

# EBRT reduces risk of subsequent mastectomy in patients with invasive breast cancer

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Standard external beam radiation therapy (EBRT) provided a higher breast preservation rate than brachytherapy in women age 66 and older with invasive breast cancer, according to a study published in the February 1, 2014 print edition of the *International Journal of Radiation Oncology, Biology, Physics* (Red Journal), the official scientific journal of the American Society for Radiation Oncology (ASTRO).

Brachytherapy after lumpectomy is an increasingly popular treatment protocol for breast cancer; however, there is conflicting data regarding its effectiveness. Additionally, published suitability criteria directing patient selection for [brachytherapy](#) have not been empirically validated. This study compares the long-term likelihood of breast preservation, risks of post-operative complications and local toxicities, and validity of suitability categories of three treatment strategies after lumpectomy: EBRT, brachytherapy and no radiation.

This study used the Surveillance, Epidemiology and End Results (SEER)-Medicare linked database to identify 35,947 women, age 66 and older, diagnosed with [invasive breast cancer](#) (79.9 percent) or ductal carcinoma in situ (DCIS) (20.1 percent) from 2002 to 2007 and treated with lumpectomy alone (23 percent), lumpectomy followed by brachytherapy (3.6 percent) or lumpectomy followed by EBRT (73.4 percent). Patients with invasive breast cancer were also classified as suitable (34.7 percent), cautionary (17.6 percent) or unsuitable (35.2

percent) for brachytherapy based on ASTRO's Accelerated Partial Breast Irradiation Consensus Statement. Twelve-and-a-half percent of patients were unclassified. The patients with DCIS in this study were analyzed separately. For this study, patients age 70 or older were classified as "older suitable."

The median follow-up for patients was 3.5 years. For this study, subsequent mastectomy is defined as a claim for mastectomy identified from one year after diagnosis until December 31, 2009, which was the last date of follow-up. The five-year cumulative incidence of subsequent mastectomy for patients with invasive [breast cancer](#) was 4.7 percent for those treated with lumpectomy alone, 2.8 percent for those treated with lumpectomy followed by brachytherapy and 1.3 percent for those treated with lumpectomy followed by EBRT. In patients with DCIS, 2.2 percent underwent subsequent mastectomy during follow-up. The five-year cumulative incidence of subsequent mastectomy in patients with DCIS was 3.2 percent for those treated with lumpectomy alone, 4.6 percent for those treated with brachytherapy and 1.6 percent for those treated with EBRT.

In this study, brachytherapy was associated with a greater likelihood of breast preservation than [lumpectomy](#) alone, while EBRT showed more likelihood of breast preservation than brachytherapy. When stratified into the ASTRO-defined suitability groups, the study found suitable group patients were the least likely to undergo subsequent mastectomy and had the smallest absolute difference when comparing those treated with brachytherapy and those treated with EBRT. The small number of patients with DCIS treated with brachytherapy in this cohort does not allow definitive conclusions on the effectiveness of brachytherapy for these patients.

"Brachytherapy offered a breast preservation benefit, although in general this benefit was slightly less than the benefit derived from standard

[external beam radiation](#) therapy," said Benjamin D. Smith, MD, a co-author of the study and associate professor in the Department of Radiation Oncology at The University of Texas MD Anderson Cancer Center. "Our findings suggest that certain patients with very favorable tumors do just as well with either brachytherapy or standard external [beam radiation](#) therapy, whereas other [patients](#) with higher risk tumors seem to do better with standard external beam radiation therapy."

The February 1 print edition of the Red Journal also contains two editorials addressing breast brachytherapy and examining the data from this study. Peter Y. Chen, MD, a radiation oncologist at William Beaumont Health System in Royal Oak, Mich., emphasizes the need to ensure guidelines keep up with changing data. Robert R. Kuske, MD, a radiation oncologist at Arizona Breast Cancer Specialists in Scottsdale, Ariz., and S. Stanley Young, PhD, the assistant director for bioinformatics at the National Institute of Statistical Sciences, explore the reported differences between breast brachytherapy and whole breast irradiation from the statistical and clinical implications.

Provided by American Society for Radiation Oncology

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