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ORIGINAL ARTICLE – BREAST ONCOLOGY

Triple Mapping to Optimize Axillary Management in Breast Cancer Patients After Neoadjuvant Therapy

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INTRODUCTION

Sentinel lymph node (SLN) biopsy is an option after neoadjuvant chemotherapy in patients who are clinically node negative. False negative rates decrease with dual mapping and identification of more than three SLNs. Patients with positive SLNs require axillary lymph node dissection (ALND). Axillary reverse mapping (ARM) with lymphovenous bypass (LVB) is a lymphedema prevention technique that can be performed in patients who require ALND. It entails injection of isosulfan blue into the proximal extremity to identify lymph nodes and lymphatics draining the arm. LVB performed at the initial surgery re-establishes the drainage of cut lymphatics, potentially decreasing the risk of subsequent lymphedema. We describe a triple mapping technique that can be used to perform both SLN biopsy and subsequent ALND.

METHODS AND RESULTS

This video introduces a triple mapping technique demonstrating the use of dual-dye technetium-99 and indocyanine green (ICG) for SLN biopsy, and isosulfan blue for ARM.

Technetium-99 and ICG are injected periareolarly into the breast for SLN mapping, and isosulfan blue is injected into the proximal extremity for ARM. SLN biopsy is performed, identifying any hot or fluorescent nodes, and ALND is performed if a positive SLN is identified. During ALND, blue lymphatics and nodes are identified, preserved, or marked. LVB re-establishes the continuity of cut lymphatic channels. ICG is then injected into the arm to confirm patency and flow of the new anastomosis.

CONCLUSION

Triple mapping with ICG, technetium-99, and isosulfan blue represents a novel strategy to optimize axillary management for preventing lymphedema in breast cancer patients following neoadjuvant therapy.

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