

3d print of the maxillary sinus for morphological study [Impresión 3D del seno maxilar para su estudio morfológico]

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The maxillary sinus (MS) is described as a pyramid-shaped cavity of the maxilla. Knowledge of its morphology makes it possible to define normality and abnormality so that its three-dimensional analysis can be a valuable preoperative tool during surgery in this anatomical area. The aim of this study is to present a strategy of morphological analysis of the MS using 3D printing acquired through computed cone beam tomography (CBCT) images. A cross-sectional descriptive study was conducted, including 15 subjects (8 women and 7 men). The 3D virtual reconstruction and modeling was done on the MSs bilaterally, and 30 physical models were produced on a 3D printer. The results revealed that the MSs obtained exhibited various morphologies. An individual analysis of each MS allowed the tripod nature of the MS to be defined. We also were able to observe anatomical repairs such as the MS ostium, as well as complex areas affecting important surgical decisions. This method for creating 3D models of MSs provides a new approach to understanding the precise anatomical characteristics in these structures, which cannot be assessed in the same way on a 2D screen. It may be concluded that 3D printouts of the MS are a suitable method of preoperative analysis that can be useful in educating the patient, however, less time-consuming strategies should be explored. © 2017, Universidad de la Frontera. All rights reserved.

3D printing

Biomodel

Maxillary sinus