



READ IT BEFORE YOUR PATIENTS

Omitting Radiotherapy after Breast-Conserving Surgery in Luminal A Breast Cancer

[Timothy J Whelan](#), [Sally Smith](#), [Sameer Parpia](#), [Anthony W Fyles](#), [Anita Bane](#), [Fei-Fei Liu](#), [Eileen Rakovitch](#), [Lynn Chang](#), [Christiaan Stevens](#), [Julie Bowen](#), [Sawyna Provencher](#), [Valerie Théberge](#), [Anna Marie Mulligan](#), [Zuzana Kos](#), [Mohamed A Akra](#), [K David Voduc](#), [Tarek Hijal](#), [Ian S Dayes](#), [Gregory Pond](#), [James R Wright](#), [Torsten O Nielsen](#), [Mark N Levine](#); LUMINA Study Investigators

N Engl J Med. 2023 Aug 17;389(7):612-619. doi: 10.1056/NEJMoa2302344.

Background:

Adjuvant radiotherapy is prescribed after breast-conserving surgery to reduce the risk of local recurrence. However, radiotherapy is inconvenient, costly, and associated with both short-term and long-term side effects. Clinicopathologic factors alone are of limited use in the identification of women at low risk for local recurrence in whom radiotherapy can be omitted. Molecularly defined intrinsic subtypes of breast cancer can provide additional prognostic information.

Methods:

We performed a prospective cohort study involving women who were at least 55 years of age, had undergone breast-conserving surgery for T1N0 (tumor size <2 cm and node negative), grade 1 or 2, luminal A-subtype breast cancer (defined as estrogen receptor positivity of $\geq 1\%$, progesterone receptor positivity of $>20\%$, negative human epidermal growth factor receptor 2, and Ki67 index of $\leq 13.25\%$), and had received adjuvant endocrine therapy. Patients who met the clinical eligibility criteria were registered, and Ki67 immunohistochemical analysis was performed centrally. Patients with a Ki67 index of 13.25% or less were enrolled and did not receive radiotherapy. The primary outcome was local recurrence in the ipsilateral breast. In consultation with radiation oncologists and patients with breast cancer, we determined that if the upper boundary of the two-sided 90% confidence interval for the cumulative incidence at 5 years was less than 5%, this would represent an acceptable risk of local recurrence at 5 years.

Results:

Of 740 registered patients, 500 eligible patients were enrolled. At 5 years after enrollment, recurrence was reported in 2.3% of the patients (90% confidence interval [CI], 1.3 to 3.8; 95% CI, 1.2 to 4.1), a result that met the prespecified boundary. Breast cancer occurred in the contralateral breast in 1.9% of the patients (90% CI, 1.1 to 3.2), and recurrence of any type was observed in 2.7% (90% CI, 1.6 to 4.1).

Conclusions:

Among women who were at least 55 years of age and had T1N0, grade 1 or 2, luminal A breast cancer that were treated with breast-conserving surgery and endocrine therapy alone, the incidence of local recurrence at 5 years was low with the omission of radiotherapy. (Funded by the Canadian Cancer Society and the Canadian Breast Cancer Foundation; LUMINA ClinicalTrials.gov number, NCT01791829.)