

Restorative Dentistry

Current Awareness Newsletter

February 2016



Respecting everyone
Embracing change
Recognising success
Working together
Our hospitals.



Lunchtime Drop-in Sessions

January - June 2016

The **Library and Information Service** provides free specialist information skills training for all UHBristol staff and students.

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If you're unable to attend we also provide **one-to-one** or **small group** sessions. Contact library@uhbristol.nhs.uk to arrange a session.

Literature Searching

An in-depth guide to formulating an effective search strategy and getting the most out of searching key healthcare databases.

Understanding Articles

How to assess the strengths and weaknesses of research methods.

Examining different research designs, bias and validity, and frameworks for systematically appraising a medical paper.

Medical Statistics

A basic introduction to the key statistics in medical articles.

Giving an overview of statistics that compare risk, test confidence, analyse clinical investigations, and test difference.

Information Resources

A comprehensive overview of Library subscription resources, freely available online resources and 'grey literature'.

January (1pm)

Mon 4th **Literature Searching**
Tues 12th **Understanding articles**
Weds 20th **Statistics**
Thurs 28th **Information resources**

February (12pm)

Fri 5th **Literature Searching**
Mon 8th **Understanding articles**
Tues 16th **Statistics**
Weds 24th **Information resources**

March (1pm)

Thurs 3rd **Literature Searching**
Fri 11th **Understanding articles**
Mon 14th **Statistics**
Tues 22nd **Information resources**
Weds 30th **Literature Searching**

April (12pm)

Thurs 7th **Understanding articles**
Fri 15th **Statistics**
Mon 18th **Information resources**
Tues 26th **Literature Searching**

May (1pm)

Weds 4th **Understanding articles**
Thurs 12th **Statistics**
Fri 20th **Information resources**
Tues 31st **Literature Searching**

June (12pm)

Weds 8th **Understanding articles**
Thurs 16th **Statistics**
Fri 24th **Information resources**

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Your Friendly Local Librarian...

Whatever your information needs, the library is here to help. We offer **literature searching services** as well as training and guidance in **searching the evidence** and **critical appraisal** – just email us at library@uhbristol.nhs.uk

Outreach: Your Outreach Librarian can help facilitate evidence-based practice for all in the restorative dentistry team, as well as assisting with academic study and research. We can help with **literature searching, obtaining journal articles and books**. We also offer one-to-one or small group training in **literature searching, accessing electronic journals, and critical appraisal**. Get in touch: library@uhbristol.nhs.uk

Literature searching: We provide a literature searching service for any library member. For those embarking on their own research it is advisable to book some time with one of the librarians for a 1 to 1 session where we can guide you through the process of creating a well-focused literature research and introduce you to the health databases access via NHS Evidence. Please email requests to library@uhbristol.nhs.uk



UpToDate is the leading evidence-based clinical decision support system, designed for use at the point of care.

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- ❖ Allergy and immunology
- ❖ Cardiovascular medicine
- ❖ Dermatology
- ❖ Drug therapy
- ❖ Endocrinology and diabetes mellitus
- ❖ Family medicine
- ❖ Gastroenterology and hepatology
- ❖ General surgery
- ❖ Geriatrics
- ❖ Haematology
- ❖ Hospital Medicine
- ❖ Infectious diseases
- ❖ Nephrology and hypertension
- ❖ Neurology
- ❖ Obstetrics and gynaecology
- ❖ Oncology
- ❖ Paediatrics
- ❖ Primary care internal medicine
- ❖ Psychiatry
- ❖ Pulmonary, critical care and sleep medicine
- ❖ Rheumatology

How to access UpToDate

You can access UpToDate from any computer via www.uptodate.com.

You will need your NHS Athens username
(register through <http://openathens.nice.org.uk/>).

New from Up-to-Date

Management and prevention of complications during initial treatment of head and neck cancer

Authors: Thomas Galloway, MD; Robert J Amdur, MD

Literature review current through: Jan 2016. | **This topic last updated:** May 20, 2015.

INTRODUCTION — Toxicity from cancer therapy is classified as acute or late based upon its temporal relationship to treatment. Acute toxicity develops during or shortly after the completion of treatment and is usually temporary. Late toxicity presents months to years after the completion of treatment and is often permanent. The term “complication” is used for a treatment toxicity that causes an important medical problem.

This topic will review the care of patients with head and neck cancer during their initial therapy, both to treat acute toxicity and to prevent late complications. The management of late complications is discussed separately.

GENERAL PRINCIPLES

Spectrum of issues — Cancers of the upper aerodigestive tract are in close proximity to organs vital to a patient’s quality of life (eg, tongue, larynx, mandible), and they often emanate from such organs. The involvement of these structures with cancer and the steps needed to eradicate the malignancy can cause a wide spectrum of toxicities.

The most basic toxicities are the impairment in the ability to breathe, communicate, and maintain an adequate oral intake. Oral intake is compromised by swallowing problems (dysphagia and odynophagia), poor taste (dysgeusia), trismus, xerostomia, and mucositis. Respiration and communication can be compromised by bulky tumors, neuromuscular impairment secondary to tumor growth, or an edematous pharynx and/or larynx. In addition to toxicity limiting the ability to speak, eat, and breathe, patients can experience cutaneous toxicity from both radiation and targeted therapy ([cetuximab](#)), neurotoxicity from both commonly used chemotherapy agents ([cisplatin](#)) and radiation, and dental complications from the effects of radiation dose to the mandible/maxilla and salivary glands.

On Twitter?

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

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

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

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

OpenAthens de-mystified...

What is OpenAthens?

OpenAthens is a way of authenticating that you have permission to access our subscription e-resources. To access our electronic resources you will need a UH Bristol Athens username/password.

How can I get an Athens login?

Click [here](#) to complete the online registration form. You will need to register using a Trust PC and a UH Bristol email address. Once you have successfully completed the form, you will be sent an email to you UH Bristol account with an authentication link.

I have an Athens account from another Trust/University. Do I still need a UH Bristol account?

You will need a UH Bristol account to access our local subscription resources. You can either update the settings of your existing account by logging in and selecting 'change organisation', or you can set up a new UH Bristol account by clicking [here](#) (you will need to register using a Trust PC and a UH Bristol email address).

My Athens account has expired. What should I do?

You can register for a new account [here](#).

I have forgotten my Athens Username / Password. How can I reset it?

Password: If you are on a Trust PC, follow the link to https://register.athensams.net/nhs/forgotten_password.php.

Username and password: You should email athens.sdhct@nhs.net with your full name, full work address, work telephone number and the email address you used to register for the account. In the email subject line put 'Forgotten username and password'. It may take up to five working days to receive your username and a reset password.

New from the Dental Elf

[Platform-switching dental implants improved bone preservation in short term](#)

Jan 27 2016

Previous studies and reviews have suggested that platform switching where the abutment has a smaller diameter than the implant platform on which is placed has a beneficial effect on marginal bone preservation. The aim of this review was to evaluate the possible benefits of platform-switching (PSW) implants when compared to regular platform (RP) implants in the categories of bone preservation and longevity.

[What is the impact of peri-implant maintenance therapy?](#)

Jan 15 2016

The increasing provision of dental implants has seen a steady increase in peri-implant diseases of mucositis and peri-implantitis. With peri-implantitis frequencies at implant level been reported to be between 1-47%. The aim of the review was to assess the impact of peri-implant maintenance therapy (PIMT) on the prevention of peri-implant diseases.

[Crowns more effective than fillings for decay in primary molar teeth](#)

Jan 6 2016

Globally dental caries affects 60-90% of children, most commonly in primary molar teeth. If this is not managed it can lead to pain and infection and impact on ability to grow and thrive. The aim of this review was to evaluate the clinical effectiveness and safety of all types of pre-formed crowns for restoring primary teeth compared with conventional filling materials (such as amalgam, composite, glass ionomer cement, resin-modified glass ionomer, and compomers), other types of crowns or methods of crown placement and non-restorative caries treatment or no treatment.

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: Prevalence of peri-implant disease on platform switching implants: a cross-sectional pilot study.

Citation: Brazilian oral research, Jan 2016, vol. 30, no. 1 (2016)

Author(s): Duque, Andrés Duque, Aristizabal, Astrid Giraldo, Londoño, Susana, Castro, Lida,

Abstract: The objective of this study was to assess the prevalence of mucositis and peri-implantitis associated with the use of two types of implants-conventional versus platform switching after one year of loading. A longitudinal study of 64 implants in 25 patients was performed. Clinical variables, such as clinical pocket depth and bleeding upon probing, plaque, mobility, gingival recession, clinical attachment loss, and radiographic bone loss, were analyzed. The case definition for peri-implantitis was established as pockets of ≥ 5 mm with bleeding and bone loss ≥ 2 mm. One year after implant loading, the prevalence of mucositis and peri-implantitis with conventional implants (CIs) was 81.2% and 15.6%, respectively. For platform switching implants (PSIs) the prevalence was 90% and 6.6%, respectively. These differences were not statistically significant ($p = 0.5375$). However, there was a trend towards a lower prevalence of peri-implantitis with platform switching Implants.

Title: Factors influencing severity of peri-implantitis.

Citation: Clinical oral implants research, Jan 2016, vol. 27, no. 1, p. 7-12 (January 2016)

Author(s): Saaby, Martin, Karring, Eva, Schou, Søren, Isidor, Flemming

Abstract: To retrospectively assess the influence of potential risk factors, primarily smoking and a prior history of periodontitis, on the severity of peri-implantitis in patients referred for treatment of peri-implantitis. Among 98 patients referred for treatment of peri-implantitis, 34 patients fulfilled the inclusion criteria: one or several implants with peri-implant marginal bone loss ≥ 2 mm concomitant with bleeding and/or pus on probing. Information about health status, smoking habits, reason for tooth loss, and performed implant treatment were obtained from the patient charts and interviews. Moreover, a detailed extra- and intraoral examination was performed, including intraoral radiographs of all implants. Risk factors were evaluated by a two-way anova at patient level. Smoking and a prior history of periodontitis were significant risk factors for increased severity of peri-implantitis. Furthermore, the presence of both smoking and a prior history of periodontitis did not further increase the severity of peri-implantitis, as compared to either of these two factors alone. Poor marginal fit of the suprastructure and extensive gingival imitations on implant-supported fixed full prostheses may also be potential risk factors. The study indicated that smoking and a prior history of periodontitis were important risk factors for increased severity of peri-implantitis, while concomitant presence of these two risk factors did not further increase the severity of peri-implantitis, as compared to either of these two risk factors alone. Therefore, early diagnosis and adequate treatment of peri-implantitis are important in patients with a prior history of periodontitis and in smokers to minimize the risk of advanced peri-implantitis in conjunction with focus on known risk factors, including meticulous infection control before implant treatment and a systematic maintenance care program.

Title: Periodontal and peri-implant microbiota in patients with healthy and inflamed periodontal and peri-implant tissues.

Citation: Clinical oral implants research, Jan 2016, vol. 27, no. 1, p. 13-21 (January 2016)

Author(s): Zhuang, Long-Fei, Watt, Rory M, Mattheos, Nikos, Si, Mi-Si, Lai,

Abstract: To compare the prevalence and levels of six bacterial pathogens within the subgingival/submucosal microbiota at teeth versus implants with various clinical conditions. Twenty-two Chinese were included. Four subgingival/submucosal sites were selected for microbiological sampling within each subject, that is, (1) healthy peri-implant tissues; (2) peri-implantitis [PPD ≥ 5 mm, presence of bleeding on probing (BOP) and confirmed radiographic bone loss]; (3) healthy gingiva; and (4) periodontitis (PPD ≥ 4 mm). Subgingival/submucosal plaque was sampled using paper points. Quantitative real-time polymerase chain reaction (q-PCR) was used to quantify six pathogens, including *Porphyromonas gingivalis* (P.g.), *Treponema denticola* (T.d.), *Aggregatibacter actinomycetemcomitans* (A.a.), *Fusobacterium nucleatum* (F.n.), *Prevotella intermedia* (P.i.), and *Staphylococcus aureus* (S.a.). Counts were log₁₀-transformed. The most commonly detected species were S. a. and F. n., while A. a. and P. i. had the lowest detection frequency. The detection frequencies of diseased tooth or implant sites for each of the six target species were either equal to or higher than the respective frequencies at the

corresponding healthy sites. There were no statistically significant differences for any of the species or clinical sites ($P > 0.05$, Cochran's Q test). No statistically significant differences in the bacterial loads were found among the four clinical sites; with the exception of *F. nucleatum*. This was more abundant in periodontitis sites ($P = 0.023$, Friedman's 2-way anova). Both periodontal and peri-implant sites, irrespective of their health status, were revealed to harbor *S. aureus* cells. The log₁₀-transformed loads of *S. aureus* were approximately 3.5 within each of the clinical sites ($P = 0.232$). This was the highest of the six species analyzed. Within the same subjects, putative periodontal pathogens were common to both periodontal and peri-implant sites irrespective of health status. The prevalence and levels of *P. gingivalis* and *F. nucleatum* were significantly associated with periodontitis, but not with peri-implantitis. *A. actinomycetemcomitans* was associated with both disease conditions, periodontitis and peri-implantitis, but not with either gingival or mucosal health.

Title: Increasing Prevalence of Peri-implantitis: How Will We Manage?

Citation: Journal of dental research, Jan 2016, vol. 95, no. 1, p. 7-8

Author(s): Tarnow, D P

Title: Effectiveness of Implant Therapy Analyzed in a Swedish Population: Prevalence of Peri-implantitis.

Citation: Journal of dental research, Jan 2016, vol. 95, no. 1, p. 43-49

Author(s): Derks, J, Schaller, D, Håkansson, J, Wennström, J L, Tomasi, C, Berglundh, T

Abstract: Peri-implantitis is an inflammatory disease affecting soft and hard tissues surrounding dental implants. As the global number of individuals that undergo restorative therapy through dental implants increases, peri-implantitis is considered as a major and growing problem in dentistry. A randomly selected sample of 588 patients who all had received implant-supported therapy 9 y earlier was clinically and radiographically examined. Prevalence of peri-implantitis was assessed and risk indicators were identified by multilevel regression analysis. Forty-five percent of all patients presented with peri-implantitis (bleeding on probing/suppuration and bone loss >0.5 mm). Moderate/severe peri-implantitis (bleeding on probing/suppuration and bone loss >2 mm) was diagnosed in 14.5%. Patients with periodontitis and with ≥ 4 implants, as well as implants of certain brands and prosthetic therapy delivered by general practitioners, exhibited higher odds ratios for moderate/severe peri-implantitis. Similarly, higher odds ratios were identified for implants installed in the mandible and with crown restoration margins positioned ≤ 1.5 mm from the crestal bone at baseline. It is suggested that peri-implantitis is a common condition and that several patient- and implant-related factors influence the risk for moderate/severe peri-implantitis (ClinicalTrials.gov NCT01825772)

Title: Adjunctive Systemic and Local Antimicrobial Therapy in the Surgical Treatment of Peri-implantitis: A Randomized Controlled Clinical Trial.

Citation: Journal of dental research, Jan 2016, vol. 95, no. 1, p. 50-57

Author(s): Carcuac, O, Derks, J, Charalampakis, G, Abrahamsson, I, Wennström, J,

Abstract: The aim of the present randomized controlled clinical trial was to investigate the adjunctive effect of systemic antibiotics and the local use of chlorhexidine for implant surface decontamination in the surgical treatment of peri-implantitis. One hundred patients with severe peri-implantitis were recruited. Surgical therapy was performed with or without adjunctive systemic antibiotics or the local use of chlorhexidine for implant surface decontamination. Treatment outcomes were evaluated at 1 y. A binary logistic regression analysis was used to identify factors influencing the probability of treatment success, that is, probing pocket depth ≤ 5 mm, absence of bleeding/suppuration on probing, and no additional bone loss. Treatment success was obtained in 45% of all implants but was higher in implants with a nonmodified surface (79%) than those with a modified surface (34%). The local use of chlorhexidine had no overall effect on treatment outcomes. While adjunctive systemic antibiotics had no impact on treatment success at implants with a nonmodified surface, a positive effect on treatment success was observed at implants with a modified surface. The likelihood for treatment success using adjunctive systemic antibiotics in patients with implants with a modified surface, however, was low. As the effect of adjunctive systemic antibiotics depended on implant surface characteristics, recommendations for their use in the surgical treatment of peri-implantitis should be based on careful assessments of the targeted implant (ClinicalTrials.gov NCT01857804

Title: Reconstruction of Peri-implant Osseous Defects: A Multicenter Randomized Trial.

Citation: Journal of dental research, Jan 2016, vol. 95, no. 1, p. 58-66

Author(s): Jepsen, K, Jepsen, S, Laine, M L, Anssari Moin, D, Pilloni, A, Zeza, B, Sanz, M,

Abstract: There is a paucity of data for the effectiveness of reconstructive procedures in the treatment of peri-implantitis. The objective of this study was to compare reconstruction of peri-implant osseous defects with open flap debridement (OFD) plus porous titanium granules (PTGs) compared with OFD alone. Sixty-three patients (36 female, 27 male; mean age 58.4 y [SD 12.3]), contributing one circumferential peri-implant intraosseous defect, were included in a multinational, multicenter randomized trial using a parallel-group design. After OFD and surface decontamination using titanium brushes and hydrogen peroxide, 33 defects received PTGs. The implants were not submerged. All patients received adjunctive perioperative systemic antibiotics. The primary outcome variable (defect fill) was assessed on digitalized radiographs. Clinical measurements of probing depth (PPD), bleeding on probing (BoP), suppuration, and plaque were taken by blinded examiners. After 12 mo, the test group (OFD plus PTG) showed a mean radiographic defect fill (mesial/distal) of 3.6/3.6 mm compared with 1.1/1.0 in the control group (OFD). Differences were statistically significant in favor of the test group ($P < 0.0001$). The OFD plus PTG group showed a mean reduction in PPD of 2.8 mm compared with 2.6 mm in the OFD group. BoP was reduced from 89.4% to 33.3% and from 85.8% to 40.4% for the test and control groups, respectively. There was no significant difference in complete resolution of peri-implantitis (PPD ≤ 4 mm and no BoP at six implant sites and no further bone loss), because this finding was accomplished at 30% of implants in the test group and 23% of implants in the control group. Reconstructive surgery using PTGs resulted in significantly enhanced radiographic defect fill

compared with OFD. However, limitations in the lack of ability to discern biomaterial from osseous tissue could not be verified to determine new bone formation. Similar improvements according to clinical measures were obtained after both surgical treatment modalities (ClinicalTrials.gov NCT02406001)

Title: Non-surgical periodontal treatment of peri-implant diseases with the adjunctive use of diode laser: preliminary clinical study.

Citation: Lasers in medical science, Jan 2016, vol. 31, no. 1, p. 1-6 (

Author(s): Lerario, Francesco, Roncati, Marisa, Gariffo, Annalisa, Attorresi, Enrica,

Abstract: Peri-implant diseases present in two forms: peri-implant mucositis and peri-implantitis. The prevalence of peri-implant complications is significantly rising. The aim of this study was to compare conventional treatment of inflamed peri-implant tissues with conventional treatment together with diode laser application. Twenty-seven patients (age 36 to 67, 15 women and 12 men, 12 smokers and 15 non-smokers) requiring treatment for mucositis or peri-implantitis were taken into account for this preliminary study. Plaque index (PI), pocket depth (PD), and bleeding on probing (BoP) were recorded at baseline evaluation. Patients in control group (CG) received conventional non-surgical periodontal treatment. Patients in test group received conventional non-surgical periodontal treatment together with diode laser application (810 nm, 30 s, 1 W, 50 Hz, t on = 100 ms, t off = 100 ms, energy density = 24.87 J/cm²). Paired t test was used to evaluate the difference in repeated measurements of considered indexes at T 0 and T 1 (1 year) in both groups. A total of 606 sites were taken into account in the test group (TG) and 144 in the CG. PD mean variation in the TG was 2.66 mm ± 1.07, while mean PD variation in the CG was 0.94 ± 1.13 mm. Paired t testing of the variation in PD in CG and TG revealed a statistically significant difference between the two groups (p < 0.0001). A reduction of pathological sites from 89 % (T 0) to 14.35 % (T 1) was achieved in the TG, while reduction obtained in the CG was from 75.69 % (T 0) to 50 % (T 1); BoP scores at time T 1 had fallen below 5 % in the TG and decreased to 59.7 %, in the CG. Within the limitations of this study, diode laser seems to be an additional valuable tool for peri-implant disease treatment.

Title: Extensive Autogenous Bone Augmentation and Implantation in Patients Under Bisphosphonate Treatment: A 15-Case Series.

Citation: The International journal of periodontics & restorative dentistry, Jan 2016, vol. 36, no. 1, p. 9-18

Author(s): Khoury, Fouad, Hidajat, Herman

Abstract: Patients under bisphosphonate (BP) treatment could be at high risk for implant treatment and bone augmentation due to the association between BPs and osteonecrosis of the jaws (BRONJ). Fifteen patients with BP intake in their anamnesis because of osteoporosis were treated with extensive bone grafting procedures and dental implants after selection according to their individual risk profile. In 47 sites, mandibular bone blocks were grafted according to the split bone block technique and 14 sinus floor elevations were

performed. A total of 71 implants were placed and restored after 4 months. Most of the grafted bone healed as expected, and all implants could be placed as planned. Two patients showed incomplete healing of the grafted bone and were regrafted during implant placement. Two other patients showed limited soft tissue necrosis that was handled successfully with local treatments. One immediately loaded implant was lost. All in all, healing was uneventful and comparable to patients with no history of BP intake. At up to 6 years of follow-up, no major bone loss, BRONJ, infections, or peri-implantitis had occurred and all implants were still well osseointegrated clinically and radiologically. Depending on individual risk profile, bone augmentation could be successfully performed in patients taking low doses of BP treatment. More research and studies are needed.

Title: Prevalence of Peri-implantitis in Medically Compromised Patients and Smokers: A Systematic Review.

Citation: The International journal of oral & maxillofacial implants, Jan 2016, vol. 31, no. 1, p. 111-118

Author(s): Turri, Alberto, Rossetti, Paulo Henrique Orlato, Canullo, Luigi, Grusovin,

Abstract: To verify whether the diversity of systemic medical conditions and smoking act as biologic associated factors for peri-implantitis. The PICO question was: "In patients with osseointegrated dental implants, does the presence of smoking habits or a compromised medical status influence the occurrence of peri-implantitis compared with the presence of good general health?" Smoking and systemic conditions such as type 2 diabetes mellitus, cardiovascular diseases, rheumatoid arthritis, lung diseases, obesity, cancer, deep depression, and osteoporosis were screened. Selection criteria included at least 10 patients per condition, 1 year of follow-up after implant loading, and strict cutoff levels (probing pocket depth [PPD], bleeding on probing [BOP] and/or pus, marginal bone loss) to define peri-implantitis. From the 1,136 records initially retrieved, 57 were selected after title and abstract analyses. However, only six papers were considered for qualitative evaluation. No randomized controlled clinical trial was found. Smoking was associated with peri-implantitis in only one out of four studies. Poorly controlled type 2 diabetes accentuated only PPD and radiographic marginal bone level prevalence rates in peri-implant patients (one study). Cardiovascular disease was considered a risk (one out of two studies). The chance of peri-implant patients harboring the Epstein-Barr virus was threefold in one report. No associations were found for rheumatoid arthritis. Data from existing studies point to smoking and diabetes as biologic associated factors for peri-implantitis. However, the body of evidence is still immature, and the specific contribution of general health problems to peri-implantitis requires additional robust epidemiologic and clinical investigations.

Title: Peri-implantitis: what you need to know and how to help.

Citation: Dental Nursing, 2016, vol./is. 12/1(24-28), 17496799

Publication Type: Academic Journal

Bisphosphonate-related osteonecrosis of the jaw

Title: Zoledronate induces bisphosphonate-related osteonecrosis of the sheep.

Citation: Clinical oral investigations, Jan 2016, vol. 20, no. 1, p. 31-38

Author(s): Voss, Pit J, Stoddart, Martin J, Bernstein, Anke, Schmelzeisen, Rainer, Nelson,

Abstract: Bisphosphonate-related osteonecrosis of the jaw (BP-ONJ) occurs in 1 % of patients with medication-induced osteoporosis treated with bisphosphonates. Sheep are an established large animal model for investigating osteoporotic skeletal changes. Zoledronate significantly reduces tissue mineral variability in ovariectomized sheep. The aim of this study was to analyze bone healing after tooth extraction in sheep with induced osteopenia and zoledronate administration. Eight adult ewes were randomly divided into two groups of four animals. All sheep underwent ovariectomy and a low-calcium diet. Dexamethasone was administered weekly for 16 weeks. Zoledronate was then given every third week for a further 16 weeks in four sheep; these infusions were repeated after extraction of two lower premolars. Four sheep without zoledronate administrations served as controls. Due to general health conditions, two sheep of the zoledronate group had to be excluded before surgery. The remaining two sheep of this group developed BP-ONJ lesions at the extraction site and various other sites in both jaws. Control group animals showed uneventful wound healing. Histology of the alveolar processes as well as lumbar spine revealed larger portions of old bone and smaller portions of new bone in the zoledronate group. This animal study showed uneventful wound healing after tooth extraction in osteopenic sheep whereas zoledronate treatment leads to development of BP-ONJ-like lesions. As bisphosphonate administration is a standard treatment for glucocorticoid-induced osteoporosis, this model can be used for further research in pathogenesis and management of bisphosphonate-related adverse events.

Title: Managing Osteoporosis in Patients on Long-Term Bisphosphonate Treatment: Report of a Task Force of the American Society for Bone and Mineral Research.

Citation: Journal of bone and mineral research : the official journal of the American Society for Bone and Mineral Research, Jan 2016, vol. 31, no. 1, p. 16-35

Author(s): Adler, Robert A, El-Hajj Fuleihan, Ghada, Bauer, Douglas C, Camacho, Pauline M,

Abstract: Bisphosphonates (BPs) are the most commonly used medications for osteoporosis. This ASBMR report provides guidance on BP therapy duration with a risk-benefit perspective. Two trials provided evidence for long-term BP use. In the Fracture Intervention Trial Long-term Extension (FLEX), postmenopausal women receiving alendronate for 10 years had fewer clinical vertebral fractures than those switched to placebo after 5 years. In the HORIZON extension, women who received 6 annual infusions of

zoledronic acid had fewer morphometric vertebral fractures compared with those switched to placebo after 3 years. Low hip T-score, between -2 and -2.5 in FLEX and below -2.5 in HORIZON extension, predicted a beneficial response to continued therapy. Hence, the Task Force suggests that after 5 years of oral BP or 3 years of intravenous BP, reassessment of risk should be considered. In women at high risk, for example, older women, those with a low hip T-score or high fracture risk score, those with previous major osteoporotic fracture, or who fracture on therapy, continuation of treatment for up to 10 years (oral) or 6 years (intravenous), with periodic evaluation, should be considered. The risk of atypical femoral fracture, but not osteonecrosis of the jaw, clearly increases with BP therapy duration, but such rare events are outweighed by vertebral fracture risk reduction in high-risk patients. For women not at high fracture risk after 3 to 5 years of BP treatment, a drug holiday of 2 to 3 years can be considered. The suggested approach for long-term BP use is based on limited evidence, only for vertebral fracture reduction, in mostly white postmenopausal women, and does not replace the need for clinical judgment. It may be applicable to men and patients with glucocorticoid-induced osteoporosis, with some adaptations. It is unlikely that future trials will provide data for formulating definitive recommendations. © 2015 American Society for Bone and Mineral Research. © 2015 American Society for Bone and Mineral Research.

Title: Risks and Benefits of Bisphosphonate Therapies.

Citation: Journal of cellular biochemistry, Jan 2016, vol. 117, no. 1, p. 20-28

Author(s): Reyes, Carlen, Hitz, Mette, Prieto-Alhambra, Daniel, Abrahamsen, Bo

Abstract: Bisphosphonates are the mainstay of osteoporosis treatment but also play a fundamental role in treating other bone diseases such as Osteogenesis Imperfecta, Pagets' disease, and in the prevention of adverse skeletal effects in certain cancers such as prostate cancer or multiple myeloma. In the last decades, the refinement of bisphosphonates and an increase in the number of new bisphosphonates commercialized has altered the clinical management of these diseases. Despite differences between randomized controlled trials and observational studies, overall all bisphosphonates licensed have proven to reduce the risk of fracture through the inhibition of bone resorption. Other beneficial effects include pain reduction in bone metastasis and potentially a decrease in mortality. However, the chronic nature of most of these disorders implies long-term treatments, which can be associated with long-term adverse effects. Some of the adverse effects identified include an increased risk of atypical femur fractures, osteonecrosis of the jaw, gastrointestinal side effects, or atrial fibrillation. The harm/benefit thinking and the constant update regarding these medications are vital in the day-to-day decision-making in clinical practices. The aims of this review are to compile the basic characteristics of these drugs and outline the most important benefits and side effects and provide a clinical context as well as a research agenda to fill the gaps in our knowledge. J. Cell. Biochem. 117: 20-28, 2016.

Title: Dose-dependent inhibitory effects of zoledronic acid on osteoblast viability and function in vitro.

Citation: Molecular medicine reports, Jan 2016, vol. 13, no. 1, p. 613-622

Author(s): Huang, Xin, Huang, Shilong, Guo, Fengjin, Xu, Fei, Cheng, Peng, Ye, Yaping,

Abstract: Zoledronic acid (ZA), which is one of the most potent and efficacious bisphosphonates, has been commonly used in clinical practice for the treatment of various bone disorders. The extensive use of ZA has been associated with increasing occurrence of jaw complications, now known as bisphosphonate-associated osteonecrosis of the jaw (BRONJ). However, the mechanism underlying BRONJ remains to be fully elucidated. The aim of the present study was to investigate the effects of different concentrations of ZA on the MC3T3-E1 murine preosteoblast cell line cells and examine the possible pathogenesis of BRONJ. In the present study, the effect of ZA on the viability, apoptosis, differentiation and maturation of MC3T3-E1 cells, as well as its relevant molecular mechanism, were examined. The results of a Cell Counting Kit 8 assay, a flow cytometric Annexin-V/propidium iodide assay and western blot analysis demonstrated that ZA exhibited a significant inhibition of cell viability and induction of apoptosis at concentrations $>10 \mu\text{M}$. Subsequently, the effect of ZA on cell differentiation at concentrations $<1 \mu\text{M}$ were investigated. In this condition, ZA inhibited bone nodule formation and decreased the activity of alkaline phosphatase. The results of reverse transcription-quantitative polymerase chain reaction and western blot analyses indicated that ZA downregulated the expression levels of the marker genes and proteins associated with osteogenic differentiation. Further investigation revealed that the suppression of differentiation by ZA was associated with decreased expression of bone morphogenetic protein-2 (BMP-2) and downregulation of the phosphorylation levels in the downstream extracellular signal-regulated kinase 1/2 and p38 pathways. These adverse effects of ZA were observed to be concentration-dependent. The results from the present study suggested that ZA at higher concentrations induces cytotoxicity towards osteoblasts, and ZA at lower concentrations suppresses osteoblast differentiation by downregulation of BMP-2. These results assist in further understanding the mechanisms of BRONJ.

Title: Clinical Practice. Postmenopausal Osteoporosis.

Citation: New England Journal of Medicine, 2016, vol./is. 374/3(254-262), 00284793

Abstract: Key Clinical Points Postmenopausal Osteoporosis Fractures and osteoporosis are common, particularly among older women, and hip fractures can be devastating. Treatment is generally recommended in postmenopausal women who have a bone mineral density T score of -2.5 or less, a history of spine or hip fracture, or a Fracture Risk Assessment Tool (FRAX) score indicating increased fracture risk. Bisphosphonates (generic) and denosumab reduce the risk of hip, nonvertebral, and vertebral fractures; bisphosphonates are commonly used as first-line treatment in women who do not have contraindications. Teriparatide reduces the risk of nonvertebral and vertebral fractures. Osteonecrosis of the jaw and atypical femur fractures have been reported with treatment but are rare. The benefit-to-risk ratio for osteoporosis treatment is strongly positive for most women with osteoporosis. Because benefits are retained after discontinuation of alendronate or zoledronic acid, drug holidays after 5 years of alendronate therapy or 3 years of zoledronic acid therapy may be considered for patients at lower risk for fracture.

Title: Histopathological Effects of Teriparatide in Medication-Related Osteonecrosis of the Jaw: An Animal Study.

Citation: Journal of Oral & Maxillofacial Surgery (02782391), 2016, vol./is. 74/1(68-78),

Abstract: Purpose: Osteonecrosis of the jaw after tooth extraction is a major complication in patients using bisphosphonates (BPs) for bone lesions, such as for the treatment of osteoporosis. The purpose of this study was to investigate the histopathologic effects of teriparatide (a synthetic parathyroid hormone) on rats developing osteonecrosis with BP use. Materials and Methods: Rats (n = 80) that had been injected intraperitoneally with zoledronic acid for 7 weeks were used. Maxillary first molar extractions and bone defects were established in the same region in the eighth week. Teriparatide was administered subcutaneously to prevent osteonecrosis. Animals were sacrificed and histopathologic changes were examined. Osteoblasts, osteoclasts, inflammatory phase of bone healing, and osteonecrotic areas were evaluated. Results: The osteoclast numbers were larger in the experimental groups (teriparatide administered before and immediately after tooth extraction) than in the control group (administered zoledronic acid). The inflammatory phase of bone healing was more pronounced in the experimental group (teriparatide administered before tooth extraction) than in the control group. There were significant differences in osteoclast numbers and in the inflammatory phase of bone healing between the experimental and control groups ($P < .05$). The osteoblast numbers and osteonecrotic areas were similar in size between the experimental and control groups. There were no significant differences ($P > .05$). Conclusions: BPs have negative effects on osteoclasts and the inflammatory phase of bone healing, whereas teriparatide was found to be effective in eliminating the negative effects of BPs. Teriparatide had positive effects in preventing osteonecrosis; therefore, teriparatide could be an effective agent for MRONJ.

Cleft lip and palate

Title: Dental anomalies inside the cleft region in individuals with nonsyndromic cleft lip with or without cleft palate

Citation: Medicina Oral, Patologia Oral y Cirugia Bucal, January 2016, vol./is. 21/1(e48-e52), 1698-4447;1698-6946 (January 2016)

Author(s): Sa J., Araujo L., Guimaraes L., Maranhao S., Lopes G., Medrado A., Coletta R.,

Abstract: Background: Individuals with nonsyndromic cleft lip with or without cleft palate (NSCL+/-P) present high frequency of dental anomalies, which may represent complicating factors for dental treatment. The aim of this study was to investigate the prevalence of dental anomalies inside cleft area in a group of Brazilians with NSCL+/-P. Material and Methods: Retrospective analysis of 178 panoramic radiographs of patients aged from 12 to 45 years old and without history of tooth extraction or orthodontic treatment was performed. Association between cleft type and the prevalence of dental anomalies was assessed by chi-square test with a significance level set at $p < 0.05$. Results: Dental anomalies

were found in 88.2% (n=157) of the patients. Tooth agenesis (47.1%), giroversion (20%) and microdontia (15.5%) were the most common anomalies. Individuals with unilateral complete cleft lip and palate (CLP, $p < 0.0001$), bilateral complete CLP ($p = 0.0002$) and bilateral incomplete CLP ($p < 0.0001$) were more affected by tooth agenesis than individuals with other cleft types. The maxillary lateral incisors were the most affected teeth ($p < 0.0001$). Conclusions: The present study revealed a high frequency of dental anomalies inside cleft region in NSCL+/-P patients, and further demonstrated that patients with unilateral complete CLP and bilateral incomplete CLP were frequently more affected by dental anomalies. Moreover, our results demonstrate that dental anomalies should be considered during dental treatment planning of individuals affected by NSCL+/-P.

Title: Evaluation of a Three-Dimensional Stereophotogrammetric Method to Identify and Measure the Palatal Surface Area in Children With Unilateral Cleft Lip and Palate.

Citation: The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, Jan 2016, vol. 53, no. 1, p. 16-21

Author(s): De Menezes, Marcio, Cerón-Zapata, Ana Maria, López-Palacio, Ana Maria,

Abstract: To assess a three-dimensional (3D) stereophotogrammetric method for area delimitation and evaluation of the dental arches of children with unilateral cleft lip and palate (UCLP). Obtained data were also used to assess the 3D changes occurring in the maxillary arch with the use of orthopedic therapy prior to rhinocheiloplasty and before the first year of life. Within the collaboration between the Università degli Studi di Milano (Italy) and the University CES of Medellin (Colombia), 96 palatal cast models obtained from neonatal patients with UCLP were analyzed using a 3D stereophotogrammetric imaging system. The area of the minor and greater cleft segments on the digital dental cast surface were delineated by the visualization tool of the stereophotogrammetric software and then examined. "Trueness" of the measurements, as well as systematic and random errors between operators' tracings ("precision") were calculated. The method gave area measurements close to true values (errors lower than 2%), without systematic measurement errors for tracings by both interoperators and intraoperators ($P > .05$). Statistically significant differences ($P < .05$) were noted for alveolar segment and time. Maxillary segments have the potential for growth during presurgical orthopedic treatment in the early neonatal period. The cleft segment delimitation on digital dental casts and area measurements by the 3D stereophotogrammetric system revealed an accurate (true and precise) method for evaluating the stone casts of newborn patients with UCLP.

Title: Improving the Evaluation of Alveolar Bone Grafts With Cone Beam Computerized Tomography.

Citation: The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, Jan 2016, vol. 53, no. 1, p. 57-63

Author(s): de Moura, Pollyana Marques, Hallac, Rami, Kane, Alex, Seaward, James

Abstract: Cone Beam computed tomography (CBCT) is used increasingly as a replacement for periapical x-rays when evaluating alveolar bone grafting. The manufacturer's standard settings for dental imaging may not, however, represent the optimal settings for evaluating postoperative alveolar bone grafts. We examined the influence of exposure parameters on CBCT image quality to optimize the quality of CBCT images while reducing the radiation dose to the minimum level necessary to obtain adequate images. A defect was created in a cadaver head to simulate an alveolar cleft, and the area was filled with a synthetic material to simulate an alveolar bone graft. Serial CBCT scans were acquired, systematically varying tube voltage and tube current settings from 72 to 96kV and 3 to 12mA. Region of interest analysis was undertaken, and image quality was evaluated by comparing the ratios of native alveolar bone to soft tissue and the ratios of synthetic bone graft to soft tissue and by assessing image noise. Twenty-one CBCT data sets were obtained. Reducing tube voltage (kV) resulted in increased contrast ratio between bone and soft tissue and between synthetic bone graft and soft tissue, with maximal contrast at values of 76 kV/11 mA, 72 kV/12 mA, and 72 kV/11 mA. Of these, the setting with lowest image noise was 76 kV/11 mA. This setting also resulted in a radiation dose of less than half of the manufacturer's recommended settings for the same scan volume. There is potential to improve CBCT image quality significantly while dramatically reducing the radiation dose during postoperative examinations for alveolar bone grafting in patients with cleft lip and palate.

Title: Evaluation of Stress Distribution of Mini Dental Implant-Supported Overdentures in Complete Cleft Palate Models: A Three-Dimensional Finite Element Analysis Study.

Citation: The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, Jan 2016, vol. 53, no. 1, p. 73-83

Author(s): Soğancı, Gökçe, Yazıcıoğlu, Hüseyin

Abstract: Mini dental implants could be an alternative treatment method for prosthetic treatment of edentulous cleft palate. The aim of this study was to analyze stress distribution around the cortical bone and different plans using a varied number of mini dental implants in edentulous unilateral complete cleft palates. Three edentulous maxillary models were modified to create unilateral complete cleft palates. Mini dental implants (2.4 × 15 mm) were located as two mini implants at the premolar region, four mini implants at the premolar and molar region, and six mini implants at the first premolar, second premolar, and first molar regions in the models, respectively. Mucosa, o-ring/ball attachments, and overdentures were simulated. Vertical and horizontal loads of 100 N were applied on both the right and left molar teeth of the overdenture for each model. Maximum and minimum principal stress values and the distribution at cortical bone around the implants and cleft palates were evaluated by finite element analysis. Stress values under vertical loads were lower than values under horizontal loadings for all models. Stress values were found to be lower in the first model than in the second and third models. The highest stress values were found around implants in the second model. The unilateral feature of a complete cleft pattern affected the stress distribution. Stresses occurred mostly around implants when the overdenture was supported by six implants; however, the stress distribution around implants was low with two implants because of tissue support.

Periodontal disease and antibiotics

Title: Evaluation of metronidazole-loaded poly(3-hydroxybutyrate) membranes to potential application in periodontitis treatment.

Citation: Journal of biomedical materials research. Part B, Applied biomaterials, Jan 2016, vol. 104, no. 1, p. 106-115

Author(s): da Silva, Marcio A C, Oliveira, Renata N, Mendonça, Roberta Helena, Lourenço,

Abstract: Guided tissue regeneration is a technique used for periodontium reconstruction. This technique uses barrier membranes, which prevent epithelial growth in the wound site and may also be used to release antibiotics, to protect the wound against opportunistic infections. Periodontal poly(3-hydroxybutyrate) membranes containing metronidazole (a drug used to help in infection control) were produced and characterized. The kinetic mechanism of the metronidazole delivery of leached and nonleached membrane as well as its cytotoxicity and structural integrity were evaluated. Poly(3-hydroxybutyrate) membranes containing 0.5-2 wt % of the drug and 20 wt % of the plasticizer were manufactured via compression molding. Based on morphological analysis, membranes loaded with 2% metronidazole were considered for detailed studies. The results revealed that metronidazole delivery by the leached membranes seemed to follow the Fick's law. Membranes were noncytotoxic. The amount of metronidazole delivered was in the range of the minimal inhibitory concentration for *Porphyromonas gingivalis*, and the membranes inhibited the proliferation of these bacteria. Besides, they maintained their mechanical resistance after 30 days of immersion in phosphate buffer at pH 7.4.

Title: Risk of adverse pregnancy outcomes in women with periodontal disease and the effectiveness of interventions in decreasing this risk: protocol for systematic overview of systematic reviews.

Citation: Systematic reviews, Jan 2016, vol. 5, no. 1, p. 16. (2016)

Author(s): Vanterpool, Sizzle F, Tomsin, Kathleen, Reyes, Leticia, Zimmermann, Luc J,

Abstract: Periodontal disease is an inflammatory disease of the tissues supporting the teeth. Women who have periodontal disease while pregnant may be at risk of adverse pregnancy outcomes. Although the association between periodontal disease and adverse pregnancy outcomes has been addressed in a considerable number of systematic reviews and meta-analyses, there are important differences in the conclusions of these reviews. Systematic

reviews assessing the effectivity of various therapeutic interventions to treat periodontal disease during pregnancy to try and reduce adverse pregnancy outcomes have also arrived at different conclusions. We aim to provide a systematic overview of systematic reviews comparing the frequency of adverse pregnancy outcomes between women with and without periodontal disease and/or evaluating the effect of preventive and therapeutic interventions for periodontal disease before or during pregnancy on adverse pregnancy outcomes. We will include systematic reviews reporting on studies comparing adverse pregnancy outcomes: (i) between women with or without periodontal disease before (<6 months) or during pregnancy and/or (ii) according to preventive or therapeutic interventions for periodontal disease. Eligible interventions include (combinations of) the following: oral hygiene education, use of antibiotics, subgingival scaling, and root planing. For preventive and/or therapeutic reviews, the following comparisons will be considered: no intervention, a placebo intervention, or an alternative intervention. Our primary adverse pregnancy outcomes of interests are maternal mortality, preterm delivery, and perinatal mortality. Two reviewers will independently identify eligible published and unpublished systematic reviews from six electronic databases and using hand searching of reference lists and citations. Data items extracted from included systematic reviews are based on the Cochrane Effective Practice and Organization of Care checklist and the preferred reporting items for systematic review and meta-analysis (PRISMA) statement. In our narrative data synthesis, we will consider risk of bias of individual reviews, focusing mainly on the conclusions of the highest quality reviews using the assessment of multiple systematic reviews (AMSTAR) checklist. Disagreements during search, selection, data extraction, and risk of bias assessment will be resolved through discussion and/or consultation of a third reviewer. PROSPERO CRD42015030132.

Title: Treatment of Acute Periodontal Abscesses Using the Biofilm Decontamination Approach: A Case Report Study.

Citation: The International journal of periodontics & restorative dentistry, Jan 2016, vol. 36, no. 1, p. 55-63

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

Abstract: The aim of this preliminary study was to show the treatment effect of the biofilm decontamination approach on acute periodontal abscesses. Clinical cases showing acute periodontitis were treated using an oral tissue decontaminant material that contains a concentrated aqueous mixture of hydroxybenzenesulfonic and hydroxymethoxybenzene acids and sulfuric acid. The material was positioned into the pocket on the root surface and left in the site for 30 seconds. No instrumentation was performed before the treatment. 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 very rapidly. The infections were quickly resolved without complications, and the pockets associated with marginal tissue recession were also reduced. The momentary pain upon introduction of the material was generally well tolerated in the nonsurgically treated cases, and it completely disappeared after a few seconds. The biofilm decontamination approach seems to be a very promising technique for the treatment of

acute periodontal abscess. The local application of this material avoids the use of systemic or local antibiotics.

Title: Antimicrobial photodynamic therapy in the treatment of aggressive periodontitis: a systematic review and meta-analysis.

Citation: Lasers in medical science, Jan 2016, vol. 31, no. 1, p. 187-196

Author(s): Souza, Emmanuel, Medeiros, Ana Cláudia, Gurgel, Bruno César, Sarmiento, Carlos

Abstract: The aim of this systematic review was to investigate whether the use of antimicrobial photodynamic therapy (aPDT) as an adjuvant to scaling and root planning (SRP) yields better results than SRP alone or associated with systemic antibiotics in the treatment of aggressive periodontitis (AgP). A meta-analysis was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) statements and Cochrane Collaboration recommendations. The search for relevant studies (earliest record to January 2015) was carried out in seven databases, followed by a manual search. Methodological quality assessment of the studies selected was based on an analysis of the risk of bias. At each time point of follow-up, the existence of significant differences ($p < 0.05$) in clinical attachment level (CAL) gain and probing depth (PD) reduction (primary outcomes) between groups was assessed with RevMan software 5.0. Heterogeneity between studies was assessed by the Higgin test (I (2)). Four randomized controlled trials (RCTs) satisfied the eligibility criteria of this review. Only one study was found to have a low risk of bias. There were no significant differences in PD reduction (mean difference 0.33, 95 % confidence interval -0.32 to 0.98, $p = 0.32$) and CAL gain (mean difference 0.20, 95 % confidence interval -0.41 to 0.81, $p = 0.53$) between the test and control interventions. At present, therefore, when compared to SRP alone or associated with systemic antibiotics, the evidence suggests that the association of aPDT + SRP is of no additional benefit in the nonsurgical treatment of AgP.

Title: Biofilm, pathogenesis and prevention-a journey to break the wall: a review.

Citation: Archives of microbiology, Jan 2016, vol. 198, no. 1, p. 1-15

Author(s): Gupta, Priya, Sarkar, Subhasis, Das, Bannhi, Bhattacharjee, Surajit,

Abstract: Biofilms contain group(s) of microorganisms that are found to be associated with the biotic and abiotic surfaces. Biofilms contain either homogenous or heterogeneous populations of bacteria which remain in the matrix made up of extracellular polymeric substances secreted by constituent population of the biofilm. Biofilms can be either single or multilayered. Biofilms are an increasing issue of concern that is gaining importance with each passing day. Due to the ubiquitous nature of biofilms, it is difficult to eradicate them. It has been seen that many infectious diseases harbour biofilms of bacterial pathogens as the reservoir of persisting infections which can prove fatal at times. The presence of biofilms can be seen in diseases like endocarditis, cystic fibrosis, periodontitis, rhinosinusitis and osteomyelitis. The presence of biofilms has been mostly seen in medical implants and urinary catheters. Various signalling events including two-component signalling, extra

cytoplasmic function and quorum sensing are involved in the formation of biofilms. The presence of an extracellular polymeric matrix in biofilms makes it difficult for the antimicrobials to act on them and make the bacteria tolerant to antibiotics and other drugs. The aim of this review was to discuss about the basic formation of a biofilm, various signalling cascades involved in biofilm formation, possible mechanisms of drug resistance in biofilms and recent therapeutic approaches involved in successful eradication of biofilms.

Title: Microbial profiles at baseline and not the use of antibiotics determine the clinical outcome of the treatment of chronic periodontitis.

Citation: Scientific reports, Jan 2016, vol. 6, p. 20205. (2016)

Author(s): Bizzarro, S, Laine, M L, Buijs, M J, Brandt, B W, Crielaard, W, Loos, B G, Zaura, E

Abstract: Antibiotics are often used in the treatment of chronic periodontitis, which is a major cause of tooth loss. However, evidence in favour of a microbial indication for the prescription of antibiotics is lacking, which may increase the risk of the possible indiscriminate use of antibiotics, and consequent, microbial resistance. Here, using an open-ended technique, we report the changes in the subgingival microbiome up to one year post-treatment of patients treated with basic periodontal therapy with or without antibiotics. Antibiotics resulted in a greater influence on the microbiome 3 months after therapy, but this difference disappeared at 6 months. Greater microbial diversity, specific taxa and certain microbial co-occurrences at baseline and not the use of antibiotics predicted better clinical treatment outcomes. Our results demonstrate the predictive value of specific subgingival bacterial profiles for the decision to prescribe antibiotics in the treatment of periodontitis, but they also indicate the need for alternative therapies based on ecological approaches.

Title: Pulp and Periodontal Regeneration of an Avulsed Permanent Mature Incisor Using Platelet-rich Plasma after Delayed Replantation: A 12-month Clinical Case Study.

Citation: Journal of endodontics, Jan 2016, vol. 42, no. 1, p. 66-71

Author(s): Priya M, Harini, Tambakad, Pavan B, Naidu, Jaya

Abstract: Numerous publications have reported revascularization of necrotic immature permanent teeth, but the regenerative potential of pulp in mature teeth has rarely been considered. Platelet-rich plasma (PRP) meets many requirements of a scaffold for regenerative endodontics. To the best of our knowledge, no clinical study has evaluated PRP for endodontic regeneration in a mature avulsed tooth. The present case evaluated PRP for pulpal regeneration in an avulsed mature incisor (>8 hours extraoral dry time) of an 11-year-old boy after delayed replantation. The canal was disinfected after extraoral access cavity preparation and pulp extirpation. The root apex was enlarged, and the tooth was placed in doxycycline solution for 20 minutes. After tooth replantation and splinting, PRP was injected up to the level of the cemento-enamel junction and sealed with glass ionomer cement. The 6-month follow-up revealed evidence of internal and external root resorption with periapical radiolucency and an apparent periodontal ligament space. Access was reopened;

slurry of 2 antibiotics (minocycline and metronidazole) was inserted into the canal and sealed. Nine- and 12-month radiographs revealed resolution of periapical radiolucency with no further progression of internal resorption. The tooth showed a positive response to thermal and electric pulp tests. The findings observed in this case warrant further research under controlled conditions to evaluate endodontic and periodontal regeneration in a tooth that would otherwise be expected to have an unfavorable prognosis. Copyright © 2016 American Association of Endodontists. Published by Elsevier Inc. All rights reserved.

Title: Occurrence and serotype distribution of *Aggregatibacter actinomycetemcomitans* in subjects without periodontitis in Turkey.

Citation: Archives of oral biology, Jan 2016, vol. 61, p. 125-129

Author(s): Doğan, Başak, Chen, Jason, Çiftlikli, Sinem Yıldız, Huang, Jonathan, Kadir, Tanju, Alniak, Anıl Kınacı, Chen, Casey

Abstract: To determine the occurrence and serotype distribution of *Aggregatibacter actinomycetemcomitans* in subjects without periodontitis. Systemically healthy dental students without periodontitis (n=94), who had not used antibiotics within the last 3 months or received any form of periodontal therapy within the last 6 months, were included in the study. Pooled subgingival microbiological samples were collected from 4 first molars and 4 central incisors in each subject using sterile paper points. All samples were tested for the presence and the serotype of *A. actinomycetemcomitans* through PCR analysis of the 16S rRNA genes and the serotype-specific gene clusters in the DNA extracted from the samples. Of the 94 samples that were tested, 43 (46%) were positive for *A. actinomycetemcomitans*. No statistically significant differences in clinical parameters were found between subgingival sites with or without detectable *A. actinomycetemcomitans* (t-test, P>0.01). Among the 43 *A. actinomycetemcomitans*-positive samples, the serotype was identified in 21 samples. Fifteen were positive for *A. actinomycetemcomitans* serotype a, 1 for serotype b, 1 for serotype c, and 4 for serotype f, while serotypes d and e were not detected. *A. actinomycetemcomitans* serotype a is the most commonly found serotype among Turkish dental students without periodontitis

Head and neck oncology and dentistry

Title: Dosimetric distribution to tooth-bearing areas in intensity-modulated radiation therapy for head and neck cancer: a pilot study.

Citation: Oral surgery, oral medicine, oral pathology and oral radiology, Jan 2016, vol. 121, no. 1, p. 43-48

Author(s): Bak, Sun-Yung, Qi, X Sharon, Kelly, James A, Alexander, Sherri, Chung, Yunro,

Abstract: Dosimetric distribution of intensity-modulated radiotherapy (IMRT) to tooth-bearing areas for common head and neck (H&N) cancer sites were analyzed to facilitate minimization of osteoradionecrosis (ORN) risk through preradiation dental treatment planning. Fifty-four patients received IMRT with prescribed doses ranging from 6000 centigrays (cGy) (adjuvant) to 6930 cGy (primary) to treat base of tongue (BOT), tonsil, larynx, nasopharynx, and hypopharynx cancers. The average maximal radiation dose delivered was recorded in tooth-bearing areas (anterior, premolars, and first, second, and third molars) of the maxilla and mandible. All tooth-bearing areas in laryngeal cancer cases received less than 2500 cGy. Maxillary and mandibular molar regions for BOT, tonsil, and hypopharynx cancers received 5000 cGy or higher. In nasopharynx cancers, maxillary teeth received higher doses than mandibular teeth. Among 5 H&N subsites, mandibular molar regions for BOT, tonsil, and hypopharynx cancers received higher IMRT doses on average, posing the greatest ORN risk. Copyright © 2016 Elsevier Inc. All rights reserved.

Dental implants

Title: Clinical practice guidelines for recall and maintenance of patients with tooth-borne and implant-borne dental restorations.

Citation: Journal of the American Dental Association (1939), Jan 2016, vol. 147, no. 1, p. 67-74

Author(s): Bidra, Avinash S, Daubert, Diane M, Garcia, Lily T, Kosinski, Timothy F,

Abstract: To provide guidelines for patient recall regimen, professional maintenance regimen, and at-home maintenance regimen for patients with tooth-borne and implant-borne removable and fixed restorations. The American College of Prosthodontists (ACP) convened a scientific panel of experts appointed by the ACP, American Dental Association (ADA), Academy of General Dentistry (AGD), and American Dental Hygienists Association (ADHA) who critically evaluated and debated recently published findings from two systematic reviews on this topic. The major outcomes and consequences considered during formulation of the clinical practice guidelines (CPGs) were risk for failure of tooth- and implant-borne restorations. The panel conducted a round table discussion of the proposed guidelines, which were debated in detail. Feedback was used to supplement and refine the proposed guidelines, and consensus was attained. A set of CPGs was developed for tooth-borne restorations and implant-borne restorations. Each CPG comprised (1) patient recall, (2) professional maintenance, and (3) at-home maintenance. For tooth-borne restorations, the professional maintenance and at-home maintenance CPGs were subdivided for removable and fixed restorations. For implant-borne restorations, the professional maintenance CPGs were subdivided for removable and fixed restorations and further divided into biological maintenance and mechanical maintenance for each type of restoration. The at-home maintenance CPGs were subdivided for removable and fixed restorations. The clinical practice guidelines presented in this document were initially

developed using the two systematic reviews. Additional guidelines were developed using expert opinion and consensus, which included discussion of the best clinical practices, clinical feasibility, and risk-benefit ratio to the patient. To the authors' knowledge, these are the first CPGs addressing patient recall regimen, professional maintenance regimen, and at-home maintenance regimen for patients with tooth-borne and implant-borne restorations. This document serves as a baseline with the expectation of future modifications when additional evidence becomes available. *Prosthodontists (ACP) in the Journal of Prosthodontics*.

Title: Pilot Study on the Influence of Nutritional Counselling and Implant Therapy on the Nutritional Status in Dentally Compromised Patients.

Citation: PloS one, Jan 2016, vol. 11, no. 1, p. e0147193.

Author(s): Wöstmann, Bernd, Simon, Teresa, Neuhäuser-Berthold, Monika, Rehmann, Peter

Abstract: To investigate the impact of implant-prosthetic rehabilitation combined with nutritional counseling on the nutritional status of patients with severely reduced dentitions. An explorative intervention study including an intra-individual comparison of 20 patients with severely reduced dentitions in terms of nutrition- and quality of life-related parameters recorded at baseline and at six and twelve months after implant-prosthetic rehabilitation. Twenty patients from the Department of Prosthetic Dentistry of Justus-Liebig University of Giessen, with an mean age of 63 years, who had fewer than ten pairs of antagonists. The baseline data collection included dental status, a chewing ability test, laboratory parameters, anthropometric data (body mass index), energy supply, a 3-day dietary record, an analysis of the oral health-related quality of life (OHRQoL) with the OHIP-G14, the Mini-Mental Status (MMS) and Mini Nutritional Assessment (MNA). Six months after implantation and prosthetic rehabilitation, individual nutritional counseling was performed by a dietician. Data were again collected and analyzed. A final follow-up was conducted 12 months after prosthetic rehabilitation. Despite the highly significant improvement in masticatory ability and OHRQoL after implant-prosthetic rehabilitation, no significant changes were observed regarding MNA, anthropometric data or energy supply. Except for cholinesterase ($p = 0.012$), ferritin ($p = 0.003$), folic acid ($p = 0.019$) and vitamin A ($p = 0.004$), no laboratory parameter changed significantly during the investigation period. In addition, no general significant differences were observed for nutrient intake or food choice. The present study does not confirm the assumption that the implant-prosthetic rehabilitation of patients with severely reduced residual dentitions with or without an individual nutritional counseling influences nutritional status.

Title: Open contacts adjacent to dental implant restorations: Etiology, incidence, consequences, and correction.

Citation: *Journal of the American Dental Association (1939)*, Jan 2016, vol. 147, no. 1, p. 28-34 (January 2016)

Author(s): Greenstein, Gary, Carpentieri, Joseph, Cavallaro, John

Abstract: The aim of this investigation was to evaluate the potential causes, clinical significance, and treatment of open contacts between dental implant restorations and adjacent natural teeth. The authors searched the dental literature for clinical trials in humans that addressed the incidence of open contacts that develop after implant restorations are placed next to teeth. The authors found 5 studies in which the investigators addressed the incidence of open contacts after implant restorations are inserted next to teeth. Results from these studies indicated that an interproximal gap developed 34% to 66% of the time after an implant restoration was inserted next to a natural tooth. This event occurred as early as 3 months after prosthetic rehabilitation, usually on the mesial aspect of a restoration. The occurrence of an interproximal separation next to an implant restoration was greater than anticipated. It appears that force vectors cause tooth movement and an implant functions like an ankylosed tooth. Clinicians should inform patients of the potential to develop interproximal gaps adjacent to implant restorations, which may require repair or replacement of implant crowns or rehabilitation of adjacent teeth. Furthermore, steps should be taken to check the continuity of the arch periodically. If the clinician detects an open contact, it is prudent to monitor for signs or symptoms of pathosis so that prosthetic repair of the gap can be initiated, if needed. These problems could add to treatment costs and decrease overall patient satisfaction related to implant treatment

Title: A Systematic Review of Recall Regimen and Maintenance Regimen of Patients with Dental Restorations. Part 2: Implant-Borne Restorations.

Citation: Journal of prosthodontics : official journal of the American College of Prosthodontists, Jan 2016, vol. 25 Suppl 1, p. S16. (January 2016)

Author(s): Bidra, Avinash S, Daubert, Diane M, Garcia, Lily T, Gauthier, Marissa F,

Abstract: To evaluate the current scientific evidence on patient recall and maintenance of implant-supported restorations, to standardize patient care regimens and improve maintenance of oral health. An additional purpose was to examine areas of deficiency in the current scientific literature and provide recommendations for future studies. An electronic search for articles in the English language literature from the past 10 years was performed independently by multiple investigators using a systematic search process. After application of predetermined inclusion and exclusion criteria, the final list of articles was reviewed to meet the objectives of this review. The initial electronic search resulted in 2816 titles. The systematic application of inclusion and exclusion criteria resulted in 14 articles that satisfied the study objectives. An additional 6 articles were added through a supplemental search process for a total of 20 studies. Of these, 11 were randomized controlled clinical trials, and 9 were observational studies. The majority of the studies (15 out of 20) were conducted in the past 5 years and most studies were conducted in Europe (15), followed by Asia (2), South America (1), the United States (1), and the Middle East (1). Results from the qualitative data on a combined 1088 patients indicated that outcome improvements in recall and maintenance regimen were related to (1) patient/treatment characteristic (type of prosthesis, type of prosthetic components, and type of restorative materials); (2) specific oral topical agents or oral hygiene aids (electric toothbrush, interdental brush, chlorhexidine, triclosan, water flossers) and (3) professional intervention (oral hygiene maintenance, and maintenance of the prosthesis). There is minimal evidence related to

recall regimens in patients with implant-borne removable and fixed restorations; however, a considerable body of evidence indicates that patients with implant-borne removable and fixed restorations require lifelong professional recall regimens to provide biological and mechanical maintenance, customized for each patient. Current evidence also demonstrates that the use of specific oral topical agents and oral hygiene aids can improve professional and at-home maintenance of implant-borne restorations. There is evidence to demonstrate differences in mechanical and biological maintenance needs due to differences in prosthetic materials and designs. Deficiencies in existing evidence compel the forethought of creating clinical practice guidelines for recall and maintenance of patients with implant-borne dental restorations

Title: Socket seal surgery: Clinical uses in implant dentistry and guided bone regeneration procedures for single tooth replacement in the esthetic zone.

Citation: Quintessence international (Berlin, Germany : 1985), Jan 2016, vol. 47, no. 2, p. 123-139 (2016)

Author(s): Negri, Bruno, Zuhr, Otto, Fickl, Stefan, Ciurana, Xavier Rodríguez,

Abstract: Restoring failing anterior teeth with a dental implant is considered a complex treatment even with thorough biologic knowledge of the situation. The goal is to produce a result in which the labial soft tissues and the papillae remain stable over time. Treatment of the fresh extraction socket in the alveolar ridge presents a challenge in everyday clinical practice. Regardless of the subsequent treatment, maintenance of the ridge contour will frequently facilitate all further therapeutic steps. Socket seal surgery and socket preservation in combination with immediate, early, or delayed implant placement can be valuable procedures for single tooth replacement. However, their potential as ridge preservation techniques in these different situations still needs to be demonstrated. The use of these procedures is illustrated in three consecutive cases.

Title: Efficacy of Alveolar Vertical Distraction Osteogenesis and Autogenous Bone Grafting for Dental Implants: Systematic Review and Meta-Analysis.

Citation: The International journal of oral & maxillofacial implants, Jan 2016, vol. 31, no. 1, p. 26-36

Author(s): Yun, Kyoung-In, Choi, Hyungkil, Wright, Robert F, Ahn, Hyeong Sik, Chang,

Abstract: The aim of this study was to assess the efficacy of alveolar vertical distraction osteogenesis and autogenous bone grafting in terms of bone gain, bone resorption, and implant survival and success rates and investigate the relationship between bone gain and resorption after alveolar vertical distraction osteogenesis. A systematic search was done using MEDLINE, EMBASE, the Cochrane Library, and KoreaMed from inception to April 30, 2014. Supplementary manual searches of published full-text articles were also performed. Searches of four electronic databases and manual searches resulted in 1,538 articles. After selection, four studies were included in the systematic review and meta-analysis. The difference in bone gain at the end of distraction or bone grafting was statistically significant

(weighted mean difference [WMD] 1.86, 95% CI 0.03 to 3.69, $P = .05$; heterogeneity: $I(2) = 78\%$, $P = .01$). However, there was not a statistically significant difference between alveolar distraction osteogenesis and onlay bone grafting (WMD 0.30, 95% CI -0.99 to 1.59, $P = .065$). Bone resorption between the end of treatment and the time of implant placement was not statistically significant (WMD -0.12, 95% CI -1.10 to 0.85, $P = .80$; heterogeneity: $I(2) = 78\%$, $P = .01$). A simple equation related to bone gain and resorption after alveolar vertical distraction was induced from these results. There was not a statistically significant difference between alveolar distraction osteogenesis and onlay bone grafting in terms of bone gain and bone resorption.

Title: Ten-Year Follow-Up of Implant-Supported All-Ceramic Fixed Dental Prostheses: A Randomized, Prospective Clinical Trial.

Citation: The International journal of prosthodontics, Jan 2016, vol. 29, no. 1, p. 31-34, 0893-2174 (2016 Jan-Feb)

Author(s): Larsson, Christel, Vult von Steyern, Per

Abstract: The aim of this study was to evaluate the long-term clinical performance of and patient satisfaction with implant-supported all-ceramic fixed dental prostheses (FDPs) and to compare two different all-ceramic systems, Denzir (DZ) and In-Ceram Zirconia (InZ). A total of 18 patients received 25 partial FDPs; 13 DZ, and 12 InZ. Of these patients, 17 attended the 10-year follow-up. None of the restorations had fractured. Fractures of the veneering porcelain were observed in nine patients; two from the InZ group and seven from the DZ group. All FDPs were in use, and all patients were fully satisfied with the treatment. Results from this long-term follow-up suggest that implant-supported all-ceramic FDPs are an acceptable treatment alternative.

Title: Loading Variables on Implant-Supported Distal-Extension Removable Partial Dentures: An In Vitro Pilot Study.

Citation: The International journal of prosthodontics, Jan 2016, vol. 29, no. 1, p. 17-19,

Author(s): Hirata, Kiyotaka, Takahashi, Toshihito, Tomita, Akiko, Gonda, Tomoya,

Abstract: The aim of this study was to investigate strain on implants used for adjunctive support of distal extension removable partial dentures. An implant with strain gauges was used for testing purposes in two positions, parallel and inclined. Three loading scenarios--loading apparatus (LA), artificial teeth via cotton roll (CR), and artificial teeth (UT)--were studied and strains compared via the Kruskal-Wallis test ($P = .05$). Strain under CR was significantly larger than UT in parallel ($P < .05$). However, the opposite was observed in inclined. Strain in parallel was smallest for UT, whereas in inclined it was largest for CR.

Title: Electrosurgery and ultrasonics on patients with implantable cardiac devices: Evidence of side effects in the dental practice.

Citation: Quintessence international (Berlin, Germany : 1985), Jan 2016, vol. 47, no. 2, p. 151-160

Author(s): Pisano, Peter, Mazzola, Joseph G, Tassiopoulos, Apostolos, Romanos,

Abstract: Implantable cardiac pacemakers and cardiac defibrillators (ICDs) have been introduced in the care of patients with cardiac dysrhythmias. Most dental practitioners demonstrate extreme caution when treating patients with ICDs. This paper presents a review of the available literature on these devices and how they interact with dental electrosurgery and ultrasonic device use. Based on the analysis of the literature, this view is not corroborated by the current clinical data, and appears to be misguided. While further in-vivo studies are needed to truly determine the true level of risk, the evidence suggests that there is no contraindication for electrosurgery or ultrasonics use in patients with ICDs. Using the precautions stated in this analysis, the risk of any deleterious effect on ICD function is minimal.

Title: A Luting Technique for Passive Fit of Implant-Supported Fixed Dentures.

Citation: Journal of prosthodontics : official journal of the American College of Prosthodontists, Jan 2016, vol. 25, no. 1, p. 77-82 (January 2016)

Author(s): Menini, Maria, Dellepiane, Elena, Pera, Paolo, Bevilacqua, Marco, Pesce,

Abstract: Several factors contribute to distortion of implant prostheses during fabrication and could prevent passive, accurate adaptation between implants and implant frameworks. The misfit between implants and restorative components may be significant and possibly lead to biologic or mechanical complications. The aim of this article is to describe a laboratory luting technique used to lute implant cylinders to metal frameworks in implant prostheses. This technique provides accurate, passive fits. According to this technique, titanium implant cylinders provided with corresponding external castable cylinders are used. Implant cylinders are screwed into the analogs in the master cast while the castable cylinders on top are splinted together using castable resin to realize a castable resin pattern. After casting, the framework is adjusted and cemented to the titanium cylinders on the master cast. Due to its ease and quickness of use and clinical efficiencies, this technique is deemed particularly useful in immediate loading rehabilitations. © 2015 by the American College of Prosthodontists.

Title: Microbiome of titanium and zirconia dental implants abutments.

Citation: Dental materials : official publication of the Academy of Dental Materials, Jan 2016, vol. 32, no. 1, p. 93-101 (January 2016)

Author(s): do Nascimento, Cássio, Pita, Murillo Sucena, Santos, Emerson de Souza,

Abstract: This study employed culture-independent molecular techniques to extend the characterization of the microbial diversity of biofilm associated with either titanium or zirconia implant-abutments, including not-yet-cultivated bacteria species, and to identify

and quantify species recovered from peri-implantar/periodontal sulci, supragingival biofilm and the internal parts of implants. Probing depth, clinical attachment level, bleeding on probing, and marginal bone level were also evaluated over time and correlated with biofilm formation. Twenty healthy participants were analyzed. DNA-Checkerboard and 16S-rDNA-Pyrosequencing were used to quantify and determine species identity. 161 bacterial taxa representing 12 different phylotypes were found, of which 25% were non-cultivable. Species common to all sites belonged to genera *Fusobacterium*, *Prevotella*, *Actinomyces*, *Porphyromonas*, *Veillonella* and *Streptococcus*. While some species were subject-specific and detected in most sites, other species were site-specific. Moderate to higher levels of unclassified species were found colonizing titanium-related sites. Pathogenic and non-pathogenic species were detected colonizing oral sites in both materials. Titanium-related sites presented the highest total microbial count and higher counts of pathogenic species. Our results revealed differences regarding microbial diversity and microorganisms counts in oral biofilm associated with titanium or zirconia. The obtained data suggests a possible relation between microbiological findings and clinical outcomes. Next-generation methods of detection have provided new insights on complex microbiota colonizing different sites of oral cavity. The present study demonstrates relevant differences in the communities and microbial counts colonizing different tested substrates with consequent significant differences in the clinical-outcomes, suggesting a probably different mechanism for specific bacterial adhesion.

Title: Dental Implants in the Aesthetic Zone.

Citation: Dentistry today, Jan 2016, vol. 35, no. 1, p. 104-105, 8750-2186 (January 2016)

Title: Oral rehabilitation with dental implants and quality of life following mandibular reconstruction with free fibular flap.

Citation: Clinical oral investigations, Jan 2016, vol. 20, no. 1, p. 187-192 (January 2016)

Author(s): Jacobsen, Hans-Christian, Wahnschaff, Falko, Trenkle, Thomas, Sieg, Peter,

Abstract: Bony reconstruction of jaw defects using the free fibular flap and dental rehabilitation mostly requires insertion of dental implants within the transferred fibula bone. The aim of this paper was to discuss results of the implant stability with data on the possible benefit for the patient's quality of life after such treatment. For clinical outcome of implants, we evaluated 26 patients with a total number of 94 dental implants after a follow-up period of 12 to 132 months. A group of 38 patients who underwent mandibular reconstruction with free fibular flap could be included in the life-quality study. Evaluation included 23 patients with and 15 patients without implant-borne restoration. The quality of life was assessed using the standard QLQ C-30 questionnaire and the H&N35 module of the European Organisation for Research and Treatment of Cancer (EORTC). Of implants, 94.7 % were stable at the time of investigation and could be used for prosthesis. Patients with dental implants reported improvement of life quality along with better scores in most function and symptom scales; however, only values for global health status (QL2), absence of dyspnea (DY) and absence of feeding tube (HNFE) were significantly better than in the control group. Dental implant insertion in fibula grafts along with implant-borne restoration

is a proven concept and might lead to improved quality of life following ablative surgery of the jaw. The effect on the quality of life is not as predictable as on the implant stability. Patients with bony defects of the jaw require bony reconstruction. This allows further masticatory rehabilitation using dental implants and might lead to improved quality of life.

Title: Evaluation of the autogenous bone block transfer for dental implant placement: Symphysal or ramus harvesting?

Citation: BMC oral health, Jan 2016, vol. 16, no. 1, p. 4. (2016)

Author(s): Ersanli, Selim, Arisan, Volkan, Bedeloğlu, Elçin

Abstract: The absence of sufficient bone volume is the most relevant problem in implant dentistry. Grafting from exogenous sources may provide a limited gain but exhibits poor performance in large bone defects. Autogenous bone block transfer (ABBT) from the mandibular symphysis and ramus has been used with varying rates of success. The aim of this study was to compare the efficacy of symphysal and ramus ABBT for the restoration of lost horizontal alveolar bone volume in the anterior maxilla. Implants placed in the augmented areas were also evaluated. The maxillary alveolar bone deficits of 32 patients were treated by similar-sized autogenous bone blocks (7 × 7 × 4 mm) harvested from the symphysis or ramus area. After 4 to 5 months of healing, implants were inserted. At the end of the osseointegration period, the implants were restored by fixed prostheses. Baseline bone thickness was determined by Cone beam computed tomography and was compared to post-op and one-year post-loading bone thickness values where the implants were inserted. Any complications or consequences were noted. The success and survival of the 45 implants were evaluated. The results were analyzed using the Student t-test and Fisher's exact test ($p < 0.05$). Post-op complications were frequent in both groups. Baseline bone thickness values were similar at the beginning of the study ($p = 0.71$) and exhibited a significant increase after the ABBT surgery (6.29 (SD 0.86) and 6.01 (SD 0.92) mm in the symphysis and ramus groups, respectively). The amount of bone thickness gain was 4.34 mm (SD: 0.92) and 4.36 mm (SD: 1.01) in the symphysis and ramus groups, respectively. After one year, the mean surface resorption was 0.6 mm (SD: 0.78) and 0.80 mm (SD: 0.56) for the symphysis and ramus groups, respectively ($p = 0.089$). The success and survival rates of the implants were 94.11 and 96.42 %, respectively. No graft failures were observed. Both symphysal and ramus ABBT procedures were successful for the restoration of a horizontal bone defect in the anterior maxilla. Ramus harvesting may be advisable due to fewer complications. Implants placed in the grafted regions exhibited a high success and survival rate within the one-year follow-up period.

Title: Removal of dental implant displaced into maxillary sinus by combination of endoscopically assisted and bone repositioning techniques: a case report.

Citation: Journal of medical case reports, Jan 2016, vol. 10, no. 1, p. 1. (2016)

Author(s): Nogami, Shinnosuke, Yamauchi, Kensuke, Tanuma, Yuji, Odashima, Kenji,

Abstract: Accidental displacement of a dental implant into the maxillary sinus is an infrequent although not uncommon complication encountered in dental clinical practice, with the main cause thought to be inadequate bone height in the posterior maxilla. We report a case of migration of a dental implant into the maxillary sinus, and discuss the benefits of its removal by a combination of endoscopically assisted and bone repositioning techniques. A 35-year-old Japanese man with a partially edentulous maxilla underwent implant placement at a private clinic. Three months later, at the time of abutment connection, the implant at the site of his maxillary right first molar was accidentally pushed into the sinus. The hole on the alveolar ridge made for placement of the implant was small and far from the dislocated implant, thus access was achieved in a transoral manner via the frontal wall of his maxillary sinus with an endoscopic approach. Piezoelectric instruments were used to perform an osteotomy. The bone lid was removed, and the implant was identified using a rigid endoscope and removed with a surgical aspirator, followed by repositioning of the bony segment; the area was secured with an absorbable suture. Removal of migrated implants should be considered in order to prevent possible sinus disease complications. In the present case, removal of a dental implant displaced into the maxillary sinus by use of a combination of endoscopically assisted and bone repositioning techniques proved to be a safe and reliable procedure.

Title: Soft tissue sealing around dental implants based on histological interpretation.

Citation: Journal of prosthodontic research, Jan 2016, vol. 60, no. 1, p. 3-11

Author(s): Atsuta, Ikiru, Ayukawa, Yasunori, Kondo, Ryosuke, Oshiro, Wakana,

Abstract: The aim of this study was to provide an overview on the biology and soft tissue sealing around dental implants and teeth. This is a narrative review performed through scientific articles published between 1977 and 2014, indexed in MEDLINE and PubMed databases. The study selected articles that focused on epithelial sealing around dental implant or teeth with cell biology and histology of soft tissue. Implant therapy has been widely applied in dental rehabilitation for many years, with predictable long-term results. The longevity and functionality of dental implants is dependent on both osseointegration around the implant body and the establishment of a soft tissue barrier that protects the underlying hard tissue structures and the implant itself. The health and stability of the peri-implant mucosa also affects the esthetics of the implant. The healing and maintenance of the epithelial and connective tissues around implants are increasingly recognized as being fundamental to implant success. However, there has been little research into the function or formation of the soft tissue seal around dental implants, and the roles of this unique mucosal interface remain unclear. This narrative review explores the extent of the current knowledge of soft tissue barriers around implants from both a basic and clinical perspective, and aims to consolidate this knowledge and highlight the most pertinent questions relating to this area of research. Copyright

Title: Are Dental Implants a Panacea or Should We Better Strive to Save Teeth?

Citation: Journal of dental research, Jan 2016, vol. 95, no. 1, p. 5-6

Author(s): Giannobile, W V, Lang, N P

Title: Design optimization of a radial functionally graded dental implant.

Citation: Journal of biomedical materials research. Part B, Applied biomaterials, Jan 2016, vol. 104, no. 1, p. 58-66

Author(s): Ichim, Paul I, Hu, Xiaozhi, Bazen, Jennifer J, Yi, Wei

Abstract: In this work, we use FEA to test the hypothesis that a low-modulus coating of a cylindrical zirconia dental implant would reduce the stresses in the peri-implant bone and we use design optimization and the rule of mixture to estimate the elastic modulus and the porosity of the coating that provides optimal stress shielding. We show that a low-modulus coating of a dental implant significantly reduces the maximum stresses in the peri-implant bone without affecting the average stresses thus creating a potentially favorable biomechanical environment. Our results suggest that a resilient coating is capable of reducing the maximum compressive and tensile stresses in the peri-implant bone by up to 50% and the average stresses in the peri-implant bone by up to 15%. We further show that a transitional gradient between the high-modulus core and the low-modulus coating is not necessary and for a considered zirconia/HA composite the optimal thickness of the coating is 100 μ with its optimal elastic at the lowest value considered of 45 GPa.

Title: Development of a Drilling Simulator for Dental Implant Surgery.

Citation: Journal of dental education, Jan 2016, vol. 80, no. 1, p. 83-90 (January 2016)

Author(s): Kinoshita, Hideaki, Nagahata, Masahiro, Takano, Naoki, Takemoto, Shinji,

Abstract: The aim of this study was to develop and evaluate a dental implant surgery simulator that allows learners to experience the drilling forces necessary to perform an osteotomy in the posterior mandibular bone. The simulator contains a force-sensing device that receives input and counteracts this force, which is felt as resistance by the user. The device consists of an actuator, a load cell, and a control unit. A mandibular bone model was fabricated in which the predicted forces necessary to drill the cortical and trabecular bone were determined via micro CT image-based 3D finite element analysis. The simulator was evaluated by five dentists from the Department of Implantology at Tokyo Dental College. The ability of the evaluators to distinguish the drilling resistance through different regions of the mandibular bone was investigated. Of the five dentists, four sensed the change in resistance when the drill perforated the upper cortical bone. All five dentists were able to detect when the drill made contact with lingual cortical bone and when the lingual bone was perforated. This project successfully developed a dental implant surgery simulator that allows users to experience the forces necessary to drill through types of bone encountered during osteotomy. Furthermore, the researchers were able to build a device by which excessive drilling simulates a situation in which the lingual cortical bone is perforated-a situation that could lead to negative repercussions in a clinical setting. The simulator was

found to be useful to train users to recognize the differences in resistance when drilling through the mandibular bone. [Journal Tables of Contents](#)

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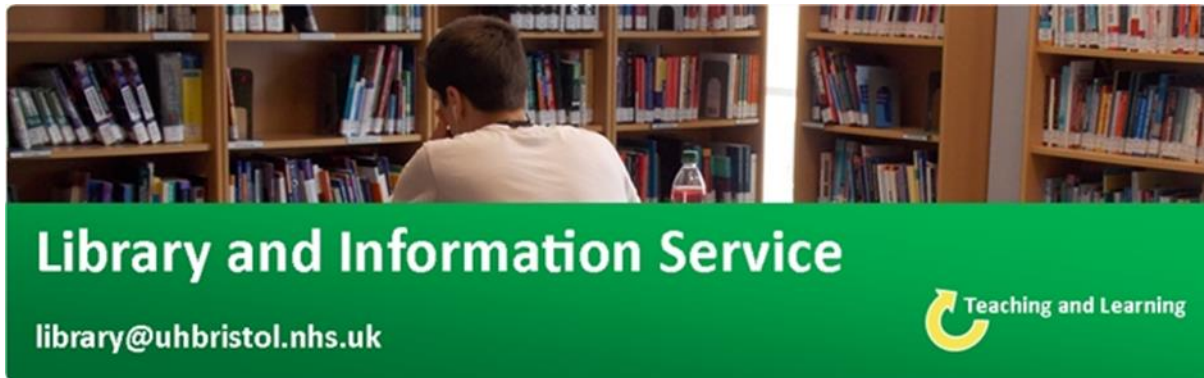
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