



CRITICAL ELEMENTS

- Identification of Anatomical Structures for Level I and II Axillary Dissection
- Removal of Level III Nodes
- Removal of Rotter Nodes
- Removal of a Sufficient Number of Lymph Nodes for Axillary Staging
- Identification and Preservation of the Long Thoracic, Thoracodorsal, and Medial Pectoral Nerves
- Identification and Preservation of the Second and Third Intercostobrachial Nerves
- Drain Placement

1A. IDENTIFICATION OF ANATOMICAL STRUCTURES FOR LEVEL I AND II AXILLARY DISSECTION

Recommendation: Identification of the axillary vein and latissimus dorsi, pectoralis major, pectoralis minor, serratus anterior, and subscapularis muscles is essential for the resection of sufficient level I and II axillary nodes for breast cancer staging and adjuvant treatment planning.

Type of Data: Retrospective case series.

Strength of Recommendation: The consensus of the group supports this guideline based on historic evidence.

Rationale

Breast cancer typically spreads to the axillary lymph nodes first, and axillary dissection is important for both local control and treatment planning. The anatomic borders of the axilla must be identified to adequately resect level I and II axillary lymph nodes (see Fig. 3-1). The axilla is a triangular space that is delineated by the axillary vein

superiorly, the latissimus dorsi muscle laterally, the serratus anterior muscle medially, the subscapularis muscle posteriorly, and the pectoralis minor and major muscles anteriorly. Lymph nodes in the axilla are identified by their location in one of three anatomical levels. Level I contains the axillary lymph nodes between the latissimus dorsi and the lateral border of the pectoralis minor muscle; level II contains the axillary lymph nodes between the lateral and medial borders of the pectoralis minor muscle; and level III encompasses the lymph nodes between the medial border of the pectoralis minor muscle and Halsted's ligament. Level III axillary nodes can be exposed by resecting or dividing the pectoralis minor muscle. Axillary lymph nodes are located primarily in level I (60% to 70% of nodes), followed by level II (20% to 30%) and level III (10% to 20%).¹⁻³ Axillary metastases are most often identified in level I nodes followed by level II nodes. Single-node metastasis occurs in level I nodes almost exclusively.^{1,2} Metastases that occur in level II or III nodes in the absence of level I metastasis ("skip" metastases) are rare and typically occur in level II nodes.^{2,4}

1B. REMOVAL OF LEVEL III NODES

Recommendation: The removal of level III axillary nodes is not typically indicated for patients with stage I or II breast cancer but should be considered to facilitate local disease control in patients with locally advanced breast cancer or N2 disease and patients in whom the nodes are identified by palpation intraoperatively.



CRITICAL ELEMENTS

- Identification of All Sentinel Nodes
- Technique for Injecting Localizing Tracer or Dye
- Precision Evaluation of Drainage Pattern
- Node Removal Technique to Limit Seroma Formation

1. IDENTIFICATION OF ALL SENTINEL NODES

Recommendation: All sentinel nodes must be identified, removed, and subjected to pathologic analysis to ensure that sentinel lymph node mapping and sentinel lymphadenectomy provide accurate information for breast cancer staging. Sentinel nodes are defined by the presence of a tracer (radioactive tracer and/or colored dye) that has been previously injected into the affected breast or by the presence of a dominant palpable lymph node identified by the operating surgeon.

Type of Data: Randomized multicenter prospective trials.

Strength of Recommendation: The group strongly endorses this recommendation based on strong evidence.

Rationale

The original definition of a sentinel lymph node was “the first draining lymph node on the direct pathway from the primary tumor site.”¹ According to the sentinel node hypothesis, tumor cells migrate from a primary tumor focus to the first draining lymph node(s) before involving distal lymph nodes. Sentinel lymph nodes are variably located but are usually within the level I or II axilla near the lateral thoracic vein.^{2,3} The median number of sentinel nodes removed during a sentinel lymphadenectomy is between two and three; in the two largest randomized clinical trials comparing sentinel

lymphadenectomy to axillary node dissection, the mean numbers of sentinel nodes removed per procedure were 2.8 in the National Surgical Adjuvant Breast and Bowel Project B32 trial³

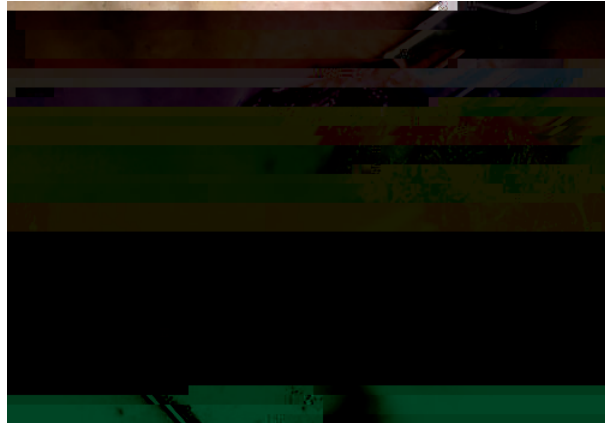


FIGURE 4-1 Sentinel node procedure demonstrating blue lymphatic leading to blue sentinel node. (Photo courtesy of Sarah BlairMD, and Marek Dobke, MD.)

radioactive and/or stained blue are considered sentinel nodes. All blue-stained nodes should be assessed with a gamma detection probe for radioactivity, and all radioactive nodes that are removed should be assessed for the presence of blue dye. Some nodes may only be identified by one modality, as studies show that the procedure is the most accurate when dual tracer technique is utilized.⁶

Identification Using Palpation of the Axilla

As a component of sentinel lymphadenectomy, careful palpation of the level I and II axilla is essential to guiding the complete removal of all sentinel nodes. Nodes that feel abnormal on palpation should be categorized as sentinel nodes and removed regardless of whether they are radioactive or stained blue.⁷

2. TECHNIQUE FOR INJECTING LOCALIZING TRACER OR DYE

Recommendation: The site of localizing tracer or dye injection within the affected breast and/or subareolar plexus does not influence the identification of the axillary sentinel node(s).

Type of Data: Multiple single institutional series, small prospective randomized study, and systematic review.

Strength of Recommendation: Consensus of the group is that the evidence is strong.

Rationale

Over the past 15 years, several different techniques and combinations of techniques have been employed for the injection of radioactive tracer and/or dye for sentinel node identification. Pesek et al⁵ published the most comprehensive and systematic