

## Original Article

# Selective biopsy of the sentinel lymph node in patients with breast cancer and previous excisional biopsy: Is there a change in the reliability of the technique according to time from surgery? ☆



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## ABSTRACT

**Aim:** To assess the influence of time on the reliability of sentinel lymph node biopsy (SLNB) in breast cancer patients with previous excisional biopsy (EB), analyzing both the sentinel lymph node detection and the lymph node recurrence rate.

**Materials and methods:** Thirty-six patients with cT1/T2 N0 breast cancer and previous EB of the lesion underwent a lymphoscintigraphy after subdermal periareolar administration of radiocolloid, the day before SLNB. Patients were classified into two groups, one including 12 patients with up to 29 days elapsed between EB and SLNB (group A), and another with the remaining 24 in which time between both procedures was of 30 days or more (group B). Scintigraphic and surgical detection of the sentinel lymph node, histological status of the sentinel lymph node and of the axillary lymph node dissection, if performed, and lymphatic recurrences during follow-up, were analyzed.

**Results:** Sentinel lymph node visualization at the lymphoscintigraphy and surgical detection was 100% in both groups. Histologically, three patients showed macrometastasis in the sentinel lymph node, one from group A and two from group B. None of the patients, not even those with malignancy of the sentinel lymph node, relapsed after a medium follow-up of 49.5 months (24–75).

**Conclusion:** Time elapsed between EB and SLNB does not influence the reliability of this latter technique as long as a superficial injection of the radiopharmaceutical is performed, proving a very high detection rate of the sentinel lymph node without evidence of lymphatic relapse during follow-up.

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## Biopsia selectiva del ganglio centinela en pacientes con cáncer de mama y biopsia escisional previa: ¿cambia la fiabilidad de la técnica según el tiempo transcurrido desde la cirugía?

### RESUMEN

**Objetivo:** Analizar la influencia del tiempo sobre la fiabilidad de la biopsia selectiva del ganglio centinela (BSGC) en pacientes con cáncer de mama y biopsia escisional (BE) previa, estudiando la tasa de detección del ganglio centinela y de recidivas ganglionares.

**Material y métodos:** Se incluyeron 36 pacientes con cáncer de mama cT1/T2 N0 y BE de la lesión, a los que se realizó la linfogammagrafía tras la administración periareolar subdérmica de radiocoloide, el día previo a la cirugía para BSGC. Los pacientes se clasificaron en dos grupos: uno incluyó 12 pacientes en los que la BSGC tuvo lugar durante los 29 días posteriores a la BE (grupo A) y otro 24 en que el tiempo transcurrido entre ambas cirugías fue igual o superior a 30 días (grupo B). Se analizaron la detección gammagráfica y quirúrgica del ganglio centinela, la histología del ganglio centinela y de la linfadenectomía axilar realizada, y las recidivas ganglionares durante el seguimiento.

**Resultados:** La detección gammagráfica y quirúrgica del ganglio centinela fue del 100% en ambos grupos. Histológicamente, tres pacientes presentaron macrometástasis en el ganglio centinela, una del grupo A y dos del B. Ningún paciente, ni siquiera aquellos con afectación metastásica del ganglio centinela, recidivó después de un seguimiento medio de 49,5 meses (24–75).

### Palabras clave:

Cáncer de mama

Biopsia escisional

Biopsia selectiva del ganglio centinela

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**Conclusión:** En la serie estudiada, el tiempo transcurrido entre la BE y la BSGC no ha influenciado la fiabilidad de esta última después de una inyección superficial del radiofármaco, demostrando una alta tasa de detección del ganglio centinela, sin evidencia de recidivas ganglionares durante el seguimiento.

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## Introduction

Selective sentinel lymph node biopsy (SSNB) in breast cancer is a widely accepted technique for predicting the state of the axillary lymph nodes. Compared to axillary lymph node dissection (ALND) SSNB presents less morbidity. Indeed, in the last years SSNB has been used as a tool for the staging of patients with early stage breast cancer, thereby reducing the number of unnecessary ALND. Different factors have been related to a reduction in the sensitivity of the identification of the sentinel node (SN) and an increase in the false negative (FN) rate. One of these factors is the previous history of excisional biopsy (EB) of the breast lesion, which is believed to alter the pathways of lymphatic drainage.<sup>1</sup> However, different studies<sup>2–4</sup> have demonstrated that after EB neither factor is significantly different from those of patients undergoing thick needle biopsy or fine needle aspiration puncture, and thus, previous EB is not currently a contraindication to SSNB in breast cancer.<sup>5,6</sup> Several groups have analyzed the effect of time between EB and SSNB in relation to the detection of the SN.<sup>7,8</sup> Nonetheless, the ideal time interval and how this interval may influence the rate of lymph node recurrence remains to be established.

The aim of the present study was to analyze how the time between EB and SSNB influences the reliability of the latter in patients with breast cancer and previous EB, taking into account not only the detection of the SN but also lymph node recurrence during follow-up.

## Materials and methods

We retrospectively analyzed 36 patients with breast cancer referred for SSNB from July 2007 to October 2011. All the cases were clinical stage T1 or T2 N0 and had undergone previous EB of the primary tumor (Table 1 shows the characteristics of the patients). Patients with a previous history of radiotherapy and/or chemotherapy were excluded from the study.

The patients were classified into two groups based on the time between EB and radioguided surgery for SSNB performed on completion of the excision of the primary tumor. Group A included 12 patients with a mean age of 51 years who underwent SSNB in the first 29 days after EB. Group B included 24 patients with a mean age of 55 years who underwent SSNB 30 days or more after EB. In most Group B patients (20/24, 83%), the range in time between EB and radioguided surgery was between 30 and 60 days (mean 52 days). The time between the two techniques was greater than 60 days in only 4 cases (17%), with a maximum of 105 days in one of these patients.

The day prior to radioguided surgery lymphoscintigraphy (LS) was performed in all the patients 2 h after 4 subdermal periareolar injections of 111 MBq (3 mCi) <sup>99m</sup>Tc-albumin nanocolloid (Nanocoll®) at a volume of 0.4 ml. Planar images of the chest were obtained in anterior, oblique or lateral of the affected side. A <sup>57</sup>Co flood source was used to draw the anatomical contour. A gamma camera with a high resolution, low energy collimators and dual energy acquisition window centered in the photopeaks of 140 keV of <sup>99m</sup>Tc (10%) and 122 keV of <sup>57</sup>Co (5%) was used with an acquisition time of 300 s/image. Foci of increased uptake were localized on the skin with a <sup>57</sup>Co pencil and marked with a waterproof marker. Lymphatic drainage was not initially demonstrated in 2 patients, and they therefore underwent subdermal reinjection with

**Table 1**

Characteristics of the patients.

Number of patients	36
Gender (women/men)	35/1
Mean age (years ± SD)	55 ± 10.8
Breast affected – n (%)	
Right	23 (64)
Left	13 (36)
Localization – n (%)	
UOQ	12 (33.4)
LOQ	5 (13.9)
UIQ	1 (2.8)
LIQ	2 (5.5)
UQU	5 (13.9)
LQU	1 (2.8)
OQU	5 (13.9)
IQU	2 (5.5)
Retroareolar	3 (8.3)
Type of surgery – n (%)	
Mastectomy	11 (30.6)
Tumorectomy	25 (69.4)
pT – n (%)	
pT1	33 (91.7)
pT2	3 (8.3)
Tumor histology – n (%)	
IDC	25 (69.4)
IDC + ISDC	7 (19.5)
Others*	4 (11.1)

IDC: infiltrating ductal carcinoma; ISDC: in situ ductal carcinoma; LOQ: lower outer quadrant; LIQ: lower inner quadrant; UOQ: upper outer quadrant; UIQ: upper inner quadrant; SD: standard deviation OQU: outer quadrant union; LQU: lower quadrant union; IQU: inner quadrant union; UQU: upper quadrant union.

\* Others: include infiltrating lobular carcinoma, papillary carcinoma and mixed histology of the previously mentioned carcinomas.

18.5 MBq (0.5 mCi) at a volume of 0.2 ml in a single injection in the quadrant in which the EB had been performed, and new images were obtained at 1 h.

Surgical localization of the SN was made from 18 to 24 h after the injection of the radiocolloid using a gamma detector probe (Europrobe; BriTec, Sheffield, UK). A SN was considered to have a greater radioactive count and activity 10% greater than that of the most active lymph node. During surgery, the lymph nodes resected were perioperatively analyzed [cytological marking and staining with Diff Quick (QCA, Amposta, Spain) until December 2010, and OSNA method thereafter], leading to ALND in the same intervention if macrometastases were shown or in a another procedure (in the following 4 weeks) if these were observed in the posterior analysis.

The parameters studied included scintigraphic and surgical detection of the SN, the histological grade of SN and the ALND in patients with macrometastasis in the SN as well as the lymph node recurrences during up to 6 years (24–75 months) of follow-up.

## Results

Presurgical LS showed at least one axillary SN in all the patients as well as in the 2 patients (5.5%) in Group B who were re-injected. In another 2 cases in Group B the SN also showed extra-axillary drainage: to the internal mammary lymph node chain in one and to the supraclavicular region in the other, ipsilateral to the affected breast in both cases. The extra-axillary lymph nodes were not

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