



Original Research

## Value of a short-term imaging follow-up after a benign result in a one-stop breast unit: Is it still useful?



Johanna Daroles<sup>a</sup>, Isabelle Borget<sup>b</sup>, Voichita Suciuc<sup>c</sup>, Chafika Mazouni<sup>d</sup>,  
Suzette Delaloge<sup>e</sup>, Corinne Balleyguier<sup>a,f,\*</sup>

<sup>a</sup> Department of Radiology, Gustave Roussy, Villejuif, France

<sup>b</sup> Department of Statistics, Gustave Roussy, Villejuif, France

<sup>c</sup> Department of Biopathology, Gustave Roussy, Villejuif, France

<sup>d</sup> Department of Surgery, Gustave Roussy, Villejuif, France

<sup>e</sup> Department of Medical Oncology, Gustave Roussy, Villejuif, France

<sup>f</sup> Paris-Sud University, IR4M UMR 8081, 91405 Orsay, France

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### KEYWORDS

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**Abstract Introduction:** A short-term radiologic follow-up after a benign breast biopsy or fine needle aspiration (FNA) is recommended in many guidelines. However, the current trend is to reduce imaging investigations, radiation dose and costs. The objectives of this study were to evaluate the cancer detection rate at short-term follow-up and to estimate its cost.

**Methods:** We retrospectively assessed all consecutive patients referred to our ‘one-stop’ breast unit between 2004 and 2012, with a benign histological or cytological result and at least one short-term follow-up within 3–12 months after the initial diagnosis. We evaluated the number of cancers detected, as well as the mean cost to detect each cancer and per patient.

**Results:** About 1366 patients were eligible for this study. Ten patients were diagnosed with cancers (0.73%) at short-term follow-up; six of 10 were low-grade tumours or ductal carcinoma *in situ*. The cost for detecting one cancer was 19,043€, with mean cost per patient of 139€.

**Conclusion:** The cancer detection rate at short-term follow-up after benign biopsy or FNA was low and was similar to that of most national screening programs. The cost of cancer detection appeared high, considering that most cancers were indolent. This suggests that radiologic follow-up could reasonably be carried out at a later point in time.

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\* Corresponding author: Gustave Roussy, Paris-Saclay University, Radiology Department, Villejuif, F-94805, France. Fax: +33 142115339.  
E-mail address: [Corinne.BALLEYGUIER@gustaveroussy.fr](mailto:Corinne.BALLEYGUIER@gustaveroussy.fr) (C. Balleyguier).

## 1. Introduction

Breast cancer screening allows a 20% reduction in breast cancer mortality [1–3]. Most Western countries have therefore implemented national breast cancer screening programs starting between age 40 and 50 years. However, screening programs are the subject of many controversies, related to their 10–20% rate of overdiagnosis and overtreatment, their costs, as well as to a high rate of false-positives, leading to anxiety, unnecessary biopsies and overcost [4]. Indeed, nearly 2% of women undergoing breast cancer screening mammogram within national programs need a breast biopsy for a benign lesion every year [5]. After a benign breast biopsy, most guidelines recommend a systematic short-term follow-up [6], in order to overcome the risk of biopsy false-negatives (approximately 2.9%) [7–10].

The value of a short-term follow-up examination has been recently discussed, mostly because of its low cancer detection rate (0–1.9%) [7,11–15].

The aim of our study was to evaluate the medical value, in terms of cancer detection rate and cost, of a short-term follow-up performed within 12 months after a benign breast biopsy in a large homogenous cohort of patients seen in a single-institution, large-scale ‘one-stop’ breast unit.

## 2. Patients and methods

### 2.1. Patients

Our multidisciplinary ‘one-stop’ breast unit is set up to provide same-day diagnosis for patients coming for a suspicious or undetermined breast finding [16]. Study population included all consecutive patients seen in our one-stop breast unit diagnosed with a benign breast lesion on core biopsy or fine needle aspiration (FNA), between April 2004 and December 2012, for whom at least one radiologic follow-up was performed between 3 and 12 months after initial assessment. Such re-evaluation was scheduled for all patients diagnosed with a benign breast lesion at biopsy or FNA at 4 months for masses and at 6 months for microcalcification clusters, according to good practice guidelines [6]. However, as some patients were re-evaluated in different imaging centres, for the purpose of this study, we only included patients seen in our clinic for re-evaluation. No informed consent was necessary as it was a retrospective study. An internal ethics committee has approved the study design.

## 3. Methods

Patients diagnosed with cancer at the one-stop breast unit are treated internally. Patients with a benign breast lesion are usually referred to their physician and

scheduled for a short-term follow-up (after an initial diagnostic consensus). The most appropriate modality of follow-up examination (ultrasound [US], mammogram, both, or, more rarely, magnetic resonance imaging [MRI]) is determined by the one-stop breast unit team according to imaging criteria.

In cases of increasing size, suspicious changes or other lesion at short-term follow-up, additional diagnostic procedures are performed such as US, mammogram, US-guided needle core biopsy (US-NCB), vacuum-assisted core biopsy (VACB) or MRI.

### 3.1. Data collection

Data from eligible patients were retrieved from the institutional database. All computed medical records of eligible patients were reviewed to obtain initial characteristics of patients and lesions (initial Breast Imaging Report and Data Systems (BI-RADS) assessment, size, imaging features: microcalcification cluster, asymmetry, mass, architectural distortion, according to BI-RADS lexicon [17,18], breast density, breast side, palpability and clinical findings) as well as procedures used and results of short-term follow-up (BI-RADS assessment, final diagnosis: benign, malignant or atypical).

### 3.2. Data analysis for patients with a final diagnosis of cancer

For patients with a final diagnosis of cancer, imaging results and medical records in our computed database and picture archiving and communication system were reviewed. Side and site of final lesion diagnosed were compared to initial lesion referred to determine if it was non-incident (meaning the initial lesion corresponded with the final diagnosis) or incidental (when initial lesion and lesion with final diagnosis at follow-up were different), whether ipsilateral or contralateral.

### 3.3. Short-term follow-up cost evaluation

Resource used for short-term follow-up was retrospectively collected from the digital medical file of our institution. It included the number of medical visits, as well as the number of imaging (US, mammogram and MRI), imaging-guided tissue sampling (FNA or NCB under US, VACB or MRI guidance) and/or surgical procedures performed between the visit to the one-stop breast unit and the final diagnosis. Costs were assessed from the perspective of the French national health insurance system and were expressed in euros. Unit costs are listed in Table 1. Radiological and surgical procedure costs were estimated using the National Health System reimbursement tariff. We then calculated the mean cost of short-term follow-up diagnosis per patient, as well as the total cost for detecting each cancer.

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