TEN-YEAR RESULTS OF A RANDOMIZED CLINICAL TRIAL COMPARING RADICAL MASTECTOMY AND TOTAL MASTECTOMY WITH OR WITHOUT RADIATION

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Abstract In 1971 we began a randomized trial to compare alternative local and regional treatments of breast cancer, all of which employ breast removal. Life-table estimates were obtained for 1665 women enrolled in the study for a mean of 126 months. There were no significant differences among three groups of patients with clinically negative axillary nodes, with respect to disease-free survival, distant-disease–free survival, or overall survival (about 57 per cent) at 10 years. The patients were treated by radical mastectomy, total ("simple") mastectomy without axillary dissection but with regional irradiation, or total mastectomy without irradiation plus axillary dissection only if nodes were subsequently positive. Similarly, no differences were observed between patients with clinically positive nodes treated by radical mastectomy or by total mastectomy without axillary dissection but with regional irradiation. Survival at 10 years was about 38 per cent in both groups.

Our findings indicate that the location of a breast tumor does not influence the prognosis and that irradiation of internal mammary nodes in patients with inner-quadrant lesions does not improve survival. The data also demonstrate that the results obtained at five years accurately predict the outcome at 10 years. We conclude that the variations of local and regional treatment used in this study are not important in determining survival of patients with breast cancer. (N Engl J Med 1985; 312:674-81.)

CURRENT controversy regarding the surgical treatment of primary breast cancer relates to the comparative merits of breast preservation and breast removal. A little more than a decade ago there was intense disagreement over whether the same outcome would occur if mammary cancers were managed by breast-removing operations that were less extensive than radical mastectomy. Anecdotal information reported by surgeons who performed less extensive operations because of dissatisfaction with the results of more radical procedures,[1-3] as well as new information about the biology of breast cancer and tumor metastases,[4] suggested that possibility.

Recognizing the need for data to resolve the clinical controversy and to determine whether results relative to patient outcome were concordant with recently formulated biologic principles, the National Surgical Adjuvant Breast Project initiated a randomized trial in August 1971. The specific aims of that trial were to determine (1) whether in patients with clinically negative axillary nodes total mastectomy, followed by delayed axillary dissection in those who subsequently had positive axillary nodes, was as effective as radical mastectomy; (2) whether the outcome of total mastectomy followed by postoperative regional irradiation was equivalent to that of radical mastectomy; and (3) whether total mastectomy with delayed axillary dissection in patients with subsequently positive nodes was as efficacious as total mastectomy and radiation. For patients with clinically positive nodes the objective was to ascertain whether radical mastectomy and total mastectomy followed by radiation produced an equivalent outcome. Previous studies of results (life-table estimates) at three years[5] and at five years[6] have failed to demonstrate a significant difference in outcome among the three treatments in patients with clinically negative nodes and between the two treatments in patients with clinically positive nodes. This report presents the 10-year findings of our trial.

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METHODS

Between July 22, 1971, and September 6, 1974, 1765 patients at 34 U.S. and Canadian institutions participating in the National Surgical Adjuvant Breast Project were enrolled in the trial and randomly assigned to treatment. A total of 100 patients (5.7 per cent) were judged to be ineligible. The findings presented below are from the 1665 eligible patients, who were enrolled in the study for an average of 126 months (range, 108 to 145). Ineligible patients were excluded from these analyses since, at the time the study was begun, ineligible patients were not routinely followed. For 30 (3.6 per cent) of the 834 patients still alive at the time of this evaluation, no follow-up data were available from the previous 12 months. The distribution of those 30 patients was similar throughout all groups. This report summarizes the results of 120 months of observation. Detailed descriptions of patient-entry information, eligibility and ineligibility criteria, the plan of investigation, operative and irradiation procedures, and other aspects of the study have been presented elsewhere.[5,7] Comparability of the treatment groups with respect to patient and tumor characteristics has also been documented. The following briefly summarizes the salient features of the study design.

Women with primary, operable, potentially curable breast cancer were considered eligible for the trial if their tumors were confined to the breast or breast and axilla and were movable in relation to the underlying muscle and chest wall. If axillary nodes were palpable, they had to be movable in relation to the chest wall, neurovascular bundle, and overlying skin. All patients in the study consented to participate. If they met specific criteria described in the protocol, their clinical nodal status was documented. Patients judged to have clinically negative nodes were randomly assigned so that one third were treated by conventional radical mastectomy, one third by total mastectomy and regional irradiation, and one third by total mastectomy alone. Patients with clinically positive axillary nodes were randomly assigned so that one half underwent radical mastectomy, and one half total mastectomy and regional irradiation. A nodal biopsy was performed in patients with clinically negative axillary nodes who had undergone a total mastectomy without irradiation and subsequently had clinical evidence of axillary-node involvement in the absence of other manifestations of disease. If the nodes were reported as positive for tumor, a delayed axillary dissection was performed. Patients with positive axillary nodes after total mas-