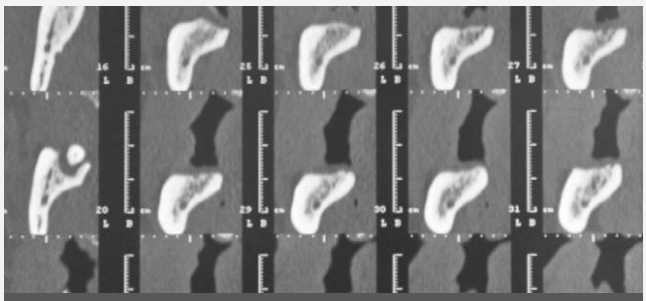
4

Volume 4.

Scientific studies



mis®

Make it Simple

MIS is proud to introduce the Scientific Studies Volume 4, which retrospect's several posters presented during the 17th annual scientific EAO meeting, Warsaw 2008. This volume represents the summation of intensive clinical and scientific studies done worldwide and over many years, through the generous funding of MIS. The fruits of these extensive efforts have resulted in significantly improving the success and quality of MIS products and procedures.

On behalf of the MIS R&D team, I am honored to introduce this new scientific volume covering the recently published clinical research on- innovating products. MIS is conducting permanent clinical studies, investigating different parameters relating to hospitals, institutes and universities in order to continually improve the performance of our products. This collaboration leads to a synergy that benefits the patients.

Our goal is to combine basic and clinical research so that our developments allow us to expand and intensify the application of new development.

Our assignment always is to be innovative and reach new horizons because there are no limits, only laggards.

Our mission is to simplify the placement of dental implants for clinicians.

Our role is to give patients back their smiles.

Our philosophy is to see beyond tomorrow but to remember that "The forecasts are difficult, particularly when they concern the future."

I would like to take this opportunity to thank the many doctors from around the world who have devoted their time and their efforts to a fruitful collaboration in order to progress our research and offer the best solutions to our patients.

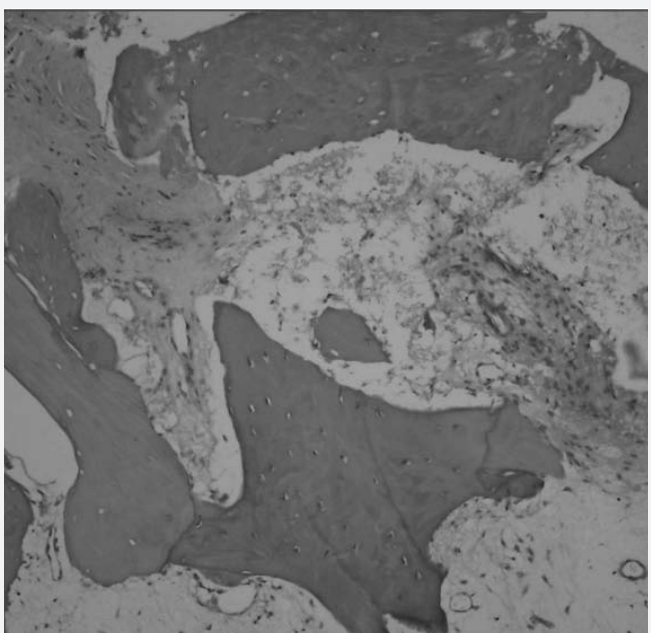
Daniel Baruc
Senior V. P. for Research
& Development

Index.

1

Cancellous bone block-allografts for the augmentation of the anterior maxilla.

*A poster presented at the EAO Meeting, Warsaw 2008.



Cancellous bone block-allografts for the augmentation of the anterior maxilla.

J. Nissan, O. Mardinger, S. Calderon, O. Ghelfan, G. Chaushu *

Introduction

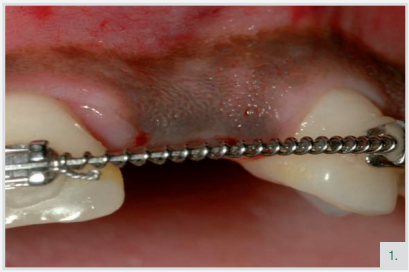
An esthetic final result depends on the presence of an adequate bone volume, providing a predictable bony support for the gingival margin and papillae. Therefore, pre-implant augmentative surgery is a pre-requisite in many cases in the anterior maxilla. pre-implant augmentative surgery is a pre-requisite in many cases in the anterior maxilla (Belser et al. 2004; Grunder et al. 2005). A variety of bone-grafting materials have been used using wound healing mechanisms as osteogenesis, osteoinduction and osteoconduction (McAllister & Haghigat 2007). Autogenous bone harvested from either extraoral or intraoral sites is still the "gold standard“ (Lundgren et al. 2008). Other sources include allogeneic, alloplastic and xenogeneic materials (McAllister & Haghigat 2007). Preliminary reports (Leonetti and Koup 2003; Lyford et al. 2003; Keith Jr. 2004; Petrungaro and Amar 2005; Keith et al. 2006; Nissan et al. 2008) suggest that a block allograft in conjunction with a resorbable membrane may be an acceptable alternative to the autogenous block graft in the treatment of compromised alveolar ridges.

Objective

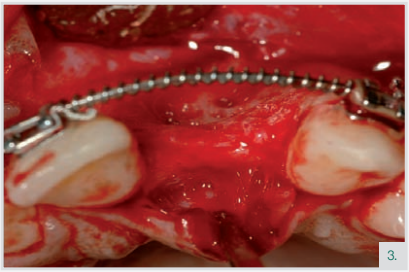
To evaluate the clinical, radiological and histological results of endosseous implants placed in the anterior maxilla following ridge augmentation with cancellous freeze-dried block bone allografts .

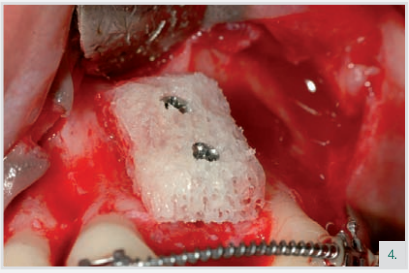
*School of Dental Medicine, Tel Aviv University, Israel

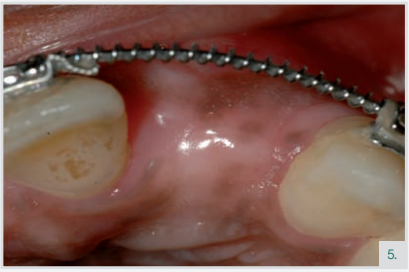
Case 1.

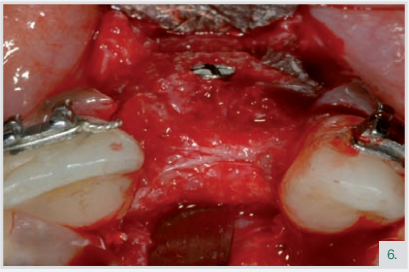

1.

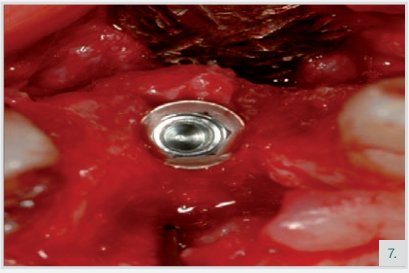

2.


3.


4.


5.


6.


7.

Materials and methods

A total of 29 patients have been included in the study. Three patients (10 %) were lost to follow-up. Those patients were excluded from the study. The remaining 26 patients have been provided with a total of 38 freeze-dried cancellous bone block-allografts and 55 dental implants in situations with compromised maxillary anterior alveolar ridges. In cases requiring more than 2 implants several blocks were used.

The patients were offered the use of both autogenous blocks from intraoral sites and allogeneic cancellous-blocks for augmentation. The patient group comprised 16 women and 10 men, with an age range from 17 to 70 years (mean age was 37±18 years). Implants were placed after a healing period of 4-6 months. Nineteen implants in 14 patients were immediately loaded while in 12 patients 36 implants were allowed to heal for 6 additional months. The implants have been restored with fixed cement-retained restorations. A bony deficiency of at least 3 mm horizontally and up to 3 mm vertically according to CTpara-axial reconstruction served as inclusion criteria. Postoperative panoramic and orthoradial periapical radiographs were taken to compare with the preoperative ones. Bone biopsies were taken after 4-6 months during implant placement .

Results

38 cancellous allogeneic bone-blocks were used in 26 patients (16 females and 10 males) aged 17-70 years (mean 34±17 years). The mean follow- up was 33±13 months (range 8 to 53 months). Two bone-blocks failed resulting in 94.7% survival rate. Bone gain in horizontal (4-6 mm, mean 5 ± 0.5 mm) dimension exceeded bone gain in vertical dimension (0-3 mm, mean 2 ± 0.5 mm). One out of the immediately loaded implants (98% survival rate) failed two months after insertion following automobile accident.

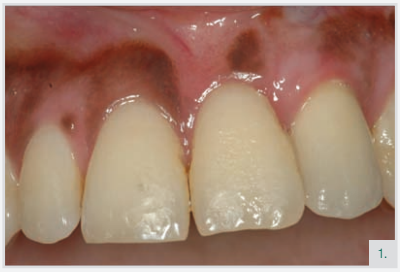
After 3 months of waiting, the implant was reinserted and successfully osseointegrated. All patients received a fixed implant-supported prosthesis. No further implants have been lost in function.

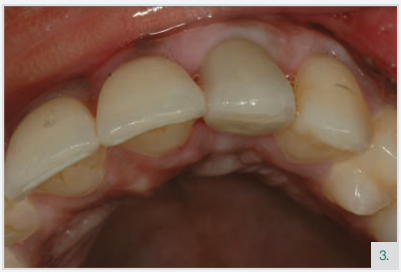
Histological evaluation demonstrated newly formed bone containing viable osteocytes merged with residual grafted bone characterized by empty lacunae devoid of osteocytes.

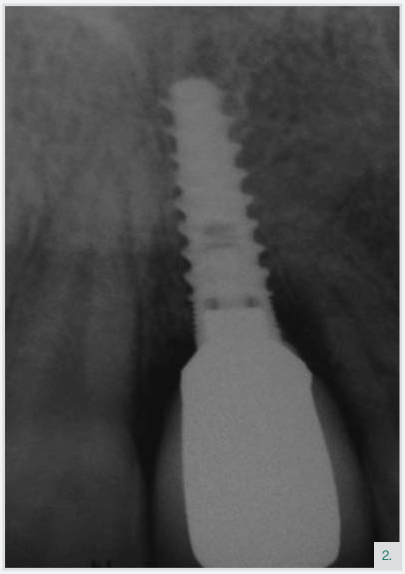
Conclusions

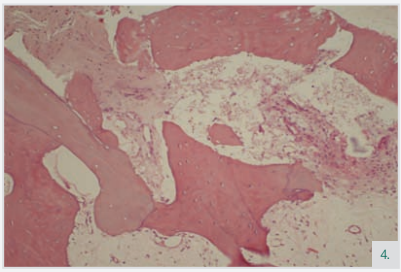
Cancellous block-allografts appear to hold promises as a grafting material for the atrophic anterior maxilla.

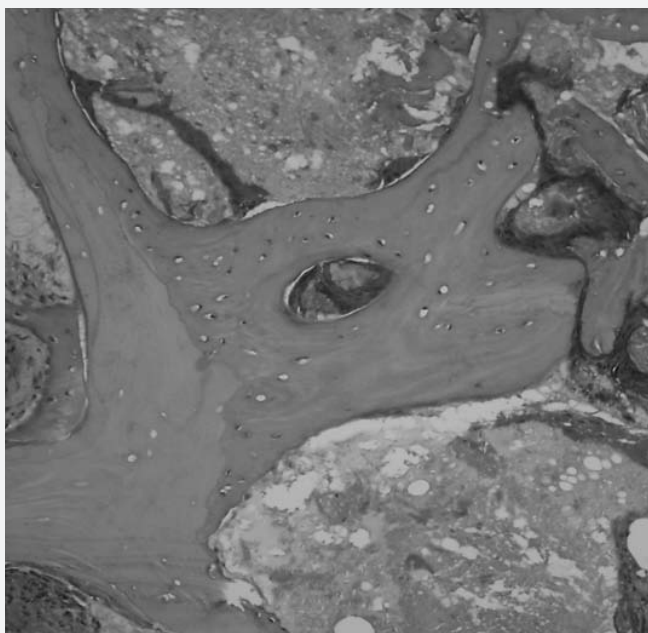
Case 2.


1.


3.


2.


4.



2

Cancellous block-allograft for sinus floor augmentation with simultaneous implant placement in the atrophic maxilla.

*A poster presented at the EAO Meeting, Warsaw 2008.

Cancellous block-allograft for sinus floor augmentation with simultaneous implant placement in the atrophic maxilla.

G. Chaushu, O. Mardinger, S. Calderon, O. Moses, J. Nissan*

Introduction

Surgical procedures for augmenting the maxillary sinus have evolved during the last decade, in order to give adequate solutions in cases where insufficient bone volume rendered implant placement impossibl (Wallace & Froum 2003; Del Fabbro et al. 2004). Simultaneous placement of dental implants during sinus augmentation was advocated in cases where a minimal amount of 4-5mm of alveolar bone existing coronally to the sinus floor (Smiler et al. 1992; Tatum et al. 1993; Hurzeler et al. 1996). Today, it is suggested that there is no specific bone height limit for a simultaneous procedure. A crucial demand for osseointegration of dental implants (Rangert et al. 2006) is primary implant stability immediately after installation during sinus lift procedures.

Objective

To assess the survival rate of dental implants placed simultaneously during sinus augmentation and stabilized by the use of cancellous freeze-dried block allograft in cases with posterior atrophic maxillary ridge height of less or equal to 4 mm.

Materials and methods

28 consecutive patients (13 females and 15 males) aged between 25 and 65 years (mean 54±9 years) were referred for implant-supported reconstruction of the posterior atrophic maxillae. Vertical residual ridge height ranging from 1 to 4 mm (mean 2.7 mm) and alveolar ridge thickness ranging from 5 to 8 mm (mean 6.3mm) were an inclusive criteria for grafting the sinus floor with cancellous block graft and a simultaneous implant placement. 72 rough surface titanium implants were placed (35 – Seven, 4.2 in diameter 13 mm in length, MIS Implant Technologies Ltd, Shlomi, Israel; 29 – Osseotite®, 4 mm in diameter 13 mm in length, 3i/Implant Innovations, Biomet®, Palm Beach Gardens, Florida, USA; 8 – 3.7 mm in diameter 13 mm in length, Tapered Screw-Vent, Zimmer Dental, Carlsbad, CA USA). Bone biopsies were taken after 9 months during implant exposure. The implants were restored with fixed partial metalo-ceramic restorations.

Results

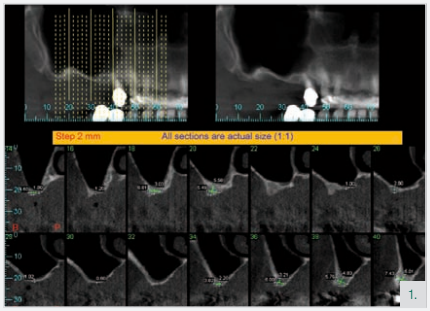
All the procedures were performed successfully. 2-4 implants were placed in each patient (total 72). None of the cases presented any difficulty in achieving initial stabilization. 68 implants were clinically osseointegrated yielding 94.4% success. Four implants failed at implant exposure. After 3 months of waiting, the implants were reinserted and successfully osseointegrated. Relatively small membrane tears (5-10 mm) were observed in 21.4% of the sinuses. There were no additional clinically evident complications of the sinuses. 68 implants were clinically osseointegrated yielding 94.4%. The mean follow-up was 27 months (range 11 to 46 months). Histological evaluation demonstrated newly formed bone containing viable osteocytes merged with residual grafted bone, characterized by empty lacunae devoid of osteocytes.

Conclusions

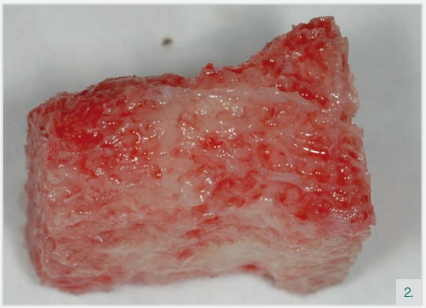
Cancellous block allograft appears to possess a potential as a grafting material for sinus floor augmentations with simultaneous implant placement. Its main advantage is ability to provide initial stability for both implants and grafting material, allowing simultaneous implant placement even in cases of membrane perforation.

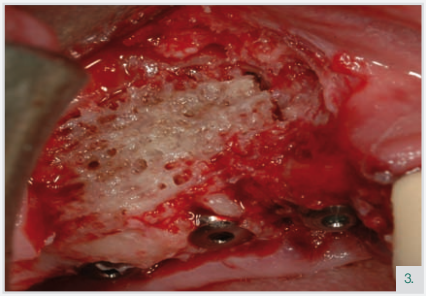
* School of Dental Medicine, Tel Aviv University, Israel

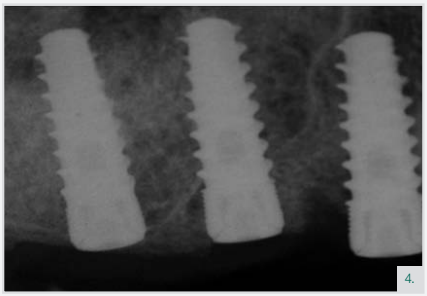
Case 1.



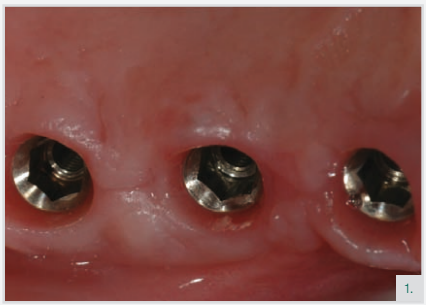
1.

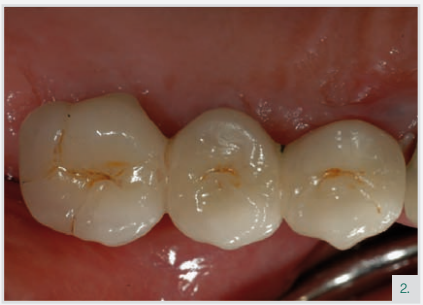

2.

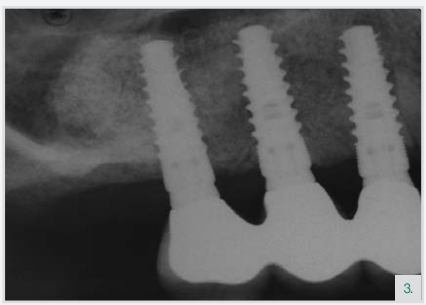

3.

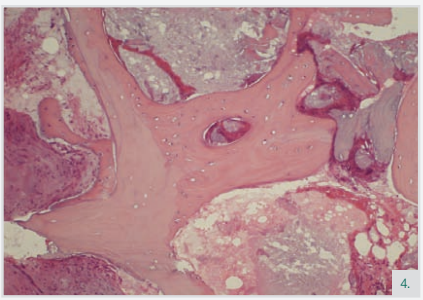

4.

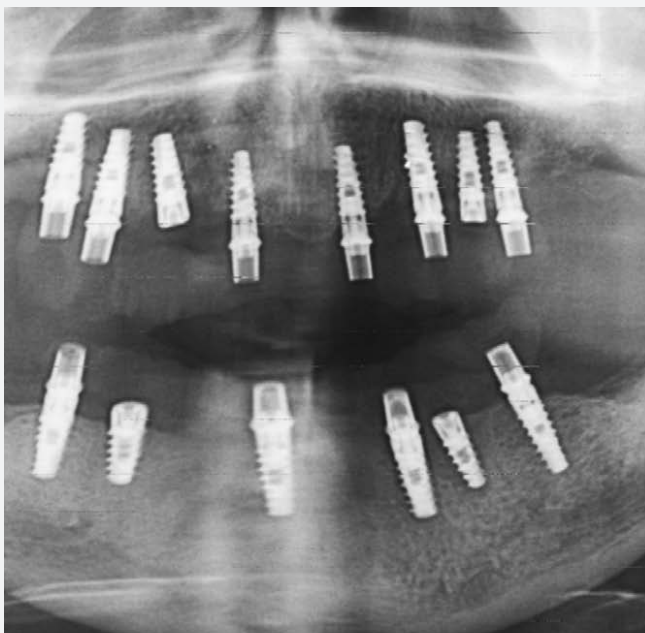
Case 2.


1.


2.


3.


4.



3

Immediate loading and diabetes. 24 months clinical study.

*A poster presented at the EAO Meeting, Warsaw 2008.

Immediate loading and diabetes: 24 months clinical study.

Di Alberti L, Camerino M, Perfetti G, Dolci M, Trisi P*

Abstract

Because the life expectansy of individuals continues to increase, implantologists providing dental implants treatment can expect to see an increasing number of patients with several sistemic iseases such as diabetes mellitus.

Multiple implant supported crowns in the recent past has become the treattment of choice for multiple tooth replacement, even in patients with type 2 diabetes, although these patients have to accept several surgical and prosthetic intervention.

Osseointegrated implants have been found to result in a high longterm success rate. Several studies have reported immediate loading of implant and demonstrated predictable results for this treatment approach. Most used implant systems have documented longterm survival/success rates of crowns on implants that compete favorably with the traditional FPD.

The aim of this clinical study was to demonstrate the effectiveness of immediate loading procedures on type 2 diabetes patients. 10 patients with partial dentures and mobility grade 3 remaining teeth have been enrolled in the study.

60 implants have been positioned in the maxilla and the provisional crowns have been screwed to the implants and loaded at the surgical time. Clinical controls have been performed every 15 days for 12 weeks, radiological controls every 4 weeks for 12 weeks and Ostell measurements have been done time 0, 12 weeks and 6 months. An overall success of 100% of all implants was shown.

Introduction

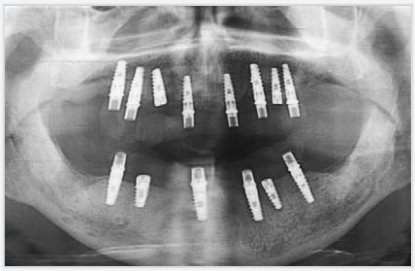
Diabetes Mellitus is a metabolic disorder characterized by anincrease in plasma glucose levels. This hyperglycaemia is the result of a defect in insulin secretion, insulin action, or both. It is one of the main causes of morbidity and mortality in modern society and has become an alarming public health problem.

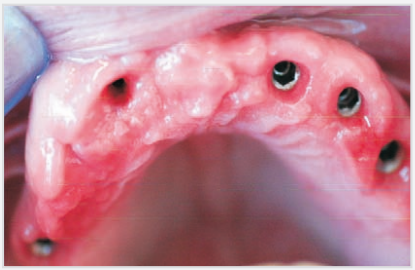
Chronic hyperglycaemia affects several tissues and organs, produces an inflammatory effect and, in vitro, has been shown to be a stimulus for bone resorption. Bone loss in diabetes does not seem to depend as much on an increase in osteoclastogenesis as in the reduction in bone formation.

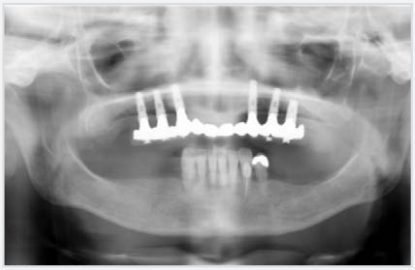
It is known that hyperglycaemia inhibits osteoblastic differentiation and alters the response of the parathyroid hormone that

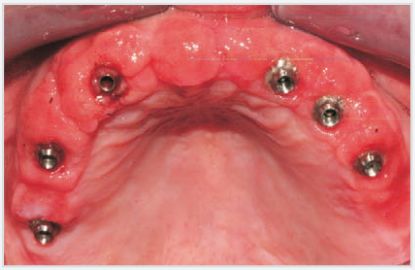
*Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

Case1.









regulates the metabolism of phosphorus and calcium, produces a negative effect on the bone matrix and its components and also affects adherence, growth and accumulation of extracellular matrix.

Mineral homeostasis, production of osteoid and, in short, bone formation, has been shown to be clearly diminished in various experimental models of diabetes.

Periodontal diseases are frequently present in patients affected by diabetes, and are considered to be a further complication of this disease. In view of the articles published, there is a higher probability that the implants will integrate in areas predominated by cortical bone. Nonetheless, further studies are necessary in humans to determine the biological factors affecting osseointegration in diabetic patients.

The present article will study the clinical and radiological implications of diabetes for the prognosis of immediately loaded full arch dental implants in a study period including 12 months of follow-up.

Materials and methods

The study was performed in two clinical centers by two investigators who followed the same clinical protocol for immediate occlusal loading of implants.

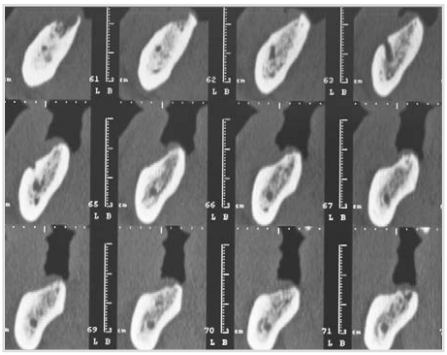
Surgical procedures

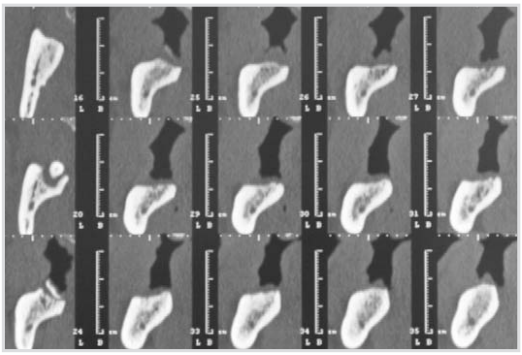
All patients received SLA screw-shaped Seven and Mistral implants (MIS, Schlomi, Israel). All clinicians followed the implant manufacturer's instructions for implant site preparation and implant insertion procedure. The initial primary stability was assessed by setting the insertion torque of the surgical unit and recorded according to the following classification: 'tight' when torque was 32Ncm, 'firm' between 25 and 32Ncm or 'loose' when 25Ncm .

Prosthetic procedures

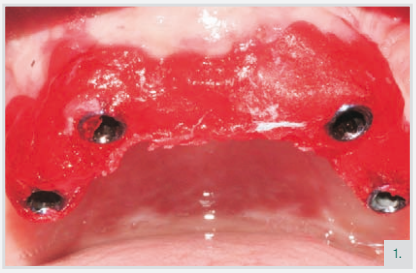
The treatment objective involved delivery of the provisional prosthesis within 4h of implant placement, by utilizing the prosthetic

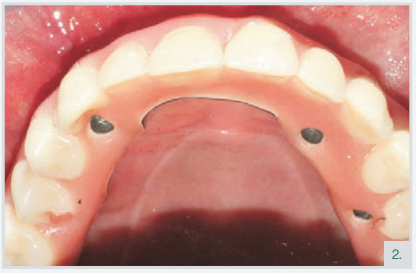
CT Scan.

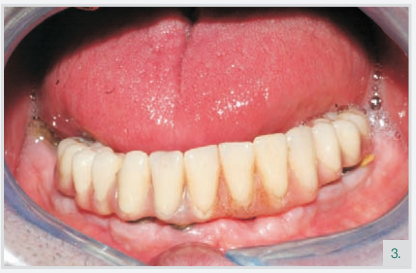


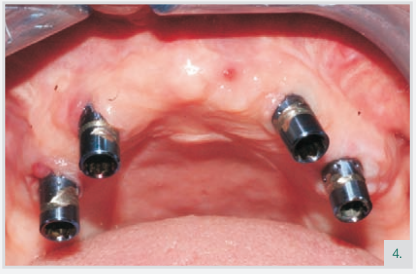


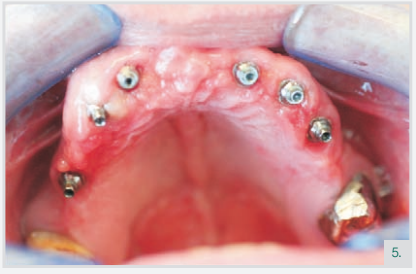
Case 2.

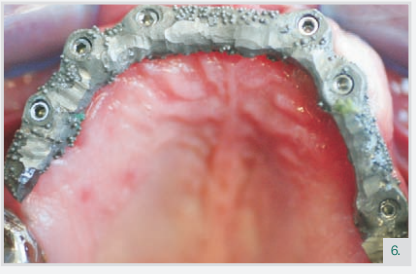

1.


2.


3.


4.


5.


6.

procedure that best suited the clinical case. A metal reinforced acrylic provisional bridge was relined over provisional cylinders and immediately screwed onto the abutments. The occlusion was carefully checked.

Follow-up procedures

The patients were on a strict recall program during the first 6 months: every week during the first month, every two weeks between the first and the third month. Patients were followed there after at 6, 9 and 12 months postloading. Orthopantograms and periapical radiographs were obtained for image analysis at implant insertion. Periapical radiographs were also performed subsequently, after 3, 6 and 12 months of occlusal loading.

Results

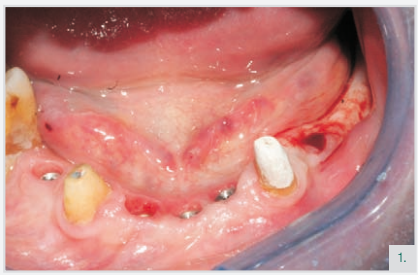
A total of 148 implants were inserted. One hundred twelve implants (75,68%) were inserted into maxillary anterior and posterior areas that scored normal and soft bone, utilizing a torque between 35 and 50Ncm (firm).

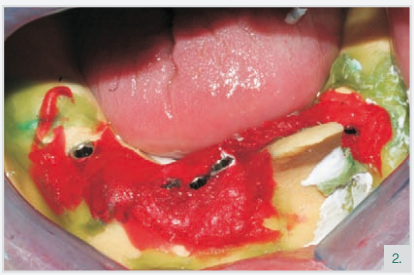
Thirty six implants (24,32%) were placed in the interforaminal and posterior area of the mandible that scored dense or normal bone quality, utilizing an insertion torque >32Ncm (tight). No deviations from the protocol were reported. No subjective complaints were reported throughout the follow-up period. All the periapical radiographs of the inserted implants were evaluated for marginal bone change and densitometry. Assessment of radiographic change in bone level over time showed no statistically significant differences in marginal bone loss between the mesial and distal sides at each time frame. None of the patients dropped out from the study. The failed implant was removed without compromising the final prosthetic design. Other than the implant that failed to integrate, no other complication arose throughout the observation period. All implants, except for the one failure, were clinically stable and met the success criteria.

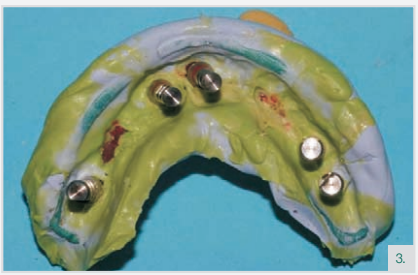
Conclusions

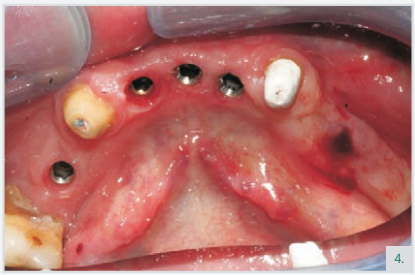
Results from the present study shows promising results on the immediate loading of single implants for the replacement of missing teeth. Promising results, are also shown advocating the compression of the papilla after three months of implant placement for the maintainance of the bone and papilla height.

Case 3.


1.


2.


3.


4.


5.

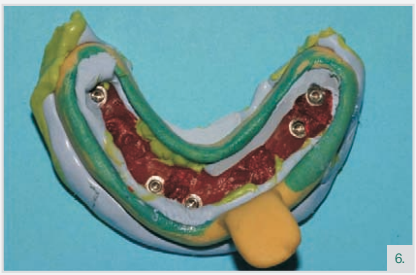
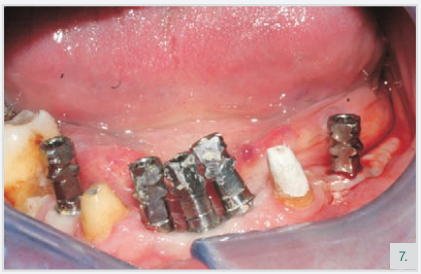
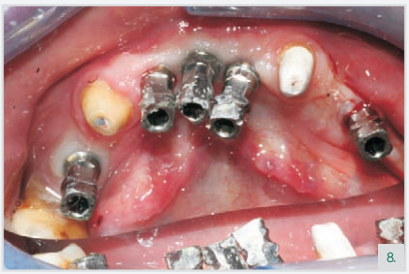
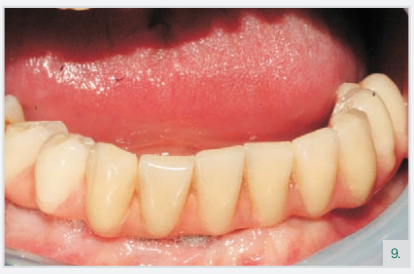

6.

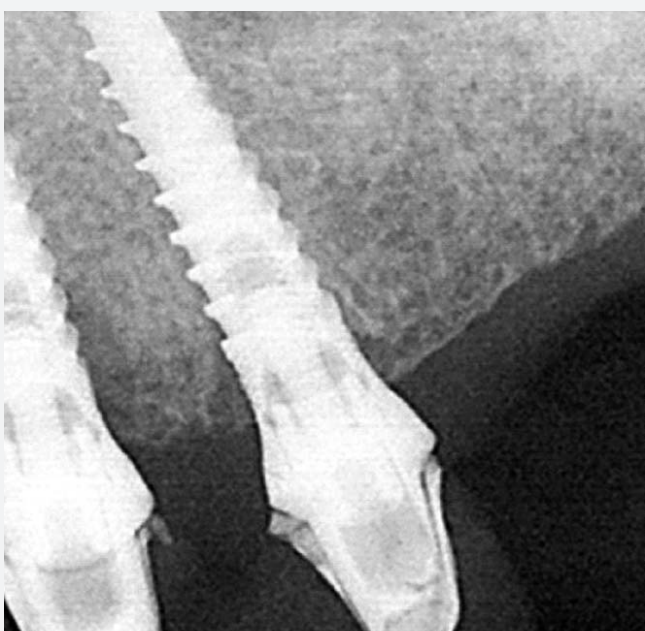
Table 1. Life table analysis of 148 immediately loaded implants

Interval Time (Months)	N° of Patients	N° of Implants	Failed Implants	Interval Survival Rate(%)	Comulative Survival Rate(%)
0	20	148	0	100	100
2	20	147	1	99.32	99.32
4	20	147	0	100	99.32
6	20	147	0	100	99.32
8	20	147	0	100	99.32
10	20	147	0	100	99.32
12	20	147	0	100	99.32
18	20	147	0	100	99.32
24	20	147	0	100	99.32


7.


8.


9.



4

Immediate full arch occlusal loading with Seven and Mistral implants.

*A poster presented at the EAO Meeting, Warsaw 2008.

Immediate full arch occlusal loading with Seven and Mistral implants.

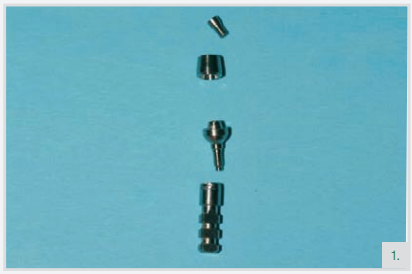
Di Alberti L, Donnini F, Camerino M, Calderini M,
Rossi G, Perfetti G, Dolci M, Trisi P*

Abstract

Prosthetic rehabilitation with implant-supported prostheses in the atrophic edentulous maxilla often requires a bone augmentation procedure to enable implant placement and integration. This paper reports the preliminary data from a clinical study of immediately loaded, full-arch, screw-retained prosthesis with distal extensions (hybrid prosthesis) supported by Mistral and Seven implants placed in the edentulous maxilla. Five patients who received 60 implants were enrolled in this study. All patients received all implants immediately loaded and the metal framework temporary prosthesis within 4 hours of surgery, and the hybrid prosthesis, made of a titanium framework and acrylic resin teeth, was placed after 3 months with no additional surgery. Marginal bone loss was monitored via periapical radiographs by a computerized technique.

* Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

Case1.


1.

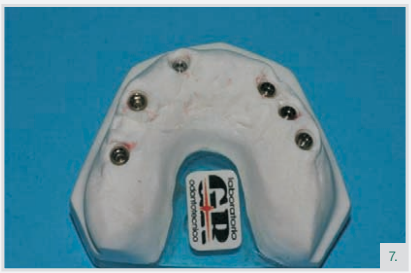

2.


3.

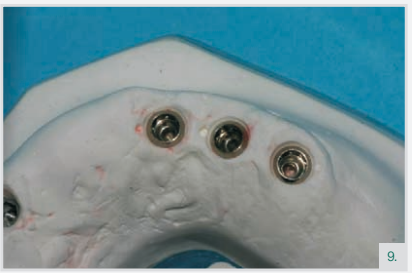

4.


5.


6.


7.


8.


9.

Results

One failure (out of the 60 immediately loaded implants) occurred after 3 weeks of function because of infection. A cumulative success rate of 98.9% was achieved for up to 18 months of follow-up, while the prosthetic cumulative success rate for the same period was 100%. RFA measurements of Seven and Mistral implants showed an increased RFA value with time, indicating an increased stability. Marginal bone loss at the immediately loaded implants was within the generally accepted conventional limits for standard delayed loading protocols.

Discussion

This technique can reduce surgical treatment time but should be applied with caution.

Conclusion

The preliminary results of this study suggest that rehabilitation of the edentulous maxilla by an immediately loaded prosthesis supported by 6 implants may represent a viable alternative treatment to the classical delayed loading protocols.

Introduction

Immediate loading of oral implants has been defined as a situation where the superstructure is attached to the implants no later than 72h after surgery (Aparicio et al. 2003; Cochran et al. 2004). The definition of immediate loading also includes occlusion with the teeth of the opposite jaw. Under these conditions, successful immediate loading of screw-type dental implants has been reported as early as 1979 (Ledermann 1979).

The question of reduction of micromovements has not been addressed in controlled studies dealing with immediate loading of oral implants. Passive fit of provisional prostheses has been mentioned as an important factor in the osseointegration of immediately loaded implants. A prosthesis that is ill-fitting may become loose, resulting in increased stress on the implants, which can lead to excessive micromotion and loss of an implant (Jaffin et al. 2004).

In this context, it has been hypothesized that screw-retained passively fitting restorations may be superior to cement-retained ones with respect to this problem, because they are less likely to loosen.

The ultimate goal of an immediate loading protocol is to reduce the number of surgical interventions and shorten the time frame between surgery and prosthetic delivery, all without sacrificing implant success rates.

Materials and methods

The study was performed in two clinical centers by two investigators who followed the same clinical protocol for immediate occlusal loading of implants placed in the edentulous mandible or maxilla.

20 patients were enrolled in the study. Of these patients 10 maxillas and 10 mandibles were treated with 6 implants and 5 implants respectively for a total of 110 implants. All patients were edentolous on the maxilla and/or the mandible at the time of surgery. All patients were treated with Seven and/or Mistral implants (MIS, Israel) and a screwed resin prosthesic appliance as a provisional was fixed at the time of surgery.

Surgical procedures

All patients received SLA screw-shaped Seven and-or Mistral implants (MIS, Israel). All clinicians followed the implant manufacturer's instructions for implant site preparation and implant insertion procedures.

Prosthetic procedures

The treatment objective involved delivery of the provisional prosthesis within 4h of implant placement, by utilizing standard abutments (MIS, Israel) and the prosthetic procedure that best suited the clinical case.

Results

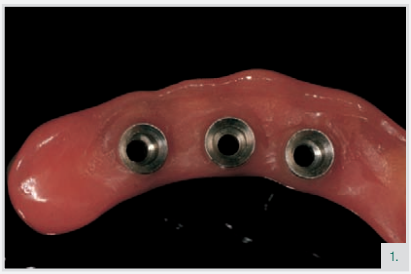
One implant was lost out of the 110 inserted. The implant showed extensive marginal bone resorption and signs of peri-implantitis. The patient had a history of bruxism/ smoking and periodontitis. The implant lost was located distally (ie. the last implant placed) in one of the mandibles. No patients enrolled in the study dropped out during the study period and all patient showed great satisfaction for the effectiveness of the treatment.

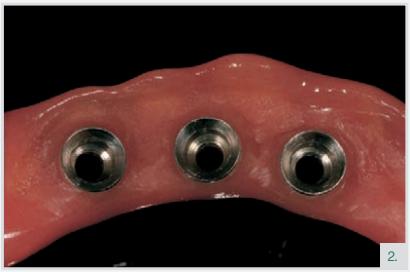
The RFA registrations showed higher values for mesial-distal measurements than for buccal-palatal ones; 65.3 ISQ (SD 6) vs. 55.8 ISQ (SD 6.9) for all implants. Radiographic findings the marginal bone level was situated more coronally for the study implants at all points in time in comparison to the literature. After 6 months the marginal bone level was on average 0.7mm (SD 1.1) below the implant shoulder for the mandibular implants and 1.7mm (SD 1.2) for the maxillary implants. On average 0.8mm (SD 1.2) of bone loss was observed for the mandibular implants in comparison to a loss of 1.8mm (SD 1) for the control implants during the 12 month period ($P<0.05$) More implants in the maxillary group showed bone loss during these 12 months. A combination of marginal bone loss and soft tissue health problems were found for two implants inone maxillary patient.

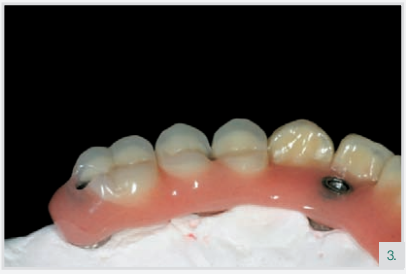
Conclusions

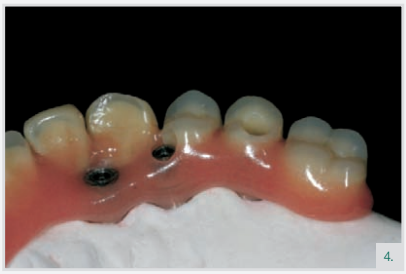
Results from the present study shows promising results on the immediate loading of Seven and Mistral implants for the replacement of missing teeth. Immediate loading of SLA surface Seven and Mistral implants for support of full-arch prostheses represents a viable therapy for the totally edentulous maxilla and mandible.

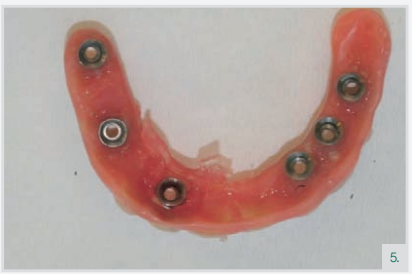
Case 2.

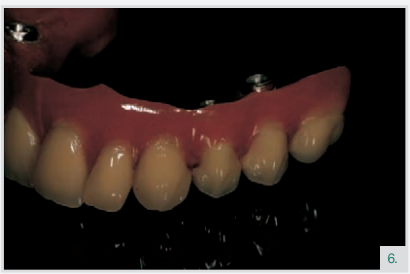

1.

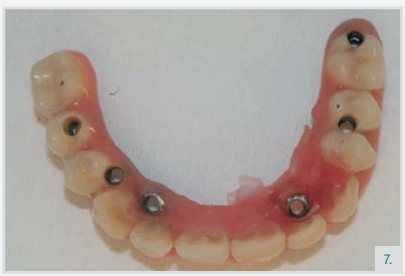

2.

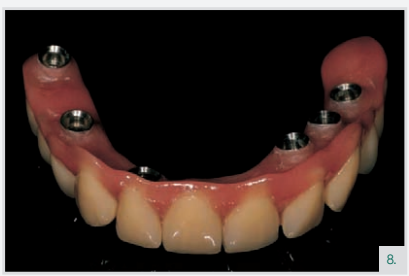

3.

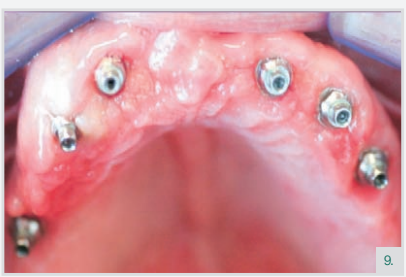

4.

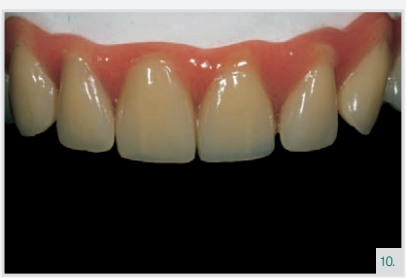

5.

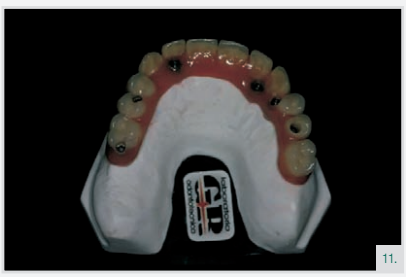

6.

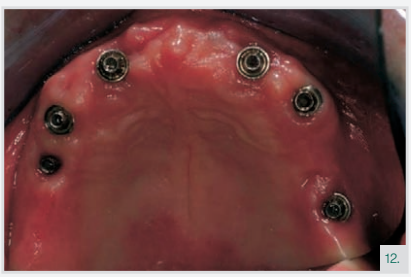

7.


8.

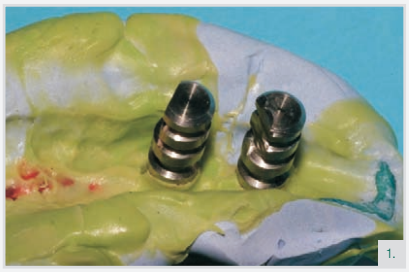

9.

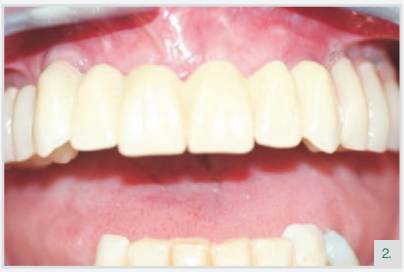

10.

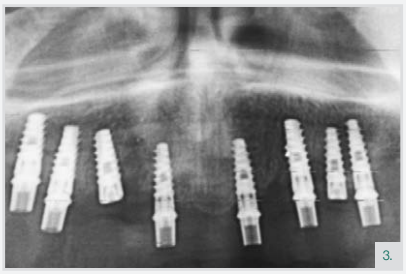

11.

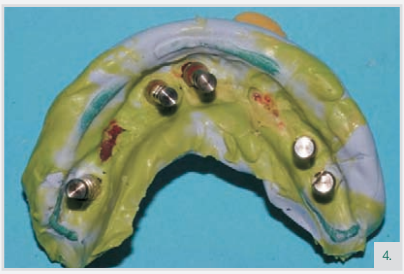

12.

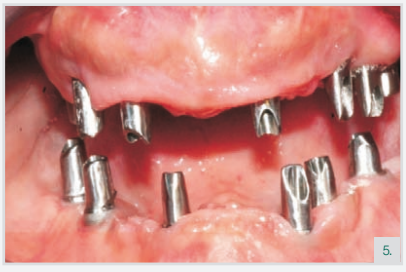
Case3.

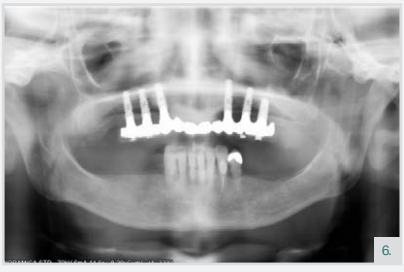

1.


2.

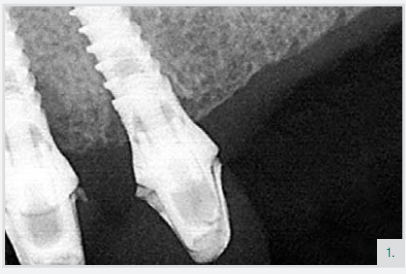

3.

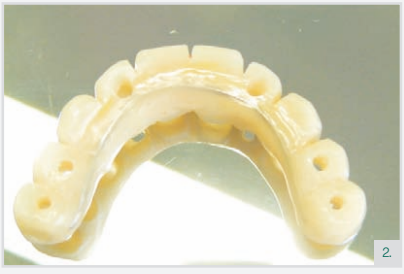

4.

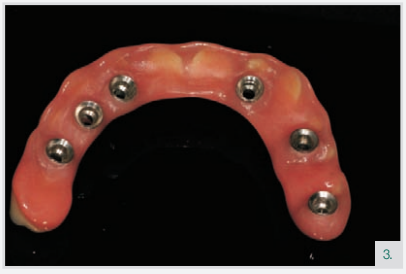

5.

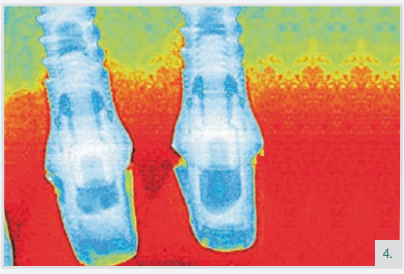

6.

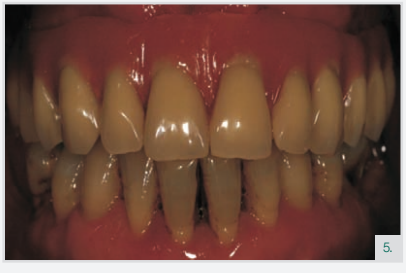
Case4.

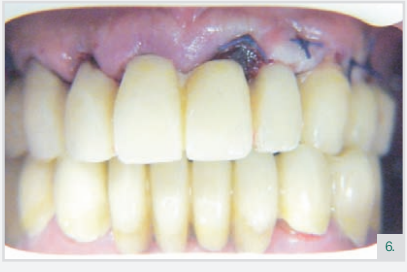

1.

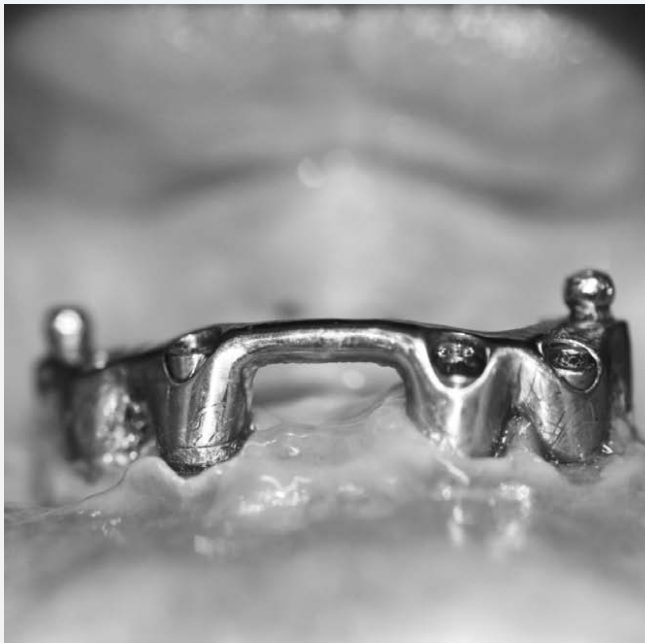

2.


3.


4.


5.


6.



5

Implant wound and periodontal pocket repair with Listerine® formulation.

*A poster presented at the EAO Meeting, Warsaw 2008.

Implant wound and periodontal pocket repair with Listerine® formulation.

Di Alberti L, Donnini F, Camerino M, Di Alberti C, Rossi G, Perfetti G, Dolci M, Trisi P*

Abstract

The aim of this study was to evaluate the clinical results of local delivery of adjunctive antimicrobials in the treatment and management of patients with periodontitis and perinplantitis.

The study population included 20 patients, with chronic adult periodontitis or perimplantitits. Ten out of 20 received local treatment with listerine in gel formulation injected directly into the periodontal pocket; 10 received local treatment with a chlorhexidine-based gel (1%) in situ. In the 10 patients treated with Listerine we observed a reduction in attachment loss and a reduction in probing depth of 1.4 mm; in the 10 chlorhexidine treated patients we observed a reduction in attachment loss and a reduction in probing depth of 0.9 mm.

Our results suggest that direct delivery of antimicrobial agents to the infection site may be a useful adjunctive to conventional periodontal treatment. Intrapocket chlorhexidine-based gel (1%) is less effective than injected Listerine in controlling infection.

Introduction

Antimicrobial resistance in bacteria raises serious concern for the continued efficacy of antimicrobial agents in medicine, agriculture, and industry. The antimicrobial properties of essential oils have been known for many years and have been used against a wide variety of bacteria and fungi (14), including oral pathogen. Essential oils have been formulated into several over-the counter oral hygiene products and the efficacy of the essential oil-containing mouthrinse, Listerine has been reported since the 1890s. Chlorhexidine is regarded as the 'gold standard' antiplaque treatment and is particularly effective against gingivitis and widely used as an adjunct treatment for periodontitis.

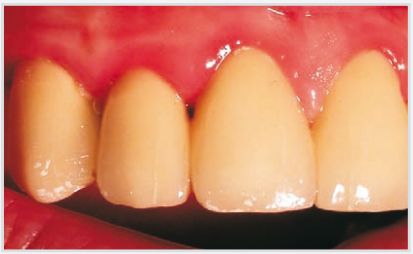
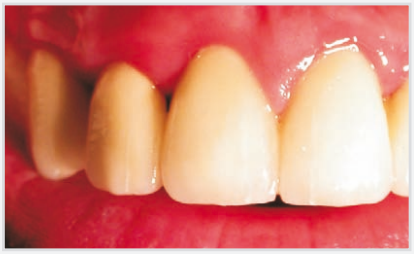
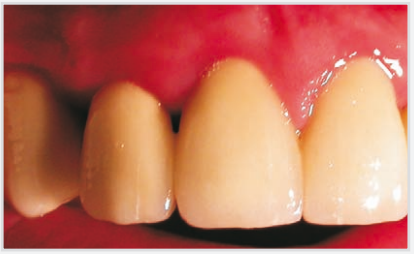
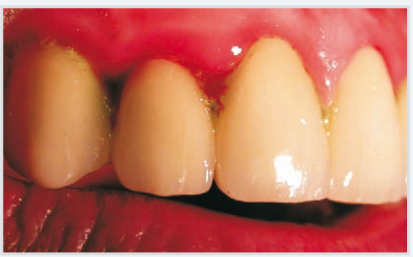
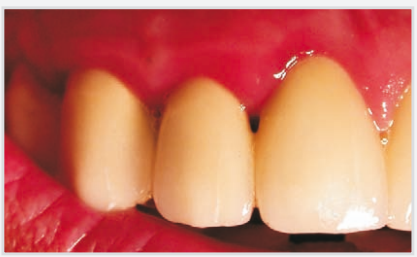
However, there are sideeffects to chlorhexidine treatment such as an objectionable taste, tooth discoloration, and desquamation and soreness of the oral mucosa. Its activity is pH dependent and is greatly reduced in the presence of organic matter.
The aim of this study was to evaluate the clinical results of local delivery of adjunctive antimicrobials in the treatment and management of patients with periodontitis and perinplantitis.

Materials and methods

The study was performed in two clinical centers by two investigators who followed the same clinical protocol. Twenty subjects were recruited for the study. Patients were recruited from referrals by the private practices of general dentists and oral and maxillofacial surgeons. Subjects were excluded from the

*Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

Case 1

study if they were not medically healthy and/or were taking medication that could influence inflammatory response.

10 out of 20 received local treatment with listerine in gel formulation injected directly into the periodontal pocket; 10 received local treatment with a chlorhexidine-based gel (1%) in situ;

All patients received then same oral hygiene instruction by a an hygienist patients were followed for Examinations included assessments of plaque and gingivitis and probing (Days 0, 7, and 14), sampling of plaque and collection of gingival crevicular fluid (GCF) (Days 0, 7 and 14).

Results

The results (Tab. 3) indicate that Listerine group had very low levels of inflammation after the two weeks period. The Chlorexidine group showed an slight higher result for all clinical parameters.

During the experimental periods, it was observed that significantly less plaque formed and less gingivitis developed when the participants rinsed with the Listerine mouthwash than with Chlorexidine based products.

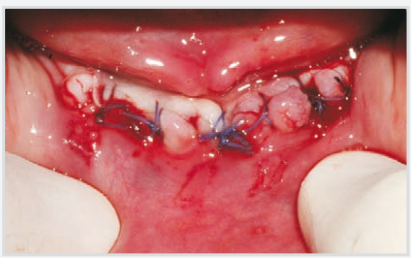
Based on these results, and on the fact that inflammation of gingival tissues around teeth and implants are similar in clinical manifestation and pathogen profile, it seems that a synergic use of Listerine mouthwash and gel lead to a decreased levels of inflammation.

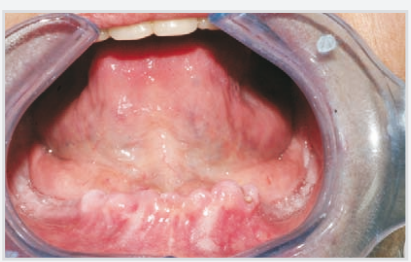
Conclusions

This study has demonstrated that when mouthrinses are used to supplement habitual mechanical oral hygiene, chlorhexidine remains the most powerful solution.

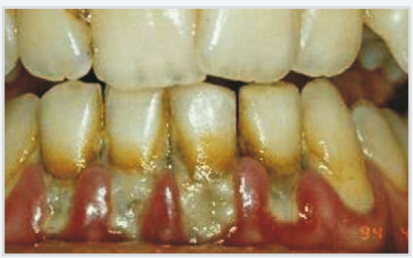
Furthermore, it was also shown that a combination of habitual self-performed and non-supervised oral hygiene with Listerine gel is more beneficial for plaque control, inflammation reduction and wound healing than the use of mechanical oral hygiene alone.

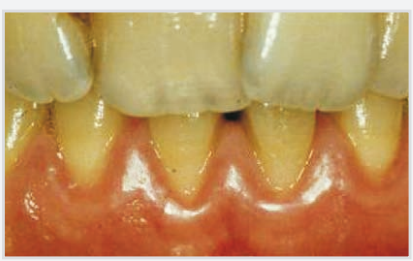
Case 2.



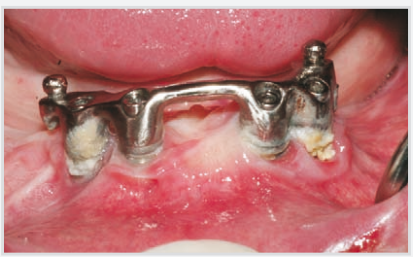


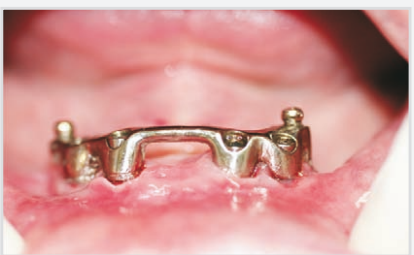
Case 3.

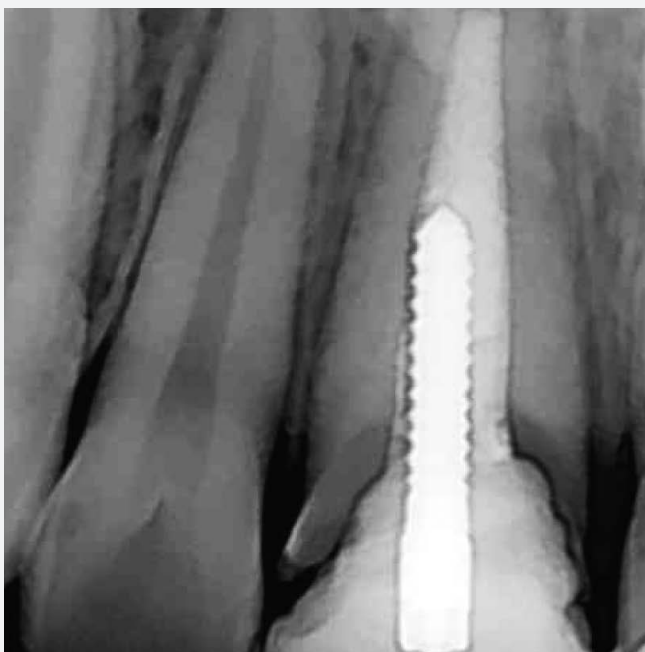




Case 4.







6

Immediate implant placement and bonymucosal papilla healing in aesthetic areas.

*A poster presented at the EAO Meeting, Warsaw 2008.

Immediate implant placement and bonymucosal papilla healing in aesthetic areas.

Di Alberti L, Camerino M, Perfetti G, Dolci M, Trisi P*

Abstract

The immediate restoration or loading of dental implants has been an intense area of clinical trial and research in the field of dental implantology over the last several years. The immediate placement of an implant, then, is not only possible but in some clinical situations advisable, with each case individually assessed and the time of placement determined by the clinician. In such cases, the immediate implant placement provides a considerable number of advantages over the traditionally established placement. Osseointegrated implants have been increasingly also used for aesthetic, predictable restorative treatment.

This study presents the 2-year postoperative results of patients treated with immediate, single, tapered implants (Seven®, MIS, Israel) in the maxillary incisor region and the simultaneous placement of screwed provisional implant-supported crowns. Implant stability was assessed clinically and by means of resonance frequency analysis (RFA) at surgery and after 3 months. Wound healing was evaluated after 1, 2, 6 and 12 weeks post-operatively. Of the total of 32 implants placed, no implants were lost, resulting in a 100% survival and success rate. All 32 implants were reevaluated and judged to have no signs of mobility, periimplant inflammation, or adverse reactions.

This pilot study has demonstrated that tapered implants yielded clinically after immediate implant placement into the extraction socket and when used in selected cases, this technique facilitated maintenance of the gingival architecture adjacent to immediate transalveolar implants.

Introduction

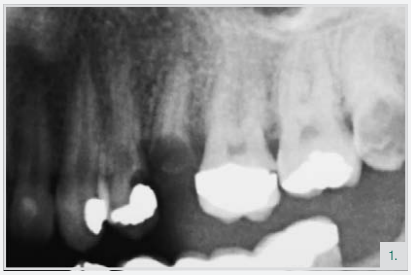
The high level of predictability in implant therapy have encouraged the re-evaluation of several aspects of the traditional Brånemark implant protocol (Adell et al. 1981; Szmukler-Moncler et al. 2000). Several authors have demonstrated successful immediate loading of edentulous mandibles by means of fixed superstructures (Salama et al. 1995; Schnitman et al. 1997; Tarnow et al. 1997; Randow et al. 1999) or bar-retained overdentures (Ledermann 1979, 1983; Babbush et al. 1986; Graber&Besimo 1991; Chiapasco et al. 1997) thereby preventing any movement or non-axial loading. Immediate loading of oral implants has been defined as a situation where the superstructure is attached to the implants no later than 72h after surgery (Aparicio et al. 2003; Cochran et al. 2004).

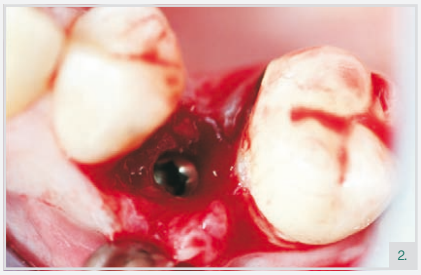
The definition of immediate loading also includes occlusion with the teeth of the opposite jaw. Under these conditions, successful immediate loading of screw-type dental implants has been reported as early as 1979 (Ledermann 1979). In the esthetic zone, a key challenge for the restorative dentist is to provide patients with a crown and periimplant mucosa that are in harmony with the adjacent teeth, thus restoring both function and esthetics.

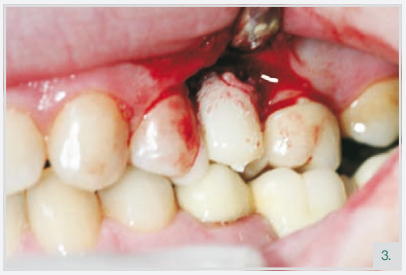
From a surgical perspective, the current

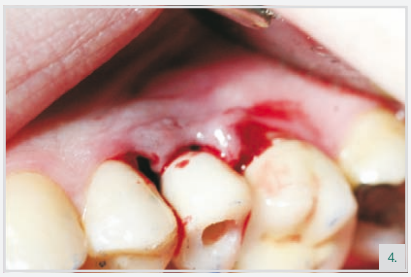
*Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

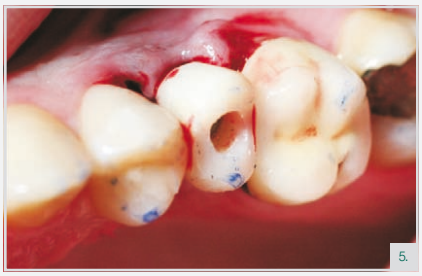
Case 1.

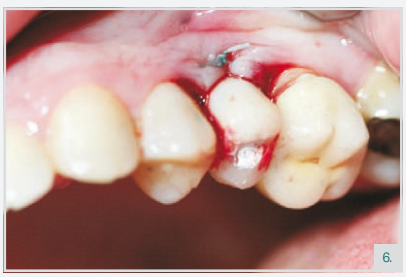

1.


2.


3.


4.


5.


6.

concept is to plan for implants to be placed in a position to optimize the emergence profile of the restoration, thereby achieving proper soft tissue form and symmetry (Belser et al. 1998). This 'restorative-driven' surgical concept is thought to be an important factor in achieving esthetic success. Several data confirm that implants placed into extraction sockets may be expected to integrate with a high degree of predictability (Mayfield 1999; Chen et al. 2004). The aim of this study is to confitm this data and introduce a new concept for the creation of papillae.

Materials and methods

In the course of our investigation, 32 patients were treated following animmediate loading protocol with Seven® implants (MIS, Israel). All patients were treated with single tooth implants and immediate functional loading of the provisional crown.

12 Seven® implants (MIS, Israel) were inserted in single post-extraction sites and the remaining 20 Seven® implants (MIS, Israel) were inserted in healthy bone. All implants were inserted with a final torque >40 Ncm. 13 implants were placed in male and 19 implants in female patients, the mean age of the patients being 45 years (minimum 16 years, maximum 71 years). The treatment course included permanent wear of an temporary crown for a minimum of 12 weeks.

Results

None of the patients dropped out from the study. Healing was, in general, uneventful with little pain and swelling for the patients. Complications were restricted to loosening of the provisional crowns or final restorations. The overall OH status evaluated after removal of the prostheses was judged to be good around 78% of the implants, fair around 20% and poor in the remaining 2%. The results from the examinations of the peri-implant mucosal status and probing around the implants placed in healed bone and extraction sockets did not reveal any infrabony pockets. The observed bone loss was similar to that reported using delayed loading protocols (Albrektsson et al. 1986). All implants were clinically stable and met the success criteria. The overall implant success rate was 100%.

Conclusions

Results from the present study shows promising results on the immediate loading of single implants for the replacement of missing teeth. Promising results, are also shown advocating the compression of the papilla after three months ofimplant placement for the maintainance of the bone and papilla height.

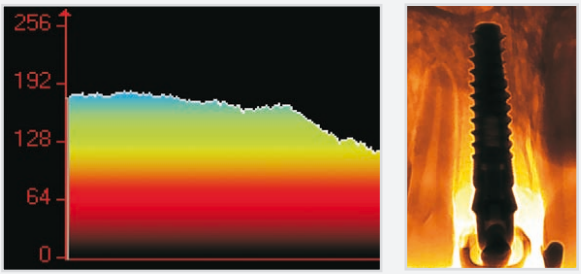


Fig 1. Seven® implant at 6 months with bone densitometry. Perfect preservation of mesial and distal bone peaks.

MES I	N-Seven	Total	Overall Survival Rate (%)
0	32	32	100
6	32	32	100
12	32	32	100
24	32	32	100

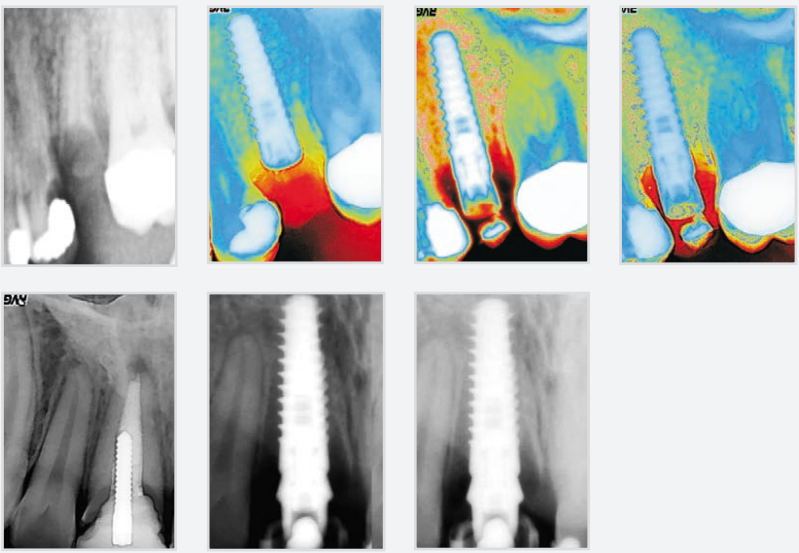


Fig 2. Fractured and decayed root of second upper premolar (25). Implant inserted at time 0, at 12 weeks and at 6 months.

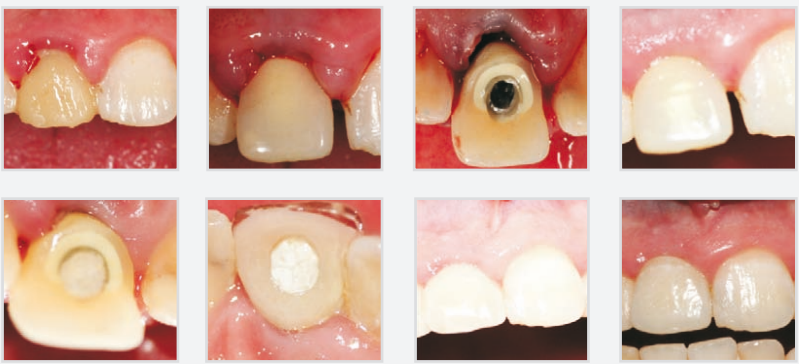
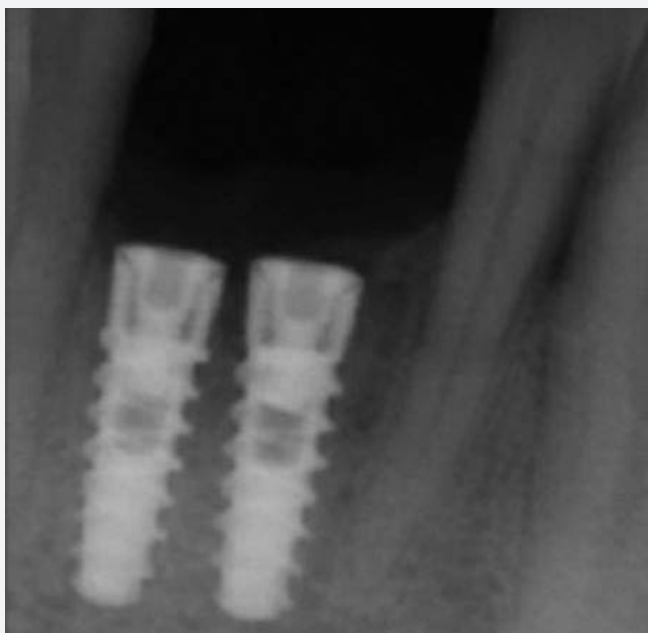


Fig 3. Clinical steps of the restoration procedure and aesthetic outcome of the full ceramic crown on zirconium abutment. (MIS, Israel). It is noted the presence of the edema of the papillae at stage 1 with composite restoration and the absence of inflammation at the end of the prosthetic implant supported restoration. Last picture below on the right shows a follow up control at 24 months.



7

Screw-retained implant-supported zirconia crowns. 12 months study.

*A poster presented at the EAO Meeting, Warsaw 2008.

Screw-retained implant-supported zirconia crowns. 12 months study.

Camerino M, Di Alberti L, Rossi G, Donnini F, Perfetti G, Dolci M, Trisi P*

Abstract

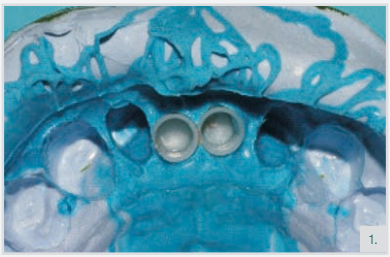
This study evaluated the clinical performance of screwed customized zirconia abutments. Additionally, the marginal fit between the selected implant components was measured and the clinical gingival response was monitored. Twenty patients were consecutively selected for a prospective study of 30 implant-supported restorations. Customized zirconia abutment complexes were prepared, then ceramic was performed directly. The abutments were screwed onto the implants and restored with all-ceramic crowns. Plaque and gingival indices were recorded monthly intervals over a 12-month period. All ceramic zirconia abutments offered sufficient stability to support implant supported single-tooth reconstructions in anterior and premolar regions. The soft and hard tissue reaction toward zirconia was favorable.

Introduction

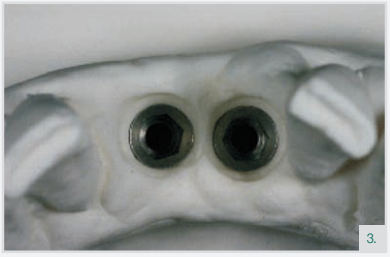
Over the past few years, rehabilitation of complete or partial edentulism with implant-supported or retained suprastructures has become a well-accepted treatment modality. The main goal for researchers and clinicians is to create restorations that are fully 'integrated' in the dentofacial complex, histologically, functionally and esthetically. In prosthodontics, the 'traditional' technique of using porcelain-fusedto metal (PFM) crowns to reconstruct lost tooth substance esthetically sufficed in most patient cases. As the esthetic demands of patients are increasing regarding tooth replacement, especially inthe anterior regions (Burgersdijk et al. 1991; Vallittu et al. 1996), any impairment in the esthetic outcome may be considered as a failure of the whole reconstruction. As crowns and fixed partial dentures fabricated out of PFM can negatively

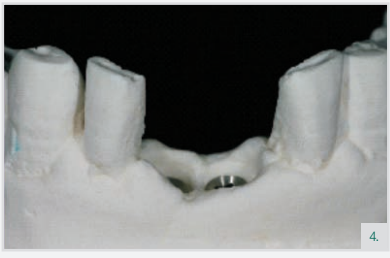
*Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

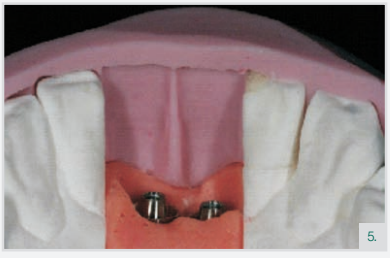
Case1.

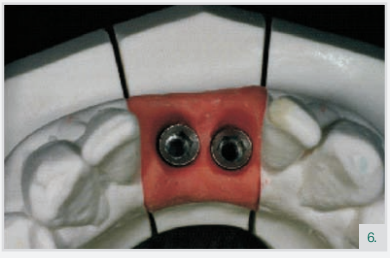

1.

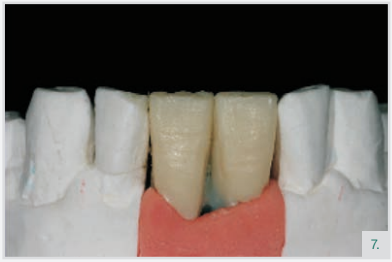

2.

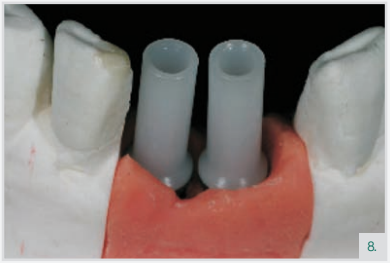

3.

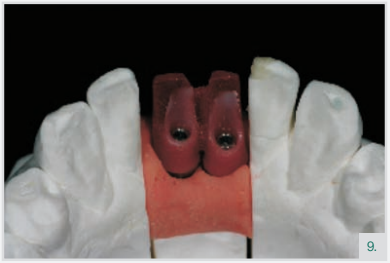

4.


5.


6.


7.


8.


9.

influence the clinical appearance of the surrounding soft tissues due to a shine through effect of the metal framework, the material of choice to obtain an uncompromisingly pleasing tooth reconstruction froman esthetic point of view is an all-ceramic crown. Improvements in the material stability of some ceramics has led to the application of allceramic systems for small fixed partial dentures, single crowns, inlays, onlays, and veneers (Andersson et al. 1998b; Fradeani 1998; Fuzzi & Rappelli 1999; Malament & Socransky 1999).

Materials and methods

The study was performed in two clinical centers by two investigators who followed the same clinical protocol for immediate occlusal loading of implants placed in the edentulous mandible or maxilla. 20 patients were enrolled in the study. Of these patients 10 maxillae and 10 mandibles were treated with 6 implants and 5 implants respectively for a total of 110 implants. All patients were edentolous on the maxilla and/or the mandible at the time of surgery. All patients were treated with Seven and/or Mistral implants (MIS, Israel) and a screwed resin prosthesic appliance as a provisional was fixed at the time of surgery.

Surgical procedures

All patients received SLA screw-shaped Seven and-or Mistral implants (MIS, Israel). All clinicians followed the implant manufacturer's instructions for implant site preparation and implant insertion procedures.

Prosthetic procedures

The treatment objective involved delivery of the provisional prosthesis within 4 h of implant placement, by utilizing standard abutments (MIS, Israel) and the prosthetic procedure that best suited the clinical case.

Results

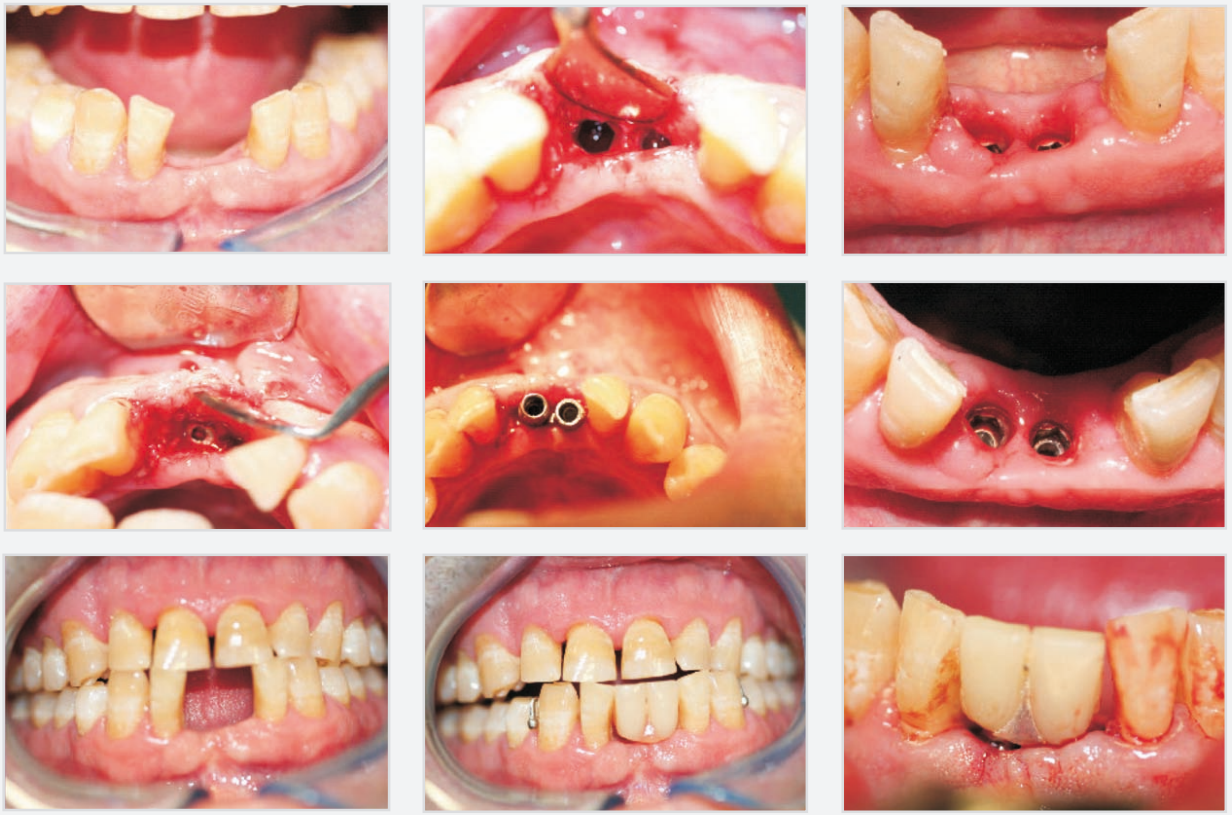
One implant was lost out of the 110 inserted. The implant showed extensive marginal bone resorption and signs of peri-implantitis. The patient had a history of bruxism/ smoking and periodontitis. The implant lost was located distally (ie. the last implant placed) in one of the mandibles. No patients enrolled in the study dropped out during the study period and all patient showed great satisfaction for the effectiveness of the treatment. The RFA registrations showed higher values for mesial-distal measurements than for buccal-palatal ones; 65.3 ISQ (SD 6) vs. 55.8 ISQ (SD 6.9) for all implants. Radiographic findings the marginal bone level was situated more coronally for the study implants at all points in time in comparison to the literature. After 6 months the marginal bone level was on average 0.7mm (SD 1.1) below the implant shoulder for the mandibular implants and 1.7mm (SD 1.2) for the maxillary implants. On average 0.8mm (SD 1.2) of bone loss was observed for the mandibular implants in comparison to a loss of 1.8mm (SD 1) for the control implants during the 12 month period ($P<0.05$) More implants in the maxillary group showed bone loss during these 12 months. A combination of marginal bone loss and soft tissue health problems were found for two implants in one maxillary patient.

Conclusions

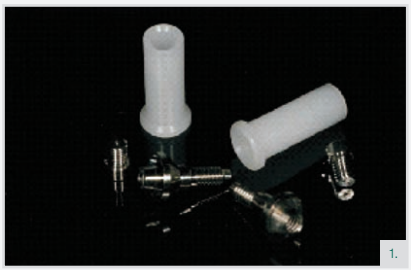
Results from the present study shows promising results on the immediate loading of Seven and Mistral implants for the replacement of missing teeth.

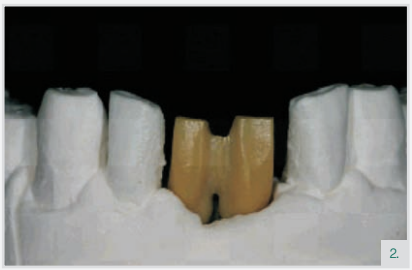
Immediate loading of SLA surface Seven and Mistral implants for support of full-arch prostheses represents a viable therapy for the totally edentulous maxilla and mandible.

Case 2.

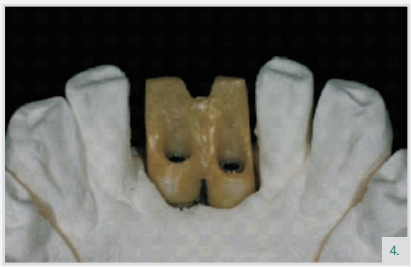


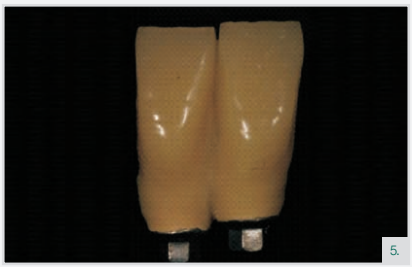
Case 3.

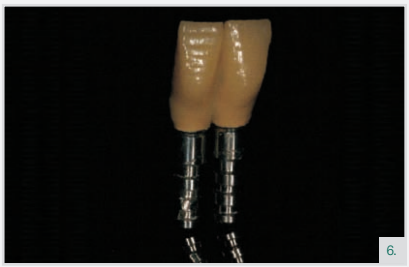

1.

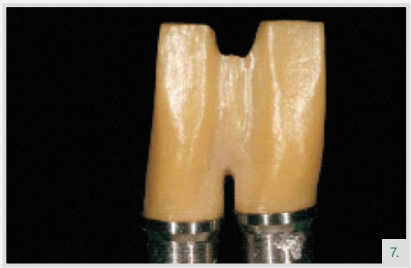

2.


3.

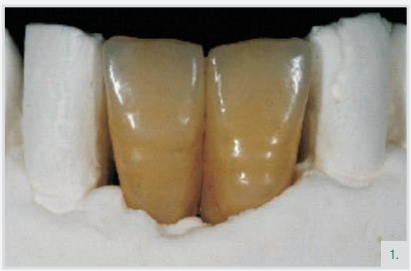

4.

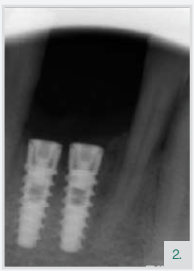

5.

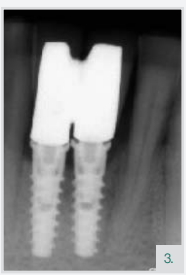

6.

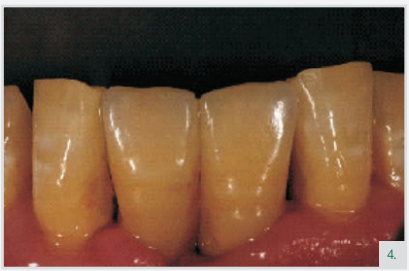

7.

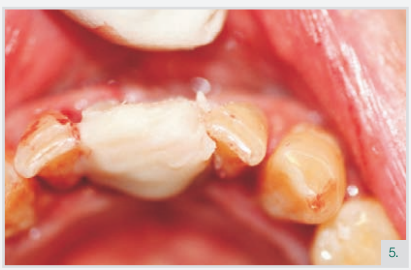
Case 4.

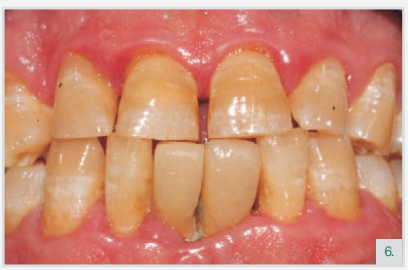

1.

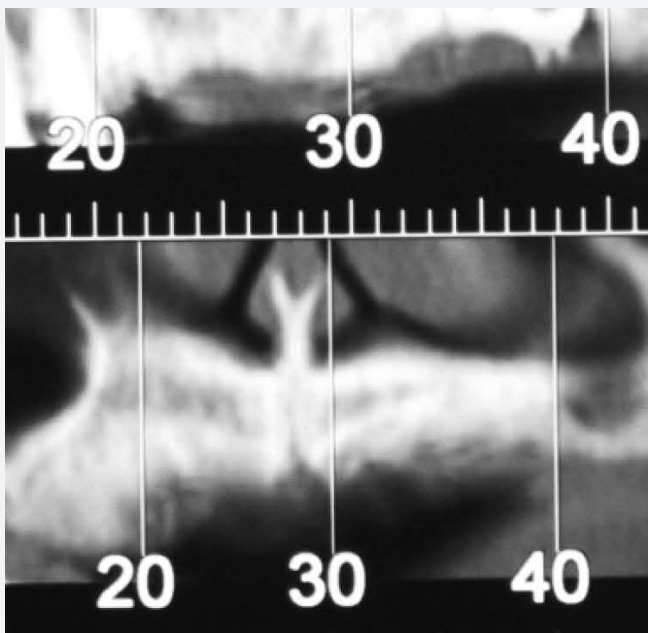

2.


3.


4.


5.


6.


20
30
40
20
30
40

8

Ridge widening and immediate implant placement. A simplified technique.

*A poster presented at the EAO Meeting, Warsaw 2008.

Ridge widening and immediate implant placement: A simplified technique.

Di Alberti L DDS, PhD, Camerino M, DDS, Donnini F RDH, Perfetti G MD, Dolci M MD, Trisi P DDS*

Abstract

Alveolar atrophy may present an anatomical limitation to the placement of endosseous implants. So narrow alveolar ridges remain a serious challenge for the successful placement of implants. This article reports a technique for widening the atrophic ridge by splitting the alveolar bone longitudinally using a novel bone expansion screw kit; treatment of ridges as thin as 2.5mm at the alveolar crest and simultaneous placement of dental implants.

A novel approach for ridge expansion without the use of osteotomes and surgical hammer has been compared with classical techniques. The new compression and expansor kit developed by MIS improved the treatment in split crest and soft bone compression. A simple bone expansion procedure had enable a better implantation and better implant primary stability. The expansion and compression kit has prevented traumatic osteotomy, increased bone density, increased implant primary stability and gave a perfect gradual control of bone expansion.

Ten patients have been divided in two groups of five. The study group has been treated with the novel expansor screws and the control group have been treated with classical technique. Results showed that the expansor screws gave better stability of the implants and better control of the expansion procedure for a more secure and atraumatic surgery.

The advantages of this technique for patients include less surgical trauma and reduced treatment time. Based on these findings, split bone with this widener screws are a promising alternative for alveolar ridge reconstruction in dental implantology.

Introduction

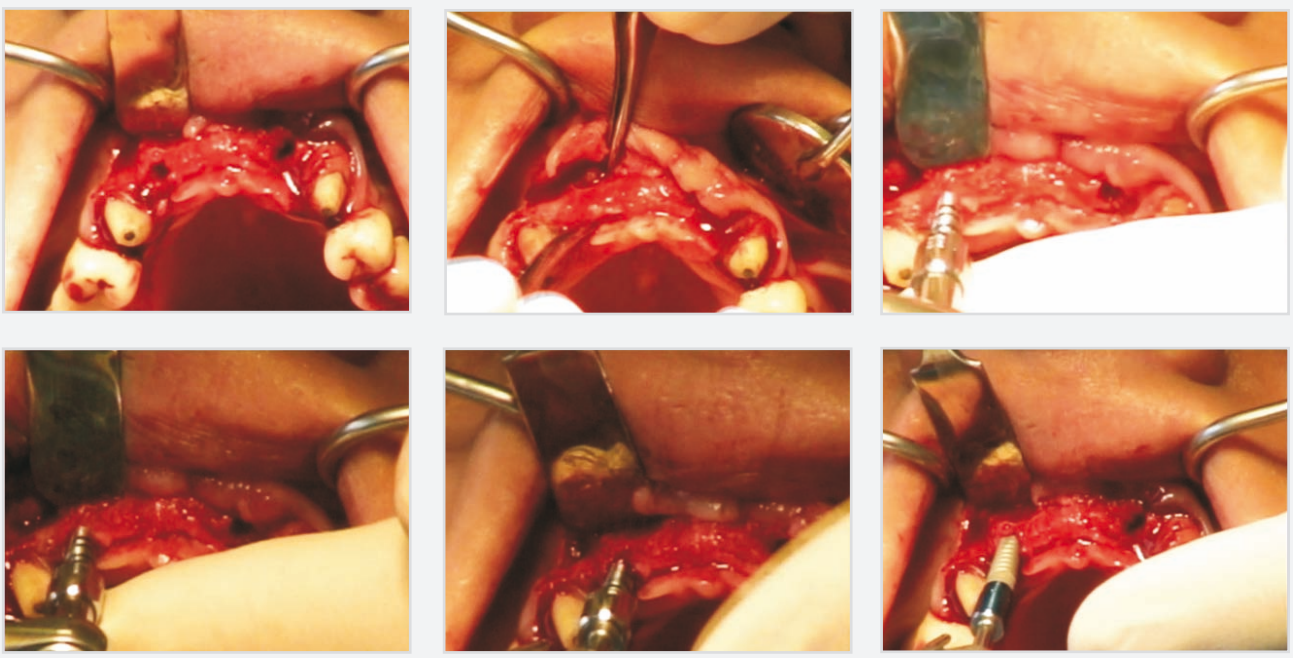
The edentulous alveolar process undergoes remodeling and resorption, resulting in characteristic contours classified by Cawood & Howell (1988). Alveolar atrophy of height and width or crestal defects with an insufficient amount of bone may limit the use of endosseous implants. The insufficient volume can be overcome by augmentation procedures with and without guided bone regeneration techniques.

Survival rates of implants placed into augmented sites with guided bone regeneration techniques varied between 79% and 100%, with the majority of studies indicating a success rate of more than 90% after at least 1 year of functional loading (Hammerle et al. 2002).

The alveolar ridge revealing a knife-edge morphology or non spacemaintaining defects,

*Department of Oral Sciences, Oral and Maxillofacial Unit - University of Chieti, Private Practitioners

Case 1.



usually requires a local alveolar ridge expansion procedure. In such situations the ridge may be expanded by splitting (Engelke et al. 1997) or spreading (Nentwig 1996; Renner et al. 1996) of the bone, resulting in a sufficient width for implant bed preparation.

Distraction osteogenesis (DO) is an alternative method for gaining bone volume before implant placement (Chin & Toth 1996). The technique is established for vertical alveolar bone transport to regenerate adequate height in alveolar crests of sufficient width (Block et al. 1998; Hidding et al. 2001). The purpose of this prospective clinical study was to determine whether horizontal expansion with modified micro bone screws can serve as an appropriate technique to generate sufficient width of hard tissue in previously knife-edge alveolar crests that allows stable osseointegration of dental implants according to the criteria of Albrektsson et al. (1986).

Materials and methods

Patients enrolled in this study were diagnosed with gaps of one or two teeth. The inclusion criteria were adequate oral hygiene; absence of local inflammation or mucosal disease; and residual bone height sufficient for accommodating screw-type titanium implants at least 10mm long. Surgery was performed in local anesthesia. Vertical and horizontal incisions were made in the buccal vestibule to raise a full-thickness flap completely exposing the labial cortex. Care was taken to spare sensitive anatomic structures. After the pilot drilling, the implant bed preparation was continued with modified micro screw osteotomes.

Due to the tapered shape of the osteotomes, a slow expansion of the site by continuous use of osteotomes of different size was possible. If bone quality class 2 was diagnosed (higher degree of resistance while drilling or inserting the osteotome) the ridge was allowed to spread for 1min with the osteotome left in place. The procedure was repeated with the next size osteotome. Insertion and removal of osteotomes was performed by the use of a surgical micromotor or by the use of a wrench. Primary wound closure was achieved after mobilisation of the full thickness flap. Sutures were removed after 7–10 days. Second stage surgery was performed after 6 months of unloaded submerged healing.

Results

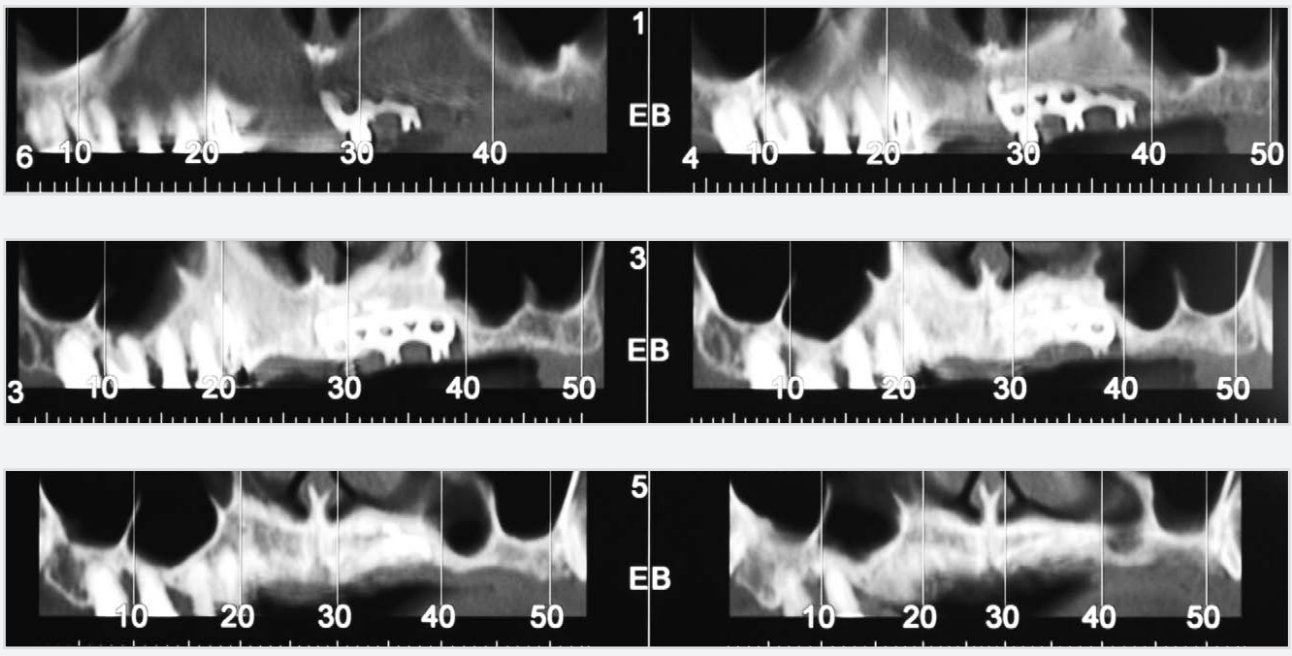
During the surgical and implant insertion phases, fracture of the labial or palatal cortical plates for all patients treated with micro screw osteotomes was avoided; moreover, no dehiscence or perforation took place either labially, palatally or apically. The postoperative healing was uneventful in all patients.

During implant insertion phase of four 4.1 implants, minor fractures at the crest that did not extend beyond 3,75 mm occurred. These fractures that involved the coronal part of the labial plate of threepatients, were treated without removing the fractured pieces but covering them with autogenous bone chips and a resorbable membrane. The post-operative healing of these last three patients was uneventful and at the end of the healing period, implants were considered suitable for the prosthetic rehabilitation. Follow-up ranged from 6 to 16 months, with an average of 12 months for the evaluated implants (calculated from the day of implantation). During the first 16 months of the present ongoing prospective study, based on the clinical and radiographic examination all the inserted implants fulfilled the pre-defined criteria of success (Buser et al. 1990) and were classified as 'successful implants' (implant success rate = 100%). Utilizing the above-mentioned criteria for implant success, the success rate of implants was 100% . All the patients could be followed at consecutive examinations, so there were no 'drop-out implants'.

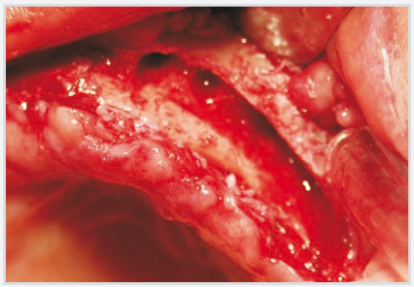
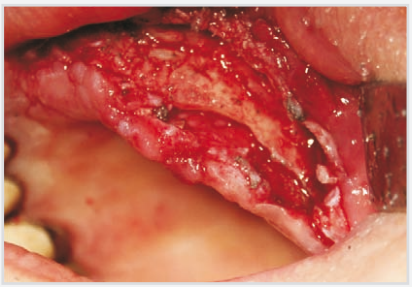
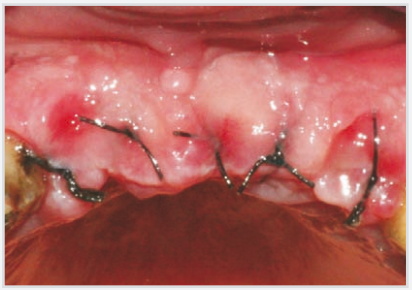
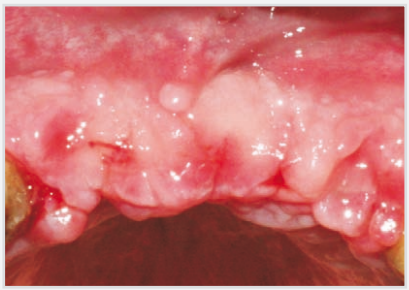
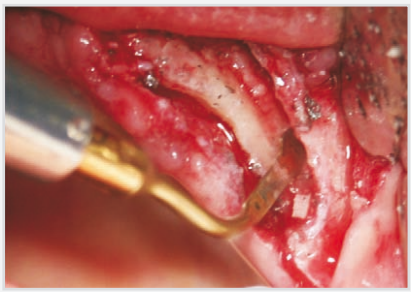
Conclusions

The very short observation period may contribute to the very good percentage of success shown by this technique so this result must be considered as preliminary. However, as a result of the lack of failures during the healing period and the good results of the subsequent clinical and radiographic evaluations, Mistral and Seven implants inserted in conjunction with this novel split crest technique seem to be a promising therapy to treat selected anatomic situation involving insufficient maxillary bone thickness.

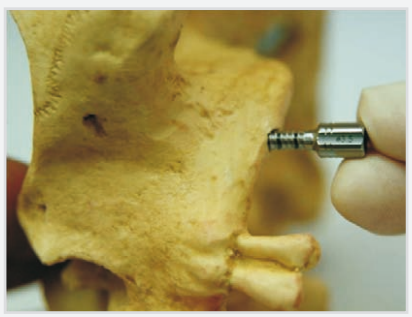
CT Scan.

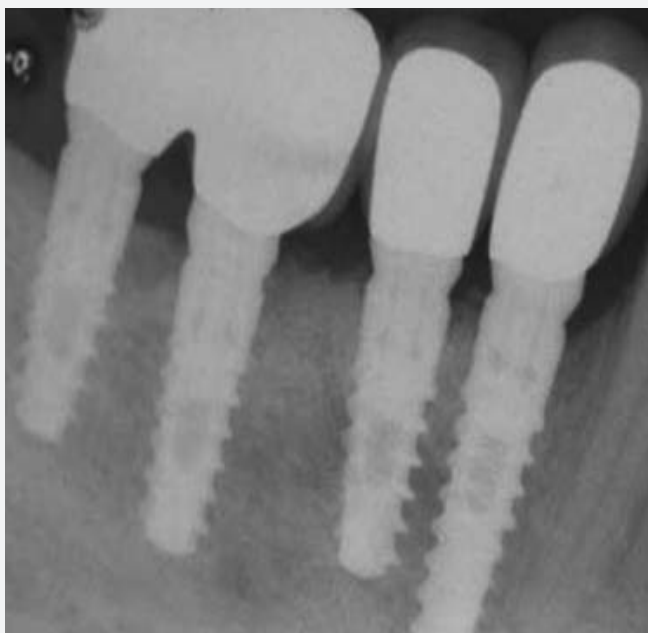


Case 2.

Bone Compression Kit



9

A retrospective multicenter analysis of the MIS Seven implants in clinical practice. A statistical study.

*A poster presented at the EAO Meeting, Warsaw 2008.

A retrospective multicenter analysis of the MIS Seven implants in clinical practice. A statistical study.

Dong-Seok Sohn[1], Hyun-Woo Lee[2], Heui-Seong Jung[3], Min-Su Bae[4]

Introduction

Implant therapy has been used for full arch and partial arch as well as single tooth restorations. The purpose of this study was to identify the clinical placement characteristics of the MIS Seven implant placed either in healthy or augmented bone and to evaluate the preliminary clinical data under function over time.

Materials and methods

A retrospective multicenter analysis of 92 records of patients who treated with MIS seven implant at Daegu Catholic University hospital, Sun Dental Clinic and Seo-Mun Dental Clinic in South Korea was performed from 2004 through 2007. Implants had to have full occlusal loading for at least 6 months.

Result

A total of 294 MIS Seven implants were placed in 92 patients. Patients ages ranged from 27 to 71 years old (mean age, 42 years old). Differences of implants survival among different implant locations and bone quality were observed. The overall survival rate of MIS Seven implants was 97.2%. The overall success in the maxilla was 96%. In the mandible, the overall success was 99.1%.

Of all implants, 7 were lost in the maxilla and 1 was lost in the mandible. In the maxilla most failures happened after maxillary sinus floor augmentation. In normal bone, from 54 implants, 1 was lost (98.1% success). In regenerated defective bone, from 240 implants placed, 7 implants were lost(97% success).

Implants were judged to be successful (osseointegrated) according to the following criteria: without clinical mobility, pain or suppuration, periimplant radiolucency.

Table 1. Patient characteristics

Characteristics	Man	Woman
No. of implants	117(40%)	177(60%)
No. of patients	41(44.5%)	51(55.5%)
Mean age	43	41
Range of age	29 to 71	27 to 68

Table 2. Implant failure by anatomic location

Implant location		Total no. of implants	No. of failures (Success rate)
Maxilla	Anterior	14(4.7%)	0(100%)
	Premolar	43(14.7%)	1(97.6%)
	Molar	118(40.1%)	6(94.9%)
Mandible	Anterior	9(3.1%)	0(100%)
	Premolar	34(11.5%)	0(100%)
	Molar	76(25.9%)	1(98.7%)

Total implant success rate

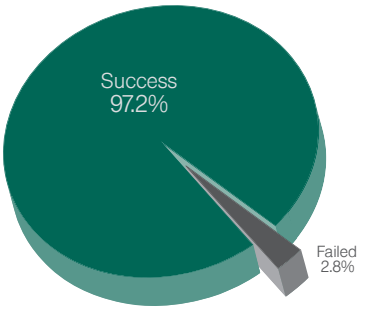
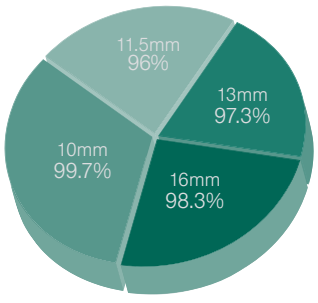


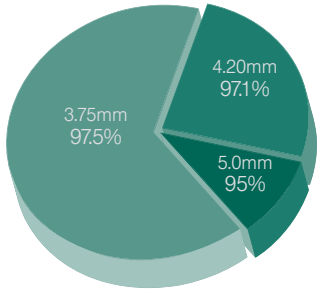
Table 3. Implant characteristics

Implant characteristics		Total No. of implants	No. of failures (Success rate)
Length	10mm	45(15.3%)	1(99.7%)
	11.5mm	76(25.9%)	3(96%)
	13mm	114(38.7%)	3(97.3%)
	16mm	59(20%)	1(98.3%)
Diameter	3.75mm	205(69.7%)	5(97.5%)
	4.20mm	69(23.5%)	2(97.1%)
	5.0mm	20(6.8%)	1(95%)

Length (Success rate)



Diameter (Success rate)



Conclusion & discussion

This report presents the success and failure rates of MIS implants, including a follow-up between 6 to 40 months. The stability of the MIS implants was examined for up to 40 months and was very satisfactory. The overall cumulative success rate was 97.2%.

This finding supports that the MIS Seven implants placed either in healthy or augmented bone will achieve satisfactory osteointegration maintained under function overtime.

[1]Chair, Dept. of Dentistry & Oral and Maxillofacial Surgery, Daegu Catholic University Hospital, Daegu, Republic of Korea

[2]Private Practice, Sun Dental Clinic, Daegu, Republic of Korea

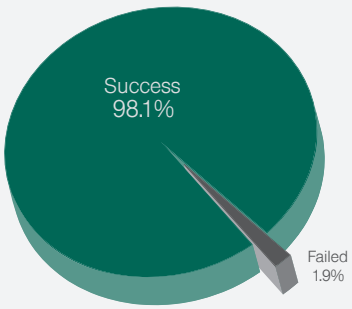
[3]Private Practice, Seo-Mun Dental Clinic, Daegu Catholic University Hospital, Daegu, Republic of Korea

[4]Residency at the Department of Dentistry & Oral and Maxillofacial Surgery, Daegu Catholic University Hospital, Daegu, Republic of Korea

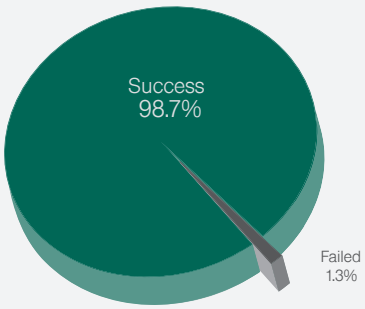
Table 4. Implant failure by treatment procedure

Treatment procedure	Total No. of implants	No. of failures (Success rate)
No augmention	54	1(98.1%)
Bucco-lingual & vertical ridge augmentation	154	2(98.7%)
Sinus augmentation	86	5(94.1%)

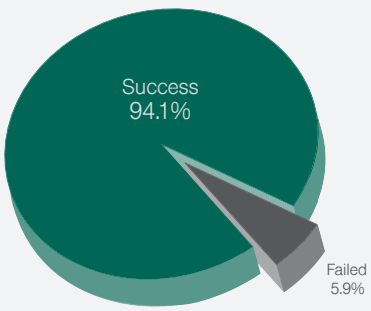
No augmention



Bucco-lingual & vertical ridge augmentation

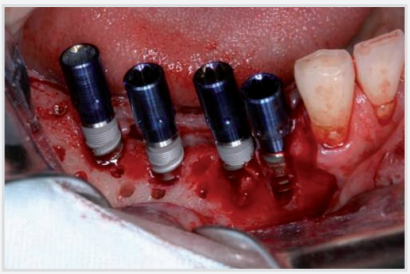


Sinus augmentation

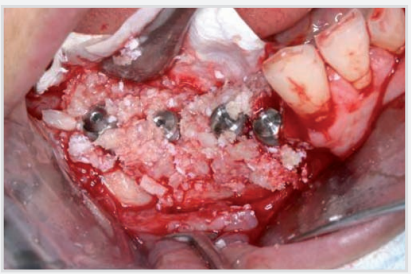


Clinical Case

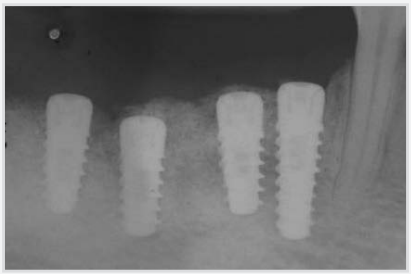
Case 1.



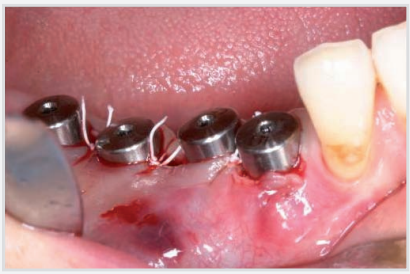
Implantation (Seven®, MIS implants Technologies Ltd. Israel)



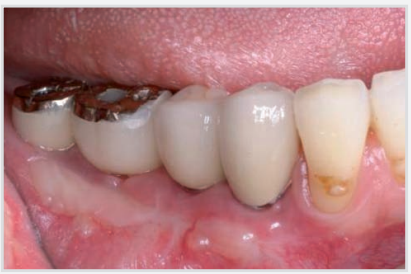
GBR with allograft (Puros®) & autobone chip



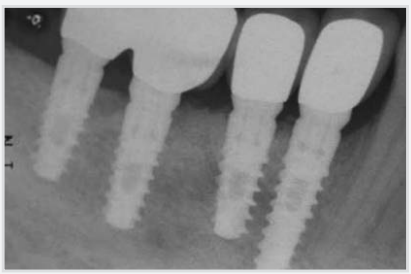
Periapical view after implantation



Second operation

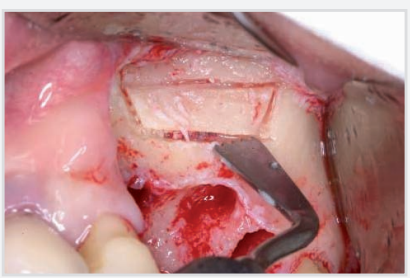


Final restoration

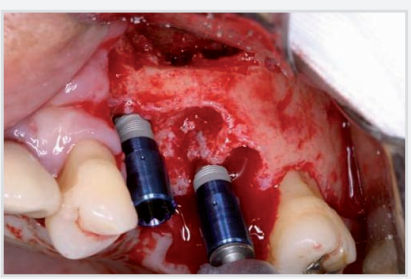


Periapical view after functional loading for 9 months.

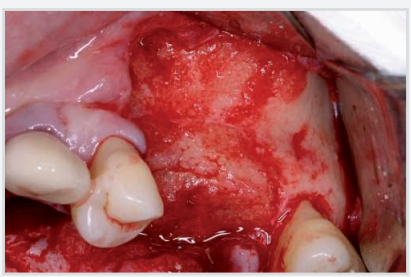
Case 2.



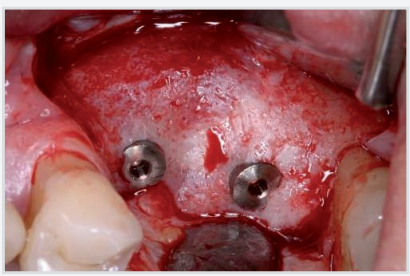
Osteotomy with Piezoelectric surgery (Surgybone®)



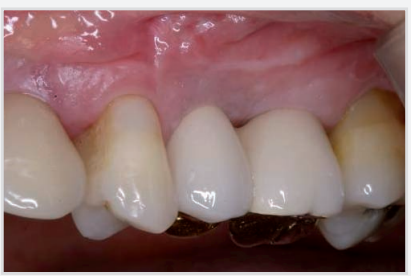
Implantation (Seven®, MIS implants Technologies Ltd. Israel)



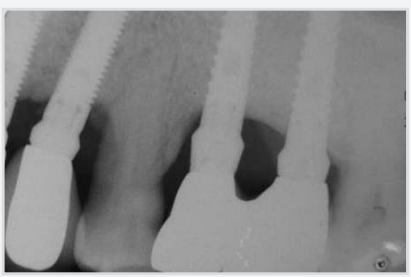
GBR with allograft (Orthoblast II®)



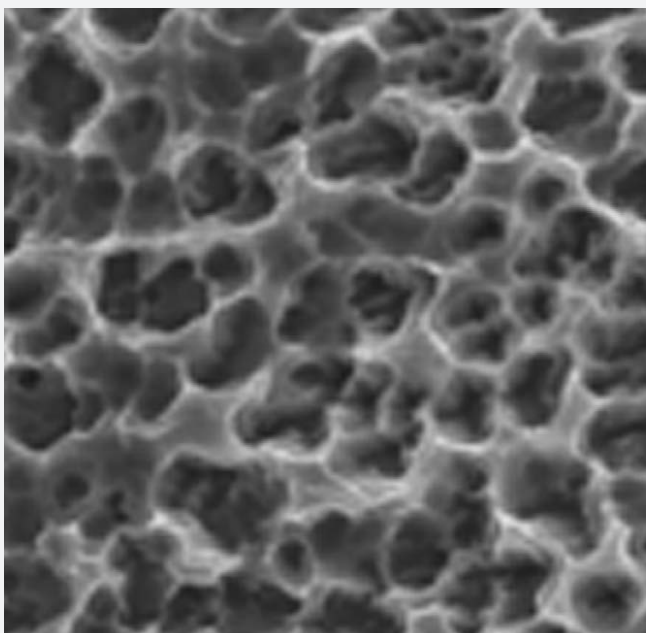
Second operation



Final restoration



Periapical view after functional loading for 15 months.



10

Titanium hydride and hydrogen concentration in acid etched titanium implants.

*A poster presented at the EAO Meeting, Warsaw 2008.

Titanium hydride and hydrogen concentration in acid etched titanium implants.

Szmukler-Moncler S[1], Bischof M[2], Nedir R[3], Ermrich M[4]

Introduction

Acid etching is a popular method to texture the surface of dental implants. During etching, the Ti oxide protective layer is dissolved and native Hydrogen ions (H^+) are released in the bath. H^+ may form a Titanium Hydride (TiH) layer and lead to the formation of TiH needles with a possible embrittlement of the titanium implants. The aim of the study was therefore to measure, the concentration of Hydrogen in the implants and the concentration of Titanium Hydride at the surface of cp titanium and titanium alloyed implants.

Materials and methods

Five Titanium implant systems with etched surfaces were investigated. Three of them were made of cp Titanium. They were, the strongly etched STRAUMANN SLActive, the strongly etched ANKYLOS Cell Plus surface, the moderately etched BIOMET 3i Osseotite surface. Two of them were made of titanium alloy TAV (Titanium 90%, Aluminum 6%, Vanadium 4%). They were, the moderately etched BIOMET 3i PREVAIL Osseotite surface, and the strongly etched MIS BIOCOM surface. Ti Hydride was measured by X- Ray Diffraction and Hydrogen concentration by thermo-desorption.

Results

Titanium Hydride was present on all cp Titanium implants (fig 4,5). The concentration varied according to each implant system, according to the strength of the etching conditions. For the moderately etched Osseotite, the concentration was much lower than for the SLActive and the Cell Plus surfaces (fig 4-6,9). No hydride was found on the alloyed implants, whatever the vigor of the etching conditions (fig 9). The concentration of Hydrogen varied as well; it was not inferior for the alloyed implants. All the normative 130 ppm of DIN and the 150 ppm of ASTM were respected.

Discussion & conclusion

Low solubility of Hydrogen in α-Titanium is responsible for the precipitation of Hydrogen into Ti Hydride. The surface is enriched in TiH_2-x according to the vigor of the etching conditions. High solubility of H in the β-Titanium phase of the α–β Titanium alloy prevented Hydrogen from precipitation into Titanium Hydride. Measurement of the concentration of Hydrogen showed that all implants, even those lacking Ti hydride on the surface, were enriched in H. All implants complied with the normative limits of 130-150 ppm of Hydrogen in the implants.

[1]Dpt. of Stomatology & Maxillo-facial Surgery, University of Paris VI , F & Galeazzi Orthopeadic Institute, University of Milano, I. [2]Ardentis, Clinique Dentaire Vevey, Swiss Dental Clinics Group, CH.
[3]Dpt. of Stomatology & Oral Surgery, School of Dental Medicine, University of Geneva, CH. [4]Röntgenlabor Dr. Martin Ermrich, 64354 Reinheim/Odw, D.

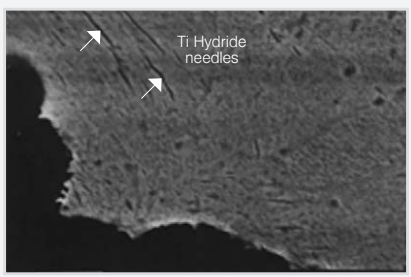


Fig1. Titanium hydride needles in an etched implant and the STRAUMANN SLActive implant surface(Ti cp), x 2'000.

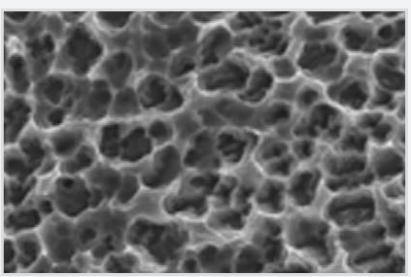


Fig2. ANKYLOS Cell Plus implant surface (cp Ti) and BIOMET 3i Osseotite implant surface (cp Ti), x 2'000.

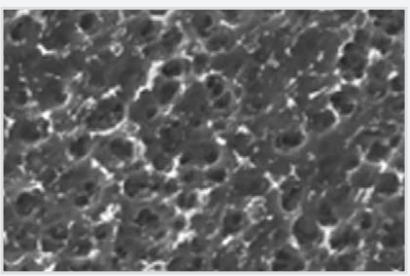


Fig3. BIOMET 3i PREVAIL implant surface (Ti alloy) and MIS BIOCOM implant surface (Ti alloy), x 2'000.

Fig 4. X-ray diffraction spectra of STRAUMANN SLActive(blue) and ANKYLOS (red) implants. Arrows are showing the TiH peaks.

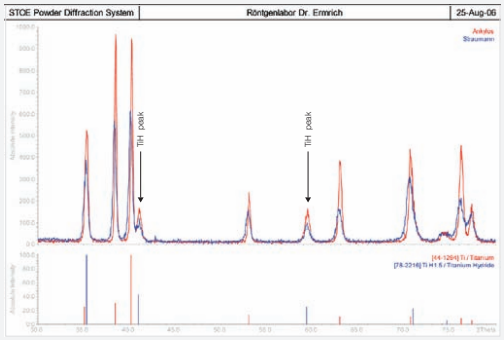


Fig 5. X-ray Diffraction spectra of BIOMET 3i Osseotite implants. The Ti Hydride peaks are weaker than the previous 2 implants.

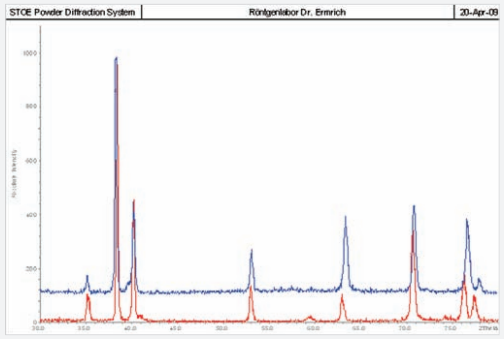


Fig 6. X-ray Diffraction spectra of BIOMET 3i PREVAIL alloy implant. No Titanium Hydride peak was found for this alloyed implant.

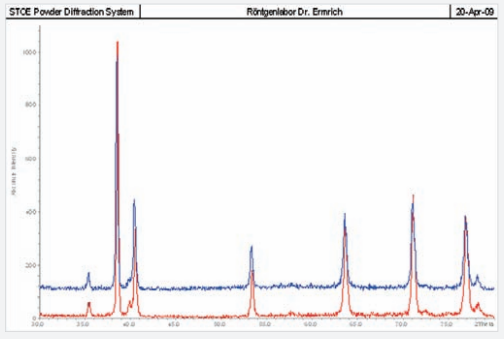


Fig 7. X-ray Diffraction spectra of MIS BIOCOM alloy implants. No Titanium Hydride peak was found on this alloyed implant.

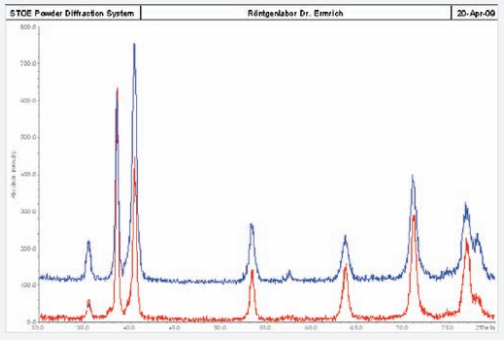


Fig 8. calibration curve of Ti Hydride from 0 to 50 %, based on the intensity peak ratio of Ti and Ti Hydride.

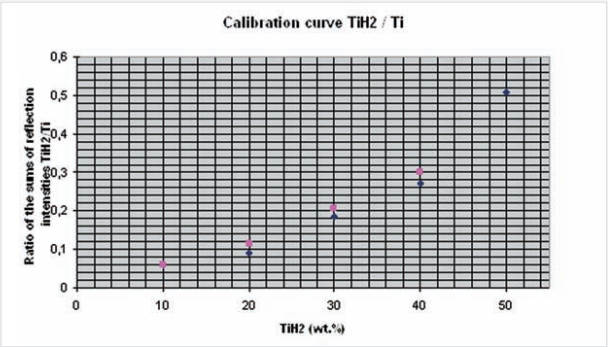


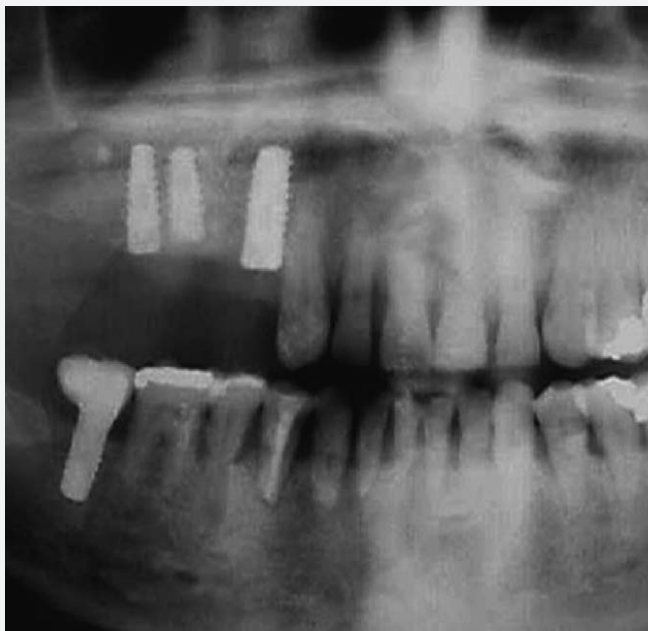
Fig 9. Ti Hydride and H concentration. There is no Hydride formation on the surface of the alloyed implants. All implants are < 130ppm.

XRD measurements

Implants	Concentration of Ti Hydride (%)	Concentration of titanium (%)	Average concentration of Hydride
Cell Plus	34	66	32%
Cell Plus	30	70	
SLActive	37	63	28%
SLActive	19	81	
Osseotite cp	5	95	6.5%
Osseotite cp	8	92	
Osseotite TAV	-	100	0%
Osseotite TAV	-	100	
BIOCOM	-	100	0%
BIOCOM	-	100	

Hydrogen concentation

Implants	Concentration of Hydrogen (ppm)	Average concentration of Hydrogen
Cell Plus	81	69 ppm
Cell Plus	57	
SLActive	69	56 ppm
SLActive	43	
Osseotite cp	81	78 ppm
Osseotite cp	75	
Osseotite TAV	54	55 ppm
Osseotite TAV	55	
BIOCOM	108	106 ppm
BIOCOM	103	



11

Clinical & radiographic evaluation of Seven implants. Osseointegration rate & bone level stability.

- Preliminary results.

*A poster presented at the EAO Meeting, Warsaw 2008.

Clinical & radiographic evaluation of Seven implants. Osseointegration rate & bone level stability.

- Preliminary results.

Zabaras D, Bouboulis S, Spanos A, Petsinis V, Gisakis I G
Department of Dental Implants and Tissue Regeneration HYGEIA Hospital, Athens, Greece

Introduction

Millions of dental implants are placed every year worldwide. They have become the most successful prosthetic device and are improving the lives of people every day. Implants are offering a variety of clinical solutions such as reconstruction of a single tooth, fixed bridges and overdentures.

The MIS self-tapping Seven implants (Medical Implant System, Shlomi, Israel) are especially designed for implantation in a wide range of bone types and bone augmentation procedures. Their new geometric design includes duel threads, three spiral channels stemming from the apex, micro rings on the implant's neck, and a changing threads thickness along the implant.

All implants are supplied with a single use final drill for reducing the heat produced during drilling, resulting in an improved osseointegration.

Aim

The aim of this poster is to present the preliminary results of an ongoing, clinical and radiographic, study regarding osseointegration rate and peri-implant bone level changes of Seven implants.

Materials and methods

A total of 684 patients (336 male, 348 female), with no medical history, participated in the study, so far. In total, 2450 implants were placed. 1196 implants (48.82%) were placed in host bone and 1254 implants (51.18%) in augmented bone (with guided bone regeneration methods) The evaluation period was 6-36 months. All patients underwent detailed clinical and radiographic examination every 6 months, or earlier in cases of bruxism, heavy smoking and diagnosed periimplantitis.

Statistical analysis

The analysis was performed using the PC program SPSS Inc. (2001) for Microsoft Windows®. Descriptive statistics were used for patient demographics and analysis of biological complications and failures. The implant survival was calculated using life table analysis (Cutler & Ederer 1958). The threshold value for significance was set at $P \leq 0.05$.

Conclusions

a) The preliminary results of this study showed exceptional osseointegration rate (99.51%);

b) The application of bone regeneration methods, prior or in conjunction with implant placement, does not seem to interfere with osseointegration;

c) Marginal bone loss around implants was minimal;

d) No statistical significant differences were observed regarding the sex and age of the patients.

*Department of Dental Implants and Tissue Regeneration HYGEIA Hospital, Athens, Greece

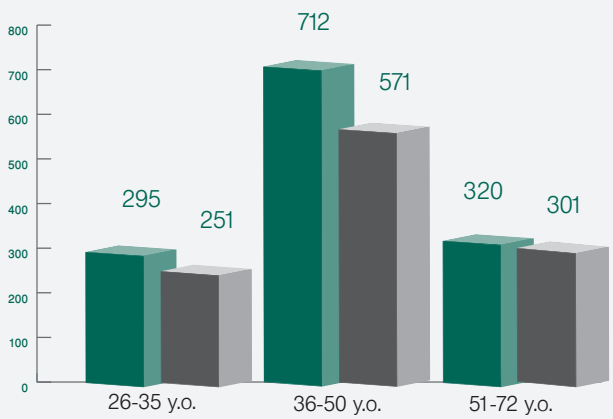


Fig. 1: Distribution of patients according to sex and age.

- Male
- Female

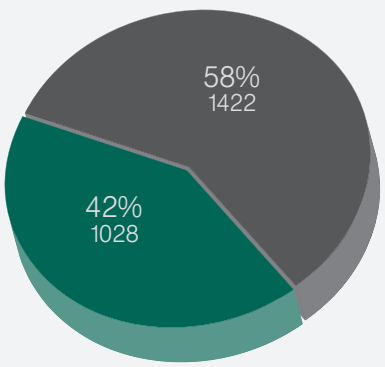


Fig. 2: Distribution of implants in maxilla & mandible.

- Maxilla
- Mandible

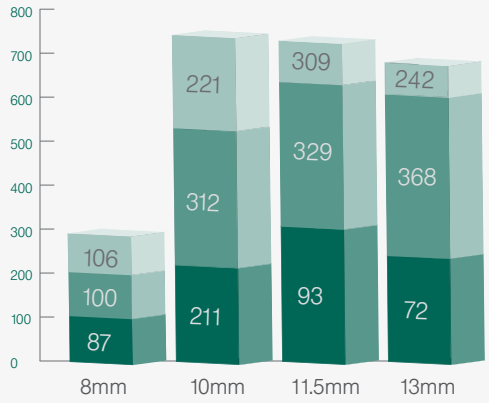


Fig. 3 Implants length and diameter distribution

- 5mm
- 4.2mm
- 3.75mm

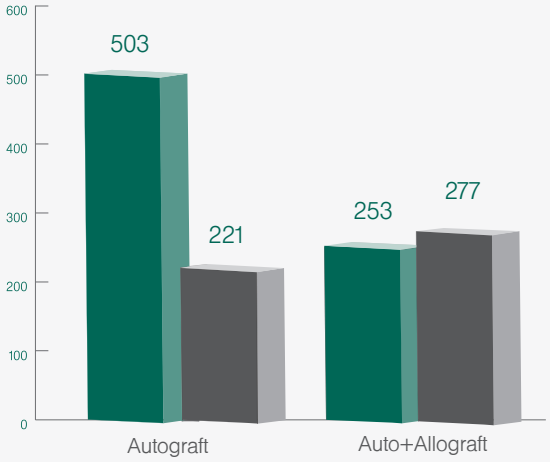


Fig. 4 Implants in augmented bone.

- Resorbable membrane
- Non-resorbable membrane

Clinical cases

Case 1. Male patient, 47 years old

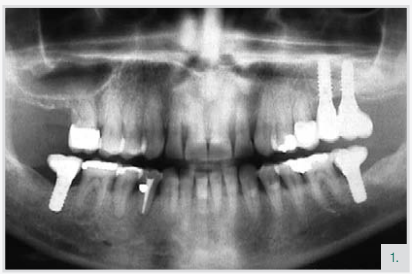


Fig 1. Implant placement is needed in the right posterior maxilla with simultaneous sinus membrane lift.

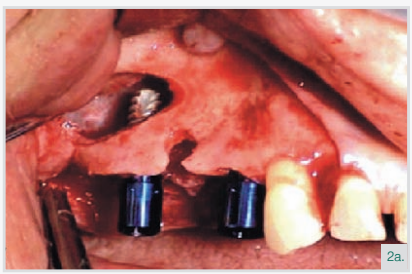
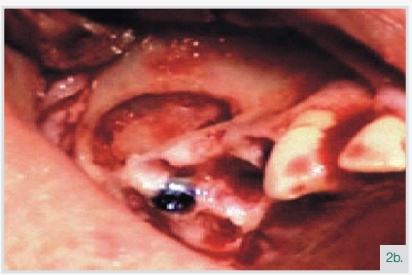
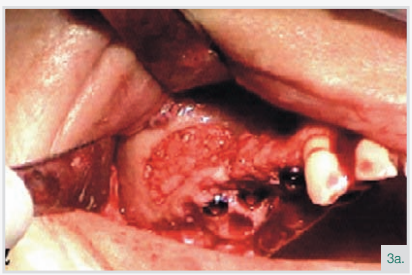


Fig 2. a) Immediate implant placement, due to good initial stability at the middle region of the implants.



b) Note the horizontal and vertical bone defect.



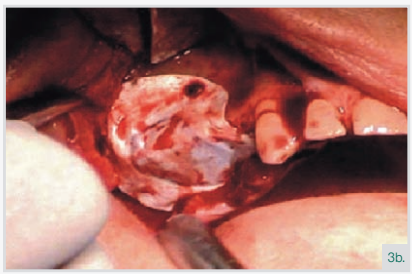
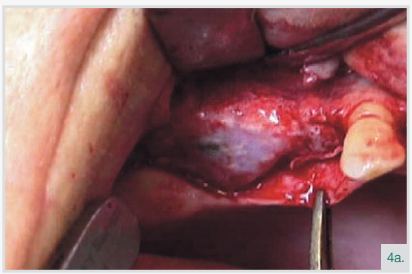


Fig 3:
a) Placement of particulated autologous bone graft mixed with allograft and PRP. b) Placement of a non-resorbable e-PTFE membrane, stabilized with titanium pins.



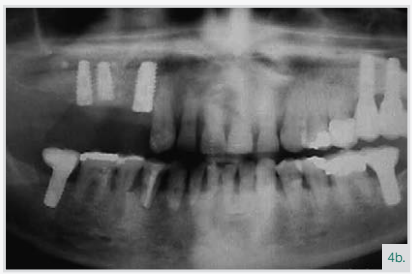
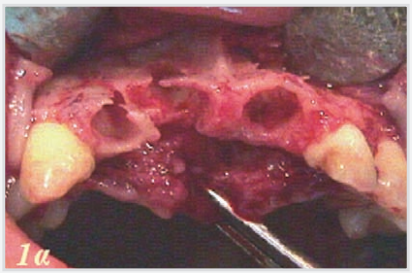
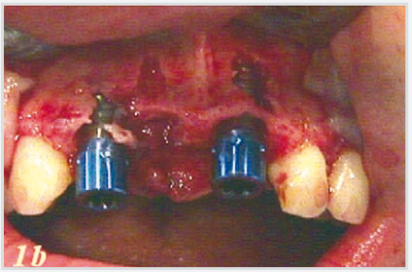
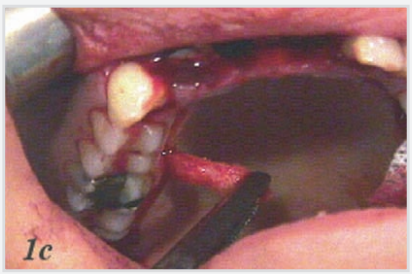


Fig 4:
a) & b) The augmented bone 4 months post-surgically and the related panoramic radiography.

Case 2. Female patient, 34 years old







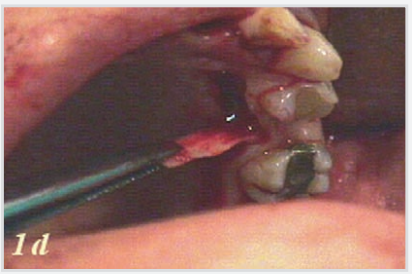
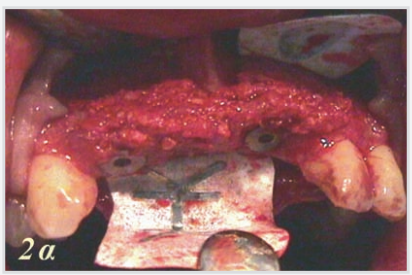
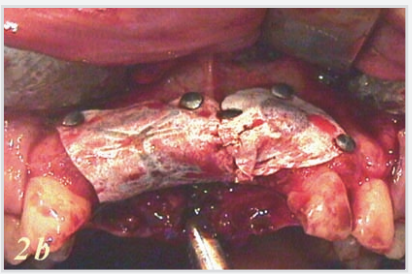
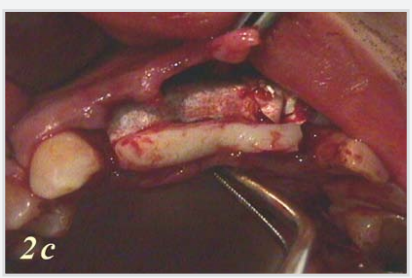


Fig 1:

a. Horizontal and vertical bone dehiscence in the incisor's area.
b. Immediate implant placement, due to good initial stability at the apical region of the implants.
c, d. Sub-epithelial soft tissue graft (two pieces) from the palate.







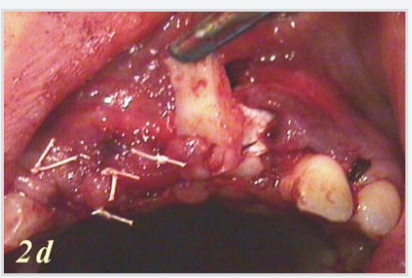
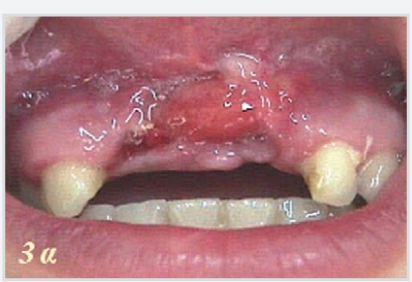
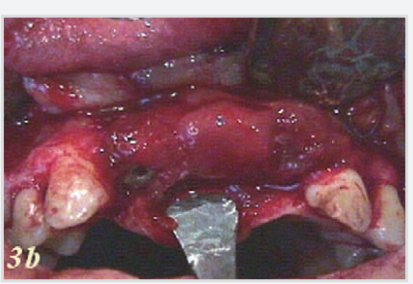


Fig 2:

a. Placement of particulated autologous bone graft mixed with allograft and PRP.
b. Placement of two non-resorbable e-PTFE membranes (titanium reinforced), stabilized with titanium pins.
c, d. Placement of the soft tissue grafts.





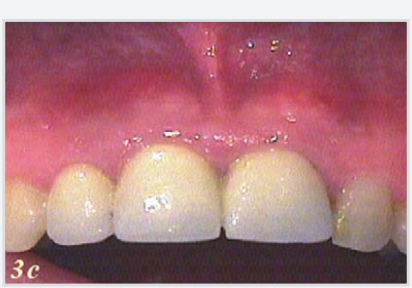


Fig 3:

a. Soft tissue healing 4 months post-surgically.
b. The augmented bone 4 months post-surgically.
c. The final restoration in place 12 months post-surgically.

Results

1. Osseointegration of implants

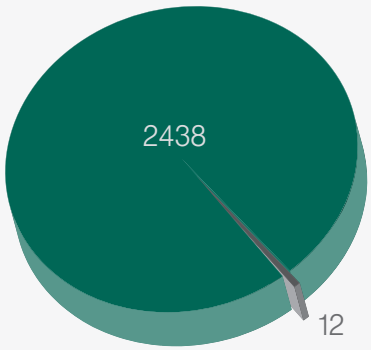


Fig 5. Osseointegration rate in general. (P<0.05)

- Osseointegration
- No-osseointegration

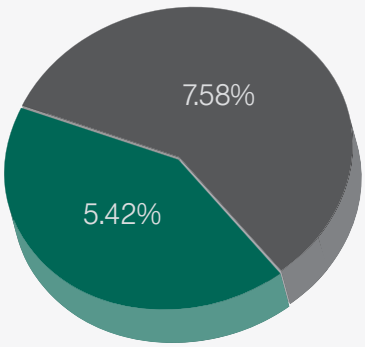


Fig 6. No-osseointegration in relation to gender. (P>0.05)

- Female
- Male

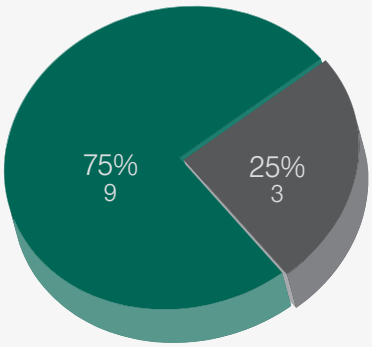


Fig 7. No-osseointegration in relation to jaw. (P>0.05)

- Mandible
- Maxilla

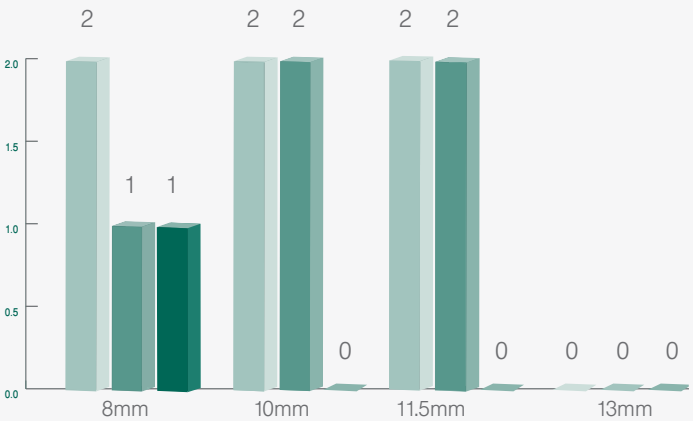


Fig 8. No-osseointegration in relation to implants. (P>0.05)

- 3.75mm
- 4.2mm
- 5mm

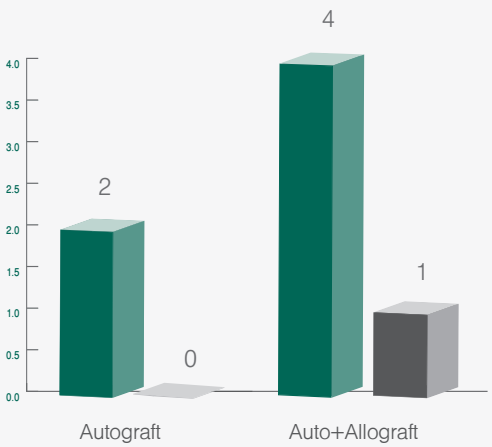


Fig 9. No-osseointegration in relation to GBR. (P>0.05)

- Resorbable membrane
- Non-resorbable membrane

2. Prevalence of peri-implantitis

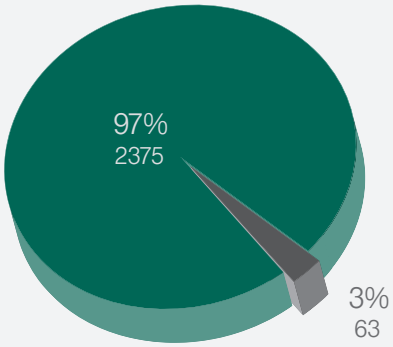


Fig 10. Peri-implantitis in general. (P<0.05)

- Peri-implantitis
- No peri-implantitis

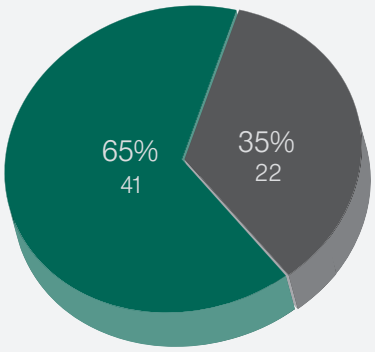


Fig 11. Peri-implantitis in relation to gender. (P=0.083)

- Female
- Male

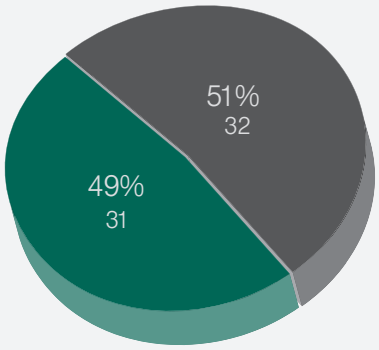


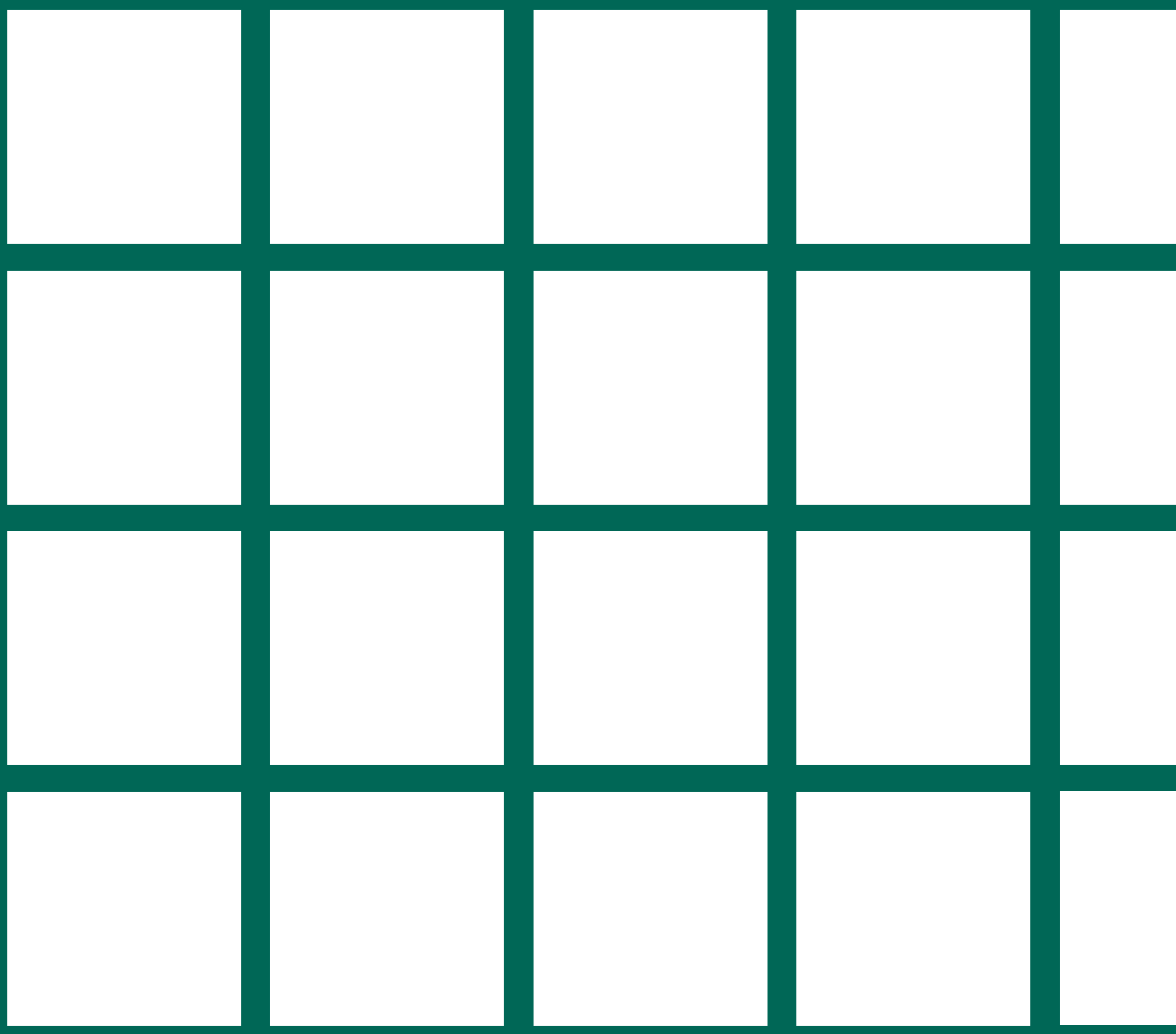
Fig 12. Peri-implantitis in relation to jaw. (P>0.05)

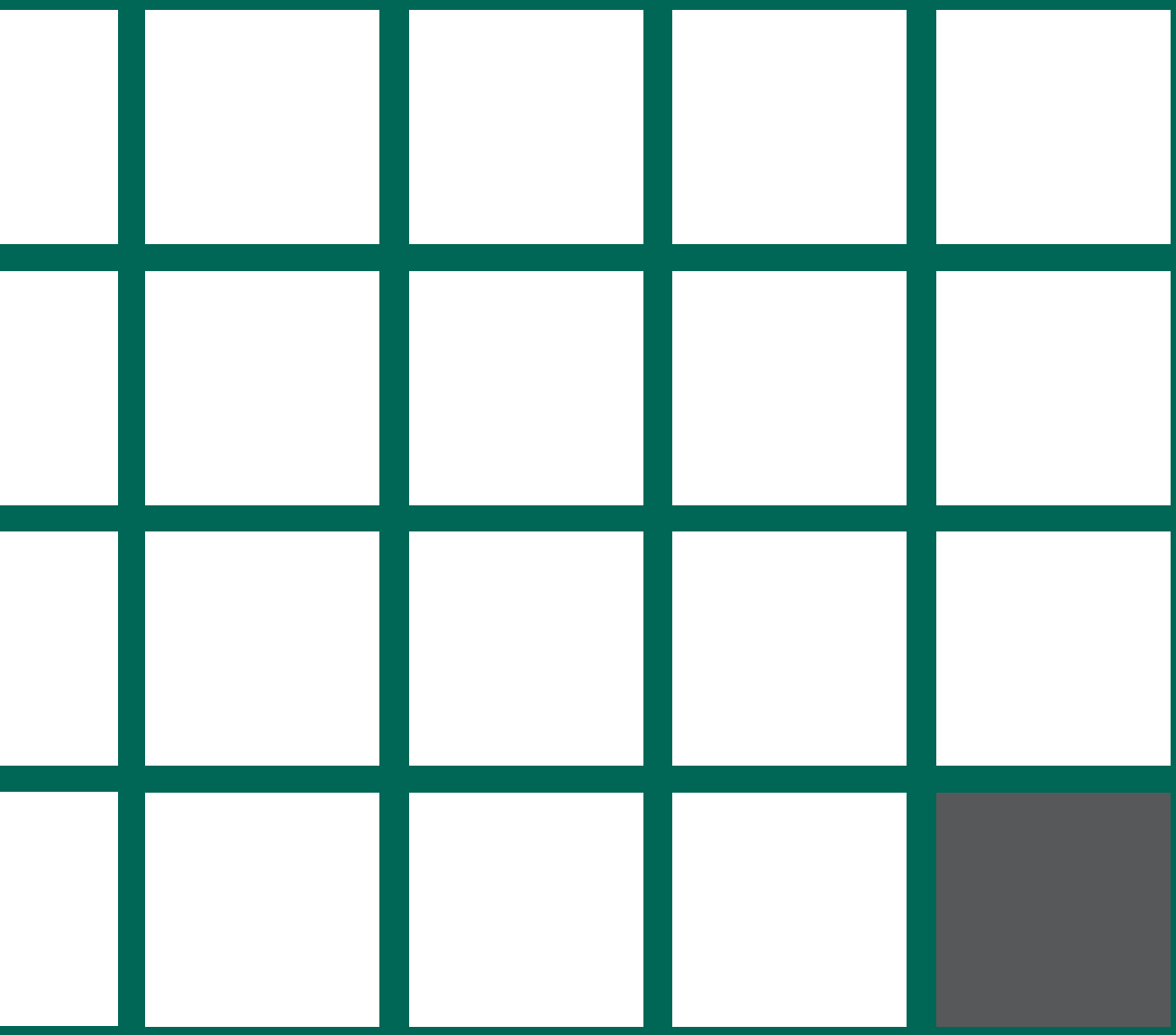
- Mandible
- Maxilla

3. Peri-implant bone loss in relation to the observation time.

bone los/time	12 months	24 months	36 months
0-0.1mm	2426	1125	214
0.11-0.5mm	4	85	43
› 0.5mm	8	-	17
Total observed	2438	1210	274

Fig 13. Peri-implant bone loss in relation to the observation time. (P<0.05)





MIS's Quality System complies with international quality standards: ISO 13485:2003 - Quality Management System for Medical Devices, ISO 9001: 2000 – Quality Management System and CE Directive for Medical Devices 93/42/EEC. MIS's products are cleared for marketing in the USA and CE approved.

MC-SS004 Rev.1

MIS Implants Technologies Ltd.
www.mis-implants.com