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Autologous Dentin Graft: rise of an old method. Case report with Tooth Transformer

Background: The avulsion of upper maxillary molars results in a progressive reduction of bone volume in both vertical and horizontal direction, especially if the dental apex is close to the cortical floor of the maxillary sinus. Alveolus and bone thickness can be preserved by means of grafting technics. The potential of demineralized dentin matrix used as graft material is known since 1967 (Urist et al) when an orthopedic surgeon made the first publication on this topic. 20 years later Bessho et al. emphasized the presence of bone morphogenetic proteins inside the dentine itself. The dentine, if shredded, plays a key role in osseo-conduction since it facilitate the recruitment of osteoblasts on their framework and neo-angiogenesis at the site to be regenerated. The **Tooth Transformer® (TT, Biomax, Milan, Italy)**, a certified medical device provides for the shredding of autologous teeth previously extracted from the patient and their transformation into graft material.

Case report: A 48-year-old male patient with a history of primary hypertension and compensated type-2 diabetes came to our private practice with symptoms affecting the molar 27. Local infection and halitosis are been detected. Orthopantomography and CT (fig 1) demonstrated the close connection of the two elements 27 and 28 with the floor of the maxillary sinus, so it was decided to extract only the 27 and to make a guided bone regeneration procedure with Tooth Transformer device also to avoid primitive demolition of the tuber. Extracted tooth was cleaned and cut with a diamond bur in small pieces, putting attention on presence of past restoration or endodontic treatment before the insertion in the device (fig 2). After the 35-minute trituration process, the material was placed to the post-extraction socket and sutured with silk threads. Patient reported no problems in the next week and 2-weeks follow up OPT showed good healing, with no apparent sinus floor injury with bone formation in the post-extraction area (fig 3). A CBCT and a biopsy will be scheduled at six months-time.

Discussion: When clinically indicated for extraction, dental fragments can be easily transformed into granular material by means of an automatic shredding system. Good integration of autologous dental grafting at the receiving site can result in bone regeneration. Compared to materials of synthetic origin, dental autologous grafts exhibit a higher biological potential and a good success rate. The tooth-to-graft transformation is an example of tissue engineering.

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Biography:

Cinzia Casu graduated in 2010 and works at the moment at her Private Dental Practice in Cagliari (Italy). She had concluded a biennal Master on Oral Surgery and Pathology at the University of Parma in 2015, and others courses of oral pathology. She is the author of several national and international articles and a monograph. She is the president of AIRO (Italian Academy of Oral Research), She is an editorial member of some International Journal such as Biology and Medicine Case Reports, Archives on Dentistry, Journal of Biomedical Practitioner. She was a speaker in Italian, European, and World congresses.

Research Interest:

One of my fundamental goals is to find devices for the treatment of oral diseases that do not have side effects on systemic health such as Photodynamic Therapy, Ozone, Laser and so on . A concept dear to me is that oral health is a window on systemic health.

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