

# Effectiveness of “core biopsy” by the mammotome device for diagnosis of inflammatory carcinoma

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## Summary

**Objective:** To assess the usefulness of “Mammotome” device for the diagnosis of the inflammatory breast carcinoma.

**Material and methods:** We studied 6 patients, aged 43-79 years, with clinical evidence of inflammatory breast carcinoma. We compared two sampling techniques, a cytologic one by Fine Needle Aspiration (FNA) and a microhistologic one by “Mammotome”.

**Results:** Cytologic sampling by FNA permitted certain diagnosis of malignant lesions in 2 out of 6 cases, while the “Mammotome” device confirmed the correct diagnosis in all 6 considered cases.

**Conclusions:** The “Mammotome” device proved more useful in the diagnosis of inflammatory breast carcinoma than FNA and it can be a valide alternative to surgical biopsy.

**Key words:** Inflammatory breast carcinoma; Fine Needle Aspiration; “Mammotome” device.

## Introduction

At first the designation of inflammatory breast carcinoma was used in a clinical sense for describing a variant of locally advanced breast cancer, which reveals itself with redness, pain, increased temperature and widespread oedema of the skin; these features can simulate an inflammatory condition [1-3]. Pathologically this lesion corresponds to undifferentiated carcinoma associated, according to some authors [4-7], with involvement of dermal lymphatic vessels (dermal-lymphatic carcinoma-tosis); according to others [1, 3] this condition may not be present.

The incidence reported in the literature [1, 2] ranges between 1% and 4%; average age of onset is like that of non-inflammatory carcinoma [1, 2].

In many cases, both clinically and by mammography and ultrasonography, nodular lesions are not detected: the diagnosis is made on one or more than one cytologic samplings or microhistologic sections in erythematous and oedematous skin or by surgical biopsy.

The aim of this study was to compare the results obtained by Fine Needle Aspiration biopsy (FNA) with Large-Core Breast biopsy by “Mammotome®” (Ethicon), a new biopsy device for the diagnosis of inflammatory breast carcinoma.

## Materials and Methods

We studied 6 patients, aged 43-79 years, with clinical evidence of inflammatory carcinoma of the breast and mammographic and ultrasound findings negative for well defined

nodular lesions, observed at the Breast Diagnostic and Counseling Centre, Department of Radiology, University of Sassari.

All patients underwent both clinical, mammographic and ultrasound exams which did not reveal nodular masses for performing target biopsy.

We compared two sampling techniques, a cytologic one (FNA) and a microhistologic one by “Mammotome”.

To perform the cytologic sampling 22 gauge needles and a 10 cubic centimeter (cc) syringe were used: the aspiration was finished when a small amount of specimen was seen in the final part of the needle. Then the aspirated material was expelled onto glass slides and smeared according to the standard technique.

Microhistologic sampling was performed by “Mammotome”, a new biopsy device which has a tissue transport aspiration mechanism. Thus multiple samples can be obtained with only one insertion because the probe has a window that can be orientated at 360°.

In order to compare the results of the two techniques, cytologic and microhistologic samplings were taken in the hyperemic and oedematous area and some centimeters near the nipple (always in the same site) with both methods ultrasound-guided.

In the same site of cytologic sampling we introduced local anesthesia (marcaina 8 cc 0.25%) and made a 5 mm skin incision to introduce the aspiration probe “Mammotome” 11G and to perform multiple samples with the window orientated both for depth up to the subcutaneous tissue and laterally, respectively; at least 4 and at the most 6 samples were taken. The samples were fixed in 10% neutral buffered-formalin and parafin-embedded for sectioning. Ultrasound-guided breast biopsy by “Mammotome” lasted for almost 15 minutes. After pulling out the probe, the flaps of the small incision were closed and medicated with two plasters; then the flaps were compressed with ice to avoid the onset of haematomas.

## Results

Cytologic sampling by FNA permitted certain diagnosis of malignant lesions in 2 out of 6 cases on the basis

of cellular size, increased nuclear to cytoplasmic ratio, nuclear irregularity and hyperchromia. Two out of the remaining 4 cases, all characterized by poor cells, resulted negative with the presence of rare well-differentiated epithelial cells; one case showed features consistent with a proliferating epithelial lesion without clear malignant characteristics; one case was suspect of a diagnosis of cancer.

Histology of tissue samples obtained by "Mammotome" confirmed diagnosis of infiltrating breast carcinoma in all 6 considered cases: 5 of these with clear ductal differentiation, 1 lobular anaplastic.

Indeed, in 3 out of 6 cases we observed features consistent with vascular tumor emboli and in 4 out of 6 cases we noted discrete inflammatory lymphatic infiltrates with associated surrounding plasmacytoid lymphocyte components.

## Discussion

Instrumental diagnosis of inflammatory breast carcinoma is very difficult because in most cases single lesions and/or microcalcifications, as also observed in our experience, are not detected.

Mammographic findings, such as a widespread radiopaque and reticular aspect of the breast structure, due to thickening of Duret's crista and to the dilatation of lymphatic vessels, can also be found in cases of benign inflammatory mastitis or in cases of lymphedema, a consequence of mechanical blocking of the axillary lymph nodes (exenteration, radiation, primary or secondary lymph node tumors).

Also, cytologic and histologic type can be difficult because the sampling can not be targeted at a suspected nodule, but near hyperemic and oedematous skin areas.

Since inflammatory breast carcinoma implies involvement of the dermal lymphatic vessels by tumor emboli, some authors [5] have employed a technique of cytologic sampling by fine needle under the epidermis with movements performed along a parallel plane to the cutaneous surface, which was successful in 10 cases.

Others authors [6] have suggested taking several samples in multiple sites because the glass slides almost always have few cells which can not always warrant a conclusive diagnosis.

In our study cytologic exams confirmed diagnoses of malignancy only in 2 out of 6 cases. On the contrary, the use of the "Mammotome" device permitted us to obtain a conclusive diagnosis of malignancy in all 6 cases; it also provided the histologic type.

The histologic type can also be obtained by automatic methods provided with needles (both shearing and not) with a gauge varying from 20 to 14. The limit of these needles, as well as for the cytologic technique, is that more passages are required to perform multiple samples, with remarkable discomfort for the patient.

The use of the aspirating system called "Mammotome" permits multiple samples to be obtained, which are a greater size and weight than those obtained by an automatic gun, using 14 gauge needles, in a short time with only one insertion of the probe (14 or 11 gauge) [8]. The "Mammotome" technique allows both the spinning of the needle and the recovery of the sample after each aspiration and to type the mammary tissue at 360°, with the window orientated to subcutaneous tissue depth and laterally, respectively.

Finally, this procedure had no complications, required about an average of 15 minutes of the radiologist's time, and can be an effective alternative to surgical biopsy with less cost.

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