



Current opinion on clip placement after breast biopsy: A survey of practising radiologists in France and Quebec

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AIM: To investigate current practice regarding clip placement after breast biopsy.

MATERIALS AND METHODS: In June 2011, an online survey instrument was designed using an Internet-based survey site (www.surveymonkey.com) to assess practices and opinions of breast radiologists regarding clip placement after breast biopsy. Radiologists were asked to give personal practice data, describe their current practice regarding clip deployment under stereotactic, ultrasonographic, and magnetic resonance imaging (MRI) guidance, and describe what steps are taken to ensure quality control with regards to clip deployment.

RESULTS: The response rate was 29.9% in France (131 respondents) and 46.7% in Quebec (50 respondents). The great majority of respondents used breast markers in their practice (92.1% in France and 96% in Quebec). In both countries, most reported deploying a clip after percutaneous biopsy under stereotactic or MRI guidance. Regarding clip deployment under ultrasonography, 38% of Quebec radiologists systematically placed a marker after each biopsy, whereas 30% of French radiologists never placed a marker in this situation, mainly due to its cost. Finally, 56.4% of radiologists in France and 54% in Quebec considered that their practice regarding clip deployment after breast percutaneous biopsy had changed in the last 5 years.

CONCLUSION: There continues to be variations in the use of biopsy clips after imaging-guided biopsies, particularly with regards to sonographic techniques. These variations are likely to decrease over time, with the standardization of relatively new investigation protocols.

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Introduction

Over the past 20 years, the field of breast disease investigation and management has dramatically evolved, in part fuelled by the development and technical improvements in breast-imaging techniques, including mammography,

ultrasonography (US), and magnetic resonance imaging (MRI).^{1–3} In parallel, the field of percutaneous biopsies also saw great improvements, motivated by the increasing complexity of diagnostic breast procedures and preoperative investigations. Percutaneous biopsy methods were developed to be performed under guidance with all current imaging techniques (stereotactic guidance for mammographically visible lesions, ultrasonographic guidance for US anomalies, and more recently MRI guidance for MRI-only visible lesions).^{4,5}

The increasing complexity of preoperative breast investigations has led to an increase in the use of

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percutaneous breast biopsies, with the resulting requirement of biopsy site markers^{6–9} to facilitate correlation across imaging methods and discussions among members of the multidisciplinary team, including for presurgical planning and oncological surveillance.^{10–12} The field of biopsy site markers thus exploded. The numerous indications of biopsy clip placement were recently reviewed¹³; the principal indications included visualization of clips on post-biopsy mammograms to facilitate multidisciplinary discussions,¹⁴ positioning a clip after biopsy to verify that correlation across imaging methods is correct,¹⁵ and the use of clips to facilitate preoperative needle localizations of malignant sites in cases of conservative surgery.

How have practices of breast radiologists changed through these developments? To begin with, it is unclear how often this technique is used. Opinions of currently practising radiologists regarding clip placement after breast biopsy are unknown. Moreover, a wide variety of markers exist (commercial metallic clips, Montreal technique or commercial clips with packing material)¹³ with a great range in costs, and there are few available data regarding biopsy marker use in practice. Therefore, the purpose of the present study was to identify current practice trends and opinions about clip placement in a European (France) and a North American country (Quebec).

Materials and methods

In June 2011, an online survey was designed by the authors (www.surveymonkey.com). This survey site allowed the investigators to send the invitations, and then anonymously and securely collect the responses. This survey was sent out to practising radiologists with regular screening and investigational breast practices in France and in Quebec. Names and e-mail addresses were obtained from publicly available membership lists of radiological professional organizations. Radiologists were contacted and asked to voluntarily complete the survey and return it anonymously within 4 weeks. There were 27 questions in the survey, for which respondents were asked to give a single best response.

The survey employed basic conditional logic, and, therefore, the denominator for each question differed. Respondents were encouraged to add free-text comments. The survey was constructed in five parts: (1) personal practice characteristics, including age, type of practice, number of breast biopsies performed, the use of breast marker; (2–4) practice data regarding clip deployment under the different imaging techniques, with a separate section for biopsies performed under (2) stereotactic guidance, (3) sonographic guidance, and (4) MRI guidance; and (5) practice data regarding quality control of clip deployment and perceived changes in the use of clips in the last decade. All questions are detailed in Tables 1–4. Radiologists were contacted initially via e-mail with the invitation to participate and complete the survey; one follow-up e-mail was sent 2 weeks later to remind radiologists of this ongoing survey. After a total period of 6 weeks, the

Table 1
General information.

General information	France	Quebec	p-Value
Response rate (%)	29.9% (131/438)	46.7% (50/107)	0.001
Age (years)			
30–40	19.1% (25/131)	40% (20/50)	0.006
40–50	32.1% (42/131)	32% (16/50)	NS
50–60	39.7% (52/131)	24% (12/50)	NS
>60	9.2% (12/131)	4% (2/50)	NS
Are you practising in an academic hospital? (%) ^a	41.9% (55/131)	28% (14/50)	NS
Are you practising in a private clinic? ^a	61.1% (80/131)	40% (20/50)	0.01
Do you perform breast biopsy? ^a	97.7% (128/131)	96% (48/50)	NS
How many breast biopsies do you perform in a week?			
<10	77.8% (102/131)	72% (36/50)	NS
10–20	16.7% (22/131)	20% (10/50)	NS
>20	3% (4/131)	4% (4/50)	NS
Do you use breast markers in your practice? ^a	92.1% (118/128)	96% (48/50)	NS

^a Data correspond to the number of “yes” responses.

survey was closed and all data were downloaded. The response rate was determined by calculating the ratio of number of responses compared to the number of successfully sent invitations (no. invitations sent – no. returned as undeliverable).

Statistical analysis

Results were summarized descriptively in tables and graphs. Descriptive results are presented as counts and percentages. Fisher’s exact test was used for categorical variables. All tests were two-sided, with the significance level set at 0.05. Data were analysed using MedCalc (www.medcalc.be).

Results

In France, 131 of 438 radiologists, (29.9%) responded, whereas in Quebec, the response rate was 46.7% (50/107). Data are listed in Table 1. Most breast radiologists surveyed performed percutaneous breast biopsy (97.7% in France and 96% in Quebec), and a large majority reported using breast markers (92.1% in France and 96% in Quebec).

Clip deployment under stereotactic guidance (Table 2)

The large majority of radiologists surveyed performed percutaneous biopsy under stereotactic guidance (83.9% in France and 88% in Quebec), principally using vacuum-assisted biopsy systems (86.3% in France and 61.3% in Quebec). When asked in which clinical situations they would deploy a clip, all radiologists reported doing so after stereotactic biopsy that leads to complete excision of clustered calcifications (100% for both countries). There was slight variability in the use of clips in other scenarios: when

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