Preoperative wire-free localization of positive axillary lymph nodes 31-365 days prior to surgery: A proposed practical approach to supplement SLN in neoadjuvant therapy patients

Mary K. Hayes, MD, Erica V. Bloomquist, MD, Heather R. Wright, MD
Envision Physician Services – Memorial Healthcare System

ABSTRACT

Wire-free nonradioactive Preoperative Localization (WFL) has been used as standard of care in over 55,000 breast cancer patients in 375 US sites. The radiologist/surgeon inserts the WFL in the positive breast or axillary lymph node (LN) using Mammography (MG), Ultrasound (US) or CT guidance.

In August 2018, the FDA expanded clearance of long-term SCOUT WFL to soft tissue/LN. Long-term (31-365 day) preoperative localization of the biopsy proven positive LN may represent a more practical approach to supplement SLN in NAT patients. Results of this study further support the ACOSOG-Z1071 subset findings that selected patients with node-positive disease who receive neoadjuvant treatment (NAT) may be eligible for sentinel lymph node (SLN) surgery, potentially requiring less extensive axillary surgery.

METHODS

This prospective pilot study enrolled 33 breast cancer patients aged 28-74 (10 Caucasian, 12 African American, 11 Hispanic), with clinical T1-4, N0-2, M0 disease who planned NAT. Preoperative WFL was performed prior to NAT response in the breast and/or positive axillary LN (19 LN only, 4 both breast and LN, 10 breast only). Descriptive statistics were used.

OBJECTIVES

To evaluate WFL placement success rate and device stability 31-365 days prior to successful surgery in patients with node-positive breast cancer prior to NAT.

RESULTS

This subset analysis showed 24/33 patients were node-positive (10-51 mm size). WFL placements were successful (0-10 mm from center) in all 24/24 patients via US (23 patients, LN 8-35 mm deep to skin) and CT guidance (1 patient, LN 90 mm deep to skin). WFL stability (0 mm migration) throughout NAT was documented on all standard of care (SOC) preoperative surveillance imaging MG, US, MRI, CT and specimen X-rays (0-216 days). Both the target LN and WFL were well visualized on 9/9 MRI and 8/8 PET/CT SOC imaging. WFL successfully supplemented SLN final surgery in 14/24 subjects to date.

CONCLUSIONS

This subset analysis provides preliminary information to suggest that up front WFL of positive LN may be performed long-term prior to NAT response when the lesion is clearly visualized on imaging, with no significant adverse events or device migration. Since successful NAT can result in a complete or partial imaging response, a simpler pre-NAT image-guided WFL may replace the more difficult and less reliable localization post-NAT response. The latter can contribute to incomplete removal of the targeted LN, and unintended larger, more disfiguring cancer surgery.

WFL of the biopsy proven positive lymph node prior to NAT may represent a more practical approach for targeting the area for surgical excision in these patients. If larger scale studies support these findings, this may result in a clinically relevant paradigm shift for patients with known axillary disease and planned NAT.