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Editorial

Editorial comment on "Reduction in the number of sentinel lymph node procedures by preoperative ultrasonography of the axilla in breast cancer" by Deurloo and colleagues

In this issue of the *EJC* Deurloo and colleagues [1] describe a method of reducing the number of sentinel node procedures by preoperative ultrasound of the axilla. The study had 2 parts. Firstly, ultrasound morphological criteria were analysed and correlated with the presence of metastases. The second part of the study consisted of ultrasound-guided fine needle aspiration (FNA) of nodes with abnormal morphology. Patients with malignant FNA results underwent axillary node dissection while all other patients underwent dye- and isotope-guided sentinel node biopsy with immediate axillary dissection of those with frozen section positive sentinel nodes. Such practice would obviously be beneficial in centres where lymph node sampling or sentinel node sampling is the standard axillary staging procedure.

Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET) and Scintimammography have all been used to attempt to radiologically stage the axilla [2–5]. None of these modalities have proven to be sufficiently sensitive or specific to guide axillary surgical choices in individual patients. Future imaging developments may include the use of ultra-small iron-oxide particles as an enhancement agent in axillary MRI. Previous studies of the use of axillary ultrasound to predict axillary node status have been disappointing. This is because the criteria used to predict the presence of metastases were inappropriate. Criteria used in other areas of radiology to define abnormal nodes, such as maximum short and long axis diameter and the presence or absence of a fatty hilum, are not very helpful when scanning the axillae of women with breast cancer. This current study has identified a simple quantitative method of defining an abnormal axillary node on ultrasound, which gives high sensitivity with a reasonable specificity. A recent *in vitro* high-resolution CT study and also a large *in vivo* MRI study came to similar conclusions regarding the morphology of metastatic axillary nodes [6,7]. Maximum cortical thickness (> 2.3 mm) is a quick, reproducible parameter, which can be used to select axillary nodes for ultrasound-guided biopsy. Another valuable feature of this study was the practical instruction regarding the normal position of the sentinel node in the axilla. It is our experience that abnormal lymph nodes occur lower in the axilla than expected and that inexperienced operators often do not scan inferiorly enough to identify all of the abnormal nodes.

Information regarding nodal status is useful in a number of other ways apart from helping select the appropriate axillary operative procedure. The identification of node-positive patients prior to surgery identifies women with presumed systemic spread of disease who may benefit from neo-adjuvant chemotherapy. Nodal positivity along with other factors, which can be assessed from core biopsy of the primary lesion, may indicate the need for mastectomy flap irradiation. In turn, this will influence the appropriateness of immediate reconstruction.

The technique described in this study is more appropriate than previous studies where multiple visible nodes underwent FNA [8,9]. This current study population consisted of predominantly symptomatic women with relatively large tumours. It would be helpful to know the distribution of patients with a preoperative diagnosis of nodal positivity by the ultrasound size of the primary tumour. Multiple large clinical studies have shown independent predictors of lymph node metastases are tumour size, tumour palpability, nuclear grade and lymphatic/vascular invasion. It may be that the ratio of false-positive to true-positive axillary ultrasound findings, as well as the proportion with nodal positivity, will change if pre-operative assessment of some of these factors such as lesion size and core grade are taken into consideration. There may be little value scanning and biopsying the axillae of women with very small, low-grade tumours. At the opposite extreme, all women with large, grade 3 tumours may be best served by axillary dissection.

It is our personal experience that ultrasound-guided core biopsy of axillary lymph nodes gives similar results to this current study. Certainly axillary node core biopsy is safe and practical. The majority of patients with axillary nodal positivity diagnosed by core in our

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practice occur in women with tumours >15 mm in size, but a significant number of small tumours have also had nodal metastases diagnosed preoperatively. We have found that axillary node core biopsy is sensitive for the detection of metastatic deposits within axillae when more than 3 nodes are involved. Women with extensive axillary disease are those who benefit most from an axillary dissection rather than lymph node sampling followed by radiotherapy. Ultrasound-guided axillary biopsy therefore seems to identify those node-positive women who will benefit most from a preoperative diagnosis of node positivity.

Image-guided axillary node biopsy may prove to be complimentary to sentinel node biopsy since it is likely to pick up nodes totally replaced by tumour, a cause of false-negative sentinel node biopsy. In the future, image-guided node biopsy is likely to become more sensitive if the sentinel node can be preferentially imaged and biopsied by dual scanning with a gamma probe and high frequency ultrasound [10]. The ultimate aim should be to preoperatively assess the sentinel node percutaneously prior to surgery, possibly with a vacuum assisted device, to allow axillary surgery to be purely therapeutic in nature. Meanwhile, unanswered questions regarding axillary node biopsy include whether FNA or core is better? How many passes are ideal? Lastly, and most importantly, which subgroups of patients will benefit most from such interventions?

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