PREDICTION MODEL OF ASYMMETRY IN BREAST CANCER CONSERVATIVE TREATMENT (CT)

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Background: The prediction of a fair or bad result after conventional BCCT could lead to the choice of an alternative surgical option. Using an ongoing study on BCCT (BCCT.prediction) we tried to predict the aesthetic outcome of classic BCCT based on the analysis of pre and post-operative patients photographs.

Material and Methods: Face-view digital photographs of 33 patients, taken before and 30 days after surgery, were objectively assessed with the software BCCT.core to extract asymmetry measures: Breast Compliance Evaluation (BCE); Breast Retraction Assessment (BRA); Upward Nipple Retraction (UNR); Breast Contour Difference (BCD); Lower Breast Contour (LBC); Breast Overlap Difference (BOD). Clinical data of these patients were retrieved from the database and included: 1) patient height, weight, thoracic perimeter and bra size; 2) tumour size, location, specimen size and weight; 3) surgeon expertise, incision size and location and flap rotation. A regression model using asymmetry measures combined with clinical data was applied (Support Vector Regression) to predict asymmetry on the 30th postoperative day. Agreement between predicted and real asymmetries, was calculated using the Linear Coefficient Correlation (p [0: no agreement to 1: highest agreement]).

Results: A moderate performance was obtained with BCE (p=0.55), BRA (p=0.65), UNR (p=0.65), BCD (p=0.73), BOD (p=0.81) and LBC (p=0.85).

Conclusions: The algorithm was capable, with moderate agreement, to predict the 30th postoperative day asymmetry measures. A larger number of patients will be needed to validate this model.