

CA

What's New In Breast Cancer Surgery?

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Despite astonishing advances that have been made in the detection, treatment, and even chemoprevention of breast cancer over the past decade, surgery remains the cornerstone of therapy for almost all women diagnosed with the disease. In fact, one of the key objectives of the American Cancer Society in its efforts to detect breast cancer in its earliest stages is the opportunity to intervene—with potential for cure of disease—with relatively simple surgical procedures.

Reductions in breast cancer deaths among middle-aged and older women in the US¹ and the UK since the late 1980s

in national mortality rates has come not from a single research breakthrough, but from the careful evaluation and adoption of many interventions, each responsible on its own for only a moderate reduction in breast-cancer mortality.”

Encouraged by these signs of significant progress, the ACS recently described an ambitious vision for the future in its document, “American Cancer Society 2015 Challenge Goals & Nationwide Objectives.”³ The specific objectives outlined for breast cancer by the year 2015⁴ include a reduction of 15% in the age-adjusted incidence rate of the disease and a

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have been attributed to wider use of systemic therapy and earlier surgery.² Peto et al writing in *The Lancet*² recently, pointed out, “This substantial reduction

45% reduction in the age-adjusted mortality rate. Moreover, by the year 2008, the ACS hopes that 90% of women 40 years of age or older will undergo breast cancer screening that is consistent with our guidelines.

Another overall principle asserted by the ACS regarding its objectives for 2015 is that cancer screening should be linked with a policy of aggressive biopsy such that removal of small ductal carcinomas *in situ* may actually reduce the incidence of invasive cancers.

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It is likely that with ongoing efforts to encourage early detection of breast cancer, especially among members of underserved populations, the gains of the past decade will continue. Advances in other areas, such as molecular/genetic identification of women at high-risk for breast cancer and refinement of chemoprevention regimens, are likely to further reduce both the incidence of and mortality from the disease.

Breast Cancer Surgery

The trend in breast cancer surgery since the introduction of Halstead's radical mastectomy more than a century ago has been toward developing surgical treatments that are increasingly less invasive and, consequently, are associated with lesser morbidity. This issue of *CA* includes two superb articles that represent classic examples of attempts to minimize the extent of breast surgery and to ameliorate its unwanted postoperative effects.

SENTINEL LYMPH NODE DISSECTION

Hsueh et al,⁵ for example, have adapted a surgical technique first developed and used in patients with Stage I melanoma to reduce the need for axillary lymph node dissection (ALND) in breast cancer patients. As the authors point out, despite some controversy about the clinical effect of removing axillary lymph nodes, assessment of the axillary nodes provides critical prognostic information that can be used to guide adjuvant therapy. Unfortunately, the morbidity associated with ALND, both in terms of complications and chronic lymphedema, is substantial.

Preventing Postoperative Complications

The procedure described in this paper, *sentinel lymph node dissection (SLND)*, is "based on the concept that the tumor-bearing status of the sentinel node, i.e., the first node in the regional nodal basin

that drains a primary tumor, reflects the tumor status of the entire nodal basin." Thus, it has been hypothesized that if the sentinel node is free of tumor, it can be assumed that no other nodes are affected.

If SLND is proved effective, it would generally reduce the extent of many breast cancer operations while providing the same level of prognostic information obtained with ALND. The fact that much of the axillary lymph node tree might be spared should result in fewer postoperative short- and long-term complications among thousands of breast cancer patients.

Although many groups have documented the reliability of the SLND technique in their own series of patients, Hsueh et al urge surgeons to continue to consider the procedure experimental. In effect, the authors recommend that multidisciplinary teams (which include surgeons, nuclear medicine specialists, and pathologists) at each institution "progress along their own 'learning curves.'" By performing a completion ALND after each sentinel node procedure, the team can evaluate and document its own accuracy without jeopardizing patient care during the learning process.

Two groups, the American College of Surgeons and the National Surgical Adjuvant Breast and Bowel Project, are currently conducting large, prospective studies designed to answer important questions regarding the value and appropriate use of SLND in breast cancer surgery.

LYMPHEDEMA

In a related article, Petrek et al⁶ focus on lymphedema, a particularly frustrating postoperative condition that mars quality of daily life in thousands of breast cancer survivors. Although large numbers of women suffer with lymphedema, its causes and treatments have been largely ignored by the medical community because it is not a life-threatening condi-

tion. It is ironic that breast cancer survivors with excellent prognoses and the potential for long-term disease-free survival nevertheless often struggle with the disfigurement and discomfort of arm swelling long after their disease has been successfully managed.

Petrek et al report on the findings of an ACS-sponsored invited workshop on lymphedema, outlining specific recommendations both for treatment and further research.

Unfortunately, although we would like to imagine that improvements in surgical techniques, such as the development of SLND, would eventually markedly reduce the incidence of lymphedema, according to Petrek et al, the reality is not always so straightforward. If the sentinel node is located very high at the level of the axillary vein and the lymph trunks, surgical excision of even that one node may result in lymphedema. Moreover, if adjuvant radiation therapy is initiated after SLND, the likelihood of lymphedema is increased.

Patient education is critical in this context: If breast cancer survivors are instructed about the early signs of lymphedema and can therefore seek treatment while the condition is still mild, the incidence of severe, disabling cases might be reduced. Clinicians, too, must be encouraged to look for lymphedema as early as 12 weeks postoperatively and must be apprised of centers to which patients can be referred for prompt, appropriate management.

Innovation and Progress

While the lay public sometimes expresses frustration with the pace of medical progress in the fight against breast cancer, numerous innovations have, in fact, been achieved. Early detection techniques are continually being refined with the result that increasingly smaller, nonpalpable lesions are being identified. Those women at high-risk of developing the disease, either because of family or personal factors, now have several proactive options ranging from chemoprevention to prophylactic mastectomy. In addition to new chemotherapy drugs and combination regimens, some investigators have been successful with neo-adjuvant administration of chemotherapy, which has significantly reduced the size of some breast tumors prior to surgery.

Surgeons, too, are constantly developing new techniques and refining established procedures. The recent use of skin-sparing mastectomy to improve reconstructive outcomes⁷ is just one example of progress in reducing the morbidity associated with surgical treatment of breast cancer.

The eventual adoption of SLND as a standard operation for breast cancer may spare thousands of women ALND, which is generally a much more invasive and extensive procedure. And, it is hoped that the attention focused by Petrek et al and others on lymphedema will bring new thinking and techniques to bear on the prevention and management of this distressing condition.

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