

3D AESTHETIC EVALUATION AFTER BREAST CANCER SURGERY USING KINECT

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Aims: Objective aesthetic evaluation after breast cancer surgery (BCS) based on 2D measures lacks volume information; however, acquiring 3D information is expensive and complex. By using 3D low-cost equipment (Microsoft-Kinect), we intended to obtain better cosmetic evaluation accuracy.

Methods: Images of 135 women submitted to BCS were captured by the same breast surgeon: 1) frontal color digital acquisitions with a standard portable camera; 2) depth-map and color frontal images acquired with the Kinect. Initially, new algorithms were developed to detect fiducial points and breast contour without user intervention. Subsequently, in the depth image, 3D information was obtained using fiducial point localization and breast contour delimitation. A novel final algorithm was developed using this new volumetric information plus 2D features. Objective evaluations using the new algorithm and the BCCT.core software (only 2D) were compared with two experts' subjective evaluation with weighted kappa statistics (wk[0-0,25–poor; 0,26-0,50–fair; 0,51-0,75–moderate; 0,76-1–good]).

Results: The new algorithm performed better (wk 0,73) than the previous version used by the BCCT.core software (only 2D)–(wk=0,39) by comparison with the subjective expert evaluation.

Conclusions: The inclusion of 3D measurements improved cosmetic evaluation of BCS, without increasing complexity of our previous system (BCCT.core).