DOES PRE-OPERATIVE BREAST MRI REDUCE RE-OPERATIVE RATES IN BREAST CANCER PATIENTS UNDERGOING WIDE LOCAL EXCISION, OR SIMPLY DELAY SURGERY?

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Background

MRI is increasingly used alongside conventional imaging in the diagnosis of breast malignancy, and has been publicised as the most reliable imaging technique to measure tumour size. However, there are concerns that MRI can lead to increased costs, over investigation of benign lesions, and treatment delays. The COMICE trial of 2010 which compared surgical outcomes of women undergoing wide local excision (WLE) with and without pre-operative MRI concluded that MRI might be unnecessary in this population of patients to reduce repeat operation rates[1] .

Nine years on, and with further advances in imaging technology, our purpose was to compare re-operative rates following wide local excision (WLE) in patients with and without pre-operative MRI, and to assess whether the addition of a pre-operative MRI causes significant treatment delays.

The ultimate aim is to reduce the number of therapeutic interventions , by ensuring there is enough pre-operative information available for the optimum amount of tissue to be removed first time. Multiple operations are stressful for the patient, may be associated with increased morbidity and are an inefficient use of what is often limited theatre time, as well as the knock on effect on treatment times, extra bed days, extra pathology and radiology resource time [2].

The NHS-BSP has the following targets [3]:

- Minimum standard: > 95% of patients should have three or fewer operations
- Minimum standard: < 5% of patients treated by breast conservation surgery should develop local recurrence within five years

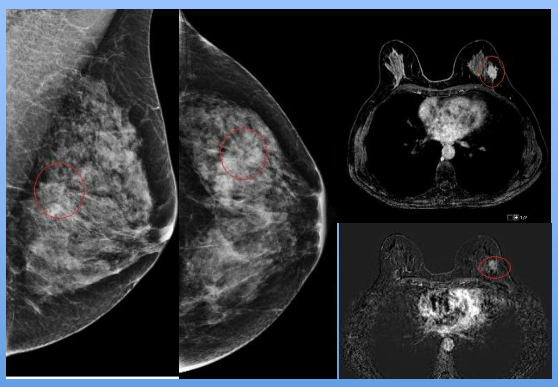
Methods:

Records obtained of all patients presenting in 2017 with a confirmed histological diagnosis of breast malignancy, highlighting those undergoing WLE. Correlation with surgical pathological specimen and re-operative rates for positive margins in those patients with and without pre-operative MRI. Time from first presentation to treatment recorded in all patients.

Results:

In 2017, there were 434 cancer diagnoses in our unit. Of these, 273 (62.9%) underwent WLE. 91/ 273 patients undergoing WLE (33.3%) had a pre-operative MRI. 49/273 (17.9%) patients who underwent WLE required re-operative intervention for positive margins. Of those requiring re-operation, 35/49 (71.4%) had not undergone pre-operative MRI imaging. Mean time to treatment from initial presentation was 58 days (without MRI), 62 days (with MRI).

Figures:



Mammograms demonstrating mass with distortion in the in the upper outer quadrant of the left breast. Accurate delineation possible, but challenging on mammography. Post contrast MRI images confirm unifocality and allow confident size measurement pre-operatively. This patient required a single wire guided wide local excision.

Conclusion:

Pre-operative MRI is extremely beneficial in patients undergoing conservation surgery. A marginal increase in diagnostic time may reduce the possibility of positive margins and re-operation. There are comprehensive guidelines regarding indications for MRI, however we suggest careful consideration and potential increased utilisation in the pre-operative setting for those considering conservation, in order to reduce re-operative rates.

References:

1. **Comparative effectiveness of MRI in breast cancer (COMICE) trial: a randomised controlled trial. Turnbull L et al. The Lancet** Volume 375, ISSUE 9714, P563-571, February 13, 2010
2. **Multiple operation rate in invasive breast cancer in the Breast Screening Service. The Royal College of Radiologists. https://www.rcr.ac.uk/audit/multiple-operation-rate-invasive-breast-cancer-breast-screening-service**
3. Quality assurance guidelines for surgeons in breast screening. Sibbering et al, NHS-BSP **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/465694/nhsbsp20.pdf**