

Breast Cancer and Axillary Lymph Node Dissection: Past, Present, Future

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Background Information

During the last twenty years the therapeutic approach to patients with breast cancer has changed dramatically, but there are still many controversies over the surgical management of the disease. With the application of more conservative procedures, along with the combined use of chemotherapy, hormone therapy and radiation at the appropriate time and monitoring of the consequences, breast conservation has become an achievable target for the majority of patients. An important basic and inseparable component of the surgical treatment of the disease has been axillary lymph node dissection (ALND), not only in the group of techniques where the breast is removed (e.g., modified radical mastectomy) but also with breast conserving surgery (BCS) [1-3].

In terms of lymph node evaluation, the Society of Surgical Oncology has issued new "Choosing Wisely" guidelines, suggesting that one should consider not doing sentinel lymph node biopsy (SLNB) on patients over the age of 70 years [4], but this has not yet been widely accepted. Although many surgeons have adopted the use of SLNB after neoadjuvant therapy, some have not yet done so. Whether complete ALND is needed with a positive SLNB after neoadjuvant chemotherapy is also under investigation.

The Past

ALND is Necessary

The classic "Halstedian" concept regarding the mechanism of how the disease is spread considers the primary disease, the regional lymph nodes and the distant metastases as a system connected in line. According to this concept the main factor that determines the disease process is the "quantity" of tumor mass (volume). Based on this theoretical background, particular emphasis was given to the locoregional control of the disease by applying radical surgical techniques. Over all this period of time, ALND was considered to have a double mission: a) reduction of the neoplastic load by removal of potentially infiltrated

lymph nodes, and b) provision of useful histopathological information for reliable staging of the disease and consequent indication of the appropriate treatment.

ALND in Dispute

Over the course of time, the increasing use of adjuvant chemotherapy in early stage breast cancer on the one hand, and on the other, the morbidity associated with routine ALND, led to reconsideration of the necessity of performing ALND as a routine procedure on all patients with breast cancer.

If, indeed, chemotherapy is administered to patients with early stage breast cancer, the benefits of ALND are open to discussion, since the results would no longer affect the decision on administration of chemotherapy.

The Present

ALND on a selective basis

SLNB is now the gold standard for the decision-making process about axillary dissection in patients with early stage of breast cancer and clinically negative ipsilateral axilla (i.e., no palpable nodes). The guidelines of the American Society of Clinical Oncology (ASCO) and the National Comprehensive Cancer Network (NCCN) recommend ALND for patients with a metastasis to a SLN sized >0.2mm, detected by any method.

Omission of ALND in a selective group of patients

As a positive SLNB often necessitates a second operation with possible immediate and long-term morbidity, its usefulness raised many arguments. Initially these arguments were focused on patients with only one positive sentinel node, based on the results of several studies showing that in 40-60% of patients the sentinel node was the single and only positive node of the total of nodes recovered from the axilla. Results of the ACOSOG Z1010 clinical trial strongly enhance the concept that ALND can be omitted in patients with micrometastatic disease (>0.2mm to <2mm) in SLNB, as this omission does not affect locoregional recurrence and/or patient survival.

The Future

ALND only in selected groups of patients

The ASCO, based on the results of the ACOSOG Z0011

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trial, and after reconsidering the guidelines of ALND, recommends the avoidance of ALND in patients with early stage breast cancer scheduled for BCS, who have less than three positive nodes at SLNB and are scheduled for postoperative chemotherapy and radiation therapy.

ALND is indicated in patients with more extensive disease on SLNB (>3 infiltrated lymph nodes) and/or clinically palpable axillary nodes, detected by ultrasound and verified by fine needle aspiration (FNA).

Neo-Adjuvant Chemotherapy and SLNB

The increasing use of neoadjuvant chemotherapy in even early stages of breast cancer (e.g., triple negative disease) has raised a lot of questions related to the reliability of SLNB in these cases. There is convincing evidence from randomized clinical trials showing that in this group of patients the sentinel node can be retrieved in more than 90% of cases and that the sensitivity of the method is 88%. SLNB after neoadjuvant chemotherapy, therefore, continues to be considered reliable.

In this issue Triantafyllidou very nicely reviews the current evidenced-based guidelines for dealing with the axilla of patients with breast cancer. ALND is a basic component of breast cancer surgery. It is interesting that a few decades ago, the surgical treatment of the primary tumor and ipsilateral axilla were considered as one united surgical target, but several years later the two components (breast and axilla) were separated, following different pathways. Breast surgery became extremely conservative with the application of BCS techniques, while the axilla remained the target of an aggressive surgical approach. It will be a matter of time for clinicians, based on thoughtful and elegant studies, to

realize that the axilla deserves the same conservative surgical behavior as the primary focus of the malignancy.

There is convincing evidence showing that there has not been a dramatic increase in axillary recurrence or a decrease in survival with the reduced application of ALND. In the future, with improvements in genomic analysis, ALND and even SLNB may become even less important in local control and prognosis.

References

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