

University of Baghdad

Collage of Dentistry

Dept. of Oral and Maxillofacial Radiology

The Effect of Tooth Loss on Mandibular Morphology (Radiographic Study)

A Thesis

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Abstract

Throughout one's life, Mandible undergoes remodeling and morphological alteration occurs in various areas of mandible including the gonial angle ,condyle and ramus. The morphological changes of mandible (i.e. condylar height, ramus height and gonial angle) are influenced by tooth loss, age and dental status of subjects. Panoramic imaging more beneficial to patients because it offers both excellent anatomical assessment and excellent evaluation of jaw.

The aim of this study to evaluate the effect of tooth loss on morphology of the mandible (i.e. condylar height, ramus height and gonial angle) using digital panoramic radiography.

This study was conducted on 150 Iraqi male subjects aged from (20-83) years attending to the digital panoramic clinic of Al-Karkh Hospital. Information from each subject was recorded in a special case sheet. The sample were divided in to 3 groups according to the presence of teeth in the mandible; the first group consists of 50 subjects with full dentate (complete dentition), second group consists of 50subjects with (partial dentition) and third group consists of 50 subjects with(edentulous mandible).

Using digital panoramic image, the condylar and ramus heights and gonial angle were measured on both right and left sides by tracing elements. The collected data were possessed and analyzed using Storage Package of Statistical Science package program (version 13).

The mean values of Condylar and ramus heights and gonial angle were significant different between complete dentition and edentulous groups(p-value<0.001) and between partial dentition and edentulous groups (p-value <0.001). the condylar and ramus heights showed a statistically significant strong

negative linear correlation with age in edentulous group(p -value <0.001) while moderate negative linear correlation in both dentate and partial dentate groups. The gonial angle showed a statistically significant Strong positive linear correlation with age in all study groups(p -value <0.001). There was a statistically significant effect of dentate status on condylar height ,in edentulous group being associated with reduction in condylar height than the partial dentate and dentate groups(p -value <0.001) while in ramus height There was no statistically significant effect of dentate status on ramus height although edentulous group associated with a mean reduction in such height compared to dentate group. There was a statistically significant effect of dentate status on gonial angle ,edentulous and partial dentate were equally important in predicating increase of gonial angle(p -value <0.001) . For the effect of tooth loss of the mean values of 3 measuring variable i.e. (condylar and ramus heights and gonial angle) among partial dentate group showed; a statistically significant moderate positive linear correlation of condylar and ramus heights with available teeth(not missing)(p -value <0.001), while gonial angle showed a statistically significant moderate negative linear correlation with available teeth(p -value <0.001) in the same group.

In this study it was concluded; the morphology of the mandible changed as a consequence of tooth loss, which could be expressed as a widening of gonial angle and shortening of both condylar and ramus heights.