AO Orlando preview: The sinus floor bone graft

By Ole Jensen, DDS, MS

Twenty years after the watershed Sinus Consensus Conference of 1996, co-chaired by Leonard Shulman, Michael Ilieck, Vincent Laccone and myself, we editorialized in "The International Journal of Oral & Maxillofacial Implants," highlighting five areas of significant change that have occurred since that time. These five areas will be the topic of a session, titled "Sinus Consensus Update Session," that I will moderate on March 17 as part of the Academy of Osseointegration 2017 Annual Meeting.

The state of the science of the sinus floor bone graft is not settled. There remains significant controversy, and therefore ongoing innovation, as it relates to augmentation procedures to enhance osseointegration. The goal of this course will be to present key topics that have improved our understanding of when and how and if to do the sinus floor procedure.

One could say that the profession does not yet know what to do about aeration of the posterior maxilla with regard to tooth replacement, which is why every specialty must contribute to making treatment planning a success.

Here are five key developments that have informed our thinking:

• Technical advances since 1996 in performing the sinus graft now involve using an alveolar approach instead of a lateral approach. Transectional osteotomes are used vertically to intrude the sinus floor, sometimes simultaneously alveolar splitting to gain alveolar width.

• For the fully edentulous setting, with the advent of the ‘all-on-4’ method, sinus grafting is generally avoided even in the severely deficient patient. Implant angulation circumvents the sinus by gaining apical anchorage into pyriform, nasal crest, pterygoid or malar bone structure, thus avoiding the need for sinus floor bone augmentation, a significant change in treatment prerogative since 1996.

• Almost iconoclastic is the resurgence of the use of short implants, even ultra-short implants that avoid sinus penetration or are only minimally invasive, having been shown in three-year studies to be just as effective as sinus grafted implant sites using longer implants.

• The overarching theme of the symposium is that ongoing clinical and basic science developments continue to strike a balance between biological efficiency and simplicity of treatment.

To view the full program guide and register to attend, visit http://meetings.osseo.org.
Belgian researchers develop implant that releases antimicrobial drugs to prevent, fight infections

By Dental Tribune International

Bacterial and fungal pathogens can form a biofilm on dental implants that is resistant to antimicrobial drugs, including antibiotics. As a result, these implants pose a significant risk of infection. A multidisciplinary team of researchers at KU Leuven in Belgium has developed a dental implant that gradually releases such drugs from an integrated reservoir. The antimicrobial liquid could help prevent and fight infections.

“Our implant has a built-in reservoir underneath the crown of the tooth,” explained lead author Dr. Kaat De Cremer. “A cover screw makes it easy to fill this reservoir with antimicrobial drugs. The implant is made of a porous composite material, so that the drugs gradually diffuse from the reservoir to the outside of the implant, which is in direct contact with the bone cells. As a result, the bacteria can no longer form a biofilm.”

In the laboratory, the implant was subjected to various tests for use with chlorhexidine, a universal mouthwash with a powerful antimicrobial effect.

The study, titled “Controlled release of chlorhexidine from a mesoporous silica-containing macroporous titanium dental implant prevents microbial biofilm formation,” was published online in January 2017 in Volume 33 of the European Cells and Materials journal.

The report, titled “Effect of heavy smoking on dental implants placed in male patients posterior mandibles: A prospective clinical study,” was conducted by researchers at the First Affiliated Hospital of Xi’an Jiaotong University in Xi’an in China. The results were published in the December 2016 issue of the Journal of Oral Implantology.

Although implants in both groups achieved osseointegration by the end of the 12th week, the healing process differed significantly between non-smokers and heavy smokers. In non-smokers, stability improved and implants began to better integrate into the bone after the second week.

In the smoking group, however, implants only began to osseointegrate and become more stable after the third week. Despite successful short-term outcomes in both groups, smokers experienced more problems, including greater bone loss around the implants and deeper soft-tissue pockets. However, smoking had no significant effect on plaque build-up or sulcular bleeding in the study group.

In light of the findings, the researchers suggested that surgeons might need to change their standard implant loading schedule for patients who smoke heavily. In addition, smokers should be aware that their habit promotes the loss of marginal bone and the further development of dental pockets and could thereby lead to complications even after osseointegration, the researchers concluded.

In the laboratory, the implant was subjected to various tests for use with chlorhexidine, a universal antimicrobial drug. The study shows that the *Streptococcus mutans* bacterium, a major contributor to tooth decay, is prevented from forming a biofilm on the surface of the implant when the reservoir is filled with the mouthwash.

Furthermore, biofilms that were grown beforehand on the implant could be eliminated in the same way. This indicates that the implant would be effective in terms of both preventing and curing infections.

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Weeks post-surgery