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C0393 - 3D PHOTOGRAMMETRY IN THE CHARACTERIZATION OF DEFORMATIONAL PLAGIOCEPHALY IN INFANTS

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Resumen

Objectives: To describe the applicability of 3D-reconstructed images acquired with a smartphone in the diagnosis of deformational positional plagiocephaly of infants.

Methods: Common morphological and deformational parameters (such as occipitofrontal circumference and cranial asymmetry index) were obtained using a calliper and a metric band. After that, a 3D model of the skull was created using imagery based on video images acquired with a cell-phone. Finally, the resultant 3D model was analyzed to measure the cranial deformation using both traditional measurements and automatic 3D methodologies.

Results: The head circumference obtained using both methodologies is very similar, with only 2 mm of difference, while asymmetry indexes differ greatly between classic and 3D measurements. Moreover, the use of 3D data models enables new possibilities, such as the comparison between the model and other surfaces. The ellipsoid has been identified as the a frame of reference, so the differences between the head and the fitted ellipsoid are shown, better depicting the cranial deformation.

Conclusions: Photogrammetry and 3D modelling are highly useful tools for the measurement of cranial deformation. It has been proved that it is possible to create an easy, low-cost, low-invasive and accurate methodology to measure plagiocephaly, brachycephaly and craniosynostosis. Smartphones as a working device (far beyond 2D imagery) allows rigorous 3D measurement and on-site analysis.