Gloucestershire Hospitals
NHS Foundation Trust

Comparison of M5 and M6 versions of the MARIA® imaging system in patients attending symptomatic breast clinic at Thirlestaine Breast Centre

R Sidebottom[1], C Gillett[2], J Graham[2], S Vinnicombe[1], E Cornford[1], K Evans[1], I Lyburn[1]
[1]Thirlestaine Breast Centre, Gloucestershire Hospitals NHS Foundation Trust. [2] Micrima Ltd, Bristol, UK

1. Introduction

The MARIA® breast imaging system is a CE-marked radio-frequency medical imaging device in development. It uses an electromagnetic technique to exploit contrasts between normal, benign and malignant tissues. The device requires the patient to lie prone with their breast positioned within a scanning cup, with an antenna array housed underneath.

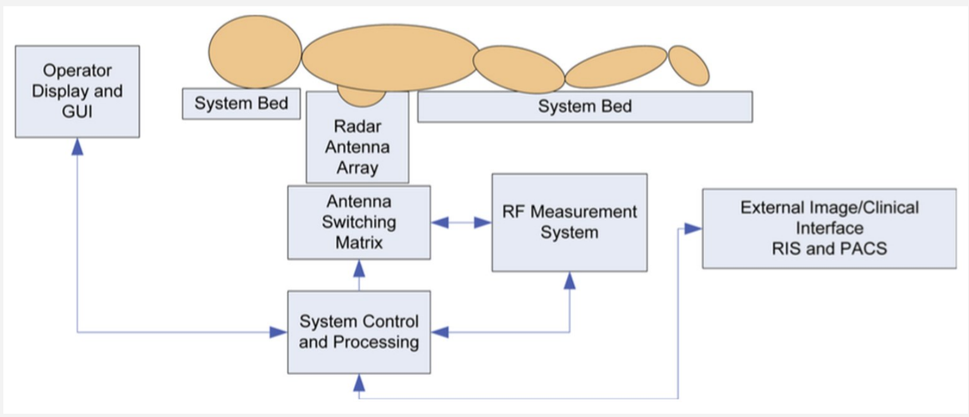

Fig.1 A schematic diagram showing the patient position and system layout of the MARIA® scanner

2. Aims

The intra– and inter– device performance and imaging characteristics between the M5 and M6 versions of MARIA® have been investigated by the company in-house on healthy volunteers.

This investigation aims to compliment that programme of research using patients who have a known breast lesion, which will act as a landmark in the produced scan set.

Further, the dielectric constant of cyst fluid is currently not well understood and obtaining readings from aspirated cyst fluid in applicable patients will be attempted.

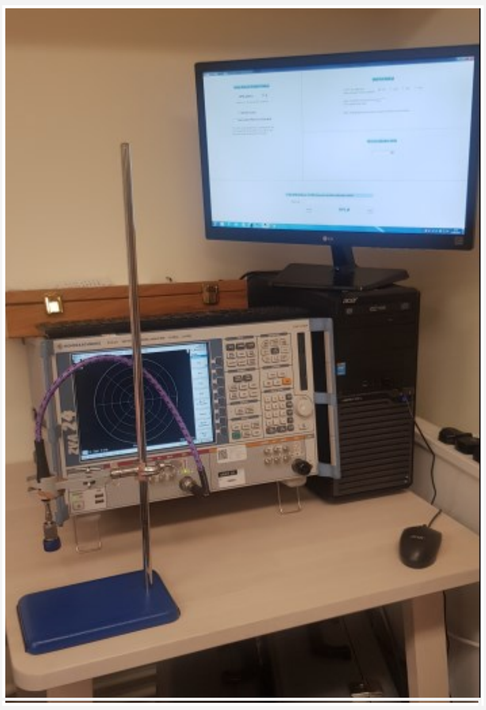

Fig.2 The dielectric probe at Cheltenham

3. Design

There are three parts to this study:

1. A comparison study between intra– and inter– device images obtained when a patient is not repositioned between scans
2. A comparison study between intra– and inter– device images obtained when a patient is repositioned between scans
3. A study to measure the dielectric constant of routinely aspirated cyst fluid. This re-

Fig.3 The MARIA® system set up at Thirlestaine Breast Centre, M6 (L) and M5 (R)

4. MARIA® images

The MARIA® image is portrayed in 3D colour, with areas of greatest contrast displayed in red. Three fields of view (FOVs) are presented, to allow for the breast tissue to be interrogated by the reviewing radiologist at different intensities.

The images obtained in this study have not yet been reviewed but below are examples of the types of image that are obtained and shown by the MARIA® system:

Fig.4 An example of the MARIA® review screen in the latest version of the User Inter-

5. Progress to date

- The study was approved by Yorkshire & The Humber—South Yorkshire Research Ethics Committee on the 16 January 2019, with recruitment beginning in April 2019
- The study is due to close at the end of September 2019
- At the time of creating this poster, 16 out of 20 patients have been recruited to the study. Image interpretation and analysis will be started in September 2019

6. Conclusions

- This technical study will help in the development of this potentially important new technology
- The learning obtained from running this trial successfully will also be able to guide both Micrima Ltd and Thirlestaine Breast Centre in their planning, set up