Cosmetic outcome after intraoperative radiotherapy or external beam radiotherapy for early breast cancer: An objective assessment of patients from a randomized controlled trial.

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Abstract

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Background: The international randomised controlled TARGeted Intraoperative radioTherapy (TARGIT) trial has demonstrated non-inferiority between the novel technique of TARGIT (intra-operative radiotherapy with Intrabeam) and conventional whole-breast external beam radiotherapy (EBRT) in women with early breast cancer, in terms of the primary outcome measure of risk of local relapse within the treated breast. With very low recurrence rates, cosmesis becomes an increasingly important outcome of breast conserving treatment with both surgery and radiotherapy. This study was performed to determine if the single high dose of TARGIT
leads to impaired cosmetic outcome. **Methods:** A validated, objective assessment tool for evaluation of cosmetic outcome was used. Frontal digital photographs were taken at baseline (before TARGIT or EBRT) and yearly thereafter for up to five years. The photographs were analysed by BCCT.core software which produces a composite score based on symmetry, colour and scar. **Results:** 342 patients were assessed, all over 50 years old with a median age at baseline of 64 years (IQR 59 to 68). The scores were dichotomised into Excellent and Good (EG), and Fair and Poor (FP). There were statistically significant increases in the odds of having an outcome of EG for patients in the TARGIT group relative to the EBRT group at year 1 (OR = 2.07, 95%CI 1.12 to 3.85, p = 0.021) and year 2 (OR = 2.11, 95%CI 1.0 to 4.45, p = 0.05). **Conclusions:** Following an objective assessment of aesthetic outcome in patients from a randomised setting, this study demonstrates that those treated with targeted intraoperative radiotherapy have a superior cosmetic result compared with those patients who received conventional whole-breast external beam radiotherapy.