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## Treatment of infra-bony periodontal defects using a collagen membrane and a bone substitute of equine origin – a pilot study

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### ABSTRACT

**Introduction:** One of the main goals of periodontal treatment is the regeneration of lost tissues, in order to improve the prognosis of the involved teeth [1–3]. Guided tissue regeneration (GTR) involves the use of a barrier with or without the use of bone substitutes [4]. Given the great diversity and constant evolution of materials, it is necessary to maintain a permanent evaluation of their clinical effectiveness. This study intends to evaluate the success and predictability of GTR using a new membrane and bone substitute of equine origin (Heart® and Mix Granules® – Bioteck SpA, Turin, Italy), in the treatment of infra-bony defects with two or three walls [5].

**Materials and methods:** This study was approved by Egas Moniz Ethics Committee and all patients signed an informed consent form. Patients were selected among those referred to the Department of Periodontology/EMDC, with indication for surgical periodontal treatment, presence of 2–3-wall infra-bony defects, probing depth (PD)  $\geq$  5 mm, infra-bony component  $\geq$  4 mm deep (evaluated radiographically) and attached gingiva  $\geq$  2 mm. Exclusion criteria were: cases with Plaque Index (PI)  $>$  20%, smokers, extension of the defect to the furcation zone, mobility grade III, endodontic pathology, diabetes or other pathologies that interfere with bone remodelling and metabolism or contraindicate periodontal surgery. All surgeries were performed by the same operator. The clinicians involved in the evaluation of the results had no intervention in surgery. The following clinical and radiographic parameters were evaluated at one, three and six months after surgery: PI, Gingival Index (GI), Probing pocket depth (PPD), Bleeding on Probing (BoP); Gingival recession (GR), height of keratinised gingiva (KG) and radiographic angle of the defect (RAD). In addition, the presence of possible intra-surgical or post-operative complications was also evaluated. The assessment of the defect depth reduction was based on standardised periapical radiographs obtained through the use of an individualised device (parallelizer).

**Results:** A total of six participants (83% females, 17% males), with a mean age of 61.6 ( $\pm$  8.1) years, were enrolled in the study. The number of defect walls was: 3 walls (50%), 2 walls (33.3%) and 2/3 walls (16.7%). After six months, an average clinical attachment level gain of 3.3 ( $\pm$  1.4) mm, mean radiographic bone filling of 72 ( $\pm$  29%) and a BoP reduction of 66.6% were observed. RAD average was 21.3 ( $\pm$  1.2°) and GR changed from 2.2 to 2.7 mm. Membrane exposure was observed in 33.3% of the cases, however, there were no cases of infection or severe pain.

**Discussion and conclusions:** The use of collagen membranes and corticocancellous bone grafts of equine origin seems to be a viable alternative in the regeneration of infra-bony periodontal defects.

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## Vascular risks in external sinus lifts: an anatomical approach

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### ABSTRACT

**Introduction:** In the anterolateral wall of the maxillary sinus, an osseous canal can be observed, corresponding to the anastomosis between arterial branches of the posterior superior alveolar artery and the infraorbital artery [1]. From this anastomosis, mostly known as Antral artery, its several branches allow for the vascularisation of the sinus mucous membrane, periosteum and the anterolateral bone wall of the sinus [2].

Surgical approach of this region, including antrostomy for external sinus lift of the maxillary sinus, can result in intraoperative bleeding due to vascular lesion during the osteotomy [3]. Current radiological 3D modelling of the sinus anatomy, as well as solid knowledge of sinus anatomy are of the utmost importance to prevent vascular complications during these surgical procedures in this area.

The objective of this presentation is to graphically review and demonstrate anatomical concepts on sinus anatomy, through live and interactive *a viva voce* anatomical black board and chalk schematic drawings, based on the general narrative description of sinus anatomy, as well as anatomical findings regarding antral artery position in cadaveric studies [4–7].

**Materials and Methods:** Medline (Pubmed) search using the following: “vascularization maxillary sinus cadavers”, completed with the revision of the bibliographical references of the selected articles in order to identify further relevant studies. Inclusion criteria: (1) Published between 2008 and 2015. (2) Cadaver Studies. (3) Studies that evaluate the position of the anatomical position of the anastomosis between arterial branches of the posterior superior alveolar artery and the infraorbital artery. Exclusion Criteria: (1) Non cadaveric studies. (2) Foetal and paediatric studies.

**Results:** Eight articles were selected.

**Discussion and conclusions:** The vascular anastomosis is frequently found in the lateral wall of the maxillary sinus. Its position and depth are variable, as well as its trajectory and morphology. Pre-surgical determination of its precise anatomical variations is of the utmost importance to avoid vascular damage and complications during external sinus lifts osteotomies.

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