Vacuum Assisted Excision of Breast Lesions – an educational summary of our experience

Background and B3 lesions

B3 lesions are a group of breast lesions of uncertain malignant potential (see Table 1) for the main histopathological subtypes diagnosed on core biopsy, either 14G or 10G vacuum-assisted biopsy. They account for approximately 7% of all breast lesions biopsied\(^1\). B1 and B2 lesions are benign, B4 are likely malignant and B5 are malignant.

The management of B3 lesions has varied across departments and previously there was no definitive guidance from NHS Breast Screening Programme on how to manage them or follow them up, leading to uncertainty and differences in practice nationally. Historically B3 lesions would undergo a diagnostic open surgical biopsy, typically with less than 20 g of tissue removed. The introduction of management guidelines for B3 lesions in 2016 by NHS BSP\(^2\) also arose from a concern regarding the over-diagnosis and over-treatment of women within the breast screening programme, and the feeling that women with a probable benign diagnosis shouldn’t be exposed to unnecessary surgery, given that most B3 lesions are not upgraded to malignancy\(^4\).

In our Breast Unit, we perform VAEs stereotactically, by either a Breast Radiologist or an Advanced Practitioner. We use a Bard Encor 7G vacuum biopsy system and Siemens MAMMOMAT Inspiration or MAMMOMAT Revelation biopsy needle (Fig. 1), and Siemens MAMMOMAT Inspiration or MAMMOMAT Revelation.

We ensure there is a Breast surgeon and theatre session available in the department in case of a complication.

Step-by-step to VAE

1. When the patient arrives in the Breast Unit, we obtain written consent, listing the Main Indications as ‘Diagnosis; Definitive Treatment’ and the Main Risks as ‘Bleeding/Kaoma; Non-diagnosis; further treatment’\(^2\). All patients are consented for a post-procedure marker clip and we ensure completion of the modified WHO checklist.

2. The patient is positioned appropriately in the mammogram machine and the targets are set (Fig. 1). If the patient has had a previous stereotactic procedure, we will position the patient in the same position, irrespective of clip position, to ensure sampling via the same plane.

3. We routinely use 2 mLs 1% lignocaine to infiltrate the skin, 5 mLs 1% xylocaine for the subcutaneous tissue and 5 mLs 1% xylocaine through the biopsy needle once it is at the target. We make a small incision in the skin to allow passage of the biopsy needle (Fig. 3).

4. The 7G biopsy needle is placed at the target in the breast (Fig. 4), and we aim to obtain 4 g of tissue. We weight the sample after 18 cores (Fig. 5, 6). We X-ray the specimen if we have targeted an existing clip or calcification.

5. We then insert a marker clip post biopsy. We apply 20 minutes of timed compression to the breast then dress it and do a post-procedure mammogram.

The patients are allowed to leave the department after 1 hr. They receive a Results appointment for 15 days later.

Learning points from setting up our VAE service & Conclusion

Practicalities for Breast Units:

- Patients were initially booked in to the Surgical Day Unit but as the service developed, this became unnecessary and patients now come directly to the Breast Unit. In our experience, recovery in the Unit is adequate.

- We haven't needed to use theatre time due to complications but we still have a surgeon available in case of haemorrhage.

- Correct coding is crucial – this was one of the most challenging aspects to ensure ongoing funding of the service. Patients have to be formally admitted on our IT system to ensure the procedure is correctly funded.

- VAE is less invasive that being admitted for surgery and general anaesthetic, and we believe this provides a greater benefit to patients.

- The cost saving should also be acknowledged in an NHS under financial pressure with workforce limitations – a VAE takes one hour of a radiologist/advanced practitioner’s time plus the cost of the equipment, but compared to open surgical biopsy (and the time of localising lesions pre-operatively, anaesthetic, surgery and ward recovery time) overall VAE is better for patients and better for the NHS. There is considerable theatre and anaesthetic saving and despite added workload to Radiology, we feel that overall this is optimising limited NHS resources.

- Minimally invasive radiological management of B3 lesions using VAE is an effective, often definitive, treatment for breast lesions of uncertain malignant potential.

References

1. S.E. Pinder et al. NHS Breast Screening multi-disciplinary working group guidelines for the diagnosis and management of breast lesions of uncertain malignant potential on core biopsy (B3 lesions). Clin Rad 73 (2018) 652-662

2. V. Fidler et al. NHS Breast Screening multi-disciplinary working group guidelines for the diagnosis and management of breast lesions of uncertain malignant potential on core biopsy (B3 lesions). Clin Rad 73 (2018) 652-662


Case study

We introduced our VAE service in Southampton in September 2017 and between then and March 2019, we performed 66 VAEs – 52 in screening patients and 14 in symptomatic patients. We have had no serious complications other than two large haematomas which resolved with no further intervention. Table 1 shows our VAE results. Our upgrade rate is 13.6%, and the most commonly upgraded pathology was AIDEP. This is in line with NHS BSP published data\(^1\).

<table>
<thead>
<tr>
<th>B3 histopathology</th>
<th>Histology at first core (14G or 10G VAE)</th>
<th>Upgrade on final histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobular Neoplasia</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Flat Epithelial Atypia</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Radical scar/ Complex Sclerosing lesion</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Papillary lesion without atypia</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Musculoconnective like lesion</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL VAEs</td>
<td>66</td>
<td>9 (13.6%)</td>
</tr>
</tbody>
</table>

In our Breast Unit, we perform VAEs stereotactically, by either a Breast Radiologist or an Advanced Practitioner. We use a Bard Encor 7G vacuum biopsy needle (Fig. 1), and Siemens MAMMOMAT Inspiration or MAMMOMAT Revolution.

We ensure there is a Breast surgeon and theatre session available in the department in case of a complication.

1. When the patient arrives in the Breast Unit, we obtain written consent, listing the Main Indications as ‘Diagnosis; Definitive Treatment’ and the Main Risks as ‘Bleeding/Kaoma; Non-diagnosis; further treatment’\(^2\). All patients are consented for a post-procedure marker clip and we ensure completion of the modified WHO checklist.

2. The patient is positioned appropriately in the mammogram machine and the targets are set (Fig. 1). If the patient has had a previous stereotactic procedure, we will position the patient in the same position, irrespective of clip position, to ensure sampling via the same plane.

3. We routinely use 2 mLs 1% lignocaine to infiltrate the skin, 5 mLs 1% xylocaine for the subcutaneous tissue and 5 mLs 1% xylocaine through the biopsy needle once it is at the target. We make a small incision in the skin to allow passage of the biopsy needle (Fig. 3).

4. The 7G biopsy needle is placed at the target in the breast (Fig. 4), and we aim to obtain 4 g of tissue. We weight the sample after 18 cores (Fig. 5, 6). We X-ray the specimen if we have targeted an existing clip or calcification.

5. We then insert a marker clip post biopsy. We apply 20 minutes of timed compression to the breast then dress it and do a post-procedure mammogram.

The patients are allowed to leave the department after 1 hr. They receive a Results appointment for 15 days later.

Learning points from setting up our VAE service & Conclusion

Practicalities for Breast Units:

- Patients were initially booked in to the Surgical Day Unit but as the service developed, this became unnecessary and patients now come directly to the Breast Unit. In our experience, recovery in the Unit is adequate.

- We haven’t needed to use theatre time due to complications but we still have a surgeon available in case of haemorrhage.

- Correct coding is crucial – this was one of the most challenging aspects to ensure ongoing funding of the service. Patients have to be formally admitted on our IT system to ensure the procedure is correctly funded.

- VAE is less invasive that being admitted for surgery and general anaesthetic, and we believe this provides a greater benefit to patients.

- The cost saving should also be acknowledged in an NHS under financial pressure with workforce limitations – a VAE takes one hour of a radiologist/advanced practitioner’s time plus the cost of the equipment, but compared to open surgical biopsy (and the time of localising lesions pre-operatively, anaesthetic, surgery and ward recovery time) overall VAE is better for patients and better for the NHS. There is considerable theatre and anaesthetic saving and despite added workload to Radiology, we feel that overall this is optimising limited NHS resources.

- Minimally invasive radiological management of B3 lesions using VAE is an effective, often definitive, treatment for breast lesions of uncertain malignant potential.

References

1. V. Fidler et al. NHS Breast Screening multi-disciplinary working group guidelines for the diagnosis and management of breast lesions of uncertain malignant potential on core biopsy (B3 lesions). Clin Rad 73 (2018) 652-662

