EVALUATION OF THE EFFICACY OF MRI FOLLOW UP OF BREAST CANCER PATIENTS.

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INTRODUCTION

- UK guidelines recommend **5-years annual mammographic** surveillance after breast cancer diagnosis.
- Some patients have **mammographically occult primary breast cancers**, **lobular cancers** or **very dense breasts**, raising concerns about the efficacy of detecting local recurrence with standard mammography.
- This study evaluates post-operative MRI surveillance in a patient cohort at risk of low mammographic sensitivity in a single UK Teaching Hospital.
Follow-up imaging

1.13.1 Offer annual mammography to all people with breast cancer, including DCIS, until they enter the NHS Breast Screening Programme (NHSBSP) in England or the Breast Test Wales Screening Programme (BTWSP) in Wales. People diagnosed with breast cancer who are already eligible for screening should have annual mammography for 5 years. [2009]

1.13.2 Do not offer mammography of the ipsilateral soft tissues after mastectomy. [2009]

1.13.3 Do not offer ultrasound or MRI for routine post-treatment surveillance in people who have had treatment for invasive breast cancer or DCIS. [2009]
METHODS

01
Identified patients who had undergone MRI over 2 year period (between Jun 2016 - Jul 2018) at DRI.

02
Cases identified by review of imaging database and MDT Meeting Notes.

03
Case-notes reviewed to collect data.
RESULTS

- **960** new cancer diagnoses in 2 year period (between Jun 2016 - Jul 2018)
- **49** patients underwent a Breast MRI for surveillance in same 2 year period
- **42** of these patients were also undergoing Mammogram Surveillance
REASONS FOR MRI SURVEILLANCE

- High mammographic breast density
- Lobular primary cancer
- Mammographically occult primary cancer

- Breast conserving surgery plus radiotherapy
- Mastectomy
NPI SCORES OF PATIENTS

- Excellent: 43%
- Good: 31%
- Moderate: 10%
- Poor: 6%
- Very poor: 8%
- Could not be calculated: 2%

Legend:
- Excellent
- Good
- Moderate
- Poor
- Very poor
- Could not be calculated
NPI SCORES OF PATIENTS

<table>
<thead>
<tr>
<th>Number of surveillance MRIs undergone by patient</th>
<th>Number of patients</th>
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<tr>
<td>1</td>
<td>9</td>
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<td>2</td>
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Total of 134 surveillance MRIs for patient cohort of 49.

90 surveillance MRIs for cohort carried out in 2 year period.

Approximately £53600
MRI RECALLS

- 10 total recalls in cohort.
- 8 recalls from 134 follow up MRIs
- 6 patients (12%) were recalled with benign outcome.
- 2 patients (4%) were recalled with malignant outcome/recurrence.
- False Positive Rate of surveillance MRIs was 4.5%
MAMMOGRAM RECALLS

- 4 recalls from **168** follow up mammograms for cohort.
- 2 patients (4%) were recalled with **benign** outcomes.
- 2 patients (4%) were recalled with **malignant** outcome/recurrence.
Surveillance MRIs overall recall rate: 6% (n = 8/134).

Comparative mammogram overall recall rate: 2.4% (n = 4/168).
MRI RECALLS FOR RECURRENTNESS

- 2 patients had local recurrence during the MRI follow-up period.
- 1 of these patients had a recurrence which was detected on mammogram and MRI. NPI = 4.1 (Moderate G1).
- The other patient had a mammographically occult recurrence which was only detected on MRI. NPI = 4.3 (Moderate G1).
CONCLUSION

Is MRI surveillance a beneficial post operative follow up tool?

- MRI surveillance detected 2 local recurrences. One patient benefitted as her recurrence was visible on MRI only. MRI surveillance showed higher benign recall rate than standard mammography.

- Based on these data, MRI surveillance cannot be recommended routinely, but may have a role in very carefully selected cases.
ALTERNATIVES TO TRADITIONAL BREAST MRI

- **Abbreviated Breast MRIs**: advantages of short examination and interpretation times and low costs. Thus, it could be used as a main screening modality that may replace conventional imaging in breast cancer survivors.

- **Three-dimensional ultrasonography of the breast**: ABVS showed 'good' correlation with MRI tumour response evaluation in breast cancer patients during NAC with 'excellent' inter- and intra-observer agreement. ABVS has patients' preference over breast MRI and could be considered as alternative to breast MRI, in case results on an on-going prospective trial confirm these results (NTR6799).

- **Trials needed to confirm efficacy of these devices before their use can be warranted.**
7 patients in cohort with BRCA gene.

1 patient had local recurrence detected on MRI and Mammogram.

Patient had strong family history but low density breasts on mammogram.
**BIRADS**

- **BIRADS** or ‘BI-RADS’ stands for Breast Imaging Reporting and Data System and was established by the [American College of Radiology](https://www.acr.org).
- **BI-RADS** is a scheme for putting the findings from mammogram screening (for breast cancer diagnosis) into a small number of well-defined categories. Although BIRADS started out for use with breast screening mammography, it was later adapted for use with [Magnetic Resonance Imaging (MRI)](https://www.mri.org) and [breast ultrasound (US)](https://www.ultrasound.org) as well.
- BIRADS is something that mainly benefits the radiologists who report mammogram (and breast MRI and US) findings. It doesn’t do anything directly useful for patients or for the doctors who referred a patient for breast imaging.
- 0- incomplete
- 1-negative
- 2-benign findings
- 3-probably benign
- 4-suspicious abnormality
- 5-highly suspicious of malignancy
- 6-known biopsy with proven malignancy