

# Image-guided breast biopsy

G Ralleigh

Consultant Radiologist, Kings College Hospital, London, England

**ABSTRACT** Image-guided percutaneous biopsies are increasingly preferred to surgical biopsies. This technique rarely misses breast cancers (0.3–8.2%), and correlation of clinical, imaging, and histological findings usually identify lesions requiring re-biopsy quickly. Communication of results to patients requires that the implications of the findings and their bearing on management are explained. Society is increasingly passing responsibility for ensuring follow-up to clinicians.

**KEYWORDS** Breast cancer, biopsy error, communication, image-guided biopsy

**LIST OF ABBREVIATIONS** UK NHS Breast Screening Programme (UK NHS–BSP)

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Correspondence to G Ralleigh,  
Consultant Radiologist, Kings  
College Hospital, Denmark Hill,  
London SE5 9RS

tel. +44(0)207 346 3875

e-mail [Gita.Ralleigh@kingsch.hhs.uk](mailto:Gita.Ralleigh@kingsch.hhs.uk)

In the autumn of 2004 the case of *Helen Cooper v Royal United Hospital Bath Trust* was widely reported in the national press. Mrs Cooper was ruled by Mr Justice Butterfield to have been given 'negligent' and 'misleading' advice following a breast biopsy procedure in July 2000. The results of the procedure were 'indeterminate' and the patient was informed that she would require a further biopsy. The hospital's plea that Mrs Cooper had declined a further biopsy and had missed two hospital appointments was rejected. The judge ruled that the Royal United Hospital Bath NHS Trust was in breach of its duty towards Mrs Cooper saying staff had 'failed to advise her adequately of the risks she faced, the options open to her and their respective merits'. Mrs Cooper's breast cancer was eventually diagnosed in May 2002 and she died in September 2004 with widespread metastatic disease. The judge said the question of whether any breaches he had found were 'causative of any loss or damage' sustained by Mrs Cooper and her widower 'is for another day'. The trust's chief executive, Mark Davies, responded: 'I am determined that if there are any lessons to be learned we will learn them, but I am confident this was an unusual and tragic one-off case.'

Image-guided percutaneous breast biopsy is increasingly preferred to surgical biopsy for the histological assessment of both non-palpable (usually screen-detected) and palpable (usually symptomatic) breast lesions. Fine needle aspiration cytology has now been replaced by 14-gauge needle automated core biopsy at most centres because of its better characterisation of benign and malignant pathology and lower frequency of insufficient samples.

Ultrasound guidance or X-ray guidance (stereotactic biopsy) may be used to target the lesion depending on the nature of the abnormality. Radiologists perform most

breast biopsies, although in some centres breast surgeons, breast physicians or radiographers also undertake these procedures.

The patient care advantages of percutaneous breast biopsy include fewer surgical procedures, less scarring and deformity, ease of performance and low complication rate.<sup>1</sup> In follow-up studies the rate of missed carcinomas is low, averaging 2.8% (range 0.3–8.2%) with approximately 70% of missed cancer identified shortly after biopsy (immediate false negatives) and 30% identified subsequently (delayed false negatives). Although this is similar to the frequency of missed cancer at surgical biopsy, which has an average miss rate of 2% (range 0–8%) it is inevitable that some cancers will not be diagnosed at an initial core biopsy.<sup>1,2</sup>

The radiologist or other breast care professional can take several steps to minimise the likelihood of a false negative diagnosis. Optimal technique ensures that the correct lesion has been adequately sampled. Careful correlation of clinical, imaging and histology findings to identify discordant lesions requiring prompt repeat biopsy (triple assessment) takes place in the context of a multidisciplinary meeting as standard practice in the UK NHS–BSP and most symptomatic breast units also follow these standards.

The radiologist, in conjunction with the referring clinician (often a breast surgeon), also has a responsibility to communicate results to the patient as well as explaining the implications of those results and what further management is required.

Claims relating to percutaneous image-guided breast biopsy may relate to radiology or pathology errors. Diagnostic pathology errors involve either over- or

under-diagnosis resulting in unnecessary surgery or delayed diagnosis. UK NHS–BSP guidelines for pathology reporting categorise results as B1 (normal tissue), B2 (benign lesion), B3 (uncertain malignant potential), B4 (suspicious) and B5 (malignant). This classification recognises that although most core biopsy samples can be characterised as normal, benign or malignant, a small proportion (less than 10%) of samples cannot. In general, a diagnostic category of B3 or B4 should lead to percutaneous or surgical repeat biopsy in order to obtain a definitive diagnosis.

Where the radiologist performing breast biopsy is concerned, there are three primary areas of negligence: the acceptance and performance of the procedure itself; the obtaining of informed consent and the responsibility for follow-up communication; and recommendations for further management.<sup>3</sup> Proof of negligence requires expert opinion to establish standard of care and the likelihood of departure from that standard of care and is related to injury to the patient. If a defendant breaches a recognised duty and if it bears a substantial relationship to injury, then negligence will be found.

With regard to stereotactic core biopsy, a joint task force of the American College of Radiology, American College of Surgeons and College of American Pathologists stated that: 'The performance of a stereotactically guided CNB carries with it the obligation to inform the patient of the results of the biopsy and the potential implication of these results...'<sup>4</sup>

## REFERENCES

- 1 Liberman L. Percutaneous imaging guided core breast biopsy: state of the art at the millennium. *Am J Roentgenol* 2000; **174**:1191–9.
- 2 Lee CH, Philpotts LE, Horvath LJ et al. Follow up of breast lesions diagnosed as benign with stereotactic core-needle biopsy: frequency of mammographic change and false negative rate. *Radiol* 1999; **212**:189–94.

As stated by Berlin in 1998, '...responsibilities to track patients after percutaneous core biopsies are clearly being imposed on radiologists by society and the radiological community itself. Whatever the extent of these responsibilities, they are greater today than they were yesterday and are likely to be greater tomorrow than they are today.'<sup>5</sup>

## KEYPOINTS

- A patient underwent a breast biopsy which was reported as indeterminate. She declined a further biopsy and failed to attend at two hospital appointments.
- A judge found the hospital in breach of its duty to the patient, as staff had 'failed to advise her adequately of the risks she faced, the options open to her and their respective merits'.
- Image (ultrasound or X-ray) -guided biopsy is now favoured generally for breast lesions, and in about 2.8% (0.3–8.2%) of cases a cancer is missed.
- Avoiding missed cancer involves using optimal biopsy technique, and correlating clinical, imaging and histological findings to identify likely missed lesions.
- The radiologist doing the biopsy and the referring clinician (usually a breast surgeon) have the duty of informing the patient of the biopsy results and of discussing their implications and any requirements for treatment.

- 3 David D Dershaw (editor). *Imaging-guided interventional breast techniques*. New York: Springer-Verlag; 2003.
- 4 Bassett L, Winchester DP, Caplan RB et al. Stereotactic core-needle of the breast: a report of the joint task force of the American College of Radiology, American College of Surgeons and College of American Pathologists. *CA Cancer J Clin* 1997; **47**:171–190 <http://caonline.amcancersoc.org/cgi/reprint/47/3/171>.
- 5 Berlin L. Tracking for breast cancer (commentary). *Am J Roentgenol* 1998; **170**:93–5.