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ABSTRACT BOOK

COMPARATIVE EVALUATION OF BONE REGENERATION T AND HEALING SCORE

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to assess bone healing after guided bone regeneration using grafts and tissue-engineering techniques and to evaluate the value of of assessing bone regeneration compared to histology. **Material and Methods:** A number of 60 mice type CD1 a bone defect at the level of the parietal bone was surgically induced and grafted with bone grafts obtained by using. Bone grafts were obtained using embryonic stem cells seeded in differentiation medium. For other 30 mice type CD1 a bone defect at the parietal bone was induced and left to heal without grafts. The process was assessed at 2 and 4 months using CBCT imaging and assessed on a histological record. **Results:** The healing score parameter by the Pearson test was statistically significantly correlated with the parameters obtained with CBCT imaging (defect width ($p \leq 0.0001$), ≤ 0.0001). The comparison of the groups depending on histological parameters at 2 and 4 month shows that regeneration and remodeling in the group sacrificed at 4 months was the most advanced in the group sacrificed at 4 months which embryonic stem cells, a complex osteogenic medium and deer antler were used. **Conclusion:** Bone grafts obtained by tissue engineering techniques proved there osteogenic potential. CBCT allows for imitative monitoring of bone defect healing and significantly with the histological findings.

POSTER PRESENTATION

P3. TOOTH SEGMENTATION AND REPLICA FABRICATION WITH DIFFERENT CBCT MACHINES

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Objective: The aim of this study was to compare the adaptive tooth segmentation method for tooth replica fabrication in the clinical setting with various CBCT machines. **Material and Methods:** Two dried human mandibles were scanned with three different CBCT machines. The premolar teeth were segmented using adaptive and global thresholding. To have a standard thresholding protocol for all CBCT machines, segmentation was performed by percentages and profile line. The teeth were segmented with the same percentage threshold value in all CBCT machines for both segmentation methods. The 3D models of segmented teeth were compared with optical scanning of teeth. Results In the present study, segmentation for tooth replica fabrication was hampered by tooth density variations with the threshold level needing to be adjusted at least three times. The latter is explained by tissue density variation, especially when gradually moving from coronal to apical tooth level. This may be strengthened by lack of robust CBCT density profiles. Global thresholding yielded inferior Results to profile line segmentation. **Conclusion:** Segmentation of teeth is hampered by the gradual density differences in teeth and the lack of standardized Hounsfield units in various CBCT machines. With decreasing tooth density in the apical area, contrast between root and bone also decreases, making global thresholding not suitable for accurate tooth segmentation. Profile line segmentation may offer a solution and reduce observer bias upon tooth replica fabrication. This type of segmentation may also provide an established protocol to be used in different CBCT machines with varying gray scale values.

P48. EXPERIMENTAL AND CLINICAL ASSESSMENT OF THREE-DIMENSIONAL CEPHALOMETRY - A SYSTEMATIC REVIEW.

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Objectives: to perform a systematic review of the current scientific literature on three-dimensional (3D) cephalometry. The null hypothesis was that 3D cephalometry was an accurate and reproducible diagnostic technique. To examine this hypothesis, the following three research questions were asked: 1. What is the accuracy of 3D cephalometric measurements compared to in vitro measurements? 2. What is the intra- and inter-observer reliability in the selection of 3D cephalometric landmarks? 3. What is the reproducibility of the linear and angular measurements in 3D cephalometry? **Methods:** A comprehensive database search was performed using Medline (Ovid), Medline In-Process and Other Non-Indexed Citations (Ovid), PubMed, Cochrane, Web of Science and Google Scholar. The titles and abstracts obtained from this electronic search were then screened and evaluated by two observers according to inclusion and exclusion criteria. **Results:** We found that there were a high level of agreement (≤ 1 mm) between the in vitro measurements and those obtained from 3D cephalometry and that some landmarks provided highly repeatable Results. However, the linear (0.04 - 7.49 mm) and angular (0.99 - 9.30 degree) measurements greatly differed. **Conclusions:** These Results do not support the hypothesis that 3D cephalometry is a completely accurate diagnostic technique. Therefore further efforts should be made to develop and refine this technique.

P49. THREE-DIMENSIONAL EVALUATION OF SINUS SEPTA FOR IMPLANT PLACEMENT BASED ON CONE-BEAM COMPUTED TOMOGRAPHY MEDICAL

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Object: Sinus lift augmentation can restore bone mass at the patients. There are studies in literature that propose using short implants for implant insertion in vestibular or palatal cortical bone to avoid sinus augmentation. The aim of this investigation is to evaluate 3D septa, for implant placement. **Material and Methods:** We selected 20 dentate patients, with maxillary sinus septum for implant placement. We created 3D reconstructions using Maxilim 3.0 software. 3 sections were performed. 3D reconstructions were performed on the base of the Department of Maxillofacial Surgery, Saint-Luc Hospital, Bruxelles, Belgium. 10 measurements were performed and the angle between the maxillary plane was calculated. For each septa we assessed the orientation. **Results:** No significant differences in age or gender were found ($p \leq 0.05$). The observed demonstrated a greater prevalence (60%) in the presence of septa. The size can vary between 2.8 and 12.3 mm in mean length. The angle was 88.48 degrees. For a mean height of 2.28 ± 0.32 we found a prevalence of 3.52 $\pm$ 0.92 at the base of the septum and 1.27 $\pm$ 0.38 at the top. **Conclusions:** Cone-Beam CT image analyses may provide useful information to avoid unnecessary sinus augmentation procedures and to identify the anatomic structures inherent to the maxilla.

MENTAL AND CLINICAL ASSESSMENT OF ENSIONAL CEPHALOMETRY - A SYSTEMATIC

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perform a systematic review of the current scientific literature on 1 (3D) cephalometry. The null hypothesis was that 3D is an accurate and reproducible diagnostic technique. To examine the following three research questions were asked: 1. What is the cephalometric measurements compared to in vitro measurements? 2. intra- and inter-observer reliability in the selection of 3D landmarks? 3. What is the reproducibility of the linear and angular 3D cephalometry? **Methods:** A comprehensive database search using Medline (Ovid), Medline In-Process and Other Non-Indexed PubMed, Cochrane, Web of Science and Google Scholar. The results obtained from this electronic search were then screened and observers according to inclusion and exclusion criteria. **Results:** There were a high level of agreement (≤ 1 mm) between the in vitro and those obtained from 3D cephalometry and that some landmarks were repeatable. However, the linear (0.04 - 7.49 mm) and (30 degree) measurements greatly differed. **Conclusions:** These support the hypothesis that 3D cephalometry is a completely accurate technique. Therefore further efforts should be made to develop this technique.

POSTER PRESENTATION

P49. THREE-DIMENSIONAL EVALUATION OF MAXILLARY SINUS SEPTA FOR IMPLANT PLACEMENT BASED ON CONE BEAM COMPUTED TOMOGRAPHY MEDICAL IMAGING

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Object: Sinus lift augmentation can restore bone mass at the maxilla in edentulous patients. There are studies in literature that propose using short or oblique implants, implant insertion in vestibular or palatal cortical bone to avoid maxillary sinus augmentation. The aim of this investigation is to evaluate 3D the maxillary sinus septa, for implant placement. **Material and Methods:** We have, randomly, selected 20 dentate patients, with maxillary sinus septum present, from the data base of the Department of Maxillofacial Surgery, Saint-Luc University Hospital, Bruxelles, Belgium. We created 3D reconstructions using Maxilin (Nobel Biocare). 3 sections were performed. 3D reconstructions were performed for each maxillary sinus. 10 measurements were performed and the angle between the septum and the maxillary plane was calculated. For each septa we assessed localisation and orientation. **Results:** No significant differences in age or gender between patients with and without sinus septum were found ($p \leq 0.05$). The location of septa observed demonstrated a greater prevalence (60%) in the posterior region. Their size can vary between 2.8 and 12.3 mm in mean length. The mean septum angle was 88.48 degrees. For a mean height of 2.28 ± 0.32 we found a mean thickness of 3.52 ± 0.92 at the base of the septum and 1.27 ± 0.38 at the top. **Conclusion:** Three-dimensional Cone-Beam CT image analyses may provide useful information that can avoid unnecessary sinus augmentation procedures by adequate, timely identification of the anatomic structures inherent to the maxillary sinus.