Original Study

Does Conservative Surgery for Breast Carcinoma Still Require Axillary Lymph Node Evaluation? A Retrospective Analysis of 1156 Consecutive Women With Early Breast Cancer

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Abstract

We performed a retrospective analysis of 1156 patients affected by early breast cancer in order to estimate the real incidence of patients with T1 tumors presenting > 2 metastatic lymph nodes. The advantage of axillary surgery seems to be limited only to a specific subgroup of T1 patients who are undergoing conservative surgery plus radiotherapy.

Background: The role of axillary surgery for early breast carcinoma treated with conservative surgery and radiotherapy is currently the subject of considerable investigation. Recent studies have supported the noninferiority of avoiding axillary surgery in terms of overall survival when sentinel lymph node biopsy (SLNB) presents ≤ 2 positive lymph nodes, thus sparing the patients from complications. There are some ongoing studies investigating the possibility of omitting SLNB. Axillary study seems to be sufficiently replaced by SLNB for staging the disease. Axillary surgery maintains a therapeutic role in the presence of > 2 metastatic lymph nodes at SLNB. **Patients and Methods:** We performed a retrospective analysis of 1156 patients with early breast cancer to estimate the real incidence of patients with T1 tumors presenting > 2 metastatic lymph nodes. **Results:** Of the 1156 cases, only 106 (9.2%) had > 2 axillary metastatic lymph nodes. More specifically, 38 (4.3%) of 884 T1 cases, and 6 (2.3%) of 257 of T1b cases had > 2 metastatic lymph nodes. **Conclusion:** The advantage of axillary surgery seems to be limited only to a specific subgroup of T1 patients who are undergoing conservative surgery plus radiotherapy. The ongoing studies on avoiding SLNB will likely prove the noninferiority of omitting biopsy because these studies are conducted in the whole population of early breast cancers. It is necessary to identify more accurately the subpopulation of patients who may benefit from axillary surgery.

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Introduction

The purpose of surgery for breast tumors is to improve overall survival as well as to achieve local control of the disease and maintain an acceptable quality of life. The current treatment of early breast carcinoma is based on conservative surgery tailored to the volume of disease in association with whole-breast radiotherapy and specific medical therapy. Sentinel lymph node biopsy (SLNB) provides information regarding the lymph node spreading of the tumor: if positive nodes are detected, the surgery is completed by axillary lymph node dissection (ALND).

Axillary surgery for breast cancer is currently considered a staging procedure that does not seem to influence breast cancer mortality, although SLNB alone provides sufficient information in the therapeutic setting. Moreover, ALND is burdened by complications that negatively affect quality of life.

Several studies have suggested that ALND could be an overtreatment, even in the case of positive sentinel lymph node (SLN).

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The American College of Surgeons Oncology Group (ACOSOG) Z0011 trial found that for clinically negative lymph node tumors (T1/T2 N0 M0) with SLN metastases in ≤ 2 nodes, ALND can be safely avoided, and surgeons are still provided with adequate information to permit surgical staging and comparable locoregional control and survival.[1]

Another trial (International Breast Cancer Study Group [IBCSG] 23-01)[2] conducted on patients with micrometastatic SLN positivity and tumor < 5 cm in size demonstrated the noninferiority of avoiding ALND, thus sparing the patient from the complications of axillary surgery. A randomized clinical trial by Agresti et al[3] performed on T1N0 breast cancers supported the noninferiority, in selected groups of low-risk patients and in terms of overall survival, of breast-conservation surgery without ALND compared to breast conservation plus ALND. The 2014 American Society of Clinical Oncology and 2015 St Gallen 2015 guidelines now suggest that ALND may be omitted in selected patients with 1 to 2 positive SLNs who are undergoing conservative surgery and radiotherapy without affecting survival or risk of local recurrence.[4,5] The SOUND (Sentinel node vs. Observation after axillary UltraSouND) trial is currently ongoing to evaluate SLNB with or without ALND versus no axillary surgical staging.[6] Also ongoing is the Intergroup-Sentinel-Mamma (INSEMA) trial, which is testing the noninferiority of no axillary surgery compared to SLNB.[7]

Because avoiding ALND is to be considered safe when SLNB presents ≤ 2 positive lymph nodes, the obvious question that arises is, how many patients who undergo conservative surgery have > 2 metastatic axillary lymph nodes? This group of patients could possibly benefit from ALND given the absence of benefits when metastatic axillary lymph nodes are ≤ 2.

The aim of this study was to retrospectively evaluate a population of patients with early breast cancer treated with a conservative approach to obtain cases of > 2 metastatic axillary lymph nodes after ALND.

Patients and Methods

We retrospectively evaluated a cohort of 1156 consecutive women with early breast cancer (2 patients had bilateral carcinoma) between January 2001 and December 2013. All patients underwent breast-conserving surgery and SLNB; when the SLNB results were positive, axillary dissection was performed. After surgery, all patients were treated by external-beam radiotherapy on the whole breast through 2 tangential fields (50 plus 10 Gy as a boost to the tumor bed) with a linear accelerator. We evaluated the number and percentage of patients with positive SLN, patients with positive SLN treated with ALND, patients with negative axillary lymph nodes after ALND, and, globally, the percentage of patients with > 2 metastatic axillary lymph nodes. According to the tumor, node, metastasis classification system, SLNs with micrometastasis were considered positive and SLNs with isolated tumor cells negative.

Results

The median age of patients was 57.2 years (range, 29-86 years). The average tumor diameter was 16 mm, with a median of 15 mm. Patient characteristics are summarized in Table 1. A total of 648 patients had SLN localization by radiocolloid, 248 by blue dye, and 262 by combined techniques, as previously reported.[8,9] Of 1156 cases, 884 were of T1 disease and 272 T2 disease. SLNB results were negative in 770 cases (66.6% of cases) and metastatic in 386 (33.4%). Of the latter, in 283 cases (24.5%) there was a macrometastasis and in 103 cases (8.9%) a micrometastasis. A total of 380 of 386 patients with metastatic SLN underwent ALND; in 234 patients (61.6%), the axilla results were negative. Overall, 274 patients had ≤ 2 metastatic lymph nodes and 106 (9.2%) had > 2 metastatic lymph nodes (Table 2). Considering only the 884 T1 tumors (Table 2), SLNB results were negative in 650 cases (73.5%) and metastatic in 234 (26.5%); of these, 166 (18.8%) were macrometastasis and 68 (7.7%) micrometastasis. ALND was performed in 233 of 234 cases of positive SLNB; histology was negative for 166 cases (71.3%). Therefore, only 38 (4.3%) of 884 T1 patients had > 2 axillary metastatic lymph nodes. Instead, SLNB results were negative in 199 (77.4%) of 257 T1b patients, and metastatic disease occurred in 35 patients (13.6%).

Table 1 Patient Characteristics

Characteristic	Value
Total No. of Cases	1156
T1	884
T2	257
Median age (years)	57.2 (29-85)
Mean Tumor Diameter	16 mm
G1	344 (29.8%)
G2	538 (46.5%)
G3	274 (23.7%)
ER^+	984 (85.1%)
ER^-	146 (12.6%)
ER ND	26 (2.3%)
PR^+	828 (71.6%)
PR^-	302 (26.1%)
PR ND	26 (2.3%)
HER-2 0	212 (18.2%)
HER-2 1^+	553 (47.9%)
HER-2 2^+	226 (19.6%)
HER-2/HER-2 3^+	121 (10.5%)
HER-2 ND	44 (3.8%)

Abbreviations: ER = estrogen receptor; G = grade; HER-2 = human epidermal growth factor receptor 2; ND = not determined; PR = progesterone receptor.

In 35 patients who underwent ALND, results were negative in 24 patients (68.6%). In only 6 (2.3%) of 257 T1b patients did the axilla contain > 2 metastatic lymph nodes.

Discussion

If we accept the premise that axillary surgery offers a real advantage to patients who undergo conservative surgery and radiotherapy and who present with > 2 metastatic axillary lymph nodes, then according to the data obtained from this unselected population, it emerges that the majority of T1 patients with positive SLNB results were overtreated by axillary surgery. Only 4.3% of T1 patients had > 2 metastatic lymph nodes and thus obtained benefit from extending surgery to the axilla; this percentage decreased to 2.3% for T1b patients. The limitation is that these results come