

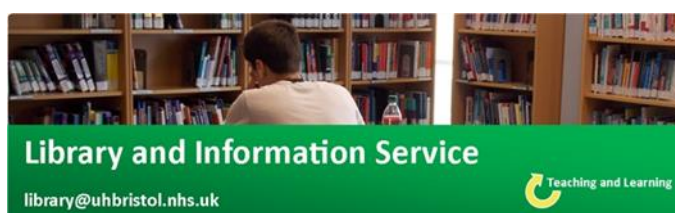
Restorative Dentistry

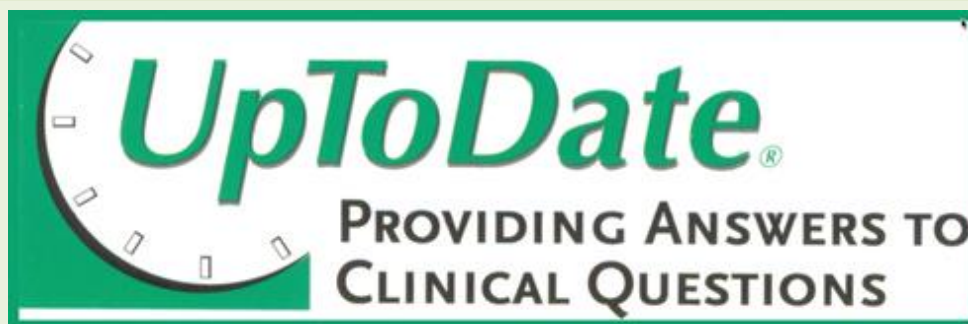
Current Awareness Newsletter

April/May 2016



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New from Cochrane library

[Infraorbital nerve block for postoperative pain following cleft lip repair in children](#)

Authors: [Gustavo Feriani](#),[Eric Hatanaka](#),[Maria R Torloni](#),[Edina MK da Silva](#)

First published: 13 April 2016

Assessed as up-to-date: 17 June 2015

Editorial Group: [Cochrane Pain, Palliative and Supportive Care Group](#)

Abstract

Background: Postoperative pain is a barrier to the quality of paediatric care, the proper management of which is a challenge. Acute postoperative pain often leads to adverse functional and organic consequences that may compromise surgical outcome. Cleft lip is one of the most common craniofacial birth defects and requires surgical correction early in life. As expected after a surgical intervention in such a sensitive and delicate area, the immediate postoperative period of cleft lip repair may be associated with moderate to severe pain. Infraorbital nerve block associated with general anaesthesia has been used to reduce postoperative pain after cleft lip repair.

Objectives: To assess the effects of infraorbital nerve block for postoperative pain following cleft lip repair in children.

New from Up-to-Date

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

Authors: [Rebecca S Wilder](#), BSDH, MS; [Antonio J Moretti](#), DDS, MS

Literature review current through: Apr 2016. | **This topic last updated:** Apr 25, 2016.

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 ([figure 1](#)). 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 [[1,2](#)].

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.

[Etiology, prenatal diagnosis, obstetrical management, and recurrence of orofacial clefts](#)

Author; Louise Wilkins-Haug, MD, PhD

Literature review current through: Apr 2016. | **This topic last updated:** Apr 20, 2016.

INTRODUCTION — The most common craniofacial malformation identified in the newborn is the orofacial cleft, which consists of cleft lip with or without cleft palate (CL/P) or isolated cleft palate (CP) [1]. They can occur as part of a syndrome involving multiple other organs or as an isolated malformation. Most studies suggest that about 70 percent of cases of CL/P and 50 percent of CP are nonsyndromic [2]. Although both congenital anomalies result in malformation of the midface, CL/P and CP differ with respect to embryology, etiology, candidate genes, associated abnormalities, and recurrence risk.

[Risks of therapy with bone antiresorptive agents in patients with advanced malignancy](#)

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

Literature review current through: Apr 2016. | **This topic last updated:** Aug 19, 2015.

INTRODUCTION — Parenteral administration of osteoclast inhibitors (bisphosphonates and [denosumab](#)) reduces the frequency of skeletal-related events among patients with multiple myeloma and in those with bone metastases from a variety of solid tumors, including breast, lung, and prostate cancer. Prolonged therapy with these antiresorptive agents in patients with advanced malignancy is generally well tolerated, but some side effects are potentially serious and require periodic monitoring [1-3].

This topic will provide an overview of the risks of therapy with antiresorptive agents in patients with skeletal involvement from advanced malignancy. The therapeutic use of bisphosphonates and [denosumab](#) in malignant disease, and their use and side effects in other conditions, such as osteoporosis and cancer treatment-related bone loss, is discussed separately, as is a more thorough discussion of medication-related osteonecrosis of the jaw (MRONJ).

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

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

New from Nice

5.1.3 Tetracyclines

Source: [British National Formulary - BNF](#) - 19 April 2016

Oral infections

In adults, tetracyclines can be effective against oral anaerobes but the development of resistance (especially by oral streptococci) has reduced their usefulness for the treatment of acute oral infections; they may still have a role in the treatment of destructive (refractory) forms of periodontal disease. Doxycycline has a longer duration of action than tetracycline or oxytetracycline and need only be given once daily; it is reported to be more active against anaerobes than some other tetracyclines.

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New from the Dental Elf

Salivary biomarkers for diagnosing periodontal disease

Posted by: **Derek Richards** May 6; 2016

Diagnosis of periodontal disease usually consists of measuring clinical parameters such as pocket probing depth (PPD), clinical attachment levels (CALs), bleeding on probing, and radiography to assess alveolar bone level. Mediators of tissue destruction can be found in the saliva of patients with periodontal disease and the potential to use these biomarkers as a non-invasive of identifying patients with disease and monitoring the progress of treatment has been proposed.

The aim of this review was to evaluate the diagnostic value of salivary biomarkers in periodontal disease, in order to determine which of the numerous biomarkers reported in literature have an excellent or acceptable diagnostic test accuracy (DTA), and to provide insights for future studies in this emerging field.

- See more at: <http://www.nationalelfservice.net/dentistry/periodontal-disease/salivary-biomarkers-for-diagnosing-periodontal-disease/#sthash.g8zxCDY3.dpuf>

Ferrule effect improved outcomes in endodontically treated teeth?

Posted by: **Derek Richards** Apr 27 2016

The ferrule effect is considered an important factor influencing the clinical outcome of endodontically treated teeth as the remaining dental structure is often fragile as a result of root canal treatment.

The aim of this review was to assess laboratory and clinical studies to evaluate the effect of ferrule in restored endodontically treated teeth.

Methods

Searches were conducted in Medline and Scopus databases with no limits on publication date on language. Clinical and in vitro studies that evaluated the effect of a ferrule in restored endodontic teeth were considered. Study selection was carried out independently by two reviewers, I reviewer extracted data with checking by a second reviewer. Risk of bias was assessed.

For laboratory studies, a meta-analysis was performed for the comparison of the fracture resistance of teeth with and without ferrule, and 3 subgroup analyses were conducted for ferrule height, post type, and type of tooth. For clinical studies, the Kaplan-Meier method was used to determine the survival of restorations, with log-rank test used to identify differences between groups

- See more at: <http://www.nationalelfservice.net/dentistry/restorative-dentistry/ferrule-effect-improved-outcomes-in-endodontically-treated-teeth/#sthash.UNMC6r6S.dpuf>

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: Detection of peri-implant bone defects with different radiographic techniques - a human cadaver study.

Citation: Clinical oral implants research, May 2016, vol. 27, no. 5, p. 529-534

Author(s): Kühl, Sebastian, Zürcher, Silvia, Zitzmann, Nicola U, Filippi, Andreas

Abstract: Two- and three-dimensional radiographic techniques are available to determine peri-implantitis-related bone loss around dental implants. To compare the performance of detecting different peri-implant bone defects in intraoral radiography (IR), panoramic radiography (PR), Cone Beam Computer Tomography (CBCT) and Computer Tomography (CT). Six implants were inserted under ideal conditions into the lower jaw of an edentulous human cadaver. IR, PR, CBCT and CT were performed. Two-wall, three-wall and four-wall defects with 1 mm depth were artificially created around two of the implants (one anterior and one posterior), and radiographies were repeated. The identical set-up was used for 3-mm-deep bone defects. All images were presented to seven observers. Sensitivity (SN) and specificity (SP) were determined for each modality, defect type and depths, and likelihood ratios were calculated. The highest sensitivity was found with IR and CBCT for 1 mm (0.67; 0.68) and 3-mm defects (0.81; 0.79). The highest specificity was found with IR for both defect depths (0.51). The best classification of defect type revealed PR for both 1-mm and 3-mm-deep defects. Both likelihood ratios (LR+ and LR-) were best for IR with 1-mm (1.37 and 0.65) and with 3-mm defects (1.65 and 0.37). IR should still be recommended as favourable method evaluating bone loss around dental implants, while CT demonstrated the lowest performance in detecting peri-implant bone

Title: Dental floss as a possible risk for the development of peri-implant disease: an observational study of 10 cases.

Citation: Clinical oral implants research, May 2016, vol. 27, no. 5, p. 618-621

Author(s): van Velzen, Frank J J, Lang, Niklaus P, Schulten, Engelbert A J M,

Abstract: To report on a possible relationship between the use of dental floss or superfloss and the development of peri-implantitis. Ten patients with progressive peri-implantitis with an intensive oral hygiene protocol, which consisted of extensive professional supra- and submucosal cleaning, and not responding to this therapy were scheduled for examination. Plaque and bleeding indices and probing depth measurements were assessed, and radiographic examination was performed every two years. In all ten cases, remnants of dental floss were found around the neck and coronal part of a dental implant. After careful removal of these floss remnants and implant cleansing, a significant improvement in the peri-implant conditions in nine of ten cases was noted. In one case, peri-implant probing depth decreased substantially. However, bleeding on probing was still present. In vitro testing yielded that the application of various types of dental floss on the exposed rough implant surfaces may easily lead to tearing of floss fibers. This may result in the deposition of floss remnants on rough implant surfaces, which, in turn, may lead to the development of plaque-related peri-implant inflammation and, subsequently, bone loss. In case of exposed rough surfaces of the dental implant, the peri-implant conditions may be jeopardized by the application of dental floss, and hence, the utilization of interproximal brushes or toothpicks may be preferred for daily home care practices.

Title: Enamel matrix derivative improves gingival fibroblast cell behavior cultured on titanium surfaces.

Citation: Clinical oral investigations, May 2016, vol. 20, no. 4, p. 685-695

Author(s): Wang, Yulan, Zhang, Yufeng, Jing, Dai, Shuang, Yang, Miron, Richard J

Abstract: Although an extensive amount of research has demonstrated the positive effects of an enamel matrix derivative (EMD) on soft tissue wound healing around intrabony defects, little information is available describing its effect on peri-implant soft tissues, an area that has recently gained tremendous awareness due to the increasing prevalence of peri-implantitis. The aim of the present study was to assess the role of EMD when gingival fibroblasts were cultured on titanium surface with different surface topographies. Human primary gingival fibroblasts were cultured on pickled (PT) and sand-blasted with large grit followed by acid etching (SLA) surfaces and assessed for cell adhesion at 2, 4, and 8 h, cell morphology at 2, 4, 8, and 24 h as well as cell proliferation at 1, 3, and 5 days post-seeding. Furthermore, genes encoding collagen 1a1, vascular endothelial growth factor-A (VEGF-A), and fibronectin were assessed by real-time PCR. Human gingival fibroblasts were also quantified for their ability to synthesize a collagen matrix on the various titanium surfaces with and without EMD by immunofluorescence staining. The results from the present study demonstrate that EMD significantly increased cell spreading at 2, 4, 8, and 24 h on PT

surfaces and 4, 8, and 24 h on SLA surfaces. Furthermore, proliferation at 5 days on PT surfaces and 3 and 5 days on SLA surfaces was also increased for groups containing EMD. Real-time PCR results demonstrated that the culture of gingival fibroblasts with EMD significantly increased extracellular matrix synthesis of collagen 1 as well as improved mRNA levels of VEGF-A and fibronectin. Collagen1 immuno-fluorescent staining revealed a significantly higher area of staining for cells seeded on PT + EMD at 7 and 14 days and 14 days for SLA + EMD when compared to control samples. The results from the present study favor the use of EMD for colonization of gingival fibroblasts on titanium surfaces by increasing cell growth, spreading, and synthesis of an extracellular matrix. The improvements were primarily irrespective of surface topography. Future animal and human studies are necessary to fully characterize the beneficial effects of incorporating EMD during soft tissue regeneration of implant protocols. The use of EMD may speed up the quality of soft tissue integration around dental implants by facilitating gingival cell attachment, proliferation, and matrix synthesis of collagen 1.

Title: Effectivity of air-abrasive powder based on glycine and tricalcium phosphate in removal of initial biofilm on titanium and zirconium oxide surfaces in an ex vivo model.

Citation: Clinical oral investigations, May 2016, vol. 20, no. 4, p. 711-719

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

Abstract: The purpose of the present study was the evaluation of effectiveness and efficiency of a powder consisting of glycine and tricalcium phosphate in comparison to two established powders based on glycine or sodium bicarbonate in biofilm removal on titanium and zirconium implant surfaces. Biofilm was collected for 48 h by five volunteers. A total of 69 titanium and 69 zirconium samples were randomly assigned to test and control groups. Residual plaque areas (RPA) and treatment time were taken as parameters. Within the titanium groups, mean RPA was determined in the following descending order: sodium bicarbonate > glycine > glycine + tricalcium phosphate. Differences between the groups were significant, $p < 0.05$. Mean treatment time in the titanium groups was determined in the following descending order without significant differences, $p > 0.05$: glycine + tricalcium phosphate > sodium bicarbonate > glycine. Regarding the zirconium groups, mean RPA was detected in the following descending order, without significant differences, $p > 0.05$: glycine > sodium bicarbonate > glycine + tricalcium phosphate. Mean treatment time of the glycine + tricalcium phosphate group was significantly lower than in the control groups, $p < 0.05$. It can be concluded that glycine + tricalcium phosphate seemed to be more effective than the control groups for biofilm removal on titanium and zirconium implant surfaces. Especially on zirconium surfaces, decontamination with glycine + tricalcium phosphate seemed to be more efficient than treatment with glycine or sodium bicarbonate. The combination of glycine and tricalcium phosphate could improve the clinical outcomes of air-abrasive device in nonsurgical peri-implantitis therapy.

Title: Removal of dental implants: review of five different techniques.

Citation: International journal of oral and maxillofacial surgery, May 2016, vol. 45, no. 5, p. 641-648,

Author(s): Stajčić, Z, Stojčev Stajčić, L J, Kalanović, M, Đinić, A, Divekar, N, Rodić, M

Abstract: The aims of this study were to review five different explantation techniques for the removal of failing implants and to propose a practical clinical protocol. During a 10-year period, 95 implants were explanted from 81 patients. Explantation techniques used were the bur-forceps (BF), neo bur-elevator-forceps (ηBEF), trephine drill (TD), high torque wrench (HTW), and scalpel-forceps (SF) techniques. The following parameters were analyzed: indications for explanation, site of implantation, and the type, diameter, and length of the implant removed. The most frequent indications for implant removal were peri-implantitis (n=37) and crestal bone loss (n=48). The posterior maxilla was the most frequent site of implant removal (n=48). The longer implants were more frequently removed (n=78). The majority of implants were removed after 1 year in function (n=69). The BF/ηBEF and SF techniques were found to be the most efficient. Explantation techniques appeared to be successful for the removal of failing implants. The BF/ηBEF and SF techniques demonstrated 100% success. The ηBEF technique enabled safe insertion of a new implant in the same explantation site. The HTW technique appeared to be the most elegant technique with the highest predictability for insertion of another implant. An explantation protocol is proposed.

Title: Psychological Interventions for Poor Oral Health: A Systematic Review.

Citation: Journal of dental research, May 2016, vol. 95, no. 5, p. 506-514

Author(s): Werner, H, Hakeberg, M, Dahlström, L, Eriksson, M, Sjögren, P, Strandell, A,

Abstract: The aim of this systematic review and meta-analysis was to study the effectiveness of psychological interventions in adults and adolescents with poor oral health. The review follows the PRISMA guidelines for systematic reviews. The PICO format (population, intervention, comparison, and outcome) was used to define eligible studies. The populations were adults or adolescents (≥13 y of age and independent of others) with poor oral health (defined as dental caries, periodontal disease, and/or peri-implantitis). The interventions were psychological and/or behavioral models and theories, in comparison with traditional oral health education/information. The primary outcomes were dental caries, periodontitis, gingivitis, and peri-implantitis. Secondary outcomes were dental plaque, oral health-related behavior, health-related quality of life, health beliefs and attitudes, self-perceived oral health, and complications/risks. The systematic literature search identified 846 articles in December 2013 and 378 articles in July 2015. In total, 11 articles on 9 randomized controlled trials were found to meet the inclusion criteria. These reported on adults with periodontal disease, and several used motivational interviewing (MI) as their mode of intervention. The CONSORT guidelines and the GRADE approach were used for study appraisal and rating of evidence. The meta-analysis showed no statistically significant differences in gingivitis or plaque presence. In addition, a meta-analysis on MI compared with education/information found no statistically significant differences in gingivitis presence. Only 1 meta-analysis-on psychological interventions versus education/information regarding the plaque index-showed a small but statistically significant difference. There were also statistically significant differences reported in favor

of psychological interventions in oral health behavior and self-efficacy in toothbrushing. However, the clinical relevance of these differences is difficult to estimate. The certainty of evidence was low. Future research needs to address several methodological issues and not only study adults with periodontal disease but also adolescents and patients with dental caries and peri-implantitis.

Title: Histopathological Features of Secondary Squamous Cell Carcinoma Around a Dental Implant in the Mandible After Chemoradiotherapy: A Case Report With a Clinicopathological Review.

Citation: Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons, May 2016, vol. 74, no. 5, p. 982-990

Author(s): Nariai, Yoshiki, Kanno, Takahiro, Sekine, Joji

Abstract: Oral squamous cell carcinoma (OSCC) around a dental implant is a rare pathologic condition. This report describes a case of recurrent OSCC surrounding a dental implant, histopathologic findings, and a literature review of this condition. A 58-year-old Japanese woman underwent chemoradiotherapy for OSCC in the right lower gingiva, resulting in a complete response. Nine years after primary chemoradiotherapy, a dental implant was placed in her atrophic mandible. Three years later, an OSCC developed around the dental implant in the right lower premolar region. Marginal mandibulectomy was performed. Microscopic examination showed medullary invasion around the implant surface, suggesting that tumor infiltration of the bone was through the interface between the implant and bone. However, no downward invasion through the interface was evident. OSCC can develop around dental implants that are placed for oral rehabilitation after ablative surgery. Staging of OSCC and planning of surgical management should be carried out carefully, because implants placed adjacent to the OSCC can influence tumor invasion. A high degree of vigilance for OSCC is required during follow-up of patients with dental implants who have OSCC risk factors such as premalignant lesions. Detailed evaluation, including biopsy examination, is essential for distinguishing peri-implantitis from OSCC.

Title: Prevalence, Etiology and Treatment of Peri-Implant Mucositis and Peri-Implantitis: A Survey of Periodontists in the United States.

Citation: Journal of periodontology, May 2016, vol. 87, no. 5, p. 493-501

Author(s): Papathanasiou, Evangelos, Finkelman, Matthew, Hanley, James,

Abstract: Currently, information available on the exact prevalence and standard therapeutic protocol of peri-implant diseases is insufficient. The aim of this survey was to investigate the perceived prevalence, etiology, and management of peri-implant mucositis and peri-implantitis by periodontists in the United States. A twenty-question survey was developed. Periodontists currently practicing in the United States were contacted by an e-mail that contained a link to access the survey. Two hundred eighty periodontists (79.3% males; 62.9% with >10 years in practice, 75.7% in private practice) completed the survey. Most (96.1%) of the participants were placing implants (58.3% for >10 years and 32.4% >150

implants/year). The majority reported that the prevalence of peri-implant mucositis and peri-implantitis in their practices is up to 25% but is higher in the general US population and that up to 10% of implants must be removed due to peri-implantitis. There was agreement among contributing etiologic factors such as: 1) plaque; 2) smoking; 3) adverse loading; 4) oral hygiene; 5) use of antimicrobial gel/mouthrinse; 6) non-surgical debridement; 7) use of systemic antibiotics; and 8) 3-month supportive care for treatment of peri-implantitis. Significant heterogeneity was recorded in relation to the instruments used for debridement, use and type of surgical treatment, and materials used for regeneration. Only 5.1% believed that treatment is very effective. This survey indicates that peri-implant diseases are a frequently encountered problem in periodontal practices and that the absence of a standard therapeutic protocol results in significant empirical use of therapeutic modalities and a moderately effective treatment outcome.

Title: Insufficient evidence to support the use of laser therapy for peri-implantitis.

Citation: Journal of the American Dental Association (1939), May 2016, vol. 147, no. 5, p. 369-371,

Author(s): Hur, Yong, Ogata, Yumi

Title: Distributions of Synergistetes in clinically-healthy and diseased periodontal and peri-implant niches.

Citation: Microbial pathogenesis, May 2016, vol. 94, p. 90-103, 1096-1208 (May 2016)

Author(s): Yu, Xiao-Lin, Chan, Yuki, Zhuang, Long-Fei, Lai, Hong-Chang, Lang, Niklaus P, Lacap-Bugler, Donnabella C, Leung, W Keung, Watt, Rory M

Abstract: Bacterial taxa belonging to the phylum Synergistetes are commonly detected within diseased periodontal niches, but are rarely found within healthy oral sites. However, as they typically constitute a minor fraction of the oral microbiota, their precise distributions and disease-associations remain to be fully established. Here, we surveyed the Synergistetes taxa present within individual periodontal/subgingival and peri-implant/submucosal sites, within Chinese subjects (n = 18) affected by both peri-implantitis and periodontitis. Four individual, clinically-distinct sites were analyzed in each patient: healthy sulcus; periodontitis lesion; healthy peri-implant space; peri-implantitis lesion. We employed a clone library-based approach, using PCR-primers that specifically amplified ca. 650bp regions of the 16S rRNA gene from oral cluster A and B Synergistetes taxa. Twenty-one of the 72 sites (from 12/18 subjects) yielded Synergistetes 16S rRNA PCR products. Sequencing of cloned amplicon libraries yielded 1338 quality-filtered 16S rRNA sequences, which were assigned to 26 Synergistetes operational taxonomic units (OTUs; oral taxon SH01-SH26) using a 98.5% identity cut-off. We identified 25 Synergistetes oral cluster A OTUs (genus *Fretibacterium*; corresponding to Human Oral Taxon (HOT) numbers 358, 359, 360, 361, 362, 363, 452, and 453), and one oral cluster B OTU (*Pyramidobacter piscicola* oral taxon SH04, HOT-357). Three OTUs predominated: *Fretibacterium* oral taxon SH01 (HOT-360), *Fretibacterium* oral taxon SH02 (HOT-452), and *Fretibacterium fastidiosum* oral taxon SH03 (HOT-363). The Synergistetes community compositions within the respective periodontal and peri-implant

sites were variable and complex, and no statistically-significant correlations could be established. However, the detection frequency of *F. fastidiosum* SH03 and *Fretibacterium* oral taxon SH01 were both positively associated with plaque index at healthy subgingival sites. Taken together, our results show that diverse *Synergistetes* populations inhabit both diseased and healthy periodontal and peri-implant niches, with considerable site-to-site variations in composition occurring within the same oral cavity.

Title: Turned Implants in Vertical Augmented Bone: A Retrospective Study with 13 to 21 Years Follow-Up.

Citation: The International journal of periodontics & restorative dentistry, May 2016, vol. 36, no. 3, p. 309-317

Author(s): Simion, Massimo, Ferrantino, Luca, Idotta, Eleonora, Zarone, Fernando

Abstract: The aim of this retrospective clinical trial was to evaluate the performance of 91 turned implants placed in vertically augmented ridges in 33 patients by means of guided bone regeneration techniques after a mean follow-up of 15 years. A total of 88 implants were in function (97% survival rate), whereas 9 showed peri-implantitis (9.9%). A mean radiographic bone loss of 1.02 mm between the baseline evaluation (1 year after loading) and the final visit (13 to 21 years later) was recorded. In conclusion, turned implants placed in vertically augmented bone seem to remain stable after many years of function.

Title: Nonsurgical Treatment of Peri-implantitis Using the Biofilm Decontamination Approach: A Case Report Study.

Citation: The International journal of periodontics & restorative dentistry, May 2016, vol. 36, no. 3, p. 383-391

Author(s): Pini-Prato, Giovanpaolo, Magnani, Cristina, Rotundo, Roberto

Abstract: The aim of this preliminary study is to show the effect of the biofilm decontamination approach on peri-implantitis treatment. Clinical cases showing peri-implantitis were treated using an oral tissue decontaminant material that contains a concentrated aqueous mixture of hydroxybenzenesulfonic and hydroxymethoxybenzenesulfonic acids and sulfuric acid. The material was positioned in the pocket around the implant without anesthesia in nonsurgically treated cases. No instrumentation and no systemic or local antibiotics were used in any of the cases. A questionnaire was used for each patient to record the pain/discomfort felt when the material was administered. All of the treated cases healed well and rapidly. The infections were quickly resolved without complications. The momentary pain on introduction of the material was generally well tolerated and completely disappeared after a few seconds. The biofilm decontamination approach seems to be a very promising technique for the treatment of peri-implantitis. The local application of this material avoids the use of systemic or local antibiotics.

Title: Systemic antibiotics and the risk of superinfection in peri-implantitis.

Citation: Archives of oral biology, Apr 2016, vol. 64, p. 39-50, 1879-1506

Author(s): Verdugo, Fernando, Laksmana, Theresia, Uribarri, Agurne

Abstract: Peri-implantitis has emerged in the last few years as a complication difficult to resolve. The etiopathogenesis consensus is mainly attributed to bacteria. Following the preferred reporting items for systematic reviews and meta-analysis (PRISMA) guidelines, a PubMed/Medline literature search was performed using the US National Library of Medicine database up to 2015 to analyze available scientific data on the rationale and risk of superinfection associated to systemic antimicrobials in human peri-implant disease. A hand search was also conducted on relevant medical and microbiology journals. The methodological index for non-randomized studies (MINORS) was independently assessed for quality on the selected papers. Proposed combined therapies use broad-spectrum antibiotics to halt the disease progression. A major associated risk, particularly when prescribed empirically without microbiological follow-up, is the undetected development of superinfections and overgrowth of opportunistic pathogens difficult to eradicate. Peri-implant superinfections with opportunistic bacteria, yeast and viruses, are plausible risks associated to the use of systemic antibiotics in immunocompetent individuals. Lack of microbiological follow-up and antibiotic susceptibility testing may lead to ongoing microbial challenges that exacerbate the disease progression. The increased proliferation of antimicrobial resistance, modern implant surface topography and indiscriminate empiric antibiotic regimens may promote the escalation of peri-implant disease in years to come. A personalized 3-month supportive therapy may help prevent risks by sustaining a normal ecological balance, decreasing specific pathogen proportions and maintaining ideal plaque control.

Title: An Exploratory Case-Control Study on the Impact of IL-1 Gene Polymorphisms on Early Implant Failure.

Citation: Clinical implant dentistry and related research, Apr 2016, vol. 18, no. 2, p. 234-240,

Author(s): Cosyn, Jan, Christiaens, Véronique, Koningsveld, Vincent, Coucke, Paul J, De Coster, Peter, De Paepe, Anne, De Bruyn, Hugo

Abstract: The association between IL-1 gene polymorphisms and peri-implantitis has been well documented. However, data on the association with early implant failure are scarce. The objective of this case-control study was to explore the impact of IL-1A (-889), IL-1B (-511), and IL-1B (+3,954) gene polymorphisms on early implant failure in Caucasians. Between September 2004 and August 2007, 461 patients were treated with dental implants at the University Hospital in Ghent, Belgium. Fourteen subjects of this patient group who had experienced one or more early implant failures (within 6 months from implant installation) were recruited as "cases." Fourteen "controls," matched in terms of age, gender, and smoking habits, with only surviving implants, were selected from the same patient group. Allele and genotype analysis was performed on the basis of a blood sample by Sanger sequencing of polymerase chain reaction products containing the IL-1A (-889), IL-1B (-511), and IL-1B (+3,954) gene polymorphisms. A significant impact of the IL-1A (-889) T

allele ($p = .039$) and the IL-1B (+3,954) T allele ($p = .003$) on early implant failure was demonstrated (odds ratios = 3.9 and 15.0, respectively). In addition, the genotypic distribution differed significantly between cases and controls for IL-1B (+3,954) ($p = .015$). The IL-1B (+3,954) gene polymorphism seems to affect osseointegration. Additional case-control studies in larger patient groups are needed to confirm this observation.

Title: Long-term retrospective follow-up of turned and moderately rough implants in the edentulous jaw.

Citation: Clinical oral implants research, Apr 2016, vol. 27, no. 4, p. 421-426

Author(s): Vandeweghe, Stefan, Ferreira, Deon, Vermeersch, Louis, Mariën, Margot, De

Abstract: To compare the long-term clinical outcome of turned vs. moderately rough implants. Patients treated with implants in the edentulous mandible and/or maxilla were invited for a clinical examination. After prosthesis removal, the pocket depth was measured and the bleeding scored. Also, a new radiograph was taken for bone loss evaluation. Patients were also requested to rate their satisfaction with the treatment. One hundred and ninety-seven implants in 33 patients were evaluated. After a mean follow-up of 172 months (SD 42, range 120-252), the mean loss was 1.61 mm (SD 1.35, range 0.00-8.25). Bone loss was higher in the maxilla compared to the mandible ($P < 0.001$), and at implants, that was restored on implant level ($P = 0.003$). Multivariate analyses demonstrated a significant effect of implant surface roughness and time of loading on bone loss. Smoking, on the other hand, did not affect the outcome. Mean pocket probing depth was 3.64 mm (SD 0.96, range 1.25-7.25). A total of 4.1% of the implants demonstrated signs of peri-implantitis. The overall patient satisfaction rate was 98.5%. Implant treatment in the edentulous jaw has a predictable long-term outcome with limited complications.

Title: Peri-implantitis - onset and pattern of progression.

Citation: Journal of clinical periodontology, Apr 2016, vol. 43, no. 4, p. 383-388

Author(s): Derks, Jan, Schaller, Dennis, Håkansson, Jan, Wennström, Jan L,

Abstract: While information on the prevalence of peri-implantitis is available, data describing onset and progression of the disease are limited. A 9-year follow-up examination of 596 randomly selected implant-carrying individuals identified 62 patients with moderate/severe peri-implantitis. Longitudinal assessments of peri-implant marginal bone levels were used to construct a statistical model with bone loss as the dependent variable. A multilevel growth model estimated the pattern of bone loss for each implant/patient. Onset of peri-implantitis was determined by evaluating the cumulative percentage of implants/patients presenting with estimated bone loss at each year following prosthesis delivery. The analysis showed a non-linear, accelerating pattern of bone loss at the 105 affected implants. The onset of peri-implantitis occurred early, and 52% and 66% of implants presented with bone loss of >0.5 mm at years 2 and 3 respectively. A total of 70% and 81% of subjects presented with ≥ 1 implants with bone loss of >0.5 mm at years 2 and 3 respectively. It is suggested that peri-implantitis progresses in a non-linear, accelerating pattern and that, for the majority of cases, the onset occurs within 3 years of function.

Title: Impact of Maintenance Therapy for the Prevention of Peri-implant Diseases: A Systematic Review and Meta-analysis.

Citation: Journal of dental research, Apr 2016, vol. 95, no. 4, p. 372-379

Author(s): Monje, A, Aranda, L, Diaz, K T, Alarcón, M A, Bagramian, R A, Wang, H L,

Abstract: At the present time, peri-implantitis has become a global burden that occurs with a frequency from 1% to 47% at implant level. Therefore, we aimed herein at assessing the impact of peri-implant maintenance therapy (PIMT) on the prevention of peri-implant diseases. Electronic and manual literature searches were conducted by 3 independent reviewers using several databases, including MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, and Cochrane Oral Health Group Trials Register, for articles up to June 2015 without language restriction. Articles were included if they were clinical trials aimed at demonstrating the incidence of peri-implant diseases under a strict regime or not of PIMT. Implant survival and failure rate were studied as secondary outcomes. A meta-analysis was conducted to evaluate the influence of PIMT and other reported variables upon peri-implant diseases. Thirteen and 10 clinical trials were included in the qualitative and quantitative analysis, respectively. Mucositis was affected by history of periodontitis and mean PIMT at implant and patient levels, respectively. Similarly, significant effects of history of periodontal disease were obtained for peri-implantitis for both implant and patient levels. Furthermore, mean PIMT interval was demonstrated to influence the incidence of peri-implantitis at implant but not patient level. PIMT interval showed significance at both levels. For implant survival, implants under PIMT have 0.958 the incident event than those with no PIMT. Within the limitations of the present systematic review, it can be concluded that implant therapy must not be limited to the placement and restoration of dental implants but to the implementation of PIMT to potentially prevent biologic complications and hence to heighten the long-term success rate. Although it must be tailored to a patient's risk profiling, our findings suggest reason to claim a minimum recall PIMT interval of 5 to 6 mo. Additionally, it must be stressed that even in the establishment of PIMT, biologic complications might occur. Thus, patient-, clinical-, and implant-related factors must be thoroughly explored.

Title: Osseoperception in Dental Implants: A Systematic Review.

Citation: Journal of prosthodontics : official journal of the American College of Prosthodontists, Apr 2016, vol. 25, no. 3, p. 185-195

Author(s): Mishra, Sunil Kumar, Chowdhary, Ramesh, Chrcanovic, Bruno Ramos,

Abstract: Replacement of lost teeth has significant functional and psychosocial effects. The capability of osseointegrated dental implants to transmit a certain amount of sensibility is still unclear. The phenomenon of developing a certain amount of tactile sensibility through osseointegrated dental implants is called osseoperception. The aim of this article is to evaluate the available literature to find osseoperception associated with dental implants. To identify suitable literature, an electronic search was performed using Medline and PubMed

database. Articles published in English and articles whose abstract is available in English were included. The articles included in the review were based on osseoperception, tactile sensation, and neurophysiological mechanoreceptors in relation to dental implants. Articles on peri-implantitis and infection-related sensitivity were not included. Review articles without the original data were excluded, although references to potentially pertinent articles were noted for further follow-up. The phenomenon of osseoperception remains a matter of debate, so the search strategy mainly focused on articles on osseoperception and tactile sensibility of dental implants. This review presents the histological, neurophysiological, and psychophysical evidence of osseoperception and also the role of mechanoreceptors in osseoperception. The literature on osseoperception in dental implants is very scarce. The initial literature search resulted in 90 articles, of which 81 articles that fulfilled the inclusion criteria were included in this systematic review. Patients restored with implant-supported prostheses reported improved tactile and motor function when compared with patients wearing complete dentures

Title: Diffuse Large B-Cell Lymphoma of the Peri-Implant Mucosa Mimicking Peri-Implantitis.

Citation: The Journal of oral implantology, Apr 2016, vol. 42, no. 2, p. 220-223

Author(s): Jin, Seong-Ho, Park, Gyeongsin, Ko, Youngkyung, Park, Jun-Beom

Title: Implant Placement in Failed Endodontic Sites: A Review.

Citation: The Journal of oral implantology, Apr 2016, vol. 42, no. 2, p. 224-230

Author(s): Flanagan, Dennis

Abstract: Dental implants may fail to osseointegrate in sites of endodontic failure. This may occur as a result colonization by various anaerobic and facultative bacterial species. If an implant is placed in a site where vegetative bacteria are residing, the implant may fail to integrate if a bacterial colonization proceeds coronally. If the implant apical cortical bone is thin or if there is an apical fenestration, the colonization may proceed through the thin or nonexistent bone through the covering mucosa, relieving inflammatory pressure to create an apical (retrograde) peri-implantitis. *Enterococcus faecalis* may be the prime culprit in these types of implant failures. After thorough debridement, the implant may be immediately placed after extraction of an endodontically failed tooth, and the patient treated with an appropriate antibiotic. Alternatively waiting for postextraction healing and subsequent implant placement can be done. Nevertheless, either way may allow for the formation of bacterial vegetative forms or biofilms. The implant surface may be colonized when the surface is exposed to the bacteria. Thorough debridement is crucial. Nonetheless, organisms may persist. Randomized controlled trials are needed to elucidate this issue.

Bisphosphonate-related osteonecrosis of the jaw

Title: Effect of bisphosphonates on the mandibular bone and gingival epithelium of rats without tooth extraction

Citation: Experimental and Therapeutic Medicine, May 2016, vol./is. 11/5(1678-1684)

Author(s): De Ponte F.S., Catalfamo L., Micali G., Runci M., Cutroneo G., Vermiglio G.,

Abstract: Osteonecrosis of the jaw (ONJ) is an adverse effect of bisphosphonate treatment that has become the subject of increasing investigations, in particular due to its poorly understood pathogenesis. Several experimental studies on animal models have been conducted; however, the majority of these replicate human ONJ following tooth extraction, and describe alterations in the bone and gingival epithelium when necrosis is manifested. The aim of the present study was to analyze the rat mandibular bone and gingival epithelium during 45 days of zoledronate treatment (which is a bisphosphonate agent), without tooth extraction. Intraperitoneal injections of zoledronate acid (0.1 mg/kg) were performed three times a week in normal male Wistar rats (n=20), while a control group of rats (n=20) was treated with saline solution for 45 days. After 7, 15, 30 and 45 days of drug treatment, all rats were sacrificed and hematoxylin and eosin staining, immunofluorescence and scanning electron microscopy analyses were performed. The results of the analyses after 7 and 15 days of treatment were similar in the treatment and control group. After 30 and 45 days of treatment, structural alterations were observed in the bone. No structural alterations to the gingival epithelium were observed. Based on these results, it was hypothesized that low doses of zoledronate act directly on the bone tissues to induce morphological alterations from bone to necrotic tissue following surgical procedures, although no cytotoxic effects were detected in the gingival epithelium.

Title: Blindness resulting from bisphosphonate related osteonecrosis of the skull base

Citation: Journal of Neurological Surgery, Part B: Skull Base, February 2016, vol./is. 77/(no pagination)

Author(s): Faraji F.

Abstract: Bisphosphonate-related osteonecrosis of the jaw is a rare, serious complication of bisphosphonate therapy. In the typical presentation, it involves the presence of necrotic bone in the maxillofacial region, most commonly in the tooth-bearing areas, of patients with a history of bisphosphonate therapy and without radiotherapy of the jaw. Patients with cancer, particularly multiple myeloma, treated with long courses of intravenous zoledronate show the highest incidence of this often refractory complication. Late stages of bisphosphonate osteonecrosis of the maxilla are associated with oroantral fistula formation, maxillary sinusitis, and osteomyelitis. We report here a 69 year old man with a history of multiple myeloma and 5 years of adjuvant zoledronate therapy presenting with loss of light perception, proptosis, ptosis, and impaired abduction of the right eye. This patient was found to have developed an unusually severe presentation of osteomyelitis of the skull base in the setting of bisphosphonate-related osteonecrosis of the jaw that ultimately led to unilateral blindness. Transnasal endoscopic uncinectomy and maxillary antrostomy were performed to reveal a maxillary sinus filled with chronically inflamed polypoid tissue and necrotic bone debris. Unfortunately, given the late stage and complete loss of vision seven days prior to presentation, optic nerve decompression was unsuccessful in restoring light

perception to the right eye. In this extreme case of bisphosphonate related osteonecrosis of the skull base, we reveal the importance of early identification and treatment of these lesions.

Title: Diagnosis and semiquantification of osteonecrosis of the jaw by bone scan index on bone scintigraphy

Citation: Journal of Clinical Oncology, January 2016, vol./is. 34/2 SUPPL. 1(no pagination)

Author(s): Yaegashi H., Mizokami A., Watanabe S., Nakajima K., Noguchi N., Kawashiri S.

Abstract: Background: Bone management is extremely important for maintaining QOL of prostate or renal cancer patients with bone metastasis. Physicians often administrate bone modifying agents (BMA), zoledronic acid or denosumab, to prevent skeletal-related event and bone pain for such patients. However, osteonecrosis of the jaw (ONJ) is one of sever adverse events of BMA (Medication-related ONJ; MRONJ). The early detection and follow-up of ONJ is extremely important issue. In order to achieve this issue, we utilized bone scintigraphy and a computer-aided diagnosis using a bone scan index (BSI). Methods: A total of 22 patients with either prostate cancer or renal cancer (27 lesions) diagnosed with MRONJ after treatment with BMA were investigated. Median age was 72.5 years (range 52-82 years). The primary disease was prostate cancer (81.8%), renal cancer (18.2%). Regarding the treatment, 86.4% of the patients were treated with bisphosphonate drugs, none in denosumab, and both in 13.6%, respectively. The median duration of medication was 33 months (range 7-70 months) by the time of MRONJ diagnosis. All patients underwent Tc-99m methylene diphosphonate bone scintigraphy. Bone uptake in the jaw was analyzed using BSI, which was calculated by BONENAVI (FUJIFILM RI Pharma, Japan; EXINIbone, EXINI Diagnostics, Sweden). Significant hot spots were manually selected according to both serial scintigraphic images and dental records, and the fraction of them to the entire skeleton was referred as BSI of the jaw (BSIJ). The level of BSIJ was evaluated in comparison with stage of ONJ and inflammation marker, C-reactive protein (CRP). Results: The median BSIJ of lesions was 0.14 (range 0.00-0.43) at the time of MRONJ diagnosis. If MRONJ is not treated appropriately, BSIJ tended to increase during treatment with BMA. When patients were classified according to their clinical stages of MRONJ, higher stage MRONJ lesions had significantly higher BSIJ ($p < 0.01$). In addition, BSIJ was correlated with CRP. Conclusions: Evaluation of BSIJ using BONENAVI on bone scintigraphy was helpful for early detection and follow-up of MRONJ. Furthermore, increased BSIJ on bone scintigraphy were related to CRP and stage of ONJ.

Title: Denosumab-associated osteonecrosis of the jaw affects osteoclast formation and differentiation: Pathological features of two cases

Citation: Molecular and Clinical Oncology, February 2016, vol./is. 4/2(191-194)

Author(s): Matsushita Y., Hayashida S., Morishita K., Sakamoto H., Naruse T.

Abstract: Medication-related osteonecrosis of the jaw (ONJ) is caused by antiresorptive (bisphosphonates and denosumab) and antiangiogenic agents, with the first report of

denosumab-related ONJ emerging in 2010. To date, although certain case reports on denosumab-related ONJ have been published, those of ONJ caused by a single application of the drug are scarce. In addition, only one report described the histopathological features of this condition, although not completely; only the sequestrum resected by conservative surgery was evaluated. Although conservative treatment is recommended, the effectiveness of extensive surgery in the early stages of bisphosphonate-related ONJ has been described in recent years. Here we report the clinical and histopathological features of denosumab-related ONJ caused by single application of the drug, which was treated by extensive surgery in two patients. Histopathological analysis revealed a decreased number of osteoclasts in viable bone around the sequestrum, and these appeared morphologically immature, as indicated by the presence of very few nuclei. These findings are different from those for bisphosphonate-related ONJ and may assist in elucidating the mechanism underlying denosumab-related ONJ. Furthermore, extensive surgery may be effective for the management of this condition.

Title: Bone scintigraphy predicts bisphosphonate-induced osteonecrosis of the jaw (BRONJ) in patients with metastatic castration-resistant prostate cancer (mCRPC).

Citation: Clinical oral investigations, May 2016, vol. 20, no. 4, p. 753-758,

Author(s): Thomas, Christian, Spanidis, Magdalena, Engel, Christina, Roos, Frederik C,

Abstract: The aim of this study was to evaluate the role of bone scintigraphy (BS) in early prediction of clinically asymptomatic bisphosphonate (BP)-related osteonecrosis of the jaws (BRONJ) in patients with metastatic castration-resistant prostate cancer (mCRPC). BS of mCRPC patients treated with BP was evaluated for pathologic tracer uptake of the jaws in BS suspicious for BRONJ. Results were compared to development of clinically evident BRONJ. Sensitivity, specificity and predictive values of BS for the detection of BRONJ as well as time from beginning of BP therapy to pathologic tracer uptake in BS and time from pathologic tracer uptake in BS to clinically evident BRONJ were determined. Thirty BP-treated patients were included. Nine patients (30 %) had pathologic BS lesions of the jaws. Six patients (20 %) developed BRONJ. Sensitivity and specificity of BS for BRONJ prediction were 67 and 79 %. Median time from the start of BP treatment to pathologic tracer uptake in BS was 28 months (range 10-33) and from pathologic tracer uptake in BS to clinically evident BRONJ 6.5 months (range 2-19). Pathologic tracer uptake in BS was significantly more often observed in patients who developed BRONJ compared to patients who did not ($p = 0.049$; OR 7.6). Patients with pathologic tracer uptake in the jaws in BS significantly more often develop BRONJ. An unsuspicious BS is predictive for absence of BRONJ in the future. We conclude that when BS has been performed, it should not only be used to assess tumour stage and treatment response but also to check for pathologic tracer uptake in the jaws in BS to detect BRONJ at an early stage in mCRPC patients receiving bisphosphonates.

Title: Medication-related osteonecrosis of the jaw associated with bisphosphonates and denosumab in osteoporosis.

Citation: Oral diseases, May 2016, vol. 22, no. 4, p. 324-329

Author(s): Bagan, J, Peydró, A, Calvo, J, Leopoldo, M, Jiménez, Y, Bagan, L

Abstract: To describe the clinical characteristics and evolution of our series of medication-related osteonecrosis of the jaws (MRONJ) associated with denosumab in osteoporotic patients. We present 10 new cases of MRONJ in patients receiving denosumab for osteoporosis. We describe the mean doses of denosumab, previous bisphosphonate intake, and the clinical characteristics associated with the osteonecrosis, such as local contributing factors, symptoms, and evolution after treatment. The mean number of denosumab doses was 3.4 ± 2.2 . In 90% of patients, there was a prior history of oral bisphosphonate intake, with a mean duration of 46.78 ± 25.11 months. The most common local factor was dental extraction (6 cases; 60%), and most cases had necrotic bone exposure (9/10, 90%). Sclerosis of the bone was the most common radiographic finding. Stage 1 was the most common ONM stage, found in 80%. 'Cure' after conservative treatments was obtained in 71.4%. Most of our cases were in the early stages of MRONJ, and the success rate after conservative treatment was high.

Title: Biomarkers for Bisphosphonate-Related Osteonecrosis of the Jaw.

Citation: Clinical implant dentistry and related research, Apr 2016, vol. 18, no. 2, p. 281-291

Author(s): Kim, Jin-Woo, Cha, In-Ho, Kim, Sun-Jong, Kim, Myung-Rae

Abstract: The aim of this study was to investigate a possible biomarker for bisphosphonate-related osteonecrosis of the jaw (BRONJ) in an animal model. Forty-eight Sprague-Dawley rats were randomly divided into the bisphosphonate group ($n = 36$), who were injected once a week with zoledronic acid, and the control group ($n = 12$), who were injected once a week with saline. After 6 weeks, surgical intervention was performed, and injections were continued up to 8 weeks. Rats in the bisphosphonate group were then further classified to the ONJ group, and the non-ONJ group, and biomarkers, including CTx, Glu-OC, TRACP 5b, RANKL, and OPG, were assessed at baseline (T0), at surgical intervention (T1), and at sacrifice (T2). Histomorphometric analysis for quantification of osteoclasts was performed. Repeated measures analysis of variance revealed that TRACP 5b levels and the RANKL/OPG ratio were significantly decreased over time in the ONJ group compared with the non-ONJ group ($p < .05$). At T2, the area under the curve was 0.807 for TRACP 5b (sensitivity: 88.9%, specificity 66.7% at cutoff) and 0.765 for the RANKL/OPG ratio (sensitivity: 77.8%, specificity 62.9% at cutoff). TRACP 5b showed a lower least significant change (29.6%) with lower intra-assay coefficient of variability (CV; 6.32%) and interassay CV (11.20%) compared with those of the RANKL/OPG ratio (39.27%) and showed a higher signal-to-noise ratio (2.76) than that of the RANKL/OPG ratio (1.62). N.Oc/T.Ar and N.Oc/B.Ar demonstrated significantly decreased number of osteoclasts in ONJ group versus non-ONJ group. These results show that serum TRACP 5b and the RANKL/OPG ratio were possible biomarkers for BRONJ. These data may provide useful additional information for future ONJ research. Further studies are needed to validate these results in humans with ONJ.

Title: Serum Markers of Bone Turnover and Angiogenesis in Patients With Bisphosphonate-Related Osteonecrosis of the Jaw After Discontinuation of Long-Term Intravenous Bisphosphonate Therapy.

Citation: Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons, Apr 2016, vol. 74, no. 4, p. 738-746

Author(s): Thumbigere-Math, Vivek, Michalowicz, Bryan S, Hughes, Pamela J, Basi, David L, Tsai, Michaela L, Swenson, Karen K, Rockwell, Laura, Gopalakrishnan, Rajaram

Abstract: To analyze serum markers of bone turnover, angiogenesis, endocrine function, and inflammation in patients with bisphosphonate-related osteonecrosis of the jaw (BRONJ) who discontinued long-term intravenous bisphosphonate (BP) therapy. Serum samples were obtained from 25 BRONJ patients who had discontinued long-term intravenous BP therapy for an average of 11.4 ± 8.7 months and 48 non-BRONJ controls who continued receiving intravenous BP therapy. Samples were analyzed for total alkaline phosphatase, bone-specific alkaline phosphatase, osteocalcin, C-telopeptide, vascular endothelial growth factor, triiodothyronine, thyroxine, thyroid-stimulating hormone, 25-hydroxyvitamin D, and C-reactive protein. The mean number of BP infusions was significantly higher in BRONJ patients compared with controls (38.4 ± 26.3 infusions vs 18.8 ± 7.2 infusions, $P < .0001$); however, the duration of BP therapy was not significantly different between the groups ($P = .23$). Overall, there were no significant differences in any of the markers between BRONJ patients and controls (all P values $\geq .16$). In a subgroup analysis that matched BRONJ patients and controls according to mean age and number of BP infusions (10 BRONJ patients and 48 controls), log₁₀ vascular endothelial growth factor (2.9 ± 0.4 pg/mL vs 2.4 ± 0.4 pg/mL, $P < .001$) and C-reactive protein (34 ± 26 mg/L vs 13 ± 8 mg/L, $P < .01$) levels were significantly higher in BRONJ patients compared with controls. Within BRONJ patients, none of the serum markers were correlated with duration of BP discontinuation. Levels of bone turnover and endocrine markers in BRONJ patients who discontinue long-term intravenous BP therapy are similar to those in non-BRONJ controls receiving intravenous BP therapy. However, levels of angiogenesis and inflammation markers are higher in BRONJ patients who discontinue long-term intravenous BP therapy. The prolonged skeletal half-life of BPs may suppress bone turnover markers in BRONJ patients for several years after discontinuation of intravenous BP therapy, suggesting an extended effect on bone homeostasis.

Title: Surgical management of bisphosphonate-related osteonecrosis of the jaw stages II and III.

Citation: Oral surgery, oral medicine, oral pathology and oral radiology, Apr 2016, vol. 121, no. 4, p. 367-372,

Author(s): Bodem, Jens Philipp, Schaal, Carolin, Kargus, Steffen, Saure, Daniel, Mertens,

Abstract: The value of surgery in advanced stages of bisphosphonate-related osteonecrosis of the jaw (BRONJ) is still controversial. Hence, we evaluated the effect of surgical therapy in BRONJ stages II and III in combination with a standardized perioperative adjuvant treatment. We included 39 patients who presented with BRONJ in a total of 47 locations and stages II ($n = 23$) and III ($n = 24$). All patients had exclusively received a monthly intravenous application of zoledronic acid. Surgical therapy consisted of complete removal of the

necrotic jaw, accompanied by a standardized perioperative adjuvant treatment including intravenous antibiotic prophylaxis, gastric feeding, and an antimicrobiologic mouth rinsing. Overall, 35 (74.5%) of the 47 BRONJ sites were treated successfully, with success defined as complete mucosal healing of the exposed jaw (n = 24) or as relative healing when surgical therapy downscaled BRONJ II or III to asymptomatic BRONJ stage I (n = 11). Interestingly, perioperative adjuvant treatment or bisphosphonate therapy parameters showed no statistical effect on the treatment outcome. The results of the present study prove the effectiveness of surgical therapy for BRONJ stage II or III. Copyright © 2016 Elsevier Inc. All rights reserved.

Title: Surgical evaluation of panoramic radiography and cone beam computed tomography for therapy planning of bisphosphonate-related osteonecrosis of the jaws.

Citation: Oral surgery, oral medicine, oral pathology and oral radiology, Apr 2016, vol. 121, no. 4, p. 419-424,

Author(s): Kämmerer, Peer W, Thiem, Daniel, Eisenbeiß, Christoph, Dau, Michael,

Abstract: The purpose of this retrospective study was to compare the clinical significance of panoramic radiography (orthopantomography [OPTG]) and cone beam computed tomography (CBCT) for therapy planning of bisphosphonate-related osteonecrosis of the jaw (BRONJ) by surgeons. Using standardized questionnaire, eight maxillofacial surgeons evaluated intraoral photographs of the clinical situation of 14 patients with BRONJ as well as the corresponding radiographic images (OPTG, CBCT). The presence of five typical BRONJ signs (bone-remodeling, periosteal reaction, osteosclerosis, sequestra, and continuity of cortical bone) was evaluated with OPTG and CBCT. The influence of radiologic information on therapy decision was examined as well. On the basis of the information from intraoral photographs only, seven of the eight surgeons indicated that an additional radiographic examination was necessary for further therapy planning. For evaluation of the five radiographic BRONJ signs, CBCT provided significantly better values compared with OPTG (all $P < .05$). A before-and-after comparison showed that four of the eight surgeons changed their therapy concept after having three-dimensional CBCT information. The majority (6 of 8) of the surgeons considered that an additional CBCT was required for therapy planning, even after having studied the clinical photographs and OPTG images. These data demonstrate a significant advantage of CBCT over OPTG for surgeons with regard to therapeutic planning for BRONJ.

Title: Simultaneous Application of Bone Morphogenetic Protein-2 and Platelet-Rich Fibrin for the Treatment of Bisphosphonate-Related Osteonecrosis of Jaw.

Citation: The Journal of oral implantology, Apr 2016, vol. 42, no. 2, p. 205-208

Author(s): Kim, Jin-Woo, Kim, Sun-Jong, Kim, Myung-Rae

Cleft lip and palate

Title: Rapid palatal expander vs. quad-helix in the orthodontic treatment of cleft lip and palate patients [English;Italian] Espansione rapida del palato versus quad-helix nel trattamento ortodontico di pazienti affetti da labiopalatoschisi

Citation: Minerva Stomatologica, April 2016, vol./is. 65/2(97-107),

Author(s): Dalessandri D., Tonni I., Dianiskova S., Migliorti M., Bonetti S., Visconti L.

Abstract: BACKGROUND: The purpose of this study was to compare the results obtained using the rapid palate expander (EPE) and the quad-helix (QH) in the treatment of cleft lip and palate (CLP) patients in mixed dentition. METHODS: In this retrospective clinical trial 28 CLP patients in mixed dentition were enrolled and divided into a group EPE, consisting of 11 patients, and a group QH, consisting of 17 patients. Plaster models before and after treatment were scanned and measurements were made using the software Ortho AnalyzerTM. Measurements, obtained with a digital gauge on plaster models, were regarded as the gold standard and compared with those on digital models. Measurement error was assessed using the Dahlberg formula and the reliability and accuracy of the measurements were evaluated by the interclass coefficient (ICC). The unpaired t-test was used to compare the group EPE with the group QH. RESULTS: Measurement error found with Dahlberg's method was 0.36. ICC values indicated a strong repeatability of the evaluator's measurements on digital models and an almost perfect repeatability on plaster models, with a value of 0.79 and 0.93, respectively. The ICC for the accuracy of the measurements on digital models was equal to 0.74, indicating a strong agreement with measurements realized on plaster models. Patients in the QH group presented a gain of the anterior palatal diameter significantly greater than those in the RPE group. CONCLUSIONS: The use in mixed dentition of the quad-helix allows obtaining a greater gain of the anterior palatal diameter and a greater symmetry of the dental arch.

Title: Success of Maxillary Alveolar Defect Repair in Rats Using Osteoblast-Differentiated Human Deciduous Dental Pulp Stem Cells

Citation: Journal of Oral and Maxillofacial Surgery, April 2016, vol./is. 74/4(8293e1-8299e9)

Author(s): Jahanbin A., Rashed R., Alamdari D.H., Koohestanian N., Ezzati A.,

Abstract: Purpose The use of cell-based therapies represents one of the most advanced methods for enhancing the regenerative response in craniofacial abnormalities. The main aim of this study was to evaluate the regenerative potential of human dental pulp stem cells, isolated from deciduous teeth, for reconstructing maxillary alveolar defects in Wistar rats. Materials and Methods Human deciduous dental pulp stem cells were isolated and stimulated to differentiate into osteoblasts in culture media. Maxillary alveolar defects were created in 60 Wistar rats by a surgical procedure. Then, on the basis of the type of graft used to repair the bone defect, the rats were divided into 6 equal groups: groups 1 and 2, transplantation of iliac bone graft; groups 3 and 4, transplantation of stem cells derived from deciduous dental pulp in addition to collagen matrix; groups 5 and 6, transplantation of just collagen matrix. Then, fetal bone formation, granulation tissue, fibrous tissue, and inflammatory tissue were evaluated by hematoxylin-eosin staining at 1 month (groups 1, 3,

and 5) and 2 months (groups 2, 4, and 6) after surgery, and data were analyzed and compared using the Fisher exact test. Results Maximum fetal bone formation occurred in group 2, in which iliac bone graft was inserted into the defect area for 2 months; there also were significant differences among the groups for bone formation ($P = .009$). In the 1-month groups, there were no significant differences between the control and stem cell-plus-scaffold groups. There were significant differences between the 2-month groups for fetal bone formation only between the control and scaffold groups ($P = .026$). Conclusions The study showed that human dental pulp stem cells are an additional cell resource for repairing maxillary alveolar defects in rats and constitute a promising model for reconstruction of human maxillary alveolar defects in patients with cleft lip and palate.

Periodontal disease and antibiotics

Title: Treponema denticola invasion into human gingival epithelial cells.

Citation: Microbial pathogenesis, May 2016, vol. 94, p. 104-111,

Author(s): Inagaki, Satoru, Kimizuka, Ryuta, Kokubu, Eitoyo, Saito, Atsushi,

Abstract: Host cell invasion is important for periodontal pathogens in evading host defenses and spreading into deeper areas of the periodontal tissue. Treponema denticola has been implicated in a number of potentially pathogenic processes, including periodontal tissue penetration. Here we tested the ability of T. denticola strains to invade human gingival epithelial cells (HGEC). After 2 h infection, intracellular location of T. denticola cells was confirmed by confocal laser scanning microscopy (CLSM). Results from an antibiotic protection assay following [(3)H]uridine labeling indicated that invasion efficiency reached a maximum at 2 h after infection. Internalized T. denticola cells were still observed in HGEC at 24 h by CLSM. A dentilisin deficient mutant exhibited significantly decreased invasion ($p < 0.05$) compared with the wild-type strain. In inhibition assays, phenylmethylsulfonyl fluoride and metabolic inhibitors such as methyl- β -cyclodextrin and staurosporine significantly reduced T. denticola invasion. Under CLSM, T. denticola colocalized with GM-1 ganglioside-containing membrane microdomains in a cholesterol-dependent manner. These results indicated that T. denticola has the ability to invade into and survive within HGECs. Dentilisin activity of T. denticola and lipid rafts on HGEC appear to play important roles in this process.

Title: Non-oral gram-negative facultative rods in chronic periodontitis microbiota.

Citation: Microbial pathogenesis, May 2016, vol. 94, p. 117-122

Author(s): van Winkelhoff, Arie J, Rurenga, Patrick, Wekema-Mulder, Gepke J,

Abstract: The subgingival prevalence of gram-negative facultative rods not usually inhabiting or indigenous to the oral cavity (non-oral GNFR), as well as selected periodontal bacterial pathogens, were evaluated by culture in untreated and treated chronic periodontitis patients. Subgingival biofilm specimens from 102 untreated and 101 recently

treated adults with chronic periodontitis in the Netherlands were plated onto MacConkey III and Dentaïd selective media with air-5% CO₂ incubation for isolation of non-oral GNFR, and onto enriched Oxoid blood agar with anaerobic incubation for recovery of selected periodontal bacterial pathogens. Suspected non-oral GNFR clinical isolates were identified to a species level with the VITEK 2 automated system. A total of 87 (42.9%) out of 203 patients yielded subgingival non-oral GNFR. Patients recently treated with periodontal mechanical debridement therapy demonstrated a greater prevalence of non-oral GNFR (57.4% vs 28.4%, $P < 0.0001$), and a greater number of different non-oral GNFR species (23 vs 14 different species), than untreated patients. *Sphingomonas paucimobilis* was the most frequently isolated subgingival non-oral GNFR species. Several GNFR species normally found in animals and human zoonotic infections, and not previously detected in human subgingival biofilms, were recovered from some patients, including *Bordetella bronchiseptica*, *Pasteurella canis*, *Pasteurella pneumotropica* and *Neisseria zoodegmatis*. *Porphyromonas gingivalis* and *Tannerella forsythia* were significantly associated with the presence of subgingival non-oral GNFR. A surprisingly high proportion of Dutch chronic periodontitis patients yielded cultivable non-oral GNFR in periodontal pockets, particularly among those recently treated with periodontal mechanical debridement therapy. Since non-oral GNFR species may resist mechanical debridement from periodontal pockets, and are often not susceptible to many antibiotics frequently used in periodontal practice, their subgingival presence may complicate periodontal treatment in species-positive patients and increase risk of potentially dangerous GNFR infections developing at other body sites.

Title: Green tea catechins potentiate the effect of antibiotics and modulate adherence and gene expression in *Porphyromonas gingivalis*.

Citation: Archives of oral biology, May 2016, vol. 65, p. 35-43,

Author(s): Fournier-Larente, Jade, Morin, Marie-Pierre, Grenier, Daniel

Abstract: A number of studies have brought evidence that green tea catechins may contribute to periodontal health. The objective of this study was to investigate the ability of a green tea extract and its principal constituent epigallocatechin-3-gallate (EGCG) to potentiate the antibacterial effects of antibiotics (metronidazole, tetracycline) against *Porphyromonas gingivalis*, and to modulate the adherence to oral epithelial cells and expression of genes coding for virulence factors and the high temperature requirement A (HtrA) stress protein in *P. gingivalis*. A broth microdilution assay was used to determine the antibacterial activity of the green tea extract and EGCG. The synergistic effects of either compounds in association with metronidazole or tetracycline were evaluated using the checkerboard technique. A fluorescent assay was used to determine bacterial adherence to oral epithelial cells. The modulation of gene expression in *P. gingivalis* was evaluated by quantitative RT-PCR. The *Vibrio harveyi* bioassay was used for monitoring quorum sensing inhibitory activity. The MIC values of the green tea extract on *P. gingivalis* ranged from 250 to 1000 µg/ml, while those of EGCG ranged from 125 to 500 µg/ml. A marked synergistic effect on *P. gingivalis* growth was observed for the green tea extract or EGCG in combination with metronidazole. Both the green tea extract and EGCG caused a dose-dependent inhibition of *P. gingivalis* adherence to oral epithelial cells. On the one hand, green tea extract and EGCG dose-dependently inhibited the expression of several *P.*

gingivalis genes involved in host colonization (fimA, hagA, hagB), tissue destruction (rgpA, kgp), and heme acquisition (hem). On the other hand, both compounds increased the expression of the stress protein htrA gene. The ability of the green tea extract and EGCG to inhibit quorum sensing may contribute to the modulation of gene expression. This study explored the preventive and therapeutic potential of green tea catechins against periodontal disease. In addition to inhibit growth and adherence of *P. gingivalis*, a green tea extract and its main constituent EGCG was found to decrease the expression of genes coding for the major virulence factors.

Title: Prevalence, Etiology and Treatment of Peri-Implant Mucositis and Peri-Implantitis: A Survey of Periodontists in the United States.

Citation: Journal of periodontology, May 2016, vol. 87, no. 5, p. 493-501

Author(s): Papathanasiou, Evangelos, Finkelman, Matthew, Hanley, James,

Abstract: Currently, information available on the exact prevalence and standard therapeutic protocol of peri-implant diseases is insufficient. The aim of this survey was to investigate the perceived prevalence, etiology, and management of peri-implant mucositis and peri-implantitis by periodontists in the United States. A twenty-question survey was developed. Periodontists currently practicing in the United States were contacted by an e-mail that contained a link to access the survey. Two hundred eighty periodontists (79.3% males; 62.9% with >10 years in practice, 75.7% in private practice) completed the survey. Most (96.1%) of the participants were placing implants (58.3% for >10 years and 32.4% >150 implants/year). The majority reported that the prevalence of peri-implant mucositis and peri-implantitis in their practices is up to 25% but is higher in the general US population and that up to 10% of implants must be removed due to peri-implantitis. There was agreement among contributing etiologic factors such as: 1) plaque; 2) smoking; 3) adverse loading; 4) oral hygiene; 5) use of antimicrobial gel/mouthrinse; 6) non-surgical debridement; 7) use of systemic antibiotics; and 8) 3-month supportive care for treatment of peri-implantitis. Significant heterogeneity was recorded in relation to the instruments used for debridement, use and type of surgical treatment, and materials used for regeneration. Only 5.1% believed that treatment is very effective. This survey indicates that peri-implant diseases are a frequently encountered problem in periodontal practices and that the absence of a standard therapeutic protocol results in significant empirical use of therapeutic modalities and a moderately effective treatment outcome.

Title: Role of bacteria in leukocyte adhesion deficiency-associated periodontitis.

Citation: Microbial pathogenesis, May 2016, vol. 94, p. 21-26

Author(s): Hajishengallis, George, Moutsopoulos, Niki M

Abstract: Leukocyte adhesion deficiency Type I (LAD-I)-associated periodontitis is an aggressive form of inflammatory bone loss that has been historically attributed to lack of neutrophil surveillance of the periodontal infection. However, this form of periodontitis has proven unresponsive to antibiotics and/or mechanical removal of the tooth-associated

biofilm. Recent studies in LAD-I patients and relevant animal models have shown that the fundamental cause of LAD-I periodontitis involves dysregulation of a granulopoietic cytokine cascade. This cascade includes interleukin IL-23 (IL-23) and IL-17 that drive inflammatory bone loss in LAD-I patients and animal models and, moreover, foster a nutritionally favorable environment for bacterial growth and development of a compositionally unique microbiome. Although the lack of neutrophil surveillance in the periodontal pockets might be expected to lead to uncontrolled bacterial invasion of the underlying connective tissue, microbiological analyses of gingival biopsies from LAD-I patients did not reveal tissue-invasive infection. However, bacterial lipopolysaccharide was shown to translocate into the lesions of LAD-I periodontitis. It is concluded that the bacteria serve as initial triggers for local immunopathology through translocation of bacterial products into the underlying tissues where they unleash the dysregulated IL-23-IL-17 axis. Subsequently, the IL-23/IL-17 inflammatory response sustains and shapes a unique local microbiome which, in turn, can further exacerbate inflammation and bone loss in the susceptible host.

Title: Effect of Periodontal Therapy With Amoxicillin-Metronidazole on Pharyngeal Carriage of Penicillin- and Erythromycin-Resistant Viridans Streptococci.

Citation: Journal of periodontology, May 2016, vol. 87, no. 5, p. 539-547

Author(s): Mombelli, Andrea, Cionca, Norbert, Almaghlouth, Adnan, Cherkaoui,

Abstract: Previous studies have focused on antibiotic resistance of Gram-negative bacteria before and after periodontal therapy. The purpose of this analysis is to assess changes in resistance patterns of the commensal Gram-positive microbiota. The viridans group streptococci (VGS) have been suggested to serve as reservoirs of resistance genes for more pathogenic streptococci and may be implicated in some non-oral infections. In this randomized clinical trial, 80 patients with periodontitis are distributed randomly into two groups. In group A, patients received 375 mg amoxicillin and 500 mg metronidazole three times per day for 7 days during the non-surgical treatment phase (T1). In group B, the antibiotics were administered during the surgical phase (T2). Resistance of VGS to penicillin and erythromycin was determined by the epsilometer test. At baseline, VGS from 12.5% (group A) and 11.8% (group B) of patients had a minimum inhibitory concentration (MIC) >2 µg/mL to penicillin. Three months after T1, VGS from 15.6% and 16.7% of patients had an MIC >2 µg/mL, respectively. Six months after T2 VGS from 5.9% and 5.9% and 12 months after T2 VGS from 6.1% and 6.3% patients had an MIC >2 µg/mL. There was no effect of therapy with antibiotics, administered either in T1 or T2, on the carriage of penicillin-resistant VGS. Erythromycin resistance was high at baseline and remained unchanged throughout the study. MICs for penicillin and erythromycin were correlated (P <0.05). Amoxicillin plus metronidazole did not significantly affect the resistance pattern of the VGS to penicillin or erythromycin.

Title: Detection of cfxA2, cfxA3, and cfxA6 genes in beta-lactamase producing oral anaerobes.

Citation: Journal of applied oral science : revista FOB, Apr 2016, vol. 24, no. 2, p. 142-147,

Author(s): Binta, Buhle, Patel, Mrudula

Abstract: Purpose The aim of this study was to identify β -lactamase-producing oral anaerobic bacteria and screen them for the presence of *cfxA* and *BlaTEM* genes that are responsible for β -lactamase production and resistance to β -lactam antibiotics. Material and Methods Periodontal pocket debris samples were collected from 48 patients with chronic periodontitis and anaerobically cultured on blood agar plates with and without β -lactam antibiotics. Presumptive β -lactamase-producing isolates were evaluated for definite β -lactamase production using the nitrocefin slide method and identified using the API Rapid 32A system. Antimicrobial susceptibility was performed using disc diffusion and microbroth dilution tests as described by CLSI Methods. Isolates were screened for the presence of the β -lactamase-TEM (*BlaTEM*) and β -lactamase-*cfxA* genes using Polymerase Chain Reaction (PCR). Amplified PCR products were sequenced and the *cfxA* gene was characterized using Genbank databases. Results Seventy five percent of patients carried two species of β -lactamase-producing anaerobic bacteria that comprised 9.4% of the total number of cultivable bacteria. Fifty one percent of β -lactamase-producing strains mainly *Prevotella*, *Porphyromonas*, and *Bacteroides* carried the *cfxA* gene, whereas none of them carried *blaTEM*. Further characterization of the *cfxA* gene showed that 76.7% of these strains carried the *cfxA2* gene, 14% carried *cfxA3*, and 9.3% carried *cfxA6*. The *cfxA6* gene was present in three *Prevotella* spp. and in one *Porphyromonas* spp. Strains containing *cfxA* genes (56%) were resistant to the β -lactam antibiotics. Conclusion This study indicates that there is a high prevalence of the *cfxA* gene in β -lactamase-producing anaerobic oral bacteria, which may lead to drug resistance and treatment failure.

Title: Immediate tooth replantation in rats: effect of systemic antibiotic therapy with amoxicillin and tetracycline.

Citation: Clinical oral investigations, Apr 2016, vol. 20, no. 3, p. 523-532,

Author(s): Melo, Moriel Evangelista, Silva, Cristina Antoniali, de Souza Gomes,

Abstract: The aim of this study was to evaluate the influence of systemic administration of antibiotics (amoxicillin and tetracycline) at the different phases of the repair process (7, 15, 30 days) in immediate rat tooth replantation. Ninety rats had their incisors extracted and stored in saline for 5 min. Next, the teeth were replanted, and the animals were assigned to three groups according to the antibiotic administered by oral gavage: control group, amoxycillin group, and tetracycline group. Euthanasia was performed at 7, 15, and 30 days after replantation. Regardless of the evaluation period, the connective tissue underlying the epithelial attachment and the periodontal ligament showed statistically significant difference relative to the acute inflammatory infiltrate, which was more intense in the control group followed by the tetracycline group. These results point to the fact that systemic antibiotic therapy (SAT) in immediate tooth replantation is beneficial to pulpal and periodontal ligament repair and that amoxycillin is an excellent option. There is a lack of randomized studies assessing how the use of systemic antibiotics could influence tooth healing after immediate replantation.

Title: Keratinized mucosa around implants in partially edentulous posterior mandible: 10-year results of a prospective comparative study.

Citation: Clinical oral implants research, Apr 2016, vol. 27, no. 4, p. 491-496

Author(s): Rocuzzo, Mario, Grasso, Giancarlo, Dalmasso, Paola

Abstract: The aim of this research was to investigate the clinical conditions around dental implants placed in the posterior mandible of healthy or moderately periodontally compromised patients, in relation to the presence or not of keratinized mucosa (KT). One hundred and twenty-eight patients who needed an implant in the posterior mandible were consecutively enrolled in a private specialist practice. Only one implant per patient was examined originally placed either within KT or alveolar (AM) mucosa. At 10 years, clinical and radiographic measures were recorded by a calibrated operator. The number of sites treated according to therapy modalities C and D (antibiotics and/or surgery) during the 10 years was also registered. Ninety-eight patients completed the 10-year study. The absence of KT was associated with higher plaque accumulation, greater soft-tissue recession (REC), and a higher number of sites that required additional surgical and/or antibiotic treatment. Patient-reported outcomes regarding maintenance procedures presented major differences between the groups. In 11 of the 35 AM cases, additional free gingival graft (FGG) was successfully employed to reduce discomfort and to facilitate optimal plaque control. Implants that are not surrounded by KT are more prone to plaque accumulation and REC, even in patients exercising sufficient oral hygiene and receiving adequate supporting periodontal therapy (SPT). In selected cases, particularly in the edentulous posterior mandible, where ridge resorption leads to reduced vestibular depth and lack of KT, additional FGG can be beneficial to facilitate proper oral hygiene procedures.

Title: [Effects of intracellular *Porphyromonas gingivalis* on proliferation and osteogenic differentiation of human periodontal ligament cells in vitro].

Citation: Nan fang yi ke da xue xue bao = Journal of Southern Medical University, Apr 2016, vol. 36, no. 4, p. 525-531

Author(s): Tan, Yong-Mei, Hou, Jin, Yang, Xiao-Jun, Liang, Yue-E, Zhang, Yan,

Abstract: To investigate the ability of *Porphyromonas gingivalis* to invade human periodontal ligament cells (hPDLCs) and the effect of intracellular *P. gingivalis* on cell proliferation and osteogenic differentiation in vitro. The invasion ability of *P. gingivalis* in hPDLCs was tested using an antibiotic protection assay at the multiplicity of infection (MOI) of 10 and 100. The proliferation of the infected cells was detected using a CFDA-SE kit, and the cells were sorted by fluorescence-activated cell sorting (FACS) followed by alizarin red staining for detecting mineralization nodules deposition; real-time PCR was used to examine the expression of Runx2 mRNA in the cells. *P. gingivalis* actively invaded hPDLCs, and the internalized *P. gingivalis* was able to resist antibiotic treatment. The cells infected by *P. gingivalis* exhibited no significant suppression of cell proliferation, but showed significantly lowered capacity for osteogenic differentiation, down-regulated RUNX2 mRNA expression,

and reduced mineral deposition. Intracellular *P. gingivalis* does not significantly affect the proliferation of hPDLs but inhibits osteogenic differentiation of the cells.

Title: Antibiotic prescribing in UK general dental practice: a cross-sectional study.

Citation: Community dentistry and oral epidemiology, Apr 2016, vol. 44, no. 2, p. 145-153

Author(s): Cope, Anwen L, Francis, Nick A, Wood, Fiona, Chestnutt, Ivor G

Abstract: To assess the extent to which antibiotic prescribing in general dental practice conforms to clinical guidelines and to describe factors associated with antibiotic prescription in the absence of spreading infection or systemic involvement. A cross-sectional study of the management of adult patients with acute dental conditions by General Dental Practitioners (GDPs) in Wales, UK. Clinical information on the management of patients was compared to clinical and prescribing guidelines published by the Scottish Dental Clinical Effectiveness Programme and the Faculty of General Dental Practice (UK). Multilevel logistic regression was used to identify patient, practitioner and consultation characteristics predictive of antibiotic prescribing in the absence of infection. Antibiotics were prescribed to 57.4% of 568 patients. Over half of antibiotics (65.6%) were prescribed in situations where there was no evidence of spreading infection, and 70.6% were used without the provision of an operative intervention. Only 19.0% of antibiotics were prescribed in situations where their use was indicated by clinical guidelines. Factors associated ($P < 0.05$) with antibiotic prescription in the absence of infection were failure of previous operative treatment (Odds Ratio (OR) 13.57), shortage of clinical time to undertake treatment (OR 10.21), patients who were unable or unwilling to accept operative treatment (OR 4.89), patient requests for antibiotics (OR 3.69) and acute periodontal conditions (OR 3.37). A high level of inappropriate antibiotic prescribing was observed amongst the GDPs studied. Features of the healthcare environment, such as clinical time pressures, and patient-related characteristics, such as expectations for antibiotics and refusal of operative treatment, are associated with antibiotic prescribing in the absence of infection. Individuals responsible for the commissioning and delivery of dental services should seek to develop targeted interventions addressing these issues in order to ensure optimal antimicrobial stewardship within dentistry

Head and neck oncology and dentistry

Title: Maxillary and mandible contouring in patients with a head and neck area irradiation

Citation: Practical Radiation Oncology, May 2016, vol./is. 6/3(e61-e72),

Author(s): Rouers M., Antoni D., Thompson A., Truntzer P., Haoming Q.C., Bourrier C.

Abstract: Purpose: Dental care is crucial after irradiation of the head and neck. This care may include dental restoration, extractions, and prosthetic implantation or prosthesis adjustment. To perform these procedures safely, dentists need to know the delivered

radiation dose delivered to the relevant part of the mandible and/or maxilla. We propose a simple, fast, and useful contouring technique to aid accurate recording of radiation therapy dose to the mandible and maxilla. Methods and materials: The maxilla and mandible of 2 patients, 1 dentate and 1 edentulous, have been contoured on computed tomography planning scans. The jaw has been divided into sextants (3 segments in both the mandible and maxilla) using bony landmarks. Results: We have developed a contouring atlas to aid radiation oncologists in delineating the maxilla and mandible allowing accurate recording of dose to each sextant and meaningful communication with their dental colleagues. Conclusion: Delineation of the maxilla and mandible is important if we are to improve communication between radiation oncologists and dentists regarding radiation and risk to these structures. Our method should not increase the time to delineate the organs at risk and target volumes in the head and neck area and could improve the safety of subsequent dental treatments.

Title: The wide-ranging clinical implications of the short telomere syndromes

Citation: Internal Medicine Journal, April 2016, vol./is. 46/4(393-403)

Author(s): Barbaro P.M., Ziegler D.S., Reddel R.R.

Abstract: There is an increasing number of inherited disorders in which excessive telomere shortening underlies the molecular defect, with dyskeratosis congenita (DC) being the archetypal short telomere syndrome. DC is classically described as a mucocutaneous triad of oral leukoplakia, nail dystrophy and abnormal skin pigmentation. However, excessive telomere shortening can affect almost any organ system, so the clinical manifestations are protean, including developmental delay, cerebellar hypoplasia, exudative retinopathy, aplastic anaemia, acute myeloid leukaemia, idiopathic pulmonary fibrosis, idiopathic hepatic cirrhosis, head and neck cancer and dental abnormalities, and may be multi-systemic. Undiagnosed patients may be seen by essentially any medical subspecialist. Correct diagnosis is important to ensure appropriate management, and for initiating investigations to identify affected family members. Treatment is often supportive, with transplantation offering cure for pulmonary fibrosis or bone marrow failure. Higher rates of mortality and morbidity with transplantation often require regimen alterations, underscoring the need for correct diagnosis. Short telomeres result from mutations in genes essential for telomere maintenance (e.g. genes encoding subunits of the telomerase enzyme complex). Disease severity reflects not only the severity of the defect, but also the inheritance of short telomeres, giving rise to incomplete penetrance and genetic anticipation. Attendees of the inaugural Australian Short Telomere Syndrome Conference were updated on the current scientific and clinical understanding of these disorders, and discussed the best approach for management of these patients in the Australian context. This review will include recommendations from the conference and aims to increase awareness of short telomere disorders.

Title: Neutron Beam Radiation Therapy: An Overview of Treatment and Oral Complications When Treating Salivary Gland Malignancies Presented as an oral abstract at the national meeting of the American Association of Oral and Maxillofacial Surgeons; September 2013

Citation: Journal of Oral and Maxillofacial Surgery, April 2016, vol./is. 74/4(830-835)

Author(s): Davis C., Sikes J., Namaranian P., Laramore G., Dillon J.K.

Abstract: Purpose There is limited information in the literature regarding the oral complications of neutron radiotherapy, with an associated lack of guidelines for their management. The purpose of this study was to review the indications, dosing, prognosis, and oral complications of neutron radiotherapy for salivary gland malignancies. Materials and Methods This is a retrospective case series of patients with salivary gland malignancies treated with neutron radiotherapy by the Radiation Oncology Department at the University of Washington from 1997 to 2006. Variables included patient demographics, tumor staging and characteristics, operative treatment, final diagnosis, operative and pathologic findings (ie, perineural invasion, lymph node involvement, and skull base invasion), dosing, complications, and locoregional control and survival rates. Data were extracted from patients' charts and by telephone for follow-up and quality-of-life information. Results The sample was composed of 140 patients (49% men, 51% women) with a mean age of 53 years (standard deviation, 15 yr). Adenoid cystic carcinoma of the submandibular gland was the most common tumor type and location. Post-treatment trismus occurred in 56%. Acute mucositis and xerostomia occurred in approximately 88 and 89% of patients, respectively. Osteoradionecrosis was reported in 5.7% of patients. The 6-year survival rate was 58% and the 6-year locoregional control was 72%. The current standard neutron dose for head and neck tumors is 1.15 neutron Gray (nGy) 4 times per week for 4 weeks (total, 18.4 nGy), which is an equivalent amount of radiation as the standard 60 to 70 Gy given for 6 to 7 weeks with conventional photon radiation. Conclusion The 6-year overall survival of 58% found in this study compares favorably to the survival rate reported in the literature for traditional photon radiation treatment of advanced salivary gland tumors. The dental profession should be educated regarding neutron radiotherapy and its indications, dosing methods, and oral complications.

Title: Role of general practice in the diagnosis of oral cancer

Citation: British Journal of Oral and Maxillofacial Surgery, 2016, vol./is. 54/2(208-212)

Author(s): Crossman T., Warburton F., Richards M.A., Smith H., Ramirez A., Forbes L.J.L.

Abstract: The incidence of oral cancer is increasing in the United Kingdom. There is evidence that early diagnosis and effective treatment improve survival, but the poor 5-year survival rate (50%), which has not improved for several decades, has been attributed to advanced stage at presentation. To investigate the symptoms associated with cancer of the oral cavity and to explore the role of general practitioners (GP) in the identification and referral of patients, we sent 200 patients questionnaires on the route to diagnosis, symptoms, delay in presentation, and outcomes of consultations with their GP. Of 161 respondents, over half (56%) had been referred to secondary care by their GP and a third (32%) by their dentist. The most commonly reported symptoms were a mouth ulcer (32%), a lump in the face or neck (28%), and pain or soreness in the mouth or throat (27%). Fifteen per cent delayed presentation for more than 3 months. After consultation with a GP (n=109), 53% were referred to a specialist, 22% were referred for tests, 12% were told that their symptom was

not serious, and 12% were treated for another condition. GPS have an important role in the identification and referral of people with oral cancer, and the clearly recognised symptoms identified in this study can be used to aid assessment and decision-making. Interventions to promote the prompt identification of oral cancer in general practice such as the opportunistic screening of high-risk patients may help to improve the poor survival rates.

Dental implants

Title: Evaluation of bone remodeling around single dental implants of different lengths: a mechanobiological numerical simulation and validation using clinical data

Citation: Computer Methods in Biomechanics and Biomedical Engineering, May 2016, vol./is. 19/7(699-706)

Author(s): Sotto-Maior B.S., Mercuri E.G.F., Senna P.M., Assis N.M.S.P., Francischone C.E.

Abstract: Algorithmic models have been proposed to explain adaptive behavior of bone to loading; however, these models have not been applied to explain the biomechanics of short dental implants. Purpose of present study was to simulate bone remodeling around single implants of different lengths using mechanoregulatory tissue differentiation model derived from the Stanford theory, using finite elements analysis (FEA) and to validate the theoretical prediction with the clinical findings of crestal bone loss. Loading cycles were applied on 7-, 10-, or 13-mm-long dental implants to simulate daily mastication and bone remodeling was assessed by changes in the strain energy density of bone after a 3, 6, and 12 months of function. Moreover, clinical findings of marginal bone loss in 45 patients rehabilitated with same implant designs used in the simulation (n = 15) were computed to validate the theoretical results. FEA analysis showed that although the bone density values reduced over time in the cortical bone for all groups, bone remodeling was independent of implant length. Clinical data showed a similar pattern of bone resorption compared with the data generated from mathematical analyses, independent of implant length. The results of this study showed that the mechanoregulatory tissue model could be employed in monitoring the morphological changes in bone that is subjected to biomechanical loads. In addition, the implant length did not influence the bone remodeling around single dental implants during the first year of loading.

Title: Titanium dental implants surface-immobilized with gold nanoparticles as osteoinductive agents for rapid osseointegration

Citation: Journal of Colloid and Interface Science, May 2016, vol./is. 469/(129-137)

Author(s): Heo D.N., Ko W.-K., Lee H.R., Lee S.J., Lee D., Um S.H., Lee J.H., Woo Y.-H.,

Abstract: Gold nanoparticles (GNPs) are quite attractive materials for use as osteogenic agents due to their potential effects on the stimulation of osteoblast differentiation. In this study, an osseo-integrated titanium (Ti) implant surface coated with GNPs was used for promotion of bone regeneration. We prepared a silanized Ti surface by chemical treatment of (3-Mercaptopropyl) trimethoxysilane (MPTMS) and immobilized the GNP layer (Ti-GNP) on their surfaces via Au-S bonding. The GNP layer is uniformly immobilized on the surface and the layer covers the titanium oxide surface well, as confirmed by scanning electron microscopy (SEM) and atomic force microscopy (AFM). The Ti-GNP was used to investigate the effectiveness of this system both in vitro and in vivo. The in vitro results showed that the Ti-GNP significantly enhances the osteogenic differentiation with increased mRNA expression of osteogenic differentiation specific genes in human adipose-derived stem cells (ADSCs). Furthermore, the in vivo results showed that Ti-GNP had a significant influence on the osseous interface formation. Through these in vitro and vivo tests, we found that Ti-GNP can be useful as osseo-integration inducing dental implants for formation of an osseous interface and maintenance of nascent bone formation.

Title: Accuracy of secondary maxillofacial reconstruction with prefabricated fibula grafts using 3D planning and guided reconstruction

Citation: Journal of Cranio-Maxillofacial Surgery, April 2016, vol./is. 44/4(392-399)

Author(s): Schepers R.H., Kraeima J., Vissink A., Lahoda L.U., Roodenburg J.L.N.,

Abstract: Background We compared the pre-operative 3D-surgical plan with the surgical outcome of complex two-stage secondary reconstruction of maxillofacial defects using inserted implants in the prefabricated fibula graft. Methods Eleven reconstructions of maxillofacial defects with prefabricated fibulas were performed using a 3D virtual planning. Accuracy of placement of the fibula grafts and dental implants was compared to pre-operative 3D virtual plans by superimposing pre-operative and post-operative CT-scans: we first superimposed the CT-scans on the antagonist jaw, to represent the outcome of occlusion, and then superimposed on the planned fibula segments. Results Superimposing the CT scans on the antagonist jaws revealed a median deviation of the fibula segments and implants of 4.7 mm (IQR:3-6.5 mm) and 5.5 mm (IQR:2.8-7 mm) from the planned position, respectively. Superimposing of the CT scans on the fibula segments revealed a median difference of fibula and implant placement of 0.3 mm (IQR:0-1.6 mm) and 2.2 mm (IQR:1.5-2.9 mm), respectively. Conclusions The final position of the fibula graft is determined by the occlusion of the denture, which is designed from the 3D plan. From a prosthodontic perspective, the accuracy of 3D-surgical planning of reconstruction of maxillofacial defects with a fibula graft and the implants allows for a favorable functional position of the implants and fibula graft.

Title: Effects of cisplatin chemotherapy on the osseointegration of titanium implants

Citation: Journal of Cranio-Maxillofacial Surgery, April 2016, vol./is. 44/4(337-346)

Author(s): Al-Mahalawy H., Marei H.F., Abuohashish H., Alhawaj H., Alrefae M.

Abstract: Purpose The effect of chemotherapy on the osseointegration of dental implants has received less interest compared with radiotherapy. Thus, the aim of the current study was to investigate the effect of cisplatin chemotherapy on the osseointegration of dental implants in a rabbit model. Materials and methods Sixteen New Zealand White rabbits were randomly assigned to two groups of treatment of either cisplatin at 2.5 mg/kg/week for 4 weeks (n = 8) or placebo (n = 8), in which the first dose was administered 2 days prior to the surgical procedure. Each rabbit received one titanium dental implant inserted in the right distal femoral condyle. Four rabbits from each group were sacrificed 4 and 8 weeks after implant insertion. Osseointegration of the dental implants was analysed using micro-computed tomography and histomorphometric evaluation. Results Analysis of micro-computed tomography data and histomorphometric data showed that the osseointegration parameters, including the ratio of bone volume to total volume (BV/TV) and bone-implant contact (BIC%) for the cisplatin group, were significantly lower compared to the control group at 4 and 8 weeks. ($P < 0.05$). Conclusion Cisplatin chemotherapy had a negative effect on the osseointegration of dental implants when inserted throughout the chemotherapeutic regimens in a rabbit model.

Title: Biological characterization of a new silicon based coating developed for dental implants

Citation: Journal of Materials Science: Materials in Medicine, April 2016, vol./is. 27/4(no pagination),

Author(s): Martinez-Ibanez M., Juan-Diaz M.J., Lara-Saez I., Coso A., Franco J.,

Abstract: Taking into account the influence of Si in osteoblast cell proliferation, a series of sol-gel derived silicon based coating was prepared by controlling the process parameters and varying the different Si-alkoxide precursors molar rate in order to obtain materials able to release Si compounds. For this purpose, methyltrimethoxysilane (MTMOS) and tetraethyl orthosilicate (TEOS) were hydrolysed together and the sol obtained was used to dip-coat the different substrates. The silicon release ability of the coatings was tested finding that it was dependent on the TEOS precursor content, reaching a Si amount value around ninefolds higher for coatings with TEOS than for the pure MTMOS material. To test the effect of this released Si, the in vitro performance of developed coatings was tested with human adipose mesenchymal stem cells finding a significantly higher proliferation and mineralization on the coating with the higher TEOS content. For in vivo evaluation of the biocompatibility, coated implants were placed in the tibia of the rabbit and a histological analysis was performed. The evaluation of parameters such as the bone marrow state, the presence of giant cells and the fibrous capsule proved the biocompatibility of the developed coatings. Furthermore, coated implants seemed to produce a qualitatively higher osteoblastic activity and a higher number of bone spicules than the control (uncoated commercial SLA titanium dental implant).

Title: A comparative and a qualitative analysis of patient's motivations, expectations and satisfaction with dental implants

Citation: Journal of Clinical and Diagnostic Research, April 2016, vol./is. 10/4(ZC23-ZC26)

Author(s): Walia K., Belludi S.A., Kulkarni P., Darak P., Swamy S.

Abstract: Introduction: Dental Implants are the norm of today's prosthetic and restorative dentistry but, is it the answer for edentulism that can affect both individual's appearance and functioning, therefore having an impact on the psychological and the social well being of the person is an ongoing quest. Also, patient's beliefs and personal expectations for dental implants vary, which may influence the treatment outcome, thus emphasizing the importance of a good clinician-patient communication. Hence in this study a qualitative analysis was carried out with an earnest attempt to gain an insight into patient's motivations, personal expectations, satisfaction and impact of clinician's motivation for implant maintenance. Aim: To learn about patient's expectations and their level of satisfaction from dental implants. To know the impact of clinician's instructions and motivation for implant maintenance, with the patient's level of understanding and compare the level of motivation for implant maintenance and care provided by a dentist with Bachelor's degree to a dentist with a Master's degree. Materials and Methods: A 30 systemically healthy patients who had undergone implant treatment (aged 25-65 years) were considered and divided into two groups: Group A: 15 patients in whom implant placement was done by a dentist with Bachelor's degree (24 years, 18 years in general and implant practice respectively) and Group B: 15 patients in whom implant placement was done by a dentist with a Master's degree (Periodontics; 20 years, 17 years in general and implant practice respectively). A qualitative analysis with the help of appropriate questionnaires comprising of multiple choice questions specifically designed for this purpose and few open ended questions was carried out with an earnest attempt to gain an insight into patient's motivations, personal expectations, satisfaction and impact of clinician's motivation for implant maintenance. Results: Patients motivations for seeking implants and their expectations of treatment differed. Dental implants had met the patient's pre-treatment expectations and they were satisfied. Variations in the knowledge on the maintenance of the implants by the patients and the kind of maintenance care provided by the dentists varied between the two groups. Conclusion: In regard to the patient's compliance towards dental implants, a clinician must ensure that patient's understand the different demands.

Title: Unusual Spontaneous Mandibular Regeneration of a Large Defect Followed by Orthodontics, Alveolar Distraction, and Dental Implant Rehabilitation: A 10-Year Follow-Up

Citation: Journal of Oral and Maxillofacial Surgery, April 2016, vol./is. 74/4(786-793)

Author(s): Cardinal L., Dominguez G.C., Marodin A.L., Rau L.H.

Abstract: This report describes an atypical case of spontaneous mandibular regeneration of a large size bony defect after resection of an aseptic osteonecrotic area near the symphysis and parasymphyseal area. The patient underwent orthodontic therapy, vertical osteogenic distraction of the alveolar bone, and oral rehabilitation with an implant borne prosthesis. This case study also describes the 10-year follow-up of comprehensive multidisciplinary treatment and successful recovery of a patient's esthetic and functional aspects.

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April 2016, Volume 220 Issue 8

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March 2016 Vol. 17, Issue 1

<http://www.nature.com/ebd/journal/v17/n1/index.html>

International Journal of Oral and Maxillofacial Implants

March/April 2016 Volume 31 , Issue 2

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International Journal of Prosthodontics

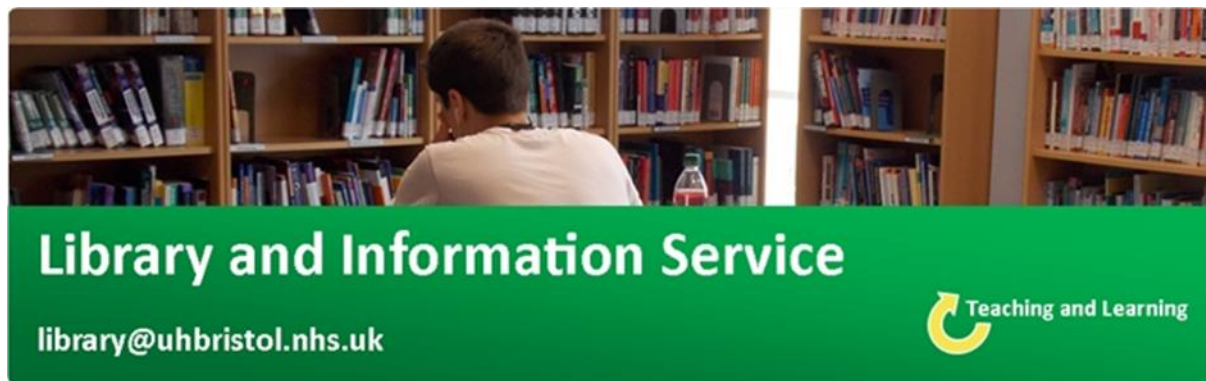
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Journal of Clinical Periodontology

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