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Breast cancer treatment beliefs and influences among surgeons in areas of scientific uncertainty

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Abstract

BACKGROUND: Breast cancer treatment beliefs in areas of scientific uncertainty may contribute to widely variable practices. We sought to better describe surgeons' beliefs and to identify the relative importance of different information sources on surgeons' decision-making.

METHODS: A total of 2,188 American College of Surgeons (ACoS) members were surveyed on their treatment beliefs in 4 controversial areas and on the perceived influence of various information sources on their decision-making. Responses were analyzed by sex, practice type, oncology training, professional society membership, and breast cancer patient volume.

RESULTS: Nine hundred twenty-three responses were received, with 459 eligible for analysis. Responses diverged most regarding significance of positive sentinel lymph node biopsy (SNLB) and role of post-lumpectomy radiation for low-risk ductal carcinoma-in-situ (DCIS). Overall, expert opinion ranked as the most influential information source.

CONCLUSIONS: Axillary dissection after positive SLNB and post-lumpectomy radiation in low-risk DCIS denoted areas of greater uncertainty. Breast cancer opinion leaders have substantial influence when standard practice is uncertain.

Developments in breast cancer treatment over the last 3 decades have introduced numerous new therapies, techniques, and technologies. While these developments have transformed breast cancer treatment from a predominantly surgical field to a multidisciplinary team effort, surgeons remain very influential in breast cancer treatment due to the fact that they work with breast cancer patients early in the diagnosis and treatment of the disease, have a high volume of breast cancer patients within their practices, and serve as referents to other specialists. Therefore, there is an increasing need for surgeons to be knowledgeable in traditionally nonsurgical areas of breast cancer therapy. The rapid evolution of medical knowledge in breast cancer, coupled with the surgeon's role in managing breast cancer treatment, amplifies the importance of understanding surgeons' decision-making in areas where standard practice is yet uncertain.

It is speculated that surgeon beliefs in breast cancer care in areas where standard practice is uncertain may contribute to widely variable practices, signaling areas at highest priority for clinical research. Although identifying areas of scientific uncertainty in a field is complicated by rapid changes in medical knowledge, the following acknowledged controversies are currently challenging clinical decision-making in breast cancer: (1) performing a completion axillary lymph node dissection in patients with a positive sentinel lymph node detected on routine hematoxylin and eosin (H&E) stain, on H&E stain with micrometastasis only, or on immunohistochemistry (IHC) only[1–4]; (2) using

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sentinel lymph node biopsy (SLNB) for patients with a diagnosis of ductal carcinoma-in-situ (DCIS) only[1–4]; (3) using post-mastectomy radiation in patients with fewer than 4 positive axillary lymph nodes[5–7]; and (4) using radiation therapy after a lumpectomy for DCIS.[4,8–10]

To better understand surgical practices when faced with scientific uncertainty, we conducted a survey study of US surgeons examining reported beliefs and influences in decision-making in these 4 controversial areas in breast cancer care. We compared these beliefs among surgeons by subspecialty training, geographic region, age, sex, professional specialty organization membership, and breast cancer patient volume. We also sought to identify the relative importance of different information sources on surgeons' decision-making when faced with scientific uncertainty.

Methods

Study population

The eligible group of survey recipients consisted of American College of Surgeons (ACoS) members practicing general surgery, as indicated by self-report. Members in training, no longer in active practice, or not practicing in the United States were excluded. From the eligible membership in August 2005, half of the female members (n = 728) and a 2:1 sample of male members (n = 1,459) were selected using random computer generation. Women surgeons were oversampled since they represent only 13% of the ACoS general surgeon membership but commonly perform twice as many breast procedures as men.[11] The surveyed population (n = 2,188) represented approximately 10% of the total ACoS general surgeon membership.

The survey was conducted in 3 direct mailings between October 2005 and February 2006. All included responses were received by March 31, 2006. Responses were screened for eligibility with 3 questions to ensure the respondent was in active practice, not including residency or fellowship training, and included patients with breast cancer in his/her practice. A percentage of ineligible surgeons based on practice activity and content was anticipated but the ACoS membership roster could not be screened fully in advance for ineligible surgeons. Therefore, the response rate was calculated in accordance with standards from the American Association of Public Opinion Research.[12] The calculated response rate estimates the proportion of cases with unknown eligibility based on the proportion of eligible surgeons among the respondents. Estimates of eligibility were assessed separately for male and female surgeons based on stratified sampling. This more accurately reflects response rate since ineligible participants should be removed from the sample.

Survey instrument

A self-administered survey consisting of 44 questions was developed using published guidelines for question writing and survey construction.[13,14] Additional details of the survey development method and content are reported elsewhere.[15] The survey questions included general practice characteristics (practice setting, community size, breast cancer patient volume, geographic region) and surgeon demographics (specialty training, years elapsed since training, specialty professional society memberships, sex). Region was defined by states as Northeast, South/Southeast, Midwest/Central, and West/Southwest. The estimated annual volume of new patients with breast cancer (<25, 26–50, 51–100, >100) and estimated proportion of annual caseload consisting of patients presenting with breast problems (<25%, 25%–75%, >75%) were categorized into low, intermediate, and high volumes based on volume previously cited in other studies.[16,17] The annual number of new breast cancer patients in the respondents' practice and the proportion of the practice devoted to patients with breast complaints correlated strongly (r = .72). Therefore, the annual caseload of new breast cancer patients will represent breast cancer practice volume. Surgeons were also asked to estimate the proportion of patients being treated with breast-conserving surgery (BCS) within their practice (<40%, 40%–59%, 60%–79%, ≥80%).

Questions examining beliefs in areas of uncertainty included general multiple-choice questions and 7 clinical scenarios to imitate decision-making in actual practice. In each scenario, no patient comorbidities precluding any of the treatment choices were included. Respondents were asked to make treatment recommendations and/or to suggest participation in a clinical trial available to their patients. Respondents could select more than 1 answer in each of the 7 clinical scenarios. A 5-point Likert scale was used to quantify respondents' perceived influence from various information sources on clinical decision-making in these areas. For each group of questions, the scale used 1 to indicate an information source as having "strong influence" on decision-making, 3 to indicate "some influence," and 5 to indicate "no influence." Respondents could also mark an information source as being not applicable. All data were entered anonymously into a database, and a random sample was audited for data entry accuracy.

Analysis

Analysis of each questionnaire item was performed by gender due to the oversampling of women surgeons within this cohort. However, if no significant differences by gender occurred, results were not presented stratified by gender. Analysis of each questionnaire item was also performed by surgeon practice type, geographic region, subspecialty training, professional society membership, years in practice, breast cancer patient volume, and BCS volume. Student t