Localizing the clipped node in patients with node positive breast cancer treated with neoadjuvant chemotherapy – early learning experience and challenges

Toan T. Nguyen M.D.1, Tina J. Hieken, M.D.1, Katie Glazebrook, M.D.2, Judy C. Boughey, M.D1

Departments of 1Surgery and 2Diagnostic Radiology

Mayo Clinic, Rochester, MN

Background

- Node-positive breast cancer patients are often treated with neoadjuvant chemotherapy (NAC).
- Sentinel lymph node (SLN) surgery is increasingly utilized over routine axillary lymph node dissection (ALND) in staging the axilla given high rates of pathologic response.
- Placing a clip in the positive node at diagnosis and ensuring resection of the clipped node at surgery is associated with lower false negative rates.

Objective

We sought to evaluate our early experience with localization and retrieval of the clipped node in node-positive breast cancer patients after NAC.

Methods

- With IRB approval, we identified all patients with biopsy-proven node-positive breast cancer treated with NAC, followed by surgery.
- Electronic medical records were reviewed to identify patients with a clip placed in the positive node at diagnosis.
- All pre-operative localization procedures, operative notes, and pathology reports were reviewed.

Results

Intra-operative identification of the clipped node

- In all 20 cases with [125I] seed localization, the seed and clipped node were retrieved successfully along with additional SLNs.
- Of the 14 cases without preoperative seed localization (9 not attempted and 5 unable to be localized), the clipped node was resected intraoperatively in 11 patients (79%).
- It was identified as one of the SLNs in 6 patients (identified by blue dye only in 2 patients, radiolabeled sulfur colloid lymphoscintigraphy only in 2 patients, and both blue dye and radiolabeled sulfur colloid lymphoscintigraphy in 2 patients) by intraoperative ultrasound in 4 patients and by intraoperative palpation in 1 patient.
- In 3 cases the clipped node was not retrieved despite intraoperative attempts to do so; 2 of these patients had a positive SLN and proceeded to ALND and 1 patient had 6 negative SLNs resected and no further axillary surgery.
- Overall, the clipped node was resected in 31 of 34 (91%) cases with documented clip location at surgery.

Discussion

- The clipped node can be localized with a [125I] seed, which has excellent success (100%) of retrieval of the seed and the clipped node intraoperatively.
- Ultrasound is the preferred modality due to ease of use, low cost, wide availability, and lack of radiation.
- The most significant challenge is failure to visualize the clipped node with US after NAC due to normalization of the node and inadequate visibility of the clip.
- Optimization of visibility includes using a clip that has high ultrasound visibility.
- Potential future improvements include placing non radioactive marks at time of axillary dissection to avoid need for additional procedures and potential localization challenges.

Conclusions

- Placing a clip in a metastatic node at diagnosis, with localization of the node pre-operatively after NAC, and retrieval of the node at surgery is feasible.
- Ultrasound is often successful to localize the clipped node after NAC; however, not always.
- When the clipped node is not visualized sonographically, CT scan can be utilized for localization or intraoperative ultrasound or palpation.
- Routine SLN can often retrieve a clipped node that was not able to be localized.
Title Safe Area: Title text should appear within this area

Author/Affiliation Area: Authors, affiliations and subbrand names should snap to the top of this area and flow downward.

Brand Safe Area: The upper title banner section of the poster provides a brand safe area for the logo, title and author/affiliation text. No photos, illustrations, patterns, high-contrast backgrounds, or graphics are allowed within this area. A logo representing another non-Mayo listed contributing affiliation may be placed in upper right corner within green guideline space.

Poster Body Area: Research text, figures, tables and graphs should appear within this area. No photos, illustrations, patterns, high-contrast backgrounds, or graphics are allowed in the margins.
Use the text boxes in the template when possible.

Copyright Line: Copyright graphic should appear at bottom right under last text/figure box. Recommend graphic be placed no more than 1.5" from bottom of poster.