



## Breast MRI

### Patient Information

#### What is a breast MRI?

A Breast MRI is a medical test where magnetic fields, radiowaves and an advanced computer are used to produce very detailed images of the breasts without using X-rays.

Breast MRI is usually performed:

1. To identify early breast cancer in women with a high risk e.g. a past history of breast cancer in a young woman, a strong family history of breast cancer, or a known genetic mutation (an hereditary characteristic that predisposes a woman to breast cancer).
2. To determine the extent of breast cancer that has already been diagnosed on mammography or ultrasound followed by a biopsy (the removal of a sample of tissue for testing).
3. It is least often it is performed to determine whether an artificial breast implant in one or both breasts is intact.

#### How do I prepare for a breast MRI?

When you make your Breast MRI appointment you may be asked the date of the the date of the first day of your last menstrual period. Your appointment will be made for a date between 6 and 16 days after the start of your last period. This is the best time for Breast MRI to detect any abnormality that may be present because there is minimal interference from the normal hormone-related changes that occur in breast tissue.

If necessary, Breast MRI may be performed if you are a breastfeeding mother. The take up of one of the gadolinium contrast agents into breast milk has been shown to be minimal (0.01%) and very little (less than 1%) of the drug is absorbed by the baby when taken in this way. This is a very tiny proportion of the dose that would normally be given to a baby who was having MRI itself.

There is no special preparation needed prior to MRI. Fasting (going without food or drink) is not necessary. You will be able to take your normal medications, except hormone replacement therapy (HRT), which you will need to stop taking from four to six weeks before the scan. Your doctor will advise about this.

If you are claustrophobic, or if lying on your stomach with your arms stretched out above your head for 30 to 60 minutes without moving is difficult, tell your doctor and our staff when you are making your booking. You may be prescribed a small dose of a medication by injection or tablet to help you to relax.

Please bring your previous mammograms, breast ultrasounds, and reports of any biopsy results with you when you come for your MRI test. These are very useful to the doctor who reviews your MRI as they often provide further information when interpreting the findings.

You will be advised to arrive at the clinic prior to your appointment time, so the procedure can be explained and you can complete a safety questionnaire.

You will be given a gown to wear and somewhere to place your belongings. You will need to take off your jewellery, bra and any other clothing items that contain metal, such as zippers

or metal buttons. Do not take any watches or any cards with a magnetic strip (such as a credit card) into the MRI examination, as they may not work once exposed to the magnetic field.

In some cases you may not be able to have the MRI test done, for example if you have a pacemaker (such as a medication infusion pump), artificial limb, any metal pins or metal fragments in your body (especially in the eyes), metal heart valves, metal clips in your brain, metal implants in your ear, tattooed eyeliner or metallic-based tattoos, or any other implanted or artificial medical device you may not be able to have the MRI examination. You should also inform your doctor if you have worked around metal or if you have recently had surgery on a blood vessel.

Other reasons why you may not be able to have this test include:

- If you have a known allergy to the contrast agent used for MRI
- If you have other health conditions, such as serious kidney problems or sickle cell anaemia
- If you are pregnant. We do not know of any harmful effects so far but at present we do not perform Breast MRI during pregnancy unless the potential benefits are thought likely to outweigh these small but as yet unproven risks to the foetus (unborn baby).

#### What happens during a breast MRI?

Breast MRI is a painless procedure.

If an injection of contrast is required, an intravenous line (IV) (a thin plastic tube) will be placed in a vein (usually on the back of your hand or arm) by the technologist prior to the MRI examination. You will feel a cold sensation where the IV line is situated, this will only last a few seconds and the line will be removed at the end of your procedure.

You will be asked to lie on your stomach on a movable padded table with your arms above your head. Your breasts will be placed into the breast coil, which is like a special padded bra. This coil works with the MRI machine to create the images of your breasts. Mild compression (pressure) is put on your breasts to keep them from moving (otherwise the images may be blurry). This is less compression than experienced with a mammogram and is not painful. Your breasts will be completely covered during the entire examination.

Once you are comfortably positioned, the table is moved into a short tunnel within the MRI scanner.

The inside of the scanner is well-lit, and has a fan to blow fresh air gently over you. The machine makes loud thumping and knocking noises while it is working, which is quite normal. You will be given special head phones or ear plugs to help block out this noise. The technologist will be able to hear you and will talk to you during the examination through the ear phones. It is very important that you do not move during the examination, as this will make the images blurry. If you become uncomfortable while in the MRI machine, you will be able to communicate with the technologist by speaking or using a buzzer.

The time you will spend on the table is 30-60 minutes, and the total examination (from the time you are called from the waiting area) is usually completed within an hour and a half.

After the test, the IV line will be removed. Pressure will be applied to the site or area where the needle was inserted and an adhesive dressing applied.

You may eat and drink normally, and providing you have not had any sedative medicine before the scan, and you may drive following the MRI. If you have had sedation, you will need to wait in the MRI facility for 30 minutes after the examination and you should not drive for six hours. You will be able to walk and talk normally and dress yourself to leave.

## Are there any after effects of a breast MRI?

If you have not been sedated you may resume your usual activities and normal diet immediately after the examination.

A few patients (1 in every 100) experience side effects from the contrast material, including nausea and local pain.

Uncommonly, patients are allergic to the contrast material and experience hives and itchy eyes. This is usually easily treated with antihistamine medication given by injection. More serious reactions to the contrast are rare, occurring in about 1 in 10,000 patients and include difficulty breathing and very low blood pressure. In the event of a serious reaction intravenous drugs will be given by our staff, followed by admittance to hospital for a short period for observation.

A very rare but serious complication from the contrast injection called nephrogenic systemic sclerosis has been recorded in patients who have poor kidney function. This may result in thickening of the skin and soft tissues, mainly affecting arms and legs and more rarely damage to the heart and kidneys. We will assess this risk if necessary by asking questions about your medical history.

You may have a bruise at the site where the IV line was inserted. There is also a very small chance of irritation or infection of your skin at the site of the IV tube insertion due to leakage of the gadolinium contrast material. This may require treatment with local anaesthetic and an ice pack. If the leakage was large, you may be asked to see your referring doctor or the clinic to review the irritation. Very rarely this type of leakage can lead to a clot formation in the affected vein, which can break off and spread to the lungs. For this reason, follow up is necessary should you experience leakage.

If you have had any sedation for the procedure, you will need to stay in the MRI facility for a period after your scan. We recommend that you avoid driving a car or operating machinery for at least 6 hours and we suggest you make arrangements for a relative or friend to take you home.

## How long does a breast MRI take?

The procedure can take between 45 minutes to one and a half hours, including the time to prepare you for the scans and obtaining the images.

## What are the risks of a breast MRI?

The MRI examination poses almost no risk to the average patient when appropriate safety guidelines are followed.

If you are given sedative medication, you may feel drowsy and won't be allowed to drive a car until the effects have worn off.

Although the strong magnetic field is not harmful in itself, medical devices that contain metal may malfunction or cause problems during an MRI examination, which is why we ask you to complete the safety questionnaire.

As previously mentioned there is a very slight risk of an allergic reaction if contrast material is injected. Such reactions are usually mild and easily controlled by medication. One in 10,000 patients will have a more severe allergic reaction (difficulty breathing, drop in blood pressure) which may require emergency treatment.

For patients with poor kidney function there is also a small risk of nephrogenic systemic fibrosis, a recognised, but rare, complication of MRI believed to be caused by the injection of certain MRI contrast material.

There is a very small risk of skin infection at the site of the injection.

## What are the benefits of a breast MRI?

Breast MRI is usually performed in addition to, rather than instead of, mammograms and breast ultrasound. Some of the benefits and advantages of Breast MRI include:

- MRI does not involve exposure to radiation. It can therefore be safely used to screen women at increased risk of breast cancer under 40 years of age (when breast tissue is much more sensitive to the effects of radiation).
- MRI is the most sensitive test to detect early breast cancer in particular groups of women at high risk. These include women with a known faulty gene that pre-disposes them to developing breast cancer (BRCA 1 or 2 mutation), women with a strong family history of breast cancer and women who have had previous chest radiation treatment for Hodgkin's disease or other cancer before the age of 30.
- The ability of MRI to show abnormalities is not lessened by dense breast tissue (which is common in younger women),
- MRI is the best method to evaluate the breasts of women with implants as it has the ability to show the tissues around the implants in cross-section.
- MRI is able to accurately show whether a breast implant has ruptured.
- Where conventional tests such as mammography and ultrasound show uncertain findings, a normal MRI study is generally able to exclude most types of breast cancer.
- Pre-operative staging: MRI is the most accurate way of determining the size of a cancer and whether there are other tumours (cancers) present in the same or other breast. This information may affect the type of surgery needed, and can prevent unnecessary removal of the whole breast, or under-treatment where only part of the breast is removed.
- Evaluation of the response of a cancer to drug treatment: MRI performed halfway into a course of drug therapy can help determine if the drugs are effective.
- Assessing residual disease after surgery and checking to see if the tumour has come back in the breast.

## Who does the breast MRI?

Your breast MRI will be performed by a medical imaging technologist skilled at operating the MRI machine. They prepare the images obtained during your examination for viewing by a radiologist (specialist doctor) who will interpret the MRI images and prepare a written report for your referring doctor.

## How do I get my results?

Your doctor will receive a written report on your test as soon as is practicable.

**It is very important that you discuss the results with the doctor whom referred you so that they can explain what the results mean for you.**

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