

initial lumpectomy is the preferred option rather than delayed administration by reopening the wound. We therefore estimated the number of cancer foci in quadrants other than the original tumour and compared the incidence of recurrence in such quadrants as per treatment received (TARGIT vs. EBRT).

Results: 793 patients in the prepathology stratum randomized to TARGIT had only TARGIT as their radiotherapy and had 2098 women years of follow up. The 5 year local recurrence rate in those who received TARGIT alone was 2.7% (95% CI 1.35-5), which was not different from the whole prepathology cohort randomized to TARGIT: 2.1% (1.14-2). In these 793 patients, one would expect 63% (i.e., 500) of patients to have additional foci of cancer in their breasts and 80% of these (i.e., 400) should be in quadrants other than the index quadrant. In reality, after 2098 women years of follow up, 7 patients had recurrence in the scar, 6 had new contralateral cancers and 2 had cancers growing in other quadrants implying that the remaining 398 foci had remained dormant. Amongst 935 patients who received whole breast radiotherapy the same number of cancers (n=2) grew in other quadrants and there were 5 new contralateral cancers. Of note, 94.4% of cases in the TARGIT A trial did not have a preoperative MRI, so patients who may have had multicentric foci detectable by MRI would have not been excluded from the trial.

Conclusions: Cancer foci in breast that are away from the site of the primary tumour remain dormant and behave no differently from those in the contralateral breast. They also appear to be unaffected by whole breast radiotherapy or are treated sufficiently by systemic therapies. This analysis from the randomized TARGIT A trial provides further proof supporting partial breast irradiation.

References:

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Intraoperative radiotherapy (IORT) in breast cancer: analysis of 6,816 cases from ISORT database

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Purpose/Objective: A joint analysis of clinical and technical data from 34 centres within the International Society of Intraoperative Radiation Therapy (ISORT) was undertaken in order to identify the range of intraoperative radiotherapy (IORT) indications and techniques for various tumour sites. In this survey we analysed breast treatments.

Materials and Methods: Since 2007, we collected demographic, clinical and technical data related to IORT procedures in a common database. Prospective and retrospective data entry was possible. The current study analysed 6,816 breast tumours.

Results: Breast tumours represent 80.3% of all data of the ISORT survey that encompassed 8,493 IORT procedures performed from 1992 to 2014. Median age of breast patients was 61.1 years (range 16-90). Gender was female in 99.7% and male in 0.3% of cases.

In 6,702 cases (98.3%), IORT was a component of radical treatment for primary, newly diagnosed disease and in 114 cases (1.7%), it was an attempt to rescue localized recurrent breast cancer.

IORT was performed as a boost before or after EBRT in 3,258 cases (47.8%) with doses of 8-12 Gy. In 3,558 cases (52.6%), IORT was used as single radiation treatment modality with doses of 18 Gy, 20 Gy or 21 Gy. The patients enrolled in study protocols represented 33% of those treated by a single dose and 6.3% of those treated by a boost dose.

IORT was delivered after and before tumour removal in 39% and 61% of cases, respectively.

In 6,406 cases (94%), IORT was performed using electrons of 4-12 MeV energy. The most used applicators (77% of cases) were 5 or 6 cm in diameter and bevel angle was 0° in the majority of cases (88%). Four hundred and ten cases (6% of patients) were treated with a 50-kV x-ray source in a single centre. X-rays treatments were delivered by a spherical applicator inserted into the surgical cavity after tumour removal.

Conclusions: At present, the ISORT database represents the largest clinical and technical IORT data collection.

Breast cancer is the most frequent IORT treatment performed in the 34 participating centres. From this analysis, it emerged that in most cases IORT was used as single shoot of 18-21 Gy, the most employed treatment modality was electron beam and the procedure was most frequently performed after tumour removal. Only a minority of patients was included in clinical trials.

Further data analyses could enhance multi-institutional performance and serve as a basis for designing clinical trials in an effort to define the role of IORT in tailored multimodality therapeutic approaches.