

Restorative Dentistry

Current Awareness Newsletter

OCTOBER 2015



Respecting everyone
Embracing change
Recognising success
Working together
Our hospitals.



On Twitter?

Twitter can be a useful CPD tool. Here are some accounts will help you stay on top of new developments in the Restorative Dentistry field:

[@BSPerio](#) – the Twitter account for The British Society of Periodontology

[@BSSPD](#) – the Twitter account for The British Society of Prosthodontics

[@BES teethforlife](#) – the Twitter account for The British Endodontic Society

Upcoming Lunchtime Drop-in Sessions

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October (12pm)

Thurs 8th	Statistics
Fri 16th	Literature Searching
Mon 19th	Understanding article
Tues 27th	Statistics

November (1pm)

Weds 4th	Literature Searching
Thurs 12th	Understanding articles
Fri 20th	Statistics
Mon 23rd	Literature Searching

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Your Friendly Local Librarian...

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New from Up-to-Date

[Medication-related osteonecrosis of the jaw in patients with cancer](#)

Authors: James R Berenson, MD, Alison T Stopeck, MD

Literature review current through: Sep 2015. | **This topic last updated:** Aug 18, 2015.

INTRODUCTION — Osteonecrosis of the jaw (ONJ), which was first described in 2002 [1], is a relatively uncommon but potentially serious side effect of treatment with antiresorptive agents such as intravenous (IV) high potency bisphosphonates and [denosumab](#), which decrease the risk of skeletal-related events (SREs) in patients with cancer and metastatic bone disease. The increased dose intensity of anti-resorptive therapy typically prescribed for cancer indications places cancer patients at a substantially higher risk for ONJ than are patients who receive them for other conditions such as osteoporosis and Paget's disease.

ONJ has also been described as a complication of cancer therapies that target angiogenesis; however, this association is more controversial with little confirmatory prospective trial data available in the setting of monotherapy with an antiangiogenic agent alone. Use of antiangiogenic agents is clearly a risk factor for medication-related ONJ (MRONJ) among patients receiving antiresorptive agents for cancer.

This topic review will describe the incidence, risk factors, staging, clinical course, prevention strategies, and management of MRONJ in patients with cancer who are receiving antiresorptive agents. The incidence, risk factors, and management strategies for MRONJ in patients receiving antiresorptive therapy for osteoporosis and other side effects associated with bisphosphonates and [denosumab](#) in patients with cancer are addressed elsewhere.

[Gingivitis and periodontitis in adults: Classification and dental treatment](#)

Authors: Rebecca S Wilder, BSDH, MS; Antonio J Moretti, DDS, MS

Literature review current through: Sep 2015. | **This topic last updated:** May 06, 2015.

INTRODUCTION — Periodontal, or gum disease is a common condition affecting the tissues that comprise the dental supporting structure: gingiva, cementum, periodontal ligament, and the alveolar bone. Periodontal disease is broadly classified as either gingivitis or periodontitis; these conditions are distinguished by the presence of alveolar bone involvement that occurs with periodontitis, and not with gingivitis.

Periodontal disease may be a risk factor for a number of conditions including cardiovascular and pulmonary diseases, and pregnancies resulting in low birth weight [3-5]. Clinicians should encourage regular dental visits and incorporate oral examination into their office practice, inspecting for inflamed gingiva, bleeding, or suppuration around teeth.

This topic will review the classification of gingivitis and conditions associated with gingivitis and periodontitis. The pathogenesis, clinical manifestations, and antibiotic treatment of odontogenic infections are discussed in detail separately.

New from the Dental Elf

[Azithromycin as an adjunctive antibiotic in non-surgical periodontal therapy](#)

Sep 24 2015

As is often the case it is not unusual to find two systematic review covering the same or similar topics published by different groups around the same time. The aim of this review was to perform a meta-analysis of randomized controlled clinical trials on the efficacy of azithromycin (AZM) when used as an adjunct to scaling and root planing (SRP) on reducing probing depth, bleeding on probing (BOP) and improving attachment level (AL) in chronic periodontitis.

[Partial dentures provided partial compensation for masticatory function](#)

Sep 29 2015

The shortened dental arch (SDA) concept classically consists of 20 occluding teeth (all upper and lower incisors, canines, and premolars) with missing posterior teeth only being replaced if they are considered necessary for appearance or function. This is seen as an alternative approach to the replacement of all missing teeth with fixed (FDPs) or removable dental prostheses (RDPs). The aim of this systematic review was to synthesise the available knowledge from the dental literature about the effects of distal-extension RDPs on the masticatory performance of subjects with moderate or extreme SDA.

Current Awareness Database Articles on Restorative Dentistry

Below is a selection of articles on restorative dentistry recently added to the healthcare databases, grouped in the following categories:

- Peri-implantitis
- Bisphosphonate-related osteonecrosis of the jaw
- Dental-related cleft lip and palate
- Periodontal disease and antibiotics
- Dental-related head and neck oncology
- Dental implants

If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: library@uhbristol.nhs.uk

Peri-implantitis

Title: Implants failures related to endodontic treatment. An observational retrospective study.

Citation: Clinical oral implants research, Sep 2015, vol. 26, no. 9, p. 992-995

Author(s): López-Martínez, Fanny, Gómez Moreno, Gerardo, Olivares-Ponce, Patricia, Eduardo Jaramillo, David, Eduardo Maté Sánchez de Val, José, Calvo-Guirado, José Luis

Abstract: The aim of the study was to analyze potential etiological risk factors that constitute a complex problem in the clinical management of peri-implantitis. An observational retrospective study was conducted to describe the possible effect of lesions of origin pulpar and/or periapical success or failure of the implant. The sample consisted of review of 800 implants, of which 500 were conducted at the Faculty of Dentistry of the UANL and 300 private clinics of Maxillofacial surgeons experienced in the placement of those who reside in Monterrey, Mexico. Five hundred and eighty cases correspond to female patients while that 220 patients of the male gender. The age of patients at the time of placing the implant ranged from 28 to 81 years. Of 800 study subjects who underwent dental implant treatments, 200 cases (25%) were detected which presented endodontic failure prior and/or adjacent to the placement of the implant. The 50.41% had peri-implantitis, recording 62 cases in the Faculty and 18 cases (23.38%) in private clinics, finding that there was a statistically significant difference between the presence and absence of peri-implantitis in terms of failed endodontic prior and/or adjacent to the placement of the implant. Within the limitations of this observational retrospective study, it could be concluded that the development of inflammatory changes mediated by the presence of remnant bacteria surrounding hard tissues adjacent to implants might induce late failures of implants, and potentially trigger pathological features of apical peri-implantitis. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Technical and biological complications of single-molar implant restorations.

Citation: Clinical oral implants research, Sep 2015, vol. 26, no. 9, p. 1024-1030

Author(s): Rinke, Sven, Roediger, Matthias, Eickholz, Peter, Lange, Katharina, Ziebolz, Dirk

Abstract: Retrospective evaluation of the biological and technical complications in implant-supported single-tooth molar restorations performed in a private practice after functional periods of ≥ 4 years. Sixty-five patients (34 females, age 51.7 ± 10.6 years) with 112 implants received annual follow-up examinations and participated in a maintenance program. The survival (in situ) and success (complication-free) rates of implants and superstructures were evaluated. Time-dependent peri-implantitis rates were calculated, and the influencing factors were identified using a multiple Cox regression. The implant survival rate was 100%. Three of 112 crowns required replacement (prosthetic survival rate = 98.1%). Thirty technical complications were observed: loss of retention (16), ceramic fracture (10), and

screw loosening (4). The success rate of the superstructures was 79.0% after 7 years. Overall, 9.2% of the patients developed peri-implantitis (probing depth ≥ 5 mm, BOP, suppuration, bone loss ≥ 3.5 mm); (smokers: 41.6%, non-smokers: 1.8%). After 7 years, the time-dependent implant success rate (free of peri-implantitis) was 100% for non-smokers and 58.6% for smokers. Multiple analysis showed a significant effect of smoking (hazard ratio, 19.5; $P = 0.008$) on peri-implantitis. Implants with cemented single-tooth restorations in the molar region constitute a reliable treatment in private practice. Smokers have a significantly increased peri-implantitis rate. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Unsplinted implants and teeth supporting maxillary removable partial dentures retained by telescopic crowns: a retrospective study with >6 years of follow-up.

Citation: Clinical oral implants research, Sep 2015, vol. 26, no. 9, p. 1091-1097

Author(s): Frisch, Eberhard, Ratka-Krüger, Petra, Wenz, Hans-Jürgen

Abstract: Data regarding tooth- and implant-supported maxillary removable partial dentures (TIRPDs) are scarce. The objective of this research was to perform a retrospective evaluation of the clinical long-term outcome of maxillary TIRPDs rigidly retained via telescopic crowns in patients undergoing supportive post-implant therapy (SIT). The inclusion criteria were met by 26 patients restored with maxillary TIRPDs between 1997 and 2011 in a private practice. Primary crowns (Marburg double crowns, MDCs) on teeth were cemented, whereas those on implants were screw-retained. Using patient records and data from a cross-sectional clinical examination in 2013, the survival rates of the teeth, implants and prostheses, together with the biological and technical complications, were analyzed. After 6.12 ± 3.80 (range: 2-16) years of loading, 23 non-smoking patients with 23 dentures supported by 60 implants and 66 teeth were available for assessment. Nine teeth (survival rate: 86.36%) were lost, whereas 1 implant (survival rate: 98.36%) failed because of peri-implantitis. Although 30 implants (50%) in 16 patients (69.57%) showed bleeding on probing (BOP+), no further peri-implantitis was observed. The mean peri-implant probing depth (PPD) was 3.68 ± 0.71 mm. All dentures were functional and required technical maintenance efforts amounting to 0.128 treatments per patient per year (T/P/Y). Within the limitations of this study, we conclude that TIRPDs retained via MDCs may represent a viable treatment option for patients with residual maxillary teeth. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Preventing and Treating Peri-Implantitis: A Cost-Effectiveness Analysis.

Citation: Journal of periodontology, Sep 2015, vol. 86, no. 9, p. 1020-1029

Author(s): Schwendicke, Falk, Tu, Yu-Kang, Stolpe, Michael

Abstract: A large number of treatments for peri-implantitis are available, but their cost-effectiveness remains uncertain. This study evaluates the cost-effectiveness of preventing and treating peri-implantitis. A Markov model was constructed that followed each implant over 20 years. Supportive implant therapy (SIT) for managing peri-implant mucositis and preventing development of peri-implantitis was either provided or not. Risk of peri-implantitis was assumed to be affected by SIT and the patient's risk profile. If peri-

implantitis occurred, 11 treatment strategies (non-surgical or surgical debridement alone or combined with adjunct therapies) were compared. Treatments and risk profiles determined disease progression. Modeling was performed based on systematically collected data. Primary outcomes were costs and proportion of lost implants, as assessed via Monte Carlo microsimulations. Not providing SIT and performing only non-surgical debridement was both least costly and least effective. The next best (more costly and effective) option was to provide SIT and perform surgical debridement (additional 0.89 euros per 1% fewer implants lost). The most effective option included bone grafts, membranes, and laser treatment (56 euros per 1%). For patients at high risk, the cost-effectiveness of SIT increased, whereas in low-risk groups, a cost-optimized strategy was cost-effective. Although clinical decision-making will be guided mainly by clinical condition, cost-effectiveness analyses might add another perspective. Based on these findings, an unambiguous comparative effectiveness ranking was not established. However, cost-effectiveness was predominantly determined by provision of SIT and initial treatment costs. Transferability of these findings to other healthcare systems needs further confirmation.

Title: The effects of Er:YAG on the treatment of peri-implantitis: a meta-analysis of randomized controlled trials.

Citation: Lasers in medical science, Sep 2015, vol. 30, no. 7, p. 1843-1853

Author(s): Yan, Mingdong, Liu, Miaomiao, Wang, Min, Yin, Fengying, Xia, Haibin

Abstract: The clinical effectiveness of the erbium-doped yttrium-aluminum-garnet (Er:YAG) laser in patients with peri-implantitis remains unclear. The aim of this meta-analysis was to investigate the efficacy and safety of Er:YAG laser (ERL) compared to subgingival mechanical debridement (SMD) for the treatment of peri-implantitis. A systematic electronic literature search was conducted to identify randomized clinical trials (RCTs), followed by a manual search. Results were expressed as weighted mean differences (WMDs) with accompanying 95 % confidence intervals (CIs). The primary outcome measurements were changes in clinical attachment level (CAL) and probing depth (PD). Secondary outcome measurements included changes in gingival recession (GR). The meta-analysis was performed with fixed-effect or random-effect model according to the heterogeneity assessed by I² test. Visual asymmetry inspection of the funnel plot, Egger's regression test, and the trim-and-fill method were used to investigate publication bias. At 6 months, significant difference in PD reduction ($p = 0.018$) was observed for Er:YAG laser compared to SMD treatment, while no significant differences were detected in CAL gain and GR change; at 12 months, no significant difference was observed for any investigated outcome. The findings of this meta-analysis suggest that use of the Er:YAG laser as alternative to SMD could potentially provide short-time additional benefits, while there is no evidence of long-time superior effectiveness. As all included studies were not at low risk of bias, and only four studies were included in the meta-analysis, future long-term and well-designed RCTs reporting clinical and microbiological outcomes, considering the cost/effectiveness ratio, and having a high methodological quality are needed to clarify the effectiveness of Er:YAG laser.

Title: Photodynamic therapy in periodontal and peri-implant diseases.

Citation: Quintessence international (Berlin, Germany : 1985), Sep 2015, vol. 46, no. 8, p. 677-690

Author(s): Al Habashneh, Rola, Asa'ad, Farah A, Khader, Yousef

Abstract: In recent years, photodynamic therapy (PDT) using a combination of photosensitizer and laser light source has been used in periodontal therapy. The aim of this review is to provide an overview of the current status and use of PDT. A review of pertinent literature was carried out in PubMed to determine the current position of PDT applications in periodontal and peri-implant diseases. In spite of different results and suggestions from various researchers, the present review showed that use of PDT may help improve periodontal outcomes. Therefore, it could become a new method for antibacterial treatment and may be used as an adjunct to or as conventional therapy for the treatment of periodontal and peri-implant diseases. Based on the results presented herein, there is promising, albeit preliminary, information regarding the benefits of PDT use on periodontal treatment outcomes. However, the conclusions are a reflection of a relatively small sample size and therefore need to be demonstrated in the general population. Periodontal diseases and peri-implantitis are among the specific targets where PDT can be applied.

Title: Peri-implantitis Treatment with a Regenerative Approach: Clinical Outcomes on Reentry.

Citation: The International journal of periodontics & restorative dentistry, Sep 2015, vol. 35, no. 5, p. 625-636 (2015 Sep-Oct)

Author(s): Parma-Benfenati, Stefano, Roncati, Marisa, Galletti, Primo, Tinti, Carlo

Abstract: This case series presents clinical outcomes on reentry using regenerative submerged and nonsubmerged approaches in peri-implant defects; pre- and posttreatment assessments of nine implants in six patients are presented. A mean bone fill value of 91.3% with a 4.88-mm mean bone gain was obtained. Neither approach led to additional bone loss or required additional bone augmentation procedures. Strict methods of implant surface decontamination and detoxification were used on all patients, regardless of implant surface characteristics. The regenerative procedure was effective in the treatment of moderate to advanced peri-implantitis lesions without compromising the previous fixed implant-supported prostheses. These preliminary results are reasonably encouraging in that all cases showed bone gains. Nevertheless, caution must be exercised when determining reosseointegration, because it is not possible to ascertain it in clinical practice.

Title: Reentry After Combined Surgical Resective and Regenerative Therapy of Advanced Peri-implantitis: A Retrospective Analysis of Five Cases.

Citation: The International journal of periodontics & restorative dentistry, Sep 2015, vol. 35, no. 5, p. 647-653 (2015 Sep-Oct)

Author(s): Schwarz, Frank, John, Gordon, Becker, Jürgen

Abstract: This retrospective analysis of five reentry cases reports on the clinical defect healing after combined surgical resective/regenerative therapy of advanced peri-implantitis. A second surgery was necessary because of a clinical need for additional treatment procedures at the respective implant sites after healing periods of 8 months to 6.5 years. All

patients underwent the same standardized procedure including access flap surgery, implantoplasty at buccally and supracrestally (> 1 mm) exposed implant parts, surface decontamination, and augmentation of the intrabony (Class I) components using a natural bone mineral and a native collagen membrane. Clinical defect resolution (DR) of the Class I component was evaluated. In two patients, clinical and radiographic signs suggested a reinfection (ie, case 3-mesial aspect; case 5-mesial and distal aspects). Mean DR values $\pm$ standard deviation were $59.4\% \pm 47.59\%$ (95% confidence interval [CI], 0.31%-118.49%). When infected aspects were excluded, resulting values were $85.76\% \pm 4.86\%$ (95% CI, 78.02%-93.50%). The presented surgical procedure was associated with a clinically important DR in advanced peri-implantitis defects.

Title: International Brainstorming Meeting on Etiologic and Risk Factors of Peri-implantitis, Montegrotto (Padua, Italy), August 2014.

Citation: The International journal of oral & maxillofacial implants, Sep 2015, vol. 30, no. 5, p. 1093-1104 (2015 Sep-Oct)

Author(s): Canullo, Luigi, Schlee, Markus, Wagner, Wilfried, Covani, Ugo, Montegrotto Group for the Study of Peri-implant Disease

Abstract: The emerging literature has recently reported an alarming increase in peri-implantitis. This disease is typically described as the result of an imbalance between host response and bacterial load, supported by gram-negative anaerobic microflora. The current literature on the prevention and treatment of peri-implantitis does not allow for the extraction of applicable clinical information. In fact, the lack of efficacy of the current treatment methods may be a result of insufficient understanding of the biology. The aim of this position paper was to try to reevaluate the etiopathogenesis of peri-implantitis, highlighting the principal clinically induced triggering factors of the disease. The consensus conference provided strong evidence to suggest that a different microbiologic flora (slightly different from that collected around teeth affected by periodontitis) could support peri-implantitis. However, the evidence to support a consensus statement regarding clinically triggering factors (surgical, prosthetic, and biomechanical) for peri-implantitis is only of moderate strength (cohort studies or consistent results from long-term, well-populated case series). Expert opinion led the consensus group to support the following: rectifying the number of peri-implant inflammatory situations caused by surgical, restorative, or material complications may lower the number of infections to a more realistic figure and may suggest different and more appropriate treatment plans. At the same time, it can be stated that implant material, shape and surface characteristics, procedures and biomaterials used for bone augmentation, and incorrect prosthetic procedures and biomechanical plans could also be risk factors for the occurrence and progression of periimplantitis.

Title: Characterization of Cement Particles Found in Peri-implantitis-Affected Human Biopsy Specimens.

Citation: The International journal of oral & maxillofacial implants, Sep 2015, vol. 30, no. 5, p. 1168-1173 (2015 Sep-Oct)

Author(s): Burbano, Maria, Wilson, Thomas G, Valderrama, Pilar, Blansett, Jonathan, Wadhwani, Chandur Pk, Choudhary, Pankaj K, Rodriguez, Lucas C, Rodrigues, Danieli C

Abstract: Peri-implantitis is a disease characterized by soft tissue inflammation and continued loss of supporting bone, which can result in implant failure. Peri-implantitis is a multifactorial disease, and one of its triggering factors may be the presence of excess cement in the soft tissues surrounding an implant. This descriptive study evaluated the composition of foreign particles from 36 human biopsy specimens with 19 specimens selected for analysis. The biopsy specimens were obtained from soft tissues affected by peri-implantitis around cement-retained implant crowns and compared with the elemental composition of commercial luting cement. Nineteen biopsy specimens were chosen for the comparison, and five test cements (TempBond, Telio, Premier Implant Cement, Intermediate Restorative Material, and Relyx) were analyzed using scanning electron microscopy equipped with energy dispersive x-ray spectroscopy. This enabled the identification of the chemical composition of foreign particles embedded in the tissue specimens and the composition of the five cements. Statistical analysis was conducted using classification trees to pair the particles present in each specimen with the known cements. The particles in each biopsy specimen could be associated with one of the commercial cements with a level of probability ranging between .79 and 1. TempBond particles were found in one biopsy specimen, Telio particles in seven, Premier Implant Cement particles in four, Relyx particles in four, and Intermediate Restorative Material particles in three. Particles found in human soft tissue biopsy specimens around implants affected by peri-implant disease were associated with five commercially available dental cements.

Title: On the mechanical integrity of retrieved dental implants

Citation: Journal of the Mechanical Behavior of Biomedical Materials, September 2015, vol./is. 49/(290-299), 1751-6161;1878-0180 (September 01, 2015)

Author(s): Shemtov-Yona K., Rittel D.

Abstract: The objective of this work is to investigate the potential state of mechanical damage in used, albeit mechanically intact, dental implants, after their retrieval from the oral cavity because of progressive bone loss (peri-implantitis). 100 retrieved dental implants were characterized with no medical record made available prior to the analysis. The implants' composition, dimensions, and surface treatments were characterized using energy dispersive X-ray analysis and scanning electron microscopy (SEM-EDX). Each implant was thoroughly examined for signs of mechanical defects and damage. The implants represent a random combination of two materials, titanium alloy (Ti-6Al-4V) and commercially pure titanium (CP-Ti), surface treatments and geometries. Two kinds of surface defects were identified: crack-like defects and full cracks that were arbitrarily divided according to their length and appearance. We found that over 60% of the implants contained both crack-like defects and full cracks. In the retrieved sample, we observed that the CP-Ti implants contained more defects and cracks than the Ti-6Al-4V ones. For the various surface roughening treatments, a general correlation with the presence of defects was observed, but without a clear differentiation between the treatments. The high incidence of embedded particles among the observed defect further strengthens the role played by the particles upon defects generation, some of which later evolve into full cracks. It was also found that the dimensions of the implant (width and length) were not correlated with the

observed defects, for this specific sample. Our observations indicate that early retrieval of biologically failed implants, many of which contain early signs of mechanical failure as shown here, does actually hinder the later occurrence of implant fracture. It seems that once biological complications will be successfully overcome, such defects might grow later into full cracks as a result of cyclic mastication loads (fatigue). In such a case, the occurrence of implants' fracture is likely to markedly increase.

Bisphosphonate-related osteonecrosis of the jaw

Title: Metastatic breast cancer in medication-related osteonecrosis around mandibular implants

Citation: American Journal of Case Reports, September 2015, vol./is. 16/(621-626), 1941-5923 (15 Sep 2015)

Author(s): Favia G., Tempesta A., Limongelli L., Crincoli V., Piattelli A., Maiorano E.

Language: English

Abstract: Objective: Rare co-existence of disease or pathology Background: Many authors have considered dental implants to be unrelated to increased risk of medication-related osteonecrosis of the jaw (MRONJ). Nevertheless, more recently, more cases of peri-implant MRONJ (PI-MRONJ) have been described, thus becoming a challenging health problem. Also, metastatic cancer deposits are not infrequently found at peri-implant sites and this may represent an additional complication for such treatments. We present the case of a breast cancer patient with PI-MRONJ, presenting a clinically and radiologically undetected metastasis within the necrotic bone, and highlight the necessity of an accurate histopathological analysis. Case Report: A 66-year-old female patient, who had received intravenous bisphosphonates for bone breast cancer metastases, came to our attention for a non-implant surgery-triggered PI-MRONJ. After surgical resection of the necrotic bone, conventional and immunohistochemical examinations were performed, which showed breast cancer deposits within the necrotic bone. Conclusions: Cancer patients with metastatic disease, who are undergoing bisphosphonate treatment, may develop unusual complications, including MRONJ, which is a site at risk for hosting additional metastatic deposits that may be clinically and radiologically overlooked. Such risk is increased by previous or concomitant implant procedures. Consequently, clinicians should be prudent when performing implant surgery in cancer patients with advanced-stage disease and consider the possible occurrence of peri-implant metastases while planning adequate treatments in such patients.

Title: New cancer therapies and jaw necrosis.

Citation: British dental journal, Sep 2015, vol. 219, no. 5, p. 203-207 (September 11, 2015)

Author(s): Patel, V, Kelleher, M, Sproat, C, Kwok, J, McGurk, M

Abstract: Osteonecrosis of the jaw (ONJ) has a number of causes, the most familiar being radiation or bisphosphonate induced. Various other novel anti-neoplastic and bone-targeting therapies that can also cause jaw necrosis have recently become available. This

has led to the suggested acronym MRONJ for medication-related osteonecrosis of the jaw. This article summarises the available information on these drugs and their implications for the dental surgeon.

Title: Effect of different doses of zoledronic acid in establishing of bisphosphonate-related osteonecrosis.

Citation: Archives of oral biology, Sep 2015, vol. 60, no. 9, p. 1237-1245 (September 2015)

Author(s): Silva, Paulo Goberlânio de Barros, Ferreira Junior, Antonio Ernando Carlos, Teófilo, Carolina Rodrigues, Barbosa, Maritza Cavalcante, Lima Júnior, Roberto César Pereira, Sousa, Fabrício Bitú, Mota, Mário Rogério Lima, Ribeiro, Ronaldo de Albuquerque, Alves, Ana Paula Negreiros Nunes

Abstract: To establish osteonecrosis of the jaws in rats treated with different doses of zoledronic acid (ZA). Male Wistar rats (n=6-7) received three consecutive weekly intravenous ZA infusions at doses of 0.04, 0.20 or 1.00mg/kg ZA or saline (control). Four weeks after the last administration, the animals were submitted to simple extraction of the lower left first molar. An additional dose of ZA was administered seven days later, and the animals were sacrificed 28 days after exodontia. Weight was measured and blood was collected weekly for analysis. The jaw was radiographically and microscopically examined along with the liver, spleen, kidney and stomach. All ZA doses showed a higher radiolucent area than the control ($p<0.0001$), but the dose of 0.04mg/kg did not show BRONJ. Doses of 0.20 and 1.00mg/kg ZA showed histological evidence of bone necrosis ($p=0.0004$). Anaemia ($p<0.0001$, $r(2)=0.8073$) and leucocytosis ($p<0.0001$, $r(2)=0.9699$) are seen with an increase of lymphocytes ($p<0.0001$, $r(2)=0.6431$) and neutrophils and monocytes ($p=0.0218$, $r(2)=0.8724$) in all the animals treated with an increasing dose of ZA. Haemorrhage and ectasia were observed in the spleen ($p=0.0004$) and stomach ($p=0.0168$) in a dose-dependent manner, and the animals treated with ZA showed a lower rate of weight gain ($p<0.0001$). We designed a bisphosphonate-related osteonecrosis of the jaw model that reproduces radiographic and histological parameters and mimics clinical alterations such as leucocytosis, anaemia and idiosyncratic inflammatory post infusion reactions. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Methotrexate-related lymphoproliferative disorder arising in the gingiva of a patient with rheumatoid arthritis.

Citation: Australian dental journal, Sep 2015, vol. 60, no. 3, p. 408-411 (September 2015)

Author(s): Horie, N, Kawano, R, Kaneko, T, Shimoyama, T

Abstract: Methotrexate (MTX) is the primary drug used in the management of rheumatoid arthritis (RA) and other immune-mediated inflammatory diseases. MTX is a strong immunosuppressive agent and has been reported to cause iatrogenic immunodeficiency-associated lymphoproliferative disorders (LPDs). Stomatitis caused by MTX-related cytotoxicity may occur, but gingival MTX-related LPDs are rare. In this article we present a case of gingival MTX-related LPD in a 60-year-old male with RA. The local findings of the gingival ulceration and alveolar bone exposure were similar to those of bisphosphonate-related osteonecrosis of the jaw. However, he had never received bisphosphonate therapy.

The biopsy specimen of the gingival lesion was diagnosed as diffuse large B-cell lymphoma with Epstein-Barr virus positivity. Immediate withdrawal of MTX resulted in marked remission of the LPD. © 2015 Australian Dental Association.

Title: Understanding bisphosphonates and osteonecrosis of the jaw: uses and risks.

Citation: European review for medical and pharmacological sciences, Sep 2015, vol. 19, no. 17, p. 3309-3317 (September 2015)

Author(s): Rosini, S, Bertoldi, I, Frediani, B

Abstract: Bisphosphonates are chemically stable analogs of pyrophosphate compounds, which have been used to treat multiple disorders of calcium metabolism. Although bisphosphonates have been employed for many years and have demonstrated an excellent safety profile, severe osteonecrosis of the jaw (ONJ) has been described in patients with bone metastases who have been treated with bisphosphonates. In this review we describe the reasons for ONJ and discuss the varying effects of different bisphosphonates on the development of ONJ. Bisphosphonates tend to accumulate in bone, subject to remodeling (such as the jaw) and can affect osteoclast-mediated bone resorption and osteoclast formation, leading to the osteonecrotic phenomenon. Risk factors for previously -treated patients include the type of bisphosphonates (amino or non-amino), length of treatment and route of administration, the presence of co-morbidities and/or treatment with immune-suppressing drugs, and the presence of other risk factors in addition to the type of intervention required. In oncological patients currently in treatment with receiving intravenous bisphosphonates, greater consideration must be taken depending on the length of treatment already undertaken and concomitant therapies. In these patients, a preventive dental surgery visit and examination of the case would be advisable prior to beginning treatment with bisphosphonates. Practical approaches in the prevention of ONJ include thorough pre-treatment evaluation and performing any preventative procedures (treat periodontal conditions, extract loose teeth, provide protective and endodontic therapies); initiating amino-bisphosphonates only after any gum tissue damage has healed; establishing a regimented check-up schedule and hygienic precautions the patient can take; and during bisphosphonate treatment conduct any dental procedures in the least invasive manner during bisphosphonate treatment.

Title: Important aspects concerning alendronate-related osteonecrosis of the jaws: a literature review.

Citation: Gerodontology, Sep 2015, vol. 32, no. 3, p. 169-178 (September 2015)

Author(s): Iglesias, Julia E, Salum, Fernanda G, Figueiredo, Maria A, Cherubini, Karen

Abstract: To conduct a literature review on sodium alendronate, focusing on osteonecrosis of the jaws, a serious potential side effect. Sodium alendronate is a bisphosphonate that is widely used for the treatment of osteopenia, osteoporosis and Paget's disease. Like other bisphosphonates, it inhibits bone resorption by inactivating osteoclasts. Alendronate has evident benefits in the treatment of these diseases, but it is associated with jaw osteonecrosis, although less frequently compared with intravenous bisphosphonates. Therefore, some preventive measures should be taken to avoid this side effect. We

reviewed the literature regarding the pharmacological aspects, mechanism of action, indications of use and side effects of sodium alendronate, as well as the management of patients under this therapy. The benefits of sodium alendronate are scientifically proven, but a serious adverse effect is osteonecrosis. Therefore, it is crucial to prepare the oral cavity before bisphosphonate therapy, providing a careful dental evaluation and all needed dental treatment. © 2013 John Wiley & Sons A/S and The Gerodontology Society. Published by John Wiley & Sons Ltd.

Title: Bisphosphonate-related osteonecrosis of the jaw in a multiple myeloma patient: A case report with characteristic radiographic features.

Citation: Imaging science in dentistry, Sep 2015, vol. 45, no. 3, p. 199-203, 2233-7822

Author(s): Lee, Byung-Do, Park, Moo-Rim, Kwon, Kyung-Hwan

Abstract: A 59-year-old male who had suffered from multiple myeloma for nine years and had been administered bisphosphonates for seven years visited a dental hospital for pain relief due to extensive caries in his left maxillary molars. The molars were extracted, leaving an exposed wound for three months. The radiograph showed sequestra formation and irregular bone destruction in the left maxilla. Sudden pain and gingival swelling in the right mandibular molar area occurred six months later. The interseptum of the right lower second molar was observed to be necrotic during surgery. These findings coincided with the features of bisphosphonate-related osteonecrosis of the jaw (BRONJ). In this case, the long intravenous administration of bisphosphonates and tooth extraction were likely the etiologic factors of BRONJ in a patient with multiple myeloma; moreover, the bilateral occurrence of BRONJ is a characteristic feature.

Title: Zoledronate induces osteonecrosis of the jaw in sheep.

Citation: Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, Sep 2015, vol. 43, no. 7, p. 1133-1138 (September 2015)

Author(s): Voss, Pit Jacob, Stoddart, Martin, Ziebart, Thomas, Zeiter, Stephan, Nelson, Katja, Bittermann, Gido, Schmelzeisen, Rainer, Poxleitner, Philipp

Abstract: The treatment of bisphosphonate-related osteonecrosis of the jaw has become routine in maxillofacial hospitals. However, the etiopathology has not yet been fully understood. The aim of this study was to develop a large animal model for medication-related osteonecrosis of the jaw (MRONJ). Eight Swiss mountain sheep were randomly assigned into two groups. Group I received 0.075 mg/kg zoledronate (ZOL) intravenously every third week for 16 weeks. After 16 weeks, extraction of the first and second lower left premolar was performed. Group II underwent surgery and no ZOL was administered. After surgery, Group I continued to receive ZOL infusions; after 16 weeks, all animals were euthanized. The jaw bones were investigated macroscopically, radiographically (computed tomography) and histologically. Osteonecrosis of the jaw was observed at all extraction sites in all the animals receiving ZOL, and at none of the sites in animals without ZOL. All ZOL-treated animals spontaneously developed exposed bone lesions in the oral cavity at sites where no surgical intervention was performed. CT imaging shows persistent alveolar

extraction sockets 16 weeks after surgery in all animals of the ZOL-group, and healed alveolar extraction sockets in non-ZOL-treated animals. Sheep treated with ZOL reproducibly demonstrated osteonecrosis of the jaw after tooth extraction, and spontaneous development of exposed bone in the oral cavity at sites where no manipulation was performed. This animal model can be used for further research in the fields of BP-ONJ etiopathology, oral implantology, bone and fracture healing and periodontology. Copyright © 2015 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

Title: Value of nonsurgical therapeutic management of stage I bisphosphonate-related osteonecrosis of the jaw.

Citation: Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, Sep 2015, vol. 43, no. 7, p. 1139-1143 (September 2015)

Author(s): Bodem, Jens Philipp, Kargus, Steffen, Engel, Michael, Hoffmann, Jürgen, Freudlsperger, Christian

Abstract: There is still controversy about the best treatment strategy for patients with bisphosphonate-related osteonecrosis of the jaw (BRONJ) stage I. Therefore, the aim of the present study was to analyse the effect of a nonsurgical treatment protocol in patients with BRONJ stage I. During the study period we included 17 patients (11 male; 6 female) who presented with a total of 24 separate areas of BRONJ, stage I. All patients were exclusively treated with a monthly intravenous regime of zoledronic acid due to an underlying malignant disease. All patients were treated using a standardized nonsurgical protocol consisting of antimicrobial mouth rinsing with chlorhexidine (CHX) (0.12%) three times a day, and daily CHX gel application. In 11 patients (45.8%) the surface area of the exposed jawbone was completely healed by nonsurgical treatment. In seven patients (29.2%), nonsurgical treatment reduced the size of the exposed bone area by a mean of 64.7% (range 20.0-96.8%). None of the patients showed an increase in size of the area of exposed jawbone, or a worsening of the BRONJ from stage I to stages II or III. However, the duration of nonsurgical treatment or the duration of intravenous bisphosphonate therapy did not significantly influence the treatment outcome ($p = 0.6628$, $p = 0.6077$, respectively). The results of the present study support the beneficial role of nonsurgical treatment in patients presenting with BRONJ stage I. Surgical therapy of BRONJ should be restricted to patients with advanced stages with clinical symptoms and local signs of infection. Copyright © 2015 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

Title: Correlation of changes in the mandible and retina/choroid vasculature of a rat model of BRONJ.

Citation: Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, Sep 2015, vol. 43, no. 7, p. 1144-1150

Author(s): Borke, James L, McAllister, Bennett, Harris, Tiffenie, Neiberg, Maryke, Guevarra-Toth, Chestine, Fulzele, Sadanand, Stoianovici, Charles, Guerra, Carlos

Abstract: Bisphosphonate-related osteonecrosis of the jaw (BRONJ) causes bones of the mandible and maxilla to become necrotic and protrude into the oral cavity. Compromised blood supply to bone is also a feature of BRONJ. The design of this study was first to use our established technique of molar extraction and IV bisphosphonate injection to produce features of BRONJ in rats that mimic the human disease; second to confirm vascular changes in the mandible and eye using micro-CT of vascular casts, and image analysis of retina/choroid images; and third to show parallel bisphosphonate-induced changes in the structure and markers of the vasculature of the bone and eye. The results of this study show structural changes in the eye and mandible as well as biochemical changes including the up-regulation of VEGF in response to the bisphosphonate-associated ischemia. These changes are not associated with angiogenesis in either the eye or mandible as determined by reduced vascular complexity. These results suggest that observations of direct changes to the vasculature in the retina/choroid structures of the eye in patients taking bisphosphonates could serve as a window to the progression of debilitating changes occurring as a result of bisphosphonate therapy. Copyright © 2015 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

Title: Adipose-derived stem cells and platelet-rich plasma for preventive treatment of bisphosphonate-related osteonecrosis of the jaw in a murine model.

Citation: Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, Sep 2015, vol. 43, no. 7, p. 1161-1168 (September 2015)

Author(s): Barba-Recreo, Paula, Del Castillo Pardo de Vera, Jose Luis, Georgiev-Hristov, Tihomir, Ruiz Bravo-Burguillos, Elena, Abarrategi, Ander, Burgueño, Miguel, García-Arranz, Mariano

Abstract: The main challenge in treating bisphosphonate-related osteonecrosis of the jaw (BRONJ) is the absence of an effective established treatment. We aimed to compare different potentially preventive treatments for BRONJ after dental extractions in zoledronic acid (ZA)-treated animals. We studied the local application of different combinations of adipose-derived stem cells (ASCs) with or without previous stimulation with bone morphogenetic protein 2 (BMP-2) and platelet-rich plasma (PRP) in rats. Fifty-six male Wistar rats were treated with ZA for 9 weeks. Dental extractions were performed in the eighth week, and the animals were divided into 4 groups. In group 1 (n = 14), alveolar coverage with mucoperiosteal flap was performed. In group 2 (n = 14), PRP was applied over the sockets and covered with the flap. In group 3 (n = 15), allogeneic ASCs with PRP were applied and covered with the flap. In group 4 (n = 13), animals were treated with ASCs cultured with BMP-2, PRP, and flap coverage. Histologic, fluorescence, and radiologic studies of the maxillae were performed. ASC-treated animals showed lower frequency of osteonecrosis (14% vs 50%, $p = 0.007$) and greater bone turnover ($p = 0.024$) and osteoclast count ($p = 0.045$) than those not receiving the ASC treatment. In this high-risk model, ASC-based treatments seem to prevent BRONJ more effectively than mucosal flap with or without PRP. The combination of ASCs and PRP appears to be synergistic, and the addition of BMP-2 could further improve the results. Copyright © 2015 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

Title: A Large National Cohort Study of the Association between Bisphosphonates and Osteonecrosis of the Jaw in Patients with Osteoporosis: A Nested Case-control Study.

Citation: Journal of dental research, Sep 2015, vol. 94, no. 9 Suppl, p. 212S (

Author(s): Kwon, J-W, Park, E-J, Jung, S-Y, Sohn, H S, Ryu, H, Suh, H S

Abstract: The purpose of this study was to examine the association between bisphosphonate exposure and osteonecrosis of the jaw (ONJ) in Korean patients with osteoporosis. A nested case-control study was performed using the claims database during 2002 to 2010 provided by the National Health Insurance Service. We identified a cohort of individuals with diagnosis of osteoporosis during 2002 to 2010. Cases and controls were identified during 2004 to 2010, and the date of potential cases of ONJ was defined as the index date. Bisphosphonate exposure was evaluated during 2 y prior to the index date. The association between bisphosphonate exposure and ONJ was tested by performing a conditional logistic regression analysis for matched data, and odds ratios (ORs) with 95% confidence intervals (CIs) were presented. Subjects were classified as nonuser, recent user, past user, or continuous user, depending on the prescription of bisphosphonates in 2 periods (1 to 2 y and 0 to 1 y prior to the index date). Continuous users were defined as patients who were exposed to bisphosphonate in both periods. We also examined the impact of bisphosphonate medication compliance by measuring the cumulative duration of exposure (CDE) on the risk of ONJ. A total of 212 cases with ONJ and 2,120 controls matched by sex, age, income level, and insurance type were identified among 109,787 patients with osteoporosis out of 1,025,340 enrollees in the sample cohort. The odds of having ONJ after adjusting for patient comorbidities significantly increased in continuous users of bisphosphonates (OR, 3.9; 95% CI, 2.4 to 6.2) compared to nonusers. Increased odds of ONJ were observed as CDE increased. The adjusted OR in patients with $1.5 \text{ y} < \text{CDE} \leq 2 \text{ y}$ prior to the index date was 7.8 (95% CI, 4.0 to 15.5) versus nonusers. Our study results support significantly increased occurrences of potential ONJ in patients with osteoporosis who were exposed to bisphosphonates compared to those without exposure. © International & American Associations for Dental Research.

Title: Bisphosphonate-related osteonecrosis of the jaw: awareness and level of knowledge of Lebanese physicians.

Citation: Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer, Sep 2015, vol. 23, no. 9, p. 2825-2831 (September 2015)

Author(s): El Osta, Lana, El Osta, Badi, Lakiss, Sara, Hennequin, Martine, El Osta, Nada

Abstract: Bisphosphonate-induced osteonecrosis of the jaw (ONJ) is a potentially destructive complication, particularly encountered in oncology. It is supposed that awareness and good knowledge of this disease by physicians are important factors of its early detection and management. This study aims to evaluate the level of knowledge among a sample of Lebanese physicians with regard to this complication. An observational cross-sectional study was conducted at Hôtel-Dieu de France hospital between March and June 2013. Data were collected through a self-administered questionnaire distributed to 190 eligible physicians in the departments involved in prescribing bisphosphonates and managing the ONJ. A total of 136 valid responses were obtained (response rate 71.6 %). Eighty-six (63.2 %) physicians were treating patients with bisphosphonates: the most prescribed form being the weekly

oral bisphosphonates for osteoporosis followed by zoledronate several times yearly for bone malignancies. Fifty-one (37.5 %) participants were unaware of bisphosphonate-related ONJ. Furthermore, the level of knowledge was relatively poor: the mean score of all participants was 12.42 ± 10.08 , while 77 (56.6 %) had a global score more than 16 over 30. There were statistically significant associations between the level of knowledge and physicians' specialty (p value <0.0001), whether or not they prescribe bisphosphonates (p value = 0.039), the most frequently form prescribed (p value = 0.048), whether or not they attend patients already on bisphosphonate (p value = 0.047), whether or not they have observed (p value = 0.004) and treated (p value = 0.002) exposed necrotic bone of the jaw. Our study revealed a deficient knowledge regarding bisphosphonate-related ONJ among Lebanese physicians. Appropriate training strategies to increase their awareness are required.

Cleft lip and palate

Title: IRF6 Is a Marker of Severity in Nonsyndromic Cleft Lip/Palate.

Citation: Journal of dental research, Sep 2015, vol. 94, no. 9 Suppl, p. 226S

Author(s): Kerameddin, S, Namipashaki, A, Ebrahimi, S, Ansari-Pour, N

Abstract: Nonsyndromic cleft lip with or without palate (CL/P) is thought to be caused by the interplay of genetic and environmental factors, and this has thus hindered the process of identifying genetic causative factors. Numerous studies in the past decade have implicated IRF6 in CL/P, but this has not often been replicated in other populations. In specific, the only etiologic single-nucleotide polymorphism (SNP) identified in the IRF6 locus (rs642961) has recently been shown not to be associated with CL/P in diverse populations. We therefore used a genewide tagging SNP (tagSNP) haplotyping approach (including rs642961 as a tagSNP) to detect all potential risk-conferring haplotypes and combined this with detailed subphenotyping of CL/P cases ($N = 150$) according to severity. We observed a significant overrepresentation of a tagSNP haplotype carrying the rs642961 risk allele in the most severe subphenotype of CL/P (complete bilateral CL/P; $P = 0.008$, odds ratio = 4.97, 95% confidence interval = 1.33 to 18.46). It was recently shown that $>80\%$ of IRF6 mutations in syndromic CL/P occur on the same haplotype background. We therefore suggest that IRF6 is a marker of CL/P severity. © International & American Associations for Dental Research 2015.

Title: The Effect of Cleft Size in Infants With Unilateral Cleft Lip and Palate on Mixed Dentition Dental Arch Relationship.

Citation: The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, Sep 2015, vol. 52, no. 5, p. 605-613 (September 2015)

Author(s): Russell, Lisa M, Long, Ross E, Romberg, Elaine

Abstract: To determine the relationship between infant cleft size and dental arch relationship in the mixed dentition in patients with complete unilateral cleft lip and palate. Retrospective analysis of mixed longitudinal records. A total of 29 consecutively enrolled

patients with unilateral cleft lip and palate participated in a longitudinal study that included dental casts prior to lip surgery (T1: age 1 month), prior to palate surgery (T2: age 10 months), and in mixed dentition (T3: age 9 years). All infants were managed with lip repair (2.5 months), hard palate repair (12 months), and soft palate repair (16 months) but without any presurgical orthopedic treatment and no orthodontic intervention prior to mixed dentition records. The outcome measures included determination of an infant cleft severity ratio, defined as the ratio of palatal cleft area to palatal surface area, at both T1 and T2, and the 9-year-old (T3) dental arch relationship as determined using the GOSLON Yardstick. The correlation between the infant cleft severity ratio at T1 and T2 and the later GOSLON Yardstick score at T3 was determined using Pearson r . The intrarater reliability of the infant cleft severity ratio was assessed with Pearson r and the interrater reliability of the GOSLON Yardstick ratings, by weighted kappa. Reliability for the infant cleft severity ratio method was $r = .92$ to $.95$, and for GOSLON ratings $\kappa = .81$ to $.91$. There was no significant correlation between 1-month infant cleft severity ratio and GOSLON ($r = .3$) and 10-month infant cleft severity ratio and GOSLON ($r = .1$). Cleft size versus the amount of palatal tissue available for repair and concern over more scarring with a greater infant cleft severity ratio were not factors in affecting the eventual dental arch relationship.

Title: Nasopharyngeal Airway Volume for Different GOSLON Scores in Patients With Unilateral Cleft Lip and Palate.

Citation: The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, Sep 2015, vol. 52, no. 5, p. e176. (September 2015)

Author(s): Olmez Gurlen, S, Aras, I, Dogan, S

Abstract: The aim of this study is to evaluate the nasopharyngeal airway volumes of patients with unilateral cleft lip and palate (UCLP) with different GOSLON scores. The study sample consisted of 34 patients with UCLP and 20 controls with no cleft history. In the UCLP group, three experienced examiners used the GOSLON Yardstick to rate dental arch relationships, and the sample was divided into three groups as GOSLON 2 (G2) ($n = 13$), GOSLON 3 (G3) ($n = 10$), and GOSLON 4 (G4) ($n = 11$). Airway volumes were constructed using three-dimensional computed tomography data and divided into four compartments named the nasal airway, and superior, middle, and inferior pharyngeal airways. No statistically significant difference was detected among G2, G3, and G4 between the constitutive airway departments of the nasopharyngeal region. However, nasal airway volumes were significantly higher in the control group when compared with the UCLP group. Although there was no correlation among the investigated parameters, it is also a fact that airway capacities display a great variability among patients when investigated three dimensionally. Although the severity of GOSLON scores might predetermine the extent of which the airways are affected from the cleft, a larger sample size is needed in future studies.

Title: Maxillary expansion and midline correction by asymmetric transverse distraction osteogenesis in a patient with unilateral cleft lip/palate: A case report

Citation: Cleft Palate-Craniofacial Journal, September 2015, vol./is. 52/5(618-624), 1055-6656;1545-1569 (01 Sep 2015)

Author(s): Shintaku Y., Tanikawa C., Iida S., Aikawa T., Kogo M., Yamashiro T.

Abstract: This case report presents the management of a female patient with unilateral cleft lip and palate presenting with skeletal Class III malocclusion and a narrow upper dental arch with a midline deviation. The treatment plan involved asymmetric transverse distraction osteogenesis of the maxilla to make the upper dental midline coincident with the facial midline. After the treatment, a good facial profile and a close intercuspatation of teeth were achieved. Occlusion remained stable with normal overjet and overbite after 2-year retention.

Title: Occlusal classification in relation to original cleft width in patients with unilateral cleft lip and palate

Citation: Cleft Palate-Craniofacial Journal, September 2015, vol./is. 52/5(574-578), 1055-6656;1545-1569 (01 Sep 2015)

Author(s): Huang A.H., Patel K.B., Maschhoff C.W., Huebener D.V., Skolnick G.B., Naidoo S.D., Woo A.S.

Abstract: Objective: To determine a correlation between the width of the cleft palate measured at the time of lip adhesion, definitive lip repair, and palatoplasty and the subsequent occlusal classification of patients born with unilateral cleft lip and palate. Design: Retrospective, observational study. Setting: Referral, urban, children's hospital. Participants: Dental models and records of 270 patients were analyzed. Interventions: None. Main Outcome Measure: Angle occlusion classification. Results: The mean age at which occlusal classification was determined was 11 +/- 0.3 years. Of the children studied, 84 were diagnosed with Class I or II occlusion, 67 were diagnosed with Class III occlusion, and 119 were lost to follow up or transferred care. Mean cleft widths were significantly larger in subjects with Class III occlusion for all measures at time of lip adhesion and definitive lip repair ($P < .02$). At time of palatoplasty, cleft widths were significantly greater at the alveolus ($P = .025$) but not at the midportion of the hard palate ($P = .35$) or posterior hard palate ($P = .10$). Conclusion: Cleft widths from the lip through to the posterior hard palate are generally greater in children who are diagnosed with Class III occlusion later in life. Notably, the alveolar cleft width is significantly greater at each time point for patients who went on to develop Class III occlusion. There were no significant differences in cleft widths between patients diagnosed later with Class I and Class II occlusions.

Periodontal disease and antibiotics

Title: Arsenic Trioxide-Induced Mandibular Osteomyelitis.

Citation: Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons, Sep 2015, vol. 73, no. 9, p. 1761-1765 (September 2015)

Author(s): Lu, Pei-Chen, Wu, Ju-Hui, Chen, Chun-Ming, Du, Je-Kang

Abstract: Previously, arsenic was a popular devitalizing agent used to necrotize inflamed dental pulp to lower the pulp sensitivity owing to the unavailability of appropriate

anesthesia. However, leakage from the apical foramen, lateral or accessory canals, or cracks in the tooth is common. This can be dangerous because of the reportedly high toxic effects of arsenic in both hard and soft tissues, leading to gingival and osseous necrosis and, consequently, osteomyelitis. Therefore, arsenic can prove fatal for both bones and teeth and is no longer used. We encountered a case involving a 50-year-old man who had developed mandibular osteomyelitis with lower lip paresthesia caused by arsenic trioxide used during endodontic treatment. The patient was treated with appropriate antibiotics, adjunctive hyperbaric oxygen therapy, and adequate surgical debridement. Hyperbaric oxygen therapy can induce neovascularization in necrosed tissues and improve bone and soft tissue healing. At a 4-year follow-up visit, bone healing was observed, with restoration of periodontal health, although the paresthesia had persisted. We describe this case, present a review of the relevant published data, and discuss the possible causes, diagnosis, treatment, and follow-up protocol of mandibular osteomyelitis caused by arsenic trioxide. Copyright © 2015 American Association of Oral and Maxillofacial Surgeons. Published by Elsevier Inc. All rights reserved.

Title: Fabrication and invitro evaluation of starch/MWCNT composites as drug delivery device

Citation: Journal of Pharmaceutical Sciences and Research, September 2015, vol./is. 7/9(753-754), 0975-1459;0975-1459 (01 Sep 2015)

Author(s): Savitha P.

Abstract: Aim: Fabricate starch drug loaded composite and study its in vitro drug release profile. Objectives: To Functionalize MWCNT using HNO₃ and adsorb tetracycline onto it. Fabricate starch/drug loaded MWCNT and perform in vitro drug study in Phosphate buffered solution (PBS) with PH 7.0 using UV visible spectrophotometer. Background: Starch is a biopolymer, biodegradable and is biocompatible. Starch has been used for many medical applications. MWCNT can be functionalized and is known to be a good absorbant for many chemicals including drugs such as tetracycline. Tetracyclines is a broad spectrum antibiotic and is very effective against microbes causing periodontal disease. Reason: The composite proposed is a novel combination and the study is designed to exploit the favorable properties of both starch and MWCNT for medical applications.

Title: Strategies to optimize photosensitizers for photodynamic inactivation of bacteria

Citation: Journal of Photochemistry and Photobiology B: Biology, September 2015, vol./is. 150/(2-10), 1011-1344;1873-2682 (01 Sep 2015)

Author(s): Tim M.

Abstract: The Infectious Diseases Society of America (IDSA) highlights that over the past several years, the number of new antibacterial drugs approved continues to decrease (Boucher et al., 2009) [1]. Bacteria are very good in developing resistance against antibiotics in a short time. Therefore new approaches like antibacterial photodynamic inactivation of bacteria (aPDI) will become more important in the future as antimicrobial resistance is expected to continue to increase. This review summarises the potential of the susceptibility of bacteria to aPDI and the strategies to optimize leading photosensitizers which are useful

for aPDI. The most appropriate photosensitizers belonging to the chemical classes of phenothiazinium, porphyrine, fullerene and perinaphthenone. They all share the following characteristics: positively-charged, water-soluble and photostable. Taken together the most promising clinical applications of aPDI are (i) decolonization of pathogens on skin, (ii) treatments of the oral cavity like periodontitis and root canal infection and (iii) superinfected burn wounds, because these are relatively accessible for photosensitizer application and illumination.

Title: Centipeda periodontii in human periodontitis.

Citation: Odontology / the Society of the Nippon Dental University, Sep 2015, vol. 103, no. 3, p. 286-291

Author(s): Rams, Thomas E, Hawley, Charles E, Whitaker, Eugene J, Degener, John E, van Winkelhoff, Arie J

Abstract: This study assessed the subgingival occurrence of the flagellated, Gram-negative, anaerobic rod *Centipeda periodontii* in chronic periodontitis and periodontal health/gingivitis with species-specific nucleic acid probes, and evaluated the in vitro resistance of subgingival isolates to therapeutic levels of amoxicillin, metronidazole, and doxycycline. Subgingival plaque biofilm specimens from 307 adults with chronic periodontitis, and 48 adults with periodontal health/localized gingivitis, were evaluated with digoxigenin-labeled, whole-chromosomal, DNA probes to *C. periodontii* ATCC 35019 possessing a 10(4) cell detection threshold. Fifty-two *C. periodontii* subgingival culture isolates were assessed on antibiotic-supplemented enriched Brucella blood agar for in vitro resistance to either amoxicillin at 2 µg/ml, metronidazole at 4 µg/ml, or doxycycline at 2 µg/ml. A significantly greater subgingival occurrence of *C. periodontii* was found in chronic periodontitis subjects as compared to individuals with periodontal health/gingivitis (13.4 vs. 0 %, $P < 0.003$), although high subgingival counts of the organism ($\geq 10^6$ cells) were rarely detected (1.3 % of chronic periodontitis subjects). In vitro resistance was not found to amoxicillin or metronidazole, and to doxycycline in only 2 (3.9 %) of the 52 *C. periodontii* clinical isolates studied. These findings indicate that *C. periodontii* is not a major constituent of the subgingival microbiome in chronic periodontitis or periodontal health/gingivitis. The potential contribution of *C. periodontii* to periodontal breakdown in the few chronic periodontitis subjects who yielded high subgingival levels of the organism remains to be delineated. *C. periodontii* clinical isolates were susceptible in vitro to therapeutic concentrations of three antibiotics frequently used in treatment of human periodontitis.

Title: Pulp Revascularization on Permanent Teeth with Open Apices in a Middle-aged Patient.

Citation: Journal of endodontics, Sep 2015, vol. 41, no. 9, p. 1571-1575 (September 2015)

Author(s): Wang, Yu, Zhu, Xiaofei, Zhang, Chengfei

Abstract: Pulp revascularization is a promising procedure for the treatment of adolescents' immature permanent teeth with necrotic pulp and/or apical periodontitis. However, the ability to successfully perform pulp revascularization in a middle-aged patient remains unclear. A 39-year-old woman was referred for treatment of teeth #20 and #29 with

necrotic pulp, extensive periapical radiolucencies, and incomplete apices. Pulp revascularization procedures were attempted, including root canal debridement, triple antibiotic paste medication, and platelet-rich plasma transplantation to act as a scaffold. Periapical radiographic and cone-beam computed tomographic examinations were used to review the changes in the apical lesions and root apex configuration. The patient remained asymptomatic throughout the 30-month follow-up. Periapical radiographic examination revealed no change in the apical lesions of either tooth at 8 months. The periapical radiolucency disappeared on tooth #20 and significantly decreased on tooth #29 by the 30-month follow-up, findings that were also confirmed by cone-beam computed tomographic imaging. No evidence of root lengthening or thickening was observed. Successful revascularization was achieved in a middle-aged patient's teeth. Copyright © 2015 American Association of Endodontists. Published by Elsevier Inc. All rights reserved.

Title: Local levels of biomarkers after surgical and nonsurgical debridement of residual pockets and nonresidual sites in diabetic patients: a 12-month follow-up.

Citation: General dentistry, Sep 2015, vol. 63, no. 5, p. 58-64, 0363-6771 (2015 Sep-Oct)

Author(s): Bezerra, Joyce Pinho, Shaddox, Luciana Machion, Mendonca, Adriana Cutrim de, Bastos, Marta Ferreira, Miranda, Tamires Szeremeske de, Santos, Vanessa Renata, Duarte, Poliana Mendes

Abstract: There is scarce evidence on suitable approaches for the treatment of unresponsive or residual periodontal sites in diabetic patients. This study assessed the effects of surgical debridement (SD) and nonsurgical debridement (NSD), associated with amoxicillin and metronidazole, on clinical and immunological outcomes of residual pockets and adjacent healthy sites in patients with type 2 diabetes. A split-mouth, randomized controlled trial was conducted in 21 patients presenting at least 2 residual pockets in contralateral quadrants 12 months after basic nonsurgical periodontal therapy. Patients received systemic antibiotics, and contralateral quadrants were assigned to receive SD or NSD. The changes in clinical parameters were evaluated from baseline to 12 months. Local levels of 14 cytokines and chemokines were measured with multiplex bead immunoassays at baseline and 3 and 12 months after therapy. There were no statistically significant differences between SD and NSD for changes in clinical parameters from baseline to 12 months ($P > 0.05$). There was a significantly greater increase in the levels of granulocyte-macrophage colony-stimulating factor and interleukin 6 from baseline to 3 months in the healthy sites adjacent to residual pockets receiving SD ($P < 0.05$). A significant decrease in the levels of monocyte chemoattractant protein-1 and macrophage inflammatory protein 1 α occurred from baseline to 12 months in the residual pockets treated by SD ($P < 0.05$). In conclusion, SD and NSD resulted in similar clinical benefits at 12 months. The short-term increase in the levels of proinflammatory biomarkers in SD sites probably can be attributed to tissue trauma and healing, and the long-term decrease in the levels of chemotactic factors in residual pockets treated by surgery may reflect remission of infection and stable wound healing in these sites at 12 months.

Title: Regenerative endodontic treatment of an immature tooth with a necrotic pulp and apical periodontitis using platelet-rich plasma (PRP) and mineral trioxide aggregate (MTA): a case report.

Citation: International endodontic journal, Sep 2015, vol. 48, no. 9, p. 902-910

Author(s): Sachdeva, G S, Sachdeva, L T, Goel, M, Bala, S

Abstract: To report the successful clinical and radiographic outcome of a regenerative endodontic treatment. A 16-year-old male patient presented with a discoloured, maxillary left lateral incisor with a necrotic pulp. Radiographic examination revealed an incompletely developed root with an open apex. Under local anaesthesia and rubber dam isolation, an access cavity was prepared and the necrotic pulpal remnants were removed. The canal was disinfected without mechanical instrumentation with 5.25% NaOCl solution and dried with sterile paper points. A triple antibiotic (metronidazole, ciprofloxacin and minocycline) mixed with distilled water was packed in the canal and left for 28 days. Ten millimetres of whole blood was drawn by venipuncture from the patients antecubital vein for preparation of platelet-rich plasma (PRP). After removal of the antibiotic mixture, the PRP was injected into the canal space up to the cemento-enamel junction level. Three millimetres of white MTA was placed directly over the PRP clot. Two days later, the tooth was restored with permanent filling materials. The patient was recalled for 3, 6, 12, 24 and 36 months clinical/radiographic follow-up. A 3-year follow-up radiograph revealed resolution of the periapical lesion, increased thickening of the root walls, further root development and continued apical closure of the root apex. The tooth was not responsive to cold tests; however, sensitivity tests with an electric pulp tester (EPT) elicited a delayed positive response. Regeneration is a viable treatment modality that allows continued root development of immature teeth with open apices and necrotic pulps. Platelet-rich plasma appears to be a suitable scaffold for regeneration of vital tissues in teeth with a necrotic pulps and an associated periapical lesion. Regenerative endodontic procedures may offer an effective treatment option to save teeth with compromised structural integrity. © 2014 International Endodontic Journal. Published by John Wiley & Sons Ltd.

Head and neck oncology and dentistry

Title: Development and evaluation of a standardized method and atlas for contouring primary and permanent dentition.

Citation: Dento maxillo facial radiology, Sep 2015, vol. 44, no. 7, p. 20150034., 0250-832X

Author(s): Fang, P, Batra, S, Hollander, A B, Lin, A, Hill-Kayser, C E, Levin, L M, Mupparapu, M, Thompson, R F

Abstract: Radiation toxicity of the dentition may present significant treatment-related morbidity in the paediatric head and neck cancer population. However, clear dose-effect relationships remain undetermined and must be predicated upon accurate structure delineation and dosimetry at the individual tooth level. Radiation oncologists generally have limited familiarity or experience with relevant dental anatomy. We therefore developed a detailed CT atlas of permanent and primary dentition. After studying this atlas, five radiation oncology clinicians delineated all teeth for each of eight different cases (selected for

breadth of dental maturity and anatomical variability). They were asked to record confidence in their contours on a per-tooth basis as well as the duration of time required per case. Contour accuracy and interclinician variability were assessed by Hausdorff distance and Dice similarity coefficient. All analyses were performed using R v. 3.1.1 and the RadOnc v. 1.0.9 package. Participating clinicians delineated teeth with varying degrees of completeness and accuracy, stratified primarily by the age of the subject. On a per-tooth basis, delineation of permanent dentition was feasible for incisors, canines, premolars and first molars among all subjects, even at the youngest ages. However, delineation of second and third molars was less consistent, commensurate with approximate timing of tooth development. Within each tooth contour, uncertainty was the greatest at the level of the dental roots. Delineation of individual teeth is feasible and serves as a necessary precursor for dental dose assessment and avoidance. Among the paediatric radiation oncology community in particular, this atlas may serve as a useful tool and reference.

Title: What every dentist should know about metformin, diabetes, and cancer.

Citation: General dentistry, Sep 2015, vol. 63, no. 5, p. 70-72, 0363-6771 (2015 Sep-Oct)

Author(s): Frykenberg, Matthew R, Schneider, Abraham, Bashirelahi, Nasir

Abstract: Metformin has long been the drug of choice for treating patients with type 2 diabetes. Because of its effectiveness, safety profile, and affordability, it is used by millions of people worldwide. Emerging evidence indicates that metformin might also have antineoplastic effects in both diabetic and nondiabetic individuals. This article reviews studies that examine the potential mechanisms of action underlying the anticancer properties of metformin and discusses the possible use of this antidiabetic biguanide in the chemoprevention and treatment of head and neck cancer.

Title: Dental demineralization and caries in patients with head and neck cancer.

Citation: Oral oncology, Sep 2015, vol. 51, no. 9, p. 824-831 (September 2015)

Author(s): Deng, Jie, Jackson, Leanne, Epstein, Joel B, Migliorati, Cesar A, Murphy, Barbara A

Abstract: Concurrent chemoradiation (CCR) therapy is a standard treatment for patients with locally advanced head and neck cancer (HNC). It is well documented that CCR causes profound acute and late toxicities. Xerostomia (the symptom of dry mouth) and hyposalivation (decreased salivary flow) are among the most common treatment side effects in this cohort of patients during and following treatment. They are the result of radiation-induced damage to the salivary glands. Patients with chronic hyposalivation are at risk for demineralization and dental cavitation (dental caries), often presenting as a severe form of rapidly developing decay that results in loss of dentition. Usual post-radiation oral care which includes the use of fluoride, may decrease, but does not eliminate dental caries associated with radiation-induced hyposalivation. The authors conducted a narrative literature review regarding dental caries in HNC population based on MEDLINE, PubMed, CLNAHL, Cochrane database, EMBASE, and PsycINFO from 1985 to 2014. Primary search

terms included head and/or neck cancer, dental caries, dental decay, risk factor, physical symptom, physical sequelae, body image, quality of life, measurement, assessment, cost, prevention, and treatment. The authors also reviewed information from National Institute of Dental and Craniofacial Research (NIDCR), American Dental Association (ADA), and other related healthcare professional association web sites. This literature review focuses on critical issues related to dental caries in patients with HNC: potential mechanisms and contributing factors, clinical assessment, physical sequelae, negative impact on body image and quality of life, potential preventative strategies, and recommendations for practice and research in this area. Copyright © 2015 Elsevier Ltd. All rights reserved.

Dental implants

Title: Analysis of commonly reported medical conditions amongst patients receiving dental implant therapy in private practice.

Citation: Australian dental journal, Sep 2015, vol. 60, no. 3, p. 343-352 (September 2015)

Author(s): Austin, S, Bailey, D, Chandu, A, Dastaran, M, Judge, R

Abstract: The population seeking implants in private practice is a demographically and medically unique group. Understanding their medical needs can improve treatment planning and service delivery specifically for this population. Privately practising dental clinicians from Victoria, Australia, participated in a five-year retrospective study. Data were collected from the medical histories of 4116 patients who met the inclusion criterion of at least one implant placed within the study period of 1 January 2005 to 31 December 2009. Descriptive statistics were used to describe patient demographics and commonly reported medical conditions. The most common age group to receive implant therapy was between 51 and 60 years (30.4% of patients). The patient population reported a broad range of co-morbidities including psychiatric disorders (83 patients), cardiovascular disorders (253 patients), gastrointestinal disorders (224 patients) and respiratory disorders (502 patients). Smoking was less prevalent amongst the study population compared to the general population. The population assessed in this study was a medically diverse group. Clinicians must be familiar with their target demographic and understand how the common co-morbidities amongst this patient group can influence clinical decision making and outcomes. © 2015 Australian Dental Association.

Title: Cerebellopontine angle mass mimicking lingual nerve injury after dental implant placement: a case report.

Citation: Australian dental journal, Sep 2015, vol. 60, no. 3, p. 412-415

Author(s): Momota, Y, Kani, K, Takano, H, Azuma, M

Abstract: This is a rare case report of a cerebellopontine angle (CPA) mass mimicking lingual nerve injury after a dental implant placement. Lingual nerve injury is a common complication following dental implant placement. CPA masses are likely to cause symptomatic trigeminal neuralgia, and thus can mimic and be easily confused with oral diseases. We experienced a case of CPA mass mimicking lingual nerve injury after dental

implant placement. The patient was a 57-year-old Japanese female who complained of glossalgia. She underwent dental implant placement in the mandible before visiting our clinic. Panoramic x-ray radiography revealed no abnormalities; the salivary flow rate by gum test was 7.0 ml/10 min. She was diagnosed with lingual nerve injury and secondary burning mouth syndrome. Vitamin B12 and oral moisturizer did not provide relief; furthermore, numbness in the lower lip emerged. A Semmes Weinstein test demonstrated elevation of her sensitivity threshold. Finally, magnetic resonance imaging revealed a 20-mm diameter mass in the CPA. The patient is now being followed under conservative management. Our experience underscores the importance of including CPA mass in the differential diagnosis of dental diseases. © 2015 Australian Dental Association.

Title: Complex systematic review - Perioperative antibiotics in conjunction with dental implant placement.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 1-14

Author(s): Lund, Bodil, Hultin, Margareta, Tranaeus, Sofia, Naimi-Akbar, Aron, Klinge, Björn

Abstract: The aim of this study was to revisit the available scientific literature regarding perioperative antibiotics in conjunction with implant placement by combining the recommended methods for systematic reviews and complex systematic reviews. A search of Medline (OVID), The Cochrane Library (Wiley), EMBASE, PubMed and Health technology assessment (HTA) organizations was performed, in addition to a complementary hand-search. Selected systematic reviews and primary studies were assessed using GRADE and AMSTAR, respectively. A meta-analysis was performed. The literature search identified 846 papers of which 10 primary studies and seven systematic reviews were included. Quality assessment of the systematic reviews revealed two studies of moderate risk of bias and five with high risk of bias. The two systematic reviews of moderate risk of bias stated divergent numbers needed to treat (NNT) to prevent one patient from implant failure. Four of the primary studies comparing antibiotic prophylaxis with placebo were estimated to be of low, or moderate, risk of bias and subjected to meta-analysis. The NNT was 50 (pooled RR 0.39, 95% CI 0.18, 0.84; P = 0.02). None of these four studies individually show a statistical significant benefit of antibiotic prophylaxis. Furthermore, narrative analysis of the studies eligible for meta-analysis reveals clinical heterogeneity regarding intervention and smoking. Antibiotic prophylaxis in conjunction with implant placement reduced the risk for implant loss by 2%. However, the sub-analysis of the primary studies suggests that there is no benefit of antibiotic prophylaxis in uncomplicated implant surgery in healthy patient. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Risk indicators for peri-implantitis. A narrative review.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 15-44

Author(s): Renvert, Stefan, Quirynen, Marc

Abstract: To examine the existing evidence in identifying risk indicators in the etiology of peri-implantitis. A literature search was performed in MEDLINE via PubMed database of the US National Library of Medicine, for articles published until October 2014 using Medical Subject Heading search terms + free text terms and in different combinations. The

microbiota associated with peri-implantitis is complex, demonstrating differences and similarities to the one seen at periodontitis sites. Plaque accumulation at dental implants triggers the inflammatory response leading to peri-implant mucositis/peri-implantitis. Individuals with a history of periodontal disease and smokers have an increased risk of developing peri-implantitis. There is some evidence to support the role of genetic polymorphism, diabetes, and excess cement as risk indicators for the development of peri-implantitis. There is also evidence to support that individuals on regular maintenance are less likely to develop peri-implantitis and that successful treatment of periodontitis prior to implant placement lowers the risk of peri-implantitis. Plaque accumulation at implants will result in the development of an inflammation at implants. A history of periodontal disease, smoking, excess cement, and lack of supportive therapy should be considered as risk indicators for the development of peri-implantitis. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: EAO consensus conference: economic evaluation of implant-supported prostheses.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 57-63

Author(s): Beikler, Thomas, Flemmig, Thomas F

Abstract: There are various alternatives for the management of oral conditions that may lead to or already have lead to partial or full edentulism. Economic evaluations measure the efficiency of alternative healthcare interventions and provide useful information for decision-making and the allocation of scarce resources. The current English literature dealing with "cost-effectiveness" of dental implant therapy versus different alternative treatment modalities, that is, complete and fixed partial dentures, root canal, and periodontal treatment, has been included in this narrative review. Due to the high heterogeneity within the literature, a meta-analysis could not be conducted. The available evidence from economic evaluations indicated that for the treatment of central incisors with irreversible pulpitis and coronal lesions, root canal treatments were most cost-effective initial treatment options. When initial root canal treatments failed, orthograde retreatments were most cost-effective. When root canal retreatments failed, extractions and replacement with single implant-supported crowns were more cost-effective compared to fixed or removable partial dentures. In the treatment of periodontitis in molars with Class I furcation invasion, non-surgical periodontal therapy was more effective and costed less than implant-supported single crowns. For the replacement of single missing teeth, two evaluations indicated that implant-supported single crowns provided better outcomes in terms of greater quality-adjusted tooth years or survival rates at lower costs compared to fixed partial prostheses. Another economic evaluation found that implant-supported crowns costed more, but provided greater survival rates compared to fixed partial dentures. For the restoration of edentulous mandibles, two evaluations indicated that overdentures retained by two or four implants improved oral health-related quality of life outcomes, but costed more than complete dentures. To better assess the efficiency of implant-supported prostheses in various clinical conditions, more economic evaluations are needed that follow well-established methodologies in health economics. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: The patient undergoing implant therapy. Summary and consensus statements. The 4th EAO Consensus Conference 2015.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 64-67

Author(s): Klinge, Björn, Flemming, Thomas, Cosyn, Jan, De Bruyn, Hugo, Eisner, Barbara M, Hultin, Margareta, Isidor, Flemming, Lang, Niklaus P, Lund, Bodil, Meyle, Jürg, Mombelli, Andrea, Navarro, Jose Manuel, Pjetursson, Bjarni, Renvert, Stefan, Schliephake, Henning

Abstract: The assignment for this working group was to update the existing knowledge regarding factors considered being of special relevance for the patient undergoing implant therapy. This included areas where conflicting opinions exist since long or recently has been expressed, like the role of antibiotic prophylaxis in dental implant surgery and peri-implantitis. Also areas with growing interest and concern such as patient-reported outcome measures (PROMs) and health-economy was included in this review. The literature in the respective areas of interest (antibiotic prophylaxis, peri-implantitis, patient-reported outcome measurements and health-economic aspects) was searched using different strategies for the different papers. Search strategies ranged from a complex systematic review to systematic- and narrative reviews, depending on subject and available literature. All collected material was critically reviewed. Four manuscripts were subsequently presented for group analysis and discussion and plenum discussions and consensus approval. The selected areas were considered to be of key importance and relevance for the patient undergoing implant therapy. The results and conclusions of the review process are presented in the respective papers. The group's conclusions, identified knowledge gaps, directions for future research and consensus statements are presented in this article. The following reviews were available for group discussions and the foundation for subsequent plenary sessions: Lund B, Hultin M, Tranaeus S, Naimi-Akbar A, Klinge B. (2015) Perioperative antibiotics in conjunction with dental implant placement. A complex systematic review. Renvert S & Quirynen M. (2015) Risk indicators for peri-implantitis. A narrative review. De Bruyn H, Raes S, Matthys C, Cosyn J. (2015) The current use of patient centered/reported outcomes in implant dentistry. A systematic review. Beikler T & Flemmig T.F. (2015) Economic evaluation of implant-supported prostheses. A narrative review. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Novel digital imaging techniques to assess the outcome in oral rehabilitation with dental implants: a narrative review.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 86-96

Author(s): Benic, Goran I, Elmasry, Moustafa, Hämmerle, Christoph H F

Abstract: To examine the literature on novel digital imaging techniques for the assessment of outcomes in oral rehabilitation with dental implants. An electronic search of Medline and Embase databases including studies published prior to 28th December 2014 was performed and supplemented by a manual search. A synthesis of the publications was presented describing the use of computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography, optical scanning, spectrophotometry or optical coherence tomography (OCT) related to the outcome measures in implant therapy. Most of the digital imaging techniques have not yet sufficiently been validated to be used for outcome measures in implant dentistry. In clinical research, cone beam CT (CBCT) is increasingly being used for 3D

assessment of bone and soft tissue following augmentation procedures and implant placement. Currently, there are no effective methods for the reduction of artifacts around implants in CBCT. Optical scanning is being used for the 3D assessment of changes in the soft tissue contour. The combination of optical scan with pre-operative CBCT allows the determination of the implant position and its spatial relation to anatomical structures. Spectrophotometry is the method most commonly used to objectively assess the color match of reconstructions and peri-implant mucosa to natural dentition and gingiva. New optical imaging techniques may be considered possible approaches for monitoring peri-implant soft tissue health. MRI and ultrasonography appear promising non-ionizing radiation imaging modalities for the assessment of soft tissue and bone defect morphologies. Optical scanners and OCT may represent efficient clinical methods for accurate assessment of the misfit between the reconstructions and the implants. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Long-term outcomes of bone augmentation on soft and hard-tissue stability: a systematic review.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 103-122

Author(s): Lutz, Rainer, Neukam, Friedrich W, Simion, Massimo, Schmitt, Christian M

Abstract: Peri-implant hard-tissue augmentation is a widely used clinical procedure. The present review aimed to analyse the current literature regarding medium- and long-term data concerning the stability of peri-implant tissues after hard-tissue augmentation prior or immediately with implant placement. An electronic literature search was performed using Medline (PubMed) databases detecting clinical studies focusing on hard- and soft-tissue stability around dental implants placed either in augmented alveolar ridges or simultaneously with peri-implant bone grafting. The search was limited to articles published between 1995 and December 2014, focusing on clinical studies with a prospective study design assessing peri-implant bone and soft tissue stability over time with a minimum follow-up of 12 months. Recent publications were also searched manually to find any relevant studies that might have been missed using the search criteria noted above. Thirty-seven articles met the inclusion criteria and were included in this systematic review. Since the outcome measures and methods, as well as types of grafts and implants used were so heterogeneous, the performance of meta-analysis was impossible. The highest level of evidence was achieved by randomized clinical trials. Different hard-tissue augmentation procedures seem to show stable peri-implant tissues, although, up to now, long-term stability of the augmented buccal bone is assessed by only few studies. Further research should concentrate on combining three-dimensional radiographic data with non-invasive methods as digital surface measuring techniques or ultrasound evaluation. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Long-term outcomes of soft tissue augmentation around dental implants on soft and hard tissue stability: a systematic review.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 123-138

Author(s): Rotundo, Roberto, Pagliaro, Umberto, Bendinelli, Elena, Esposito, Marco, Buti, Jacopo

Abstract: To investigate whether the height and volume of the soft tissues and peri-implant bone levels around dental implants are stable, when soft tissue augmentation has been performed. Three operators conducted a search on electronic databases (MEDLINE, COCHRANE, EMBASE) and a hand searching on the main journals dealing with periodontology and implantology until 30 October 2014. Only articles that considered peri-implant soft tissue augmentation performed in a group of at least 10 patients and with a follow-up of at least 1 year were selected. The outcome variables were peri-implant attached/keratinized tissue width (KTW) changes, peri-implant marginal soft tissue level (PSL) changes, and peri-implant marginal bone level (PBL) changes. The review was performed according to the PRISMA statements. Ten articles were selected for the qualitative synthesis, but only one meta-analysis was accomplished, indicating that 1 year after implant recession coverage procedures, a mean gain of 1.65 ± 0.01 mm (90% CrI [1.44; 1.85]) was observed. There is no long-term evidence whether augmented soft tissues can be maintained over time and able to influence the peri-implant bone levels. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd

Title: EAO Supplement Working Group 4 - EAO CC 2015 Short implants versus sinus lifting with longer implants to restore the posterior maxilla: a systematic review.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 154-169

Author(s): Thoma, D S, Zeltner, M, Hüsler, J, Hämmerle, C H F, Jung, R E

Abstract: To compare short implants in the posterior maxilla to longer implants placed after or simultaneously with sinus floor elevation procedures. The focused question was as follows: Are short implants superior to longer implants in the augmented sinus in terms of survival and complication rates of implants and reconstructions, patient-reported outcome measures (PROMs) and costs? A MEDLINE search (1990-2014) was performed for randomized controlled clinical studies comparing short implants (≤ 8 mm) to longer implants (> 8 mm) in augmented sinus. The search was complimented by an additional hand search of the selected papers and reviews published between 2011 and 2014. Eligible studies were selected based on the inclusion criteria, and quality assessments were conducted. Descriptive statistics were applied for a number of outcome measures. Survival rates of dental implants were pooled simply in case of comparable studies. Eight randomized controlled clinical trials (RCTs) comparing short implants versus longer implants in the augmented sinus derived from an initial search count of 851 titles were selected and data extracted. In general, all studies were well conducted with a low risk of bias for the majority of the analyzed parameters. Based on the pooled analyses of longer follow-ups (5 studies, 16-18 months), the survival rate of longer implants amounted to 99.5% (95% CI: 97.6-99.98%) and for shorter implants to 99.0% (95% CI: 96.4-99.8%). For shorter follow-ups (3 studies, 8-9 months), the survival rates of longer implants are 100% (95% CI: 97.1-100%) and for shorter implants 98.2% (95% CI: 93.9-99.7%). Complications were predominantly of biological origin, mainly occurred intraoperatively as membrane perforations, and were almost three times as higher for longer implant in the augmented sinus compared to shorter implants. PROMs, morbidity, surgical time and costs were generally in favor of shorter dental implants. All studies were performed by surgeons in specialized clinical settings. The

outcomes of the survey analyses demonstrated predictably high implant survival rates for short implants and longer implants placed in augmented sinus and their respective reconstructions. Given the higher number of biological complications, increased morbidity, costs and surgical time of longer dental implants in the augmented sinus, shorter dental implants may represent the preferred treatment alternative. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Therapeutic concepts and methods for improving dental implant outcomes. Summary and consensus statements. The 4th EAO Consensus Conference 2015.

Citation: Clinical oral implants research, Sep 2015, vol. 26 Suppl 11, p. 202-206

Author(s): Sanz, Mariano, Donos, Nikos, Alcoforado, Gil, Balmer, Marc, Gurbawska, Katarzyna, Mardas, Nikos, Milinkovic, Iva, Nisand, David, Rocchietta, Isabella, Stavropoulos, Andreas, Thoma, Daniel S, Torsello, Ferruccio

Abstract: Different therapeutic concepts and methods have been proposed for improving dental implant outcomes in three specific clinical situations: (i) the fresh extraction socket with alveolar ridge preservation protocols; (ii) the posterior maxilla with limited bone height with either the placement of regular-sized implants after sinus elevation and grafting or short dental implants and; (iii) the posterior mandible with limited bone height with either vertical bone augmentation and placement of implants or short dental implants. Three systematic reviews, based on randomized and controlled clinical trials have evaluated the efficacy of these different therapeutic modalities in terms of dental implant outcomes. Interventions aimed for alveolar ridge preservation have shown efficacy in terms of allowing the placement of dental implants and for reducing the need of further augmentation procedures at implant placement. Both therapeutic options, the placement of implants after sinus elevation and grafting or short dental implants, were valid alternatives in the treatment of the posterior maxilla with deficient bone availability, although short implants resulted in fewer complications. Similarly, the placement of implants in vertically augmented bone rendered comparable outcomes with those of short implants in the treatment of the posterior mandible, but short implants resulted in fewer complications. © 2015 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Implants failures related to endodontic treatment. An observational retrospective study.

Citation: Clinical oral implants research, Sep 2015, vol. 26, no. 9, p. 992-995

Author(s): López-Martínez, Fanny, Gómez Moreno, Gerardo, Olivares-Ponce, Patricia, Eduardo Jaramillo, David, Eduardo Maté Sánchez de Val, José, Calvo-Guirado, José Luis

Abstract: The aim of the study was to analyze potential etiological risk factors that constitute a complex problem in the clinical management of peri-implantitis. An observational retrospective study was conducted to describe the possible effect of lesions of origin pulpar and/or periapical success or failure of the implant. The sample consisted of review of 800 implants, of which 500 were conducted at the Faculty of Dentistry of the UANL and 300 private clinics of Maxillofacial surgeons experienced in the placement of those who reside in Monterrey, Mexico. Five hundred and eighty cases correspond to

female patients while that 220 patients of the male gender. The age of patients at the time of placing the implant ranged from 28 to 81 years. Of 800 study subjects who underwent dental implant treatments, 200 cases (25%) were detected which presented endodontic failure prior and/or adjacent to the placement of the implant. The 50.41% had peri-implantitis, recording 62 cases in the Faculty and 18 cases (23.38%) in private clinics, finding that there was a statistically significant difference between the presence and absence of peri-implantitis in terms of failed endodontic prior and/or adjacent to the placement of the implant. Within the limitations of this observational retrospective study, it could be concluded that the development of inflammatory changes mediated by the presence of remnant bacteria surrounding hard tissues adjacent to implants might induce late failures of implants, and potentially trigger pathological features of apical peri-implantitis. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Peri-implant evaluation in type 2 diabetes mellitus patients: a 3-year study.

Citation: Clinical oral implants research, Sep 2015, vol. 26, no. 9, p. 1031-1035

Author(s): Gómez-Moreno, Gerardo, Aguilar-Salvatierra, Antonio, Rubio Roldán, Jerónimo, Guardia, Javier, Gargallo, Jordi, Calvo-Guirado, José Luis

Abstract: The aim of this study was to analyze the changes produced in peri-implant tissues in type 2 diabetes mellitus patients with different glycemia levels, measured by monitoring glycated hemoglobin A1c (HbA1c), over a period of 3 years following dental implant placement. Sixty-seven patients were divided into four groups according to their HbA1c levels: 21 patients in Group 1 (<6); 24 patients in Group 2 (6.1-8); and 11 patients in Group 3 (8.1-10) and Group 4 (>10.1). Each patient received one implant. All implants were placed in the anterior zone of the maxilla. The variables selected to assess the general state of patients' peri-implant health were as follows: probing depth, bleeding on probing, and marginal bone loss. Marginal bone loss was found to increase in relation to increases in HbA1c levels. Bleeding on probing showed statistically significant differences between groups. When the peri-implant area was probed, mean levels of bleeding varied from 0.43 in Group 1 at 1 year after implant surgery to 0.62 in Group 4 ($P = 0.042$ between the four study groups). After the second year, greater bleeding on probing was observed in Group 4 (0.63) in comparison with groups with lower HbA1c levels. Peri-implant pocket depths presented values that were too low to be considered pathological and without statistically significant differences between the study groups. Implant therapies for diabetic patients can be predictable, providing these patients fall within controlled ranges of glycemia over time, assessed by monitoring HbA1c levels. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Title: Dental implants in irradiated patients: which factors influence implant survival?

Citation: Clinical oral investigations, Sep 2015, vol. 19, no. 7, p. 1691-1692

Author(s): Schiegnitz, E, Al-Nawas, B, Kämmerer, P W, Grötz, K A

Title: Erratum to: Oral rehabilitation with dental implants in irradiated patients: a meta-analysis on implant survival.

Citation: Clinical oral investigations, Sep 2015, vol. 19, no. 7, p. 1693. (September 2015)

Author(s): Schiegnitz, E, Al-Nawas, B, Kämmerer, P W, Grötz, K A

Title: Automated 3D-2D registration of X-ray microcomputed tomography with histological sections for dental implants in bone using chamfer matching and simulated annealing.

Citation: Computerized medical imaging and graphics : the official journal of the Computerized Medical Imaging Society, Sep 2015, vol. 44, p. 62-68 (September 2015)

Author(s): Becker, Kathrin, Stauber, Martin, Schwarz, Frank, Beißbarth, Tim

Abstract: We propose a novel 3D-2D registration approach for micro-computed tomography (μ CT) and histology (HI), constructed for dental implant biopsies, that finds the position and normal vector of the oblique slice from μ CT that corresponds to HI. During image pre-processing, the implants and the bone tissue are segmented using a combination of thresholding, morphological filters and component labeling. After this, chamfer matching is employed to register the implant edges and fine registration of the bone tissues is achieved using simulated annealing. The method was tested on $n=10$ biopsies, obtained at 20 weeks after non-submerged healing in the canine mandible. The specimens were scanned with μ CT 100 and processed for hard tissue sectioning. After registration, we assessed the agreement of bone to implant contact (BIC) using automated and manual measurements. Statistical analysis was conducted to test the agreement of the BIC measurements in the registered samples. Registration was successful for all specimens and agreement of the respective binary images was high (median: 0.90, 1.-3. Qu.: 0.89-0.91). Direct comparison of BIC yielded that automated (median 0.82, 1.-3. Qu.: 0.75-0.85) and manual (median 0.61, 1.-3. Qu.: 0.52-0.67) measures from μ CT were significant positively correlated with HI (median 0.65, 1.-3. Qu.: 0.59-0.72) between μ CT and HI groups (manual: $R(2)=0.87$, automated: $R(2)=0.75$, $p<0.001$). The results show that this method yields promising results and that μ CT may become a valid alternative to assess osseointegration in three dimensions. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Clinical response of edentulous people treated with mini dental implants in nine dental practices.

Citation: Gerodontology, Sep 2015, vol. 32, no. 3, p. 179-187 (September 2015)

Author(s): Mundt, Torsten, Schwahn, Christian, Stark, Thomas, Biffar, Reiner

Abstract: To analyse implant survival, prosthetic aftercare and quality of life (QoL) after stabilisation of complete dentures with mini-implants. Many edentulous patients refuse implant therapy due to the expenses and fear of surgery. Studies on minimally invasive and low-cost mini-implants remain rare. A total of 133 participating patients from nine private practices were evaluated via patient records, questionnaires and clinical examinations. Complications, maintenance, QoL questions and the German short version of the oral health impact profile (OHIP-G14) were analysed. After 7 to 61 months, 15 of 336 maxillary implants and 11 of 402 mandibular implants had to be removed. In addition, four mandibular implants experienced fracture. The difference between the 4-year survival rates of 94.3% for the maxilla and 95.7% for the mandible was not statistically significant ($p = 0.581$). All original 144 overdentures remained functional. The prosthetic interventions were typically

limited to repairs of acrylic base fractures (about one in five patients), changes of plastic O-rings and relining procedures. The participants showed OHIP-G14 scores (median = 2) that were comparable with those of patients with overdentures retained by conventional implants. Mini-implant survival was similar to that of regular-diameter implants. Although some prosthetic aftercare was necessary, none of the overdentures had to be replaced. Prospective studies comparing conventional and mini-implants are warranted. © 2013 John Wiley & Sons A/S and The Gerodontology Society. Published by John Wiley & Sons Ltd

Title: Radiographic evaluation of the maxillary sinus prior to dental implant therapy: A comparison between two-dimensional and three-dimensional radiographic imaging.

Citation: Imaging science in dentistry, Sep 2015, vol. 45, no. 3, p. 169-174, 2233-7822

Author(s): Tadinada, Aditya, Fung, Karen, Thacker, Sejal, Mahdian, Mina, Jadhav, Aniket, Schincaglia, Gian Pietro

Abstract: This study was performed to evaluate the diagnostic efficacy of panoramic radiography and cone-beam computed tomography (CBCT) in detecting sinus pathology. This study was based on a retrospective evaluation of patients who had undergone both a panoramic radiograph and a CBCT exam. A total of 100 maxillary sinuses were evaluated. Four examiners with various levels of expertise evaluated the images using a five-point scoring system. Receiver operating characteristic (ROC) curve analysis was performed to evaluate the diagnostic efficacy of the two modalities. The image analysis was repeated twice, with at least two weeks between the evaluation sessions. Interobserver reliability was assessed using Cronbach's alpha, and intraobserver reliability was assessed using Cohen's kappa. Maxillary sinus pathology was detected in 72% of the patients. High interobserver and intraobserver reliability were observed for both imaging modalities and among the four examiners. Statistical analyses using ROC curves demonstrated that the CBCT images had a larger area under the curve (0.940) than the panoramic radiographs (0.579). Three-dimensional evaluation of the sinus with CBCT was significantly more reliable in detecting pathology than panoramic imaging.

Title: Bone Regeneration of Blood-derived Stem Cells within Dental Implants.

Citation: Journal of dental research, Sep 2015, vol. 94, no. 9, p. 1318-1325

Author(s): Zheng, R C, Park, Y K, Kim, S K, Cho, J, Heo, S J, Koak, J Y, Lee, S J, Park, J M, Lee, J H, Kim, J H

Abstract: Peripheral blood (PB) is known as a source of mesenchymal stem cells (MSCs), as is bone marrow (BM), and is acquired easily. However, it is difficult to have enough MSCs, and their osteogenic capacity with dental implantations is scarce. Therefore, we characterized peripheral blood mesenchymal stem cells (PBMSCs) cultured on a bone marrow-derived mesenchymal stem cell (BMMSC) natural extracellular matrix (ECM) and demonstrated the osteogenic capability in an experimental chamber implant surgery model in rabbits. We isolated PBMSCs from rabbits by culturing on a natural ECM-coated plate during primary culture. We characterized the PBMSCs using a fluorescence-activated cell scanner, cell proliferation assay, and multiple differentiation assay and compared them with BMMSCs. We also analyzed the osteogenic potential of PBMSCs mixed with

hydroxyapatite/tricalcium phosphate (HA/TCP) by transplanting them into immunocompromised mice. Then, the mixture was applied to the canals. After 3 and 6 wk, we analyzed new bone (NB) formation inside the chambers using histological and histomorphometric analyses. The PBMSCs had a similar rate of BrdU-positive cells to BMSCs, positively expressing CD90 but negative for CD14. The PBMSCs also showed osteogenic, adipogenic, and chondrogenic ability in vitro and osteogenic ability in vivo. Histological and histomorphometric results illustrated that the PBMSC and BMSC groups showed higher NB than the HA/TCP and defect groups in the upper and lower chambers at 6 wk and in the upper canal at 3 wk; however, there was no difference in NB among all groups in the lower canal at 3 wk. The PBMSCs have characteristics and bone regeneration ability similar to BMSCs both in vitro and in vivo. ECM was effective for obtaining PBMSCs. Therefore, PBMSCs are a promising source for bone regeneration for clinical use. © International & American Associations for Dental Research 2015.

Title: Peptide-functionalized zirconia and new zirconia/titanium biocermet for dental applications.

Citation: Journal of dentistry, Sep 2015, vol. 43, no. 9, p. 1162-1174 (September 2015)

Author(s): Fernandez-Garcia, Elisa, Chen, Xi, Gutierrez-Gonzalez, Carlos F, Fernandez, Adolfo, Lopez-Esteban, Sonia, Aparicio, Conrado

Abstract: Titanium materials have been functionalized with biomolecules as a modern strategy to incorporate bioactive motifs that will expand and improve their biomedical applications. Here, we have biofunctionalized biomaterials based on zirconia of much interest for dentistry: the widely used bioceramic 3Y-TZP and a newly developed 3Y-TZP/Ti biocermet. The biosurfaces were activated, silanized, and functionalized with coatings made of oligopeptides. Surface activation by plasma or alkaline-etching was optimized. The surfaces were coated by tethering a purposely-designed RGD-containing peptide. We selected this oligopeptide as a model peptide to validate the effectiveness of the biofunctionalization process. Successful treatments after each step of the process were assessed by surface physical and chemical characterization with water contact angles and XPS, respectively. Coatings' stability was evaluated after 2h sonication in water. Pre-osteoblasts adhesion on the functionalized surfaces was also studied. 10-min air-plasma treatment effectively activated all types of materials with no detrimental effects on the material structure and hardness. Nitrogen XPS-peak confirmed that RGD-peptides were chemically-attached on the silanized samples. This was further confirmed by visualizing the functionalized surfaces with fluorescence-labelled RGD-peptides before and after ultrasonication. Furthermore, RGD-functionalized surfaces significantly enhanced osteoblast adhesion on all types of substrates, which demonstrated their successful bioactivation. We successfully developed stable functional biocoatings on zirconia and biocermet made of oligopeptides. Surface bioactivation of zirconia-containing components for dental implant applications will enable their improved clinical performance by incorporating signalling oligopeptides to accelerate osseointegration, improving perimucosal sealing, and/or incorporating antimicrobial properties to prevent peri-implant infections. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Meta-analysis of Failure and Survival Rate of Implant-supported Single Crowns, Fixed Partial Denture, and Implant Tooth-supported Prostheses.

Citation: Journal of international oral health : JIOH, Sep 2015, vol. 7, no. 9, p. 11-17, 0976-7428 (September 2015)

Author(s): Muddugangadhar, B C, Amarnath, G S, Sonika, Radhika, Chheda, Pratik S, Garg, Ashu

Abstract: Dental implants have become the most viable option for rehabilitation. Although, many studies report the success of these reconstructions using implants, a cumulative data about the various studies and the failure rate still remain unaddressed. Therefore, the purpose of this systematic review was to analyze these data and to derive the cumulative survival rate of different implant-supported prosthesis. Manual searches followed by a MEDLINE search were conducted to select prospective and retrospective cohort studies on single crowns (SCs), fixed partial denture (FPD), and tooth implant connected prostheses with a mean follow-up time of minimum of 5 years. Random-effects Poisson's regression models have been used to obtain summary estimates for implant failure and survival rates. Data were extracted from the final selected 63 studies. In a meta-analysis of these studies, the survival rate of SCs supported by implants (95% CI) was 96.363%, for FPDs was 94.525% and implant tooth-supported prostheses was 91.27% after 5 years of function. The cumulative failure rate per 100 FPD years of the SCs, FPDs, and implant tooth-supported prostheses were 0.684, 0.881, and 1.514, respectively. The study concludes high survival rates for implant-supported SCs followed by implant-supported FPDs can be expected over an observation period of 5 years. However, tooth implant-supported prostheses can be provided if there are certain limitations prohibiting the completely implant-supported prostheses.

Title: Telescopic Partial Dentures-Concealed Technology.

Citation: Journal of international oral health : JIOH, Sep 2015, vol. 7, no. 9, p. 143-147, 0976-7428

Author(s): Bhagat, Tushar Vitthalrao, Walke, Ashwini Nareshchandra

Abstract: The ideal goal of good dentist is to restore the missing part of oral structure, phonetics, his look and the most important is restored the normal health of the patient, which is hampered due to less or insufficient intake of food. Removable partial denture (RPD) treatment option is considered as a notion, which precludes the inevitability of "floating plastic" in edentulous mouth, that many times fail to fulfill the above essential of the patients. In modern dentistry, though the dental implants or fixed partial denture is the better options, but they have certain limitations. However, overdentures and particularly telescopic denture is the overlooked technology in dentistry that would be a boon for such needy patients. Telescopic denture is especially indicated in the distal edentulous area with minimum two teeth bilaterally present with a good amount of periodontal support. This treatment modality is sort of preventive prosthodontics remedy, which in a conservative manner preserve the remaining teeth and helps in conservation of alveolar bone ultimately. There are two tenets related to this option, one is constant conservation edentulous ridge around the retained tooth and the most important is the endless existence of periodontal sensory action that directs and monitor gnathodynamic task. In this option the primary

coping or inner coping are cemented on the prepared tooth, and a similar removable outer or inner telescopic crown placed tightly by using a mechanism of tenso-friction, this is firmly attached to a removable RPD in place without moving or rocking of the prosthesis, which is the common complaint of almost all patients of RPD. Copings are also protecting the abutment from tooth decay and also offers stabilization and maintaining of the outer crown. The outer crown engages the inner coping and gives as an anchor for the remainder of the dentition. This work is the review of telescopic prosthesis which is well supported by the case discussion, and designates the utilization of favorable retained tooth/teeth as abutment that drastically minimized alveolar bone resorption beneath the prosthesis and give the maximum tactile sensation of natural teeth to the patient, which is not possible with other type of RPD.

Title: Glycosaminoglycan derivatives: promising candidates for the design of functional biomaterials.

Citation: Journal of materials science. Materials in medicine, Sep 2015, vol. 26, no. 9, p. 232.

Author(s): Scharnweber, Dieter, Hübner, Linda, Rother, Sandra, Hempel, Ute, Anderegg, Ulf, Samsonov, Sergey A, Pisabarro, M Teresa, Hofbauer, Lorenz, Schnabelrauch, Matthias, Franz, Sandra, Simon, Jan, Hintze, Vera

Abstract: Numerous biological processes (tissue formation, remodelling and healing) are strongly influenced by the cellular microenvironment. Glycosaminoglycans (GAGs) are important components of the native extracellular matrix (ECM) able to interact with biological mediator proteins. They can be chemically functionalized and thereby modified in their interaction profiles. Thus, they are promising candidates for functional biomaterials to control healing processes in particular in health-compromised patients. Biophysical studies show that the interaction profiles between mediator proteins and GAGs are strongly influenced by (i) sulphation degree, (ii) sulphation pattern, and (iii) composition and structure of the carbohydrate backbone. Hyaluronan derivatives demonstrate a higher binding strength in their interaction with biological mediators than chondroitin sulphate for a comparable sulphation degree. Furthermore sulphated GAG derivatives alter the interaction profile of mediator proteins with their cell receptors or solute native interaction partners. These results are in line with biological effects on cells relevant for wound healing processes. This is valid for solute GAGs as well as those incorporated in collagen-based artificial ECM (aECMs). Prominent effects are (i) anti-inflammatory, immunomodulatory properties towards macrophages/dendritic cells, (ii) enhanced osteogenic differentiation of human mesenchymal stromal cells, (iii) altered differentiation of fibroblasts to myofibroblasts, (iv) reduced osteoclast activity and (v) improved osseointegration of dental implants in minipigs. The findings of our consortium Transregio 67 contribute to an improved understanding of structure-function relationships of GAG derivatives in their interaction with mediator proteins and cells. This will enable the design of bioinspired, functional biomaterials to selectively control and promote bone and skin regeneration.

Title: Hybrid Implant: A Novel Implant System.

Citation: Journal of maxillofacial and oral surgery, Sep 2015, vol. 14, no. 3, p. 720-727, 0972-8279

Author(s): Mani, Varghese, Sivaprasad, K K, George, Arun, Sankar Vinod, V, Mathew, Miriam, Paul, Susan

Abstract: Replacement of missing tooth has evolved from removable dentures to fixed dentures and recently to dental implants. The need of sufficient bone around the endosseous implant is critical for the success of the implant. The present study was aimed to evaluate the efficacy of a novel implant (HYBRID IMPLANT-submitted for patency) for replacement of the missing teeth. 1. Research design A prospective research design with a follow up after 1st week ,2nd week ,3rd week,1st month ,3rd month,6th month and 1st year postoperatively. 2. Sampling method Population: All patients who reported for replacement of missing teeth. Inclusion criteria 1. All patients above the age group of 16years 2. Patients who need replacement of single or multiple teeth in the anterior or posterior region of the maxilla and mandible. Exclusion criteria 1. Medically compromised patients. 2. Patients having craniofacial syndromes. 3. Sample size 5 patients were selected taking into consideration the inclusion and exclusion Criteria. Results PAIN All the patients were non symptomatic during the 1st month to 1st year postoperative periods. We experienced mobility during the 1st and 2nd postoperative periods where the implants were inserted in the mandibular molar region. Radiographic assessment showed no bone loss during the postoperative periods. The novel implant (hybrid implant) showed good stability and minimum patient discomfort during one year postoperative period evaluation. The implant system leads to new prospect in the field of prosthetic rehabilitation.

Title: Dental implants inserted in male versus female patients: a systematic review and meta-analysis.

Citation: Journal of oral rehabilitation, Sep 2015, vol. 42, no. 9, p. 709-722

Author(s): Chrcanovic, B R, Albrektsson, T, Wennerberg, A

Abstract: The aim of this meta-analysis was to test the null hypothesis of no difference in the failure rates, marginal bone loss (MBL) and post-operative infection for implants inserted in male or female patients, against the alternative hypothesis of a difference. An electronic search without time or language restrictions was undertaken in December 2014. Eligibility criteria included clinical human studies, either randomized or not. Ninety-one publications were included, with a total of 27 203 implants inserted in men (1185 failures), and 25 154 implants inserted in women (1039 failures). The results suggest that the insertion of dental implants in male patients statistically affected the implant failure rates (RR 1.21, 95% CI 1.07-1.37, P = 0.002). Due to the limited number of studies reporting results on MBL, it is difficult to estimate the real effect of the insertion of implants in different sexes on the marginal bone level. Due to lack of satisfactory information, meta-analysis for the outcome 'post-operative infection' was not performed. The results have to be interpreted with caution due to the presence of several confounding factors in the included studies. © 2015 John Wiley & Sons Ltd.

Title: Micro-arc oxidation as a tool to develop multifunctional calcium-rich surfaces for dental implant applications.

Citation: Materials science & engineering. C, Materials for biological applications, Sep 2015, vol. 54, p. 196-206 (September 2015)

Author(s): Ribeiro, A R, Oliveira, F, Boldrini, L C, Leite, P E, Falagan-Lotsch, P, Linhares, A B R, Zambuzzi, W F, Fragneaud, B, Campos, A P C, Gouvêa, C P, Archanjo, B S, Achete, C A, Marcantonio, E, Rocha, L A, Granjeiro, J M

Abstract: Titanium (Ti) is commonly used in dental implant applications. Surface modification strategies are being followed in last years in order to build Ti oxide-based surfaces that can fulfill, simultaneously, the following requirements: induced cell attachment and adhesion, while providing a superior corrosion and tribocorrosion performance. In this work micro-arc oxidation (MAO) was used as a tool for the growth of a nanostructured bioactive titanium oxide layer aimed to enhance cell attachment and adhesion for dental implant applications. Characterization of the surfaces was performed, in terms of morphology, topography, chemical composition and crystalline structure. Primary human osteoblast adhesion on the developed surfaces was investigated in detail by electronic and atomic force microscopy as well as immunocytochemistry. Also an investigation on the early cytokine production was performed. Results show that a relatively thick hybrid and graded oxide layer was produced on the Ti surface, being constituted by a mixture of anatase, rutile and amorphous phases where calcium (Ca) and phosphorous (P) were incorporated. An outermost nanometric-thick amorphous oxide layer rich in Ca was present in the film. This amorphous layer, rich in Ca, improved fibroblast viability and metabolic activity as well as osteoblast adhesion. High-resolution techniques allowed to understand that osteoblasts adhered less in the crystalline-rich regions while they preferentially adhere and spread over in the Ca-rich amorphous oxide layer. Also, these surfaces induce higher amounts of IFN- γ cytokine secretion, which is known to regulate inflammatory responses, bone microarchitecture as well as cytoskeleton reorganization and cellular spreading. These surfaces are promising in the context of dental implants, since they might lead to faster osseointegration. Copyright © 2015 Elsevier B.V. All rights reserved.

Title: Potential use of a polycarbonate-urethane matrix reinforced with polyethylene fibers for shock-absorbing dental implants.

Citation: Medical hypotheses, Sep 2015, vol. 85, no. 3, p. 241-244 (September 2015)

Author(s): Sheikhhassani, Ramtin, Anvari, Pasha, Taei, Simin, Sheikhhassani, Yasmin

Abstract: The absence of a shock-absorbing mechanism in commercial dental implants is a likely factor in the resulting bone loss and possible implant failure. The aim of the current study is to generate a shock-absorbing dental implant that resembles the periodontal ligament, which naturally absorbs occlusal overloading forces. To achieve this, a polycarbonate-urethane composite reinforced with polyethylene fibers will be constructed. Tests based on finite element analysis and mechanical testing are proposed to further examine this novel implant type. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Effects of Ti surface treatments with silane and arginylglycylaspartic acid peptide on bone cell progenitors.

Citation: Odontology / the Society of the Nippon Dental University, Sep 2015, vol. 103, no. 3, p. 322-332 (September 2015)

Author(s): Chen, Wen-Cheng, Lo, Yang, Chen, Hong-Sen

Abstract: Achieving optimal aesthetic appearance is a major objective in dental implant design, and the interaction between the materials and the bone cell progenitors is an important factor in the attainment of this objective. In this study, a novel concept was evaluated by varying the surface modifications on titanium (Ti). Different levels of roughness can be attained by machine grinding (M), sand blasting, and acid etching (SLA) of the samples. The behavior of bone cell progenitors (D1) on the surfaces of Ti disks with different surface modifications was investigated. The surfaces of M or SLA disks were silanized (MS or SLAS group) through treatment with silane/Gly-Arg-Gly-Asp-Ser (GRGDS) peptide (MSP or SLASP group) and anchored particles of tetracalcium phosphate (TTCP) on the specimen surfaces (SLA-TTCP group). Physicochemical analysis was performed by metallographic microscopy, scanning electron microscopy, and contact angle analysis. The proliferation and the quantitative alkaline phosphatase (ALP) production of D1 cells on the surface of different sample groups were determined. The SLASP group had a significantly larger D1 cell proliferation than the other groups after 4 and 7 d of incubation ($p < 0.05$). ALP expression was a very early marker of differentiation, and was the first indication of the increasing number of cells at 7 d of culture. Among the groups in the M substrate series (i.e., M, MS, and MSP) and in the SLA series (i.e., SLA, SLAS, and SLASP), the MSP and SLASP specimens exhibited superior differentiation abilities on respective cultures until day 7 and day 10. A high number of hydrophilic surfaces dominated cell proliferation in the early stage of cell attachment. However, factors affecting the pore structure and the surface morphology can improve cell proliferation and differentiation. According to analyses of proliferation and ALP expression of bone cell progenitors D1, the original SLA implant surface can be improved with surface treatment methods, such as silanization and treatment with graft GRGDS pentapeptide. These methods can be potential candidates for the promotion of bone growth.

Title: Influence of a micro-thread at cervical position and a cylindrical intermediate zone on the mechanical behaviour of dental implants: A three-dimensional finite element analysis.

Citation: Proceedings of the Institution of Mechanical Engineers. Part H, Journal of engineering in medicine, Sep 2015, vol. 229, no. 9, p. 670-680 (September 2015)

Author(s): Garitaonandia, Ugutz, Alcaraz, José Luis

Abstract: The purpose of this work is to analyse the influence on the biomechanical behaviour of dental implants of a micro-thread at their cervical part as well as of a cylindrical geometry at an intermediate zone. Stresses and strains in the elements involved, that is, bone, implant, screw and abutment, have to be considered in detail. Three different three-dimensional finite element models are generated to analyse the behaviour of the various components under the so-called tightening and operating conditions. For the modelling, material specifications for the cancellous bone and cortical bone, on one hand, and titanium properties for the implant, screw and abutment, on the other, are implemented. The tightening condition was fixed according to the stresses in the screw. The operating conditions were simulated by applying a force of 150 N, taking into account ISO

14801:2007 standard. The maximum stress under tightening conditions occurs always in the screw, while under operating conditions it is produced at the screw or the abutment, although considerable stress values are also present in the implant. In all the models, the maximum stress at the junction between the implant and the bone occurs within the cortical bone. Implants provided with micro-thread at the cervical position are advantageous over homogeneously threaded implants since lower stresses in both the implant and the adjacent bone are produced. A cylindrical intermediate portion on the implant surface does not present special advantage over the implants with continuous external thread under tightening and operating conditions. © IMechE 2015.

Title: Peri-implant mucosal recession: Clinical significance and therapeutic opportunities.

Citation: Quintessence international (Berlin, Germany : 1985), Sep 2015, vol. 46, no. 8, p. 671-676 (September 2015)

Author(s): Fickl, Stefan

Abstract: Peri-implant mucosal recessions can be a major esthetic problem in the anterior zone, whereas in the functional zone the coverage of exposed implants is not of primary significance, as methods to clean these structures are more important. In these situations free gingival grafts are often used to deepen the vestibule and increase the amount of attached keratinized mucosa. Complete coverage of mucosal recessions around dental implants is still a challenging procedure, but it seems that recessions up to 2 mm can be successfully grafted with subepithelial connective tissue grafts.

Title: [Implant-borne prosthetic rehabilitation in patients with cleft lip and palate: A retrospective study on 43 patients].

Citation: Revue de stomatologie, de chirurgie maxillo-faciale et de chirurgie orale, Sep 2015, vol. 116, no. 4, p. 229-234

Author(s): Borgnat, F, Martin, P, Paulus, C

Abstract: Implant-borne rehabilitation in cleft lip and palate patient are aimed to allow for good orofacial functions, stable occlusion, and adequate support for the naso-labial region. The goal of our study was to evaluate the functional and esthetic results of the implant-born dental rehabilitation of the cleft lip and palate patients in our department. Our retrospective study concerned patients operated between 1995 and 2010 in our department. All included patients suffered from a cleft alveolus and lip, with or without cleft palate. Dental implants were placed in the bone-grafted alveolus and the end of growth and at distance from the bone graft procedure. Criteria of implant survival and implant-borne rehabilitation success were defined. **RÉSULTS:** A total of 78 implants were placed in 43 patients between 1995 and 2010. Two implants were lost (implant survival rate: 97.4%). Despite this loss, all the patients could be rehabilitated with good functional and esthetic results. Implant-borne rehabilitation is a reliable solution for prosthetic rehabilitation in patients with cleft lip and palate. This solution allows for avoiding removable prosthesis and dental mutilation. Copyright © 2015 Elsevier Masson SAS. All rights reserved.

Title: Branch of the canalis sinuosus: a rare anatomical variation-a case report.

Citation: Surgical and radiologic anatomy : SRA, Sep 2015, vol. 37, no. 7, p. 879-881

Author(s): Torres, Marianna Guanaes Gomes, de Faro Valverde, Ludmila, Vidal, Manuela Torres Andion, Crusoé-Rebello, Iêda Margarida

Abstract: The canalis sinuosus (CS) is a neurovascular canal, a branch of the infraorbital canal through which the anterior superior alveolar nerve passes. There are no studies or case reports of anatomical variations related to this canal. A rare case of anatomical variation in the CS is reported that was detected by cone beam computed tomography done in a 47-year-old female as a pre-operative workup before dental implants. In this case, in the region slightly medial to tooth 23, a wide accessory branch from the CS was observed, running an intraosseous course in the inferior and posterior direction up to a foramen located in the hard palate, slightly medial in relation to tooth 23. The location of this branching, as well as its neurovascular component, is important for dental implant planning because of its proximity to the upper teeth. Identification of neurovascular bundles is fundamental to avoid complications for the patient.

Title: Insertion torque of dental implants after microvascular fibular grafting.

Citation: The British journal of oral & maxillofacial surgery, Sep 2015, vol. 53, no. 7, p. 647-649

Author(s): Maluf, P S Z, Ching, A W, Angeletti, P, Bretos, J L G, Ferreira, L M **Abstract:** We have measured the necessary torque to the initial stabilisation of dental implants in revascularised bony transplants for reconstruction of the maxilla and mandible in edentulous patients. We installed 28 dental implants in 7 patients who had had reconstructions of the maxilla and mandible by microsurgical flaps. At the time of the installation of the implants, we measured the torque for final stabilisation. The minimum torque was 20 Newton centimetres (Ncm) in 11 implants, and the maximum 45Ncm in 8. The measure of torque was not influenced by sex, age group, or time between transplant and implant. Copyright © 2015. Published by Elsevier Ltd.

Title: The Influence of Torque Tightening on the Position Stability of the Abutment in Conical Implant-Abutment Connections.

Citation: The International journal of prosthodontics, Sep 2015, vol. 28, no. 5, p. 538-541, 0893-2174 (2015 Sep-Oct)

Author(s): Hogg, Wiebke Semper, Zulauf, Kris, Mehrhof, Jürgen, Nelson, Katja

Abstract: The influence of repeated system-specific torque tightening on the position stability of the abutment after de- and reassembly of the implant components was evaluated in six dental implant systems with a conical implant-abutment connection. An established experimental setup was used in this study. Rotation, vertical displacement, and canting moments of the abutment were observed; they depended on the implant system ($P = .001$, $P < .001$, $P = .006$, respectively). Repeated torque tightening of the abutment screw does not eliminate changes in position of the abutment.

Title: Evaluation of Dental Implants Placed in Preserved and Nonpreserved Postextraction Ridges: A 12-Month Postloading Study.

Citation: The International journal of periodontics & restorative dentistry, Sep 2015, vol. 35, no. 5, p. 677-685 (2015 Sep-Oct)

Author(s): Cardaropoli, Daniele, Tamagnone, Lorenzo, Roffredo, Alessandro, Gaveglio, Lorena

Abstract: Forty-eight single dental implants were inserted 4 months after tooth extraction following ridge preservation (RP; n = 24) or spontaneous healing (EXT; n = 24). During surgery, 1 (7%) of 24 implants in the RP group and 14 (58%) of 24 in the EXT group required additional bone grafting, and the implant stability quotient value was similar in the two groups. The survival rate of the implants in both groups was 100% at the 1-year follow-up. The success rate was 95.83% in the RP group and 91.66% in the EXT group. No statistically significant differences in the marginal bone level were detected between the two groups. Similar outcomes of implants inserted in preserved or spontaneously healed ridges can be anticipated, but the use of an RP procedure reduces the need for further bone augmentation.

Title: Comparison of the Primary Stability of Two Implant Designs in Two Different Bone Types: An In Vitro Study.

Citation: The International journal of oral & maxillofacial implants, Sep 2015, vol. 30, no. 5, p. 1036-1040 (2015 Sep-Oct)

Author(s): Bilhan, Hakan, Bilmenoglu, Caglar, Urgan, Aliye Ceren, Ates, Gokcen, Bural, Canan, Cilingir, Altug, Geckili, Onur

Abstract: Achievement of primary stability upon surgical placement of dental implants is a key factor for successful osseointegration and depends mainly on implant-related factors. The aim of this study was to compare and assess the primary stability of implants with active and regular threads in type 2 as well as type 4 bone. Fresh cow vertebrae and a pelvis were used as models of type 4 bone and type 2 bone, respectively. Implants with two different designs-regular-threaded and active-threaded-both 4.3 mm wide and 13 mm long, were placed in both types of bone (n = 80). Stability measurements were completed by four prosthodontists using two different Periotest devices and resonance frequency analysis. Statistical analyses were performed with the Mann-Whitney U test. No statistically significant differences were found between the implant types in either type of bone in the stability measured with different methods. For both implant types, the mean resonance frequency values in type 2 bone were statistically significantly higher than in type 4 bone, whereas the mean Periotest values in type 2 bone were statistically significantly lower than in type 4 bone. Within the limitations of this in vitro study in bone types 2 and 4, the active-threaded implant, which was invented to increase primary stability, did not show higher primary stability compared to a regular-threaded implant.

Title: Mandibular Reconstruction Based on the Concept of Double Arc Reconstruction.

Citation: The Journal of craniofacial surgery, Sep 2015, vol. 26, no. 6, p. e539.

Author(s): Sarukawa, Shunji, Noguchi, Tadahide, Kamochi, Hideaki, Sunaga, Ataru, Uda, Hirokazu, Nishino, Hiroshi, Sugawara, Yasushi

Abstract: The natural mandible has 2 arcs, the marginal arc and the occlusal arc. The marginal arc is situated along the lower margin of the mandible and affects the contour of the lower third of the face. The occlusal arc is situated along the dental arc and affects the stability of prosthodontics. The gap between these 2 arcs widens in the molar area. Our developed concept of "double arc reconstruction" involves making these 2 arcs for the reconstructed mandible. For the double-barrel fibula reconstruction, 2 bone segments are used to make both arcs. For reconstructions using the iliac crest, the double arc is made by inclination of the top of the bone graft toward the lingual side. Ten patients underwent double arc reconstruction: 2 underwent reconstruction with the double-barrel fibula, and 8 underwent reconstruction with the iliac crest. Four patients had a removable denture prosthesis, 1 had an osseointegrated dental implant, and 5 did not require further prosthodontic treatment. The shape of the reconstructed mandible after double arc reconstruction resembles the native mandible, and masticatory function is good with the use of a dental implant or removable denture prosthesis, or even without prosthodontics.

Title: Dental Implant Placement in Patients With Osteoporosis.

Citation: The Journal of craniofacial surgery, Sep 2015, vol. 26, no. 6, p. e558. (September

Author(s): Barbu, Horia M, Comaneanu, Raluca M, Andreescu, Claudia F, Mijiritsky, Eitan, Nita, Tiberiu, Lorean, Adi

Title: Maxillary and mandibular immediately loaded implant-supported interim complete fixed dental prostheses on immediately placed dental implants with a digital approach: A clinical report.

Citation: The Journal of prosthetic dentistry, Sep 2015, vol. 114, no. 3, p. 315-322

Author(s): Lewis, Ryan C, Harris, Bryan T, Sarno, Robert, Morton, Dean, Llop, Daniel R, Lin, Wei-Shao

Abstract: This clinical report describes the treatment of maxillary and mandibular immediate implant placement and immediately loaded implant-supported interim complete fixed dental prostheses with a contemporary digital approach. The virtual diagnostic tooth arrangement eliminated the need for a customized radiographic template, and the diagnostic data collection required for computer-guided surgery (digital diagnostic impressions, digital photographs, and a cone beam-computed tomography [CBCT] scan) was completed in a single visit with improved workflow efficiency. Computer-aided design and computer-aided manufacturing (CAD/CAM)-fabricated surgical templates and interim prosthesis templates were made in a dental laboratory to facilitate computer-guided surgery and the immediate loading process. Copyright © 2015 Editorial Council for the Journal of Prosthetic Dentistry. Published by Elsevier Inc. All rights reserved.

Title: Crestal bone loss and periimplant inflammatory parameters around zirconia implants: A systematic review.

Citation: The Journal of prosthetic dentistry, Sep 2015, vol. 114, no. 3, p. 351-357

Author(s): Vohra, Fahim, Al-Kheraif, Abdul Aziz, Ab Ghani, Siti Mariam, Abu Hassan, Mohamed Ibrahim, Alnassar, Talal, Javed, Fawad

Abstract: Zirconia implants have been used for oral rehabilitation; however, evidence of their ability to maintain crestal bone and periimplant soft tissue health is not clear. The purpose of this systematic review was to evaluate crestal bone loss (CBL) around zirconia dental implants and clinical periimplant inflammatory parameters. The focus question addressed was, "Do zirconia implants maintain crestal bone levels and periimplant soft tissue health?" Databases were searched for articles from 1977 through September 2014 with different combinations of the following MeSH terms: "dental implants," "zirconium," "alveolar bone loss," "periodontal attachment loss," "periodontal pocket," "periodontal index." Letters to the editor, case reports, commentaries, review articles, and articles published in languages other than English were excluded. Thirteen clinical studies were included. In 8 of the studies, the CBL around zirconia implants was comparable between baseline and follow-up. In the other 5 studies, the CBL around zirconia implants was significantly higher at follow-up. Among the studies that used titanium implants as controls, 2 studies showed significantly higher CBL around zirconia implants, and in 1 study, the CBL around zirconia and titanium implants was comparable. The reported implant survival rates for zirconia implants ranged between 67.6% and 100%. Eleven studies selectively reported the periimplant inflammatory parameters. Because of the variations in study design and methodology, it was difficult to reach a consensus regarding the efficacy of zirconia implants in maintaining crestal bone levels and periimplant soft tissue health. Copyright © 2015 Editorial Council for the Journal of Prosthetic Dentistry. Published by Elsevier Inc. All rights reserved.

Title: Accuracy of mechanical torque-limiting devices for dental implants after clinical service.

Citation: The Journal of prosthetic dentistry, Sep 2015, vol. 114, no. 3, p. 378-382

Author(s): Yilmaz, Burak, L'Homme-Langlois, Emilie, Beck, Frank M, McGlumphy, Edwin

Abstract: Limited information is available regarding the accuracy of mechanical torque-limiting devices (MTLDs) after their clinical use. The purpose of this study was to determine the accuracy of 2 types of MTLDs (friction-style and spring-style) after clinical use. Twenty-seven MTLDs in clinical service at The Ohio State University College of Dentistry were collected. Thirteen were friction-style and 14 were spring-style. A total of 6 different dental implant companies were represented (Astra Tech, Zimmer Dental, Biomet 3i, Straumann, Nobel Biocare, and Thommen Medical). All MTLDs had been in use for at least 6 months without being recalibrated, and all were tested to determine their accuracy in delivering target torque values. Statistical analysis used nonparametric tests to determine the accuracy of the MTLDs in delivering target torque values, and Bonferroni post hoc tests were used to assess pairwise comparisons. After clinical service, spring-style MTLDs were significantly more accurate than friction-style MTLDs ($P < .05$). Within the limitations of this study, it was concluded that after clinical service, spring-style MTLDs were more accurate than friction-style MTLDs. All MTLDs delivered torque values within 10% of the target torque value.

Title: Accuracy of computer-guided surgery: A comparison of operator experience.

Citation: The Journal of prosthetic dentistry, Sep 2015, vol. 114, no. 3, p. 407-413

Author(s): Rungcharassaeng, Kitichai, Caruso, Joseph M, Kan, Joseph Y K, Schutyser, Filip, Boumans, Tiny

Abstract: Even though high-precision technologies have been used in computer-guided implant surgery, studies have shown that linear and angular deviations between the planned and placed implants can be expected. The purpose of this study was to evaluate the effect of operator experience on the accuracy of implant placement with a computer-guided surgery protocol. Ten surgically experienced and 10 surgically inexperienced operators participated in this study. Each operator placed 1 dental implant (Replace Select) on the partially edentulous mandibular model that had been planned with software by following a computer-guided surgery (NobelGuide) protocol. Three-dimensional information of the planned and placed implants were then superimposed. The horizontal and vertical linear deviations at both the apex and platform levels and the angular deviation were measured and compared between the experienced and inexperienced groups with the independent t test with Bonferroni adjustment ($\alpha=.01$). The magnitude and direction of the horizontal deviations were also measured and recorded. No significant differences were found in the angular and linear deviations between the 2 groups ($P>.01$). Although not statistically significant ($P>.01$), the amount of vertical deviation in the coronal direction of the implants placed by the inexperienced operators was about twice that placed by the experienced operators. Overall, buccal apical deviations were most frequent and of the highest magnitude. When a computer-guided protocol was used, the accuracy of the vertical dimension (depth of implant placement) was most influenced by the operator's level of experience.



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Evidence Based Dentistry;

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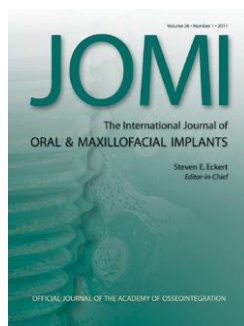
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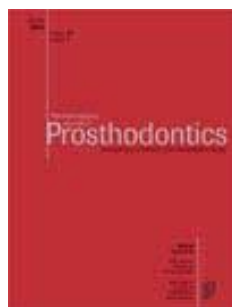
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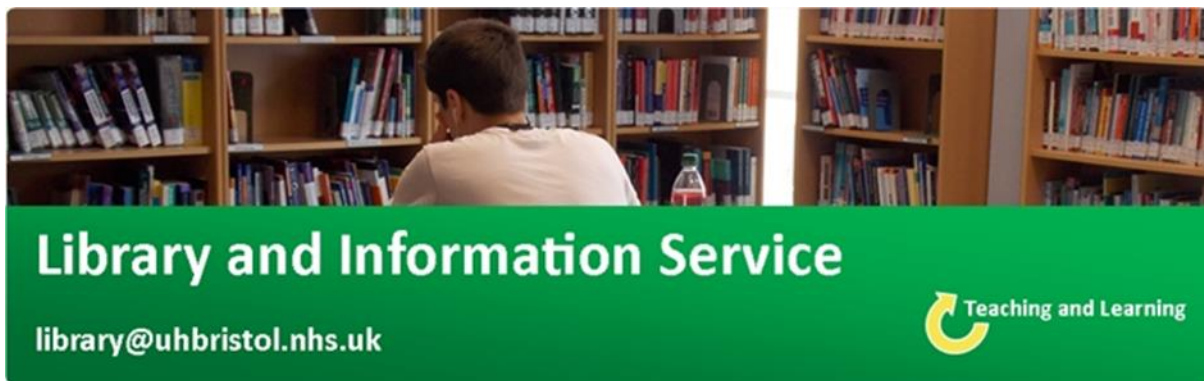
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