Digital pre-treatment planning for atrophic ridges restorations

Course code DNTL-DENT0180-001 & 002

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Course description
Management of severe bone atrophies still represents a challenge in the treatment of edentulous patients. The most appropriate surgical technique selection as well as the choice of biomaterials are key factors for predictable functional and esthetic outcomes. Digital planning represents an advantage, as it allows clinicians to precisely plan hard and soft tissues augmentation according to final prosthetic wax-up. The GBR application in the 3D reconstruction will be described both for vertical and horizontal ridge augmentation in mandible and maxilla.

The use of an organic bovine bone (Bioss) and resorbable membrane (Biogide) will be described both for horizontal augmentation and sinus lift procedure because maxillary bone resorption leads to the formation of insufficient alveolar ridge for implant placement, both vertically and horizontally. Soft tissue management is definitely a sheer topic in obtaining excellent clinical results in surgical procedure concerning both natural teeth and dental implants.

Current concepts for augmenting soft tissue volume in a vertical and/or buccal direction are based on the use of autologous tissue that is harvested most often from the palatal area. These transplants have a long history in dentistry and numerous articles have been published documenting their effectiveness, safety and long-term stability.

Limitations and disadvantages of autologous tissue grafts include:
- Availability and thickness of the donor tissue vary according to anatomical dimensions of the palatal vault.
- Length and thickness are limited by anatomy, like a thick alveolar process, exostoses and the palatine nerves and blood vessels.
- Patients very often complain about pain and numbness at the donor site.

In order to overcome these issues and reduce the morbidity due to graft harvest, research activities have focused on the development of soft tissue graft substitutes from various sources and for a number of clinical indications.

For soft tissue volume augmentation, a suitable biomaterial must provide volume stability over time and favorable biological behavior that allows normal modeling and remodeling processes. A volume stable collagen matrix will be presented analyzing research data and clinical indications. Starting from literature background by means of numerous in vitro, preclinical and clinical models the new matrix can be considered as a valid option thanks to:
- Favorable mechanical properties and biological attributes promoting the ingrowth of human fibroblasts.
- Favorable tissue integration and promotion of angiogenesis

The surgical protocol in peri-implant soft tissues management and periodontal plastic surgery will be presented. The most recent data from the literature will be the scientific background of the proposed concepts.

Learning objectives
At the end of the course, participants will learn:
- How to digitally plan an atrophic ridge restoration
- How to manage soft tissues during bone augmentation procedures
- How to manage hard and soft tissues in the aesthetic area

Instructor biography
Dr. Mario Beretta DDS, PhD, MSC

Degree in Dentistry at the University of Milan | PhD in Implantology at the University of Milan | Post graduated in Oral Surgery at the University of Milan | Clinical Assistant Professor, School of Dentistry, Dept of Biomedical Surgical and Dental Sciences.

Author of scientific publications and co-author of books concerning implants, bone augmentation, soft tissues management and digital dentistry.

Speaker at National and International congresses.