

Title: Sentinel Lymph Node Biopsy in Triple Negative Infiltrating Ductal Carcinoma after Bilateral Prophylactic Mastectomy for ER+ Breast Cancer: A Case Report

Authors: Natasha Gaito, OMS-IV; Rod Flynn, MD

Background/Synopsis- Sentinel lymph node biopsy (SLNB) after mastectomy has historically been considered impractical due to altered drainage patterns, which can lead to false-negative results. Lymphatic flow in the breast follows a predictable pathway, but prior surgeries – including mass excision or mastectomy– can disrupt these pathways, potentially limiting the reliability of SLNB.

Objective/Purpose - This case report evaluates the feasibility and utility of sentinel lymph node biopsy in the setting of recurrent breast cancer after prophylactic mastectomy. Secondary aims include examining the incidence and contributing factors to triple-negative breast cancer recurrence following prior estrogen receptor-positive (ER+) disease treated with prophylactic mastectomy and tamoxifen therapy, the incidence of recurrence of contralateral new breast cancer in BRCA 1/2 positive patients, and the role of tamoxifen in recurrence risk reduction.

Case Report- BC is a 65-year-old woman with a history of locally advanced ER+ right breast cancer status post prophylactic bilateral mastectomy and reconstruction 10 years earlier. She presented with a palpable mass in the left breast. Ultrasound revealed a 2.4 x 1.0 x 1.4 cm irregular-shaped hyperechoic mass located along the anterior margin of the left implant, concerning for malignancy. Core needle biopsy pathology results demonstrated triple-negative infiltrating ductal carcinoma (IDC). Given the prior mastectomy, the utility of SLNB was debated. The patient consented to lymphoscintigraphy with SLNB, with the understanding that failure to map lymphatics would necessitate axillary radiation or lymphadenectomy. Lymphoscintigraphy successfully identified sentinel nodes, which were negative on pathology following SLNB. Subsequent ultrasound following neoadjuvant chemotherapy showed a slight decrease in mass size, and the patient will proceed with partial mastectomy with needle localization.

Results- This case demonstrates that SLNB is a feasible and valuable diagnostic tool, even after prophylactic mastectomy. It allows for targeted treatment planning while avoiding the morbidity associated with axillary dissection. Although BRCA-positive individuals have a higher risk of recurrence, especially contralateral disease, recurrence with a different receptor profile (from ER+ to TNBC) is rare. However, prolonged tamoxifen use may induce estrogen resistance, potentially contributing to phenotypic transformation of recurrent disease.

Conclusion- Sentinel Lymph Node Biopsy should be considered a viable diagnostic modality even in patients with prior chest surgery, including prophylactic mastectomy, given emerging evidence that lymphatic flow does not universally preclude accurate mapping. Broader use of SLNB may be beneficial in other malignancies, such as cervical cancer. In addition, BRCA 1/2 positive patients' recurrence is more likely to present as contralateral rather than ipsilateral disease; however, prophylactic mastectomies are also more common within this patient population when compared to patients without BRCA 1/2 mutations making it difficult to fully assess the recurrence rates between the two groups. Transformation from ER+ to TNBC is uncommon but may be influenced by long-term anti-estrogen therapy, such as tamoxifen. This case highlights the importance of individualized diagnostic strategies and the evolving understanding of breast cancer recurrence patterns.