A randomized clinical pilot study on the use of
deproteinized bovine bone for the treatment of
alveolar bone critical size defect secondary to cyst
removal. Preliminary results
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INTRODUCTION
The healing of extensive alveolar bone defects secondary to cysts removal is not predictable. Usually residual voids of various entity persist. Some Authors have proposed the use of grafting materials to reconstitute the loss of hard tissue.

OBJECTIVES
The aim of this study was to evaluate the effect of the use of deproteinized bovine bone as a filler material of bony defects derived from the excision of maxillary and mandibular cysts having a diameter > 20 mm. Deproteinized bovine bone was considered effective if subjects treated with the graft material (group 1) showed a lower recurrence and a better healing in terms of volume of bone regrowth at 12 months after surgery, when compared to no treatment (group 2). Clinical and radiological control (computerized tomography) were considered at baseline (pre-operatory)and after 12 months post-operative for both groups.

METHODS
The study was approved by the local ethics committee.(protocol 218/P; Azienda Ospedaliera di Padova Ethics Committee, Padova (I) 05th January 2011). 29 patients (20 male and 9 female) requiring the removal of maxillary cyst => 20 mm and showing tolerance to conventional surgical procedure were considered.
Patients were randomly divided into 2 groups according to the type of treatment: the bone defect was filled with granules of deproteinized bovine bone ( Group 1); no filling material (Group 2).
Clinical and radiological follow up was performed for every patient. Clinical follow up was scheduled as follows: 7 days, 3, 6 and 12 months after surgery. Radiological follow up consisted of an ortopantomography and a CT scan taken at the baseline (pre-operatory) and 12 months after surgery.
A computerized method was adopted to compare the pre-op and the 1 year post-op CT scan: images were acquired in DICOM format and then converted into NIfTI format using the stand-alone program DCM2NII. Using an in-house software, cysts outline in the pre-op CT, and residual radiotransparent areas in the 1 year post-op CT, were manually outlined on single axial layers. The final volume of each cyst was computed as the sum of the voxel with histological features compatible with lateral periodontal cyst

RESULTS
Results are preliminary, since not all the 19 patients enrolled for this study completed the 1-year follow up. 8 patients were considered (5 in Group 1 and 3 in Group 2).
No differences in clinical conditions were observed between the two groups.
The comparison between the pre-operative and post-operative CT revealed that the average volume of residual radiolucrency in Group 1 was reduced with respect to Group 2 (2,256% vs 27,87%) showing a difference of 25,62%.

CONCLUSIONS
Preliminary results show that the use of deproteinized bovine bone seems to influence positively the healing of alveolar bone critical size defects in humans. The method used to compare the pre-op and the 1 year post-op CT scans, may be considered as a repeatable one to evaluate the healing of bony defects.
The results of this pilot study may justify future researches with a larger number of patients.

REFERENCES
Shear VC, Seward GR. Cysts of the oral regions, 3 ed. Oxford; Boston: Wright: 1992