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Bone volume assessment around dental implants after lateral approach maxillary sinus lift using Cone- Beam Computerized Tomography Scan (CBCT): A retrospective study.

By

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ABSTRACT

INTRODUCTION: Implant dentistry has become the excellent treatment modality since its inception to modern era of dentistry. The procedure of choice to restore this anatomic deficiency is maxillary sinus floor lift up procedure. Regeneration of the cavity that has been created can take place from the surrounding bony walls as long as they have the regenerative capacity, and the space can be maintained. CBCT remains the gold standard, as it provides high resolution while keeping the radiation dose to a minimum and overcomes the limitations of superimposition and magnification of traditional 2D techniques (Tadinada et al., 2015). the assessment of bone volume gain around the implants over a period can be considered as a prognostic indicator for success and survival of implants. And CBCT can be a useful tool in assessing the amount of new bone gain in turn predicting the success and survival of implants placed after sinus floor elevation without bone grafting.

AIM: To assess the amount of bone around the implant placed after direct sinus lift procedure with grafting at different time points using data from CBCT.

MATERIAL AND METHOD: This is a retrospective clinical interventional study which includes 15 participants, who have undergone maxillary sinus lift procedure with lateral approach. selection criteria: patient undergone direct sinus lift procedure and having CBCT scan at baseline and 6th month postoperative. Sample:1} Sampling procedure: Demographics data and CBCT images of all 15 participants will be collected from patient data base and radiographic investigation data base of the institutec2} Study instrument: CBCT Images, 3D Imaging Software 3} Data collection: Collected Demographics data and CBCT images of participants will be analyzed, Mean bone height after sinus lift procedure will be measured using CBCT data and CS 3D imaging software at baseline, at 6 months post procedure.

RESULTS: Retrospective cohort study 56 sites in 23 patients with mean age of 48.09. Simultaneous grafting and implant placement at 11 and delayed implant placement in 45 sites. Implant failures = 5 (2 in autogenous + alloplast, 1 in xenograft, 1 in autogenous + alloplast, 1 in alloplast). When immediate compared to re-entry and follow up values, there was a significant decreased at re-entry and follow up, when compared to height of graft measured immediately after graft. However, there was also

a significant reduction in bone height when re-entry value was compared with follow up values. Inter-group comparison among graft materials used Autogenous with alloplast showed significant difference of 2.32. and lowest being combination of autogenous allograft with xenograft.

CONCLUSION: The lateral window technique offers several advantages compared to the crestal approach including access through a larger window into the sinus. However, sinus elevation using the lateral window approach requires extensive surgical manipulation and extended waiting period before uncovering for implant placement Comparison of mean bone gain, where done between various types of graft. Overall, comparison by Anova shows the significant difference in bone gain when compared between various graft typed. Significant higher bone gain was observed in combined autograft with alloplast compared to alloplast alone. The presented methodologies show potential for future application in research areas evaluating volumetric changes in CBCT images, such as comparison of grafting materials or surgical strategies.