Dallas Oral Surgery Associates

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Winter 2016~ A Quarterly Update

Dear Colleague:

Happy New Year! We hope this quarter's newsletter finds everyone in good health and spirits.

Each year we continue to see growth and development in our practice accompanied by an increase in treatment success. Through this quarterly newsletter, we wish to share with you some of the latest developments in oral surgery and implant dentistry, as well as open communication with your office.

If we can provide any additional information, or if you would like to see an article on a particular topic in our next issue, please do not hesitate to call. We appreciate the trust you place in us by allowing us to participate in the care of your patients.

Regards,

Dr. Steven D. Sherry
Dr. John D. Wallace

Effects of Antiseptic Solutions Commonly Used in Dentistry on Bone Viability, Bone Morphology, and Release of Growth Factors

Sawada K, Fujioka-Kobayashi M., et al.
J Oral Maxillofac Surg. 2016 Feb;74(2):247-54

Antiseptic solutions are commonly used in dentistry for a number of sterilization procedures, including harvesting of bone chips, irrigation of extraction sockets, and sterilization of osteonecrotic bone. Despite its widespread use, little information is available regarding the effects of various antiseptic solutions on bone cell viability, morphology, and the release of growth factors. The antiseptic solutions included 1) 0.5% povidone iodine (PI), 2) 0.2% chlorhexidine diguluconate (CHX), 3) 1% hydrogen peroxide (H_2O_2), and 4) 0.25% sodium hypochlorite (HYP). Bone samples collected from porcine mandibular cortical bone were rinsed in the antiseptic solutions for 10 minutes and assessed for cell viability using an MTS assay and protein release of transforming growth factor (TGF-β1), bone morphogenetic protein 2 (BMP2), vascular endothelial growth factor (VEGF), interleukin (IL)-1β, and receptor activator of nuclear factor κB ligand (RANKL) using an enzyme-linked immunosorbent assay at 15 minutes and 4 hours after rinsing.

After antiseptic rinsing, changes to the surface protein content showed marked alterations, with an abundant protein layer remaining on CHX-rinsed bone samples. The amount of surface protein content gradually decreased in the following order: CHX, H_2O_2, PI, and HYP. A similar trend was also observed for the relative cell viability from within bone samples after rinsing, with up to 6 times more viable cells found in the CHX-rinsed bone samples than in the HYP- and PI-rinsed samples. An analysis of the growth factors found that both HYP and PI had significantly lower VEGF and TGF-β1 protein release from bone samples at 15 minutes and 4 hours after rinsing compared with CHX and H_2O_2. A similar trend was observed for RANKL and IL-1β protein release, although no change was observed for BMP2. *The results from the present study have demonstrated that antiseptic solutions present with very different effects on bone samples after 10 minutes of rinsing. Rinsing with CHX maintained significantly higher cell viability and protein release of growth factors potent to the bone remodeling cycle.*

The Fate of Buccal Bone Around Dental Implants

Merheb J, Vercruyssen M, et al.
Clin Oral Implants Res. 2016 Jan 8

Buccal bone thickness is considered to be an important factor during implant surgery. Its resorption might have an effect on the soft tissue stability and eventually on implant survival. This study was conducted to investigate the resorption of the buccal bone over the first 12 months after implant loading. Twenty-four subjects (47 implants) were included. The buccal bone thickness was measured during implant surgery at several distances from the implant shoulder using a

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Buccal Bone...*continued*

specifically designed device which allows buccal bone thickness measurements without the elevation of a muco-periostal flap. These measurements were repeated after 12 months of loading. Sixteen implants were placed flapless and 31 with the elevation of a flap. Of the latter, 19 were placed following a one-stage protocol and 12 following a two-stage protocol.

The mean reduction in buccal bone thickness, when all groups pooled, was 0.26, 0.36, 0.35 and 0.27 mm at the shoulder and 2, 4 and 6 mm apically. Implants with initial bone thickness <1mm (thin buccal plate) did not lose significantly more bone than those with an initial thickness ≥1mm (thick bone plate) except in the 'open-flap, one-stage' group. A flapless procedure leads to less bone resorption compared to an open-flap procedure. *However, the number of surgeries (one stage vs. two stages) did not influence the rate of bone resorption. From the results of this study, the authors questioned the necessity of having a thick bone plate at the vestibular site of the implant.*

Comparison of Azithromycin and Amoxicillin Before Dental Implant Placement: An Exploratory Study of Bioavailability and Resolution of Postoperative Inflammation

Escalante MG, Eubank TD, et al.
J Periodontol. 2015 Nov;86(11):1190-200

Studies suggest that a single prophylactic dose of amoxicillin reduces early implant complications, but it is unclear whether other antibiotics are also effective. This study compared the local antimicrobial and anti-inflammatory effects resulting from a single dose of azithromycin or amoxicillin before surgical placement of one-stage dental implants. Healthy adult patients requiring one-stage dental implant placement were allocated randomly to receive either 2 g amoxicillin (n = 7) or 500 mg azithromycin (n = 6) before surgery. Peri-implant crevicular fluid (PICF) samples from the new implant and gingival crevicular fluid (GCF) from adjacent teeth were sampled on postoperative days 6, 13, and 20. Inflammatory mediators in the samples were analyzed by immunoassay, and antibiotic levels were measured by bioassay.

On day 6, azithromycin concentrations in GCF and PICF were 3.39 and 2.77 µg/mL, respectively, whereas amoxicillin was below the limit of detection. During early healing, patents in the azithromycin group exhibited a significantly greater decrease in GCF volume. At specific times during healing, the azithromycin group exhibited significantly lower levels of interleukin (IL)-6 and IL-8 in GCF than the amoxicillin group and exhibited significantly lower levels of granulocyte colony stimulating factor, IL-8, macrophage inflammatory protein-1β, and interferon-gamma-inducible protein-10 in PICF. *Azithromycin was available at the surgical site for a longer period of time than amoxicillin, and patients taking azithromycinexhibited lower levels of specific proinflammatory cytokines and chemokines in GCF and PICF. Thus, preoperative azithromycin may enhance resolution of postoperative inflammation to a greater extent than amoxicillin.*

Dental Implants in Patients with Oral Mucosal Diseases

Reichart PA, Schmidt-Westhausen AM, et al.
J Oral Rehabil. 2015 Dec 21

The purpose of this study was to reveal dental implants survival rates in patients with oral mucosal diseases: oral lichen planus (OLP), Sjögren's syndrome (SjS), epidermolysis bullosa (EB) and systemic sclerosis (SSc). A systematic literature search identified publications on clinical use implant-prosthetic rehabilitation in patients with OLP, SjS, EB, SSc reporting on study design, number, gender and age of patients, follow-up period exceeding 12 months, implant survival rate.

After a mean observation period (mOP) of 53.9 months, 191 implants in 57 patients with OLP showed a survival rate (SR) of 95.3%. For 17 patients with SjS (121 implants, mOP 48.6months), 28 patients with EB (165 implants, mOP 38.3 months) and five patients with SSc (38 implants, mOP 38.3), the respective SR was 91.7 (SjS), 98.5 (EB) and 97.4 (SSc). Heterogeneity of data structure and quality of reporting outcomes did not allow for further comparative data analysis. For implant-prosthetic rehabilitation of patients suffering from OLP, SjS, EB and SSc, no evidence-based treatment guidelines are presently available. *However, no strict contraindication for the placement of implants seems to be justified in patients with OLP, SjS, EB nor SSc. Implant survival rates are comparable to those of patients without oral mucosal diseases. Treatment guidelines as for dental implantation in patients with healthy oral mucosa should be followed.*

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