

# Patient Study Spotlight

## IORT for early-stage, low-risk breast cancer: Outcomes from a prospective, observational study



Palacios-Eito, Amalia, et al. „IORT for early-stage, low-risk breast cancer: Outcomes from a prospective, observational study.“ Clinical and Translational Radiation Oncology 54 (2025): 100998.

### Introduction:

Treatment of early-stage, low-risk breast cancer (BC) has changed a lot within the last years, with a trend towards less aggressive treatments. The TARGIT-A trial provided information on intraoperative radiotherapy (IORT) which allows doctors to give radiation treatment during surgery in just one session, making it more convenient for patients (1). The present study aims to provide real-world data, to help identify which patients might benefit the most from this treatment and to provide additional information to support the effectiveness and safety of IORT.

### Methods:

- **Participants:** 500 patients (464 received IORT, 36 did not due to constraints)
- **Design:** Prospective, observational, single-center
- **Inclusion Period:** June 2017 - December 2023
- **Inclusion Criteria:** Age  $\geq 45$ , tumors  $\leq 2.5$  cm, unifocal invasive ductal carcinoma, positive hormone receptors, HER2-negative, no nodal involvement
- **Treatment:** IORT: Single dose of 20 Gy; External whole breast irradiation (WBI): Added for high-risk patients (2.67 Gy in 15 fractions)

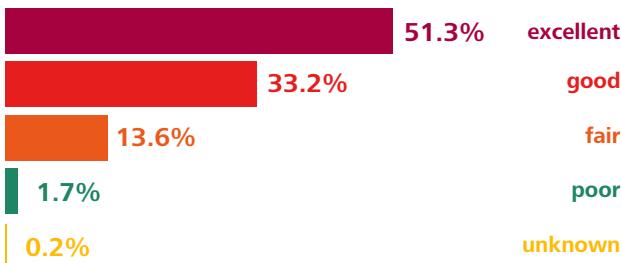
### Endpoints:

- **Primary:** Ipsilateral (= on the same side) breast recurrence (IBR)
- **Secondary:** Survival rates, patient-reported cosmesis

### Results:

- **Groups:** in 133 patients (28.7%), WBI was administered due to high-risk abnormal findings, 331 patients (71.3%) received exclusive IORT
- **Median follow-up time:** 45.3 months (range: 8 - 89 months)
- **Recurrences: total:** 12 ipsilateral breast recurrences (IBR), 10 in the exclusive IORT group (10/331) and 2 in the IORT + WBI group (2/133), 0 in non-IORT group (0/36)
- **Mortality:** 11 deaths (2.2%), of which 9 were unrelated to breast cancer
- **Estimated 5-year IBR risk:** entire cohort 1.7% (95% CI: 0.7% - 2.8%), exclusive IORT cohort 2.1% (95% CI: 0.6% - 3.7%), IORT + WBI cohort 1% (95% CI: 0.3% - 2.4%)
- **Age factor:** 86.2% lower IBR risk for patients  $\geq 50$  years

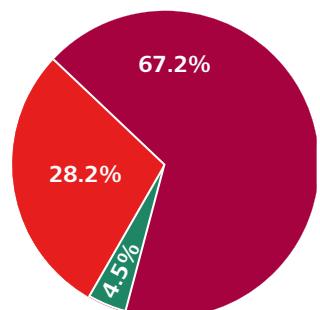
#### ■ Patient-reported cosmetic outcome:



Only 6.3% fair and poor results in the exclusive IORT group (vs 15.3% on all patients)

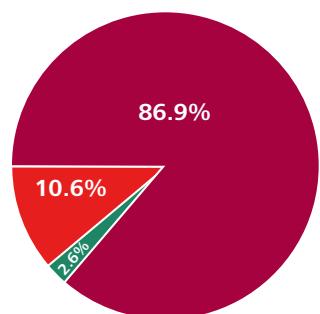
#### ■ Acute toxicity:

- **Grade 0:** 312 patients
- **Grade 1:** 131 patients
- **Grade 2:** 21 patients



#### ■ Chronic toxicity:

- **Grade 0:** 403 patients
- **Grade 1:** 49 patients
- **Grade 2:** 12 patients



## Estimated 5-year results for IORT group and IORT + WBI group.

Five-year results	N=494	N=331	N=133
	IORT	Exclusive IORT	IORT + WBI
Kaplan-Meier estimates (95% CI)			
Local recurrence free-survival	96% (93.4% - 98.5%)	95.2% (91.8% - 98.5%)	97.7% (94.5% - 100%)
Mastectomy free survival	98.1% (96.3% - 99.8%)	98.2% (96% - 100%)	97.7% (94.3% - 100%)
Distant recurrence-free survival	99.4% (98% - 100%)	99.7% (99.1% - 100%)	98.5% (96.1% - 100%)
Recurrence and/or progression-free survival	95% (92.2% - 97.7%)	94.3% (90.6% - 98%)	96.4% (92.3% - 100%)
Overall survival	97.7% (96.1% - 99.2%)	97.8% (96% - 99.5%)	97.5% (94% - 100%)
Cancer-specific overall survival	99.5% (98.5% - 100%)	100%	98.4% (95.2% - 100%)

## Discussion:

Physicians are trying to find ways to provide effective breast cancer treatments while also making them less intense. This means: to reduce side effects and improve patients' quality of life, all while keeping the cancer under control. Intraoperative radiotherapy is a treatment option that fits this need. It has both medical and financial benefits. IORT allows patients to receive their radiation treatment during surgery in one visit. This approach helps patients feel less anxious and reduces the risk of long-term side effects by lowering radiation exposure to sensitive areas like the skin, heart, and lungs (1,2).

Patients are often very happy with the cosmetic outcome after IORT, which can improve their overall well-being. IORT is particularly helpful for patients who have trouble moving or have conditions such as Parkinson's disease or multiple sclerosis, where staying still during treatment can be difficult (3). This method also saves money for both patients and the healthcare system (4,5).

Although IORT may slightly increase the chance of cancer recurrence in the treated breast, it does not affect overall survival rates (1). Therefore, it is important for patients to receive clear and balanced information about the benefits and risks of IORT so they can make informed decisions about their treatment options.

## Conclusion:

The rates of cancer recurrence in the same area were low for all groups in the study. We found that better results in controlling the cancer could be achieved by using stricter rules for choosing patients than those used in the TARGIT A trial. Most patients were very satisfied with the cosmetic outcome after treatment. However, we need to follow up with patients for a longer time to be sure about these findings.

## Literature Cited:

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