E7. Update on tissue sampling

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Tissue sampling in a breast unit is part of a standard triple assessment procedure and necessary to attempt a pre-operative, or non-operative diagnosis of breast lesions. European guidelines [1,2] give target performance indicators for this. Ideally, an accurate pre-operative diagnosis should be provided in over 90% of cases. The purpose is to facilitate rapid management decisions, suitable patient counselling, single-procedure operative planning and a reduction in unnecessary benign biopsies.

Even if a breast lesion is palpable, many specialist breast units would regard sampling under imaging control as 'best practice'. For palpable lesions, this will usually mean ultrasound guidance. If a mass is not clearly visible on ultrasound, stereotactic sampling should be carried out. If there is any doubt or discrepancy in the radiographic and sonographic findings, the modality which provides the clearest indication of the lesion to be sampled should be used. Microcalcification may well be visible under ultrasound control, especially if extensive and vascular, or if there is a soft tissue mass. However, most calcifications will be sampled using stereotaxis.

The standard method of tissue sampling for many years was fine-needle aspiration cytology (FNAC). In most units, this has now been supplemented with, or even replaced by core biopsy (CB). In recent years, vacuum-assisted biopsy techniques (VAB) have become available, and there is now a further method of tissue acquisition using radio-frequency (RF) devices.

All units which carry out such procedures must be dedicated with a full compliment of trained and experienced staff [3]. FNAC, in particular, requires highly skilled pathological support for interpretation. If this is not available, then histological as opposed to cytological sampling should be provided. It must not be forgotten that the success of FNAC is also dependent on the accuracy of image guidance and radiological skill. However, it must not be assumed that problems caused by difficulty in accurate placement of a small needle will be automatically overcome by the use of a larger needle.

Apart from its obvious use in cyst drainage, FNAC can be useful for confirmation of lesions which are believed to be entirely benign on clinical and imaging grounds, as the method is relatively cheap and quick to carry out. Under such circumstances, the use of a cytologist in the clinic enables rapid diagnosis and patient management. Clinical and imaging findings which might be regarded as suitable for FNAC will be best decided by each unit according to their individually drawn up protocols. However, in the simplest terms, FNAC might be regarded as suitable for reassurance in clearly benign lesions or confirmation in clearly malignant lesions. Indeterminate lesions, in particular calcifications, should not be sampled using cytology. It is also unwise to carry out sampling of post-therapy breasts with cytology as radiotherapy may make cytological interpretation difficult. Neither is cytology to be recommended if the patient might undergo a mastectomy. The medico-legal implications would be significant without some form of histological confirmation.

14-gauge (G) core biopsy is likely to provide better sensitivity and specificity than FNA [4,5] and has the obvious advantage of providing histological samples, although accurate sampling under image guidance is still crucial. If there is any disparity between core biopsy and clinical/imaging findings, surgical excision biopsy is still to be recommended. Indeterminate and suspicious calcifications should be regarded as more suitable for core biopsy than FNAC and specimen radiography must be provided in order to confirm the accuracy and sufficiency of sampling with regard to demonstration of calcification [6]. If a palpable lesion is not to be removed on therapeutic grounds, many units would regard core biopsy as preferable to FNAC prior to discharge of the patient from the clinic.

Several manufacturers now provide equipment for VAB. This has the advantage of single entry, the ability to provide contiguous and rotationally acquired samples and a greater tissue volume with less likelihood of an underestimation of the pathology. 11G VAB is regarded as preferable by some units for sampling architectural distortions and suspicious calcifications. With regard to the under-registration of the pathology, the greater tissue provided may allow upgrading of atypical hyperplasia to ductal carcinoma *in situ* (DCIS) and DCIS to invasive tumour.

Therapeutic use of 8G VAB for excision of benign lesions, eg. papillomata, is becoming more frequently used, and is now approved by the United States Food and Drug Administration. Diagnostic use of VAB should be followed by clip or metallic marker placement for future reference.

Radio-frequency devices have been recently introduced

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which allow the easier passage of a wide-bore needle through tissues to the lesion to be sampled, followed by either basket or bag retrieval. Advantages suggested for this technique include less tissue bleeding and haematoma, the ability to provide larger intact specimens for pathology and, in some cases, even complete removal of smaller lesions.

References

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