Breast biopsy specimen fixation

Further to the correspondence by Drs Start, Cross, and Smith regarding the procedure of fixing breast biopsy specimens, we add our findings to this debate.

In our view the handling of this kind of specimen poses a dilemma: for best slicing and minimisation of distortion for assessment of resection margins and extent of lesion, the specimen should be fixed before slicing. To overcome this problem we suggest that the specimen should be injected with 10% neutral buffered formalin on receipt then left to fix for 24 hours before slicing.

We use a 10 ml syringe with a 21 gauge needle. The amount of formalin injected depends on the size of the specimen. The injection can be performed by technical staff, which means the specimen need not be sent dry and the pathologist does not have to be on hand when the specimen is received: this may often be the case in a district general hospital.

This technique offers adequate fixation of tissues deep within the specimen while allowing fixation of the outside which “hardens” the specimen, giving optimal slicing.

There are two possible hazards that need to be borne in mind when using this technique. The first is the danger of needlestick injuries to the second, and the splashback of formalin which can occur if too much pressure is applied, particularly when injecting firm areas of tissue. Accordingly, appropriate protective clothing should be worn and great care taken when performing this procedure.

We have found a definite improvement using this method in the quality of morphology in subsequent sections compared with those from specimens which were allowed to fix overnight before slicing and were not injected.

We propose that this method helps reduce the inevitable variation in fixation that occurs with these specimens, and thereby reduces the associated variation in mitotic counts which may affect grading. It also improves assessment of resection margins and extent of lesions.

We accept that our findings are subjective and anecdotal, but feel that there is sufficient benefit to merit extending the use of this procedure from localisation biopsy specimens and wide local excision specimens to mastectomy specimens.

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Summary of results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean (SD)</th>
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<tbody>
<tr>
<td>Normal mucosa</td>
<td>2.37 (0.28)</td>
</tr>
<tr>
<td>Metaplastic poly</td>
<td>2.71 (0.44)</td>
</tr>
<tr>
<td>Tubular adenoma</td>
<td>3.67 (0.64)</td>
</tr>
<tr>
<td>Villous adenoma</td>
<td>4.12 (0.43)</td>
</tr>
<tr>
<td>Tubulo-villous adenoma</td>
<td>3.62 (0.41)</td>
</tr>
</tbody>
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2 Griffiths AF, Butler CW, Roberts P, Dixon MF, Quirkie P. Silver stained structures (Ag-NORs), their dependence on tissue fixation and absence of prognostic relevance in rectal adenocarcinoma. J Pathol 1992;166:121-7.

Penetration of 10% neutral buffered formalin into an unsliced 5 cm diameter lump after a single 1 ml injection of fixative.