

## Radical axillary dissection in sentinel lymph node biopsy era: it's still a considerable technique in breast cancer management?

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**SUMMARY:** Radical axillary dissection in sentinel lymph node biopsy era: it's still a considerable technique in breast cancer management?

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*The new staging technique of sentinel node biopsy facilitates the identification of pathological node negative patients in whom axillary dissection may be avoided; however, patients with a positive sentinel node biopsy would require a thorough examination of their nodal status. Axillary dissection provides good local control, accurate staging and prognostic information for decisions about adjuvant therapy. We describe a technique of radical axillary clearance that includes levels I, II and III; this isn't associated with additional morbidity to patients and involves minimal extension of operative time.*

**RIASSUNTO:** La linfectomia ascellare radicale nell'era del linfonodo sentinella: è ancora importante nel trattamento del carcinoma mammario?

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*La chirurgia del cancro della mammella è sempre più conservativa. La biopsia del linfonodo sentinella facilita notevolmente questo atteggiamento. Le pazienti linfonodo sentinella-positivo necessitano comunque della linfectomia ascellare per stadiazione. Ciò garantisce un buon controllo locale della malattia e indicazioni prognostiche per il trattamento adiuvante. Descriviamo la tecnica della linfectomia ascellare radicale comprendente il III livello. Tale metodica ha una serie di complicanze sovrapponibili alla linfectomia di I e II livello ed i tempi operatori risultano minimamente allungati.*

**KEY WORDS:** Axillary lymph node dissection - Breast cancer management - Sentinel lymph node biopsy.  
Linfectomia ascellare - Trattamento del carcinoma mammario - Biopsia del linfonodo sentinella.

### Introduction

Axillary lymph node status remains an important prognostic indicator for women with breast cancer and axillary dissection provides accurate information regarding nodal status. Local control of axillary disease and decision about adjuvant systemic therapy are dependent on appropriate axillary surgery. Sentinel

lymph node biopsy (SLNB) has become an important staging procedure, however, is not yet considered the standard of care for all breast cancer cases and axillary node-positive disease still requires adequate local control and accurate staging information. Axillary clearance is indicated for women with a clinically positive axilla and women who are subsequently found to be positive following sentinel node biopsy. Many studies showed that from 10 to 20% of women with a clinically negative axilla, and a primary tumour that was >20 mm and had vessel invasion, had level III axillary metastases. If sentinel node biopsy is validated as an axillary staging procedure for breast cancer, women with a positive sentinel node may still require further axillary surgery. The morbidity of adding a level III dissection to a level I and II dissection is poorly quantified from the published works. The technique is described for complete axillary clearance that includes nodes of levels I–III. In our experience, this technique is associated with no additional morbidity and involves only minimal extension of operative time.

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## Procedure

With the patient in the supine position, the lateral chest wall is placed level with the edge of the table. The arm is placed on an arm board, abducted to 90°. A curved incision, convex upward, is made just below the hairbearing area of the axilla. The limits of incision are the anterior and posterior axillary folds and a better cosmetic result is obtained if these are not crossed. The axillary dissection can be carried out in conjunction with an upper outer quadrantectomy but the surface boundaries of the axilla should be similarly respected. A radial incision does not need to extend beyond a point level with the lower margin of the hairbearing area.

**Access in the axilla.** Initially, raising an upper and lower skin flap, approximately 3 cm, improves access. Dissection is continued anteriorly and medially behind the anterior axillary fold to the lateral margin of pectoralis major. The axillary contents are then freed from the pectoralis major muscle and the more deeply situated pectoralis minor muscle. The lateral margin of this one is easily identified as its muscle bundles run craniocaudally in relation to the transversely running fibres of serratus anterior. The lateral chest wall, covered by serratus anterior, can then be followed from before backward until the craniocaudally running anterior muscle fibres of latissimus dorsi are seen. This most caudal extent of the dissection is approximately at the fourth thoracic vertebral level. The lateral muscle edge of latissimus dorsi marks the lateral extent of the dissection.

**Searching the nerves.** The lower branch of the intercostobrachial nerve will be found crossing this edge higher up and can be preserved at this point. It is necessary to incise the investing axillary fascia in a direction parallel to the edge of latissimus dorsi. The subscapular vessels and thoracodorsal nerve may be identified with a dissection worked out with ultrasound scissors. These structures remain bound to the muscle by fascia 2 cm from its lateral margin. In its lower extent the nerve is in close relation with the vessels and take an angled course in the vicinity of the angular vein. Lateral intercostal vessels join the subscapular vessels. These can be followed back to the chest wall and are as a reliable landmark for locating the long thoracic nerve. Establishing a plane of dissection without breaching this fascial layer minimizes the risk of injury to the nerve as the surgery proceeds cephalad. This straight forward dissection can be continued almost to the level of the axillary vein. The first structure that is seen well forward of the mid-axillary line is the intercostobrachial nerve. This structure can be preserved by following it and dividing the axillary contents until the lateral border of latissimus dorsi is seen. If nodal involvement is suspected then disruption of the axillary contents is best avoided and the nerve sacrificed. There is a gutter between the long thoracic nerve and the thoracodorsal nerve, both still attached to the respective muscles of supply.

**Axillary vessels exposure.** When the intercostobrachial nerve is identified, the operator should be aware that the axillary vein is a 1 cm in a cranial direction. The infero lateral portion of the clavipectoral fascia at the upper extent of the dissection is readily seen. When this is divided and the underlying fat gently teased away, the axillary vein will be identified without difficulty. It is necessary to dissect right along the inferior margin of the vein surface by dividing its investing fascia. By dragging this down with forceps the medial pectoral nerve is identified with the blood supply to pectoralis minor. Often, a duplex axillary vein is seen. Another anomaly that may confuse at this point is a congenital muscular, occasionally tendinous, band crossing the axillary vein. It's known as 'Langer's Arch' and it's occur in approximately 1 in 400 cases.

**Level II and III dissection.** Incision of the fascia on the posterior aspect of pectoralis minor allows the insertion of a large retractor. The pectoral muscles can then be lifted up and away from the chest wall. The highest lateral intercostal vessels will need to be divided against the chest wall to facilitate access to the level III nodes. As the inferior margin of the axillary vein is followed, the lateral thoracic tri-

butaries and any other small tributaries are ligated and divided in succession. The acromiothoracic tributaries at the highest level of dissection must be handled very carefully. The dissection ends where the tendon of subclavius is seen. A small gauze swab left in the apex for a few minutes will control any minor ooze that may occur. With blunt dissection between the pectoralis major and minor muscles, any interpectoral nodes can be identified and removed. The lateral pectoral nerve and acromiothoracic vessels perforate the fascia and care must be taken not to injure these structures or the lateral pectoral branches situated in the interpectoral space. After the axillary dissection has been completed, a suction drain inserted, wound is closed. A pressure dressing is then applied to the axilla. Those are removed 24 h after surgery and patient may be discharged from hospital.

## Discussion

The principal roles of axillary dissection are eradication of metastatic disease in the axillary nodes, and determination of nodal status to evaluate prognosis and facilitate decisions about adjuvant therapy. However, the question of whether, and to what extent, ALN should be removed for patients with operable breast cancer is yet to be conclusively answered.

The technique of sentinel node biopsy is emerging as a well known alternative to axillary dissection; however, clinicians would still be faced with the need to perform more extensive axillary surgery for women with a positive SNB. Prognosis is also related to the number of involved nodes. Fisher reported a 5-year disease-free survival of 60% for patients with 1-3 positive nodes, and 31% for those with  $\geq 4$  positive nodes. Accurate determination of the extent of nodal involvement is also required to estimate the risk of local-regional recurrence and enable decisions about adjuvant radiation therapy. There is consensus that women with  $\geq 4$  positive axillary nodes should receive post-mastectomy radiation to improve local-regional control. A level III axillary dissection provides optimal staging information, both qualitative (positive or negative) and quantitative (number of involved nodes), for assessing prognosis and predicating further therapeutic interventions. Anatomically, of the three axillary levels, the greatest volume of tissue and number of lymph nodes lie in level I. Level II is an area bound by the chest wall posteriorly, the pectoralis minor anteriorly and on either side, is defined by the medial and lateral borders of this muscle. The muscle is applied closely to the chest wall and is narrow as it tapers towards its point of insertion at the coracoid process. After a dissection has been carried out up to level II using the technique described, further surgery to incorporate level III nodes involves only approximately another 10 min of operating time; and, no new planes are traversed to complete the axillary clearance.

There is no evidence to suggest from an anatomical point of view that an axillary clearance carried out in this manner leads higher morbidity. It would be reasonable to expect that disruption of the natural anatomical pla-

nes of the axilla during surgery may result in a higher incidence of lymphoedema. Dissection respecting the boundaries described need not necessarily lead to more morbidity. Although there is good evidence that low-level sampling is associated with less morbidity, this may not be adequate local surgery for node-positive disease.

The ability to identify the 'positive' axilla with sentinel node techniques, magnetic resonance imaging or positron emission tomography scanning, continues to improve. Therefore, the importance of an oncological operation that maximizes local control and prognostic information is paramount.

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