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A 2 year retrospective clinical study of inmediate implants

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Background: The objective of placement of an implant based on immediate, is the making of a prosthesis capable of transfer chewing loads the same day of the surgery.

Aim/Hypothesis: The aim of this retrospective study was to evaluate cumulative survival rate of inmediate implants followed for 2 years and association between risk factors and cumulative survival rate.

Material and methods: A total of 113 inmediate implants in 23 patients from 2010 to 2012 were investigated with several identified risk factors (sex, systemic disease, smoking, alchohol, reason of tooth loss, length implant, age, density bone, arch (maxilla or mandible), replace tooth type (incisor, canine, premolar or molar) and prosthodontic type. Clinical and radiographic examination.

Results: Nine of 113 implants were failed.The 2 years implant survival rate are 91.34%.

Conclusions and clinical implications: The presence of systemic diseases and combination of other risk factors may be associated with increased implant failure.The advantages of immediate implant placement include a reduction in treatment time, a reduction of surgical procedures and a reduction of aesthetic rehabilitation time.Prospective randomised controlled studies are necessary to confirm the predictability and reproducibility of this procedure in long term.

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Effectiveness of the newly developed autogenous tooth bone graft technique

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Background: In Korea, autogenous tooth bone graft materials using teeth extracted from patients themselves by processing them were developed in 2008. They were named 'AutoBT.' AutoBT was proven to be a biocompatible material inducing osteoinductive and osteoconductive healing.

Aim/Hypothesis: We investigated pre- and post-operative sinus membrane thickness change and bone quality and quantity in the case of sinus bone graft using autogenous tooth bone graft materials when residual bone was insufficient on the implant installation site.

Material and methods: We measured and compared pre- and post-op sinus membrane thickness change, bone quality, and increased amount of bone between groups of autogenous tooth bone graft materials and xenograft bone materials in patients who underwent sinus bone graft and had CT records from January 2012 to August 2012. Autogenous tooth bone graft materials were used in 14 patients (16 cases), and xenografts (Biooss, Geistlich, Swiss), in 14 patients (16 cases). Bone quality and increased amount of bone were measured by SimplantTM software (Columbia Scientific, Inc., Columbia, MD, USA); we investigated the Haunsfield Unit (HU) and increased bone height. Sinus membrane thickness change was also measured using the panoramic view of CT image. We evaluated bone quality of more than HU 1250 as D1, 850–1249 as D2, 350–849 as D3, and 150–349 as D4.

Results: Sinus graft was done in all cases, with only one case subjected to vertical ridge augmentation as well. In the group of autogenous tooth bone graft, average pre-operative bone quality was HU 432.43, and bone height was 3.52 mm. On the other hand, average post-operative bone quality was HU 881.12, and bone height was 14.19 mm. The difference was statistically significant. The 0.62 mm decrease in sinus membrane thickness was also statistically significant. In the Biooss group, average pre-operative bone quality was HU 414.01, and bone height was 3.60 mm. In contrast, average post-operative bone quality was HU 977.48, and bone height was 14.02 mm. The difference was statistically significant. Sinus membrane thickness decreased by 1.54 mm, but the difference was not statistically significant. Neither was there any statistically significant difference between groups.

Conclusions and clinical implications: In the evaluation of the CT image after sinus bone graft, this study found a change of bone quality and a significant increase in height; bone quality changed from D3 to D2 in both groups. There was a significant decrease in sinus membrane thickness only in the group of autogenous tooth bone graft. We can secure sufficient increase in bone quality and bone height for implant installation and soothe the sinus membrane using autogenous tooth bone graft.

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Prospective clinical study of 7-mm in length short implant: randomized clinical trial

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Background: There are often limitations of implant placement length at mandibular posterior area because of severe alveolar bone loss. So it was devised to install short length implant. Recently, the prognosis of short implant was improved due to

advancement of surface conditioning and design. Many stable outcomes were reported especially in mandible.

Aim/Hypothesis: This study is to evaluate clinical prognosis of 7 mm length short implant in mandible prospectively.

Material and methods: We investigated clinical prognosis of implant according to installation technique, installation depth, and Crown/Implant (C/I) ratio in 21 patients. All implant prostheses were splinted type. We divided patients two groups; 1 stage and 2 stage technique. We measured peri-implant marginal bone loss using periapical radiograph 12 months after final prosthetic delivery. Moreover, we measured periodontal index such as plaque index (PI) and pocket depth (PD) 12 months after final prosthetic delivery.

Results: There were no statistically significant differences in bone loss, installation technique and depth, and C/I ratio 12 months after final prosthetic delivery. PI and PD index that show periodontal health level were not influenced by installation technique or depth, and C/I ratio. Marginal bone loss of an implant of submerged group was 3.3 mm. Total 1-year success rate was 97.83%.

Conclusions and clinical implications: 7 mm short implant showed great clinical prognosis regardless of installation technique or depth, and C/I ratio in 1 year clinical prognosis.

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Allograft for maxillary sinus floor augmentation: a retrospective study of 90 cases

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Background: Requirement to successfully place endosseous dental im- plants in the jaws is to have enough bone volume availability both in height and in the bucco-palatal di- mension. However, in many cases, spe- cifically in the posterior maxilla, this situation is more exception than the rule. The most common cause of this bone deficiency is edentulism followed by a progressive resorption of the alveolar ridge, which then subsequently leads to pneumatization of the maxillary sinus. Sinus floor augmentation, or sinus lift, with simultaneous grafting is a well- accepted, widely performed, and highly predictable procedure of the reconstruc- tive surgery armamentarium. Since first described by Geiger and Pesh and Tatum in the 1970s, the original 'modified Caldwell-Luc op- eration' (lateral wall technique) has been altered by different authors.Basically, the modalities available at present to surgically approach the maxillary sinus with the purpose of elevating its floor are the lateral win- dow, osteotome, and crestal core tech- niques, which can be performed using different options of graft materials, in.

Aim/Hypothesis: The aim of this study is to demonstrate the clinical applicability and efficacy of an allograft for maxillary sinus augmentations in patients requiring placement of dental implants.

Material and methods: Sixty consecutive patients underwent a total of 90 sinus augmentations. Twenty-nine were women and 31 men, with a mean age of 54 years. Twenty-six patients received a bilateral procedure and 34 unilateral. All cases were treated with the lateral wall technique. Allograft consisted of demineralized freeze-dried blocks in six cases, particulate in 82 cases, and a combination of both in two cases. In 30 patients, it was combined with platelet-rich plasma. A total of 84 implants were inserted. Bone samples of grafted areas were obtained in two patients for histological examination.

Results: Seventy-three implants were clinically successful at the reentry time. Eleven implants in seven patients were removed between 15 days and 6 months after their placement. Seven of these implants were replaced and received prostheses as well, for an overall postloading success rate of 95.2%. Follow-up for all patients after final restoration was between 12 and 96 months. Specimen's histological evaluation revealed bone formation and evidence of inflammatory infiltrate.

Conclusions and clinical implications: Based on the findings of this study, it can be suggested that the use of the demineralized freeze-dried bone allograft from the Banco de Huesos y Tejidos Fundación Cosme y Damian for sinus augmentation is effective and constitutes a feasible therapeutic alternative for implant placement.

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Transalveolar sinus elevation and short implants for the treatment of severely atrophied edentulous maxilla

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Background: Maxillary sinus floor augmentation is a well-documented surgical procedure that is performed through transalveolar approach or lateral approach. The residual bone height is the deciding parameter between these two approaches and the threshold value is set at 5 mm.

Aim/Hypothesis: Study, for the first time, the association of sequential drilling in tranalveolar sinus aumgentation, the use of platelet concentrates and short implants in the rehabilitation of posterior edentulous atrophic maxilla with residual height ≤ 5 mm.

Material and methods: Patients participation in this study was based on the following criteria:, the presence of residual bone height ≤ 5 mm, the performance of transalveolar sinus elevation and the insertion of short implants. Conventional drills with a working length 1 mm shorter than the RBH was first employed to prepare the translaveolar access and then a new

drill with frontal cutting flat surface was employed to remove the bone floor below the Schneiderian membrane. To assure the safety of the procedure and minimize the risk of membrane perforation, platelet-rich plasma clot was employed to transmit the forces generated during drilling to elevate the Schneider membrane.

Results: Forty-eight patients with 61 short implants completed the inclusion criteria. The RBH was 4.04 ± 0.09 mm (range: 1.65–4.99 mm) before surgery. The residual bone height was increased to 8.66 ± 0.21 mm indicating a gained height of 4.62 ± 0.23 mm. Autologous bone graft was employed in the 14.8% of the cases, autologous bone+Bio-Oss in 13.1% and only Bio-Oss in the 3.3%. The clot of plasma rich in growth factors was solely applied in the 68.9% of the cases. The statistical analysis revealed the absence of significant difference between the grafting materials with respect to the gained bone height. The mean follow-up time of the implants was 10.81 ± 5.87 months and the average bone loss was about 1 mm. The use of wide implants was the only parameter that decrease significantly the marginal bone loss. The cumulative implant survival was 96%.

Conclusions and clinical implications: The proposed treatment protocol could be efficient in the rehabilitation of posterior atrophic maxilla with RBH < 5 mm.

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Prospective clinical study on survival and complications of narrow-diameter implants

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Background: Narrow diameter implants are used in cases where mesio-distal space is limited or the alveolar ridge does not alow the placement of regular diameter implants. To improve de mechanical strenght and biocompatibility, a new titanium-zirconium alloy has been developed. Evidence regarding the use of titanium-zirconium narrow diameter implants in partially esdentulous patients is scarce.

Aim/Hypothesis: Present the preliminary results of a case series on partially edentulous patients rehabilitated with titanium-zirconium narrow-diameter implants.

Material and methods: Partially edentulous patients in need for rehabilitation with dental implants that were ellegible (Older than 18 years old, not pregnant, healthy for oral surgery and with <6 mm of crestal width) that presented at the School of Dentistry's Clinic, Universitat Internacional de Catalunya, Barcelona. Two titanium-zirconium narrow-diameter implants were placed in each patient. Only minor bone regeneration or soft tissue grafting was performed in some of the cases. An early loading protocol was performed in all cases.

Results: The success and survival rates for the implants were 100%.Only minor complications souch as post-operative pain or inflamation where recorded in the patients followed. Prosthodontics success and survival rates for the implants were 100% No biomechanical complications were found.

Conclusions and clinical implications: The use of titanium-zirconium narrow-diameter implants in partially edentulous patients seems to be a predictable treatment option. A greater sample size and long-term results are needed to proove this concept of treatment in partially edentulous patients.

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Gender–based prevalence of peri-implant disease

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Background: The objective of this study was to evaluate sexual dimorphism in peri-implant disease.

Aim/Hypothesis: Gender may influence outcome parameters in implantology.

Material and methods: Out of 433 patients, 234 women and 85 men were matched according to patient and implant characteristics. Effects of gender and confounding factors were tested in a binomial frailty model. Mean age in women was 61 ± 12.7 and 59 ± 13.1 in men. The mean loading time was 6.9 ± 4.5 for women and 6.8 ± 5.6 for men.

Results: The 313 patients had been treated with 1461 implants. Mean marginal bone loss did not significantly differ between genders. Early loss was higher in men ($P = 0.01$) while late implant failure occurred significantly less in men ($P < 0.05$). Also men had a lower prevalence of peri-implantitis ($P < 0.01$). A moderately rough ($P < 0.01$) and rough surface ($P < 0.01$), plaque ($P < 0.01$) and smoking ($P < 0.05$) are risk indicators for late implant failure. Smoking and periodontitis are risk indicators for peri-implantitis ($P < 0.05$) in both genders. Other risk indicators for peri-implant disease differ between genders.

Conclusions and clinical implications: Gender has an influence on peri-implant disease and risk indicators differ between men and women.

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Flapless and graftless transcrestal sinus floor elevation – one step placement of two stage dental implants

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Background: The usage of minimally invasive techniques, facilitates the implant-prosthetic rehabilitation of patients by decreasing tissue trauma, terms of functional loading, and treatment costs.

Aim/Hypothesis: To optimize the implant-prosthetic rehabilitation of patients with atrophies in posterior sides of upper jaw.

Material and methods: Thirty one patients (mean age 40.1 ± 0.35 years) had 44 two stage dental implants (SLA, Diameter 3.75–6 and 8–11.5 mm length) inserted in posterior sides of upper jaw, using trans-crestal sinus floor elevation without flap. In the study group (16 patients) 22 implants were inserted in one surgical step – with immediate placement of the healing abutment. In the control group (15 patients), 22 implants were inserted in two surgical steps. According to the radiographic aspects (orthopantomograms) implants' sides were divided into anterior and posterior ones. Radiographic images (postoperatively-baseline and at the end of the healing period) were analysed using Adobe Photoshop CS3 Extended Program. The following indices has been analysed: the height of subantral residual bone, degree of intra-sinusal penetration, periimplant bone resorption, intrasinusal formed bone (at the end of the healing period), implant stability (Periotest device, Bensheim, Germany). Statistical analysis was made by calculating mean values, standard errors, indices of Mann–Whitney *U* test and Student's paired *t*-test ($P < 0.05$).

Results: All implants successfully integrated. The mean healing period was 5.9 ± 0.42 months. The residual sub-antral bone height at the moment of implant placement consisted 7.75 ± 0.28 mm in the Study group and 7.51 ± 0.27 mm in the Control Group ($P > 0.05$). The implant penetration into the sinus for Study and Control Groups was 1.74 ± 0.2 mm şi 2.1 ± 0.17 mm respectively ($P > 0.05$). Periimplant bone loss consisted: Study- Anterior 0.24 ± 0.14 mm, Posterior 0.3 ± 0.13; Control- Anterior 0.15 ± 0.18 mm ($P > 0.05$), Posterior 0.28 ± 0.11 ($P > 0.05$). Intrasinusal new formed bone in the Study Group was: Anterior 2.85 ± 0.41 mm, Posterior 2.34 ± 0.39; and in the Control Group: Anterior – 3.0 ± 0.3 mm ($P > 0.05$), Posterior 3.05 ± 0.25 mm ($P > 0.05$). Mean Periotest values were −4.9 ± 0.32 (Study) and −5.6 ± 0.16 (Control), ($P > 0.05$). Indices of Mann–Whitney *U* test and Student's paired *t* test showed no statistical difference between groups.

Conclusions and clinical implications: During the healing period, the one-step placement of two-stage dental implants using trans-crestal sinus floor elevation without flap and grafting material does not affect crestal periimplant bone remodeling, intra-sinusal bone formation as well as implants' stability.

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One stage sinus floor elevation: systematic review of the relationship between <5 mm residual bone height and implants placement success

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Background: elevation of the maxillary sinus floor is an option in solving problems related to reduced vertical bone height in the posterior region of maxillary; currently two main techniques of sinus elevation are described: a 2-stage technique followed by implant placement after a healing period and a 1-stage technique using both lateral or transalveolar approach.the decision to apply one of these procedure is related to the residual bone height available.

Aim/Hypothesis: The aim of this systematic review is to assess the survival and success rate of implants placed in combination with sinus augmentation, with a mean residual bone height of 5 mm or less.Furthermore the aim is to evaluate the influence of some factors such as different surgical techniques; different grafting materials and implant surfaces.

Material and methods: A medline (pubmed) search from 1965 up to October 2012 was conducted to select articles from the international dental literature, limited to human trials, on SFE one stage associated to an amount of the residual bone height <5 mm. These search terms have been used: 'sinus lift', 'sinus floor elevation', maxillary sinus augmentation', 'lateral window', 'maxillary sinus grafting.This systematic review included randomized controlled clinical trials, prospective and retrospective cohort studies and case series.titles and abstracts of the searches were initially screened by two indipendent reviewers (N.B & O.F.) for possible inclusion in the review. Figure 1 describes the process of identification and selection from an initial yield of 288 studies.Multivariable Poisson regresson was used to investigate whether event rates varied by grafting materials, implant surface, membrane coverage of lateral window and study design. the evaluation of the search strategy has been achieved by combination of parameter from MOOSE, STROBE and PRISMA statement.

Results: A total of 17 studies were included in the analysis. All the included studies were mainly divided into four categories: grafting materials (autogenous bone, bone graft in combination with autogenous bone) implant surface, membrane employement, study design. The 17 studies included 2564 implants placed in 790 patients between 18 and 80 years of age; the overall implant survival rate was of 90.09%.

Conclusions and clinical implications: This review reveals that sinus floor augmentation in combination with simultaneous implant placement, in sites with a residual bone amount of 5 mm ore <5 mm is predictable with a 12 years follow up survival rate of 82.7%. moreover this review shows that there's

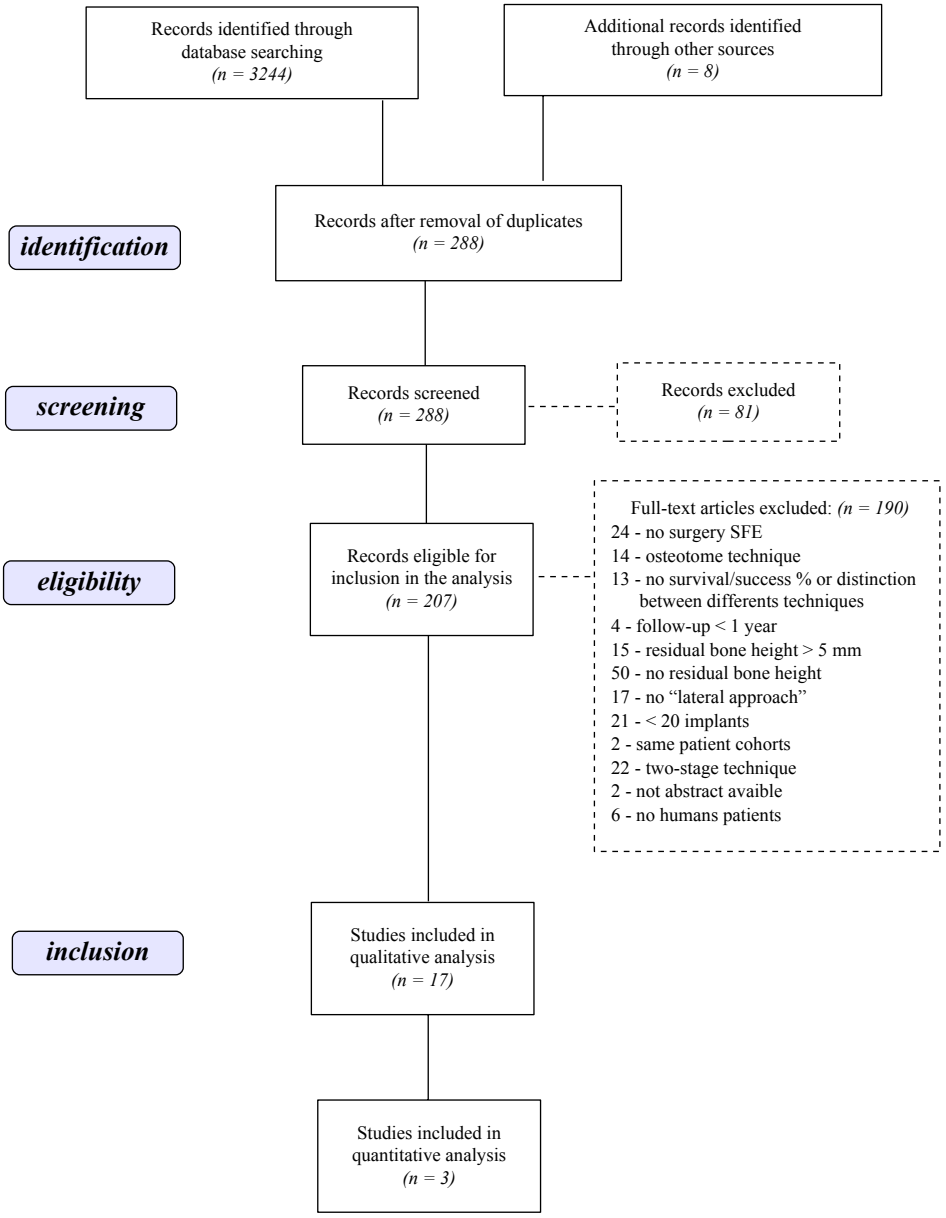

Fig 1. : search strategy. PRISMA STATEMENT

also a lack of RCTs with sufficient statistical power comparing grafting materials. Hence it shoul be appropriate performing prospective studies, comparing implant survival both in graft and non grafted sinus sites, with the same surgical technique, type of implant and grafting material.

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Soft and hard tissue management for immediate implantation: a case report

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Background: Achieving an esthetic and functional implant-supported restoration in the maxillary anterior segment can be challenging. Basic requirement for an optimal final restoration include having adequate volume of supporting alveolar bone and soft tissues. Nevertheless, in cases in which there are advanced facial bone and soft tissue loss due to infection or trauma, the treatment goals expand to the need for regenerating both of these lost structures. Besides, immediate implantation when performed into compromised extraction sockets in conjunction with hard and soft tissues augmentation has been suggested to achieve successful osseointegration and to enhance esthetics for the final restoration with a significantly reduced treatment time.

Aim/Hypothesis: To achieve successful osseointegration and esthetics with implant therapy when immediate implantation is performed into compromised extraction sockets in conjunction with hard and soft tissues augmentation.

Material and methods: A 48-years old man was treated by placing an implant (Nobel Replace® Groovy Tapered, Nobel Bio-

care AB, Göteborg, Sweden) immediately after extracting a severely compromised maxillary central incisor. The adequate anchoring bone available apical to the defect of extraction socket (Class 3 according to Funato classification [2007]) provided satisfactory implant stability. In order to manage the totally missing buccal bone of the socket, the facial aspect of the implant was grafted with bovine bone (Bio-Oss®, Geistlich Biomaterials, Wolhusen, Switzerland) overlaid with a bioabsorbable membrane (Bio-Gide®, Geistlich Biomaterials, Wolhusen, Switzerland). A connective tissue graft raised from the palate was then placed over the implant area and a tension free primary wound closure was performed by displacing the flap laterally. A definitive ceramometal crown was completed 10 months later with periodical clinical maintenance.

Results: The post-operatives follow-ups revealed that the implant was stable, and the buccal depression of the surgical area was reconstructed. A harmonious soft tissue margin was achieved. Radiographs demonstrated a stable bone level with excellent osseointegration of the implant.

Conclusions and clinical implications: This approach can be used effectively to simultaneously augment hard and soft tissues and to place immediately the implant in an extraction socket with a large three-dimensional defect achieving excellent final esthetic outcome of the implant-supported restoration.

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One-piece zirconia implants: 5 year clinical outcomes

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Background: Zirconia is a relevant material for dental implant because of its biocompatible and esthetic properties. However, the long-term clinical performance of zirconia implants is not widely reported in the literature.

Aim/Hypothesis: The aim of the present study was to evaluate prospectively the clinical outcomes of a prototype one-piece zirconia implant during a follow-up period of 5 years.

Material and methods: Twenty one-piece zirconia implant prototypes with an O-ring cervical design were placed and immediately restored with provisional prostheses. A flapless or a minimally invasive approach was used in each case. Surgical, biological and prosthetic complications were assessed and bone levels were recorded at baseline and after 5 years.

Results: Fifteen patients were included in the study. Most of the implants (90%) were placed at the anterior maxilla. Six of the implant sites were previously augmented with autogenous bone block grafts, eight were managed with socket preservation techniques, three implants were immediately placed after extraction and one implant was placed simultaneously with a guided bone regeneration. Insertion torque (30 Ncm) was reached for all implants. One implant abutment fractured at placement because of an excessive insertion torque (50 Ncm). Patients were followed-up for a mean period of 5.2 years (min-max: 4.1–5.8). Four patients (six implants) dropped out. All implants of the recalled patients were still in place, leading to a 100% survival rate. Clinical assessment and peri-implant bone loss measurements were carried out at baseline and after 5 years on 11 patients (14 implants). The mean bone loss reached 1.1 mm (min-max: 0–4.5 mm), at the implant level. Most of the implants showed stable peri-implant bone levels (mean loss of 0.37 mm) while three of them disclosed signs of peri-implantitis leading to an implant success rate of 78.5%, according to Albrektsson's criteria. Two out of the three implants with significant bone loss were found in smoker patients.

Conclusions and clinical implications: From the results of this prospective clinical study, one-piece zirconia implants seem to display good survival rate despite a significant bone loss on three implants. Nevertheless, the results have to be interpreted cautiously since most of the implants were placed in challenging clinical situations where bone augmentations/regenerations were necessary.

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Clinical evaluation of post-extraction implants with a sloped configuration: 1 year prospective preliminary results

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Background: Different reports and clinical studies indicated that an overall reduction in the horizontal dimensions occurred following tooth extraction and that the resorption of the buccal side of the alveolar bone was more prominent than the lingual side.

Aim/Hypothesis: To assess the clinical outcomes in dental implants with a new configuration placed in fresh extraction sockets in the anterior maxilla.

Material and methods: Six patients with a mean age of 50.6 (range form 30–66) years, treated with six single-tooth implants, restored with six customized abutments were included. Implant placement (OsseoSpeed™ Profile implants; Astra Tech AB, Mölndal, Sweden) was performed in fresh extraction sockets respecting a position were the sloped part of the fixture was located at the buccal and most apical position of the osteotomy preparation. The buccal side of the implant was positioned at the crestal bone level and the lingual side became positioned either below or at the level of the lingual bone crest. Presence/absence of the interproximal papilla, inter tooth-implant distance (ITD), distance from the base of the contact point to dental crest bone of adjacent tooth (CPB) and bleeding on probing (BoP) were accessed. Statistical

analysis was performed by means of chi-square test and statistical significance was set at $P < 0.05$.

Results: An overall mean papilla presence of 1.41 ± 0.52 (baseline) and 1.5 ± 0.52 (12 months) was assessed. Baseline assessment showed a mean mesial CPB of 6.04 ± 1.58 mm and distal CPB of 6 ± 1.95 mm. At 12 months a mean mesial CPB of 6.93 ± 2.19 mm and distal CPB of 6.49 ± 2.07 mm were assessed. Overall interproximal bone level changes of −0.69 mm, between baseline and 1 year evaluation were determined. No significant differences were found between the mean mesial and distal CPB in different time measurements.

Conclusions and clinical implications: The present study showed that hard and soft tissue changes around this type of new implant, as assessed in clinical examinations and radiological evaluations, are scarce and tissue stability was achieved.

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Long term treatment outcome of reconstruction of the extremely atrophied mandible with onlay bone grafts followed by insertion of endosteal implants

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Background: Rehabilitation of the extremely resorbed edentulous mandible (Cawood, Class VI, bone height <7 mm) is still a challenge in implant dentistry.

Aim/Hypothesis: This retrospective study aimed to assess the long term treatment outcome (5–12 years) of implant-retained lower dentures on two endosteal Straumann implants placed in a severely atrophied mandible that was reconstructed with bone grafts from the iliac crest.

Material and methods: In 2012, all consecutive patients ($n = 40$) who had been treated with iliac crest bone grafts, two implants and a lower denture between 2000 and 2007 were recalled. Clinical and radiographic parameters, patients' satisfaction and chewing ability were scored. All data was normally distributed. Differences between evaluation periods were tested with a paired Student's t-test. In all tests, a significance level of $P < 0.05$ was chosen.

Results: Implant survival rate was 99% (one implant was lost after 5.5 years). Surgical complications related to the iliac crest donor site were seroma ($n = 1$), hematoma ($n = 2$) and sensible disturbance of the femolaris cutaneous lateralis ($n = 1$) directly after augmentation. All these complaints had resolved before insertion of the implants. Furthermore, 11 patients had reported postsurgical sensory disturbances of the mental nerve (objectively and subjectively). Five of them still had a sensory disturbance in the region at the last recall visit, but the region had diminished in size over time. Mean scores of the indices for plaque, calculus, gingival inflammation, and bleeding were very low. Patients' satisfaction and chewing ability were high.

Conclusions and clinical implications: Iliac crest bone onlay augmentation of the extremely resorbed mandibule followed by placement of two implants after 3 months provides a solid basis for a bar-retained mandibular overdenture. The results show that also on the long run patients are well satisfied with treatment. Peri-implant parameters, chewing ability and patients' satisfaction were high.

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HIV and dental implants: review and case report

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Background: Nowadays thanks to the 'highly active antiretroviral therapy' (HAART), HIV positive patients have a greater life expectancy and a huge reduction of opportunistic infections associated to HIV. But it still remains the idea that HIV positive patients are not good candidates to receive dental implants due to their compromised immunologic system.

Aim/Hypothesis: The objective is to show the survival dental implant rate on HIV positive patients with a literature review. A dental implant treatment case in a HIV positive patient is attached to this presentation.

Material and methods: An electronic search was performed in PubMed database of the US National Library of Medicine (MEDLINE) for studies published until April 5, 2013 using the following search terms: 'dental implant' AND 'HIV'. For the

Table 1. Dental implants in HIV positive patients

Studies	Patients	Nbr. of implants placed	Implant failures	Implant survival rate (%)
Stevenson et al (2007)	15	30	–	100
Anchong et al (2006)	3	6	–	100
Strietzel et al (2006)	3	10	1	90
Shetty et Anchong (2005)	1	8	–	100
Baron et al (2004)	1	12	–	100
Rajnay et Hochstetter (1998)	1	1	–	100
Oliveira et al (2011)	19	39	–	100
Kolhatkar et al (2011)	2	3	–	100
Chan et al (2011)	2	2	–	100
Total global	47	111	1	98.89

final selection the studies had to meet the following inclusion criteria: Clinical studies or case reports on dental implants placed in HIV positive patients. Only studies in English language.

Results: The electronic search resulted in a total of 22 studies. A manual search completed the investigation. Finally 9 articles were selected. These collect 47 HIV positive patients having been positioned 111 dental implants (Table 1). Only four of a total of 47 patients weren't received HAART. The mean of implant survival rate was 98.9% and the follow-up time varied between 6 and 36 months. The case report a dental implant treatment on a male HIV positive patient. That included sinus lift by lateral approach, implant placement and the installation of fixed implant cemented crown. 2 years later, the peri-implant soft tissue is healthy and the prosthetic restoration is functional and in good condition. No post operatory complications –neither biological, nor mechanical– were presented.

Conclusions and clinical implications: The present review demonstrates dental implant in HIV positive patients, especially patients under HAART, is a treatment option presenting similar survival rate as in healthy patients at least in a short-term period (up to 36 months). Further studies are necessary to evaluate implant survival and success in median and long-term follow-ups.

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Precision in computer guided dental implant surgery using rapid prototyping drilling guides: a literature review

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Background: The computer guided surgery systems are marketed as the most reliable solution for accurate positioning of dental implants. However literature reviews have shown precision errors or deviations between implant planned position and position obtained in patient. Unfortunately those reviews included few clinical studies on patients, these types of investigations being the best way to recreate real assessment conditions including all factors that influence precision error occurrence.

Aim/Hypothesis: Evidence precision deviations between implant planned position and real position obtained in patient for computer guided dental implant surgery system using rapid prototype drilling guides by a literature review performed only including human clinical studies.

Material and methods: An electronic search was performed in PubMed database of the US National Library of Medicine (MEDLINE) for studies published until May 25, 2012 using the following search terms: 'computer dental implant guided surgery', 'computer dental implant assisted surgery'. A pre-selection of the titles having as research focus precision in computer guided surgery system was performed. Titles obtained by manual search were added to the pre-selection studies. For the final selection the studies had to meet the following requisites: Inclusion criteria: Clinical studies on patients. Use of drilling guides obtained from rapid prototyping. Precision assessment of computer guided surgery system using image fusion methods. Exclusion criteria: *In vitro* studies on laboratory models, and/or cadavers. Computer guided surgery studies with drilling guides not obtained by other methods than of rapid prototyping and evaluating system deviations (precision) using different methods than image fusion methods. As soon as the final study selection was achieved data on four deviation areas of implant position, between planning and real obtained positioning was recollected: Coronal Horizontal Deviation, apical horizontal deviation, vertical deviation, angular deviation. The mean score and standard deviation for these four parameters was obtained using Microsoft Excell program.

Results: Finally 13 studies were selected. These studies make a total of 1143 assessed dental implants using image fusion methods after computer guided surgery system placement with rapid prototyping guides in patients. The results for the four evaluated deviation parameters (Table 1) are: coronal deviation: 1.04 mm (±0.42), apical deviation: 1.53 mm (±0.67), vertical deviation: 0.59 (±0.36) and angular deviation 4.71° (±1.99).

Table 1. Deviations between virtual planned position and real insertion position of implants

Deviations	Mean	Standard deviation DS
Coronal (mm)	1.04	0.42
Apical (mm)	1.53	0.67
Depth (mm)	0.59	0.36
Angular (°)	4.71	1.99

Conclusions and clinical implications: The clinical use of these computer guided surgery systems demonstrates the presence of precision errors or deviations between virtual planned position and real insertion position of implants. These deviations need to be considered during planning as a minimum required safety margin, especially when flapless surgery is performed as a frequent procedure using this type of system.

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Osseointegrated craniofacial implants in rehabilitation of facial defects: a retrospective study of 23 years experience

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Background: Osseointegrated craniofacial implants have been available for retention of facial prostheses since first reported by Tjelstrom et al. in 1981. This system was based on the tita-

nium intraoral implant system developed by Branemark. Until that time, facial prostheses relied mainly on skin adhesives, or if available, tissue undercuts for retention.

Aim/Hypothesis: The purpose of this study is to report on the 23 year experience of one institution's use of craniofacial implants for retention of facial prostheses. Long term follow-up reports have not commonly been published, even though it is known that some implants continue to fail over time.

Material and methods: In this study, 39 patients have been identified, having had a total of 144 craniofacial implants inserted over a 23 year period. Of the 144 implants placed, 128 were included in this study. Prostheses fabricated for these patients were auricular (30 patients), nasal (7) and orbital (2). Three different implant systems have been used over this time period. These include BUD (BUD Industries, Holland, N.Y.) extraoral implants (53), Straumann (Straumann AG, Basel, Switzerland) extraoral implants (44), and Cochlear (Cochlear Americas, Centennial, CO) extraoral implants (47). The data were analyzed for overall success rates, and success rates among the different systems used. In addition, attempts were made to analyze relationship to other factors including location of implants, radiation therapy, and length of time they were in place, and in those cases where failures occurred, time to failure.

Results: Overall success rate of the combined groups of three manufacturers' implants was 72%, with a mean length of time in place of 69 months. The implants in the Straumann group were 90% successful, vs. 73% of the Cochlear implants and 64% of the BUD implants. These results must be interpreted with caution however, because the success rates were inversely proportional to the mean time in place. The mean time in place for successful Straumann implants was 34 months, while the mean success time for the Cochlear implants was 42 months and the BUD implants was 133 months. Length of times to failure, and variables of radiation therapy and implant location are also discussed. A discussion of previously published reports on extraoral implant success rates is also included.

Conclusions and clinical implications: It is concluded that osseointegrated titanium craniofacial implants continue to be the best available foundation for retention for facial prostheses and continue to be considered state-of art treatment for these defects.

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Vascularized fibula flap graft in the height insufficient jaw bone combine with dental implants for oral functional rehabilitation retrospective study

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Background: Fibula bone flap combine with dental implants are widely used in the reconstruction of extremely atrophic jaw or tumor ablated jaw to acquired functional reconstruction, it is said, no only esthetic profile was obtained but also masticatory function was acquired.

Aim/Hypothesis: The study to evaluate (1) the clinical out come of fibula bone flap extensive ridge height in atrophic jaw bone. (2) The survival of dental implants placed in the reconstructed area and, (3) compare mucosa graft with trimming covery skin flap around the implants, effect to the marginal bone loss under functional loading.

Material and methods: From 1999 to 2009, a total of 13 patients, two female, 11 males, two cases of atrophic maxilla and 11 cases of extensive mandibular defect height due to tumor ablated (Marginal mandibulectomy), underwent vascular fibula bone flap as an onlay bone graft in ridge height insufficant jaw bone combine with dental implants (simultaneous/delay implantation), total of 42 pieces for oral functional reconstruction.

Results: (1) Complication of fibula bone flap are uneventful in all patients. (2) All implants are survival, average 73.6 month (21–142 months) occlusal functional loading. (3) In palatal mucosa graft around implant group, the crown/implant fixture ratio (C/I) was 1.41 ± 0.37 and the mean of marginal bone loss was 0.52 ± 0.28 mm. (4) In trimming covering skin flap around the implants group, the C/I ratio was 1.16 ± 0.12 and the marginal one loss was 1.72 ± 1.51 mm. (5) Compare the two groups. Mucosa graft around implant group significant statistic difference (P: 0.008) in marginal bone loss.

Conclusions and clinical implications: Provide good oral hygiene enviroment for patient is very important.

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Early vs. delayed flapless placement of two-stage dental implants

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Background: The advantages and disadvantages of implants' placement immediately after tooth extraction and in mature bone are widely described in the literature. Currently, the early implant placement and its varieties are insufficiently studied.

Aim/Hypothesis: To appreciate the influence of early flapless placement (type 2) of two-stage dental implants with preservation of alveolar socket content upon their integration and stability.

Material and methods: Thirty-six partially edentulous patients (45.4 ± 0.36 years) had 58 two-stage dental implants (SLA, diameter 3.3–5, 8–13 mm length) installed in the mandible, using flapless approach. In the Study Group (21 patients) 29 implants were installed 6.4 ± 0.69 weeks after tooth extraction (early placement type 2), with the preservation of alveolar

socket content and using underpreparation technique (Insertion torque >40 Ncm). In the Control Group, 29 implants were installed in two surgical steps, after a period of at least 5 months after tooth extraction. According to radiographic aspect, implants' sides were divided into anterior and posterior. Crestal bone loss (Adobe Photoshop CS3 Extended), secondary stability (Periotest Classic) and soft tissue status were evaluated. Statistical analysis was performed by calculating mean values, standard error, Student's paired t test and Mann–Whitney U test.

Results: All implants successfully integrated (healing period 3.5 ± 0.36 months). Early implant exposure type 2 and 3 by Tal was noted in four cases in the study group and three cases in the Control Group. Bone apposition was noticed in the Study Group in 15 cases (0.61 ± 0.08 mm) anterior and 18 cases (0.49 ± 0.09 mm) in posterior sides; in the Control Group anterior – six cases (0.45 ± 0.08, $P > 0.05$) and posterior – five cases (0.21 ± 0.04, $P < 0.01$). An elevated bone apposition in posterior sides of Study Group ($P < 0.01$) can be explained by subcrestal positioning of implant platform comparatively with implants installed in healed bone. Crestal bone loss was noticed in the Study group: 0.51 ± 0.11 mm anterior (14 cases), 0.64 ± 0.12 mm posterior (11 cases); Control Group- 0.47 ± 0.09 mm $P > 0.05$ anterior (23 cases) and 0.5 ± 0.08 mm posterior ($P > 0.05$, 24 cases). Mean Periotest values for Study and Control Groups were −5.31 ± 0.18 and −5.2 ± 0.24 ($P > 0.05$).

Conclusions and clinical implications: Early flapless placement type 2 of two-stage dental implants with preservation of socket content, is minimally invasive and has a similar integration degree and stability with implants installed in mature bone. Due to particularities of given method, there is no necessity of peri-implant bone augmentation.

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A retrospective study on sinus bone grafting with simultaneous implant placement in case of residual bone height <4 mm

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Background: If < 4 mm of residual bone is remained in posterior maxilla, two-stage operation is recommended for implant installation. However, if primary stability could be obtained using tapered designed implants, one-stage surgery could be performed with reliable success rate in severely resorbed maxilla.

Aim/Hypothesis: The purpose of this study was to evaluate survival rates of the implants simultaneously placed into grafted maxillary sinus where the residual alveolar bone height was <4 mm.

Material and methods: A total of 168 implants were installed from January 2010 to September 2012. Allogenic bone graft material was used solely for filling the elevated maxillary sinus. Second stage surgery was performed around 5.5 months after operation and final prosthodontic treatment was conducted around 6 months after operation. Porcelain fused metal or gold crown was used for definitive restorations. Cumulative survival rates were evaluated according to residual alveolar bone height (RABH), general health conditions, smoking status, and Schneiderian membrane perforation.

Results: The mean follow-up was 21.9 ± 7.1 months (Min. 371 days ~ Max. 1186 days) months. A total of 168 implants were installed in posterior maxilla where the residual alveolar bone height was <4 mm. The cumulative survival rates were 99.4%. Perforation of the Schneiderian membrane was not related to implant survival rates and smoking status was not related with implant failure. The systemic disease of the patient was not associated with implant survival rates if the systemic disease was well controlled.

Conclusions and clinical implications: Sinus bone grafting with simultaneous implant placement could be used to treat atrophic maxilla in patients with minimal residual alveolar bone height when initial stability could be obtained by using taper designed implants with modified surgical techniques. Schneiderian membrane perforation did not have an adverse effect on implant success if the membrane was repaired properly using collagen membranes.

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Maxillary anterior bone augmentation using natural osteoconductive porous bone mineral (B-Oss™): a clinical and histological evaluation

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Background: In implantology, various bone graft materials are used for the regeneration of bone. Based on their origin, these are classified as autolgenous bone, allogenic, xenogenic and alloplastic bone substitutes. The characteristics of the xenogenic bone substitutes are the biocompatibility with the bone tissue, the osteoconductivity of the anorganic matrix and the long-term stability of the matrix in regenerated bone. Non-resorbable characteristic of xenogenic bone substitutes during bone regeneration leads to higher bone density of newly formed bone whereby the augmented volume can remain stable over the long term. For this reason, the first indication of the xenogenic bone graft is the volume maintenance.

Aim/Hypothesis: B-Oss is a natural, non-antigenic, porous bone mineral matrix. It is produced by removal of all organic compo-

nents from bovine bone. Due to its natural structure B-Oss is physically and chemically comparable to the mineralized matrix of human bone. The anorganic bone matrix of B-Oss has macro and microscopic structures similar to human bone. The formation and ingrowth of new bone at the implantation site of B-Oss is favored, due to its trabecular architecture, interconnecting macro and micropores and its natural consistency. Due to the bone graft material's close resemblance to human bone results in effective bone regeneration. In the present study, a labial bone augmentation procedure was done with B-Oss, new deproteinized inorganic bovine xenogenic bone graft material and resorbable collagen membrane. Furthermore we analyzed in clinically, radiologically and histologically.

Material and methods: Implant placement and simultaneous labial bone augmentation procedure were done with deproteinized inorganic bovine bone (B-Oss®, Osstem, Korea) & resorbable porcine collagen membrane (OssGuide, Bioloand, Korea). 4.5 months after bone augmentation, at the time of second stage suregry, biopsy samples were taken from the grafted area and was analyzed histologically.

Results: The final prosthetic treatment was conducted at 14 weeks after the implant installation. Augmented alveolar bone volume was maintained stably. The gingival condition looks healthy. From the perspective of histological evaluation, new bone formation through B-Oss was observed. There was direct deposition of bone on the surface of the graft material.

Conclusions and clinical implications: The pore system of B-Oss is architecturally structured to allow vascularization of new bone. High stability and long-term maintenance in the augmented region is achieved through integration of B-Oss granulate into the new bone formations. Good clinical results in the form of stable augmented bone volume was achieved. Histologically, osseous integration of B-Oss granulate was observed. The osteoconductive properties of B-Oss lead to the development of new bone formation both at the surface of the substitute material and at trabeculae between the B-Oss particles of the substitute material.

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Immediate loading in periodontal patient-retrospective study

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Background: The treatment with dental implants, is well documented, with valid scientific proof, predictable and with a high survival rate in healthy patients. The concept of immediate loading born in the beginning of 1990 and was one of the biggest evolutions in implantology. Can be defined for the placement of the dental prosthesis until one weak after the implant insertion. The objective is reducing the wetting time, less mobility and number surgeries procurements, removing the transient prosthesis and attending to the need and objectives of the patients. The survival rate of patients with a history of periodontal disease still remains controversial. Several authors consider that these patients have a higher probability to suffer complications.

Aim/Hypothesis: Compare the survival rate of the implants inserted with immediate loading or delay loading in patients with a history of chronic periodontal disease.

Material and methods: The retrospective study initiated with the collecting data from all clinical processes (private clinic in Oporto, Portugal) referring to patients with a medical history of chronic periodontal disease who had been submitted to the insertion of implants for the placement of a total prosthesis. The diagnosis and the treatment to the periodontal disease was prior to the insertion of implants. Afterwards, the patients were split in two groups: implants with immediate loading or implants with delay loading; The dental implant was used as an independent statistical unit and the comparison between the groups mentioned above used a program of statistical analysis SPSS 18.0. The survival analysis was done through the test Kaplen-Meier. The sample is 37 patients with a total of 260 dental implants; immediate loading 111 implants and delay loading 149 implants.

Results: The survival rate for the total sample was 94.2% and while immediate loading (91.9%) and delay loading (96%). Haven't been observed statistically significant differences ($P > 0.05$). The majority of the implants was loss in the first year. The survival rate stabilised after the second year.

Conclusions and clinical implications: A higher loss of implants was observed in the first year, probably because of the periodontal sequels that cause severe bone loss. Is possible the use immediate load technic in periodontal patients with no statistically significant differences ($P > 0.05$) compared to delay loading; however, a more conservative approach and a good selection of the cases should be adopted. After the first year, it is possible to observe stability in the survival rate in both groups. It is likely that this is due to the strict maintenance protocols, associated to a prosthetic construction that makes the daily oral hygiene easier.

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Immediate placement and loading of single NobelActive™ implants in the esthetic zone: 1-year clinical and radiographic results

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Background: Since the 1969 when Brånemark introduced the concept of osseointegration, the traditional protocols have

been modified and clinical procedures, such as immediate or early implant placement and immediate or early loading, have been proposed to decrease the overall treatment time and to optimize functional and esthetic results.

Aim/Hypothesis: To assess the clinical, radiographic and esthetic outcomes of immediate loaded post-extractive implant to replace single-teeth in the esthetic zone.

Material and methods: A total of 24 consecutive patients requiring single-tooth extraction in the maxillary or mandibular anterior or premolar zones were treated with 25 immediate placement and loading of a single NobelActive™ implant. The treatment involved minimal flap elevation, tooth extraction, immediate implant placement, peri-implant marginal defect filled up with grafting material, insertion of the definitive abutment and the temporary crown within 24 h. The final prosthetic restoration was performed after a mean period of 6 months. Clinical and radiographic examination was completed at 6 and 12 months to assess implant success, radiographic bone loss and periodontal parameters. The modified Pink and White Esthetic Score (PES/WES) were used to evaluate the esthetic outcome. The data were analyzed using the Wilcoxon signed ranch test. Bonferroni's correction was used to take into account multiple comparisons. A value of $P < 0.05$ was considered as statistically significant.

Results: Two implants had failed at 1 month of follow-up, resulting in an implant success rate of 91.67%. Periapical radiographs at 12 months showed minimal crestal bone loss, with mean bone loss of 0.38 mm and 0.28 mm respectively at the mesial and distal aspect. The aesthetic evaluation showed a mean total PES/WES score of 17.1.

Conclusions and clinical implications: The study included a one-stage procedure for immediate replacing single teeth with implant-supported fixed prosthesis. For the patient this strategy seems to be attractive because the protocol decreases treatment time, minimizes the number of surgical/restorative procedures and eliminates the need for a removable partial denture in the early stages of healing, providing immediate functional and esthetic comfort. Within the limitations of the present study, that includes few patients and short follow-up period, it is possible to suggest that, if a careful selection of the patient and strict clinical protocol are observed, the immediate placement and loading of a single NobelActive™ implant in a fresh socket may be considered a valuable and predictable option in terms of implant success and hard and soft tissue remodeling.

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Mini invasive approach for maxillary sinus floor elevation: a randomized splith mouth clinical trial

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Background: the sinus floor augmentation technique has been extensively utilized in the last 20 years to increase the vertical dimension of the posterior maxilla for implant placement; nowadays many clinicians focus on reducing patient post surgical discomfort by application of grafting materials instead of autogenous grafts or by different surgical technique, such as one stage approach. Furthermore it could be interesting to evaluate clinical results associated with a reduced window for the sinus cavity access.

Aim/Hypothesis: the aim of the present study was to clinically evaluate the possible benefit of a mini invasive approach for the maxillary sinus elevation by reducing the size of the window, as compared with the traditional procedure, investigating both the augmentation trend of bone and the post surgical discomfort of patients when compared with the standard procedure (control site); furthermore it was also the purpose of this report to document the real duration of the surgical procedure.

Material and methods: Six patient were selected for the bilateral sinus elevation, based on the following main inclusion criteria: maxillary partial bilateral edentulism; residual bone height < 4 mm; severe atrophy (Cawood & Howell 4 o 5 class); the following patients were excluded from the study: smokers (more than 10 cigarettes per day); patient with systemic controindication to implant therapy; patient with ongoing pathology of maxillary sinus and non treated periodontitis. Computer tomographic scans were carried out in all patients using surgical stents with radiopaque markers in the implant planned position immediatly prior to surgery the randomization was made. In test side access window of 6 × 6 mm was realized, using a piezoelectric system; in control side a larger window was created; in both cases grafting materials were utilized and the bone windows were covered by collagen membranes.

Results: the following parameters were recorded: bone height (on TC slices): plaque and bleeding scoore; bone window size; thickness of bone crest; residual bone crest thickness, duration of surgical procedure; patient discomfort (VAS scale). after 6 months follow up patient were recalled for TC examination. The data were analyzes with a paired *t*-test; the significance level was set at $P < 0.05$.

Conclusions and clinical implications: none of the patient had post operative complication besides normal inflammation at the surgical sites and furthermore test sides showed a lower swelling; in test side data analisys also demonstrated a lower duration of surgical procedure and less surgical complications related to swelling and pain. No statistically significant correlations between the two groups in relation to bone height were observed. We concluded that this surgical less invasive approach for the maxillary sinus elevation is a reliable treatment modality with good results and possible benefit.

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Immediate provisionalization of implants placed in fresh extraction sockets using a definitive abutment: the chamber concept

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Background: The immediate placement of implants after tooth extraction is a common clinical practice with a success rate similar to implants placed in healed sites. Nevertheless the observation of gingival recessions raises concern for placing immediate implants in the esthetic zone. A particular aspect in the stability of peri-implant health is the repeated dis-/reconnections of the abutment during prosthetic phases.

Aim/Hypothesis: The purpose of the present case series is to present radiographic results of dental implants immediately placed and restored with a definitive abutment and followed for 18 months.

Material and methods: Ten consecutive patients who required extraction of the maxillary central or lateral incisor were treated with immediate extraction, implant placement and provisionalization. After a flapless extraction, a single implant was inserted so that the implant shoulder was placed slightly palatally and at least 2.0 mm beneath the bone crest. A standard prosthetic abutment was connected to the implant and never removed; a provisional crown was engaged with the abutment using conic coupling and secured with a lingual screw. The final restorations were delivered 6 months after implant insertion. CBCT radiographic measurements were performed immediately after surgery and the fitting of the temporary restoration (T0) after 18 months (T1).

Results: After 18 months the mean buccal horizontal gap was 2.02 ± 0.3 mm at T0 and -0.21 ± 0.3 at T1, demonstrating bone growth over the implant platform. The mean vertical gap was 4.07 ± 0.15 mm at T0 and 0.15 ± 0.23 at T1, with nearly complete gap filling. The mean distance between bone crest and implant bevel was 2.21 ± 0.12 at T0 and 1.73 ± 0.17 at T1.

Conclusions and clinical implications: The immediate provisionalization of implants placed in fresh extraction sockets by means of a definitive abutment seems to sensibly reduce the loss in the height of buccal bone plate.

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Zigomatyc implant reahabilitation outcomes: case series and survival rate

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Background: The zygoma implants (ZI) have been an effective option in the short-term management of the atrophic edentulous maxilla. Nowadays, this surgical implant-prosthetic rehabilitation is supported by positive results in the international scientific literature. In fact results that the cumulative survival rate (CSR) of ZI is 95.12%, only slightly lower than the CSR of regular implants (RI) that is 97.17%. These data suggest that it's possible to achieve optimal and adequate levels of rehabilitation in selected patients. Particularly, these are subjects with severe maxillary atrophy (VI Cawood's class), reduced compliance, and subjects who request less time in executing or refuse to undertake bone reconstructive surgery.

Aim/Hypothesis: To report on outcomes in the rehabilitation of the atrophic maxilla using zygomatic implants.

Material and methods: Twenty-nine adults patients, were included in a maintenance program, treated with the insertion of ZI for subsequent prosthetic rehabilitation from 2001 to 2013. Cumulative survival rate of ZI, prostheses, and complications were recorded during, at least, 1 year of loading. Clinical torque test was also done.

Results: All patients received fixed dental prostheses (FDPs), anchored on 123 immediately load implants. All patients maintained functional prostheses with a prosthetic survival rate of 100%. Three ZI were lost, one primary failure (surgical error in non-smoking patient) and two secondary failures (non-continuous perimplantitis in patients who smoked a lot of cigarettes a day), with a success rate of 97.56% (120/123). Some postoperative complications were observed during the entire follow-up period. Primary complications were edema, periorbital and malar hematoma, epistaxis and fracture of the orbital floor. Secondary complications were exposure implant's head in patients with reduced adipose tissue, silent and asymptomatic sinusitis. Moreover five prosthetic screw fractures occurred and seven resin teeth has been replaced.

Conclusions and clinical implications: The use of ZI for severely atrophic maxillae is therefore a predictable procedure of rehabilitation, supported by scientific literature and confirmed by preliminary results derived from this work. Complications, however, can occur, so the patient must put in quote the possibility of going repeatedly to the dentist and therefore spend a considerable amount of time during treatment with FDP implant-supported.

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Evaluation of implant stability at different sites of jaws

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Background: Primary implant stability has been used as an indicator for future osseointegration and whether an immediate/early loading protocol should be applied. Bone density is one of the most impostant factor that may affect the primary implant stability.

Aim/Hypothesis: The purpose of this study was to evaluate the implant stability determined by resonance frequency analysis (RFA) device at different sites of jaws and its comparison with the well-known bone density classifications.

Material and methods: One hundred and sixty Tapered screw-vent (TSV), implants with different length but the same diameter (3.7 mm) have been placed at different sites of both jaws. The ISQ was recorded with Osstell mentor device (Integration Diagnostics AB, Sweden) at implant placement and before loading as the final implant stability.

Results: In our previous reports we have shown that the length of the implant did not affect the primary and final stability of the implants so we have placed implant with different length. However; both the initial and the final implant stability was increased with the increase of the diameter of the implants ($P < 0.01$), so we have evaluated only the implants with 3.7 mm diameter. The highest primary implant stability was observed at the anterior mandibular region and the lowest was observed at the maxillary posterior region ($P < 0.05$ when mandibular anterior region compared with the maxillar posterior region). No statistical difference was observed among the other regions. Highest final implant stability was again at the anterior mandibular region and the lowest was at the maxillary posterior region but it was not statistically different. The results were well correlated with the Michs's bone density classification.

Conclusions and clinical implications: According to the results of this study it can be concluded that the primary stability is highest at the mandibular anterior region, and followed by the maxillary anterior, mandibular posterior, and maxillary posterior regions which is correlated with the well known bone density classifications. However final implant stability is not affected by the region.

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Use of antimicrobial photodynamic therapy and guided bone regeneration for the treatment of periimplantitis: a case report

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Background: Periimplantitis is an inflammatory disease that affects osseointegrated dental implants, with 28–43% estimated patients prevalence and 12–53% of sites prevalence. Until now, there is no predictable treatment protocol that promotes implant surface decontamination and re-osseointegration. Antimicrobial photodynamic therapy (aPDT) is a local and painless antimicrobial treatment that can be applied in periimplantitis treatment without systemic risks.

Aim/Hypothesis: This case report presents a protocol with the use of antimicrobial photodynamic therapy combined with a guided bone regeneration (GBR) procedure to treat periimplantitis lesions in the anterior maxilla.

Material and methods: A 45 year old smoker female came to the university dental clinic complaining about an infection on her two dental implants on the anterior maxilla (left and right lateral incisors). The implants were osseointregrated and connected to healing abutments, with 6 mm of pocket depth, suppuration and bleeding on probing. The left lateral incisor implant presented a bucally localized fistula and the patient had no systemic health condition that could affect surgical procedure. A previous aPDT treatment was performed to reduce inflammation. After 2 weeks of aPDT sessions both implants presented residual pocket depths and bleeding on probing but no signs of suppuration and acute infection. A mucoperiosteal flap and vertical releasing incisions were performed to access the periimplant lesion. Implant sites were carefully debridated and mechanically decontaminated with plastic curettes. Then, a photodinamic pre-irradiation time of 5 min using phenothiazine chloride (Helbo Blue®) was performed; sites were irrigated with saline solution and irradiated with a red laser (HELBO® TheraLite Laser) for 60 s (70 mW of power, and a power density of 28 mW/cm²) each site, using an optic fiber delivering a total energy of 16.72 J/cm² per site. Finally, GBR was conducted using a bovine xenograft (Bio-Oss®) and a collagen membrane (BioGide®). The flap was sutured with primary closure and proper post-operatory medications were prescribed.

Results: Clinically, both implants did not present any signs of infection during the evaluation period of 1 year. The pocket depth around implants was ≤3 mm and radiographically, newly forming bone around implants was observed allowing a good aesthetic result.

Conclusions and clinical implications: This case report suggests that treatment protocol with aPDT + GBR may be clinically effective in treating periimplantitis and may promote re-osseointegration.

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Implantation and simultaneous grafting with local harvested bone: evaluation of a minimal invasive approach

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Background: Nowadays, autogenous bone remains the gold standard for grafting procedures in oral implantantology, thanks its osteogenesis, osteoinduction and osteoconduction properties. Autogenous bone grafts can be harvested from different areas intra or extraorally, which often involves the opening of a second wound. But for the reconstruction of limited defects, the bone can also be harvested and grafted locally through a minimal invasive approach.

Aim/Hypothesis: The aim of this study was to sum up the indication for a simultaneous autogenous bone grafting and implantation, to describe and evaluate this minimal invasive autogenous approach, and to put the indications and the limits of this technique according to a clinical evaluation.

Material and methods: Forty patients were consecutively treated through the same approach. Each of them has presented a bone defect of a part of the buccal, lingual or palatal wall, which were measured intraoperatively. In all cases, the alveolar crest was wide enough, permitting the implant placement inside the bony contours. The surgical protocol was to harvest a bone core during the implant bed preparation using a trephine bur (diameter 3.5 mm extern, 2.4 mm intern). A total of 51 implants were then inserted inside the alveolar bone contours. The remaining defects adjoining the implants were measured. The Palatal, lingual or buccal defects were then grafted with the harvested bone core and stabilized with Microscrews®. Then, the dimensions of the grafted areas were clinically measured again before the wound closure. After a 3 months healing period, during the second stage surgery, new measures of the dimensions of the grafted regions were done and the results were compared with the initial situation.

Results: After 3 months of healing, all implants were well osseointegrated. No dehiscense, and no infection were observed. In five cases, part of the screw heads were exposed, without any inflammation or consequences for the grafted bone. For all 51 implants, the grafted bone showed a good stability after 3 months of healing.

Conclusions and clinical implications: According to this study, this technique using an autogenous bone core harvested during the implant bed preparation seems to be a simple and safe method for the reconstruction of small bone defects.

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Clinical decision support system in dental implantology

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Background: Implantology is rapidly developing interdisciplinary field providing enormous amounts of data to be classified, evaluated and interpreted. Approaches offered by dentistry and also by dentoalveolar surgery and prosthodontics data analysis and treatment are therefore of extreme interest. Numerous methods are now available as open source tools for data evaluation ready to support the various treatment plans. The analysis of clinical data remains a big challenge, because each new system has specific requirements. There are more than 30 decision support systems in Dentistry mentioned in literature, which are classified to seven subcategories according to special attributes identified by White.

Aim/Hypothesis: The aim of study is to prepare specific tool for treatment planning. This tool is web-based application developed for using knowledge base (expert knowledge) and solving included data by user and making decision and recommendations in treatment. The tool is kind of DSS (Decision support system) that is classified as clinical considered DSS (using knowledge base and inference engine).

Material and methods: Decision-making supportive system in dental implantology is divided into following three modules: First module is anamnesis including questions regarding patient illness (interactive questionnaire). Second module is the diagnostic examination of dental implant procedure selecting position of implant; evaluating implant positioning diagnosis – 3-D measurement; and checking diagnostic information for treatment planning. Third module is treatment plan in the form of objective measurement of implant placement considering anamnesis and overall health status of the patient.

Results: The structure model with four basic components (Inference engine, Knowledge base, Working memory and Explanation) is prepared. Inference engine is core of system or the main part of Expert System or DSS (programming language – php (there are mechanisms for processing and evaluating data based on KB – knowledge base and WM – working memory). A clinical decision support system (CDSS) is an application designed to assist health professionals in decision-making tasks as in regard to diagnosis and treatment planning.

Conclusions and clinical implications: CDSS for dental implantology planning is based on comprehensive appraisal of the morphologic features of the proposed implantation site: the quality and quantity of available bone, the presence of pathoses, the inclination of the alveolar process, and the rela-

tive location of anatomic structures to the site of implantation. It is known that decision can be qualified as either 'effective' or 'preference sensitive', to the extent that it is related to scientific evidence of benefits and risks to patients. The system can practically help to receive objective treatment plan including implant objectification in general practice. This research has been supported by IGA MZCR 13351-4 and 00064203 (FN Motol).

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Performance and risk assessments of short implants in partial restorations

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Background: There is limited evidence for the outcome and risk assessment of short implants (<9 mm) to rehabilitate posterior jaws.

Aim/Hypothesis: The purpose of the present study was to assess the outcome and risk factors of short implants (<9 mm) in the rehabilitation of posterior areas of atrophic jaws.

Material and methods: This retrospective study included 43 patients treated with 55 implants (47 one-piece and 8 two-piece). Outcome measures were implant survival and peri-implant marginal bone resorption calculated at patient level. Risk factors assessed for marginal bone loss included bruxism, smoking, periodontitis, diabetes, stress, sites with keratinized gingiva (KG) <2 mm, type of implants, and implant with flapless surgery or immediate placement. Generalized estimating equation analysis was performed to determine the predictors of ABL by taking into account of the clustering of implants within patients.

Results: Patients included 21 male and 22 female. Length of 53 implants were 8 mm and two implants were 8.5 mm. Forty-five (82%) implants were placed in molar region and 10 (18%) in premolar region. Nineteen implants (35%) were placed in the maxilla and 36 (65%) in the mandible. None of the implant was lost after 6 year of follow-up. Eighteen implants had ≤2 mm marginal bone resorption. Bruxer ($P = 0.001$) and lack of keratinized gingiva ($P = 0.026$) seemed to be associated with early bone loss. Increased age ($P = 0.074$) had a borderline statistical significance to have more ABL.

Conclusions and clinical implications: Short implants provided good survival rates in the present study (100% at patient level and implant level). Bruxer, KG < 2 mm, and increased age seemed to be associated with more ABL. Further long-term studies with larger samples is needed to validate risk factors for implant bone loss and failure.

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A survey of antibiotic prescribing for dental implant placement and the development of an antibiotic prophylaxis guideline

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Background: Dental implants are increasingly viewed as the gold standard for replacing missing teeth and survival rates are typically high. It has been suggested that these could be further increased with the prescription of antibiotics prophylactically at implant placement. The aim of prophylaxis is to reduce the risk of contamination at the time of surgery which may lead to post-operative infection and early implant failure. The evidence base is limited as to the efficacy of prophylactic antibiotics for this type of procedureand there are no national or international guidelines. The prescription of 2 g Amoxicillin for all patients undergoing ordinary implant surgery, suggested by a recent Cochrane review, seems to contradict efforts to reduce empirical antibiotic prescription.

Aim/Hypothesis: To report the antibiotic prescribing practice for implant placement at Leeds Dental Institute and develop a guideline for prophylaxis for the following procedures: straightforward dental implant placement; placement into grafted bone; and placement with simultaneous bone augmentation; bone augmentation only.

Material and methods: A data collection form was developed and used to record information for consecutive implant placements in the Department of Restorative Dentistry, Leeds Dental Institute during the period of March 2012 to March 2013.

Results: Thirty-nine patients were included in the study and total of 71 implants were placed: 24 patients received antibiotics and five different antibiotic regimes were used. Amoxicillin was prescribed most frequently. All prescriptions ($n = 24$) were for multi-day courses, ranging from 5 to 7 days. Table 1 shows the timing of antibiotic prescription related to bone augmentation.

Conclusions and clinical implications: The general lack of consensus with regards to the antibiotic prophylaxis for implant placement is reflected in the results of this survey where several different antibiotic regimes were used. Additionally, the lengthy regimes prescribed are designed to treat infections rather than prevent them, and have the potential to increase the risk of development of antimicrobial resistance. A subsequent review of the literature has allowed the development of guidelines in line with the best evidence available, aimed at reducing the risk of surgical site infection, drug-related adverse events and the development of antimicrobial resistance. A single pre-operative dose of antibiotics is advised for

	Previous augmentation	Augmentation at placement	Augmentation prior to and at placement	No bone augmentation
No antibiotics (n = 15)	4	1		10
Pre-op and post-op antibiotics (n = 19)	2	14	3	
Post-op antibiotics only (n = 5)		3	1	1

intra-oral bone grafting and implant placement with simultaneous bone grafting. Where implants can be placed without bone augmentation or implants are to be placed as a second stage procedure into established bone grafts, no prophylactic antibiotics are advised.

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Alveolar ridge preservation using a combination of allograft, platelet concentrates and platform switching concept in esthetic area

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Background: In patient with gummy smile, maintaining bone volume after extraction of upper anterior teeth is essential, in order to ensure favourable esthetic results.

Aim/Hypothesis: In this work, we illustrate the benefits of postextractional alveolar filling with particulate allograft (DFDBA) and platelet concentrates, in combination with an implant system including the concept of 'platform-switching', in order to obtain favorable esthetic and functional results.

Material and methods: A 52 years-old patient presents with hopeless anterosuperior teeth and a gummy smile. Extraction of the teeth is carried out, along with osteoplasty, using piezoelectric surgery allowing preservation of bony walls. Dental alveoli are filled with a mixture of particulate allograft 300–500 μm (DFDBA) and platelet concentrates ('buffy coat'), then covered with autologous membranes realized with the upper part of platelet concentrate rich in fibrin. Three months after extractions, A CT-Scan is performed with a radiological guide, than implant planification is realized. Four implants including the concept of 'plateform switching' are placed in the anterosuperior region.

Results: This technique combining alveolar ridge preservation with a mixture of a biomaterial and platelet concentrates allows an excellent healing of the soft tissues. Abundant keratinizing tissue is present. This is favourable for the preservation of the biological space and hence long term esthetic result stability. This technique allows also a good bone volume preservation, allowing ideal position for the implants, and stability of the results.

Conclusions and clinical implications: As we show in this case report, combination of an implant system including 'Platform-Switching' with alveolar ridge preservation using a combination of allograft and platelet concentrates, allows an excellent result in the esthetic zone.

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Rehabilitation of a patient with orbital mutilation resulting from necrotizing fasciitis using extraoral fixtures and epithesis

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Background: Treatment of facial mutilation resulting from orbital exenteration needs a technique which allows a good esthetic rehabilitation.

Aim/Hypothesis: As plastic surgery is not a valid option in this case, we propose to use three extraoral fixtures to be able to fix removable orbital prosthese.

Material and methods: A 58-years old diabetic woman was referred to our department, for left eye pain with loss of light perception and ophtalmoplegia. The diagnosis of necrotizing fasciitis of dental origin was made. Treatment consisted first in aggressive surgical tissue debridement in order to eliminate completely all the necrotic tissues. A total exenteration of the left orbit was performed guided by extemporaneous tissue biopsies. Six months later, three extraoral fixtures were inserted, two in the superior orbital rim and one in the inferior one, under general anesthesia. Five months after insertion, the fixtures were denudated under local anesthesia, and prosthetic abutments were placed. Two weeks later, prosthetic steps were realized, and the patient was rehabilitated by a removable orbital prosthesis, fixed by three magnetic devices on the implants. We describe and illustrate the different surgical and prosthetic steps of this case.

Results: Surgical reconstruction following an orbital mutilation remains a challenge, due to the necessity to recreate the complex three-dimensional ocular form. Extraoral cranio-facial fixtures, with an average success of 95% in non irradiated patients have made it possible for the orbital epithesis to be considered as a forerunner in the strategies of cosmetic rehabilitation. Satisfaction of the patient was achieved with this technique.

Conclusions and clinical implications: The clinical case presented here shows that transcutaneous extraoral fixtures may be used as bone anchorage for an ocular epithesis, in cases of orbital mutilation resulting from necrotising fasciitis treatment.

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Four extramaxillar zygomatic fixtures and bilateral sinus lift allow rehabilitation of the edentulous maxilla

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Background: Following initial Bränemark technique, zygomatic fixtures crossed the maxillary sinus, and main complications were the occurrence of acute and/or chronical sinusitis.

Aim/Hypothesis: We aim at improving the more recent extramaxillar technique, completing fixtures placement with bone graft of the sinus, in order to ensure the upper part of the posterior zygomatic implants being embedded by bone.

Material and methods: We describe a new technique of bilateral sinus lift simultaneous to the placement of four zygomatic fixtures, by means of piezosurgery, platelet concentrates in combination with an allograft (DFDBA). Five months later, at the time of the second stage surgery, immediate loading of the four zygomatic fixtures is realized. Then, after 3 weeks of healing of the mucosa, prosthetic steps are realized, in order to provide the patient with a fixed screwed monobloc titanium prosthesis. Surgical and prosthetic steps are showed and described.

Results: Radiological postoperative evaluation at 5 months post-first stage surgery shows that in this case, the two posterior zygomatic fixtures are surrounded by bone in their upper transsinusal part, and that the bone gained by this technique has a good density and quality. The maxillary mucosa is free of any inflammatory reaction. The excellent osteointegration of the fixtures obtained allows realization of a fixed prosthesis with a monobloc titanium frame.

Conclusions and clinical implications: The case presented here illustrates that four extramaxillar zygomatic fixtures completed by a bilateral sinus lift (piezosurgery, DFDBA and platelet concentrates) performed at the time of zygomatic fixtures placement allows the upper part of the more posterior zygomatic implant being surrounded by bone, thus decreasing the risk of maxillary sinusitis.

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Comparative evaluation of 55 narrow diameter implants followed for up to 7 years: a clinical and radiographic retrospective Study

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Background: Narrow diameter implants are commonly used in cases of unfavourable bone width, or small mesio-distal space. The question arise concerning success and survival rates of this type of implants.

Aim/Hypothesis: The present study evaluated the success and survival rates of commercially pure (cpTi) or titanium-zirconium (Ti-Zr) Narrow Diameter implants (NDI: diameter 3.3 mm), the peri-implant parameters, mechanical and prosthetic post-loading complications over period of up to 7 years.

Material and methods: Fifty-five NDIs (42 cpTi and 13 Ti-Zr) were inserted into 23 patients. Nineteen NDIs (16 cpTi and 3 Ti-Zr) had been placed in appositional bone graft. Clinical and radiographic assessment data were collected during recall visits. Implant success (SC), cumulative survival rate (CSR), marginal bone loss (MBL), peri-implant conditions and prosthetic complications were assessed. Bravais-Pearson values (r) were calculated in order to evaluate the outcome of NDIs within comparable subgroups. MBL and peri-implant parameters measured annually were further analyzed.

Results: The mean follow-up time was 11 months (range: 1–84 months). One implant was lost. The mean MBL in the maxilla and the mandible was 0.6 and 0.53 mm, respectively. SC and CSR were 76% (76% cpTi and 77% Ti-Zr) and 95% (93% cpTi and 100% Ti-Zr), respectively. Success rate is correlated significantly with the ease of maintenance of the prosthesis and the choice of making a removable prosthesis on implant ($0.61 < r < 0.80$). The success rate is correlated moderately with an equilibrated occlusion ($0.41 < r < 0.60$).

Conclusions and clinical implications: From this study, NDIs can be used with confidence when a regular diameter implant is not suitable. Ease of hygiene and choice of a removable solution are positive parameters for the success of NDIs, as well as equilibrated occlusion. Ti-Zr NDIs show a slightly higher rate of success and a higher survival rate than cpTi NDIs This tendency has to be confirmed in a future RCT.

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Implant resection in the management of neurosensory disturbance of the inferior alveolar nerve

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Background: A 46 years old female healthy patient was admitted at the emergency service with excruciating pain in the right mandible. Discrete progressive neurosensory disturbances started following the placement of two dental implants 2 years ago at position 44 and 46 culminating with a complete anesthesia of the right inferior lip. Conventional painkillers were ineffective. At clinical examination, there was no sign of inflammation or infection. Psychophysical tests, performed bilaterally in the lip and chin areas, showed a dysesthesia of the right inferior alveolar nerve. Conventional periapical x-rays were not contributive. However, CBCT examination

revealed that the apical portion of the implant 46 was placed into the mandibular service. Several therapeutic options were discussed with the patient. Resection of the apical portion of the implant was retained.

Aim/Hypothesis: To show an implant resection in the management of neurosensory disturbance of the inferior alveolar nerve.

Material and methods: The resection was performed under strict local anesthesia (without right alveolar nerve block). The implant was exposed by raising a large flap from teeth 43 to 48 and opening a bone window of 25 × 15 mm using a piezo surgery device (Mectron®). Apical resection of the implant was performed using a tungsten carbide bur. The bony window was finally repositioned and fixed using four osteosynthesis bone screws (Medartis® modus1.5). The flap was repositioned and sutured. Patient's recovery was uneventful.

Results: The patient reported complete sensitivity recovering of the gums, lip and chin right after implant resection. After surgery, pain was completely relieved. Nevertheless, 4 months later the patient described a return of pain sensation. Adjunctive carbamazepine and pregabalin was successfully instaured.

Conclusions and clinical implications: There are few articles dealing with nerve injuries induced by implants (Peñarrocha-Diago et al., 2010). Most of them are case reports and often end by a removal of the implant. The method used in the present case is an alternative, more convenient, cheaper and definitely less invasive procedure. Conclusion: The resection of the apical portion of the implant allows the decompression of the inferior alveolar nerve while maintaining the functional implant and the prosthetic reconstruction in place.

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Transitionnal mini-implants to assist computer guided surgery and immediate provisionnalisation in the fully edentulous arch: a clinical case series

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Background: The recent advances in dental 3D imaging combined with the development of specific planning software has opened new perspectives in the surgical approach of implant dentistry, by the means of computer aided surgery. However, treating the fully edentulous patient remains a major challenge for the clinician essentially due to the lack of rigid surfaces to adequately seat the radiographic guide (RG) and surgical template (ST) which may lead to a significant disrcepancy between planning and surgical execution.

Aim/Hypothesis: The aim of this case series is to present a clinical innovative approach for treating complete edentulous patients using computer guided implant placement assisted by screw retained type mini-implants which will be utilized to support both surgical template and immediate provisionnalisation at the time of definitive implant placement.

Material and methods: Four patients with at least one edentulous arch were treated. After the diagnostic teeth setup was performed, a duplicate with radio-opaque acrylic was fabricated to serve as a template for the placement of screw retained type mini-implants. Four mini-implants were strategically placed through the guide where they would not interfere with the future definitive implants. The mini-implants were used to support the RG for CT scan. Subsequently, the RG was converted into a ST based on the 3D virtual planning. Eight implants were placed by the computer guided system and an immediate prefabricated fixed provisional was connected to the mini-implants.

Results: All the implants included in the study achieved primary stability. In 48% of the total implants placed, the insertion and the depth of the implants were completely controlled by the precise adaptation between the implant mount and the guided sleeve. The flapless guided implant placement was 12% and the implants around which bone graft was required with flap elevation were 22%. Until a 4-month healing period, the mini-implants were successfully served as interim abutments for provisional prosthesis.

Conclusions and clinical implications: This innovative clinical approach overcomes the limitations of mucosa and bone-borne surgical template by offering a fixed and reproducible seating of the radiographic guide and surgical template supported by mini-implants. The complete immobility of the guide on mini-implants in a predetermined position may: (1) Eliminate the innacuracy related to guide repositionning, thus increasing predictability between planning and surgical execution. (2) Provides the clinicians with more surgical technique flexibility (GBR, Localized flap elevation). (3) Reduce intra and post operative discomfort The delivery of a prefabricated screw-retained provisional on mini-implants allows for passive healing and minimum chairside adjustments as opposed as conventionnal immediate loading protocol which may be time consuming, technique sensitive and not appropriate with regards of minimal primary stability or grafted sites.

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Mineral grafting vs. xeno-grafting in small and medium lost of substance

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Background: This study is part of a vast research quantifying through computer programs and 3D modelling the integration degree of augmentation materials in the case of rehabilitation

of small and medium oro-maxillo-facial substance loss in the contextual biomechanical behaviour of different types of prosthetics.

Aim/Hypothesis: The study aims at a comparative analysis of the usage of mineral grafting or of the xeno-grafting, selection dictated by the specific features of the clinical case and the therapy solution chosen. An important role in the selection of one category or the other of grafting is due to the cito-architecture of the intra-oral substance loss or the degree of re-absorption and the atrophy of the edentulous ridge, associated with the use of the collagen membranes or of the titan mesh.

Material and methods: During the first stage, a mathematical model was created in order to reiterate the clinical situation of the case which is about to be solved. This was doubled by experiments on animals in order to evaluate the pressures exerted during different therapeutic solutions, correlated with different types of applied implants, quantifying the degree of re-absorption and bone re-modelling post-grafting with one type or another of substitutes. The second stage aims a representative number of cases (300 patients) to which it was applied the therapy solution of election and the type of grafting according to the factorial sum which influences the therapy results. In this study we used 3D Robodent navigation system, designed so as to increase the degree of accuracy of the insertion of dental implants and to quantify the degree of bone density.

Results: The selection of mineral grafting or the xeno-grafting is dictated by the particularity of the clinical case. The positive evolution of the case is fully according to the type and number of implants used and, of course, the prosthetic solution chosen and anchored in the field of the fixed or mobile prosthetics in the field of the meto-ceramic or entirely non-metallic biomaterials.

Conclusions and clinical implications: The binominal material grafting – mucous-bone support structure influences in a decisive way the evolution of the clinical case. The success of the final result depends on the surgical technique used and the selected prosthetic solution.

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Comparison of primary stability between titanium and zirconium implants

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Background: One of the basic procedures during a comprehensive implant treatment is measurement of the primary implant stability. Determination of high stability allows to immediately load the implant. Otherwise, low stability indicates the risk of implant loss.

Aim/Hypothesis: To investigate the degree of primary implant stability and to assess its value and variability, depending on implant material: titan and zirconia, type of thread and shape of the implant.

Material and methods: Comparision of eleven different implant systems: Ziterion Zit-Z, NobelActive, NobelReplace, Astra Tech, Straumann Standard Plus, Straumann Bone Level, Osstem GS2, Osstem GS3, NanoTite Certain (Biomet 3i), Neoss and Adin. Ten implants from each system have been inserted into purchased pig fibula bones, in accordance with individual procedure for each system. Stability of each implant was examined by Periotest device.

Results: Among titanium implants mean Periotest Values ranged from −2.5 to 11.5 PTV. The highest primary implant stability achieved NobelActive (−2.5 PTV), Neoss (−1.8 PTV), NobelReplace (−1.7 PTV), Osstem GSIII (−1.7PTV), Adin Touareg (−1.6 PTV). In the group of zirconia implants Ziterion Zit-Z mean values amounted 9.1 PTV.

Conclusions and clinical implications: Assessment of the primary stability allows to decide about immediate loading possibilities. At a later stage implant stability evaluation enables to get information about osseointegration process, which proper course is essential to successful treatment. Primary stability of dental implants depends on many factors. Variable results indicate that thread geometry influences on the primary implant stability.

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Use of pain medication following implant surgery

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Background: Patients are often dissuaded from having implant surgery because of perceived pain involved with the procedure. There is a paucity of normative data from which to guide patients using an evidence based approach.

Aim/Hypothesis: The objective of this study was to quantify the average amount of pain medication required by patients following implant surgery and bone grafting in a specialty private practice setting. Furthermore, perceived pain prior to the surgery and the actual pain experienced was compared. It was hypothesized that a patient's expectations of post-operative pain is exaggerated compared to their actual experience.

Material and methods: Patients self reported the amount of pain medication they required to manage post-operative pain at the 2 weeks post-operative visit. Furthermore, a visual analog pain scale was used to measure the perceived pain prior to the surgery and again at the follow up appointment. Concomitant medication used to manage non-oral pain, smoking, number of implants placed, whether bone grafting was required, dental anxiety, length of surgery and patients previous surgical experience were controlled for. All patients were

prescribed 600 mg ibuprofen 30 min pre-operatively and 600 mg ibuprofen post-operatively every 6 h as required to manage pain.

Results: In this pilot study 60 patients receiving between one and four implants were included. All implants achieved osseointegration and no post-operative infections were observed. The average number of 600 mg ibuprofen capsules required post-surgery was 5.1 ranging from 0 to 19 capsules. Ninety percent of patients required pain medication for <48 h. Twenty percent of patients required no more than one capsule of pain medication. Patients taking pain medication for more than 5 days all had bilateral implant surgery, high dental anxiety and were being comanaged for chronic pain conditions. The comparison between the pre and post operative visual analog scales revealed that patients perceived pain was significantly higher than the actual pain experienced.

Conclusions and clinical implications: Most patients having implant surgery required <48 h of pain medication to manage post-operative pain. Furthermore, the anticipated pain prior to surgery was significantly higher than the actual pain reported. These data enable the clinician to assure a patient that surgery will be less painful than the patients likely anticipates, encouraging them to go forward with the surgery.

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Diode laser vs. conventional technique for second stage surgery – a pilot study

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Background: Dental implants may be placed following single or second stage protocol during healing phase. With the second stage procedure the risk of unwanted loading is minimized, but second minor surgical intervention and more time prior to prosthetic phase are needed. The surgical exposure of dental implants can be performed using scalpel, punch, or, with less bleeding and postoperative discomfort, laser uncovering. Diode laser for soft tissue oral surgery is becoming widely used due to its beneficial effects regarding sufficient haemostasis, precise incision margin, abscence of swelling and pain. The importance of the soft tissue-implant interface is a vital element of treatment, especially when there are aesthetic and patients' satisfaction considerations.

Aim/Hypothesis: The purpose of this study was to compare diode laser and conventional scalpel surgery for dental implants exposure with regard to oedema, haematoma, postoperative pain and patients' satisfaction.

Material and methods: The sample of presented study consists of 29 patients with dental implants previously inserted in the lateral mandible, 16 in the study group (laser) and 13 in the control group (scalpel). Local anestethic was administered to all patients before the procedure. Dental implants in the study group were treated with high power diode laser (Hager&Werken, Duisburg, Germany), layer of (Al-In-Ga-As-P) on a (Ga-As) substrate, using wavelength of 975 nm, Fibroma removal program, and power of 5 W, continuous mode with the spot size of 0.1–0.5 mm. Control group was treated using scalpel for crestal incision technique with silk sutures. Three days after the surgical procedure oedema, haematoma, postoperative pain and patient's satisfaction rate were assessed by a single examiner. After 3 weeks patients were recalled again to evaluate delayed postoperative complications. Statistical analysis was performed with χ^2 test for categorical and Mann-Whitney test for numerical variables. *P*-values lower than 0.05 were considered as significant.

Results: No significant differences regarding age and gender of the participants were observed between the groups. Patients in the study group had significantly lower oedema and haematoma scores compared to the patients in the control group ($P < 0.05$). Patients in the study group reported significantly lower pain and higher satisfaction rate compared to the patients in the control group ($P < 0.05$). After 3 weeks follow-up no postoperative complications or healing complications were found in study or control group.

Conclusions and clinical implications: Diode laser can improve healing and patients' satisfaction, and minimize postoperative complications. Diode laser can be used as an effective modality for dental implants exposure, due to precise incision, reduced bleeding and postoperative discomfort.

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Ceramic oral implants: 1-year results from a prospective multicenter study

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Background: Dental implants are usually made from titanium due to its well documented biocompatibility. Implant design is recognised to influence the aesthetic results of the treatment. A major concern affecting the aesthetic outcome may be the metallic tulip-shaped shoulder of the implant and the metallic abutments, which may lead to a visible grey metallic shadow through the associated soft tissue. Therefore the use

of ceramic implants (made from e.g. zirconia) may have the potential to improve the aesthetics of implant restorations due to its similarity to natural tooth colour. Furthermore, allergic reactions to titanium have been reported, whereas allergic reactions associated with ceramic implants are unknown. Zirconia-based ceramics have documented biocompatibility and proven stability as a biomaterial for clinical implantation. Several animal studies have shown that zirconia dental implants can osseointegrate to the same extent as titanium implants and show the same peri-implant soft tissue dimensions.

Aim/Hypothesis: The hypothesis of the presented study is that Straumann monotype ceramic implants serve as a suitable alternative for implant therapy especially in the aesthetic zone, with comparable success and survival rates to those published for titanium oral implants. This is a prospective study with 43 patients recruited at three different study centres in Germany.

Material and methods: Implants were placed transmucosally and were protected by a thermoplastic splint for healing. Twelve to 14 weeks post implant placement a provisional single crown was placed out of occlusion. Final crowns were placed between study weeks 24 and 28. Implant survival, implant success, radiographic bone loss (by standardized x-rays) and adverse events were assessed in the 1-year follow-up visit and compared to baseline measurements. Follow-up visits at 2 and 3 years after placement will follow in 2014 and 2015 respectively.

Results: The results indicate a high survival rate of 97.7% (1/43 implants lost); the corresponding success rate is 97.7%. The bone loss is comparable to that reported in the literature for similar titanium oral implants. Excellent aesthetic results have been achieved. Product related adverse events have not been reported.

Conclusions and clinical implications: Even though long-term data are still pending the actual data support the conclusion that Straumann monotype ceramic implants may be a suitable alternative for implant therapy, especially in the aesthetic zone.

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Bone and soft tissue augmentation for the rehabilitation of the anterior maxilla: 1–10 years follow-up study

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Background: The loss of alveolar ridge and soft tissue contour in the aesthetic zone compromises both function and aesthetics. Bone and soft tissue regeneration is often needed for implant placement and their successful osseointegration, as well as for optimal aesthetic results.

Aim/Hypothesis: Aim of this study was to evaluate the effectiveness of materials and techniques used for soft tissue and bone regeneration in the aesthetic zone.

Material and methods: One hundred and eighty-six adult patients (92 male, 94 female) participated in the study, ranging in age from 18 to 62 years (mean 44.8 years). All patients revealed moderate to severe hard and soft tissue defects in the anterior maxilla, where reconstruction involved implant placement. Vertical defect height, horizontal defect depth and horizontal defect width at the implant sites were measured. As graft materials were used: (1) only autologous bone (AB): onlay block graft (21 cases), particulated graft (86 cases), (2) AB mixed with platelet-rich plasma (PRP; 34 cases), (3) AB mixed with allograft (AL; 32 cases), (4) AB mixed with AL and PRP (13 cases). In 109 cases resorbable collagen membranes and in 77 cases non-resorbable e-PTFE membranes were used. In 65 cases sub-epithelial connective tissue grafts (SECT), in 38 cases acellular dermal matrix (ADM) and in 26 cases collagen matrix (CM) were used for the closure of the surgical site, at the time of bone regeneration, in order to avoid aesthetic pitfalls. Immediate implant placement took place in 112 patients, while in 74 patients the implants were placed after 4–6 months. In total, 278 implants were placed. All patients had a detailed clinical and radiographic examination every 6–12 months.

Results: Bone resorption was evident, mainly, in horizontal level (mean 2.2 mm, SD 0.7), while less significant resorption occurred in vertical dimension (mean 1.1 mm, SD 0.4). There was a tendency towards less resorption in sites where AB grafts and non-resorbable membranes were used ($P < 0.05$). Soft tissue contour reduction occurred in 36 cases, mainly where CM (six cases) and no soft tissue graft was used ($P < 0.05$). Compromised aesthetic results, due to either hard or soft tissue resorption, were observed in 52 cases ($P > 0.05$). Only six implants failed during osseointegration period. Eight implants were lost during loading period.

Conclusions and clinical implications: The present study showed that stable marginal bone and soft tissue conditions can be achieved in the aesthetic zone, after 1–10 years of implant function, following bone and soft tissue regeneration. AB in combination with non-resorbable membranes revealed better results regarding bone stability, while SECT grafts achieved better soft tissue coverage. High implant success (97.8%) and survival (97.1%) rates were occurred.

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Osseointegration and survival rates after immediate implant placement: 1–3 years clinical study

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Background: Immediate implant placement is often needed in clinical implant practice.

Aim/Hypothesis: Aim of this study is to present the results of a prospective, clinical and radiographic, evaluation regarding osseointegration and survival rate after loading of Seven® implants (Medical Implant System, Israel).

Material and methods: One hundred and forty-six patients (66 male, 80 female), with no medical history, participated in the study. In total, 183 implants were placed. The diameter of the implants was: (1) 3.3 mm, 18 implants, (2) 3.75 mm, 35 implants, (3) 4.2 mm, 84 implants, (4) 5 mm, 46 implants. The length of the implants was: (1) 8 mm, 22 implants, (2) 10 mm, 81 implants, (3) 11.5 mm, 63 implants, (4) 13 mm, 17 implants. In 151 implants bone augmentation took place after insertion, while in 32 implants no graft was used. As graft materials were used allograft (65 cases) and biphasic calcium sulfate (86 cases). Eighty-nine implants were placed in the maxilla and 94 implants in the mandible. The evaluation period was 12–36 months. All patients had a detailed clinical and radiographic examination every 3–6 months.

Results: Osseointegration was achieved in the great majority of the cases examined (180 implants, 98.4%; $P < 0.001$). Three implants failed to osseointegrate (1.6%). Out of them, two implants were placed in conjunction with bone graft (allograft) and one implant with no bone garft ($P > 0.05$). Peri-implantitis was revealed in six implants (3.3%), mostly after the 24th month (four implants; $P < 0.05$). Out of them, five cases observed in male patients, while one case in female patients, mainly due to poor oral hygiene ($P > 0.05$). Four cases of peri-implantitis were observed in the maxilla and two cases in the mandible. Two implants were lost after loading during the observation period.

Conclusions and clinical implications: The results of this study showed exceptional osseointegration rate (99.73%). The application of bone regeneration, in conjunction with implant placement, does not interfere with osseointegration. The majority of failed osseointegration and peri-implantitis cases were observed in male patients, but no statistical significant differences were established regarding the sex of the patients. Implant survival rate after loading was 98.9%.

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Evaluation of a one-piece ceramic implant used for single tooth replacement and three-unit bridge restoration: a prospective cohort clinical trial

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Background: Zirconia (ZrO2) as metal substitute possesses good physical characteristics, like high flexural strength and hardness. Furthermore, its biocompatibility as dental implant material has been proven. So far, no long-term data on the clinical use of zirconia implants are available yet.

Aim/Hypothesis: The aim of this trial is to evaluate the safety and efficiency of zirconia oral implants after 1 year of function.

Material and methods: Two centers treated healthy subjects in need of implant supported single tooth restorations or three-unit bridges. A 1-stage surgery was performed, where the implants were immediately temporized. Follow-ups took place at 6 months and 1 year following placement of the final prosthetic restoration. The earliest cementation of the final prosthetic restoration was 3 months after implant placement. At each visit a clinical evaluation was performed and standardized analogue periapical radiographs were taken. The mean marginal bone resorption was evaluated by an independent radiologist. For statistical analysis the life-table analysis, Kaplan-Meier methods, and the modern time-to-event analysis including the competing risk-model will be used for evaluation of the cumulative success and survival rate.

Results: 57 patients with 66 implants were included in this study provided with nine bridges and 48 crowns. No implant loss was detected after the 1-year follow-up. The mean marginal bone loss from implant insertion to the 1-year follow up of the final prosthetic restoration was −0.8 mm with a standard deviation from 0.76 mm (min. −3.1 mm/max 0.6 mm). No bone loss was detected from prosthetic delivery to the 1-year follow up.

Conclusions and clinical implications: The presently tested one-piece ceramic implant was successful in replacing single tooth and three-unit gaps with a mean marginal bone loss of <1 mm after 1 year of function. Further long-term data are necessary to verify these initial findings.

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Gingival papillae after single-implant computer guided flapless surgery

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Background: The computer-guided flapless implantology has numerous advantages including better preservation of circulation, soft tissue as well as bone volume at the site. The literature brings the evidence that the papilla regeneration depends on surgery technique. It would be interesting to know how gingival papillae fill up the proximal space after flapless surgery.

Aim/Hypothesis: To compare the degree of change of papillae at time of crown insertion and during follow-up; to analyse the relation between Gingival Papilla Index (GPI, Jemt 1997) scores and distances from the coronal contact point to the crest of bone.

Material and methods: Twenty-seven Hexcel single-implants were placed in both jaws using computer-guided flapless one-stage surgical approach in 22 patients; $\langle x \rangle = 57 \pm 12$ years. Except two all implants had diameter 3.75 mm. The healing

period was 3–6 months. With the aid of GPI we clinically and photographically evaluated the degree of change of 33 available papillae at time of crown insertion and during follow-up. The mean time since crown insertion was 36 ± 25 months. The changes in GPI scores of two groups on both proximal sides were tested using *t* test. We analysed also the relation between GPI scores and distances from the contact point between the crown of the tooth and the implant to the crest of bone using intraoral radiographs.

Results: The difference of mean values of GPI scores at crown placement and at follow-up was not statistically significant. Table shows that the highest number of present† papillae are found when the distance (mm) from contact point to the bone crest reached ≤5 mm (Table 1).

Distance (mm)	<3	3	4	5	6	7	8	9	>10
Number	1	5	5	15	1	5	0	1	0
Present†	0	4	3	15	1	5	0	1	0
Absent‡	1	1	2	0	0	0	0	0	0
Jemt Index Score									
0	0	0	2	0	0	0	0	0	0
1	1	1	0	0	0	0	0	0	0
2	0	2	0	12	1	5	0	1	0
3	0	2	3	3	0	0	0	0	0

†Jemt Index 2 and 3 combined.
‡Jemt Index 0 and 1 combined.

Conclusions and clinical implications: Our results suggest that the level of papillae between implant and tooth remain stable in <x> = 3 years. The data show that papillae are present† 5.5 time more frequent than absent‡ ones when the distance from contact point to bone crest is ≤5 mm.

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Evaluation of the effect of surface properties on the stability of the different implants

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Background: Dental implant surface technology has made a big progress with the aim of achieving faster osseointegration on their surfaces and improving the expected outcomes. Recently various attempts have been made to modify the surface of titanium in order to make it bioactive, but without the use of coating of other bioactive material. The most successful methods of titanium bioactivation are e.g. alkali or fluoride treatment. It was found that the combination of treatments modifying roughness on all scales and those modifying reactivity (bioactivity) could result in an optimal implant surface with outstanding ability of quick and reliable osseointegration. Knowledge about the importance of nanostructures in early bone healing and osseointegration is limited.

Aim/Hypothesis: The aim of this study was to investigate if titanium bioactivation enhance early bone healing on straight shaped dental implants and to evaluate how long times to be shortened treatments.

Material and methods: A total of 45 straight shaped, self-tapping, commercially pure titanium dental implants, divided into a test group (implants with an alkali-modified surface or biosurface) and a control group (implants with sand-blasted surface) were inserted in the mandibles of 14 patients. A total of 45 implants which had the same diameter and lenght, were planned to use for this study. Resonance frequency analysis method was used to measure the implant stability quotient (ISQ) 0.2, 6 and 12 weeks after the implantation.

Results: The results from the resonance frequency analysis showed a tendency for higher values for the implants with biosurface immediately after the implantation. But the high value showed fast/speedy decrease for the implant stability quotient 2 and 6 weeks after the implantation and 3 months later both groups had the same ISQ. Although the result of resonance frequency analysis indicated highly primer stability, over time in the alkali-treated surface implant group there was no effect of seconder stability. Although immediately after the implantation the statistical significance were exist ($P < 0.05$), 3 months later the differences did not reach statistical significance ($P > 0.05$).

Conclusions and clinical implications: According to the results of our study, biosurface implants are more advantageous compared to sand-blasted surface implants for immediate loading. There are need new comparative and long-term follow-up studies with alkali-treated surface implants.

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Immediate implant placement in areas of aesthetic priority: a 10-year follow-up study

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Background: Immediate implant placement is characterized by several advantages. However, specific challenges such as compromised primary implant stability, the need for bone augmentation and predictability of the esthetic outcomes have been addressed. Previous studies focusing on immediate implant placement has involved a short follow-up period and long-term studies are sparse.

Aim/Hypothesis: To evaluate the 10-year clinical and radiographic outcomes after immediate implant placement using a standard, cylindrical, screw-shaped transmucosal implant

(SLA, n = 12, Straumann, Switzerland) or a tapered transmucosal implant (SLA, n = 12, Straumann, Switzerland) in extraction sockets in areas of aesthetic priority in a randomized-controlled clinical trial.

Material and methods: A total of 24 implants were placed in 24 patients. Following minor flap elevation and careful tooth luxation, the implant was installed after randomization. When the periimplant bone defect was >1 mm horizontally or vertically, guided bone regeneration was performed simultaneously (Bio-Oss and Bio-Gide, Geistlich Pharma, Switzerland). After a 3-month transmucosal healing period, the final implant crown was placed. The outcome measures included implant crown survival, implant survival, probing depth, bleeding on probing, peri-implant marginal bone level, biological complications, and technical/mechanical complications.

Results: Implant crown survival and implant survival were 100%. The peri-implant tissues were generally clinically healthy with probing depths < 4 mm and maintained peri-implant marginal bone level. However, peri-implantitis characterized by bleeding on probing as well as progressive probing depth and peri-implant marginal bone loss developed around a few implants. Technical/mechanical complications included porcelain fracture and abutment screw loosening. No significant differences were observed between the two implant types used.

Conclusions and clinical implications: Immediate implant placement in areas of Esthetic priority is characterized high survival rates and in most cases healthy periimplant tissues.

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Guided bone regeneration in dehiscence-type defects using a 3D customized pre-formed design titanium mesh (SMARTbuilder™)

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Background: Vertical and horizontal bone loss in edentulous jaw is one of the major reasons that make the placement of dental implant difficult. Alveolar bone augmentation technique to enhance bone support around the implants especially for the bone defect area, is considered key to successful implant treatment. In fact, various kinds of augmentation techniques including GBR have been introduced in clinical tests. Titanium is good enough to be used as implant material since it has a good level of biological affinity. Furthermore, thanks to its ductile and malleable features, it can be made not only in mesh form but also as a material with higher flexibility and which can be used in oral and maxillofacial surgery for the treatment of bone fracture or maxillofacial reconstruction.

Aim/Hypothesis: I would like to present clinical cases of alveolar bone augmentation using SMARTbuilder including the guidelines for use.

Material and methods: To minimize the shortcoming of the existing titanium mesh while maximizing the practitioner's convenience, Osstem released SMARTbuilder, a 3D Customized Pre-formed Design titanium mesh. Since SMARTbuilder is ready-made according to the general types of alveolar bone loss, there is no need to spend time for trimming and bending to form the overall shape of titanium mesh. Besides, it can be removed easily by replacing the screws used in fixing traditional titanium mesh with healing abutment or cover cap. Guided bone regeneration (GBR) procedure in dehiscence type defect was performed using SMARTbuilder. Clinical and radiological evaluation was done.

Results: We can shorten the time not only for alveolar bone augmentation but also for overall implant treatment. Having obtained a satisfactory result in the clinical test using SMARTbuilder.

Conclusions and clinical implications: SMARTbuilder has excellent mechanical properties for stabilization of bone graft materials. Its rigidity prevents contour collapse, its elasticity prevents mucosa compression, and its stability prevents graft displacement. Thereby, an essential prerequisite for bone graft integration, i.e, mechanical graft stability, could be guaranteed by SMARTbuilder.

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A comparative clinical study evaluating the primary and secondary stability of implants in varying bone densities using resonance frequency analysis

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Background: Implant stability is of paramount significance in the early surgical success & long term clinical success. The bone quality contributes to the primary stability of implants. Secondary stability offers biologic stability and is influenced by bone modeling and remodeling, primary stability and implant design. Resonance Frequency Analysis (RFA) has emerged as a reliable tool to objectively quantify the same as Implant Stability Quotient (ISQ).

Aim/Hypothesis: This study aims to evaluate the influence of varying bone densities on the surgical torque and the stability of implants achieved. A comparison can thus be made between the stability at the time of placement to the stability achieved at second stage surgery.

Material and methods: Assessment of 50 healed implant sites was done. CT scans were done to assess the bone density in Hounsefield Units. Insertion torque was measured during

implant insertion and was recorded in Ncm. Resonance frequency analysis was done immediately following the implant placement to note the primary stability and secondary stability was noted at the time of second stage surgery. All the implants were placed using two-stage surgical protocol by a single surgeon. The surgical protocol was varied as per individual case requirement to achieve a high primary stability. Three groups were made based upon bone densities observed- D2, D3, D4. Mean of all ISQ values obtained was taken. Student-T test was done to compare the variations seen within the groups and ANOVA test was done to observe inter-group changes. $P < 0.5$ was considered statistically significant.

Results: Similar torque values were observed in all three groups. The ISQ values recorded for primary stability were similar to the values of secondary stability in all bone types. Mean observed from the three different groups revealed that the ISQ values decreased from stage I to stage II with 2.17%, 5.96%, 5.01% in D2, D3and D4 bone respectively and this variation was not found to be statistically significant.

Conclusions and clinical implications: It can be concluded that bone quality in the recipient site does not affect insertion torque values and changes in implant stability. Insertion torque recorded thus depends upon the surgical protocol followed. Stability of implants placed in softer bone would 'catch up' over time and be comparable to that of implants placed in denser bone if adequate healing time is provided.

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Antibiotic prescription patterns among Swedish dental implant surgeons

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Background: The potential benefit of antibiotic regiments during routine implant insertion is still a controversial subject. A single dose prophylaxis antibiotic has shown to decrease early implant failures, although extended regiments perioperatively has not shown additional effect. Solid clinical guidelines on antibiotic usage in implant dentistry have thus not yet been fully established. Therefore, inappropriate use of antibiotics during implant insertion may occur.

Aim/Hypothesis: To investigate antibiotic prescription behavior among implant surgeons in Stockholm, Sweden and to examine the influence of recent scientific national reviews on antibiotic prescription patterns.

Material and methods: An observational questionnaire study was conducted in 2008 and 2012. Eligible implant clinics were obtained through online search services for the Swedish telephone directory. In 2008 the questionnaires were posted to 120 operators while in 2012 to 161 representing the whole Stockholm region which account for approximately 20% of the Swedish population. The questionnaire included two open and 10 closed questions; five extra questions in 2012 were added concerning knowledge about recent national reviews and if this influenced their prescribing behavior. Absolute frequencies were used to describe data and Chi square test used to assess statistically significant difference.

Results: The response rate reported was 75% in 2008 and 88% in 2012. In 2008, 88% of the operators routinely prescribed antibiotics while 74% in 2012 ($P = 0.01$). There was a significant reduction in the duration of antibiotic treatment; in 2012 65% prescribed a single antibiotic dose comparing to 49% in 2008, while 35% and 51% respectively prescribed antibiotics for 3 days or more ($P = 0.04$). Moreover, there was a significant change in the type of antibiotics prescribed as 47% prescribed amoxicillin in 2012 while 21% in 2008 ($P = 0.01$). There were various patterns for antibiotic prescriptions. Furthermore, a significant association noticed between the surgeons with postgraduate clinical training and prescribing a single antibiotic dose ($P < 0.001$).

Conclusions and clinical implications: There is a wide variation in the type and duration of prophylactic antibiotic treatment prior to implant insertion. However, a reduction in antibiotic prescription to a single dose is observed between 2008 and 2012 probably influenced by recent reviews. It seems that higher education gives a more restrictive approach to antibiotic prescription. Robust national guideline is needed to establish an effective way for antibiotic prescription.

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Clinical evaluation of extraction socket graft using autogenous tooth bone: prospective case series study

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Background: The loss of height and width of alveolar bone is inevitable over time after the extraction of tooth. Happening the most in the early period, bone resorption is more common and widespread when there is a periodontal disease. The progress of bone resorption after the extraction of tooth can make the implant placement difficult. Likewise, it makes oral hygiene care around the prosthesis difficult. Therefore, various methods were attempted to minimize alveolar bone resorption. The authors have transplanted the recently developed autogenous tooth bone graft material (AutoBT, Korea Tooth Bank, Seoul, Korea) to the exraction socket with serious bone loss.

Aim/Hypothesis: This research was conducted to evaluate the clinical availability of AutoBT in implant dentistry through the clinical and histological evaluation of extraction socket graft using autogenous tooth bone graft material (AutoBT).

Material and methods: This study was performed the patients who received extraction socket graft using AutoBT from Nov. 2008 to Aug. 2010. During the healing period after the procedure, clinical and radiological evaluation were performed; his-

tological analysis was done on the biopsy specimen that had been harvested from the patient who agreed on the histological evaluation during implant placement. The average period of follow-up evaluation after implant prosthetic function was 22.5 months.

Results: After 15 teeth were extracted from 13 patients, socket graft using AutoBT powder and/or block was performed. Then, after an average healing time of 3.3 months, 14 implants were placed. One patient became uncontactable during the research. The primary stability of the placed implants was an average of 58 ISQ, and the secondary stability, an average of 77.9 ISQ. In one case, initial osseointegration failed; for the postoperative complications, wound dehiscence was noted in two cases. In both cases, however, good secondary healing was achieved. The average amount of crestal bone loss around the implant was 0.05 mm. Likewise, based on the histological analysis, favorable new bone formation was observed after 3~4 months.

Conclusions and clinical implications: Autogenous tooth bone graft material is considered a useful material for extraction socket graft.

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Long-term results of immediately loaded enossal implants with prefabricated cone abutments – final results

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Background: Due to alveolar ridge atrophy in the edentulous lower jaw several patients suffer of an insufficient retention by a lower denture. Therefore this retrospective study examines the implantological concept of the Ankylos SynCone System.

Aim/Hypothesis: The purpose was to investigate the long-term stability of peri-implant bone and soft tissue condition after immediate loading of four interforaminal inserted Ankylos implants (Dentsply-Friadent, Germany), such as the objective and subjective retention force of the overdenture.

Material and methods: In this study all patients received four interforaminal implants, immediately loaded, with the Ankylos SynCone concept. The observation period started 2005 and ended 2011. One hundred and thirty-two implants were placed. The clinical and radiographic examination was performed on the day of the final prosthetic treatment and annually after, ending in March 2011. The stability of the peri-implant bone and the soft tissue condition were evaluated. Besides, a questionnaire concerning patient's contentment and further clinical parameters, such as periotest values, periodontal sounding, and radiological bone loss were basis of examination.

Results: In this study 33 Patients, 19 woman and 14 men, with an average age of 72.28 years were treated with 132 implants. Nine patients had the original SynCone denture, 14 had a framework included and ten a ceramic electroplated denture. The collection of data was described descriptively. Among 132 implants merely four losses were recorded. Therefore the survival rate was 96.97%. The average time of the implants in situ was 45.1 months (range 12–72 months). At the final recall 98.48% of the implants revealed no vertical and horizontal bone-loss. Exclusively two implants showed a maximum marginal resorption of 1.5 mm. Furthermore no gingival recession could be recorded. Regarding patient's contentment concerning retention, a rate of 90.91% could be determined. Considering periotest values and periodontal sounding no relevant deviation was noted.

Conclusions and clinical implications: Due to contentment value of 90.91% SynCone can be recommended as a long term provisional concept. Secondarily included frameworks can enhance the retention but nonetheless the ceramic electroplated dentures provide prime results concerning retention and comfort in wearing. The Type of denture covering the implants has no influence on the beneath located implants.

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Patients' perspectives on dental implant and bone graft surgery: questionnaire-based interview survey

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Background: Patients' attitude towards implant therapy may be influenced by prospective morbidity, demand for fixed restorations, treatment duration and costs, however, scientific data on patient expectations and motivation to choose or refuse dental implants are scarce.

Aim/Hypothesis: To assess up-to-date expectations and preferences of patients seeking dental implants.

Material and methods: One hundred and fifty consecutive patients (66 male and 84 female interviewees) were asked to rank their concerns regarding implant therapy and answer a questionnaire on implant and bone graft surgery, cost and time considerations and second-opinion behaviour.

Results: Treatment predictability and avoidance of removable dentures were ranked high priority (compared with time and cost efficiency or avoidance of bone grafts). Patients' estimation of the 10-year implant success rate was 84%, and 59% of patients expected implants to last for a lifetime. Total treatment time was estimated to be 4 months on average, and only 12% would tolerate increased risk of implant failure for the sake of shortening treatment duration. 61% of interviewees accepted autologous bone grafts (the majority favouring the

retromolar area), while only 23% were willing to undergo bone harvesting from the hip. 43% opted for bone substitute material to avoid donor site morbidity. 67% would accept the additional costs associated with computed tomography, software-based treatment planning and guided implant placement to avoid bone graft surgery. Motivation for second-opinion seeking was high (46–62%), especially in young and male patients.

Conclusions and clinical implications: Patient expectations on implant success and predictability are high compared with their reluctance towards treatment costs and duration. Acceptance of treatment morbidity is high among patients reporting low denture satisfaction; however, minimally invasive treatment alternatives are generally preferred.

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Immediate function concept at different types of cases

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Background: Immediate-function concept have become an accepted alternative for fixed restorations in edentulous mandibles and maxillas, based on documented high success rates. Continuous development is ongoing to find simple protocols for their use.

Aim/Hypothesis: Aim of this case series is to use an accepted concept at different types of cases.

Material and methods: Three patients edentulous or with remaining teeth to be extracted in the maxilla and mandibula received 4–6 implants. The patients were restored with screw-retained fixed provisional prostheses supported within 24 h after surgery. Definitive prostheses were placed after a mean healing time of 18 weeks. Follow-up examinations were performed at 6 and 12 months. Radiographic assessment of the marginal bone level was performed after 1 year in function.

Results: No significant differences were found between the survival of tapered or cylindrical screw-type implants placed in postextraction sockets vs. those in healed edentulous sites or between vertical and off-angle placed implants.

Conclusions and clinical implications: In this case series with 12-month follow-up, 4–6 implants were sufficient to successfully support fixed implant screw-retained prostheses in the edentulous maxilla and mandibula.

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Long term follow-up of patients treated with OsseoSpeed™ implants in a private practice setting

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Background: A great number of clinical studies published in the scientific literature describe implant therapy in well-defined study populations, treated according to strictly controlled study protocols. As a complement to this, larger and broader observational studies evaluating the typical implant patient and the outcome of routine implant therapy in clinical practice are needed.

Aim/Hypothesis: The aim of the current study was to evaluate the OsseoSpeed™ implant (ASTRA TECH Implant System, DENTSPLY Implants, Mölndal, Sweden) when routinely used in a private practice setting.

Material and methods: Four dental clinics in Switzerland have retrospectively compiled data according to an established case report form from all patients who were treated with OsseoSpeed™ implants between June 2008 and February 2013. Information was collected from the time of implant installation, abutment surgery, delivery of permanent restoration and the following yearly control visits. At these follow-up visits, implant stability, plaque, bleeding on probing, patient satisfaction and complications were evaluated and registered. In addition, intra-oral radiographs were collected for evaluation of marginal bone level changes. The study is ongoing and the enrolled patients will continue to be followed-up annually.

Results: During the studied time period, 518 patients were treated with 931 OsseoSpeed™ implants at the four clinical practices. Six implants were reported as failures, resulting in a cumulative survival rate of 99.3%. Four of the implants were lost before loading and two implants were lost due to peri-implantitis 4 and 7 months, respectively, after loading. The incidence of complications was low and the most commonly reported complications were extensive bone loss, which was reported around 15 implants, and loose bridges or crowns, which were reported for 14 implants. Up to now, 150 patients with a total of 281 implants have been followed for at least 2 years after loading. After 2 years in function, plaque was registered on 49% of the examined surfaces and bleeding on probing around 17% of the implants. All but one of the 150 patients were satisfied with the implant therapy. Analyses of intra-oral

radiographs showed a mean marginal bone loss of 0.2 mm from implant installation to the 2-year follow-up visit.

Conclusions and clinical implications: This study will provide long-term clinical outcome data after implant treatment in patients routinely treated by clinicians in private clinical practices. So far, the results indicate a high implant survival rate, stable marginal bone levels and a high rate of satisfaction with the implant therapy among the treated patients.

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Influence of hyperbaric oxygen therapy on survival rate of dental implants inserted in irradiated bone-2 years follow up

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Background: Radiotherapy (RT) of planocelluar cancer in oral cavity has negative influence on regeneration of bone inside therapeutic field. It is known that insertion of dental implants in irradiated bone has worse survival rate as non-irradiated and on the other hand hyperbaric oxygen therapy (HBO) increased bone formation at the implant-bone interface.

Aim/Hypothesis: The aim of the pilot study is presentation that HBO had positive influence on survival rate of implants inserted in irradiated bone.

Material and methods: Four consecutive patients (two female/two male), mean age was 56 years (ranging 53–58), got RT after resection of oral carcinoma by the protocol. Cumulative radiation dose was 56 Gy (2) or 72 Gy (2). Secretion of saliva was seriously affected at all patients without history of osteoradionecrosis. RT was ended at least 2 years before implantation and no new cancer or metastases were found. HBO was done by the protocol: 20 dives before and 10 after surgical intervention. Implantation of 16 (12 mandible/four maxilla) two-stage implants was done in 1 week after first 20 dives. Amoxicillin/clavulanic acid was prescribed to all patients for 10 days. Sutures were removed 10 days and another 10 dives were followed. Reopening of implants was done after 4 months and removable prostheses were delivered by protocol. X-rays follow-up was done after implantation and annually. Clinical examination was performed every 3 months.

Results: All 16 implants were osseointegrated uneventfully. Before delivery of implant supported prosthesis surgical intervention was needed due to improve soft tissue condition around four implants in mandible (two patients)-transposition flap of keratinized mucosa. Peri-implant soft tissue was stable at all sights with no inflammation in 2-year period.

Conclusions and clinical implications: It seems that presented protocol of HBO for patients after regional RT of oral cancer improves condition for osseointegrated and with antibiotics therapy overweighed the threat of infections of non-integration. Due to small sample and short time of follow-up investigation should be prolonged.

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Retrospective 6–10 years clinical and radiographic follow-up of 205 Ti-Unite surface Implants.

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Background: The biological fixation between the dental implant surfaces and jaw bones should be considered a prerequisite for the long-term success of implant-supported prostheses. In this context, the implant surface modifications gained an important and decisive place in implant research over the last years.

Aim/Hypothesis: To study the long-term outcome of implant survival rate, soft and hard tissue conditions and prosthetic status in a group of individuals treated with Ti-Unite Brånemark implants supporting single-tooth, multi-units and full-arch restorations.

Material and methods: Forty-one patients were treated with Ti Unite surface Brånemark implants were recalled for examination after 6–10 years. Intra-oral radiographs were taken for bone level assessments. Clinical prosthetic conditions, number of surviving implants, implant stability, plaque scores, probing pocket depths, bleeding and pus after probing were recorded. Analyses of bone level changes during the total observation period were performed by an external examiner.

Results: A total of 205 implants were examined, the mean observation period was 8.8 years (6.6–10.6 years). One hundred and forty-five implants were placed in maxilla and 60 placed in mandible. 3.4% were placed for single tooth restoration, 45.9% for partial restoration and 50.7% for full arch restoration. 82% were placed following a one-stage procedure and 18% followed a two stage procedure. 55.1% of the examined implants were immediate loaded. The CSR after 6–10 years was 96.1 (n = 197). The mean PPD was 3.64 mm (2–6 mm). Marginal bone remodeling recorded at the follow-up visits was 0.43 mm in mean.

Conclusions and clinical implications: Treatment with TiUnite surface Brånemark implants supporting single-tooth, partial and full-arch restorations showed generally good clinical results with low numbers of implants with marginal bone loss indicative of peri-implantitis.

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Patterns of bone graft remodeling after placement implants using hatch reamer technique in sinus floor elevation

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Background: Various techniques of sinus floor elevation are introduced. Commonly, if the residual bone height is over 5 mm, sinus floor elevation is operated through transcrestal approach using osteotome technique. But, it is possible for patients to feel discomfort during operation and dizziness after operation while malleting, sinus floor elevation, using osteotome technique. Some instruments and methods has been used to overcome these problems and use more easily.

Aim/Hypothesis: The aim of this prospective study was to document radiographically tissue remodeling patterns around implants placed according to an hatch reamer technique.

Material and methods: In 10 patients from Samsung Medical Center, 10 implants of the ITI® or Branemark® Dental Implant System were placed subjacent to the sinus floor. Implant beds were pre-prepared with pilot drills and/or using the Hatch reamer Kit®. Bio-Oss® particles were into the apex area. Implants were placed self-tapping. At 4–6 months, all implants had been restored with crowns. Panoramic radiographs were taken right after the surgery and 6 months after.

Results: The mean postoperative distance between the sinus floor and the crest was 5.8 mm (range 4.5–7.6 mm). The mean distances between the implant apex and the initial sinus floor were: 3.10 mm, but was reduced significantly to 1.59 mm at 6 months.

Conclusions and clinical implications: This study shows that in areas with reduced bone height subjacent to the sinus, an hatch reamer technique may provide a minimally invasive way to obtain implant predictably. The grafted area apical to the implants undergoes shrinkage and remodeling.

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Micromorphometrical analyses of bone and Schneiderian membrane with crestal approach surgical instruments in human cadavers

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Background: The crestal approach sinus floor elevation technique is blind & tapping procedure which has chance of sinus membrane damage or perforation. Several membrane protecting instruments were introduced recently. However, there were few reports available about the bone & membrane damage pattern after using these instruments in human samples.

Aim/Hypothesis: To compare the differences between five sinus crestal approach instruments and to study micromorphometrical change of bone and membrane surface after sinus elevation procedure.

Material and methods: Five fresh frozen cadavers were used. Fresh lateral walls of both sinus were taken from cadavers after using sinus elevation instruments. Five sinus crestal approach instruments were osteotome instrument (O) (Osteotome kit, Dentium, Suwon, Korea), Motor High speed drill (S) (SCA kit, Neobiotech, Seoul, Korea), Ultrasonic instrument (P) (Piezosurgery, Mectron Medical Tech. Cara-sco, Italy), Low speed tapping drill (H) (Hatch reamer, Sinustech, Seoul, Korea), Hydraulic pressure instruments (Pa) (Pascal lift, Dreamray, Seoul, Korea). Specimens were prepared and examined with light microscopy, ESEM (Environmental Scanning Electron Microscopy) and CLSM (Confocal Laser Scanning Microscopy). Surgery has done by one dentist. The statistical analysis was performed with ANOVA using SAS Ver. 9.1 program (SAS, Raleigh, NC, USA). The ANOVA was used for membrane roughness value between normal and surgical site in each instruments and roughness change inter-instruments. P values of <0.05, post-hoc analysis with Scheffe's multiple comparison method was conducted.

Results: The membrane perforation was happened at least one case using every five instruments. Micromorphological differences of bones and membranes after using five instruments were clearly identified, and it also showed the cutting characteristic of instrument. There were significant differences in the quantitative roughness value of membrane between normal site and surgical site in all instruments ($P < 0.05$). The quantitative roughness change was the highest in osteotome group and it was followed by Hatch reamer, Pascal lift, Piezosurgery, SCA kit in order. But, there were no significant differences statistically among five instruments ($P > 0.05$).

Conclusions and clinical implications: Although there were no instrument that absolutely do not perforate, all of the instrument damage memrane a lttle and there were no difference on the degree of damage.

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Early placement, early loading of single mandibular molar; prospective clinical study

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Background: One of the is the important goals of the implants therapy is to achieve secured outcome with respect to time factor, different protocols of placement and loading can be utilized to achieve outcome with variable risk factors. Early placement within 4–8 weeks provides better condition for both soft tissue complete healing and hard tissue reasonable healing .Early loading after 2 months of insertion can meet patients needs and expectation.

Aim/Hypothesis: Clinical and radiographic evaluation of early placement, early loading of single mandibular molar using flabless technique.

Material and methods: Twenty-seven healthy patients indicated for extraction of single molar – atraumatic extraction was performed by splitting and preservation of the socket walls – 4–8 weeks allowed for sockets healing without augmentation – Radiographic evaluation, cone beam was performed pre-implant insertion – All the patients received Kontact ®implant with platform switching and Morse-taper connection in a flapless technique – Radiographic evaluation after insertion was performed – All patients receive definitive final restoration after 2 months (early loading protocol) – Radiographic evaluation was performed after loading – BOP and plaque accumulation and MBL was evaluated after loading – Follow up extended for 1 year.

Results: In this prospective study all implants were successfully osseointegrated. BOP (bleeding on probing) was varied until the end of observation between 6.5% and 11.0% plaque accumulation was decreased from the time of early loading to the end of the observation period .MBL changes from 0.52 mm as the time of implant placement to 0.70 mm at the time of early loading.

Conclusions and clinical implications: Within the limitation of this prospective study concerning sample size and follow up duration early placement, early loading in mandibular molar by flapless technique can provide a predictable outcome, which can meet the patient's expectations concerning time factor .

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Three to 10 years treatment outcomes and survival rate with single implants in the most posterior area: a retrospective study

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Background: A single implant is one of the most frequently performed implant technique and it has been reported a high success rate in various studies recently.

Aim/Hypothesis: Aim of study is to evaluate the long-term outcomes of single implants in the most posterior area.

Material and methods: From January 2001 through December 2009, 169 patients were treated at the Department of periodontology, Chosun University Dental Hospital, Gwangju, Korea were identified. A retrospective study design was adopted. Patients gender and age, follow-up duration, distribution of the implants according to the location, inserted implants according to implant system, the inserted implants by diameter and length, cumulate survival rates for total implants, mean marginal bone loss were evaluated.

Results: One hundred and sixty-nine patients (117 male and 52 female) were eligible for the present study. One hundred and eighty-four implants were inserted in the most posterior area. Among those implants, 51 implants of those were placed in maxilla, 133 implants of those were placed in mandible area. The diameter and length of the most implants appeared from 5 to 6 mm diameter and 11 to 12 mm length. Twenty implants were installed after the sinus floor elevation, respectively. The average follow-up time was 4.86 years. During the follow-up, four implants in four patients were failed. A cumulative survival rate was 97.9%. The mean bone loss was 1.82 ± 0.64 mm.

Conclusions and clinical implications: Reliable survival rate for the single implants in the most posterior area could be achieved after 3–10 years. Taken together, the single implant in the most posterior area of jaw is a successful treatment modality and has a positive prognosis as well.

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Alveolar ridge augmentation with titanium mesh and autogenous bone

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Background: The reconstruction of alveolar ridges for implant placement is still a challenging surgical procedure, especially in the case of extensive vertical and horizontal bone atrophy. A major complication of bone grafting is bone resorption. To prevent this using nonresorbable barrier membrane is recommend. The titanium mesh technique is one alternative way.

Aim/Hypothesis: The purpose of this study was to evaluate the height of augmented bone following alveolar ridge augmentation with titanium mesh and autogenous bone graft for implant placement in terms of the preoperative bone defect.

Material and methods: A retrospective study design was used to analyze the treatment outcomes of 10 patients who were treated with autogenous bone graft conjunction with fixation of titanium mesh. All the sites showed horizontal-vertical bone defect, and the augmented bone was evaluated based on preoperative computed tomographic data. Postoperative complication such as exposure of the titanium mesh were assessed during the healing period.

Results: A total of 10 patients with 10 sites in the maxilla and mandible that required substantial bone augmentation and

were treated with titanium mesh were evaluated for 3 months after surgical treatment. The bone defects were successfully augmented showing mean vertical height 1.96 ± 0.9 [SD] mm. Exposure of titanium mesh was seen in 4 (40%) of the 10 surgical sites evaluated. The success of the bone grafting procedure was 100%.

Conclusions and clinical implications: Autogenous bone grafting with titanium mesh allows adequate vertical alveolar bone reconstruction for implant placement. Titanium mesh expose very well during healing but it does not necessarily compromise the final treatment outcome.

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The soft and hard tissues around trans-gingival implants: long term clinical evaluation on 93 immediate loaded implants in edentolous jaw

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Background: Long term studies have demonstrated that dental implants can be successfully used for rehabilitation of edentulous jaw. The predictability of immediate loading has made it possible to simplify the techniques, reduce healing time and minimize the delay between surgical and prosthetic phases, thus leading to develop this approach. With transgingival implants we can also have the advantage to avoid the micro-gap problem and reduce costs.

Aim/Hypothesis: Several studies also show that the survival rate and success are comparable with those obtained with 2-stage procedure and that no significant differences were found between transgingival and two stage procedure. Aim of this long term clinical evaluation is to show that the stability is successfully maintained not only by hard tissues but also by soft tissues. Starting from the same surgical approach it is also possible to obtain three prosthetic solutions.

Material and methods: 21 patients were treated in a 10-year study period. Twelve were female and nine were male. After an X-ray (TC and Cone Bean when necessary) examination, the patients underwent the same surgical protocol: a crestal incision was made and a mucoperiosteal flap was raised. Then from 3 to 6 transmucosal implants were placed in the mandible. Seventy-one implants were placed in edentulous site and 22 in post extractive site. Good primary stability after placement was considered a basic requirement for success (at least 35 N) In this study the ISQ values obtained were from 62 to 81. In the immediate loading protocol an impression using vinyl polysiloxane was taken after surgery and the prosthesis was fitted to the patient within 24 h. Depending on each clinical situation and the patient's requests, mandibular overdentures on a U-shaped bar or Fixed Prostheses with or without pink gum are customised. A rigid connection is always used to minimize micro-motion and guarantee the correct osseointegration.

Results: After at least 24-month clinical probe and X-ray follow-up, 92 implants showed great success, no bone loss and patient satisfaction, only one implant was lost in a bruxist patient. The gum around collar neck shows in every case good health probably also due to the implants' easily cleaning and absence of micro-gap.

Conclusions and clinical implications: The follow up on this cases has shown the perfect integration by hard tissue and also the perfect healing and adaptation of soft tissue above and around the implant neck. As the literature confirms, on the basis of the high implant survival rate and favourable tissue response, the 1-piece implant can be recommended for clinical use in the rehabilitation of the mandible by immediate loading to simplify the techniques.

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Hard tissue augmentation and implant therapy in the esthetic zone without bone substitutes

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Background: Achieving ideal emergence profile and restoration contours for implant-supported prostheses in the anterior esthetic zone is a prime requisite.

Aim/Hypothesis: Primer rule for the hard tissue augmentation is avoiding migration of soft tissue cells into the bone defect by using barrier membranes. Most of the similar cases huge amounts of bone substitues are needed. Our aim, in this case, is to show that if the hard tissue deficiencies in the oral region are three wall defects, augmentation procedures will be successful by only using collagene barrier membranes without bone substitues.

Material and methods: Thirtry-six years old female patient referred to our clinic due to grade I mobility of central incisor (tooth number 11). Patient had an apical resection operation 8 years ago. Recurrence of the apical lesion was detected after clinical and radiographical examination. Patient referred to radiology department for a CT scan. According to the CT scan, we decided to extract tooth no 11.12; remove the cyst, and augment the cyst cavity for the hard tissue remodelling by using only collagene membrane without bone substitutes due to dimension of cavity. Nine months after the removal of cyst a control CT scan had been reanalyzed and it had been decided to place two Straumann 3.3 × 12 mm bone level implants. During the whole healing period an adhesive partial fixed denture used as provisional. After 4 months of osseointegration time implant was installed with the connection of a fixed provisional crown to a prefabricated temporary abutment. The soft tissue around the implant healed according to the contours of the provisional restoration and the emergence

profile was used to duplicate the custom abutment and final fixed partial prothesis.

Results: At 12 months recall, patient was evaluated radiologically and clinically. There was no bone resorption around the implants and full, intact papilla was observed.

Conclusions and clinical implications: Amount of the achieved bone in the defected area, right positioning of the implant, biotype of the gingiva and using emergence profile techniques for maintaining soft tissue profile are the important factors. To achieve a satisfactory result in the esthetic region these factors should be considered. In addition; surgical and prosthetic techniques should be chosen according to the detailed examination of the patient.

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Single tooth immediate implant placement with buccal bone rebuilt in aesthetic zone: a 1–3 years consecutive clinical research

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Background: Although immediate implant placement can shorten the overall treatment time and minimize the number of surgical interventions, esthetic risks related with soft tissue alterations, especially the buccal marginal mucosal recession, appeared to be high. Several modified surgical techniques and bone graft materials have been used to improve the outcome. We also developed modified surgical techniques in different types of anterior maxilla anatomy to improve aesthetic effect and long-term stability.

Aim/Hypothesis: To evaluate clinical outcome and technical aspects of the new modified surgical protocol of immediate implant placement.

Material and methods: CBCT was taken. Based on anterior maxilla anatomy patients were divided into two groups: group 1 with intact buccal bone and buccal-lingual width over 6 mm; while group 2 with buccal-lingual width <6 mm and/or buccal bone dehiscence. Atraumatic tooth extraction was used in each group. In Group 1, flapless techniques and palatal implant placement was used. The gap between implant and buccal bone was at least 2 mm in width and filled with low-substitute graft materials (Bio-oss, Geistlich). A round piece of connective tissue with epithelium was taken from palate with trephine and sealed the socket with suture. Implant was exposed after 3 months. Implant supported temporary crown was delivered 2 weeks later. In Group 2, a flap was elevated to facilitate GBR technique with non-submerged implant placement. Implant supported temporary crown was delivered 4 months after implant placement. In both group patients received final restorations 3–6 months after soft tissue conditioning with temporary crown. CBCT examinations were taken immediately after surgery, after final restoration, 1 and 3 years after surgery to evaluate the gain of buccal vertical bone height and width over time. Pink Esthetic Score (Furhauser et al. 2005) was evaluated by three doctors.

Results: From September 2008 to August 2011, 23 implants were inserted in 23 patients and restored. Thirteen patients were male, 10 were female, with an average age of 37.2 years (19–64 years). Five patients were followed for 3 years, seven patients were followed for 2 year, and 11 were followed 1 year. All 23 implants were ossteo-integrated. At 1-year revisit (23 cases), the mean mesial papilla was −0.2 mm, and distal papilla was −0.1 mm, while buccal recession was −0.1 mm. Mean vertical bone height was −0.1 mm, and width was −0.4 mm. At 3-year revisit (five cases), the mean mesial papilla was −0.3 mm, and distal papilla was −0.2 mm, while buccal recession was −0.2 mm. CBCT results of vertical bone height was −0.2 mm, and width was −0.5 mm.

Conclusions and clinical implications: Based on limited preliminary research, immediate implant placement with 2 mm buccal bone rebuilt have good effect on clinical esthetic stability.

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Immediate implant at anterior region: noblereplace vs. nobleactive, 6-month post immediate loading result of a randomized controlled trial

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Background: With immediate implant success rates improving, we pay more attention to immediate loading, but the primary stability will be more demanded. NobleReplace and NobleActive using TiUnite surface with grooves increases implant stability and the osteoinduction effect make the bone formation faster. NobleActive surface adds self-tapping screw and double-lead thread design condenses bone gradually, which requires a higher insertion torque when implant is placed .The modified designs let us have more options for immediate loading after immediate implant.

Aim/Hypothesis: By comparing the insertion torque of NobleReplace and NobelActive at the time of the implant is placed in fresh extraction socket immediately and the marginal bone remodeling levels 6-month post immediate loading, to evaluate the effect of the two kinds of implants in case of immediate loading after immediate implant.

Material and methods: Forty-two implants were immediate placed at anterior region because of trauma or endodontic disease in 42 patients, labial bone plate thickness not <0.5 mm by CBCT. All patients were randomly allocated into two groups: group A placed NobelReplace (tapered groovy), group B placed NobelActive (internal connection), all implants loading immediately. Record the insertion torque to evaluate the initial stability, CBCT were performed to measure the marginal

bone at implant placement and 6 months after. The data were made single-factor analysis of variance by SPSS17.0.

Results: All patients were successful permanent restoration after 6 months, no patient lost to follow, the cumulative survival rate was 100%.The insertion torque of group A was between 35 and 45 Ncm average 40 Ncm, group B was 40–70 Ncm between, average 50 Ncm. The marginal bone remodeling from insertion to 6 months for group A (-0.78 ± 0.22 mm, $n = 21$) was comparable to that of the group B (-0.33 ± 0.12 mm, $n = 21$), the two groups have a significant difference ($P < 0.05$).

Conclusions and clinical implications: This study suggests that: for immediate loading after immediate implant in fresh extraction socket at anterior region, NobleReplace and NobleActive both obtain predictable stability results, but according to the initial stability and the marginal bone remodeling levels, Noble Active is suitable for immediate loading more. However, these preliminary results need large sample of clinical studies and longer follow-up to further confirm.

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Six to 7 weeks healing time of SLA surface soft tissue level straumann implants: 1–3 years results of randomized controlled clinical trial in China

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Background: Some studies show that reduced healing time of SLA surface soft tissue level Straumann implant can get high predictable success. But no such evidences have been published in Chinese patients.

Aim/Hypothesis: To evaluate the clinical effects of 6–7 weeks healing time of SLA surface soft tissue level Straumann implants in Chinese patients.

Material and methods: From June 2009 through October 2010, a total of 81 Straumann implants were placed in 50 Chinese patients with restorations of crowns and bridges. Abutment was placed with a 35 Ncm force. There was no guide bone regeneration or sinus argumentation procedure. According to healing time, the patients were randomly assigned to control (12 weeks or more) or test (6–7 weeks) group. Patients were evaluated clinically and radiographically. The follow-up after restoration was 12–40 months (averaged 24.3 months).

Results: Forty-three implants were used in 26 cases in test group with a success rate of 97.7%. Only one implant of the total five implants in one case was lost 11 months after restoration. Thirty-nine implants were used in 24 cases in control group with a success rate of 97.4%. One implant failed shortly after the implant placement surgery. Osseointegration was successfully gained in the second surgery.

Conclusions and clinical implications: Within the limitations of this study, SLA surface soft tissue level Straumann implant could be predictably and safely restored for the Chinese patients, in 6–7 weeks after implant placement surgery.

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Computerised assessment of volumetric alveolar reconstruction with the titanium mesh technique and relevant factors conditioning its effectiveness

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Background: The titanium mesh (Ti-mesh) technique with particulate bone demonstrated to resolve atrophies with complex morphology and large extension, even being prone to a huge amount of dehiscence. The real capability of this technique in terms of bone augmentation is up to date unknown.

Aim/Hypothesis: To evaluate the effectiveness of Ti-mesh technique in terms of three-dimensional bone reconstruction and the correlation of the obtained augmentation with the surface and the timing of the mesh exposure and the entity of pre-operative planned reconstruction.

Material and methods: Twelve patients (mean age: 49.1 years) with 15 three-dimensional alveolar defects, treated with titanium meshes and particulate bone (autogenous bone/ anorganic bovine bone: 70/30) and implant placement 8 months thereafter were retrospectically evaluated. For each treated site CT scans were analysed using a software designed for three-dimensional measurement of volumes: the missing bone volume (MBV) was obtained subtracting the reconstructed bone volume (RBV) 8 months after surgery from the planned bone volume (PBV) to be created at time of reconstruction. The mesh exposure was recorded in terms of area of extension and time of occurrence. MBV was statistically correlated with a linear regression with the surface and the time of mesh exposure and with the entity of PBV.

Results: The mean MBV (0.45 cm^3) percentage was 29.07 (range 6–74)% of the PBV. The mean area and timing of mesh exposure were 0.73 (range 0.09–3.45) cm^2 and 2.17 (range 1–8) months respectively. The mean MBV (0.45 cm^3) resulted 30.2% (range 6–74%) of the mean PBV (1.49 cm^3). MBV resulted positively correlated with the area of mesh exposure in a statistically significant manner (P: 0.001 [<0.05]), with a 16.3% of MBV for every cm^2 of mesh exposure; a positive correlation resulted between MBV and the precocity of exposure and the PBV.

Conclusions and clinical implications: The bone volume obtained with Ti-mesh technique corresponded to the 60.8% of the pre-operative planned reconstruction. The bone augmentation resulted significantly influenced by the surface of mesh exposure, and negatively conditioned by the precocity of exposure and the entity of PBV. This effective technique may be improved taking in consideration the reported results.

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Immediate implant placement in maxillary molars using septa dilatation with threaded expanders or osteotomes: a clinical comparative study

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Background: Immediate placement of dental implants has reported to reduce treatment times and provide better preservation of the alveolar ridge. This concept has limitations during replacement of teeth with multiple roots as found in molar positions Additionally, the maxillary molar region also presents a lower bone density and the proximetry of the maxillary sinus. Many attempts have been made to place implants into extraction sockets in the maxillary posterior, while some advocate the best treatment option is a delayed approach following extraction.

Aim/Hypothesis: The aim of this study was to evaluate two techniques to place immediate implants in maxillary molar region compared to a control group using the delayed approach.

Material and methods: Sixty Eight (68) patients, with an indication for maxillary molar extraction, were selected. Inclusion criteria included: patients younger than 50 years old, tooth extraction due to caries, bone loss no greater then the coronal of the roots and with good general health. Implants were placed following a delayed approach after bone healing ($n = 22$), or using two techniques for septa dilatation and immediate placement after extraction: Osteotomes ($n = 25$) and Threaded Expanders ($n = 21$) Primary stability and osseointegration at 2nd stage, 12, 24 and 36 months were recorded by means of Periotest device.

Results: None of the implants placed failed during the evaluation period. Mean Periotest Values and standard deviation of the different groups are shown in Table 1. Statistical differences were found between the delayed technique and the two techniques for septa dilatation at initial placement, 2nd stage, 12, 24 and 36 months ($P < 0.001$ One Way ANOVA and $P < 0.05$ Holm-Sidak method). No differences were found between the two techniques for septa dilatation at each interval ($P > 0.05$ Holm-Sidak method).

Conclusions and clinical implications: Immediate implant placement in maxillary molar sites is a predictable procedure. Both septa expansion techniques have shown promising results. They were able to reduce the treatment time and provide better initial stability, allowing for better osseointegration in the long term compared with the delayed technique. The threaded expander technique seems to be better, since it showed similar results to the osteotome technique, but was less traumatic for the patient.

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Implant placement in the aesthetic area following endodontic- periodontal infection

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Background: Advanced endodontic-periodontal lesions involve significant bone loss leading to alveolar bone defect after tooth extraction.

Aim/Hypothesis: To present bone and tissue reconstructive therapy in case of endodontic periodontal lesion.

Table 1. Mean Periotest Values and standard deviation of the different groups

	Implant placement	2nd stage	12 months	24 months	36 months
Control					
Media	−0.727	0.136	−0.682	−1	−1.455
SD	1.352	0.889	0.894	0.873	1.011
	N = 22	N = 22	N = 22	N = 22	N = 22
Osteotomes technique					
Media	−2.040	−2.440	−2.640	−2.76	−2.92
SD	0.935	0.712	0.700	0.723	0.759
	N = 25	N = 25	N = 25	N = 25	N = 25
Threaded expanders technique					
Media	−2.476	−2.762	−2.857	−3.429	−3.476
SD	0.68	1.044	0.655	0.507	0.512
	N = 21	N = 21	N = 21	N = 21	N = 21

Material and methods: A 45-year old male patient presenting with combined endodontic periodontal lesion with reconstructive bone and tissue is presented.

Results: In the presented case of endodontic-periodontal infection in the frontal maxillary area, reconstruction of the bone defect with a bone block, successful management of soft tissues resulted in full functional and aesthetic recovery of #21.

Conclusions and clinical implications: The use of a piezosurgical unit at the donor site (the zygomatic alveolar crest) allows avoiding trauma when separating the bone block.

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Edentulous jaws restoration with 3D software planning, guided surgery and immediate loading

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Background: The growing interest in minimally invasive surgery, together with the possibility of fitting prostheses with immediate function, have led to the development of software and digital workflows allowing the planning and manufacturing of a surgical guide and provisional prosthesis that can be inserted immediately after the implant surgery step. Several studies seem to validate these concepts, but further prospective trials with medium to long term follow-up are needed.

Aim/Hypothesis: This prospective clinical study aims to analyse the clinical and radiological performance of 23 edentulous jaws treated with 3D software planning, guided surgery, immediate loading and restored with Cad-Cam Zirconia AND titanium full arch frameworks.

Material and methods: This study was designed as a prospective clinical trial. Twenty patients have been rehabilitated with an immediately loaded implant supported fixed full prosthesis. A total of 120 fixtures supporting 23 bridges (eight mandible, 15 maxilla) were placed, 22 of which in fresh post extraction sockets. All the implants were inserted with an insertion torque of 35/45 Ncm. One hundred and seventeen out of 120 implants were immediately loaded the other three were delayed loaded. Outcome measures were radiographic implants survival, marginal bone-levels and marginal bone remodelling, soft tissue parameters (PPD values, BOP index), complications.

Results: One hundred and fourteen of 117 implants reached 30 months follow-up, no patients dropped out from the trial, cumulative survival rate was 97.7% (four out of 120 inserted implants failed, three out of 117 immediate loaded and one out of three delayed); mean marginal bone loss was 1.25 ± 0.30 mm after 30 months, mean marginal bone remodelling value after 30 months was: 1.08 ± 0.33. After 30 months mean PPD value was 2.84 ± 0.55 mm and mean BOP value was 4 ± 2.8%. Only minor prosthetic complication were recorded.

Conclusions and clinical implications: Within the limitations of this study, mainly the relatively low number of patients treated and short observation period, it can be concluded that computer guided surgery and immediate loading seem to represent a viable option for the immediate rehabilitations of completely edentulous jaws with fixed implant supported restorations.

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Early placement of an implant in a maxillary left lateral incisor site with bone guide regeneration-description of the surgical procedure

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Background: Today, implant placement in post-extraction sites is a common clinical procedure. Clinical practice in implantology offers challenges that currently are surmountable by applying various techniques and materials. A major challenge is to overcome large bony defects caused by trauma or cystic pathology. AIM: In this case report, we intend to describe the immediate placement of a single implant in post-extraction site, associated with guided bone regeneration in localized cystic defect using autogenous bone graft associated with biphasic calcium sulphate.

Aim/Hypothesis: In this case report, we intend to describe the immediate placement of a single implant in post-extraction site, associated with guided bone regeneration in localized cystic defect using autogenous bone graft associated with biphasic calcium sulphate.

Material and methods: Patient, male, 57 years old, ASA I, presents tooth 2.2 with apical lesion associated, verified by the radiographic exam, asymptomatic, requiring extraction and rehabilitation of edentulous space. Under local anesthesia, proceeded to the sulcular incision and extension to distal side and distal line-angle releasing incision. The facial bone wall had a crater-like defect, that was degranulated. The implant-bed was prepared for a Conexão® Master Screw Implant, (endosteal diameter 4.1 mm, length 21 mm Hex. Ext.). Then proceeded to access the left mandibular ramus for collection autogenous bone chips through multilayered low speed drill. Next, the defect was filled with particulate autogenous bone, to achieve a pleasant contour in the long term, it was important to apply a second layer with Calcium Sulphate of biphasic (Bondbone ™, MIS). The grafted area was covered with collagen membrane (CollaCote ®, Zimmer). An appropriated pharmacologic medication was prescribed. There were no intraoperative or postoperative complications. After 6 months ealing period, the implant at

site 2.2 was restored with ceramic crown. The 2-year follow-up examination confirmed the stability of the peri-implant soft tissues.

Results: The immediate implant placement simultaneously of grafting the defect, reduces the number of surgical stages. An 21 mm lenght was installed in order to obtain adequate primary stability. The application of the biphasic calcium sulphate on the particulate autogenous bone reduces the future reabsorption of the autogenous bone graft.

Conclusions and clinical implications: This case suggests that unitary edentulous post-extraction sites, which is present a large bone defect, can be rehabilitated in one surgical stage through the judicious choice of an implant with an appropriate length and the application of guided bone regeneration techniques.

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CT-scan evaluation and implant placement lateral to the inferior alveolar canal

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Background: Resorption of the alveolar ridge often leaves minimal bone superior to the inferior alveolar nerve (IAN), precluding placement of implants of favorable length. Various strategies have been proposed to overcome the anatomic and physiologic limitations of implant placement in the posterior mandible. Surgical interventions including guided bone regeneration, distraction osteogenesis and nerve transposition have been utilized. While these methods have obtained a level of success, the evidence relating to the predictability of surgically increasing vertical ridge height is limited with a number of possible complications associated with these procedures to be considered.

Aim/Hypothesis: The purpose of the present case report study was to place the implant lateral to the inferior alveolar nerve (IAN) using cone beam computerized tomographic (CBCT) guidance in the areas of the mandibular first and second molar.

Material and methods: This retrospective study utilized 40 consecutive CBCT scan images of 40 subjects from an available CAT-scan of patients who were candidates for implant therapy. The distance between the mandibular canal and the buccal aspect of mandible and the distance between mandibular canal and alveolar crest were examined in axial view radiographs of the mandibular body. Two cross sectional images were selected at the level of the neurovascular bundle at the estimated 1st molar and 2nd molar areas. Each section the following two measurements were recorded: (1) The distance from the mandibular canal to the lateral aspect of the buccal cortical plate, (B): This B measurement was used to determine how many patients had ≥6 mm from the IAN to the external dimension of the buccal cortical plate. The 6 mm B dimensions assumed a 1 mm safety zone for a 4 mm diameter implant from the IAN to outer buccal plate. (2) The distance from the mandibular canal to the alveolar crest (H). This H measurement was used to determine how many patients had ≥11 mm from the crest to the IAN. These dimensions ≥11 mm assume a 1 mm safety zone for an implant 10 mm in length.

Results: Of the 40 scans 15% and 20% of patients had <11 mm H measurement and ≥6 mm B measurement respectively for the 1st and 2nd molar area. These patients could be candidates for a 4 × 10 mm implant to be placed lateral to the IAN.

Conclusions and clinical implications: Placing implants lateral to IAN offers an effective treatment alternative to bone grafting, guided bone regeneration, nerve lateralization, or short implants for the narrow, height deficient atrophic posterior mandible.

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One-step vs. two steps early flapless placement of two-stage dental implants

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Background: The usage of minimally invasive methods in oral implantology facilitates the precocious rehabilitation of patients. Early flapless placement type 2 of two-stage dental implants with preservation of alveolar content is insufficient studied.

Aim/Hypothesis: To appreciate the efficiency of one-step early flapless placement (type 2) of two-stage dental implants, with preservation of alveolar content.

Material and methods: Twenty-eight partially edentulous patients (47.3 ± 0.32 years) had 39 two-stage dental implants (SLA, diameter 3.3–6, 8–16 mm length) installed in the mandible using early (type 2) flapless placement, with the preservation of socket content. The underpreparation technique was used (Insertion torque > 40 Ncm). In the study group implants (10) were installed in one-step, with immediate placement of healing abutment (10–15 Ncm). In the Control Group, 29 implants were installed in two surgical steps. The mean time between tooth extraction and implant placement was 6.6 ± 0.49 (Study) si 6.4 ± 0.69 (Control) weeks. According to radiographic aspect (orthopantomograms), implants' sides were divided into anterior and posterior ones. Peri-implant bone remodeling (Adobe Photoshop CS3 Extended), primary (only for study group) and secondary stability (Periotest), plaque index and bleeding index by Mombelli were evaluated. Statistical analysis was performed by calculating mean values, standard error, indices of Mann–Whitney *U* test and Student's paired *t* test.

Results: All implants successfully integrated (mean healing period 3.3 ± 0.24). In the study group, two implant presented

signs of peri-implant mucositis at 3 weeks postoperatively (3rd degree of plaque and bleeding index). In the Control Group there were four cases of early implant exposure type 2 and 3 by Tal. At the end of the healing period, in the Study Group 5 implants had a bone apposition of about 0.35 ± 0.18 mm (anterior) sides and 0.44 ± 0.19 mm (posterior), while in the Control Group it was noted in 15 cases in anterior (0.61 ± 0.08 mm, $P > 0.05$) and 18 cases in posterior (0.49 ± 0.09 mm, $P > 0.05$) sides. The other five implants from Study Group had a bone loss of 0.57 ± 0.23 mm (anterior) and 0.28 ± 0.16 mm (posterior). Peri-implant bone loss in the Control Group was: anterior (14 cases) 0.51 ± 0.11 mm $P > 0.05$, posterior (11 cases) 0.64 ± 0.12 mm, $P > 0.05$. Periotest values were: Study (Primary stability) −5.87 ± 0.398 and −5.6 ± 0.37, $P < 0.05$ (Secondary stability); Control Group −5.31 ± 0.18, $P < 0.05$.

Conclusions and clinical implications: Methods of early (type 2) flapless placement of two-stage dental implants, with preservation of socket content, in one and two surgical steps, are effiecient and facilitate the precocious rehabilitation of patients in comparison with conventional methods. Immediate placement of the healing abutment (Study Group) avoid the second surgical step and lead to both osseointegration and soft tissue integration.

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Long-term – up to 12 years – clinical and radiographic follow up of 209 Brånemark System TiUnite Implants

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Background: The mid-term clinical and radiological performance of implants with a porous anodized surface in daily practice is well-documented. Relatevely few data are however available on the long-term outcomes.

Aim/Hypothesis: To retrospectively assess the long-term clinical and radiological results in a group of patients treated with Brånemark TiUnite implants supporting mostly single-tooth, and partial restorations.

Material and methods: Ninety consecutive patients of both sexes with a mean age of 55.9 years (range 21–82) were treated with 209 Brånemark System MkIII or MkIV TiUnite implants (72 maxilla and 137 mandible, 26 anterior inter-canine and 183 posterior sites). Type of indication was single tooth (21), partial (180) and full arches (8). A delayed loading protocol was applied in 128 implants while 81 were immediately loaded. Provisional as well as definitive restorations were both screw-retained and cemented. Cumulative survival rate (CSR) were assessed. Evaluation of marginal bone remodeling was conducted. Marginal bone level was evaluated by an independent radiologist from periapical radiographs taken at implant insertion and at the long-term follow up visit. Probing pocket depth (PPD) and peri-implant mucosa conditions were also assessed.

Results: Mean follow up time was 11.0 years (range 9.6–12.4): 181 implants reached at least 10 years follow up, 100 implants 11 years, and 17 implants 12 years. Overall six implants failed in four patients (five during the first year and one after 2 years) resulting in a CSR of 97.1% after 12 years. The mean bone level at implant insertion and at the last follow up visit was reported as −0.90 mm (SD 1.16, $n = 169$) and −1.49 mm (SD 0.95, $n = 195$) respectively. Mean marginal bone remodeling from implant insertion to the last follow up visit was −0.60 mm (SD 1.17, $n = 168$). At the last available follow up mean PPD was 1.65 mm (SD 0.84). Periimplant mucosa was scored as normal for the large majority of implants.

Conclusions and clinical implications: This retrospective long-term follow up of 90 patients treated with 209 Brånemark MkIII /MkIV TiUnite implants demonstrated high implant survival rate and excellent marginal bone response and soft tissue conditions.

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Immediate implant placement and provisionalization in extraction sites with severe gingival recessions: a case series with 1–5-year follow-up

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Background: The main objective in modern implantology is to maintain peri-implant osseous and soft tissue structures to combine long-term osseointegration with an esthetic peri-implant mucosa. In contrast to the mainstream of findings we have shown in previous reports that immediate implant installation is even successful when the facial bony wall is defect or absent.

Aim/Hypothesis: The aim of this case series is to proof a surgical approach of a combination of immediate implant installation, immediate provisionalization and immediate facial reconstruction by autogenous bone and connective tissue grafts in situations with facial bone deficiences and severe gingival recessions.

Material and methods: Eight patients (mean age 53.1 years) received a total of eight implants (two OsseoSpeed, six OsseoSpeed Profile, Dentsply Implants, Mölndal, Sweden) which were immediately inserted into extraction sockets with facial bone deficiencies and severe gingival recessions. Implants were aligned in contact to and slightly below the palatal bony wall. Connective tissue grafts were harvested from the palate.

In the recipient sites a supraperiostal tunnel was created without any vertical incisions or papilla separations. The connective tissue grafts were placed within the tunnel and covered by the coronal positioned split flap. Facial gaps between implant surface and the connective tissue were grafted with autogenous bone chips. All implants were immediately provisionalized with a temporary crown without occlusal contacts. Implant survival, marginal bone levels, mucogingival changes and the Pink Esthetic Score (PES) were assessed.

Results: Reasons for teeth removal were endodontic failure, external root resorption, root fracture or periodontitis. Seven implants were placed in the anterior maxilla, one in the anterior mandible. All implants were still in function at the final follow-up (survival rate: 100%). The mean follow-up period was 23 months (range 11–60 months). CBCTs were recorded preoperatively and at final examination. The preoperative distance from the CEJ to the marginal bone level was 8.02 ± 1.97 mm at the facial aspect; the distance between the implant shoulder and the marginal bone was 0.58 ± 0.65 mm in the final examination. The mean PES ratings improved from 8.75 ± 1.75 to 11.13 ± 0.84. The width of the attached gingiva improved from 2.63 ± 0.92 to 4.00 ± 0.76 mm. Mean pre-op gingival recession was 4.62 ± 1.19 mm. The height of the mucosal recession at the implant sites improved to 1.25 ± 1.16 mm.

Conclusions and clinical implications: Within the limitations of this case series, single teeth rehabilitation patients can be treated with a favorable esthetic outcome and stable marginal bone levels using the immediate implant placement and provisionalization approach even when facial bony defects and severe gingival recessions have to be reconstructed simultaneously by hard and soft tissue grafting.

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Implant's placement in areas with reduced buccolingual dimensions

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Background: The volumetric changes that occur after tooth extraction are particularly relevant in the aesthetic zone. Some authors observed that healing resulted in a reduction of roughly 50% in buccolingual bone width within 12 months. Two-thirds of the bone loss occurred on the buccal aspect. Thin biotypes associated with thin buccal bone plates are presumed to be most susceptible to this type of bone loss. Local factors, such as the presence of inflammation, and systemic factors, such as smoking, could also have an impact on the expected extent of bone resorption.

Aim/Hypothesis: To show a very common type of bone defect with great resorption of buccal bone and how to deal with this in implant-supported rehabilitations.

Material and methods: Female patient, 55-years-old, with an edentulous space in the area of tooth 24, presenting a buccolingual bone defect, which required the placement of the implant with a buccal or lingual dehiscence. We used a one-stage procedure, in which the implant was placed with primary stability and in a correct three-dimensional position and the reconstruction of the buccal bone defect was made with particulate bone substitute material and a resorbable collagen membrane.

Results: After 6 months, we proceeded to the exposure of the implant and an increase in the bone volume in the regenerated area is visible. Impressions were taken and a screw-fixed metal-ceramic crown was made. After 1-year of follow-up, the gingival margin remains stable and the periapical X-Ray confirms the stability of the hard tissue without signs of bone loss around the implants.

Conclusions and clinical implications: Xenografts are an important bone substitute material used in contemporary periodontal and implant surgery, with some benefits compared to autogenous bone such as absence of donor site, less morbility and better post-operative recovery. Xenografts have a much slower and lower resorption rate than autogenous bone, particularly in reconstruction defects, which can be an advantage, particularly in the aesthetic zone. Currently, autogenous bone particles must be added to xenograft to achieve an osteoinduction effect.

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Stereolithography in diagnostic surgical implants

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Background: Over the last 10 years, there has been continuous evolution in both the diagnostic phase and prosthetic production. In the surgical-prosthetic planning of complex cases, computerized tomography of the crown sections and 3D maxillary reconstruction on paper or cd have allowed detailed anatomical study and correct implant placement. In the diagnostic phase, we now have an additional tool: stereolithography – a process for creating three-dimensional objects from computer data.

Aim/Hypothesis: In our study, we aim to highlight the role of stereolithografic models in reducing intraoperator surgical mistakes in interdisciplinary consultation and doctor-patient relationships.

Material and methods: We present clinical cases in which surgical implant planning relies on the use of 1 : 1 scale biomaterial resin anatomical replicas, obtained from dicom files

through CT and Cone Beam, for highlighting internal structures (e.g. roots, nerves, inclusive teeth, etc.).

Results: In our clinical cases, the stereolithografic models facilitated our surgical operations and improved both interdisciplinary consultation and doctor-patient relationships.

Conclusions and clinical implications: The development in diagnostic tools and materials has undoubtedly facilitated the achievement of excellent aesthetic and functional results, to the great satisfaction of patients and operators.

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Surgical treatment of peri-implantitis with a regenerative approach: case reports

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Background: It has been reported in the recent literature that the prevalence of peri-implantitis is increasing. The ideal management of peri-implantitis includes not only control of the infection, but also halting further loss of tissues, regeneration of lost soft and hard tissues, and reosseointegration of the exposed implant surfaces. Lekovic et al. (2001) reported that an enhanced hard tissue healing response occurred when enamel matrix derivative was used in combination with bovine porous bone mineral and a bioabsorbable membrane.

Aim/Hypothesis: The purpose of the present case reports was to evaluate the effectiveness of a combination of enamel matrix proteins, bovine porous bone mineral, and a bioabsorbable membrane on the regeneration of peri-implantitis bony defects.

Material and methods: Two patients diagnosed as having peri-implantitis by the definition of Heitz-Mayfield (2008) were included in the case reports. During the surgical treatment procedure, the bony defects were exposed with a flap elevation, and the exposed implant surfaces were decontaminated with a manual curettage (Martin, Germany), and tetracycline was applied over the implant surfaces for 3 min. Then, the bone defect was filled with a combination of bovine porous bone mineral (Bio-Oss®) and enamel matrix derivative (Emdogain®) and covered with a bioabsorbable membrane. Clinical and radiographic examinations assessing bone defects morphology were performed at the surgical treatment, and follow-up visits.

Results: The results of this report indicate that a combination technique including enamel matrix proteins, bovine porous bone mineral, and a bioabsorbable membrane showed a resolution of inflammation and reduction in probing depth in clinical evaluation as well as an increased bone fill in the radiographs. During the follow-up periods, the treated sites were well maintained without any further signs of inflammation.

Conclusions and clinical implications: The present case reports demonstrated that the surgical treatment involving combined use of enamel matrix proteins, bovine porous bone mineral, and a bioabsorbable membrane might effectively improve clinical and radiographic outcomes in the management of peri-implantitis bone defects. However, the reports only cover short-term outcomes, and thus long-term observation of peri-implant tissue conditions would be necessary.

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Soft and hard tissue maintenance after the placement of immediate-loaded implants in the anterior maxilla – photographic and radiographic assessment

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Background: The dynamics of soft and hard tissue volume maintenance following the placement of immediate-loaded implants in aesthetic areas remains unclear in literature.

Aim/Hypothesis: To present a method to evaluate by clinical (photography) and radiographic bi- and tri-dimensional means the alterations in soft and hard tissues following immediate implant placement and loading in the anterior maxilla.

Material and methods: Ten patients, treated with immediate-loaded implants in the maxillary central or lateral incisor, were evaluated in this study. Clinical parameters (distance from the tip of the crown to the interdental papilla – P; distance from the top of the crown to the gingiva – C; keratinized mucosa height – K) were evaluated in standardized pictures taken immediately after (baseline), and 1, 3, and 6 months after provisional implant-supported single crown placement. Bi-dimensional radiographic parameters (distance from the top of the implant to the first bone-to-implant contact – IT-FBIC; distance from the bone crest to the first bone-to-implant contact – BC-FBIC; lateral bone lost at the implant neck – LBL) were evaluated from standardized digital periapical radiographies acquired at the same time points, or from CBCT images (buccal bone wall thickness, measured at the top, the midpoint and the apex of the implant – TT, MT, and AT, respectively) acquired at baseline and 6 months after surgery. The volume of the buccal bone wall covering the central millimeter of the implant (BV) was also assessed in the CBCT images. Comparison among multiple periods of observation were performed using repeated-measures ANOVA followed by Tukey post-hoc test,

while two-period based comparison were made using paired *t*-test.

Results: The variation for all clinical (photographic), bi- and tri-dimensional parameters assessed was non-statistically significant. Mean P was 5.55 ± 1 mm, considering all time periods, while C and K were 9.2 ± 1.2 and 5.3 ± 1.6 mm, respectively. Mean IT-FBIC was 1.3 ± 0.8 mm, considering all time periods, whilst BC-FBIC and LBL were 3.9 ± 1.1 and 0.3 ± 0.1 mm, respectively. There was a 94% maintenance of BV.

Conclusions and clinical implications: Assessed parameters showed good clinical, bi- and tri-dimensional radiographic stability of soft and hard tissues for implants immediately placed and loaded in aesthetic areas.

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Immediate restorations of maxillary implants placed in fresh extraction and healed sites using NobelGuide™: 5 years follow up

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Background: The increasing demand of the patients to have a smooth transition from a hopeless dentition to a fixed implant supported prostheses, without wearing an interim removable denture, raises new challenges to adapt 3D software planning and guided implant treatement techniques to post extraction cases.

Aim/Hypothesis: To retrospectively evaluate the mid-term follow up of patients with compromised dentition treated with immediate fixed restorations of maxillary implants inserted in fresh extraction and healed sites by using the NobelGuide™ system in combination with a specially designed radiographic stent.

Material and methods: Twenty-seven consecutive patients (females 20, males 7), aged 34–71 years (mean 55.8) and presenting compromised dentition were treated with flapless implant surgery in fresh extraction sites. Immediate full arch ($n = 19$) or partial ($n = 10$) fixed upper restorations by using NobelGuide™, in conjunction, in the planning phase, with a specially designed radiographic stent. This technique allows prosthetically –guided 3D implant planning even in patients with residual hopeless dentition in order to avoid them wearing a transitional removable denture. The patients were clinically and radiologically followed up 5 years (mean 61.3 months, range 48–77) and up to 5 years (mean 46, 5 months, range 12–61), respectively. Cumulative survival rate (CSR) was assessed. Evaluation of marginal bone remodeling was conducted. Marginal bone level was evaluated by an independent radiologist from periapical radiographs taken at implant insertion, after 2 years and at the last follow up visit. Soft tissue parameters were also collected. Biological and mechanical complications recorded.

Results: One-hundred sixty implants in 27 consecutive patients have been assessed. Four implants in two patients failed and were removed resulting in a overall CSR of 97.33%. Two failed implants could be successfully replaced. All final prosthesis were stable and in good function trough the follow up period. Bone loss from implant insertion to 1–2 years, for implants placed in both extraction and healed sites, was 0.85 mm (SD 1.28, $n = 130$); from implant insertion to the last radiological control (4–5 years) −1.39 mm (SD 1.88, $n = 127$) and between 2 years and last control −0.64 mm (SD 1.66, $n = 111$). No statistically significant difference in bone loss values was found between extraction and healed sites at any time ($P > 0.05$); at the last visit most of the implants showed normal periimplant mucosa. No other biological complications occurred.

Conclusions and clinical implications: Within the limitations of a retrospective study, this 5-years follow up of immediate fixed restorations of maxillary implants inserted in fresh extraction and healed sites using NobelGuide™ in combination with a specially designed radiographic stent, demonstrated good outcome with regard to implant survival, marginal bone changes and soft tissue conditions.

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Immediate restorations of maxillary implants inserted in fresh extraction and healed sites using the NobelGuide™ system

Giovanni Polizzi, Tommaso Cantoni
Private Clinic, Verona, Italy

Background: The increasing demand of patients to have smooth transition from a hopeless dentition to a fixed implant supported prostheses, without wearing an interim removable denture, raises new challenges to adapt 3D software planning and guided implant treatement techniques to post extraction cases.

Aim/Hypothesis: To retrospectively evaluate the mid-term follow up of patients with compromised dentition treated with immediate fixed restorations of maxillary implants inserted in fresh extraction and healed sites by using the NobelGuide™ system in combination with a specially designed radiographic stent.

Material and methods: Twenty-seven consecutive patients (females 20, males 7), aged 34–71 years (mean 55.8) presenting compromised dentition were treated with flapless implant surgery in fresh extraction sites, immediate full arch (19) or partial (8) upper restorations, by using the NobelGuide™ system, in conjunction with, in the planning phase, a specially designed radiographic stent: this technique allows prosthetically –guided 3D implant planning even in patients with residual hopeless dentition so as to avoiding them a transitional period with a denture. The patients were clinically and radiologically followed up to 5 years (mean 46, 5 months, range 12–61). Cumulative survival rate (CSR) was assessed. Evalua-

tion of marginal bone remodeling was conducted. Marginal bone level was evaluated by an independent radiologist from periapical radiographs taken at implant insertion, after 2 years and at the last follow up visit. Soft tissue parameters were also collected. Biological and mechanical complications recorded.

Results: One hundred and sixty implants in 27 consecutive patients were assessed. Four implants in two patients failed resulting in a overall CSR of 97.33%. Two failed implants could be replaced, two were just removed. All final prosthesis maintained stable and in good function during the follow up. Bone loss from implant insertion to 1–2 years, for implants placed in both extraction and healed sites, was 0.85 mm (SD 1.28, $n = 130$); from implant insertion to the last radiological control (4–5 years) −1.39 mm (SD 1.88, $n = 127$) and between 2 years and last control −0.64 mm (SD 1.66, $n = 111$). No statistically significant difference in bone loss values was found between extraction and healed sites at any time ($P > 0.05$); at the last visit most of the implants showed normal periimplant mucosa. No other complications occurred.

Conclusions and clinical implications: This up to 5-years follow up of immediate fixed restorations of maxillary implants inserted in fresh extraction and healed sites using NobelGuide™ system in combination with a specially designed radiographic stent, demonstrated good treatment outcomes with regard to implant survival, marginal bone changes and soft tissue conditions.

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NobelActive® implants in maxillary post-extraction sockets using NobelGuide™ system: retrospective analysis of 4 year outcomes

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Background: Transition from hopeless-dentition to implant prostheses, without wearing removable-denture, require adaptation of guided surgery to post-extraction cases. NobelAactive implant design features makes it particularly fit for placement in extraction sockets.

Aim/Hypothesis: Aim of this study was to assess the survival rate of NobelActive implants placed in fresh extraction or healed sites of the upper jaw when using NobelGuide™ system in combination with a specially designed radiographic stent.

Material and methods: Thirty consecutive patients of both sexes (females 21, males 9), aged 38–84 years (mean 60.1 years) and presenting compromised dentition in maxilla were treated with flapless implant surgery for total upper rehabilitation just after teeth extraction. Patients were clinically followed-up to 1–4 years (mean 32.6 months). Cumulative survival rate (CSR) and Kaplan-Meier Survival Analysis were assessed to allow estimation of survival over time, even when patients dropped out or were followed for different lengths of time. P values ≤ 0.05 were considered statistically significant and their respective 95% CI calculated.

Results: One-hundred sixty implants were consecutively placed into 30 patients; 90 were placed in healed sites and 70 in extraction sites. Only two implants in two patients failed resulting in an overall implant CSR of 98.1% (Table 1). One failed implants was placed one in an healed site and it was lost during the third year for progressive bone loss. The other implant, placed in an extraction site, was lost during the second year and showed clinical signs of periapical peri-implantitis. Risk factors (smoking habit; poor oral hygiene compliance) were present in both patients. Statistical analysis showed that there is no statistically significant difference in survival dental implants placed in fresh extraction or healed sites by using the NobelGuide™ system in combination with a specially designed radiographic stent.

Table 1. Life table analysis of surviving implants with NobelActive/NobelGuide™ system

Time	Implants	Failed	Not followed*	CSR (%)
0–1 year	160	0	0	100
1–2 years	160	0	0	100
2–3 years	140	1	20	99.3
3–4 years	91	1	49	98.1

*The latest recorded patient follow-up occurred in this time period.

Conclusions and clinical implications: Within the limitations of a retrospective study, this 4-years follow-up analysis of NobelActive/NobelGuide™ implants inserted for total maxillary fixed restorations, demonstrated good outcome with regard to implant survival. It can be concluded that the implants in fresh extraction sites have similar success rate that implants placed in healed sites. In our experience, thanks to the use of variable-threaded tapered implant combined with a guided surgery approach, the immediate placement/function of implants in fresh extraction sockets seem to be a safe and predictable technique with high survival rate.

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Prevalence, location and morphology of maxillary sinus septa

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Background: Maxillary sinus septa are barriers of cortical bone that divide the maxillary sinus floor into multiple compartments, known as recesses.

Aim/Hypothesis: To gain further insights and resolve conflicting results in the literature regarding prevalence, predominant location and morphologic variability of maxillary sinus septa.

Material and methods: Electronic and hand searching of English literature identified 33 investigations published from 1995 to 2011. Septa were defined as at least 2–4 mm in height.

Results: Septa were present in 28.4% of 8923 sinuses investigated (95% CI 24.3–32.5%). Prevalence was significantly higher in atrophic sinuses compared with dentate maxillae ($P < 0.001$). Septa were located in premolar, molar and retromolar regions in 24.4%, 54.6% and 21.0% respectively. Orientation of septa was transverse in 87.6%, sagittal in 11.1% and horizontal in 1.3% of cases. Septa height measured 7.5 mm on average. Complete septa (dividing the sinus into two separate cavities) were found in only 0.3%. Other rare conditions included multiple septa in one sinus (4.2%) and bilateral septa (17.2%). Septa diagnosis using panoramic radiographs yielded incorrect results in 29% of cases.

Conclusions and clinical implications: In view of their high overall prevalence and significant morphologic variability, 3D radiographic imaging prior to sinus floor augmentation may help to reduce complication rates in the presence of maxillary sinus septa.

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Use of narrow implants (3.3 mm in diameter), in posterior sites (follow-up 1-year)

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Background: In replacing missing teeth, osseointegrated implants have become a viable option, especially in the restoration of partial edentulism. Such situations may require additional and complex surgical interventions to augment insufficient bone volume especially In width. An alternative therapy in limited bone volume could be the placement of narrow implants, simplifying the restoration of posterior segments.

Aim/Hypothesis: To evaluate the clinical and radiographic outcome and the survival rate of narrow Straumann implants (3.3 mm of diameter), placed in posterior sites, in partially edentulous patients with a 1-year follow-up.

Material and methods: Twentyone Straumann narrow implants, with a 3.3 mm wide diameter were placed in 11 consecutively patients. Seventeen implants were 10 mm long and four 8 mm long; eleven in mascellar sites and 10 in mandibular sites. Implants were loaded after 8 weeks of healing. Implant survival rate and marginal bone loss were evaluated at different intervals.

Results: None of 21 implants were lost before loading. Hence, the survival rate at 1 year after loading was 100%. No further technical or biological complications were encountered during 1-year of follow-up. The mean marginal bone loss was 0.44 and 0.75 mm (Table 1), respectively at prosthesis delivering and after 1 year after loading. Insertion torque was registered >35 Ncm in 17 implants.

	Bone loss(mm) at 8 weeks		Bone loss (mm) at 1 year	
	M	D	M	D
Mean value	0.44	0.44	0.79	0.73
Range	0.00–2.00	0.00–1.9	0.00–2.4	0.00–2.3

Conclusions and clinical implications: Narrow implants with a moderately rough surface loaded early (after 8 weeks) during healing yielded high implant survival rates and moderate loss of bone after 1 year of loading. Longer observation periods are needed to draw more definite conclusions on the rialibility of narrow implants, in order to avoid complicated bone augmentation procedures.

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Marginal peri-implant bone loss using two different type of fixture: a prospective split-mouth clinical study

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Background: The use of large diameter implants rapresents a reliable indication for the rehabilitation of the posterior area in order to obtain more functional and prosthetic support. Despite a relevant number of publications concerning posterior dental rehabilitation using large diameter implants, few data are present about the difference in marginal bone loss using fixture with different macrostructure design.

Aim/Hypothesis: Dental rehabilitation of edentulous patients by means of implant-supported prostheses has presented a significant treatment alternative with relevant improvement in masticatory function and well-being of partially or completely

edentulous patients. The purposes of this prospective split-mouth study on humans are to evaluate (1) marginal peri-implant bone loss using two different macrostructure implant design of the same diameter (Astra 5 mm®Astratech) (2) success and survival rate of implant inserted in posterior area for single tooth after 3-years follow-up.

Material and methods: From 2006 10 patients with bilateral and posterior simmetric single-tooth loss were included in the study. The inclusion criteria were very selective: vertical bone height minimum 12 mm, horizontal bone width minimum 7 mm, no GBR technique associated, normal occlusion, normal intermaxillary distance and implant-supported prostheses in occlusion with fixed dentition. Routine documentation of the treated patients was obtained with: models of the maxilla and mandible, diagnostic wax-up, surgical templates, panoramic and intraoral radiographs. TC scans were performed only when the other radiographic exam should not be sufficient to evaluate the treated area. The following parameters were evaluated: peri-implant bone resorption, peri-implant clinical parameters, survival and success of implants.

Results: From loading time, all the patients reached 36 months follow-up. No implants had been lost. Implant bone resorption values ranged from 0 to 0.5 mm in the 80% of cases and from 0.5 to 1 mm in the 10%; one patient presented 1.3 mm bone implant resorption. MPI was 0 in the 90% of cases, one in the 10%. The 95% of the patients present any bleeding after probing. One patient reported a probing depth higher than the physiological value (4 mm). Survival rate was 100%, success rate was 95%. No statistical significant difference were observed between the two types of implants. Despite of the limited follow-up, the present study suggested that implant with same diameter but different macrostructure seems to be equally predictable and safeness for implant-prosthetic rehabilitation of single unit lateral-posterior edentulous areas.

Conclusions and clinical implications: Despite of the limited follow-up, the present study suggested that implant with same diameter but different macrostructure seems to be equally predictable and safeness for implant-prosthetic rehabilitation of single unit lateral-posterior edentulous areas.

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Piezo hydrodynamic internal sinus lift.. a safe step in implant dentistry

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Background: Sinus lifting via crestal approach (internal sinus lift) by Summer's technique is a common and a non invasive procedure in implantology practice compared to sinus lift via external approach. However, patient discomfort, shocking feeling, membrane tearing, difficulty in graft packing, and the unsafe use of hammer and osteotomes are disadvantages and drawbacks of this technique.

Aim/Hypothesis: Introducing an easy and safe technique for internal sinus lift.

Material and methods: Advanteges of Piezo technology: Piezo surgery opened a new era in implantology practice as a safe and easy to use technology by means of respecting and protecting the soft tissues principle and surgical steps of the piezo hydrodynamic sinus lifting technique as well as other sinus lift and Ultrasonic piezo surgical applications with end results.

Results: Piezo Hydrodynamic Internal sinus lift achieves more safety, easy graft packing, less membrane tearing complications, less trauma, less edema, less post operative pain and more patient acceptance.

Conclusions and clinical implications: Hydrodynamic Piezo Intralift technique is a minimally invasive and reliable technique for internal sinus lifting with highest success rate, especially in less experienced hands.

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Histological and clinical results of autologous bone block graft for augmentation in an esthetic zone for implant placement: study case

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Background: Esthetic zones are one of the main challenges in implant placement. In this region and following tooth loss the edentulous ridge will became concave or flat with Class I or II deficiencies (Wang 2002) and in order to achieve a good emergence prosthetic profile defects needed to be filled with autogenous bone or bone substitutes and sometimes covered with resorbable or non resorbable membranes. Several surgical procedures to augment the peri-implant hard tissue have been proposed with success. Discussion persists on complete integration of the bone graft in the receptor site which can influence clinical results.

Aim/Hypothesis: The aim of this study case was to evaluate with histological analysis, the hard tissue quality in the transition area between the graft and the receptor bone site and the clinical outcome of implant therapy in an esthetic zone.

Material and methods: A class II ridge deficiency and the loss of an upper central and lateral incisor in a 40 year old female was treated with implant therapy. After 11 years of root fragment extractions, this area presented a big buccal bone defect and connective tissue and bone grafts were made. The treatment plan included in first hand, an autologous bone graft harvested from the anterior mandibula, fixed with a bone block fixation screw. After 6 months, a single implant surgery was performed. During this intervention, a bone sample was collected from the implant site, with a bone trephine, and sent for histological analysis. The implant was then placed in a better posi-

tion, only possible because of the previous bone graft. The prosthetic treatment followed, with two crowns over the single implant. A good aesthetic and emergence prosthetic profile were achieved. It seems possible to treat with success.

Results: Histological analysis results showed normal tissue between the old and new bone and it was possible to visualize the total integration of the bone graft. Clinically, a good bone anatomy was obtained.

Conclusions and clinical implications: In implant therapy, autologous bone graft technique may be a good clinical option for horizontal bone augmentation in the esthetic intra-oral area in order too achieve a good emergence prosthetic profile.

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Outcome of immediate loaded implants in anterior regions

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Background: Anterior regions of the upper and lower jaws are highly aestethically demanding especially in patients with low smile line. The immediate placement and loading of implants for replacing unsolvable teeth is preferred treatment option because it shortens the treatment time, prevents bone loss and early restores function.

Aim/Hypothesis: The aim is to present the outcome and marginal bone loss around immediate loaded implants placed in fresh extraction sockets and healed sites in anterior regions of the upper and lower jaw.

Material and methods: In five healthy two female and three male non smoking patients age between 43 and 69 we inserted 12 implants. The cover screw were removed, temporary abutments were inserted and impression was taken immediately after insertion before wound closure. The implants were loaded no later than 24 h after insertion. Deproteinized bovine bone mineral (DBBM) was used in gaps more than 1.5 mm. The antibiotics were prescribed for 5 days only to patients where DBBM was used. The implants were definitely loaded after 3 months. Radiographs for bone resorption and clinical evaluation for papilla presence (PP), emergence profile (EP), plaque accumulation (PA), bleeding on probing (BP) and probing depth (PD) were performed 1, 6, 12, 24 weeks and once a year.

Results: Implant distribution was four in the upper jaw placed in healed sites, eight in the lower jaw placed in fresh extraction sockets. Reason for teeth loss was periodontal disease in three and periapical parodontitis in two patients. All implants were placed 1 mm subcrestaly and were primary stable. Around eight implants we used DBBM. Temporary bridges were placed on all implants. The mean follow up was 24.4 months. Radiographically 1 mm bone loss was measured around two implants after 12 months without clinical evidence of inflammatory signs. PP and EP were present around all implants. PA and BP were present only first week.

Conclusions and clinical implications: Presence of PA and BP first week is explained by presence of sutures material and sparing during oral hygienic procedures. Bone loss of 1 mm was observed between two implants with <2 mm of inter implant distance. Despite irrelevant minor inconveniences immediate loading of implants placed in anterior regions is predictable, reliable and desirable method for replacing missing teeth and function in the frontal regions.

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Clinical investigation of the postoperative altered sensation due to autologous bone harvest

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Background: Postoperative altered sensation due to autologous bone harvest is important complication as well as paresthesia in the mental region after implant body installation to the back of lower jaw. However this problem has not enough reported in the literature, many patients with atrophic alveolar consult with our department. Therefore, bone graft to atrophic region from other area of autologous bone could be needed; indeed, autologous bone has many advantages compare with artificial or xenografts.

Aim/Hypothesis: To clarify the incidence of paralysis after autologous bone harvesting, we analyzed our out come in alternative sensation after this surgery.

Material and methods: Two-hundred and thirty-four patients (mean age: 55; 16–74, male: 111 and female: 123) were undergone for harvest own osseous tissue from buccal side cortex of mandible (148 cases), mental cortex (29 cases), ramus cortex of mandible (three cases), and/or anterior iliac crest and its marrow (13 cases) as donor site in order to be bone augmentations with/without simultaneous implants between Feb 2007 and Feb 2012. The patients were received alveolar ridge veneer, onlay, saddle or/and sinus floors grafting. They were checked the altered sensation on lower lips, mental and lateral femoral regions. Degree of altered sensation was evaluated by the quantitative sensory needle (type 1, Esu-Yu Co. Ltd. Tokyo, Japan) that is able to quantify the sensation according to push the skin of patient ranges 1–10 g. Normal sensation was defined to be 1 g skin oppression and soft drawing brush touching to the regions.

Results: Altered sensation due to harvest of buccal cortex, mental cortex, ramus cortex of mandible and anterior iliac crest were observed 6/148 (4.1%), 7/29 (24.1%), 1/3 (33.3%) and 2/13 (15.4%), respectively on the first day after the surgery. And afterward, in the above sites of the cases, altered sensation was improved according to time course, that were 2/

148 (1.4%), 1/29 (3.4%) and 1/13 (7.7%) in 6 months after the surgery, respectively. Any of postoperative infections were not observed in all cases after the surgery.

Conclusions and clinical implications: Buccal side cortex of mandible is prominent donor site, at least for aversion of postoperative altered sensation or paresthesia, compared with the other regions. But it is recommended that inform to patients who will be received the operation, which are altered sensation, disharmony or paresthesia before autologous grafting operation.

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The treatment of 3D bone defects by using the bone ring technique

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Background: Until now, a two-stage approach usually had to be selected for 3D bone defects augmented with autogenous bone blocks. The Bone Ring Technique of Dr. Giesenhagen allows bone transplantation and implantation on large three-dimensional bone defects in a single operation.

Aim/Hypothesis: The Bone Ring Technique is a fast and predictable alternative to the two step approach.

Material and methods: A 52 year old male patient with severe defects of hard and soft tissue in the high esthetic area of the upper jaw was treated with the Bone Ring Technique. Three months after extraction of 11 and 21, two Ankylos® implants were placed simultanously with bone block augmentation. Both corticocancellous blocks were taken from the chin using special trephine drills. The defect site was prepared with a smaller trephine drill to achieve the best possible fitting for the transplants, like a cork to the bottle. The implants were placed subcrestally. For both implants membrane screws® were inserted to achieve a better stabilty of implant and transplant. Voids were filled with bone chips and a bone regeneration material. To prevent resorption, the transplants were covered with a thin layer of a slow resorbable bone regeneration material. Finally the augmented area was covered with a collagen membrane. The soft tissue was closed tension free. The implants were loaded after 6.5 months with individalized cercon abutments and full ceramic crowns.

Results: There weren't any complications during the healing time. The vertical augmentation at regio 11 was 11 mm, at regio 21 it was 6 mm. There was no resorption detected. Bone has grown on the implant shoulder of both implants. Hard- and soft-tissue were stable and free of any inflammatory signs during the healing period. The functional and esthetic result was good, the patient 100% satisfied. The follow up examinations after six, twelve and 24 months showed healthy hard- and soft-tissue.

Conclusions and clinical implications: Autogenous block grafts are a predictable way of treatment and can be done with bone rings. A one step approach of augmentation and implantation shows good results. It's important to stabilize the graft around the implant. The Bone Ring Technique is a predictable technique for the skilled and experienced surgeon. The simultanous augmentation and implantation minimalize the treatment time beacuse a second surgery and a second healing period is not necessary. Possible harvesting regions are the chin, the palate and the retromolar area. The Bone Ring Technique works perfectly with an implant which has a parallel wall design with the absence of threads in the neck region in combination with a progressive thread design in the apical part which allows a very good primary stabilty even in cancellous bone of a poor quality. The absence of microgap and micromovement is the precondition for a longterm stabilty of the augmented bone. The membrane screw® is one of the key factors for a successful use of the Bone Ring Technique.

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Immediate loading of TiUnite™ and machined implants in the posterior mandible, part II: a 9 year follow-up clinical trial

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Background: Immediate loading can reduce treatment time and preserves bone volumes, providing good aesthetic results, and increasing patient comfort.

Aim/Hypothesis: The aim of this study is to present its clinical results with 9 years of follow-up of a protocol of immediate loaded implants with two different surfaces.

Material and methods: Forty-four patients received 66 Brånemark System TiUnite™ and 55 Brånemark machined implants, immediately loaded, including a bone mapping and a flapless approach technique. Control examinations were performed on the day of surgery and at 1, 3 and 9 year follow-up visits.

Results: All implant sites had intact buccal and lingual bone walls. The prefabricated temporary restorations showed an excellent fit. Three TiUnite and 8 machined implants failed within 7 weeks of loading, resulting in a cumulative survival rate of 95.5% and 85.5% respectively after 9 years of load. The survival rate for implants in a partial prosthesis was 98.8% and for single restorations was 92.2% for the TiUnite group; and 87.8 and 83.2 respectively for partial and single resorations for controls. The marginal bone resorption in the first year was on average 0.9 mm in the TiUnite group and 1.0 mm in the machined group, 0.4 and 0.5 mm respectively till the third year. On examination at 9 years there has been a general settlement of the bone, without further loss in height, if not negligible.

Conclusions and clinical implications: The unchanged survival rate and the low average bone loss after 9 years confirm the feasibility of an immediate loading protocol in the mandible, which included flapless surgery. TiUnite implants obtained a 10% higher succes rate compared with machined fixtures. Moreover, we have responded to the lack of reliable and significant data of a therapeutic protocol so important, to many years after surgery, with a follow-up of 9 years.

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Abstract withdrawn

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Comparison of two different progresses of implant periapical lesion in mandibular anterior lesion (Case report)

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Background: There are many reports of implant periapical pathology. Various causes of periapical pathology are suggested such as contamination of the implant surface, overheating of bone during drilling and previous periapical lesion of extracted tooth. Usually surgical treatments such as removal of apical portion of implant and removal of implant are recommended. However, in some cases, implant periapical pathology could be treated without surgical treatment.

Aim/Hypothesis: The aim of this case is to present the two different progress of implant periapical pathologic lesion without surgical treatment.

Material and methods: First case: A 48 years old health male patient treated two implants in mandibular anterior lesion (#32, #42/Branemark MkIII, TiUnite Surface, 3.3 × 13 mm). After 2 months, second surgery was done and prosthetic process was done by prosthodontist. After placement of final restoration, periapical radiograph was taken and implant periapical pathology was found in #32 implant apex. Patient didn't show any discomfort on the lesion. For 3 years, patient didn't show any pathologic change and radiolucent area of #32 implant apex was resolved. Second case: A 51 years old healthy male patient was treated in two implants in mandibular anterior lesion. (#32, #42/Branemark Groovy, TiUnite surface, 3.3 × 11.5 & 3.3 × 10 mm). Implant placement was performed in one staged surgery. Two months later, there was abscess formation on #42 buccal gingival area. Thorough irrigation with saline and application of minocycline gel were performed. One week later, patient discomfort was decreased. However, fistular opening still remained. The same treatment was done again. Three week later, patient didn't show any discomfort and fistular opening was disappeared. For 2 years, no recurrence was occurred.

Results: One implant periapical pathologic lesion was occurred and disappeared without any symptom. However, the other lesion showed fistular formation and abscess discharge and treated using minocycline gel application.

Conclusions and clinical implications: Two different cases showed different progresses. It might be caused by different causes of implant periapical pathologic lesion. Overheating of bone during drilling might be the cause in first case. Surface infection might be the cause of second case. Implant periapical pathologic lesions could show different progresses according to their causes and should be treated differently.

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Sinus lift in extremely atrophic maxillae: a case report

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Background: Treatment of the upper-posterior maxilla represents one of the major challenges within dental implantology. Not only it possesses poor bone quality but often needs bone augmentation to provide sufficient bone height for proper implant placement. New therapeutic solutions that significantly minimize biological and economic cost for the patient are of evident need. While traditional implants consist of pure titanium, industry has introduced new materials. Trabecular Metal (TM) is a porous tantalum biomaterial that has excellent biocompatibility and is a safe and effective biomaterial fixation. The three dimensional structure similar to trabecular bone has shown excellent bone ingrowth and was successfully used in orthopedics for 15 years. Based on current scientific data we hypothesized that new TM dental implants show higher performance when inserted in the atrophic maxillae than regular titanium implants.

Aim/Hypothesis: Clinical and histological evaluation of the TM dental implant regarding its behavior and efficiency in poor quality bone combined with a maxillary sinus floor augmentation procedure.

Material and methods: Clinical and radiological evaluation of a 49 year old healthy patient with complete removable upper denture revealed a maxillary alveolar ridge of bone high <1 mm. A bilateral sinus augmentation using the crestal window technique was performed. Six month after surgery, a CBCT was taken and bone core specimens were removed for histological evaluations. Followed by implant placement at both sides. After six more months the implants were uncovered and evaluated by a countertorque of 25 Ncm. Rehabilitation was completed by a fixed implant-supported full-arch prosthesis.

Results: The crestal window technique allowed sufficient bone regeneration for implant placement within 6 months. Histological evaluation of the augmented sites showed vital bone between 9.6% and 27.3%. Six-month post placement, all TM implants were stable upon 25 Ncm of countertorque force and clinical evaluation, allowing support of a full-arch hybrid prosthesis.

Conclusions and clinical implications: The combination of the crestal window technique, the use of allograft and TM dental implants allowed to place a fixed complete rehabilitation, in a patient with an extremely atrophic maxilla. The TM implants are very stable even in completely regenerated bone with allograft. Even though this encouraging case is supported by a case series of similar patients, no long time date is available and thorough statistical evaluations have to follow.

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Clinical interim data from a prospective, randomized, controlled, multicentre, 5-year study comparing two versions of an implant system

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Background: To clinically evaluate surgical and prosthetic modifications of an oral implant system.

Aim/Hypothesis: The aim of this long-term prospective study is to compare marginal bone level changes, implant survival rates and surgeon's perception of primary stability, between two versions of an implant system.

Material and methods: One-hundred and twenty subjects were randomized to treatment with control implants (OsseoSpeed™ TX, DENTSPLY Implants, Mölndal, Sweden) or test implants (OsseoSpeed™ EV, DENTSPLY Implants, Mölndal, Sweden). Subjects needed to be partially dentate and the implants placed in healed sites and loaded early (6–8 weeks). Need for bone augmentation, smoking more than 10 cigarettes/day and any untreated pathologies were exclusion criteria. A jawbone classification related to thickness of the cortical bone (thin/thick) and structure of the trabecular bone (standard/soft) guided the choice of drilling procedure in the test group. Implant installation in the control group followed the recommendations by the manufacturer (e.g. drilling protocol for soft, standard or dense bone) dictated by bone quantity and quality judgement (Lekholm&Zarb). Insertion torque values (ITV), bone classification, surgeon's perception of primary stability (questionnaire) were recorded. Marginal bone levels were evaluated on radiographs taken at implant placement, permanent restoration (baseline), 6 months post loading, and thereafter yearly until the 5-year follow-up.

Results: Most subjects received one implant placed in the premolar or molar areas (95% of sites). Fifty-three per cent of the implants were placed in the maxilla. Bone classification in the test group was primarily soft trabecular bone and thin cortex in the maxilla. The mandible had an equal distribution of thick/thin cortex as well as standard and soft trabecular bone. Corresponding bone quality and quantity in the control group was most frequently B3 in the maxilla and B2 in the mandible. Mean ITV was 30 ± 13 and 22 ± 9 Ncm for test and control groups, respectively. The surgeons expressed a perception of elevated primary stability for the implants placed in the test group compared to the control group. Mean marginal bone level changes 6 months after functional loading showed a slight gain in both groups (0.27 ± 0.64 mm test and 0.15 ± 0.35 mm control). In total, five implants have been lost (four test, one control) by 6 month from placement.

Conclusions and clinical implications: Marginal bone levels were stable 6 months after functional loading and did not differ between groups. Treatment with OsseoSpeed EV utilizing its bone classification for guidance of drilling protocol, results in enhanced perception of implant stability.

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Densitometric analysis of prf vs. xenograft for sinus augmentation procedures – 2 years follow-up

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Background: The autologous platelet concentrates Platelet-Rich Plasma (PRP) and Platelet-Rich Fibrin (PRF) are used in various medical fields, particularly in oral and maxillofacial surgery. Platelet-rich fibrin (PRF) is derived from an autogenous preparation of concentrated platelets that containes high levels of polypeptide growth factors and therefore has the potential to be used as regenerative treatment for bone defects. Growth factors are the key elements in wound healing, particularly in bone regeneration.

Aim/Hypothesis: The purpose of this study was to examine the suitability of autologous PRF in combination with xenograft as regenerative treatment for maxillary sinus augmentation in humans and compare it to xenograft alone using densitometric measurements.

Material and methods: The sample of presented study consists of 10 patients partially edentoulous in the lateral region of the upper jaw. Lateral approach for maxillary sinus augmentation with immediate placement of two dental implants were used in all of 10 patients. In the first group of five patients sinus augmentation was performed using xenographic bone graft

(Bio-Oss®, Geistlich, Germany) only and finally covered with resorbable collagen membrane (Bio-Gide®, Geistlich, Germany). In the second group of five patients sinus augmentation was performed using combination of autologous PRF and xenograft (Bio-Oss®, Geistlich, Germany) and covered using combination of resorbable collagen membrane (Bio-Gide®, Geistlich, Germany) and PRF membrane. Following the healing period of 6 months, the osseointegration of inserted implants was assessed with resonance frequency analysis and considered adequate. All inserted implants were loaded with metal-ceramic restorations. All patients were followed for 24 months after loading through clinical follow-ups and digital radiographic imaging after 6, 12, 18 and 24 months. Densitometric analysis was done based on radiographic images.

Results: After comparing the average densities of all inserted implants, the results showed statistically significant increase of density in group of patients where combination of xenograft and autologous PRF for sinus augmentation was used.

Conclusions and clinical implications: The results of this study indicate that PRF can improve densitometric parameters associated with maxillary sinus floor elevation procedures and immediate implant placement, improving clinical implant stability and promoting bone healing following augmentation. PRF can be used as an effective modality for promoting bone healing and osseointegration process.

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Autogenic bone block transplantation for jaw bone augmentation and implant treatment in Anorexia: 5 years old follow up

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Background: The implant-prtosthodonthic treatment is introduced by bone augmentation procedrures, when the quanitity and quality of bone are not enough. The anorexia is an hormonal and menthal – derived – syndrome manifested by critical bone quality and quantity.

Aim/Hypothesis: The aim of work was: to help patients with anorexia and to analysed, and found the respond to question: does anorexia relative or rather relative contradictions, and how high will be Implants survival rates and implant success rate.

Material and methods: Our anorectic patients is 34 years old girl, her anorexia is an complicated origin: psychiatric mainly with prooves of sauside because edentulous jaws, preterm tooth loss, no bone for implants instalation (5–6 grade of Callwel Hawood scale) her body mass was <40 kg. But her needs have implants (not denture) as well as very high motivation were also stimulation for us, when we decided to do this bone augmentation from the pelvis bone and scruing autogenic fitted block bone into atrophic maxilla basal bone as scrue use long narrow implants 13 × NP (Nobel Replace, Select).

Results: Results which we received after bone transplantation were satisfactory: transplant-block transplanatation, for 4 years, the survival rates was eight implants −1 lost after loading (in sinus lumen, need removal). Interesting is that autogenic bone blocks transplanted and loaded start to resorbed on right side, on level saide the bone block stabilized with the implant are satisfactory, stable, and no big bone resorption around the implants. During last 2 years anorhectic patienst birdh a boy. The condition and boy general health is not a scope of this abstract.

Conclusions and clinical implications: (1) It is still difficult to say, anorexia is and contradiction, or maybe in some cases indication, as a different way for different died, and some happiness of the treated patients. No direct or direct live and health are dangeourous. (2) The number of anorhectic woman is tendency of growing, the losing teeth are preterm lose. (3) It is not known, why one of the maxilla site were after transplantation stable, but the oher one – symmetric are loosing bone, (4) Maybe general poor condition, died, psychiactric symptoms act on transplant remodeling an incorporation as well implants loading, with axtremally improve nutritional opportunities instead of full acryclic edentulous denture. The implant treatment in anorectic people are not contradiction, but they must be consultate with general medicin sepcialists and be under permanent aid of these specialist. The survival rate and success rate are difficult to evaluate because one case were evaluated clinically.

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Oral rehabilitation after failure with biomaterials

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Background: Failures related to augmentation of the alveolar crest with Biomaterials with or without implant placement can lead to severe complications with destruction of bone and soft tissue. The treatment of such complications, particularly in the esthetics area, is long and difficult. Those patients can be treated successfully with pure autogenous bone in form of three-dimensional reconstruction. This can assure a correct implant position in 3D-dimension, fundamental for the esthetics results.

Aim/Hypothesis: The widespread use of biomaterials has also led to a growth of failure. The treatment of such complication is very difficult due to the need to remove the implants and the contamination of the failure site with the infected biomaterial. The regeneration potential of the bony site is reduced due to the obstruction of the blood vessels with the biomaterial. Scar tissue with biomaterial particle is reducing the quality of the soft tissue. In the following the concept of treatment such a complication is described.

Material and methods: Ten consecutive patients were treated in the front teeth area with the following protocol: The first step of the protocol provides the removal of the remaining biomaterial from the bone and the soft tissue and at the same

time soft tissue reconstruction with single or double rotated pedicle palatal flap. After 2 months healing time, the treatment is continued in the most cases by a 3D reconstruction of the affected crest with pure autogenous bone harvested from the mandible with the microsaw technique and following the 'biologic concept' of bone grafting. Sixteen implants are placed 3–4 months later. The correction of the soft tissue with soft tissue management and augmentation is performed during the implant exposure 3 months later. The prosthetic rehabilitation begins 1 month later.

Results: The augmentation of the soft tissue prior to the bone grafting procedure was giving more security for a good protection of the grafted bone. A primary good healing occurs without any infection or bone exposure in all the 10 patients. During implantation the bone showed good revascularization and volume to permit insertion of implants in the correct height. Implants were placed in eight Patients without and in two patients with secondary bone augmentation due to poor bony regeneration 3–4 months postoperatively. In all the patients it was possible to get a satisfied functional and aesthetical result.

Conclusions and clinical implications: Each surgical failure with biomaterial can lead to bone and soft tissue destruction, that require special attention. This is particularly important in the esthetic zone where high request is expected. The presented study shows that autogenous bone is predictable for the reconstruction of complicated bony destruction due to biomaterial failures, particularly where great aesthetic and functional demands are required.

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The influence of suture remnants on peri-implant bone healing – a pilot animal experimental study

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Background: Suture remnants may potentially induce an inflammation and influence peri-implant osseous healing. It might thus be preferable to use a resorbable suture material in order to avoid soft and hard tissue complications.

Aim/Hypothesis: To evaluate the influence of remnants of suture filaments on osseointegration in a rabbit tibial model.

Material and methods: In this pilot animal experimental study calibrated defects were prepared in the tibia of five chinchilla rabbits. Four sites were prepared in each animal and randomized to one of the three groups. Test filaments of nylon and chitosan were placed at the prepared implant sites before implant placement. A sham site was used as control. A coin-shaped machined titanium implant covered with a teflon cap and a preshaped maxillofacial bone plate were seated over the prepared cortical bone. After a healing period of 4 weeks, rabbits were euthanized and the tibial bone with the implants was exposed and removed. The implants were subjected to a pull-out test procedure. Wound fluid was collected with filter papers for the analyses of lactate dehydrogenase activity, alkaline phosphatase activity and total protein. Total-RNA was isolated from the peri-implant bone tissue. Real time PCR was performed for the following target genes: vacuolar type proton ATPase, insulin like growth factor-1, bone morphogenetic protein-2, collagen-1, interleukin-10, interleukin-6, osteocalcin, calcitonin receptor, tartrate-resistant acid phosphatase and tumor necrosis factor-α. A one-way analysis of variance was used to detect differences across groups with the significance level set at 0.05.

Results: When comparing the data across the three groups no statistically significant differences were found. There was, however, a trend towards a reduced pull-out force for the nylon group (Nylon: 23.0 ± 12.8; Chitosan: 33.9 ± 11.3; Sham 33.6 ± 24.0). Similarly, the resorption bone marker vacuolar type proton ATPase was increased in the nylon group compared to the sham and chitosan groups. The chitosan group showed lower ALP activity and lower expression of osteocalcin compared to the nylon group.

Conclusions and clinical implications: In this closed surgical model, peri-implant bone healing was only marginally affected by the different materials tested. There was, however, a tendency toward better osseointegration and less expression of bone resorption markers in the sham and chitosan groups as compared to the nylon group. The number of animals was low in this pilot study and further research is warranted to explore this issue.

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Performance of the CONELOG® SCREW-LINE implant in the posterior mandible – preliminary 1 year results of a prospective two-center pilot study

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Background: Secondary clinical parameter become more and more noticeable for the definition of success in dental implants. Recent studies report on the stability of marginal bone and soft tissue for a satisfying esthetical and long time outcome. Furthermore, implant design and prosthetic parts may influence the aesthetic result apart from the surgical procedure. CAMLOG Biotechnologies AG developed a new design with platform shift and conical connection (CONELOG® SCREW-LINE implant).

Aim/Hypothesis: To evaluate the radiographic bone level changes from time of implant placement up to 12 months after prosthetic delivery by intraoral standardized x-rays. Secondary parameters were the survival rate of the CONELOG® implant system, the performance of restorative components, the nature and frequency of adverse events and the patient satisfaction.

Material and methods: Two to three CONELOG® SCREW-LINE implants (diameters 3.8 and 4.3 mm and lengths 11 and 13 mm) were set in the distal mandible. Opposing dentition had to be natural teeth or fixed restoration. The implant shoulder was placed at bone-level. Prosthetic delivery (loading) took place after 9–12 weeks in class I-III or 15–18 weeks in class IV bone. Peri-apical radiographs were taken before and after abutment/crown placement. Routine clinical controls photographs, and peri-apical radiographs were taken at 6 and 12 months after loading.

Results: Fiftty-two implants were set in 24 patients. Mean age was 48.89 (SD ± 13.79). Twenty patients received two, four had three neighbouring implants. The mean healing time in weeks was 11.34 (SD ± 2.67). Crown to implant ratio was 0.73 (SD ± 0.18). Mean ISQ-values at surgery were available for 30 patients: 75.10 (SD ± 4.5) and 79.71 (SD ± 2.20) in 24 patients after loading. Between insertion and loading mean bone loss was 0.482 mm (SD ± 0.393) and between loading and 6-months a bone gain of 0.115 mm (SD ± 0.365) was observed. No implant was lost during the observation period.

Conclusions and clinical implications: The CONELOG® SCREW-LINE implant is safe and reliable for the partially edentulous patient in the distal mandible with a good performance regarding implant survival, esthetical outcome and nearly negligible bone resorption within the first year.

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GBR with a mechanically stable resorbable membrane as a potential alternative to the use of autogenous bone block grafts

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Background: Guided-Bone-Regeneration (GBR) is a well-documented and successful technique for the reconstruction of the alveolar ridge. However, it has its limitations in situations requiring major bone augmentations as e.g. in case of knife-edged ridges. Today the standard treatment procedure is the use of autologous bone block graft that are fixed to the ridge. Several authors are considering alternatives to the use of autologous bone block grafts and developed the so-called 'sausage-technique', a GBR procedure that requires mechanically strong membranes that are tensed over the bone graft material to stabilize the augmented area and to allow a tensionless closure of the gingival tissue over the membrane. So far collagen-based resorbable membranes were not widely used for this technique due to their limited mechanical stability and limited stability against degradation.

Aim/Hypothesis: To study a new collagen barrier membrane regarding its suitability for the treatment of major bone augmentations that so far typically required the use of autogenous bone blocks.

Material and methods: In the first part of the study the mechanical properties of four commercially available collagen membranes (Bio-Gide®, Jason, Remaix, Resodont) and one PTFE membrane (Cytoplast) were evaluated by stress-strain and suture pull-out testing. The purpose of the mechanical testing was to compare the behaviour of the different membranes when tensed to the underlayed bone to fix the graft material for GBR. In the second, clinical part of the study a total of seven consecutive individuals underwent surgical GBR treatment in a dental practice clinic for major augmentations of the alveolar ridge. Here, only the Remaix membrane was applied for reasons shown in the results section.

Results: The evaluation of the different membranes in the first part of the study showed a significantly higher mechanical stability of the Remaix membrane than of all other membranes tested, even the PTFE membrane (Table 1). On the basis of these results the Remaix membrane was selected for the clinical part of the study. For the presented seven cases of major bone augmentations, Bio-Oss® was used as a bone graft

Parameter/Membrane	Resorbable				Non-resorbable
	Bio-Gide Geistlich	Jason Botiss	Remaix Matricel	Resodont Resorba	CytoPlast Osteogenics
Sutural stability (wet) (N)	2.6 ± 0.7	1.1 ± 0.1	5.5 ± 1.4	0.2 ± 0.06	3.5 ± 0.3
Tensile strength (dry) (N) (absolute value)	11.9 ± 2.4	1.3 ± 0.3	20.3 ± 9.3	7.3 ± 2.3	3.7 ± 0.6
Tensile strength (dry) (N/mm^2) (normalized to thickness & width)	5.5 ± 1.5	2.2 ± 0.5	11.2 ± 4.4	5.4 ± 1.2	2.9 ± 0.5

material and combined with autologous particulated bone. The dehiscence rate showed an absolute value of 33% in a total of nine operation sites. The Graft Failure rate was 22% (two sites lost). The Implant success rate was 100%. All implants obtained successful prosthetic devices. Only one individual needed an autogenous bone block harvesting afterwards because of a rejection reaction to the bone graft material.

Conclusions and clinical implications: The presented concept of GBR with suitable bone graft materials, autogenous particulated bone (optionally), and a titanpin-fixed mechanically stable collagen membrane can lead to excellent implant-prosthetic results in cases that were previously treated with autogenous bone-block grafts.

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Immediate implants placement in esthetic zone: case series of 4–10 years follow up with PES

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Background: Following tooth extraction, the alveolus ridges had consequently marked alterations, these will have been great impact on the esthetics outcomes (Cardaropolo et al. 2003; Araujo & Lindhe 2005, Kan 2011). Adequate thickness of buccal bone can prevent soft tissue recession (Evans and Chen et al. 2008). To achieve the esthetics outcome in esthetic zone, it is a great challenge and demanding. Understanding the biology and physiologic limitations of these tissues will facilitate predictability in simple to complex esthetic situations. Nowadays, immediate implant placed still shown insufficient advantages or disadvantages of these treatment modalities (Esposito et al 2010).

Aim/Hypothesis: The aim of this case series was to evaluate the long-term esthetic outcomes and assess the PES of peri-implant tissue following immediate implant placement.

Material and methods: Totally ten patients with 20 implants were immediately placed in extraction socket (five male, five female). The mean age of patients was 36.8 (26–54). The follow period is 4–10 years. Implants position distributions were 10 in central incisors, six in lateral incisors, and four in canines. Following implants insertion, the buccal bony gaps were filled with bone graft.

Results: All the patients healed without complication. No implant failed during the observation period. The cumulative survival and success rate was 100% during 4–10-year follow up. The mean facial mucosa recession is 0.59 ± 0.6 mm (−0.4 to −1.1 mm). The most notable recession is at thin biotype patients. Assessment the PES at base line was 11.7 ± 0.45, the esthetic outcome had a mean total PES of 11.5 ± 0.43.

Conclusions and clinical implications: Within the limitations of this study it can be concluded that immediate implant placed seems to provide high level of survival rate and good esthetic result. But a meticulous case selection is still needed, with particular attention to thin biotype mucosa.

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Volumetric dimensional change of differents types of bone grafts in humans maxillary sinus augmentation

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Background: Oral rehabilitation in edentulous areas of maxilla is often limited due to bone resorption. Different grafts for maxillary sinus augmentation are presented as predictable procedures and indicated to improve bone volume and height in the posterior maxilla, with the objective of install osseointegrated implants. However an important condition investigated throughout the literature refers to the dimensional changes of grafts over time. These changes can influence the final bone volume obtained after a maxillary sinus augmentation performing.

Aim/Hypothesis: The present study evaluated, by means of multislice tomography, the dimensional change of five different bone grafts used for the maxillary sinus augmentation procedures.

Material and methods: Patients requiring maxillary sinus augmentation, to receive implant supported prosthesis rehabilitation, were aleatory divided in five grafts protocols: $n = 10$ autogenous bone, $n = 10$ mixture of hydroxyapatite (Genox Baumer®) and autogenous bone from chin donor area, at a ratio of 80 : 20, $n = 10$ particulate allogeneic bone graft, $n = 10$ biphasic calcium phosphate (Straumann® BoneCeramic), and xenogeneic hydroxyapatite (Endobon®, BIOMET3i), in total of 50 maxillary sinus augmentation surgeries. In the periods of 15 and 180 days post-surgery, measurements by means of computed tomography (Somatory Sensation 64 – Siemens®), were performed. A blind and calibrated examiner utilized software Kodak Carestream Solution (Carestream Health®) to verify the volumetric dimensional changes of the grafts. The data of volumetric changes, for each material, were submitted to paired Student's t test compared in the two periods of the study as well an average of final volumetric contraction were performed.

Results: The Kappa test demonstrated an intraobserved agreement ranged from good to excellent (k = 0.79). All the grafts protocols presented significant dimensional changes in the period of 15–180 days post-surgery $P < 0.05$. The autogenous bone showed an average contraction of 42.30% the mixture of hydroxyapatite and autogenous bone showed an average 25.87%, the allogeneic bone graft showed an average of 65.33%, the biphasic calcium phosphate showed an average 25.13% and the xenogeneic hydroxyapatite 8.04%.