

# Targeted axillary dissection of lymph nodes after chemotherapy improves staging accuracy of node-positive breast cancer

January 26 2016

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Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

A new procedure developed by surgeons at The University of Texas MD Anderson Cancer Center improves the accuracy of axillary staging and pathologic evaluation in clinically node-positive breast cancer, and reduces the need for a more invasive procedure with debilitating complications.

The research, published in the *Journal of Clinical Oncology*, has changed treatment guidelines at the institution for a select group of [breast cancer patients](#) with [lymph node metastasis](#), who will now receive Targeted Axillary Dissection (TAD).

The TAD procedure involves removing [sentinel lymph nodes](#), as well as additional cancerous lymph nodes found during diagnosis. At the time of diagnosis, those select nodes are clipped for identification during later surgery.

Each year, more than 60,000 women with breast cancer are diagnosed with axillary metastasis. Until recently, the standard of care was for these patients to undergo a complete axillary lymph node dissection (ALND) under the arm.

ALND is one of the most challenging procedures for breast cancer patients to recover from and can have lifelong effects, explained Abigail Caudle, M.D., assistant professor, Breast Surgical Oncology at MD Anderson, and the study's first author. Patients can experience complications such as numbness and lymphedema - an often debilitating swelling of the arm.

Yet, with the addition of chemotherapy before surgery, neoadjuvant chemotherapy, research has shown that approximately 40 percent of these patients have no evidence of disease in their lymph nodes, and therefore would not need the invasive surgery to remove lymph nodes that no longer contain cancer metastases.

"As chemotherapy is utilized more often before surgery, there is a greater likelihood that the disease in the lymph nodes will be eradicated and surgeons do not need to perform extensive nodal surgery," explains Caudle.

The challenge, says Caudle, is that surgeons haven't had a way to identify those patients for whom chemotherapy has resulted in this nodal change, so far too many women have undergone the more invasive surgery.

Several studies have shown that sentinel [lymph node dissection](#) (SLND), the less-invasive removal of one or a few key lymph nodes, shows promise in assessing disease status, yet the procedure alone can miss residual disease in 10-15 percent of women, defined as a false negative rate (FNR).

"We just haven't had a good way to determine which patients have converted to node-negative status, and thereby, we are subjecting too many women to unnecessary surgery," said Caudle. "With our study, we hoped to find a new way to target the lymph node known to have cancer, selectively remove it, look at it, and hopefully avoid additional surgery if chemotherapy has wiped out all the cancer."

For the prospective single-institution study, 208 [breast cancer patients](#) with axillary metastasis were enrolled. When patients underwent their first ultrasound and biopsy at the time of diagnosis, radiologists placed a clip in the cancerous node. They then underwent chemotherapy. To help locate the specific nodes during surgery, small radioactive seeds were implanted in the clipped node the day before. During surgery, pathologists would then determine the specific pathology of the clipped node to see how it related to other nodes.

The analysis showed:

- Of those enrolled, 191 underwent ALND; with residual disease identified in 120 patients (63 percent). The clipped node revealed metastasis in 115 patients, resulting in an FNR of 4.2 percent.
- In the 118 patients that underwent an SLND and ALND, the FNR was 10.1 percent, which included seven false negative events in 69 patients with residual disease. Adding evaluation of the clipped node reduced the FNR to 1.4 percent.
- TAD was performed in 96 of the 208 patients, 85 of which also underwent an ALND to identify the FNR, which was found to be 2.0 percent.

One note, say the researchers, the clipped node was not retrieved as a sentinel lymph node in 23 percent of the patients. This indicates that the node that was confirmed to contain cancer before chemotherapy would have been missed by SLND alone, and therefore not examined in these patients.

"This study may now allow up to 40 percent of women who are diagnosed with axillary metastasis and undergo neoadjuvant chemotherapy to avoid more extensive and often debilitating surgery," said Henry Kuerer, M.D., Ph.D., professor, Breast Surgical Oncology. "Our findings epitomize precision surgery in that we are specifically targeting the known disease and limiting the morbidity for our patients."

Given the findings, MD Anderson's breast surgical oncologists, together with colleagues, have changed care guidelines at the institution: women with three or fewer [lymph nodes](#) involved at initial presentation may be offered the TAD procedure with the intent to omit further [surgery](#) if no cancer is seen in the clipped or sentinel nodes. The researchers hope that with these findings, national guidelines are further strengthened to recommend TAD for women with minimal lymph node involvement.

The study is continuing, with plans to further expand the research to some of MD Anderson's Network and Certified Partner members, in hopes of one day allowing patients with more advanced axillary disease to undergo the procedure.

Provided by University of Texas M. D. Anderson Cancer Center

Citation: Targeted axillary dissection of lymph nodes after chemotherapy improves staging accuracy of node-positive breast cancer (2016, January 26) retrieved 26 April 2024 from <https://medicalxpress.com/news/2016-01-axillary-lymph-nodes-chemotherapy-staging.html>

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