

The role of ultrasound (US) and US-guided core needle biopsy of axillary lymph nodes in preoperative staging of breast cancer

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Purpose

Introduction

- **Sentinel lymph node biopsy (SLNB)** has replaced axillary dissection for lymph node staging in patients with breast cancer. However, according some series, from 15% to 40% of SLNB have axillary metastases.
- **Determination of nodal invasion** is important because if nodal affectation is proved preoperatively (FNA or core needle biopsy), Sentinel Lymph Node Biopsy can be avoided and the surgeon will perform an axillary programmed lymphadenectomy.
- Fine Needle Aspiration (FNA) or Core Needle Biopsy (CNB) can be used to provide histopathologic analysis to the axillary lymph nodes before SLNB. Fine Needle Aspiration is more operator dependent than CNB and it needs cooperation of experienced cytologists. **Ultrasound Core Needle Biopsy** is a standard procedure in breast diagnosis but is not widely used for axillary lymph node staging. In our institution we have better results using axillary core needle biopsy than using fine needle aspiration.
- **Axillary US CNB** is an easy procedure because most sentinel lymph nodes are located at level one in the inferior axilla and it has a higher reproducibility.

Purpose

To evaluate the role of Ultrasound and Ultrasound Guided Core Needle Biopsy of axillary lymph nodes in preoperative staging of breast cancer.

Methods and Materials

A [retrospective analysis of all axillary preoperative ultrasound](#) on page _____ performed in patients who had indication of Sentinel Lymph Node Biopsy between **August 2008 and December 2009**. A total of [190 patients](#) on page _____

Ultrasound Findings on page _____

- [Normal](#) on page _____: if axillary nodes had a thin cortex and a relatively large fatty hilum
- [Asimetric Cortical Thickening](#): > 2,5 mm and < 5 mm
- [Suspicious Axillary Lymph Nodes](#) on page _____: Cortical thickening > 5mm or without fatty hilum

[Core Needle Biopsy](#) on page _____

We performed 56 Core Needles Biopsies in patients with Asimetric Cortical Thickening (35 biopsies) and with Suspicious Axillary Lymph Nodes (21 biopsies)

[Biopsy Device](#) on page _____: automated biopsy gun 14-gauge ([needle notch](#) on page _____ length 25 mm and 1-3 passes performed per biopsy)

[Technique of axillary ultrasound guided procedure](#) on page _____: The patient is placed in supine position with her arm raised and with the axilla flattened using a pillow. The approaching point is selected by using the shortest skin-lesion path, usually from inferolateral to superomedial approach at the tail of the axilla. Sterile technique. Local anaesthesia and small skin incision. The biopsy needle advance to the target is aligned with the tip of the needle we can perform the fire. After the procedure we perform local compression.

Results

[Axillary preoperative ultrasound](#) on page _____ were performed in 190 patients who had indication of Sentinel Lymph Node Biopsy

- A total of **118 patients had the axillary ultrasound normal**. After SLNB 99 were diagnosed accurately (true negative), and the other 19 had metastases (false negative); 12/19 micrometastases (<3mm) and 7/19 macrometastases
- Of the **43 asymmetric cortical thickening**, 29 had metastases proven by axillary lymphadenectomy or ultrasound CNB (true positive). 14/43 had no metastases at surgery (SLNB) (false positive)
- All of the **29 suspicious axillary lymph nodes** were proved by ultrasound CNB or axilar lymphadenectomy (true positive)

[Correlation Axillary Ultrasound - Surgery \(SLNB or AL\)](#) on page

- Sensibility 75%
- Specificity 88%
- PPV 81%
- NPV 84%

[Correlation Axillary Core Needle Biopsy- Surgery \(SLNB or AL\):](#) on page

- **56 Core Needle Biopsy:** 41/56 were positive and 15/56 were negative. Of the 15 negative Core Needle Biopsies, 11 had no metastases (true negative) and 4 had metastases (false negative)
- Sensibility 93,2%
- Specificity 100%
- PPV 100 %
- NPV 73,3%

Conclusion

- **Axillary Ultrasound** has a high Sensibility and Positive Predictive Value in the axillary preoperative study, specially if findings are normal or if there are suspicious lymph nodes
- **Ultrasound Core Needle Biopsy** is an easy procedure and less operator dependent than FNA. It can be performed the same day and before the Diagnostic Breast Core Needle Biopsy
- **Asymetric Cortical Thickening** is related in a high percentage of cases with axillary metastases

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