



# COMPLETE AND PARTIAL AXILLARY LN DISSECTION IN BREAST CANCER

Antisar Abdalati Maweloud Rahoumah, Nabil Abdulazim Hamrah, Adel Mahmoud Attya, Loay Mohamad  
El-Hady Osman

General Surgery Department, Faculty of Medicine, Zagazig University, Egypt

Corresponding author: Antisar Abdalati Maweloud Rahoumah

Email: Antisar.abdalati@gmail.com

## Abstract

Axillary dissection has been a routine part of breast cancer treatment for more than 100 years. Axillary node involvement is the single most important prognostic variable in patients with breast cancer. Recently, routine node dissection has been eliminated for intraductal carcinoma because so few patients had positive nodes. With the availability of numerous histologic prognosticators and the development of new immunochemical prognostic indicators, it is time to consider eliminating routine node dissection for lesions more advanced than duct carcinoma in situ (DCIS) but with extremely low likelihood of axillary involvement.

**KeyWords:** complete dissection, partial dissection, breast cancer, LN.

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## Introduction.

During the last two decades, surgeons have become more conservative in their approach toward patients with breast cancer. The trend has clearly been away from mastectomy and toward breast conservation therapy (1).

The treatment of the axilla has also been moderated, with a trend from radical (complete) axillary node dissection toward a more limited dissection, generally Levels 1 and 2 (2).

Axillary dissection, though, has remained a permanent part of breast cancer care with little debate regarding the need for some form of axillary dissection in all patients with invasive breast cancer.

Silverstein et al. (3) called for less radical treatment of the axilla by suggesting the elimination of axillary node dissection for patients with ductal carcinoma in situ (DCIS). Recently, that recommendation has been extended to include patients with micro-invasive

carcinoma. It may now be time to extend conservatism even further.

## COMPLETE AXILLARY LN DISSECTION

For patients with a clinically positive ALN (including ultrasound identified suspicious nodes), the standard of care is a complete axillary dissection, performed at the time of mastectomy. For patients undergoing a SLN dissection with node-negative disease or micrometastatic disease ( $\leq 2$  mm disease), no further axillary dissection is necessary. For patients with a positive SLN, the management of the axilla is evolving. Although most surgeons typically would perform a complete ALND at the time of the mastectomy, other oncologists prefer to plan administration of radiation to the chest wall and axilla (4).

The axillary contents are divided into three levels, level I lies lateral, level II lies posterior and level III lies medial to the pectoralis minor muscle. Complete ALND refers to the extirpation of lymph nodes from all three levels. In contrast, a



partial ALND refers to the extirpation of lymph nodes only from levels I and II and axillary sampling indicates only resection of the level I nodes **(4)**. The main goals of axillary surgery are local control, survival and staging **(5)**.

### Technique

The possible incisions for ALND are either separate from or continuous with the incision used for the breast surgery. Separate axillary and breast incisions are almost always cosmetically superior to continuous one **(6)**.

A separate incision is best done transversely, extending from the lateral border of the pectoralis major muscle up to the anterior border of the latissimus dorsi **(6)**.

After skin incision, the lateral axillary margin up to the anterior border of the latissimus dorsi is dissected. The tendinous portion of this muscle crosses the axillary vein in the superolateral operative field. Then, clavipectoral fascia (extending from the coracobrachialis to the pectoralis minor muscle, encompassing it) is then incised superiorly along the axillary vein. The axillary contents are mobilized inferiorly and the axillary vein is exposed in full view. To incise the clavipectoral fascia as far as possible, the retractor should be placed deep to the pectoralis minor muscle. With this manoeuvre, level II of the axilla is also exposed **(6)**.

When the axillary vein crosses the pectoralis muscles, the medial pectoral nerve can be found. It lies lateral to the lateral border of the two pectoral muscles and innervates the lower third of the pectoralis major. It should be preserved whenever possible because if it is injured, it causes muscle atrophy which is visible after mastectomy especially with implant breast reconstruction. The entire accompanying medial pectoral vessel is ligated and divided **(6)**.

The intercostobrachial nerve can be sacrificed but the long thoracic nerve (which runs on the lateral chest wall near the axilla floor, beneath

the thin fascia of the serratus anterior muscle) and the thoracodorsal nerve, which runs medial to the thoracodorsal artery and vein must be preserved. The thoracodorsal neurovascular bundle lies posteriorly on the axillary floor and is better identified after the ligation and dissection of the thoracoepigastric vein (the largest side branch of the axillary vein) and by retracting the axillary contents inferiorly. The entire axillary contents are then removed. A drain is put in place, the incision is closed with a multi-layer suture and a compressive dressing is applied **(6)**. The sentinel lymph node/s is/are the first lymph node/s that drain the primary tumor. Anatomical studies showed that the lymphatic drainage of the breast starts from the deep part of the mammary gland above the muscular fascia, moves to the cutaneous lymphatic system of the skin, especially around the nipple areola complex, and ends in the SLN **(5)**.

SLNB is a diagnostic test that is useful in determining the status of the regional lymph nodes. This technique allows the surgeon to determine the status of the regional lymph nodes and avoid the morbidity associated with a more extensive lymph node dissection. SLNB has been widely used to stage patients with primary breast cancer with the goal of reducing the morbidity of ALND. Once identified, the sentinel node is excised and sent for histopathologic evaluation. For patients with primary breast cancer, the contraindications to SLNB include the presence of palpable axillary lymph node metastasis and prior breast or axillary surgery that might interfere with lymphatic drainage **(7)**.

Sentinel lymph node biopsy was indicated for all patients with invasive ductal carcinoma and for patients with ductal carcinoma-in situ (DCIS). Intraoperative subareolar injection of unfiltered technetium-99m sulfur colloid. Earlier experience with methylene blue dye has demonstrated significant risk of skin necrosis such that we no



longer use it for sentinel lymph node mapping(5).

### **PARTIAL AXILLARY LN DISSECTION**

Axillary lymph node harvesting is recommended as standard treatment in breast cancer to control local recurrence and classify lymph node metastasis (pN stage) (8).

Several studies have indicated that routine complete axillary lymph node dissection does not improve the survival rate after breast cancer surgery in patients who are clinically node negative (N0) (8).

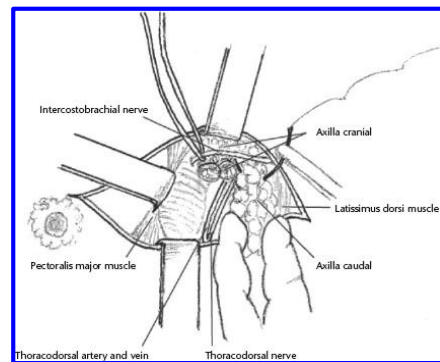
The National Surgical Adjuvant Breast and Bowel Project B-04 trial found no significant differences in 10-year survival rates between patients who underwent radical mastectomy with axillary dissection and those who underwent simple mastectomy without axillary dissection (9), this was despite histopathological examination demonstrating metastasis in ~40% of patients without clinical axillary node metastasis. Similarly, a meta-analysis demonstrated that combined axillary dissection and radiotherapy did not improve survival after surgery (10).

Sentinel node biopsy (SNB) with selective axillary lymph node dissection has now become the standard of care in patients with N0 breast cancer (11). The American College of Surgeons Oncology Group Z0011 randomized controlled trial (12) and a large retrospective study from the National Cancer Data Base (13) reported no differences in disease-free or overall survival rates between selected patients with microscopic sentinel node metastasis who underwent axillary dissection and those who did not (14).

Sentinel node biopsy is associated with lower morbidity than complete axillary lymph node dissection (15). The procedure of partial lower axillary lymph node dissection, which involves dissection of only the level I nodes caudal to the intercostobrachial nerve, has been developed to reduce further the rates of postoperative seroma

and arm lymphoedema occurring after SNB (14).

During breast cancer surgery, the intercostobrachial nerve was identified at the lateral border of the pectoralis muscle in the axilla. The nerve was retracted using tape and the axillary tissue caudal to the nerve divided into two to three parts. After focal radiofrequency ablation using a needle, the caudal axillary tissue was excised (Fig., 1). Focal ablation is an important part of this procedure, as it prevents leakage of lymphatic fluid from the remaining mammary and axillary tissues, thus minimizing the occurrence of postoperative axillary seroma (14).



**Figure (1):** Schematic diagram showing partial lower axillary lymph node dissection. Complete interruption between the upper and lower parts of the axillary tissue is essential to reduce the volume of postoperative lymphatic fluid collection (14).

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