VALUE OF PHOTOGRAPHIC SIDE-VIEWS IN THE OBJECTIVE EVALUATION OF THE AESTHETIC RESULT OF BREAST CANCER CONSERVATIVE TREATMENT

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Aims: The BCCT.core (Breast Cancer Conservative Treatment. cosmetic results) is a software tool created for the objective evaluation of the aesthetic result of Breast Cancer Conservative Treatment (BCCT). It makes use of a face-only photographic view of each patient and might thus have been considered insufficient for an accurate evaluation of the aesthetic result. So far, there are not many studies reporting the value of side-views in the objective evaluation of the aesthetic result after BCCT. Therefore the purpose of this work was to compare the input value of a set of asymmetry measures captured on patients photographic side-views with the aesthetic evaluation obtained by the software (face-view only) and a consensus expert panel classification.

Methods: Photographic face-views and bilateral side-views of 63 patients, taken after BCCT, were subjectively evaluated by a panel of experts (consensus), objectively evaluated by BCCT.core software (face-views only) and by an extension of the BCCT.core developed to make use of face and bilateral side-views. We captured a set of previously determined features on face-views with the BCCT.core classic software and a new set of asymmetry measurements were taken over the bilateral side-views: breast size difference, nipple distance to breast contour, nipple distance to thoracic wall, nipple distance evaluation, breast compliance evaluation and breast ptosis difference. An initial classification was given to each patient using features captured from face-views and subsequently bilateral side-views measurements were added and a final result was obtained using specific classification methods for this kind of data, namely, Support Vector Machines (SVM). The aesthetic result was classified in four classes: excellent, good, fair and poor. To test the obtained results, agreement between the consensus expert panel, face-view only evaluation and face and side-views evaluation was computed using a Misclassification Error Rate (MER) and a weighted MER. This method is based on the comparison of the classifications of the consensus (ground truth) and classifier patient result, in that zero means all classifications are correct and 1 means none of the classifications is correct; the weighted MER takes into account the fact that humans tend to use more the middle classes in detriment of extreme classes, which led us to adopt higher costs to the misclassifications of the cases classified as excellent or poor.

Results: The test results concerning the misclassification error using face-views only was 0.37 and 0.60 for MER and weighted MER respectively. With the addition of bilateral side-views the misclassification error was 0.32 and 0.53.

Conclusions: We have developed a new model for the assessment of the aesthetic outcome of BCCT, with the addition of features obtained from patients’ photographic side-views. Although these preliminary results are better, the difference between the face-view only evaluation and the face-view and side-view evaluation is not statistically significant. However they suggest that asymmetry measures captured on side-views may add some value to the objective evaluation of the aesthetic result after BCCT.