



## 4011E ePOSTER CLINICAL RESEARCH – SURGERY

### Dentin particulate autograft for alveolar ridge augmentation – a pilot clinical study

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**Background:** A human periodontal ligament fibroblast cell line showed a very promising growth reaction to the mineralized dentin. The mineral and organic matrix compositions of a tooth, dentin, and cementum are almost identical to membranous bone, although, compared to bone, teeth contain more mineral. This feature may be beneficial for volume maintenance since at the remodeling stage dentin graft is resorbed slowly. As a supplement of bone graft material, dentin particulate autograft could be beneficial.

**Aim/Hypothesis:** The aim of this pilot clinical study was to assess efficacy and predictability of dentin particulate autograft as regenerative treatment for alveolar ridge augmentation and two stage implant placement using CBCT radiographic analysis.

**Materials and Methods:** The sample of presented study consisted of 8 patients, with insufficient width of alveolar ridge in lateral lower jaw. After surgical removal of third molar or periodontally compromised tooth, a dentin autograft was prepared according to manufacturer recommendations. Clean extracted teeth were dried and ground in a sterile chamber of the Smart Dentin GrINDIAr<sup>®</sup> unit (KometaBio Inc., Cresskill, USA). The particulate teeth were immersed in a basic alcohol cleanser to dissolve all organic remnants and bacteria and dehydrated. The particles were rinsed twice with sterile phosphate-buffered saline solution. The platelet-rich fibrin (PRF) membranes were prepared. Graft material was used for ridge augmentation and covered with PRF membranes. After 5 months of healing CBCT scan were made. During implants placement homogeneous integration of dentin particulate was found. Dental implants (BEGO Semados<sup>®</sup> SC BEGO, Germany) were inserted and restored by titanium abutment and zirconia crown.

**Results:** Clinical re-entry, prior to dental implants placement confirmed a homogeneous integration of dentin autograft and bone-like appearance in former grafted area. Six months after implants placement CBCT scans were obtained as part of the standard procedure. The radiographic images of the target areas revealed no grafted bone resorption around the implants. All patients were followed for 6 months after loading through clinical follow-ups and control CBCT scans. No resorption of the autograft around inserted implants were found.

**Conclusions and Clinical Implications:** Within its limitation, the present pilot clinical study revealed that autologous dentin particulate autograft may serve as an alternative autologous bone substitute to support alveolar ridge augmentation and two-stage implant placement.

**Keywords:** dentin graft, alveolar ridge augmentation, dental implants, bone substitutes, cbct analysis