

Thinking outside the vacuum: using site markers to aid ultrasound biopsy of calcifications when a vacuum assisted biopsy is not possible

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- NHS Breast Screening Programme (NHSBSP) guidelines recommend that a vacuum assisted stereotactic guided core biopsy (VAB) should be considered as the biopsy method of choice for micro calcifications.
- There are limiting factors to performing a VAB, one of these is lack of breast thickness and in our department this has meant that when a VAB cannot be performed and the calcifications are not visible on ultrasound (US) the patient has had a surgical excision biopsy.
- One of the NHSBSP standards is non-operative diagnosis rate, this aims to minimise number of operations and to enable planning in advance of surgery. For non-invasive cancers the minimum standard is 85% with a target of 90%. With this in mind we wanted to find a way of avoiding a surgical excision biopsy in these cases where a VAB is not possible.
- When doing a stereotactic VAB a site marker is used post biopsy to mark the biopsy site. In cases where a VAB can not be performed it is still possible to insert the marker under stereotactic guidance. The marker is visible on US and can then be used as a guide for an US core biopsy of the calcifications.
- The following cases demonstrate where this technique has successfully avoided the need for surgery in two screening cases and aided diagnosis in a symptomatic case.
- Since case 2 and 3 we have started using additional shaped markers for cases where there is more than one biopsy site in the breast, this makes it easier to correlate the mammogram with the US and with the pathology result.

Case 1 screening

1a. A small subtle cluster of calcifications are seen at first screening. At assessment magnification views confirm the presence of calcifications and US is normal. A VAB is recommended for diagnosis. Due to the lack of breast thickness on compression (20mm) a VAB is not possible.

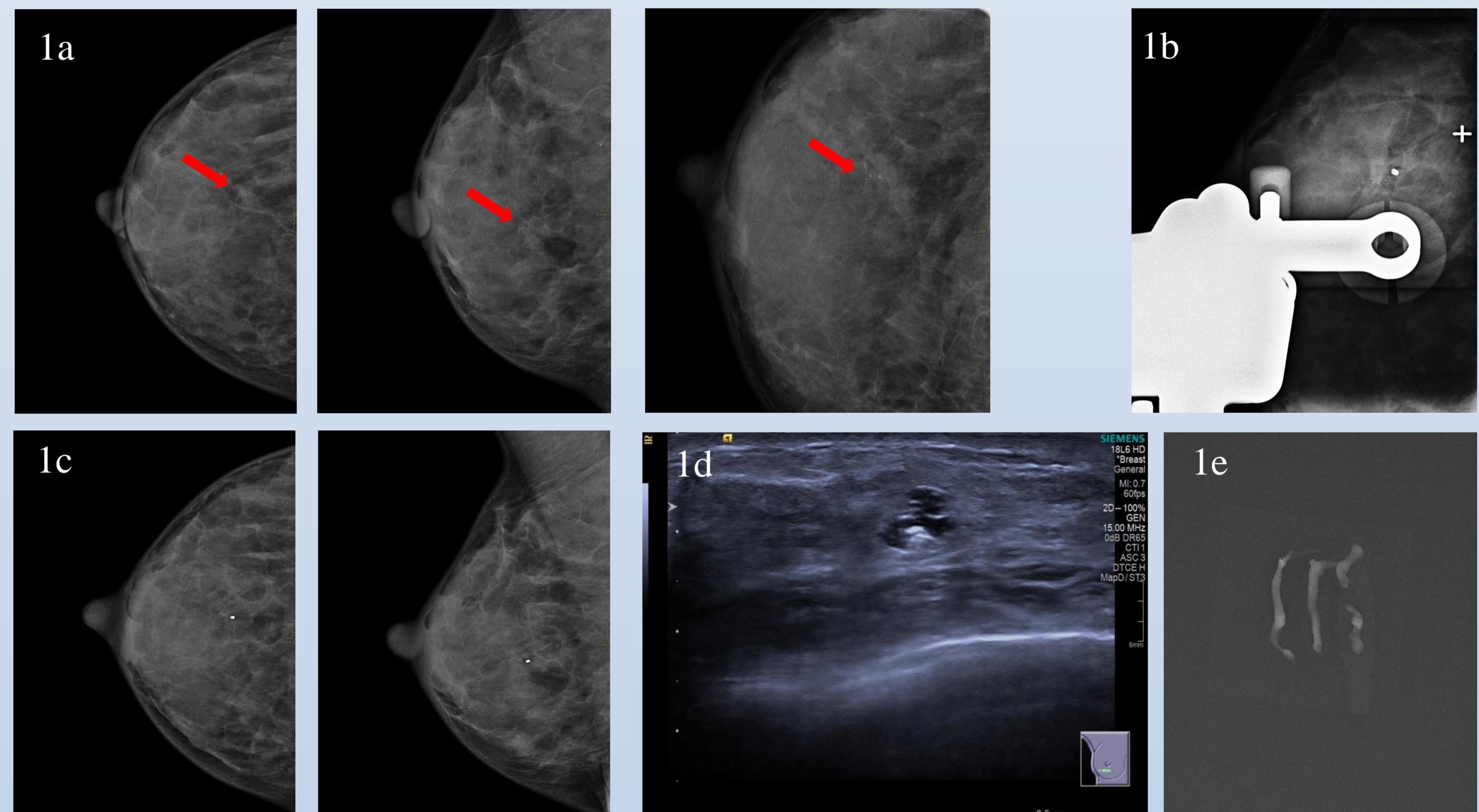
1b. A site marker is placed at the calcifications under stereotactic guidance.

1c. A mammogram confirms that the site marker is at the calcifications.

1d. US is repeated, the site marker is identified and a biopsy is performed.

1e. A specimen image confirms that calcifications have been obtained.

Diagnosis. Fibrocystic change B2, calcifications present. Patient discharged with no need for surgery.



Case 2 screening

2a. A new cluster of calcifications are seen at screening. At assessment US shows an area thought to contain calcifications. An US biopsy is taken and a marker inserted but no calcifications are seen on a specimen image and the marker is not at the calcifications on a repeat mammogram. A VAB is needed but not possible due to the lack of breast thickness (26mm).

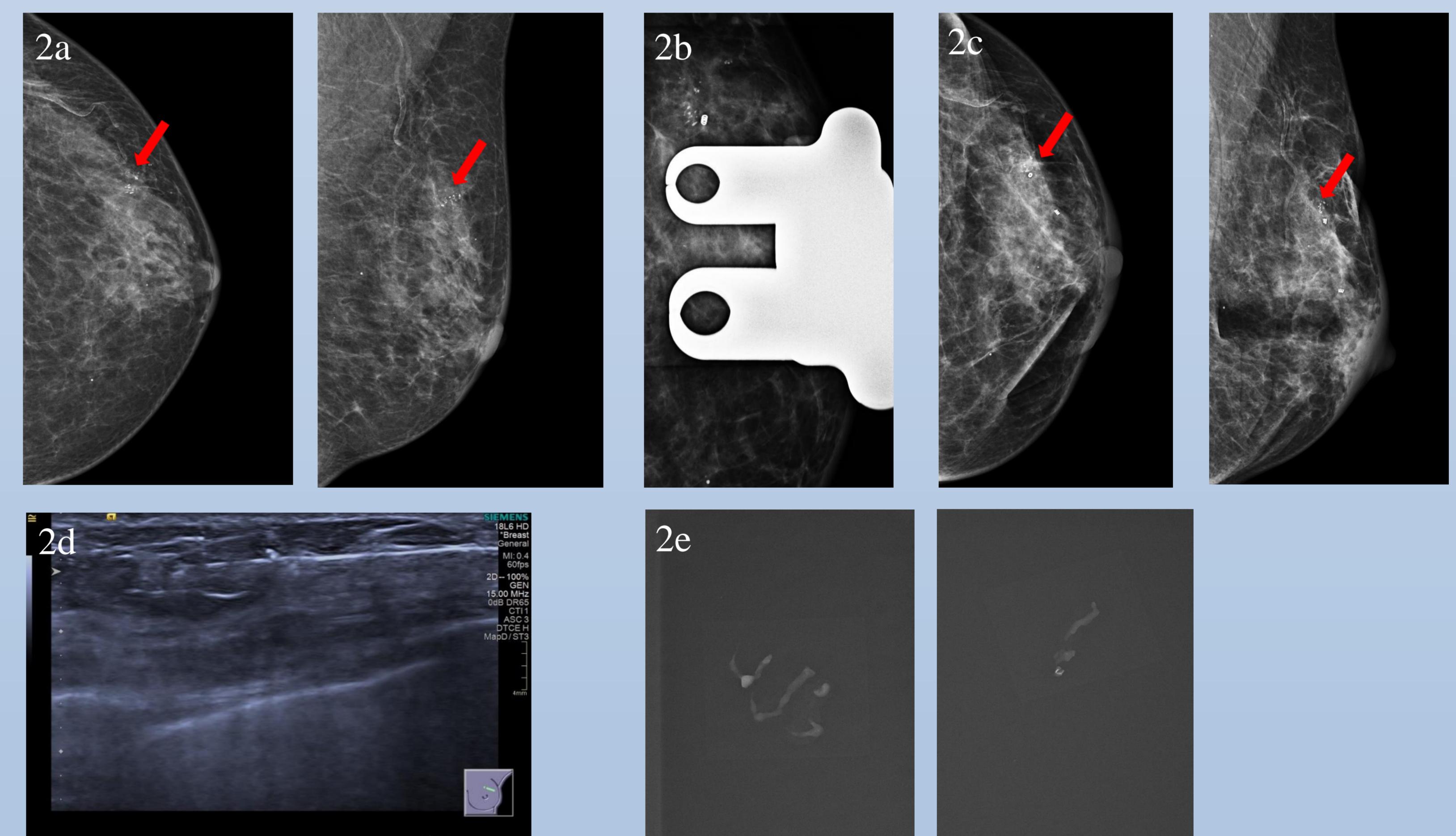
2b. A site marker is placed under stereotactic guidance.

2c. A mammogram confirms that this second marker is at the calcifications.

2d. US shows the site marker and this image demonstrates the biopsy needle at the marker.

2e. The second specimen image confirms that a good sample of calcifications has been obtained.

Diagnosis. Benign calcifications, fibrocystic change B2. Patient discharged with no need for surgery.



Case 3 symptomatic

3a. A small cluster of low density calcifications are seen on the mediolateral view in a patient with extensive malignant calcifications in the opposite breast. A VAB is recommended but is not possible due to lack of breast thickness (25mm).

3b. A site marker is placed under stereotactic guidance (an additional marker is seen on the image from a previous B3 biopsy of an MRI abnormality).

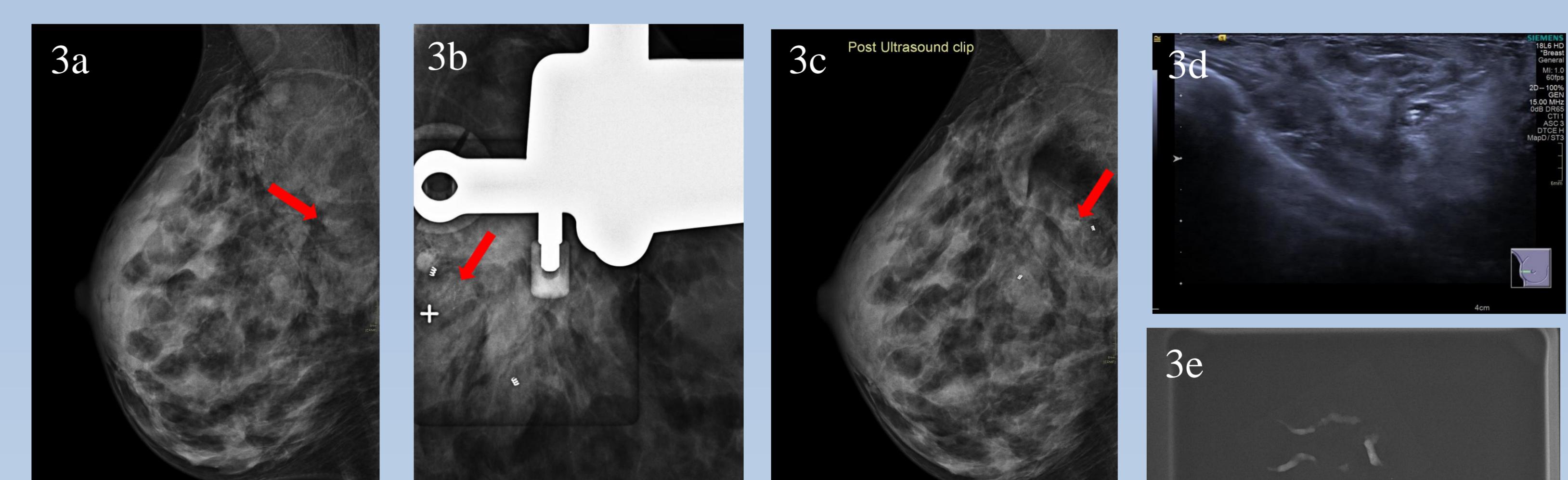
3c. A mammogram confirms that the marker placed under stereotactic guidance is at the calcifications.

3d. US shows the site marker and a biopsy is performed.

3e. A specimen image confirms that calcifications have been obtained.

Diagnosis. Lobular carcinoma in situ, B3.

The patient had diagnostic excision biopsies of both areas.



References

NHS Breast Screening Programme, Clinical guidance for breast cancer assessment, Public Health England 4th edition Nov 2016

NHS Breast Screening Programme, Consolidated standards, Public Health England April 2017