

Review Article

Axillary Lymph Node Metastases in Breast Cancer

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Abstract: Axillary lymph node status is the most accurate predictor of clinical outcome in breast cancer. Decisions on adjuvant chemotherapy and post-mastectomy radiotherapy depends on not only axillary nodal status, but the number of nodes involved with tumour. Studies utilizing lymphoscintigraphy has shown that all quadrants of the breast drain into the axillary lymph nodes in over 90% of cases; however drainage from the inner quadrants drain into the internal mammary lymph nodes in about 30% of cases. Whether or not internal mammary nodes require biopsy remains debatable, as isolated internal mammary involvement is seen only in around 5-10% of cases. Whether axillary dissection is a staging or therapeutic procedure is controversial. Although randomized controlled clinical trials have found no survival benefit between axillary dissection and no axillary surgery, there is an increased axillary recurrence rate when axillary dissection is not carried out. Nevertheless, some studies have shown an improved breast cancer specific survival when a complete axillary dissection is done, especially if more than 6 nodes are removed. Axillary dissection can lead to significant morbidity such as lymphoedema and limited shoulder mobility, which can be reduced with sentinel lymph node biopsy. Sentinel lymph node biopsy has been shown to be reliable in determination of nodal status, with acceptable false negative rates; however there is a slightly increased axillary recurrence rate shown in some studies. Current clinical guidelines allow sentinel lymph node biopsy as standard of care, but only in the presence of an experienced sentinel lymph node team.

KeyWords: Breast Cancer; Axillary Lymph Nodes; Sentinel Lymph Node Biopsy; Axillary dissection

In the absence of distant metastases, axillary lymph node status in breast cancer remains the most accurate predictor of clinical outcome. (1) The number of lymph nodes involved is also important in prognosis. (2) Decisions about what type of adjuvant chemotherapy to use, and whether radiotherapy is indicated is dependent on the axillary lymph node status. The value of the axillary dissection is to provide accurate prognostic information, provide excellent local control, and improve the survival rate in the node-positive group. (3) However the extent of axillary dissection is controversial; whether a complete clearance is required or just a sampling has been the focus of several studies. The surgical approach to the axilla in the management of breast carcinoma has been changing significantly in recent years; the concept of conservation, which has been applied to the breast with the successful development of quadrantectomy, now also involves the axillary lymph nodes. (4) Current evidence suggests that sentinel lymph node biopsy, which removes only a few initial nodes draining the axillary basin is sufficient if lymph nodes are not involved.

Drainage of lymph from the breast

Lymph drainage from the breast is important in relation to malignant disease and is via the axillary and internal mammary nodes. To a lesser extent lymph also drains by intercostal routes to nodes adjacent to the vertebra. An early study comparing lymphatic drainage to the axilla and internal mammary nodes from intramammary injections of radioactive colloidal gold injected preoperatively showed very little drainage to the internal mammary nodes, with 97% of the radioactivity found in the axillary nodes in postoperative radical mastectomy specimens, irrespective of the site of injection into the breast tissue and only 3% of the injectate was found in internal mammary nodes. (5) However a more recent study on preoperative lymphoscintigraphy performed after injection of ^{99m}Tc -nanocolloid into the tumor showed that from all quadrants, 95.3% drained into the axilla, while 14.4% from the outer quadrants, and 37.4% from the inner quadrants drained into the internal mammary lymph nodes. This study also reported that there appeared to be a difference between palpable and non-palpable tumours, where the non-palpable tumours were more likely to drain into the internal mammary lymph nodes (32.2% vs 19.0%) regardless of the quadrant. A postulation for this is that for deep tumours, which are non-palpable, the drainage is into the retromammarian lymphatics which drain into the internal mammary lymph nodes. (6) Drainage to the internal mammary node without drainage to the axillary node is very rare, and was seen only in 1% in a lymphoscintigraphy study. (7)

Anatomical considerations

The authors have no commercial, proprietary, or financial interest in the products or companies described in this article.

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Submitted February 18, 2009. Accepted for publication February 25, 2009.
Available at www.lymphologyandoncology.com

ISSN: 1538-5124/\$ - see front matter © 2009 U.S. Chinese Journal of Lymphology and Oncology. All rights reserved.

The axilla is a truncated pyramid with a base that is formed by the skin of the axilla, and an apex formed by the costoclavicular ligament between the first rib and the clavicle. The medial border is the lateral chest wall covered by serratus anterior muscle, the lateral border the latissimus dorsi muscle, the posterior border the subscapularis muscle and the anterior border is the pectoralis major and pectoralis minor muscles. The superior border is the axillary vein and inferiorly the axilla stops at the 4th intercostal space. Surgically the axillary nodes, can be divided into three groups in relation to the pectoralis minor muscle: level I nodes lie lateral to the muscle; level II nodes lie behind the muscle; and level III (apical) nodes lie between the muscle's medial border, the first rib, and the axillary vein. The number of axillary nodes are variable, with on an average, 20 nodes in the axilla; 13 nodes at level I, five at level II, and two at level III. The drainage of lymph nodes is in an orderly fashion from Level I to Level II and finally to Level III. However 5% of patients may have involvement of Level II and III without involvement of Level I ("skip" lesions) because there is an alternative route, by which lymph can get to level III nodes without passing through nodes at level I, through lymph nodes on the undersurface of the pectoralis major muscle, the interpectoral nodes. It is extremely rare to have involvement of the internal mammary lymph nodes in isolation - this occurs in only about 5% of patients and most of these have tumours involving the medial half of the breast.(8)

Technical aspects of axillary dissection

Terminology for the extent of axillary dissection remain unclear, with terms such as axillary sampling, axillary dissection or axillary clearance in common use. Strictly the terms used should be limited to the extent of axillary dissection ie Level I dissection, Level I - II dissection and Level I-III dissection (which is a full clearance). The term low axillary dissection is used for a dissection that ends at the level of the intercostobrachial nerve and such a dissection is appropriate for ductal carcinoma in situ. The term axillary sampling is imprecise and should not be encouraged.

The most appropriate level of axillary dissection for breast cancer remains unclear. If there is an involved lymph node in Level I, there is a 12.5% chance of nodes at Level II or III being involved; hence ideally if there is any node involvement, a full clearance (Level I-III dissection) should be carried out. Thus, patients with involved nodes after an axillary sampling / level I or Level II dissection would require axillary radiotherapy; however combination of radiotherapy and a Level I-II dissection are associated with high rates of lymphoedema of more than 30%. (8)

Some would argue that residual axillary disease can be treated by adjuvant systemic therapy; however recurrent disease in the axilla can be distressing and difficult to treat. A prospective trial looking at Level I vs Level I- III dissection for T1-3/N0-1b breast cancer found no significant differences in the 10-year overall and disease-free survival rates between the two groups; Level I-III dis-

section resulted in a longer operation time and greater blood loss than Level I, but did not improve the survival rate. (9)

Axillary dissection routinely involves dividing the intercosto brachial nerve (ICBN), which supplies sensation to the axilla and the inner arm. Preserving the ICBN was feasible in 65% of patients randomized to the preservation group, and was shown to reduce the incidence of sensory deficit (but not symptoms) in patients after axillary dissection. (10)

Is axillary dissection necessary in all cases?

In 149 patients assessed clinically, positive nodes were not detected in 31 (45%) of 69 patients with pathologic Stage II disease. (11) In another study, the sensitivity of preoperative clinical palpation was only 45.8% while the sensitivity for intraoperative palpation was 81.9%. (12) Since clinical assessment of the axilla is not reliable, a form of axillary dissection is required for accurate staging of the axilla and hence the appropriate decision for adjuvant therapy.

The extent of axillary dissection remains controversial. Is axillary dissection a therapeutic or a staging procedure? If it is a therapeutic procedure, that is, it improves the overall survival, then a full dissection should be carried out. However if it is a staging procedure, only a few nodes need to be removed to determine the nodal status.

The NSABP B-04 trial concluded that axillary dissection has no effect on survival.(13) However, there is substantial evidence that axillary dissection provides excellent local control of disease in the axilla, with a local recurrence rate of 2% or less.(14) A meta-analysis had shown a 4-16% improvement in survival in patients with axillary dissection.(15) A prospective non-randomized study on 401 patients with early-stage breast cancer (< 2 cm) evaluated the impact of surgery without axillary dissection on axillary and distant relapses. The 5-year follow-up revealed a low rate of nodal and distant relapses for T1a and T1b patients. Avoidance of axillary dissection has a negligible effect on the outcome of T1 patients, conversely in the T2 group the high rate of relapses represents a limit for avoiding axillary dissection (16) A trial randomizing 435 women with T1a and T1b tumours who did not have axillary dissection done, into two arms with simple follow-up or radiotherapy to the axilla showed a very low rate of axillary relapse after a mean follow-up of 42 months.(17)

In node negative patients, a poorer breast cancer specific survival was noted if fewer than 6 lymph nodes were examined. This could be due to understaging, and hence undertreatment.(18) Another study also showed a statistically significant improvement in disease-free survival if more than 10 lymph nodes were removed compared to if 10 or less nodes were removed; these results may reflect a potential for misclassification of tumor stage among patients who had fewer nodes removed. The data, however, suggest that in patients with Stage I breast cancer, improved survival is associated with a more complete axillary lymph node dissection. (19)

It has been suggested that at least 10 axillary nodes need to be examined to be able to determine with nodal status accurately. (20)

A study looking at the value of the triple node biopsy (low axillary, apical axillary and internal mammary nodes) in 693 patients with early breast cancer was reviewed, and showed that the low axillary node contributed the most useful prognostic information. The involved apical node carried the worst prognosis. Either the internal mammary node or a low axillary node when positive alone carried the same prognostic weight. When both nodes were positive the prognosis declined to the level associated with apical node positivity, and suggested that the triple node biopsy technique can be used to divide patients into groups with vastly different prognoses. (21)

voiding axillary surgery in older women (60 years and above) with clinically negative axillary lymph nodes, resulted in improved quality of life (QL) with similar disease-free survival (DFS) and overall survival (OS). (22)

Predictors of lymph node metastases

Lymphatic invasion, tumor size, and age were independently associated with lymph node metastases. (23) Multivariate analyses revealed four independent predictors of node positivity: tumour size, presence of lymphovascular, tumours with histology other than invasive ductal or lobular carcinoma, and presence of progesterone receptors. (24) A recent study found that tumor diameter >2 cm, presence of lymphovascular invasion, and higher tumor grade (2 & 3) were factors significantly associated with a higher risk of nodal metastases; however on multivariate analysis, only lymphovascular invasion and tumor size were independent predictors. (25)

Pre-operative diagnosis of axillary status

With the advent of sentinel lymph node biopsy, it has become increasingly important to determine if axillary lymph nodes contain metastases preoperatively, because if it can be proven preoperatively that axillary lymph nodes are involved, then a sentinel lymph node biopsy, which is an expensive procedure, need not be carried out, and the patient should have an axillary clearance. A study on ultrasound of the axilla preoperatively found that axillary lymph nodes with abnormal US findings can be sampled with high accuracy and without major complications by using a modified 14-gauge CNB technique. (26)

A study comparing SNB and positron-emission tomography (PET) imaging in detecting occult metastases in the axillary lymph nodes showed that the high specificity of FDG-PET imaging indicates that patients who have a PET-positive axilla should have an axillary lymph node dissection (ALND) rather than an SNB for axillary staging. In contrast, FDG-PET showed poor sensitivity in the detection of axillary metastases, confirming the need for SNB in cases where FDG-PET is negative in the axilla. (27)

Complications of axillary dissection

Lymphedema is a relatively common, potentially serious and unpleasant complication after ALND for breast cancer. It may be associated with functional, aesthetic, and psychological problems, thereby affecting the quality-of-life of breast cancer survivors. The risk of lymphedema is associated with the extent of ALND and the addition of axillary radiation therapy. (28)

Besides lymphoedema, numbness is also common, being present in 60% of patients overall, with pain in 45%, weakness in 40% and stiffness in 12.2%, in a self-administered questionnaire to 170 patients. (29)

Sentinel lymph node biopsy

The concept of sentinel lymph node biopsy involves the identification, removal, and pathologic examination of the lymph node that first receives lymph from the area of the breast containing the tumor. The assumption is that if the sentinel lymph node is negative, all other axillary lymph nodes will be negative. (30) Sentinel lymph node biopsy allows serial sectioning of the sentinel node and micrometastases can be identified by immunohistochemistry or reverse-transcriptase polymerase chain reaction (RT-PCR). (31) However the significance of micrometastases remain controversial. There does not appear to be strong evidence that the presence of SLN micrometastases leads to axillary recurrence or distant disease. (32)

The dual method of sentinel lymph node identification ie using the blue dye together with lymphoscintigraphy has an identification rate of over 95% in most studies with a false negative rate of 5-10%; (33) however false negative rates of over 10% have been reported. (34) It is possible that both the radioisotope and the blue dye may bypass a node that is wholly replaced by tumour, hence leading to a falsely negative sentinel node. (35)

Intradermal injection of radioisotope or blue dye correctly predicted the sentinel lymph node in 95.5%, similar to intraparenchymal route for lymphatic mapping. Nathanson demonstrated that both intradermal and intraparenchymal injection drained to the same sentinel axillary lymph node. (36) However the intradermal route has not been shown to demonstrate sentinel nodes in the internal mammary chain, unlike that of the intraparenchymal route. The clinical relevance of extra-axillary sentinel nodes and, in particular, the internal mammary chain sentinel nodes has been debated. The incidence of isolated internal mammary lymph node metastases in the axillary node-negative patient is around 5-10%. (37) Some investigators have taken it upon them to pursue these nodes and to take their tumor status into account when making a treatment plan. (6)

Sentinel lymph node (SLN) biopsy is associated with reduced arm morbidity and better quality of life than standard axillary treatment and should be the treatment of choice for patients who have early-stage breast cancer with clinically negative nodes. (38) At a median follow-up of 56 months, there were more locoregional recurrences in the SLN arm, and the 5-year disease-free survival was

89.9% in the ALND arm and 87.6% in the SLN arm, with a difference of 2.3%.⁽³⁴⁾

Sentinel lymph node biopsy is the preferred method of axillary lymph node staging if there is an experienced sentinel node team and the patient is an appropriate sentinel lymph node biopsy candidate, ie in clinically node negative patients.

Conclusions

Axillary nodal status is the most important prognostic factor in breast cancer, and decisions about the various adjuvant therapy options depends on accurate axillary staging, hence some form of axillary dissection is necessary. The extent of axillary dissection remains controversial, with ongoing debate about whether the axillary dissection is a staging or a therapeutic procedure. For early breast cancer, with a clinically negative axilla, sentinel lymph node biopsy has become the standard of care in centres with an experienced sentinel lymph node team, and is associated with a lower incidence of arm morbidity associated with a full dissection.

References

- Whitworth P, McMasters KM, Tafra L, Edwards MJ. State-of-the-art lymph node staging for breast cancer in the year 2000. *Am J Surg* 2000; 180:262-7.
- Carter CL, Allen C, Henson DE. Relation of tumor size, lymph node status, and survival in 24,740 breast cancer cases. *Cancer* 1989; 63:181-7.
- Moore MP, Kinne DW. Is axillary lymph node dissection necessary in the routine management of breast cancer? Yes. *Important Adv Oncol* 1996;245-50.
- Luini A, Gatti G, Ballardini B, Zurrada S, Galimberti V, Veronesi P, et al. Development of axillary surgery in breast cancer. *Ann Oncol* 2005;16:259-62.
- Hultborn KA, Larsson LG, Ragnhult I. The lymph drainage from the breast to the axillary and parasternal lymph nodes, studied with the aid of colloidal Au198. *Acta radiol* 1955; 43:52-64.
- Estourgie SH, Nieweg OE, Olmos RA, Rutgers EJ, Kroon BB. Lymphatic drainage patterns from the breast. *Ann Surg* 2004; 239:232-7.
- Byrd DR, Dunnwald LK, Mankoff DA, et al. Internal mammary lymph node drainage patterns in patients with breast cancer documented by breast lymphoscintigraphy. *Ann Surg Oncol* 2001; 8:234-40.
- Bundred NJ, Morgan DA, Dixon JM. ABC of breast diseases. Management of regional nodes in breast cancer. *BMJ* 1994; 309:1222-5.
- Kodama H, Nio Y, Iguchi C, Kan N. Ten-year follow-up results of a randomised controlled study comparing level-I vs level-III axillary lymph node dissection for primary breast cancer. *Br J Cancer* 2006; 95:811-6.
- Abdullah TI, Iddon J, Barr L, Baildam AD, Bundred NJ. Prospective randomized controlled trial of preservation of the intercostobrachial nerve during axillary node clearance for breast cancer. *Br J Surg* 1998; 85:1443-5.
- Davies GC, Millis RR, Hayward JL. Assessment of axillary lymph node status. *Ann Surg* 1980; 192:148-51.
- Haron NH, Taib NA, Yip CH. Is clinical assessment of the axilla a reliable indicator for lymph node metastases in breast cancer? *ANZ J Surg* 2008; 78:943-4.
- Fisher B, Redmond C, Fisher ER, Bauer M, Wolmark N, Wickerham DL, et al. Ten-year results of a randomized clinical trial comparing radical mastectomy and total mastectomy with or without radiation. *N Engl J Med* 1985;312:674-81.
- Cabanes PA, Salmon RJ, Vilcoq JR, Durand JC, Fourquet A, Gautier C, Asselain B. Value of axillary dissection in addition to lumpectomy and radiotherapy in early breast cancer. The Breast Carcinoma Collaborative Group of the Institut Curie. *Lancet* 1992;339:1245-8.
- Orr RK. The impact of prophylactic axillary node dissection on breast cancer survival--a Bayesian meta-analysis. *Ann Surg Oncol* 1999; 6:109-16.
- Greco M, Agresti R, Cascinelli N, Casalini P, Giovanazzi R, Maucione A, et al. Breast cancer patients treated without axillary surgery: clinical implications and biologic analysis. *Ann Surg* 2000;232:1-7.
- Zurrada S, Orecchia R, Galimberti V, Luini A, Giannetti I, Ballardini B, et al. Axillary radiotherapy instead of axillary dissection: a randomized trial. Italian Oncological Senology Group. *Ann Surg Oncol* 2002; 9:156-60.
- Blancas I, Garcí a-Puche JL, Bermejo B, Hanrahan EO, Monteagudo C, Martí nez-Agulló A, et al. Low number of examined lymph nodes in node-negative breast cancer patients is an adverse prognostic factor. *Ann Oncol* 2006; 17: 1644-9.
- Sosa JA, Diener-West M, Gusev Y, Choti MA, Lange JR, Dooley WC, Zeiger MA. Association between extent of axillary lymph node dissection and survival in patients with stage I breast cancer. *Ann Surg Oncol* 1998; 5:140-9.
- Cady B, Sears HF. Usefulness and technique of axillary dissection in primary breast cancer. *J Clin Oncol* 1986; 4:623-4.
- Du Toit RS, Locker AP, Ellis IO, Elston CW, Blamey RW. Evaluation of the prognostic value of triple node biopsy in early breast cancer. *Br J Surg* 1990; 77: 163-7.
- International Breast Cancer Study Group, Rudenstam CM, Zahrieh D, Forbes JF, Crivellari D, Holmberg SB, et al. Randomized trial comparing axillary clearance versus no axillary clearance in older patients with breast cancer: first results of International Breast Cancer Study Group Trial 10-93. *J Clin Oncol* 2006; 24: 337-44.
- Gajdos C, Tartter PI, Bleiweiss IJ. Lymphatic invasion, tumor size, and age are independent predictors of axillary lymph node metastases in women with T1 breast cancers. *Ann Surg* 1999; 230:692-6.
- Tan LG, Tan YY, Heng D, Chan MY. Predictors of axillary lymph node metastases in women with early breast cancer in Singapore. *Singapore Med J* 2005; 46: 693-7.
- Yip CH, Taib NA, Tan GH, Ng KL, Yoong BK, Choo WY. Predictors of axillary lymph node metastases in breast cancer: is there a role for minimal axillary surgery? *World J Surg* 2009; 33:54-7.
- Abe H, Schmidt RA, Kulkarni K, Sennett CA, Mueller JS, Newstead GM. Axillary lymph nodes suspicious for breast cancer metastasis: sampling with US-guided 14-gauge core-needle biopsy--clinical experience in 100 patients. *Radiology* 2009; 250:41-9.
- Veronesi U, De Cicco C, Galimberti VE, Fernandez JR, Rotmensz N, Viale G, et al. A comparative study on the value of FDG-PET and sentinel node biopsy to identify occult axillary metastases. *Ann Oncol*. 2007; 18:473-8.
- Sakorafas GH, Peros G, Cataliotti L, Vlastos G. Lymphedema following axillary lymph node dissection for breast cancer. *Surg Oncol* 2006; 15:153-65.
- Taylor KO. Morbidity associated with axillary surgery for breast cancer. *ANZ J Surg* 2004; 74:314-7.
- Veronesi U, Paganelli G, Galimberti V, Viale G, Zurrada S, Bedoni M, et al. Sentinel-node biopsy to avoid axillary dissection in breast cancer with clinically negative lymph-nodes. *Lancet* 1997; 349:1864-7.
- Sakorafas GH, Geraghty J, Pavlakis G. The clinical significance of axillary lymph node micrometastases in breast cancer. *Eur J Surg Oncol* 2004; 30:807-16.
- Langer I, Marti WR, Guller U, Moch H, Harder F, Oertli D, Zuber M. Axillary recurrence rate in breast cancer patients with negative sentinel lymph node (SLN) or SLN micrometastases: prospective analysis of 150 patients after SLN biopsy. *Ann Surg*. 2005; 241:152-8.
- Leong SP. Paradigm shift of staging and treatment for early breast cancer in the sentinel lymph node era. *Breast J* 2006; 12:S128-33.
- Zavagno G, De Salvo GL, Scalco G, Bozza F, Barutta L, Del Bianco P, et al. A Randomized clinical trial on sentinel lymph node biopsy versus axillary lymph node dissection in breast cancer: results of the Sentinella/GIVOM trial. *Ann Surg* 2008; 247:207-13.
- Boolbol SK, Fey JV, Borgen PI, Heerdt AS, Montgomery LL, Paglia M, et al. In

tradermal isotope injection: a highly accurate method of lymphatic mapping in breast carcinoma. *Ann Surg Oncol* 2001; 8:20-4.

36. Nathanson SD, Wachna DL, Gilman D, Karvelis K, Havstad S, Ferrara J. Pathways of lymphatic drainage from the breast. *Ann Surg Oncol* 2001; 8:837-43.

37. Morrow M, Foster RS, Jr. Staging of breast cancer: a new rationale for internal

mammary node biopsy. *Arch Surg* 1981; 116:748-51.

38. Mansel RE, Fallowfield L, Kissin M, Goyal A, Newcombe RG, Dixon JM, et al. Randomized multicenter trial of sentinel node biopsy versus standard axillary treatment in operable breast cancer: the ALMANAC Trial. *J Natl Cancer Inst* 2006; 98:599-609.



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