

A breast unit's experience of 15 cases of lesion localisation prior to surgery using radiofrequency (RFID) seeds - a radiological, surgical and pathology review.

Joan Butt MSc, Giles Cunnick FRCS, Rosie Browning FRCR, Chin Ng FRCR, Shaheel Bhuva FRCR, Carol Record FRCR, Farid Ahmed FRCS, Vaishali Gada FRCR

Aylesbury and Wycombe Breast Unit, Buckinghamshire Healthcare NHS Trust, High Wycombe, England

Introduction

Wire guided localisation of impalpable breast lesions is the procedure of choice in the UK for women having breast conserving surgery for breast cancer. This procedure can be associated with challenges for both patients and staff¹. In our unit wires are inserted on the day of surgery and this can lead to increased stress for the patient on that day. The workload for the imaging team can be variable, leading to delay in processing cases, causing disruption to other procedures and delays in theatre. As a busy breast unit we were keen to explore ways of improving the experience for the patient and at the same time be able to manage our workload more effectively².

Method

The unit had the opportunity to trial the Hologic LOCalizer™ wire-free guidance system³ which is designed to mark and guide to non-palpable breast lesions using a miniature radiofrequency identification (RFID) Tag. Each Tag, which comes in a pre-loaded 12G needle introducer, has a unique identification number that is displayed on a handheld reader and can be placed in the breast up to 30 days prior to, or on the day of surgery. At surgery the RFID tag can be located with a handheld reader and then more precise localisation is possible with an attached single-use, pencil sized probe which can be used intra-operatively. The handheld reader's bright screen displays the distance to the Tag in millimetres and the Tag's ID number. Consumable costs are currently £270 per case. There is an initial one off cost for a handheld reader of £4000 per device; one is required in the imaging department, one in Theatre and another in Pathology. All involved groups were consulted to ensure they were happy with the trial. Fifteen cases were subject to RFID placement over a period of 6 weeks using both ultrasound and x-ray guidance (Figure 1). The RFID seeds were placed in a variety of lesions (Figure 2). One case had two lesions localised within the same breast.



Hologic LOCalizer

Results

The time taken to place the seed and obtain check images was similar to that of wire placement (Figure 3). Initially the imaging team commented on some difficulty when placing seeds in dense breast tissue due to the slightly blunt 12G introducer and there was some bounce-back of the seed when marking very solid lesions due to the size of the seed which measures 11mm – this resolved with experience.

There were no negative responses from the surgeons, pathologists or patients.

In 14/15 cases the margins were clear at initial surgery. In one case incidental DCIS was within 0.6mm of a margin.

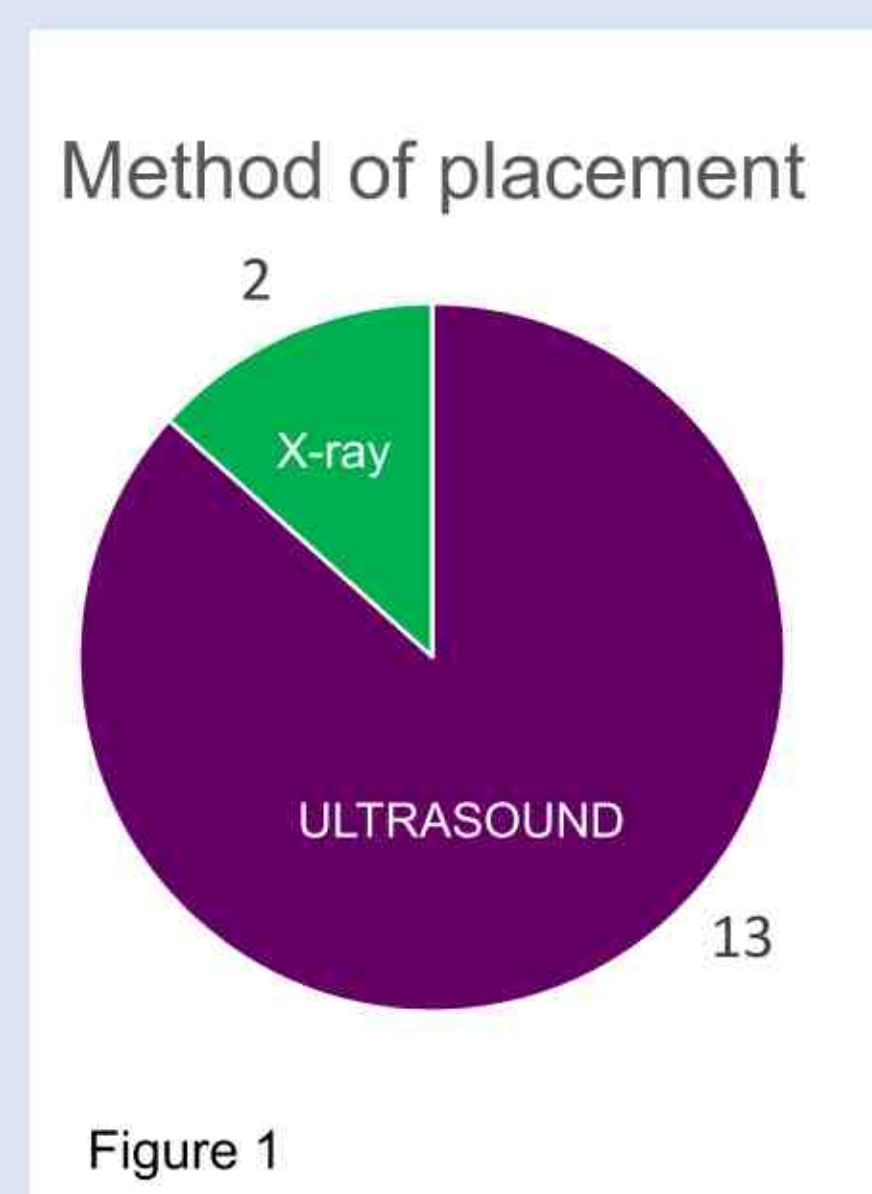


Figure 1

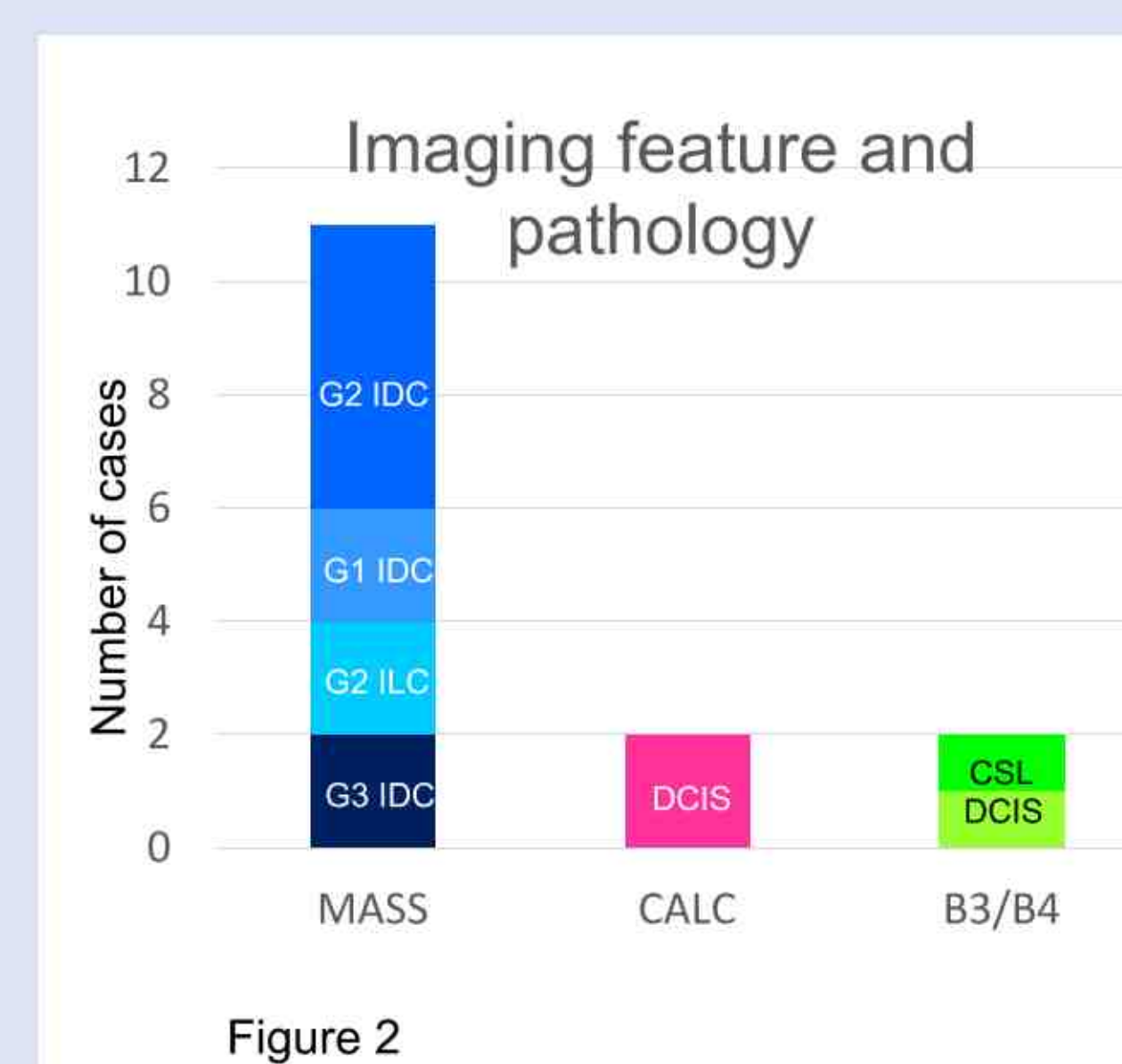


Figure 2

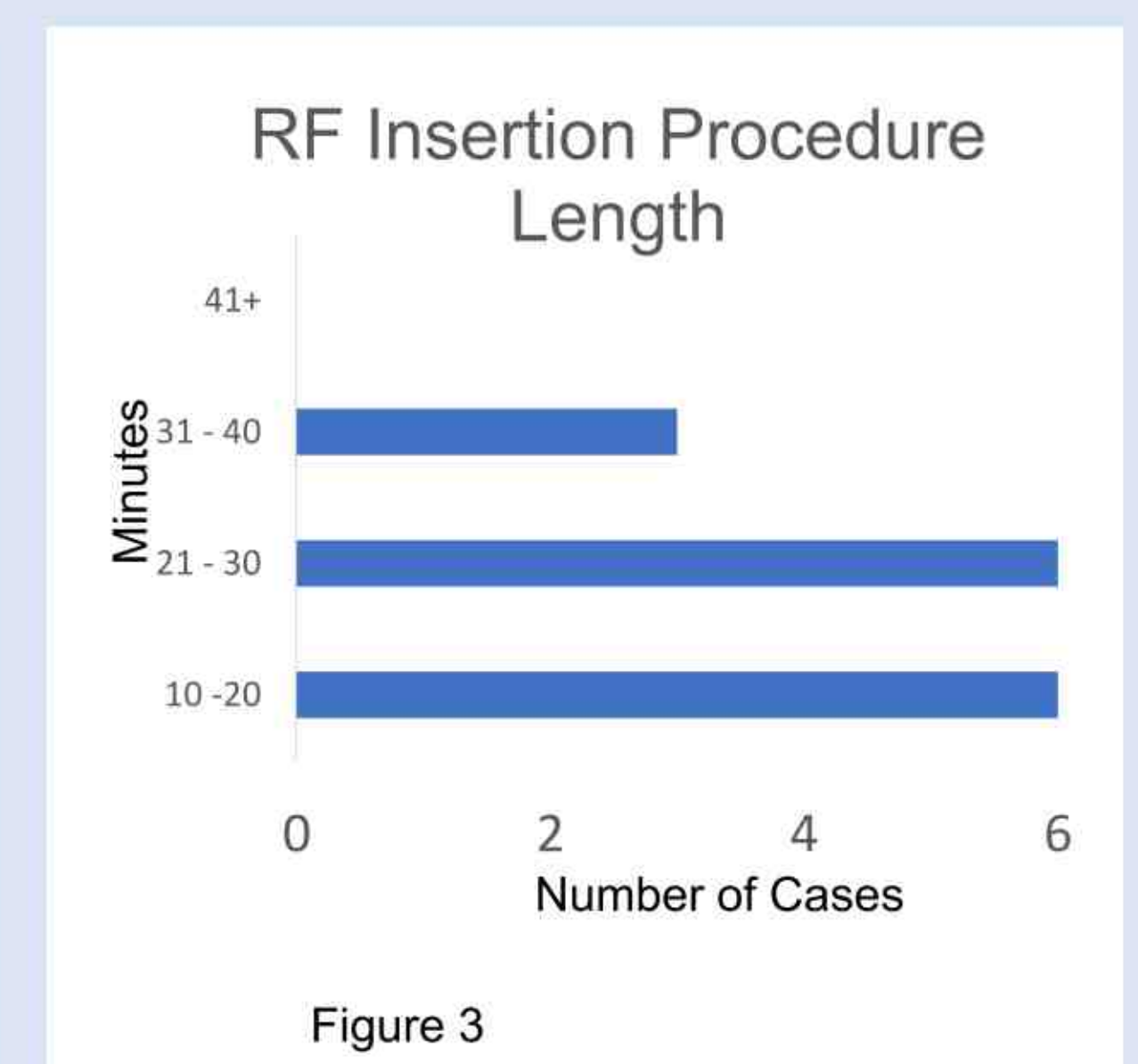
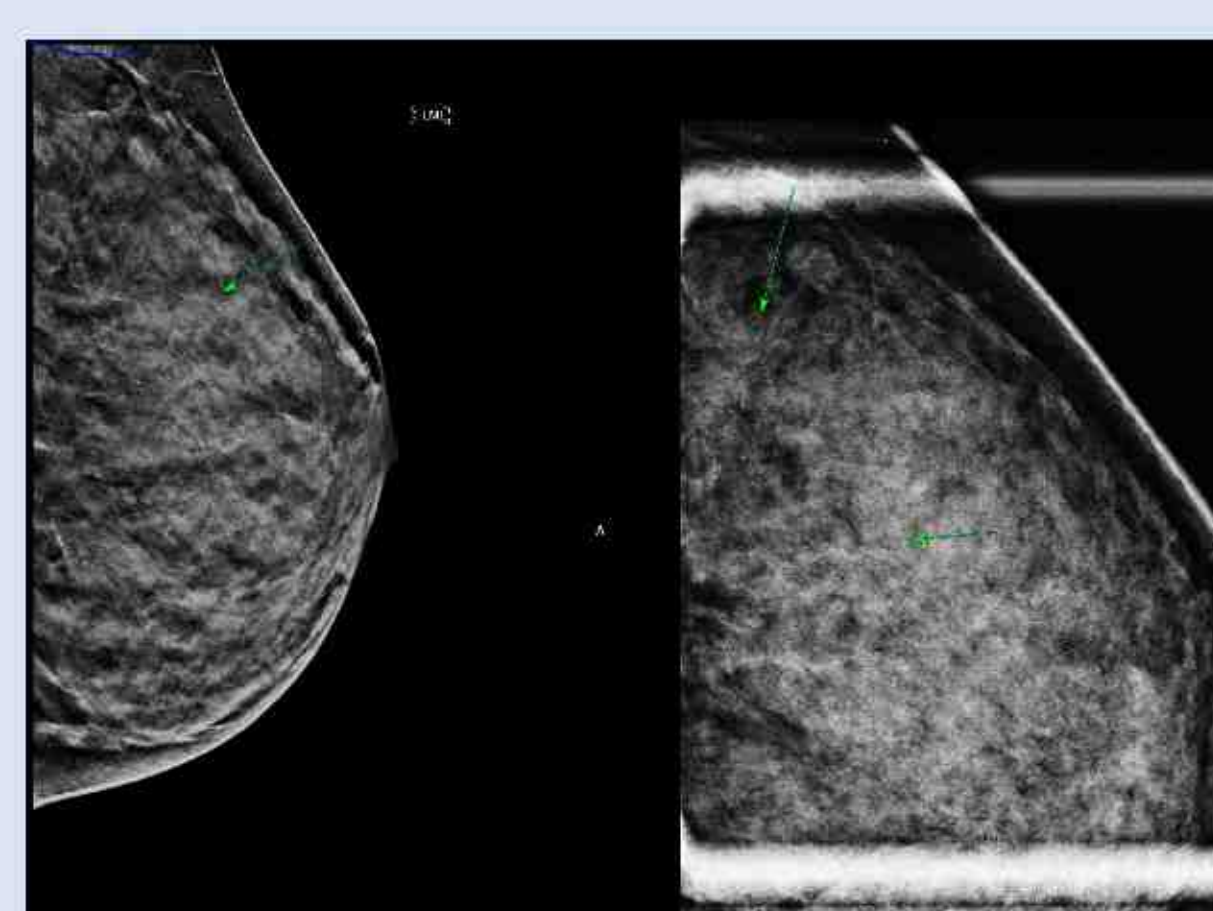
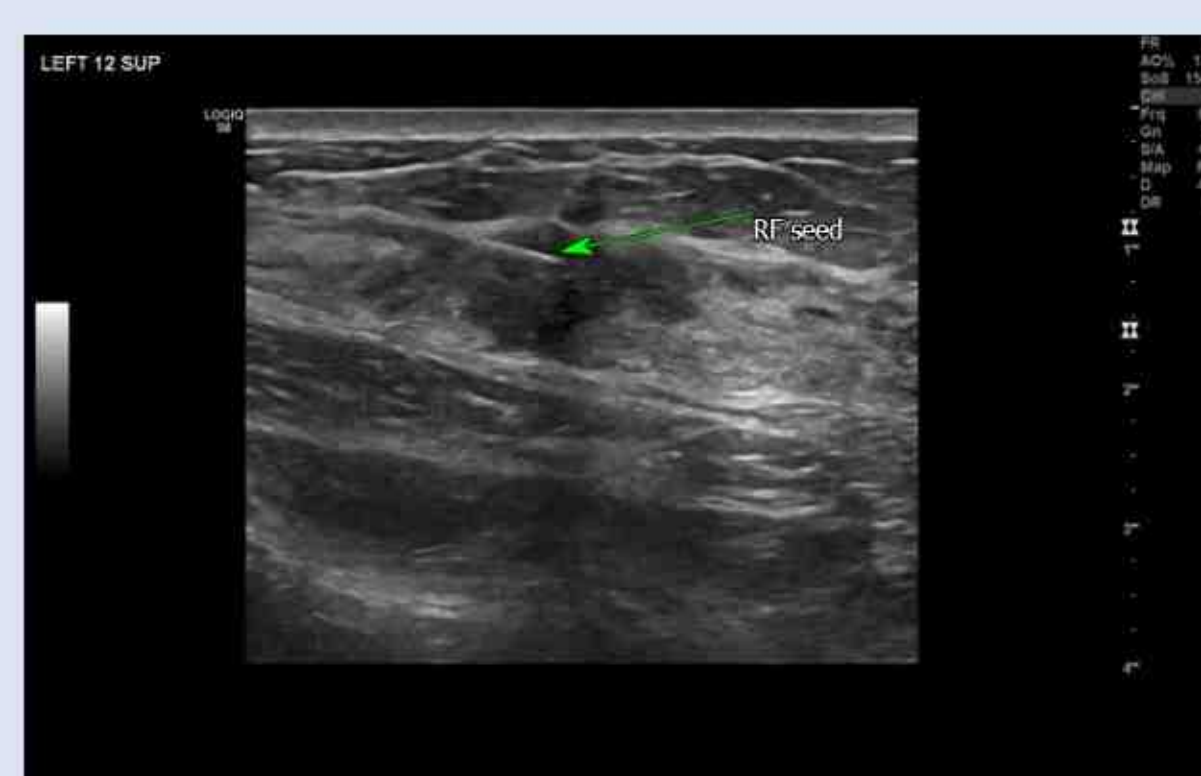


Figure 3



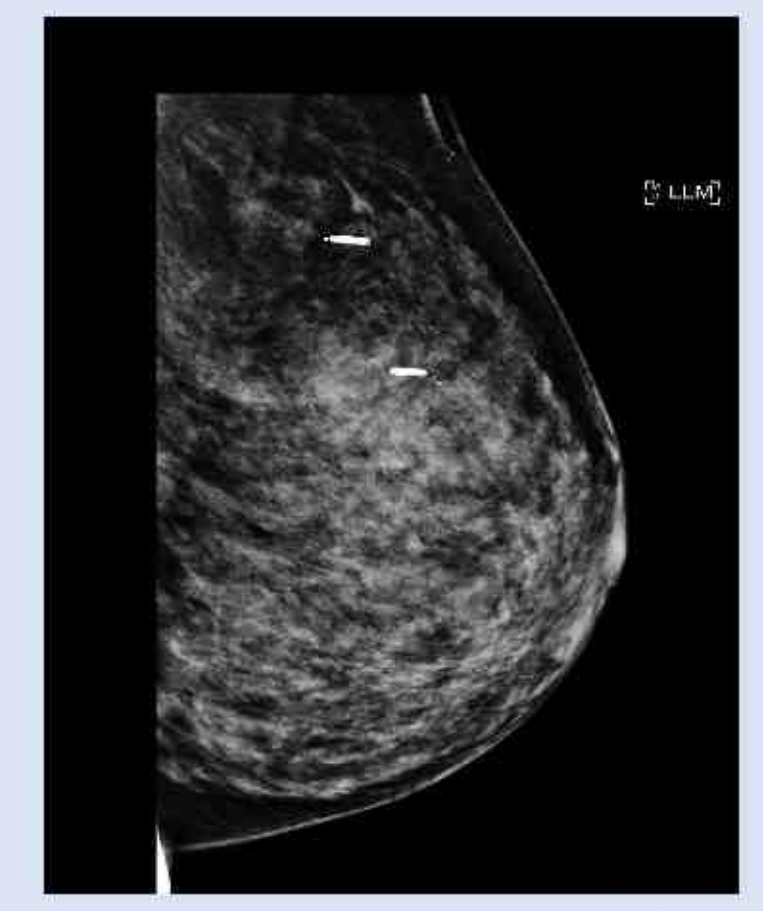
Tomosynthesis and focal compression images demonstrating two lesions within the left breast



RFID seed inserted in to superior lesion



RFID seed inserted in to inferior lesion



Post insertion image in lateral projection identifying RFID seeds in good position



Conclusion

There was a positive response from all involved professional groups with only one negative comment recorded. The procedure was well-tolerated by the patients.

The technique would allow for improved imaging workload planning and surgical scheduling flexibility as the RFID seeds could be implanted anytime up to 30 days prior to surgery. If licence for extended time use was obtained the RFID seed could be used for neo-adjuvant cases prior to treatment.

In the small sample there was a high number of cases with clear margins at surgery.

The use of RFID seeds could prove a cost effective method of breast lesion localisation, attracting an HRG code (YJ12Z) for the procedure as an outpatient of £273 which covers the cost of consumables.

References

- <https://doi.org/10.1016/j.clinimag.2019.01.013>
- Breast Cancer Research and Treatment October 2019, Volume 177, Issue 3, pp 735–739
- <https://www.hologic.com/hologic-products/breast-skeletal/localizer-wire-free-guidance-system>

