Does Vacuum assisted biopsy decrease the B3 rate in stereotactic biopsy of breast lesions?

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Introduction/Aim

At regional QA study days, West London Breast Screening Service has often reported higher rates of BI-RADS category 3 lesions and lower pre-operative invasive disease diagnostic rates compared to other screening services.

Vacuum-assisted breast biopsy (VABB) systems have been shown to out-perform 14-G core needle biopsy (CNB) by producing heavier and larger specimens with more contiguous sampling and a higher retrieval rate of calcification (1). VABB is reported to lower the histological underestimation rates compared to other screening services.

We introduced VABB in 2011 with the aim of reducing our B3 rate and increasing the rate of preoperative diagnosis of invasive cancer.

Method

Mammographic abnormalities requiring stereotactic biopsy in a defined period which had either 14-G CNB or VAB were included.

Data collated included mammographic findings and BI-RADS category. The histological results of the core biopsy samples were correlated with surgical specimens.

Results

<table>
<thead>
<tr>
<th>Biopsy History</th>
<th>Number of 14G-CNB</th>
<th>Number of VAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>B2</td>
<td>69</td>
<td>46</td>
</tr>
<tr>
<td>B3</td>
<td>61</td>
<td>28</td>
</tr>
<tr>
<td>B4</td>
<td>56</td>
<td>5</td>
</tr>
<tr>
<td>B5a</td>
<td>29</td>
<td>15</td>
</tr>
<tr>
<td>B5b</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

VAB is more sensitive with better correlation between biopsy diagnosis and post-surgical histological correlation. 82% of B3 lesion diagnosed following VAB were confirmed as B3 lesions following surgical excision compared with only 33% in the 14G-CNB group.

The percentage of B3 lesions upgraded to DCIS was much lower in the VAB group 6.7% (3/45) compared with 26.7% (4/15 cases) in the 14G-CNB group.

Fig 1: Biopsy outcomes by BI-RADS categories as a percentage (and actual numbers)

The pre-invasive cancer pick up rate following biopsy has increased from 15.4% to 26.5%

Fig 2: Histological correlation between biopsy and surgical outcomes in B3 lesions

The pre-operative invasive malignancy diagnostic rates are unchanged (5% in both groups).

The DCIS underestimation rate (i.e invasive disease found at surgery) is also unchanged, 21% in the VAB and 20% in the 14G-CNB group.

Fig 3: Histological correlation between biopsy and surgical outcomes in B5a cases

Conclusion

- The introduction of VABB has increased the number of BI-RADS category 3 lesions diagnosed by 15%. We suspect the larger volume of tissue is increasing the likelihood of pathologist finding atypia. In addition, the introduction of VABB coincided with implementation of full field digital imaging to the screening program which increased our recall for calcification resulting in more stereotactic biopsies. This confounding factor may also have increased the B3 rate.
- This leads us to consider whether we should streamline which B3 cases require surgical excision and consider the role of vacuum excision and follow-up in low risk cases.
- The number of B3 lesions upgraded to DCIS following surgery has reduced whereas the invasive disease upgrade following surgery is unchanged. The number of cases analysed are however low in both these groups.

References