line of thought and the careful analysis of scientific evidences recurring in international literature, in the early 1990s Bone System created and produced an implant system that was so innovative as to be, as of today, the only method that can reduce and eliminate problems related to prosthetic connections and soft tissue management, fundamental in maintaining the bone and the long-term success of fixed prosthetic reconstructions on implants.

To conform with the principle that each affirmation should be validated with a scientific method, Bone System has compiled a summary of what has been published through the years by prestigious authors on the root of the problems and the scientifically proven validity of the solutions offered.

We hope this collection will lead you to deep reflection and confrontation, while we ensure you of our utmost commitment to continuous research and experimentation to secure a “safe” system that can warranty the quality of your work and the health of your patients.
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ABSTRACT. Background. Two-piece implants present gaps and cavities between the implant and the abutment, and these hollow spaces can act as a trap for bacteria. The aim of the present in vitro study was to evaluate the migration of two different microbial species from the inside to the outside of the implant-abutment assembly in three different connection types.

Methods. A total of 30 implants (10 implants per group) were used. The implants presented a screwed trilobed connection (group 1) (Nobel Biocare, Sweden), a cemented connection (group 2) (Bone System, Italy), and an internal conical connection (group 3) (Ankylos, Germany). The inner parts of five implants, per group, were inoculated with Pseudomonas aeruginosa suspension and the remaining five implants, per group, with Aggregatibacter actinomycetemcomitans. The penetration of bacteria into the surrounding solution was determined by the observation of turbidity of the broth.

Results. In group 1, bacterial contamination was found in six of 10 implants. In group 2, no contaminated samples were found. In group 3, bacterial contamination was found in one implant of 10. Statistically significant differences were detected between group 1 versus group 3 (P <0.05) and between group 1 versus group 2 (P <0.01), whereas no significant differences were found when comparing group 2 versus group 3 (P >0.05).

Conclusion. The present study confirms previous results about the hermeticity of the cement-retained implant-abutment assembly, the very low permeability to bacteria of the conical implant-abutment connection, and the high prevalence of bacterial penetration of screw-retained implant-abutment assemblies.

ABSTRACT.
Background. A few studies have investigated the influence of drilling on bone healing. Many factors have been reported to influence temperature rise during surgical preparation for implant placement: drill geometry, drilling depth, sharpness of the cutting tool, drilling speed, pressure applied to the drill, use of graduated versus one-step drilling, intermittent versus continuous drilling, and use or not of irrigation.

Purpose. The objective of this study was to quantify the temperature changes in cortical bone and at the apical portion of the drills during implant site preparation with a cylindrical implant drill versus a conical implant drill.

Materials and Methods. Two implant drill systems were evaluated in vitro using bovine femoral cortical bone. The two implant drill systems evaluated in this study were system A (a cylindrical drill with triple twist drills) (Bone System, Milano, Italy) and system B (a conical drill with quadruple twist drills) (Bone System). Site preparation began, and the temperature of the cortical bone and at the apical portion of the drill was measured by the infrared thermography.

Results. The mean temperature produced in the cortical bone during implant preparation was 31.2 ± 0.5 °C for the cylindrical drills and 29.1 ± 0.6 °C for the conical drill. The mean temperature produced in the apical portion of the drill during implant site preparation was 32.1 ± 0.7 °C for the cylindrical drill and 29.1 ± 0.6 °C for the conical drill. Statistical significant differences were found in the temperature measurements in the cortical bone in the two groups (p < .05). A statistically significant difference was observed for the temperature measurements in the apical portion of the drill in the two groups (p < .005). The model system used in this work was able to evaluate the temperature in the cortical bone and in the apical portion of the drills; the temperature modifications in the apical portion of the drill seemed to be correlated to the drill geometry. The results of the present study showed that drill geometry seems to be an important factor in heat generation during implant site preparation.

Conclusion. The drill geometry could explain the increased temperature in the apical portion of the drill.

Infrared thermographic evaluation of temperature modifications induced during implant site preparation with cylindrical versus conical drills.


ESTRATTO.
Contesto. Alcuni studi hanno esaminato l’influenza della preparazione implantare sulla guarigione ossea. Sono stati segnalati molti fattori in grado di influenzare l’aumento di temperatura durante la preparazione chirurgica per il posizionamento dell’impianto: la geometria della fresa, la profondità di foratura, l’affilatura dell’utensile di taglio, la velocità di fresaggio, la pressione applicata alla fresa, la gradualità di perforazione in contrapposizione con la perforazione in un unico passaggio, l’intermittenza rispetto all’azione continua e l’uso o meno di irrigazione.

Scopo. L’obiettivo di questo studio era quello di quantificare le variazioni di temperatura in osso corticale e nella porzione apicale delle frese durante la preparazione del sito implantare con un sistema di foratura cilindrica con tre taglienti elicoidali e con uno conica.

Materiali e Metodi. Sono stati valutati in vitro due sistemi di fresa implantati utilizzando un bovino femore. I due sistemi di preparazione implantare valutati in questo studio sono stati: il sistema A (una fresa cilindrica con tre taglienti elicoidali) (Bone System, Milano, Italia) e il sistema B (una fresa conica con punte quadruple) (Bone System).

Risultati. Iniziana la preparazione del sito, è stata misurata la temperatura della corticale ossea e della porzione apicale della fresa grazie alla termografia ad infrarossi. La temperatura media prodotta in osso corticale durante la preparazione dell’impianto era di 31,2° ± 0,5 °C per le frese cilindriche e 29,1 ± 0,6 °C per le frese coniche. La temperatura media prodotta nella porzione apicale della fresa nella stessa fase era di 32,1° ± 0,7 °C per il sistema di foratura cilindrica e 29,6 ± 0,6 °C per quello conico. Si sono osservate differenze statisticamente significative nei valori di temperatura nel tessuto osseo corticale rispetto ai due gruppi di fresa (p <.05). Differenza significativa è stata rilevata anche per le temperature nella porzione apicale della fresa nei due gruppi (p <.005).

Il modello utilizzato in questo lavoro è stato in grado di valutare la temperatura sia nella corticale che nella porzione apicale delle fresse. Le variazioni della temperatura nella porzione apicale della fresa sembrano essere correlate alla geometria della fresa. I risultati di questo studio hanno dimostrato che la geometria della fresa sembra essere un fattore importante nella generazione di calore durante la preparazione del sito implantare.

Conclusion. La geometrica della fresa potrebbe spiegare l’aumento della temperatura nella porzione apicale della fresa.
In vitro evaluation of bacterial leakage along the implant-abutment interface of an external-hex implant after saliva incubation.

do Nascimento C, Miani PK, Watanabe E, Pedrazzi V, de Albuquerque RF Jr.

ABSTRACT.
The aim of this in vitro study was to evaluate bacterial leakage along the implant-abutment interface under unloaded conditions. Twelve premachined abutments with plastic sleeves and 12 dental implants were used in this study. Prior to tests of bacterial leakage, samples from the inner parts of the implants were collected with sterile microbrushes to serve as negative controls for contamination. After casting, the abutments were tightened to 32 Ncm on the implants. The assemblies were immersed in 2.0 mL of human saliva and incubated for 7 days. After this period, possible contamination of the internal parts of the implants was evaluated using the DNA Checkerboard method. Microorganisms were found in the internal surfaces of all the implants evaluated. Aggregatibacter actinomycetemcomitans and Capnocytophaga gingivalis were the most incident species. No microorganisms were found in the samples recovered from the implants before contamination testing (negative control). Bacterial species from human saliva may penetrate the implant-abutment interface under unloaded conditions.

VALUTAZIONE IN VITRO DELL’INFIILTRAZIONE BATTERICA LUNGO L’INTERFACCIA IMPIANTO-MONcone DI UN IMPIANTO AD ESAGONO ESTERNO DOPO INCUBAZIONE DI SALIVA.

ESTRATTO.
Lo scopo di questo studio in vitro è stato valutare l’infiltrazione batterica lungo l’interfaccia impianto-moncone in condizioni non di carico. In questo studio sono stati utilizzati dodici monconi prelavati con manicotti di plastica e 12 impianti dentali. Prima del test di dispersione batterica, sono stati raccolti dei campioni delle parti interne degli impianti con micro pennelli sterili con la funzione di controlli negativi per la contaminazione. Dopo l’accoppiamento, i monconi sono stati serrati a 32 Ncm sugli impianti. I gruppi sono stati, infine, immersi in 2,0 mL di saliva umana e incubati per 7 giorni. Dopo questo periodo di incubazione, la possibile contaminazione delle parti interne degli impianti è stata valutata con il metodo Checkerboard DNA. Sono stati trovati alcuni microrganismi nelle superfici interne di tutti gli impianti valutati. Tra cui, Aggregatibacter actinomycetemcomitans e Capnocytophaga gingivalis risultavano essere le specie più presenti. Nessun microrganismo è stato trovato nei campioni recuperati dagli impianti prima della prova di contaminazione (controllo negativo). Le specie batteriche da saliva umana possono penetrare attraverso l’interfaccia impianto-moncone in condizioni di assenza di carico.
Microbial leakage through the implant-abutment interface of Morse taper implants in vitro.

Aloise JP, Curcio R, Laporta MZ, Rossi L, da Silva AM, Rapoport A.

ABSTRACT

Objectives. The aim of this study was to determine and compare the frequency of bacterial leakage of Streptococcus sanguinis bio-type II along the implant-abutment interface between two systems of Morse taper dental implants. Different methods of activation of the taper abutments were used: tapped-in (Bicon) and screwed-in (Ankylos).

Materials and Methods. Twenty sterile assemblies were used and attached, 10 Bicon and 10 Ankylos implants, according to manufacturers’ specifications. They were then totally immersed within 20 test tubes containing a sterile nutrient solution brain-heart infusion (BHI). The internal part of the 20 implants was previously inoculated with 0.1 microl of S. sanguinis II (ATCC 10557) and then connected to the respective abutments. The assemblies were incubated under anaerobic conditions for 14 days in an autoclave at 37 degrees C. They were monitored daily for solution cloudiness resultant from microbial leakage on the interface of the assemblies. For statistical analysis, the Fisher test was applied and significance was assigned at the 5% level.

Results. There was solution cloudiness, indicating the finding of bacterial growth inside two Bicon assemblies and two Ankylos assemblies 48 h after incubation. Microbial leakage was further substantiated by testing the suspension for the presence of Streptococcus sp. None of the sterility controls were contaminated. The frequency of bacterial leakage along the implant-abutment interface, with the two different Morse taper implant systems, was 20% of the assemblies of each system. There were no statistical differences between them.

Conclusion. Irrespective of which of the two Morse taper implant connection systems of activation was analyzed, tapped-in (Bicon) or screwed-in (Ankylos), this in vitro experiment showed bacterial leakage along the implant-abutment interface.
ABSTRACT. Objectives. Bacterial penetration along the implant-abutment interface as a consequence of abutment screw loosening has been reported in a number of recent studies. The aim of this in vitro study was to investigate the influence of repeated tightening of the abutment screw on leakage of Streptococcus mutans along the interface between implants and pre-machined abutments.

Materials and Methods. Twenty pre-machined abutments with a plastic sleeve were used. The abutment screws were tightened to 32 N cm in group 1 (n=10 - control) and to 32 N cm, loosened and re-tightened with the same torque twice in group 2 (n=10). The assemblies were completely immersed in 5 ml of Tryptic Soy Broth medium inoculated with S. mutans and incubated for 14 days. After this period, contamination of the implant internal threaded chamber was evaluated using the DNA Checkerboard method.

Results. Microorganisms were found on the internal surfaces of both groups evaluated. However, bacterial counts in group 2 were significantly higher than that in the control group (P<0.05).

Conclusion. These results suggest that bacterial leakage between implants and abutments occurs even under unloaded conditions and at a higher intensity when the abutment screw is tightened and loosened repeatedly.

Influence of repeated screw tightening on bacterial leakage along the implant-abutment interface.

do Nascimento C, Pedrazzi V, Miani PK, Moreira LD, de Albuquerque RF Jr.
ABSTRACT.

Background. The geometry of the fixture-abutment interface (FAI) might influence the risk of bacterial invasion of the internal part of the implant. The aim of this study was to use an in vitro model to assess the potential risk for invasion of oral microorganisms into the FAI microgap of dental implants with different characteristics of the connection between the fixture and abutment.

Methods. Thirty implants were divided into three groups (n = 10 per group) based on their microgap dynamics. Groups 1 and 2 were comprised of fixtures with internal Morse-taper connections that connected to standard abutments and the same abutments with a 0.5-mm groove modification, respectively. Group 3 was comprised of implants with a tri-channel internal connection. Fixtures and abutments were assembled and allowed to incubate in a bacterial solution of Aggregatibacter actinomycetemcomitans (previously Actinobacillus actinomycetemcomitans) and Porphyromonas gingivalis. Two standard abutments were either exposed to bacterial culture or left sterile to serve as positive and negative controls. After disconnection of fixtures and abutments, microbial samples were taken from the threaded portion of the abutment, plated, and allowed to culture under appropriate conditions.

Results. Three of the 10 samples in group 1 developed one colony forming unit (CFU) for A. actinomycetemcomitans, whereas zero of 10 samples developed CFUs for P. gingivalis. Ten of 10 and nine of 10 samples from groups 2 and 3, respectively, developed multiple CFUs for A. actinomycetemcomitans and P. gingivalis. 

Conclusion. This study indicated that differences in implant designs may affect the potential risk for invasion of oral microorganisms into the FAI microgap.
ABSTRACT

Background. Few studies have investigated the influence of drilling on bone healing. After the drilling of bone and placement of dental implants, a sequence begins of cellular and molecular events which represents a combined response of wound healing. The bone healing around dental implants is a complex phenomenon and influences the proliferation and differentiation of pre-osteoblasts into osteoblasts, together with the activation of periosteal and endosteal lining cells, and initiates the production and mineralization of osteoid matrix followed by the organization of the bone-implant interface. The objective of this study is to quantify the temperature changes in cortical bone and marrow spaces during implant site preparation in bovine rib bone. A total 10 harvested bovine ribs and 6 10.5 x 3.5 new drills for implant insertion with external irrigation (Bone System, Milano, Italy) were used in this study. The implant sites were prepared with 10 mm long drills at 500 rpm under abundant external irrigation with saline solution at 37 degrees C. Each drill was used for 10, 30, 60, 90 and 120 implant site preparations; each drill was then observed under SEM for evaluation of the damage of the cutting edge after 10, 30, 60, 90 and 120 preparations. There was an higher and statistically significant increase in the temperature in the cortical bone; this increase in temperature increases with the number of the times of drill use. The drill wear seemed to play a major role in heat production and could explain the observed increased temperature of the bone.


Scarano A, Carinci F, Quaranta A, Di Iorio D, Assenza B, Piattelli A.
Implants system based on cement-retained implant-abutment. Analysis of different kind of cements.

Traini T, Assenza B, Zarone F, Caputi S, Ciarrocchi F, Piattelli A

ABSTRACT.
The long term success in implant dentistry was largely reported by dental literature for a great variety of implant systems. Nevertheless, in clinical practice the most of complication affecting dental implants was related to the implant/abutment screw loosening. The cemented instead screwed abutment/implant connection should be an interesting alternative. The present paper presents a series of results on the mechanical resistance of different kind of luting cements used for abutment/implant cementation.

After an introduction on general complications of screw-retained implant-abutment, this paper introduces an implant system based on cement-retained implant-abutment (Bone System, Italy). An in vitro study was made in order to identify, among the different type of cements, the most performing in metal-to metal connection.
ABSTRACT.
Background. It has been recently observed that in implants with screw-retained abutments, in vitro as well as in vivo conditions, bacteria can penetrate inside the internal cavity of the implant as a consequence of leakage at the implant-abutment interface. An alternative to screw-retained abutments is represented by implants that can receive cemented abutments. In this case, the abutment goes through a transmucosal friction implant extension (collar) and is cemented inside the internal hexagonal portion of the implant. The aim of the present research was to compare fluids and bacterial penetration in 2 different implant systems, one with cement-retained abutments (CRA) (Bone System, Italy) and the other with screw-retained abutments (SRA) (3i Implant Innovation, USA).

Methods. Twelve CRA dental implants and 12 SRA implants were used in this study. The research was done in 3 steps: scanning electron microscopic (SEM) analysis, fluid penetration analysis, and bacterial penetration analysis.

Results. 1) Under SEM it was possible to observe in the SRA implants a mean 2 to 7 micron gap between implant and abutment, while in the CRA implants, the gap was 7 micron. In the latter group, however, the gap was always completely filled by the fixation cement. All the spaces between abutment and implant were filled by the cement. 2) With SRA implants, it was possible to observe the presence of toluidine blue at the level of the fixture-abutment interface and the internal threads; the absorbent paper was stained in all cases. With CRA implant, the absorbent paper inside the hollow portion of the implants was never stained by toluidine blue. No penetration of toluidine blue was observed at the implant-abutment interface and inside the hollow portion of the implants. 3) In all the SRA implant assemblies, bacterial penetration was observed at the implant-abutment interface. No bacteria were detected in the hollow portion of the CRA implants.

Conclusion. On the basis of the results obtained in the present study using 2 different implant systems, we conclude that CRA implants offer better results relating to fluid and bacterial permeability compared to SRA implants.
Surface analysis of machined versus sandblasted and acid-etched titanium implants.

Orsini G, Assenza B, Scarano A, Piattelli M, Piattelli A.

ABSTRACT.
Initially, implant surface analyses were performed on 10 machined implants and on 10 sandblasted and acid-etched implants. Subsequently, sandblasted and acid-etched implant cytotoxicity (using L929 mouse fibroblasts), morphologic differences between cells (osteoblast-like cells MG63) adhering to the machined implant surfaces, and cell anchorage to sandblasted and acid-etched implant surfaces were evaluated. Results indicated that acid etching with 1% hydrofluoric acid/30% nitric acid after sandblasting eliminated residual alumina particles. The average roughness (Ra) of sandblasted and acid-etched surfaces was about 2.15 microns. Cytotoxicity tests showed that sandblasted and acid-etched implants had non-cytotoxic cellular effects and appeared to be biocompatible. Scanning electron microscopic examination showed that the surface roughness produced by sandblasting and acid etching could affect cell adhesion mechanisms. Osteoblast-like cells adhering to the machined implants presented a very flat configuration, while the same cells adhering to the sandblasted and acid-etched surfaces showed an irregular morphology and many pseudopods. These morphologic irregularities could improve initial cell anchorage, providing better osseointegration for sandblasted and acid-etched implants.
ABSTRACT.
The aim of this study was to evaluate peri-implant bone reactions around immediately loaded conical implants (Bone System, Italy) with metal and acrylic resin prosthetic restorations. Five splinted conical implants were inserted in each hemimandible of six minipigs at the alveolar crest level. Ten implants were inserted in each minipig. All the implants were immediately loaded. The implants were divided into a group with an acrylic resin prosthetic restoration and into another group with a metal prosthetic restoration. No postoperative complications or deaths of the minipigs occurred. All minipigs were killed after 3 months. No implant was lost. A total of 60 implants were retrieved and processed to obtain thin ground sections. Histology and histomorphometry showed the presence of compact, mature bone around all the implants. Bone was in close contact with the implant surface starting from the first or second implant threads.

A high quantity of mineralized bone was present around immediately loaded conical, root form implants. No differences in the peri-implant bone response were found in the groups with different prosthetic reconstructions.

REZONZIJE NEL’OSSO PERIMPLANTARE INTORNO AD IMPIANTI CONICI A CARICO IMEDIATO CON DIVERSE SOVRASTRUTTURE PROTESICHE: STUDIO ISTOLOGICO E ISTMORFOMETRICO SU MINIPIGS.

ESTRATTO.
ABSTRACT.
Crestal bone loss has been reported to occur around dental implants. Even if the causes of this bone loss are not completely understood, the presence of a microgap between implant and abutment with a possible contamination of the internal portion of the implants has been suggested. The aim of this study was to see if there were differences in the vascular endothelial growth factor (VEGF) expression, microvessel density (MVD), proliferative activity (MIB-1), and inflammatory infiltrate in the soft tissues around implants with screwed and cemented abutments. Sandblasted and acid-etched implants were inserted in the mandibles of 6 Beagle dogs. Ten 3.5- x 10-mm root-form implants were inserted in each mandible. A total of 60 implants (30 with screwed abutments (Bone System, Italy)) and 30 with cemented abutments (Bone System, Italy) were used. After 12 months, all the bridges were removed and all abutments were checked for mobility. A total of 8 loosened screws (27%) were found in the screwed abutments, whereas no loosenings were observed in cemented abutments.

A gingival biopsy was performed in 8 implants with cemented abutments, in 8 implants with screwed abutments, and in 8 implants with unscrewed abutments. No statistically significant differences were found in the inflammatory infiltrate and in the MIB-1 among the different groups. No statistically significant difference was found in the MVD between screwed and cemented abutments (P = .2111), whereas there was a statistically significant difference in MVD between screwed and unscrewed abutments (P = .0277) and between cemented and unscrewed abutments (P = .0431). A low intensity of VEGF was prevalent in screwed and in cemented abutments, whereas a high intensity of VEGF was prevalent in unscrewed abutments. These facts could be explained by the effects induced, in the abutments that underwent a screw loosening, by the presence of bacteria inside the hollow portion of the implants or by enhanced reparative processes.
ABSTRACT.
The causes of implant failures can be biological or mechanical. The mechanical causes include fracture of the implant, fracture of the abutment, and loosening of the abutment. Numerous studies show that abutment loosening constitutes one of the marked implant post-surgery complications requiring clinical intervention. The aim of the present study was to evaluate the incidence of the screw loosening in screwed or cemented abutments. Six adult male Beagles were used. In each dog, the first molars and 2 premolars were extracted. The sutures were removed after 7 days. After 3 months, 10 implants were placed in each dog, 5 in the right mandible and 5 in the left mandible. The abutments either were screwed in ($n=30$) (Bone System, Italy) by applying a total strength of 30 N/cm or were cemented ($n=30$) (Bone System, Italy). After 12 months, 8 (27%) loosened screws were present in screwed abutments, whereas no abutment loosening was observed in cemented abutments ($P = .0001$). Screwed abutments are often submitted to nonaxial loads that determine screw and abutment loosening.


Interimplant distance and crestal bone resorption: a histologic study in the canine mandible.


ABSTRACT

Background. Crestal bone loss has been shown to occur around dental implants. This crestal bone resorption may determine a more apical position of the gingival margin. A clear trend of increased bone loss with increased interimplant distance has been reported.

Purpose. The aim of the present study was to evaluate, in the canine mandible, the crestal bone behavior around dental implants inserted with different interimplant distances.

Materials and Methods. Sandblasted and acid-etched implants (Bone System, Milano, Italy) were placed in the mandibles of six beagle dogs. Each dog received 10 implants in the mandible (five in the right side and five in the left side). A total of 60 implants was used in this study. The implants were divided in four groups: group I, with a 2 mm interimplant distance; group II, with a 3 mm interimplant distance; group III, with a 4 mm interimplant distance; and group IV, with a 5 mm interimplant distance. The dogs were killed after 12 months.

Results. No statistically significant differences were found in regard to vertical bone loss whereas on the contrary, statistically significant differences were found in regard to lateral bone loss (p = .0001). Statistically significant differences were found in regard to vertical crestal bone loss (p = .0001). In fact, vertical crestal bone loss decreased, from 1.98 mm in group I to 0.23 mm in group IV.

Conclusion. The clinical significance of these data lies in the fact that increased crestal bone loss results in an increase in the distance between the base of the contact points of the neighboring implants and the crest of bone, and this fact could determine whether the papilla is present or absent between two implants.
ABSTRACT.

Purpose. The aim of this study was to histologically evaluate the crestal bone response to loaded and unloaded implants in beagle dogs.

Materials and Methods. Sand-blasted and acid-etched implants (Bone System, Milano, Italy) were placed in the mandible of six beagle dogs. The two premolars and the first molars had been extracted 3 months previously. Each dog received 12 implants in the mandible, and a total of 72 implants were used in this study. Three months after implantation, second-stage surgeries were performed for placement of abutments or healing screws. Three dogs were killed after 6 months, and three dogs were killed after 12 months. All 72 implants were retrieved.

Results. No statistically significant differences were found in the amount of bone loss between test and control implants, both at 6 and 12 months. Statistically significant differences were found, in both groups, between the bone loss observed at 6 months and that found at 12 months.

Conclusion. Loading does not seem to be a relevant factor in the peri-implant bone resorption observed during the first year of function. Our results support previous findings that bone crest level changes could depend on the location of the microgap.


Crestal bone remodeling in loaded and unloaded implants and the microgap: a histologic study.

Osteoclast activity around loaded and unloaded implants: a histological study in the beagle dog.


**ABSTRACT.**
The mechanisms of bone loss around dental implants are poorly understood. The osteoclast is the most important bone-resorbing cell. Humoral factors seem able to stimulate the differentiation of osteoclasts from mononuclear phagocytes. Bacterial lipopolysaccharides seem to be directly involved in inflammatory bone loss by stimulation of the survival and fusion of pre-osteoclasts. Excessive load seems to be able to cause bone loss. The aim of this paper was to evaluate the presence and number of osteoclasts in peri-implant bone in control (unloaded) and test (loaded) implants in order to determine if loading per se could be a contributing factor in peri-implant bone resorption. Forty-eight implants were inserted in the mandibles of 4 beagle dogs. After 3 months, a prosthetic superstructure was inserted on 24 implants, whereas in 24 implants only the healing screws were positioned. Twenty-four implants (12 test and 12 control) were retrieved at 6 months, and 24 implants (12 test and 12 control) were retrieved at 12 months. All implants were osseointegrated. The number of osteoclasts found in the crestal bone in the first 3 mm from the implant surface was evaluated. The mean number of osteoclasts were the following: control implants (6 months), 5.66 +/- 0.81; control implants (12 months), 2.55 +/- 1.05; test implants (6 months), 5.25 +/- 1.55; and test implants (12 months), 2.5 +/- 1.0. No statistically significant differences were observed between the control and test implants. According to our data, loading does not seem to have a relevant importance on the osteoclast activation in peri-implant bone.

**ESTRATTO.**

Lo scopo di questo lavoro è stato quello di valutare la presenza e il numero di osteoclasti in osso perimplantare con impianti di controllo (senza carico) e test (a carico) e determinare se il carico di per sé potrebbe essere un fattore che contribuisce al riassorbimento osseo perimplantare. Sono stati inseriti quarantotto impianti nelle mandibole di 4 cani beagle. Dopo 3 mesi, una sovrastruzione protesica è stata inserita su 24 impianti, mentre nei restanti 24 impianti sono state posizionate solo le viti di guarigione. Ventiquattro (12 impianti di prova e 12 di controllo) sono stati recuperati a 6 mesi, e altri 24 impianti (12 e 12 test di controllo) sono stati recuperati a 12 mesi. Tutti gli impianti erano osteointegrati. È stato valutato il numero di osteoclasti presenti nella cresta ossea nei primi 3 millimetri dalla superficie dell’impianto. Il numero medio di osteoclasti rilevato è stato il seguente: impianti di controllo (6 mesi), 5.66 +/- 0.81; impianti di controllo (12 mesi), 2.55 +/- 1.05; impianti di prova (6 mesi), 5.25 +/- 1.55; e test impianti (12 mesi), 2.5 +/- 1.0. Nessuna differenza statisticamente significativa è stata osservata tra controlli e impianti test. Secondo i nostri dati, il carico non sembra avere un’importanza rilevante sulla attivazione degli osteoclasti in osso perimplantare.
Influence of the size of the microgap on crestal bone levels in non-submerged dental implants: a radiographic study in the canine mandible.

King GN, Hermann JS, Schoolfield JD, Buser D, Cochran DL.

ABSTRACT.

Background. Accumulating evidence suggests that alveolar crestal bone resorption occurs as a result of the microgap that is present between the implant-abutment interface in dental implants. The objective of this longitudinal radiographic study was to determine whether the size of the interface or the microgap between the implant and abutment influences the amount of crestal bone loss in unloaded non-submerged implants.

Methods. Sixty titanium implants having sandblasted with large grit, acid-etched (SLA) endosseous surfaces were placed in edentulous mandibular areas of 5 American fox hounds. Implant groups A, B, and C had a microgap between the implant-abutment connection of <10 micron, 50 micron, or 100 micron, respectively, as did groups D, E, and F, respectively. Abutments were either welded (1-piece) in groups A, B, and C or non-welded (2-piece screwed) in D, E, and F. All abutment interfaces were placed 1 mm above the alveolar crest. Radiographic assessment was undertaken to evaluate peri-implant crestal bone levels at baseline and at 1, 2, and 3 months after implant placement whereupon all animals were sacrificed.

Results. The size of the microgap at the abutment/implant interface had no significant effect upon crestal bone loss. At 1 month, most implants developed crestal bone loss compared with baseline levels. However, during this early healing period, the non-welded group (D, E, and F) showed significantly greater crestal bone loss from baseline to one month (P <0.04) and 2 months (P <0.02) compared with the welded group (A, B, and C). No significant differences were observed between these 2 groups at 3 months (P >0.70).

Conclusion. Crestal bone loss was an early manifestation of wound healing occurring after 1 month of implant placement. However, the size of the microgap at the implant-abutment interface had no significant effect upon crestal bone resorption. Thus, 2-piece non-welded implants showed significantly greater crestal bone loss compared with 1-piece welded implants after 1 and 2 months suggesting that the stability of the implant/abutment interface may have an important early role to play in determining crestal bone levels. At 3 months, this influence followed a similar trend but was not observed to be statistically significant. This finding implies that implant configurations incorporating interfaces will be associated with biological changes regardless of interface size and that mobility between components may have an early influence on wound healing around the implant.

INFLUENZA DELLA DIMENSIONE DEL MICROGAP SUI LIVELLI DELLA CRESTA OSSSEA IN IMPIANTI DENTALI NON SOMMERSI: UNO STUDIO RADIOGRAFICO NELLA MANDIBOLA CANINA.

ESTRATTO.

Contesto. L’evidenza accumulata suggerisce che il riassorbimento alveolare osseo crestale si verifica come conseguenza del microgap presente nell’interfaccia l’impianto-moncone degli impianti dentali. Obiettivo di questo studio longitudinale radiografico era quello di determinare se la dimensione della interfaccia o il microgap tra impianto e moncone influenzi la quantità di perdita di osso crestale in impianti non caricati e non sommersi.

Metodi. Sessanta impianti in titanio con superficie endossea sabbia di grana grossa, acida (SLA) sono stati collocati in aree edentule mandibolari su 5 American Fox hounds. Gli impianti dei gruppi A, B, C avevano rispettivamente un microgap tra impianto-moncone di <10 micron, 50 micron, 100 micron, come rispettivamente i gruppi D, E, F. I pilastri sono stati saldati (1 pezzo) nei gruppi A, B, e C e non saldati (2 pezzi avvita- ti) in D, E ed F. Tutte le superfici interfacce del moncononi sono state collocate 1 mm sopra la cresta alveolare. La valutazione radiografica è stata effettuata per valutare i livelli di osso crestale perimante all’inizio dello studio e dopo 1, 2, e 3 mesi dall’inserimento dell’impianto; dopo di che tutti gli animali sono stati sacrificati.

Risultati. La dimensione del microgap nell’interfaccia moncone / impianto non ha avuto effetto significativo sulla perdita di osso cresta- le. A 1 mese, la maggior parte degli impianti ha sviluppato una perdita ossea cresta- le rispetto ai livelli basali. Tuttavia, durante questo periodo di guarigione iniziale, il gruppo non saldato (D, E, e F) ha mostrato una perdita ossea crestale significativamente maggiore dal momento di rilevamento iniziale a un mese (p <0.04) che non a 2 mesi (p <0.02) rispetto al gruppo saldato (A, B, e C). Non sono state osservate differenze significative tra i 2 gruppi a 3 mesi (p >0.70).

Conclusioni. La perdita di osso crestale è una manifestazione precoce di guarigione delle ferite che si verificano dopo 1 mese dal posizionamento dell’impianto. Tuttavia, la dimensione del microgap dell’interfaccia impianto-moncone ha avuto effetto significativo sul riassorbimento osseo crestale. Infatti, gli impianti a due pezzi non saldati mostravano una maggiore e significativa perdita ossea crestale rispetto agli impianti saldati a 1 pezzo dopo 1 e 2 mesi suggerendo che la stabilità dell’impianto / moncone può avere un ruolo iniziale importante nella determinazione dei livelli di osso cresta- le. A 3 mesi, questa influenza ha seguito un andamento simile, ma non è stato osservato essere statisticamente significativo. Questo risultato implica che le configurazioni di impianti che hanno l’interfaccia, saranno associati a cambiamenti biologici indipendentemente dalla dimensione dell’interfaccia stessa e della mobilità tra i componenti può avere un’influenza nella gua- rigione iniziale attorno all’impianto.
Influence of the size of the microgap on crestal bone changes around titanium implants. A histometric evaluation of unloaded non-submerged implants in the canine mandible.

Hermann JS, Schoolfield JD, Schenk RK, Buser D, Cochran DL.

ABSTRACT.

Background. Endosseous implants can be placed according to a non-submerged or submerged approach and in 1- or 2-piece configurations. Recently, it was shown that peri-implant crestal bone changes differ significantly under such conditions and are dependent on a rough/smooth implant border in 1-piece implants and on the location of an interface (microgap) between the implant and abutment/restoration in 2-piece configurations. Several factors may influence the resultant level of the crestal bone under these conditions, including movements between implant components and the size of the microgap (interface) between the implant and abutment. However, no data are available on the impact of possible movements between these components or the impact of the size of the microgap (interface). The purpose of this study was to histometrically evaluate crestal bone changes around unloaded, 2-piece non-submerged titanium implants with 3 different microgap (interface) dimensions and between implants with components welded together or held together by a transocclusal screw.

Methods. A total of 60 titanium implants were randomly placed in edentulous mandibular areas of 5 hounds forming 6 different implant subgroups (A through F). In general, all implants had a relatively smooth, machined superproportion 1 mm long, as well as a rough, sandblasted, and acid-etched (SLA) endosseous portion, all placed with their interface (microgap) 1 mm above the bone crest level and having abutments connected at the time of first-stage surgery. Implant types A, B, and C had a microgap of < 10 microns, approximate 50 microns, or approximately 100 microns between implant components as did types D, E, and F, respectively. As a major difference, however, abutments and implants of types A, B, and C were laser-welded together, not allowing for any movements between components, as opposed to types D, E, and F, where abutments and implants were held together by abutment screws. Three months after implant placement, all animals were sacrificed. Non-decalcified histology was analyzed histometrically by evaluating peri-implant crestal bone changes.

Results. For implants in the laser-welded group (A, B, and C), mean crestal bone levels were located at a distance from the interface (IF; microgap) to the first bone-to-implant contact (IBIC) of 1.06 +/- 0.46 mm (standard deviation) for type A, 1.28 +/- 0.47 mm for type B, and 1.17 +/- 0.51 mm for type C. All implants of the non-welded group (D, E, and F) had significantly increased amounts of crestal bone loss, with 1.72 +/- 0.49 mm for type D (P < 0.01 compared to type A), 1.71 +/- 0.43 mm for type E (P < 0.02 compared to type B), and 1.65 +/- 0.37 mm for type F (P < 0.01 compared to type C).

Conclusion. These findings demonstrate, as evaluated by non-decalcified histology under unloaded conditions in the canine mandible, that crestal bone changes around 2-piece, non-submerged titanium implants are significantly influenced by possible movements between implants and abutments, but not by the size of the microgap (interface). Thus, significant crestal bone loss occurs in 2-piece implant configurations even with the smallest-sized microgaps (< 10 microns) in combination with possible movements between implant components.

INFLUENZA DELLA DIMENSIONE DEL MICROGAP SULLE MODIFICAZIONI DELLA CRESTA OSSEA ATTORNO AD IMPIANTI DI TITANIO. UNA VALUTAZIONE ISTOMETRICA DI IMPIANTI NON CARICATI NON SOMMERSI NELLA MANDIBOLA CANINA.

ESTRATTO.

Contesto. Gli impianti endosso si possono essere posizionati in base a un approccio non-sommerso o sommerso e in configurazioni a 1 e 2 pezzi. Recentemente, è stato dimostrato che le modifiche della cresta ossea perimplantare differiscono significativamente in base alle suddette condizioni e dipendono da un contatto ruvido / liscio in impianti a 1 pezzo e dalla posizione dell’interfaccia (microgap) tra impianto e moncone protesi o in configurazioni a 2 pezzi. Diversi fattori possono influenzare il livello risultante della cresta ossea in queste condizioni, inclusi gli spostamenti tra i componenti dell’impianto e la dimensione del microgap (interfaccia) tra impianto e moncone. Tuttavia, non sono disponibili dati sugli effetti di eventuali movimenti tra queste componenti o l’impatto delle dimensioni del microgap (interfaccia). Lo scopo di questo studio era quello di valutare istometricamente i cambiamenti della cresta ossea intorno ad impianti in titanio non caricati, a 2 pezzi, non sommersi con 3 diverse dimensioni dell’interfaccia (microgap) tra gli impianti e i componenti saldati assieme o collegati con vite transocclusale.

Metodi. Sono stati collocati un totale di 60 impianti in titanio randomizzati in aree dentate mandibolari su 5 cani, formando 6 sottogruppi di impianti diversi (da A a F). In generale, tutti gli impianti avevano una porzione di 1 mm sovracrestale relativamente liscia finita di macchina, nonché una porzione endossea ruvida, saibbiata e mordenata (SLA), tutti posizionati con la loro interfaccia (microgap) 1 mm sopra il livello della cresta ossea ed avente i monconi connessi al momento della prima fase chirurgica. I tipi di impianto A, B, e C avevano un microgap <10 micron, circa 50 micron, o circa 100 micron tra i componenti dell’impianto come riscontrato, rispettivamente, nei tipi D, E, e F. Come differenze più rilevanti, gli impianti e i monconi di tipo A, B, e C sono stati saldati fra loro a laser, non permettendo alcuno movimento tra i componenti, in contrapposizione con i tipi D, E, ed F, dove monconi ed impianti erano tenuti insieme dalle vite dei monconi. Tre mesi dopo l’inserimento degli impianti, tutti gli animali sono stati sacrificati. È stata successivamente, analizzata una istologia non decalcificata, valutando istometricamente i cambiamenti dell’osso crestale perimplantare.

Risultati. Per gli impianti del gruppo saldato a laser (A, B, e C), i livelli medi di cresta ossea erano situati ad una distanza dall’interfaccia (IF; microgap) al primo contatto osseo-impianto (IBIC) di 1.06 +/- 0.46 mm (deviazione standard) per il tipo A, 1.28 +/- 0.47 mm per il tipo B, e 1.17 +/- 0.51 mm per il tipo C. Tutti gli impianti del gruppo non saldato (D, E, e F) avevano una significativa maggiore quantità di perdita di osso cresta, con 1.72 +/- 0.49 mm per il tipo D (<0.01 rispetto al tipo A), 1.71 +/- 0.43 mm per il tipo E (P <0.02 rispetto al tipo B), e 1.65 +/- 0.37 mm per il tipo F (P <0.01 rispetto alla versione C).

Conclusione. Questi risultati dimostrano, come è stato valutato da istologia non decalcificata in condizioni statiche nella mandibola canina, che i cambiamenti dell’osso crestale intorno agli impianti in titanio a 2 pezzi non sommersi sono influenzati significativamente dai possibili movimenti tra impianti e moncone, ma non dalle dimensioni del microgap (interfaccia). Così, una significativa perdita di osso cresta si verifica nelle configurazioni di impianto a 2 pezzi, anche con dimensioni del microgap molto piccole (<10 micron), in combinazione con i possibili movimenti tra i componenti dell’impianto.
ABSTRACT.
Different protocols have been developed in case of immediate loading for a full arch replacement. Several reports show that a syncrystallization - welded framework exhibits a more precise fit than a one-piece casting. The intra-oral syncrystallization welding technology can not only create a passive-fitting implant prosthesis, but also prefabricate implant components, including titanium bars and attachments, and can be syncrystallization-assembled directly on the master cast. This article describes a technique developed to fabricate an immediately loaded prosthesis using syncrystallization a new component for welding a passive-fitting implant prosthesis.

The aim of this article was to describe a technique developed for an accelerated rigid splinting of multiple implants for same-day immediate loading with metal-reinforced provisional restorations using a technique of welding temporary implant abutments with a prefabricated titanium connection tab directly performed in the oral cavity.

Between June 2009 and July 2011, immediate loading of threaded implants with a metal-reinforced acrylic resin provisional restoration at stage 1 surgery was evaluated in 22 consecutive patients. A total of 232 implants (Bone System, Italy) were placed in selected edentulous patients using the syncrystallization technique. All of the rigidly temporized immediately loaded implants were osseointegrated. An implant success rate of 100% was achieved over a period of 6 months postplacement. No fracture or luting cement failure of the provisional restoration occurred during the observation time. The technique allows for a highly accurate, passively fitting prosthesis in only 6 hours with excellent patient satisfaction.

A technique for an accelerated rigid splinting of multiple implants for immediate loading.

Scarano A, Sinjari B, Murmura G, Assenza B, Carinci F, Brunelli G.
A cosmetic technique called lip repositioning in patient of excessive gingival display.

Assenza B, Carinci F, Di Cristinzi A, Sinjari B, Murmura G, Scarano A.

ABSTRACT.
Excessive gingival display can be managed by a variety of treatments modalities, depending on the specific diagnosis.
A 29-year old woman was referred to the Unit of Oral Surgery of the University of Chieti-Pescara by her dentist for a consultation regarding a gummy smile.
A partial-thickness dissection was made. The epithelium and connective tissue was excised. Tissue tags were removed. The mucosal flap was advanced and sutured at the mucogingival junction using 5-0 polypropylene sutures and 4.0 chromic gut sutures. No periodontal dressing was placed. Postoperative instructions included recommendations for limited facial movements, no brushing around the surgical site for 14 days, and placing ice packs over the upper lip. This treatment modality was effective, producing esthetically acceptable smiles in these patients. This case report demonstrates the successful management of excessive gingival display with a lip-repositioning procedure.

ESTRATTO.
L'eccessiva esposizione gengivale può essere trattata con diverse modalità di trattamento, a seconda della diagnosi specifica.
Una donna di 29 anni è stata mandata all'Unità di Chirurgia Orale dell'Università di Chieti-Pescara dal suo dentista per un consulto in merito al proprio sorriso gengivale. È stata eseguita una dissezione parziale dello spessore dell'epitelio e del tessuto connettivale con rimozione del lembo residuo. È stato portato in avanti il lembo della mucosa e suturato alla giunzione muco-gengivale utilizzando delle suture 5-0 di polipropilene e suture cromico gut 4.0. Non è stata utilizzata nessuna medicazione parodontale. Le indicazioni post operatorie includevano raccomandazioni circa la limitazione dei movimenti facciali, il divieto di spazzolare la ferita chirurgica per i primi 14 giorni e apporre del ghiaccio sopra il labbro superiore.
Questa modalità di trattamento è stata efficace, producendo un sorriso esteticamente accettabile in questa tipologia di paziente. I risultati di questo caso dimostrano il successo del trattamento dell'eccessiva esposizione gengivale utilizzando la procedura di riposizionamento del labbro.
Vertical ridge augmentation of atrophic posterior mandible using an inlay technique with a xenograft without miniscrews and miniplates: case series.

Scarano A, Carinci F, Assenza B, Piattelli M, Murmura G, Piattelli A.

ABSTRACT.

Background. Rehabilitation of partially or totally edentulous posterior mandible with implant-supported prosthesis has become a common practice in the last few decades, with reliable long-term results. The use of miniscrews and miniplates have been reported to increase the risk of fracture of the osteotomy segments. The purpose of this case series was to use an inlay technique, without the use of miniscrews and miniplates for stabilization of the transported bone fragments.

Materials and Methods. Nine consecutive patients (six men and three women) aged between 26 and 51 years (mean 44 years) were enrolled in this study. A horizontal osteotomy was performed 2-3 mm above the mandibular canal, and two oblique cuts were made using a piezosurgery device. The final phase of the osteotomy was performed with chisels. The osteotomized segment was then raised in the coronal direction, sparing the lingual periosteum. Two miniblocks of xenograft without miniscrews and miniplates were inserted mesially and distally between the cranial osteotomized segment and the mandibular basal bone. The residual space was filled with particles of cortical-cancellous porcine bone. Four months after surgery, a panoramic X-ray was taken before implant insertion. A bone trephine with an internal diameter of 2 mm was used as the second dental drill to take a bone core biopsy during preparation of the #35 and #37 or #45 and #47 implant sites.

Results. The postoperative course was uneventful in seven of the nine patients. No dehiscence of the mucosa was observed at the marginal ridge of the mobilized fragment. Newly formed bone was present near the osteotomized segments, and was observed in the bottom half of the specimens and was identified by its higher affinity toward the staining. Newly formed bone was observed to be in close contact with the particles of biomaterials. No gaps or connective tissue were present at the bone-biomaterial interface. Histomorphometry demonstrated that 44±2.1% of the specimens was composed by newly formed bone, 18±0.8% by marrow spaces, and 33±2.4% by the residual grafted biomaterial.

Conclusion. The rigidity of the equine collagenated block allowed to eliminate the use of miniscrews and miniplates and simplified the technique. Moreover, the rigidity of the block allowed maintenance of the space.

AUMENTO VERTICALE DI CRESTA ATROFICA MANDIBOLARE POSTERIORE UTILIZZANDO UNA TECNICA DI INNesto CON XENOTRAPIANTO SENza MINISCREWS E MINIPLACCHe: SERIE DI CASI.

ESTRATTO.

Contesto. La riabilitazione di una mandibola posteriore parzialmente o totalmente edentule con protesi supportata da impianto è diventata una pratica comune negli ultimi decenni, con risultati affidabili a lungo termine. È stato rilevato che l’uso di microritve e miniplacche aumentano il fattore rischio di frattura dei segmenti dell’osteotomia. Lo scopo di questa serie di casi è stato quello di utilizzare una tecnica di innesto, senza l’uso di microritve e miniplacche, per la stabilizzazione dei frammenti ossei trasportati.

Materiali e Metodi. Per questo studio, sono stati selezionati nove pazienti consecutivi (sei uomini e tre donne) di età compresa tra i 26 e 51 anni (media 44 anni). È stata effettuata una osteotomia orizzontale a 2-3 mm al di sopra del canale mandibolare e sono stati elettualisi due tagli obliqui utilizzando un dispositivo piezosurgery. La fase finale dell’osteotomia è stata eseguita con scalpelli. Il segmento osteotomizzato è stato poi sollevato in direzione coronale, risparmiando il peristio linguale. Due miniblock di xenotrasplantato senza miniscrews e miniplacche sono stati inseriti in direzione mesiale e distale tra il segmento craniale osteotomizzato e l’osso mandibolare basale. Lo spazio residuo è stato riempito con particelle di osso suino corticospugnoso. Quattro mesi dopo l’intervento chirurgico, è stata effettuata una radiografia panoramica prima dell’inserimento dell’impianto. Una frese cava con un diametro interno di 2 mm è stata usata come seconda fresa per prelevare una biopsia ossea durante la preparazione dei siti implantari #35 e #37 o #45 e #47.

Risultati. Il decorso postoperatorio è stato regolare in sette dei nove pazienti. Non è stata osservata alcuna deiscenza della mucosa alla cresta marginale del frammento mobilizzato. L’osso neoformato era presente in prossimità dei segmenti osteotomizzati, ed è stato, inoltre, osservato nella metà inferiore dei campioni. La sua identificazione è stata possibile grazie alla sua maggiore affinità alla colorazione chimica. È stato osservato che l’osso neoformato risulta essere in stretto contatto con le particelle di biomateriali. Non erano presenti lacune o tessuto connettivo nell’interfaccia osso-biomateriale. L’istomorfometria ha dimostrato che il 44 ± 2,1% dei campioni era composto da osso neoformato, 18 ± 0,8% da spazi midollari, e 33 ± 2,4% da biomateriali innestato residuale.

Conclusioni. La rigidità del blocco equino collaginato ha permesso di eliminare l’uso delle microritve e delle miniplacche e ha, inoltre, semplificato la tecnica. Inoltre, la rigidità del blocco ha permesso il mantenimento dello spazio.

Traini T., Pettinicchio M., Murmura G., Varvara G., Di Lullo N., Sinjari B., Caputi S.

ABSTRACT. This article describes the high esthetic value of a single-tooth implant immediately placed in the anterior region using a flapless approach and a custom-made zirconia-ceramic abutment (Bone System, Italy) and crown. The case reported illustrates the practical procedure involved in developing natural esthetics with a zirconia, custom-made prosthesis and abutment. The technique is relatively simple, can be used in a variety of clinical situations, and provides excellent results from an esthetic point of view, which is demonstrated by the results of pink esthetic scores (PES) (9 ± 0.70) and white esthetic scores (WES) (7 ± 0.70) after 4 years.

SUCCESSO ESTETICO DI UN IMPIANTO SINGOLO POSTESTRATTIVO NEL MASCELLARE ANTERIORE, RESTAURATO CON L’UTILIZZO DI MONCONE E CORONA INDIVIDUALIZZATI IN CERAMICA E ZIRCONIA: UN TRATTAMENTO A FASI.

ESTRATTO. Questo articolo descrive l’alto valore estetico di un impianto a dente singolo postestrattivo immediato nella regione anteriore utilizzando un approccio “senza lembo” e un elemento transmucoso (Bone System, Italia) eseguito su misura in ceramica e zirconia e corona. Il caso riportato di seguito illustra il procedimento pratico alla base dello sviluppo di una estetica naturale, realizzando una personalizzazione dell’elemento transmucoso in Zirconia e ceramica e del moncone. La tecnica è relativamente semplice e può essere utilizzata in svariate situazioni cliniche. Essa, inoltre, fornisce eccellenti risultati da un punto di vista estetico, suffragati dai risultati ottenuti al punteggio Pink Esthetic Score (PES) (9 ± 0.20) e al punteggio White Esthetic Score (WES) (7 ± 0.50) dopo 4 anni.
AbSTRACT.

Purpose. Rehabilitation of the edentulous posterior maxilla with dental implants often represents a clinical challenge because of the insufficient bone volume resulting from pneumatization of the maxillary sinus and crestal bone resorption. The aim of this study was a retrospective clinical evaluation of maxillary sinus augmentation using porcine bone.

Materials and Methods. One hundred twenty-one healthy patients with a noncontributory medical history were included in this study. All patients underwent sinus augmentation procedures with porcine bone. After a 4- to 6-month healing period, sandblasted and acid-etched implants were inserted.

Results. All grafted sinuses healed without major complications, except for 2 that showed no regeneration at the time of implant placement. A total of 21 implants were lost, 8 after the second-stage surgery and 13 in the 5 years’ follow-up after loading. The cumulative survival rate was 92% after a mean loading time of 5 years. Only minor peri-implant marginal bone resorption was found.

Conclusion. Within the limitations of this study, porcine bone can be used with success in sinus augmentation procedures, and rougher-surfaced implants are probably preferable.


Porcine bone used in sinus augmentation procedures: a 5-year retrospective clinical evaluation.

Implant supported prostheses with Bone System® implant system: a retrospective study with follow-up period up to 13-years about 1021 fixtures.

Carbone M, Goss E, Borione M, Bava L, Broccoletti R, Carrozzo M, Gandolfo S.

ABSTRACT.

Aim. To analyze the data collected in 13 years of clinical controls in patients with oral rehabilitation on Bone System® dental implant systems and to evaluate the success, failure and complications in daily implant dentistry, without strict inclusion criteria, in order to define the success or survival or failure of dental implants.

Methods. A total of 477 patients (231 men and 246 women) received dental implants for oral rehabilitation in 3 different private dental offices in Piedemont, Italy. A total of 1021 fixtures were implanted from 1992 to 2004; patients were followed up for a maximum of 13 years. Surgery was performed by the same operator using the same dental implant system (Bone System, Italy), with manufacturer modifications and improvements to the system as it evolved during the study period. Treatment planning and oral reconstruction on the inserted implants were carried out by 3 different specialists in prosthesis dentistry and 4 dental laboratory technicians. In the follow-up period, clinical success was defined as the degree of patient satisfaction and the survival of restorations on dental implants.

Results. The survival rate of the fixtures was 95.9%; the clinical effectiveness was 92.8%; the failure rate was 4.1%. Complications included peri-implantitis, implant fractures and technical complications related to implant components and prosthesis. Long-term implant survival and clinical success were not influenced by anatomic site (maxilla or mandible).

Conclusion. Dental implant therapy is a viable option for oral rehabilitation; if correctly managed, it may provide predictable results.
A 16-year study of the microgap between 272 human titanium implants and their abutments.


ABSTRACT.
A microgap has been described at the level of the implant-abutment connection. This microgap can be colonized by bacteria, and this fact could have relevance on the remodeling of the peri-implant crestal bone and on the long-term health of the peri-implant tissues.

The authors report on 272 implants with screw-retained abutments (Nobel Biocare, Sweden) (Implant Innovations implants, USA) (Lifecore Biomedical, Minn) or cement-retained abutments (Bone System, Italy) retrieved from humans for different causes during a 16-year period. In the implants with screw-retained abutments, a 60-microm microgap was present at the level of implant-abutment connection. In some areas the titanium had sheared off from the surface and from the internal threads. The contact between the threads of the implant and those of the abutment was limited to a few areas. Bacteria were often present in the microgaps between implant and abutment and in the internal portion of the implants. In implants with cement-retained abutments, a 40-microm microgap was found at the level of implant-abutment connection. No mechanical damage was observed at the level of the implant or of the abutment. All the internal voids were always completely filled by the cement. No bacteria were observed in the internal portion of the implants or at the level of the microgap. The differences in the size of the microgap between the two groups were statistically significant (P < .05). In conclusion, in screw-retained abutments the microgap can be a critical factor for colonization of bacteria, whereas in cement-retained abutments all the internal spaces were filled by cement. In these retrieved implants, the size of the microgap was markedly variable and much larger than that observed in vitro.

UNO STUDIO LUNGO 16 ANNI DEL MICROGAP FRA 272 IMPIANTI SULL’UOMO IN TITANIO E RELATIVI MONCONI.
Il microgap è stato descritto a livello della connessione impianto-moncone. Questo microgap può essere colonizzato da batteri e, per questo motivo, il microgap potrebbe assumere rilevanza sul rimodellamento della cresta ossea perimplantare e sulla salute a lungo termine dei tessuti perimplantari.

Gli autori riferiscono di 272 impianti con monconi a vite (Nobel Biocare, Svezia) (Implant Innovations implants, USA) (Lifecore Biomedical, Minn) o cementati (Bone System, Italia) recuperati da esseri umani per diverse cause nel corso di un periodo di 16 anni. Negli impianti con monconi avvitati era presente un microgap di 60 micron a livello della connessione impianto-moncone. In alcune zone, il titanio risultava reciso dalla superficie e dalla filettature interne. Il contatto tra i filetti dell’impianto e quelli del moncone era limitato a poche aree. I batteri erano spesso presenti nel microspazio tra impianto e moncone e nella parte interna degli impianti. In impianti con monconi cementati, è stato trovato un microgap di 40 micron a livello della connessione impianto-moncone. Nessun danno meccanico è stato osservato a livello dell’impianto o del moncone. Tutte le cavità interne erano sempre completamente riempite dal cemento. Nessun batterio è stato osservato nella porzione interna degli impianti o al livello del microgap. Le differenze nella dimensione del microgap tra i due gruppi era statisticamente significativa (P <0,05). In conclusione, nei monconi fissati da una vite il microgap può essere un fattore critico per la colonizzazione di batteri, mentre nei monconi cementati tutti gli spazi interni sono stati occupati dal cemento. In questi impianti recuperati, la dimensione del microgap era marcatamente variabile e molto più grande di quella osservata in vitro.
Localized ridge augmentation using titanium micro mesh.


ABSTRACT.
Guided bone regeneration (GBR) has been used recently for the regeneration of bone in conjunction with the placement of dental implants, for augmentation of resorbed alveolar crests, and to treat localized ridge deformities. Twenty-two patients with alveolar crest defects or peri-implant dehiscences participated in this study. Titanium implants (Bone System, Italy) were inserted, and the defects were covered with a titanium micromesh (Bone System, Italy), above which was positioned an e-PTFE membrane. After healing, the 2 membranes were removed and a small specimen of the underlying tissues was retrieved with a small trephine. The postoperative healing was mostly uneventful, and only a few dehiscences with membrane exposure were observed. The space under the membranes was, in all patients, filled by a tissue with the macroscopic features of newly formed bone. No residual bone defects were observed and an increase of the alveolar width or height was observed. No untoward effects on bone regeneration were observed in the cases with membrane exposure. Histology showed that the underlying regenerated tissues were composed, in all cases, by newly formed bone. In conclusion, our results show that very satisfactory results concerning GBR techniques can be obtained even without the use of grafts under barrier membranes.
ABSTRACT.
In order to ensure an adequate space where new bone can be formed in guided bone regeneration (GBR), most surgeons fill bone defects with biomaterials. In this work we evaluated new bone regeneration in 10 patients using only a blood clot protected with titanium grids (Bone System, Italy) and non-resorbable membranes, without any filling material. A manual measurement of the size of the bone defect, using a plastic probe, was performed at 2 surgical steps. After 5 months of treatment, a biopsy was taken from each patient, fixed and embedded in PMMA, examined micro-radiographically and morphologically to evaluate the newly-formed bone. Our results showed a good repair of the defects by bone regeneration (about 85% overall), high mineral density of new bone around the implants after 5 months, and steady state deposition processes. These results in GBR, without filling material, appear very promising for implantology and reconstructive odontostomatology practice.