JOI: Bone augmentation procedure successful for challenging cases

Fig. 1. Autologous fibrin matrix platelet rich fibrin after centrifugation and subsequent compression. Figs. 2, 3. Radiographic (Fig. 2) and clinical (Fig. 3) baseline situations after tumor therapy and before reconstruction. Fig. 4. Three-dimensional design of the titanium mesh according to the ideal anatomy of the mandible and the position of the foramen mentale. Figs. 5, 6. Augmentation process with the titanium mesh, a combination of the xenogeneic Bio-Oss, advanced platelet rich fibrin and injectable platelet rich fibrin.

By JOI Staff

Dental implants have become a reliable, long-term treatment option for restoring proper speech, function and aesthetics of the oral cavity and facial features. However, despite the effectiveness of conventional augmentation procedures, complex cases, such as tumor resections or extreme atrophy, result in considerable patient pain and other comorbidities from slow or incomplete healing. To address this challenge, different bone substitution materials are currently being investigated.

Researchers from the Medical Center of the Goethe University Frankfurt (Germany) recently published a case study in the Journal of Oral Implantology that evaluates the use of a novel augmentation alternative in a former

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AAP installs new officers, president

By AAP Staff

The American Academy of Periodontology installed Richard T. Kao, DDS, PhD, as its president during its 104th annual meeting in Vancouver, British Columbia, held Oct. 27-30. Other newly appointed officers are President-Elect Bryan J. Frantz, DMD, MS, of Scranton, Pa; Vice President James G. Wilson, DMD, of Tampa, Fla; as well as Secretary and Treasurer Christopher Richardson, DMD, MS, of Richmond, Va.

In addition to maintaining a private practice in Cupertino, Calif., Kao is a clinical professor in the department of orofacial sciences at the University of California San Francisco and an adjunct clinical professor of periodontology at the University of the Pacific. Kao obtained his doctor of dental surgery degree, certificate in periodontics and PhD from the University of California.

About other installed officers:

- Bryan J. Frantz, DMD, MS, president-elect: Certified by the American Board of Periodontology, Frantz is in full-time private practice in Scranton, Pa.
- James G. Wilson, DMD, vice president: A two-term AAP trustee, Wilson is also a past president of the Florida Association of Periodontists, and he currently serves as the president of the Florida Academy of Dental Practice Administration.
- Christopher Richardson, DMD, MS, secretary/treasurer: Currently in private practice in Richmond, Va., Richardson is also a clinical professor at the Virginia Commonwealth University School of Dentistry.
- Steven R. Daniel, DDS, immediate past president: Daniel has been a practicing periodontist for more than 35 years. He completed his doctor of dental surgery degree and certificate in periodontics at the University of Tennessee School of Dentistry. He also earned his board certification and became a diplomate of the American Board of Periodontology in 2005.

These executives will serve a one-year term ending with the installation of a new team of officers at the AAP 105th Annual Meeting in Chicago, to be held Nov 2-5, 2019.
A head and neck cancer patient. By using a combination of a xenogenic bone substitute (BO) and platelet-rich fibrin (PRF), they were able to successfully perform an implantation in a severely compromised mandible.

A 61-year-old female with cancer in her mandible was treated by a tumor resection in her jaw as well as neck dissection on both sides, resulting in disfiguration to the lower jaw. After enduring a painful cancer treatment, the patient did not desire another surgery to harvest bone for dental implants and opted instead for using the BO and PRF alternative. The patient’s blood was drawn, centrifuged and combined with the BO to fill an anatomy-specific three-dimensional titanium mesh. The titanium “cage” was designed and made from a CT scan-generated model of the patient’s mandible. The mesh was placed at the involved surgical site, and then covered with collagen matrix (that had previously been shown to aid in tissue regeneration) plus a final layer of PRF clots were used to cover the matrix.

No complications were observed during the 16-month, full implantation procedure in which six implants were successfully integrated into the mandible. From bone biopsies taken during the implantation procedure, researchers were able to histologically confirm that the combination of BO and PRF created a successful augmentation and is a strong alternative to direct bone harvesting from the patient. The histology also revealed an increased blood flow of the connective tissue, which aided tissue regeneration and new bone formation during augmentation healing phase.

In this case study, researchers introduce an extremely promising new method of dental reconstruction in treating a severely compromised mandible in a patient recovering from head and neck cancer. More research is necessary to examine the longer-term effects of this procedure on bone regeneration.


About Journal of Oral Implantology

The Journal of Oral Implantology is the official publication of the American Academy of Implant Dentistry and of the American Academy of Implant Prosthodontics. It is dedicated to providing information to general dentists, oral surgeons, prosthodontists, periodontists, scientists, clinicians, laboratory owners and technicians, manufacturers and educators. The JOI distinguishes itself as the first and oldest journal in the world devoted exclusively to implant dentistry. For more information about the journal or society, visit www.joionline.org

Fig. 7: Post-operative X-ray image after reconstruction of the mandibular defect.
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