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Citation	The 14th Annual Scientific Meeting & 16th Annual General Meeting of Malaysian Section IADR, Kuala Lumpur, Malaysia, 18 April 2015.
Issued Date	2015
URL	http://hdl.handle.net/10722/219291
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RADIOGRAPHIC CONDYLAR CHANGES FOLLOWING VERTICAL SUBSIGMOID OSTEOTOMY IN DIFFERENT SETBACK MAGNITUDES

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OBJECTIVES: The objective of this retrospective study was to compare the effect of different mandibular setback amount by vertical subsigmoid osteotomy (VSSO) on the pattern of radiographic condylar remodeling in one year time span post-surgically.

METHODS: 200 patients diagnosed of mandibular prognathism and underwent VSSO surgery with various setback amounts from 2007 until 2012 at the Prince Philip Dental Hospital were included in this study. Pre-surgical and 1 year post-surgical Postero-Anterior Cephalogram, Lateral Cephalograms and Cone Beam Computed Tomography (CBCT) Scans were retrieved. Tracings of plain cephalometric radiographs were performed. CBCT data sets were used to measure the linear and condylar axis angle value in multiplanar view. Finally the pre- and post-surgical 3D condyle-ramus units were superimposed using stable registration point of the condylar neck and ramal area above the lingula to assess the condylar bone remodeling by topographic and multiplanar slide views.

RESULT: Plain radiographic tracing shows significant differences in the changes of ramus inclination angle, intergonial width and total ramus angle between postoperative (T2) and preoperative (T1) phases between the setback groups. Changes in the CBCT multiplanar condylar axis angle as well as condylar head linear measurements between T2 to T1 were not significantly different between the setback groups. Superimposed multiplanar view analysis in the coronal and sagittal planes showed no significant relationship between the remodeling changes and the setback magnitude. However there was higher proportion of positive remodeling following higher setback amount at the mid-anterior and posteromedial zone in the axial plane.

CONCLUSION: Condyle remodeling is noted to be positive and not destructive following VSSO. The positive remodeling effect remains stable regardless of the amount of VSSO setback.