TEST

# Breast MRI scan

A breast MRI uses a magnetic field, radio waves, and often contrast dye to create detailed breast images.

**WHAT IT MEASURES**
Detailed breast tissue images and contrast uptake patterns

**SAMPLE**
None

**FASTING NEEDED?**
Sometimes, if sedation or the imaging centre requires it

**HOW LONG IT TAKES**
Usually 30 to 60 minutes

**RESULTS IN**
Usually several days; turnaround varies by radiology service

**USED FOR**
Screening, diagnosis, treatment planning, and implant assessment

**MAIN LIMITATION**
Benign changes can lead to unnecessary further testing

## Overview

A breast MRI scan creates detailed pictures using a strong magnetic field and radio waves rather than X-rays. It does not expose you to ionising radiation.

Most breast MRI scans used to look for cancer require an injection of a gadolinium-based contrast agent. This highlights areas with increased blood flow, but increased contrast uptake does not necessarily mean cancer.

Breast MRI is usually used alongside mammography or ultrasound, not instead of them. Each test shows different features; for example, mammography may detect tiny calcium deposits that are less visible on MRI.

MRI without contrast may be used to check silicone breast implants for rupture but is generally less useful for detecting breast cancer.

## Why the test is ordered

Breast MRI may be ordered to:

For high-risk screening, MRI is normally added to mammography. Eligibility may depend on inherited gene changes, family history, previous chest radiation, and calculated lifetime risk.

MRI is not needed for every breast symptom or abnormal mammogram. Additional mammogram views, ultrasound, or biopsy may sometimes provide a clearer answer.

- screen someone at high risk of breast cancer
- assess the size or extent of a cancer already found
- look for another tumour in either breast
- assess response to treatment before surgery
- investigate a concern not explained by mammography or ultrasound
- search for breast cancer after cancer is found in an underarm lymph node
- check a silicone implant for rupture

## Who should have the test

Breast MRI may be suitable if you have a substantially increased lifetime risk of breast cancer, such as from a harmful BRCA1 or BRCA2 gene change, strong family history, or chest radiation at a young age.

It may also support treatment planning after a cancer diagnosis or assess suspected silicone implant rupture. Routine MRI screening is not recommended for everyone because false alarms can lead to unnecessary tests or biopsies.

Before the appointment, tell the imaging centre if you:

Many modern devices can be scanned under specific conditions, but staff must confirm their safety.

- are pregnant or might be pregnant
- have kidney disease
- have reacted to MRI contrast before
- have an implanted device, tissue expander, metal fragment, aneurysm clip, cochlear implant, or previous surgery involving metal

## How to prepare

Follow your imaging centre's instructions. Most people can eat, drink, and take their usual medicines. You may need to fast if you will receive a sedative or the centre requires it.

Tell staff about your medicines and supplements. Do not stop hormonal medicines unless advised. If you menstruate, a screening MRI may be scheduled for a particular part of your cycle to reduce normal hormone-related enhancement. A time-sensitive scan for a new diagnosis should not usually be delayed for this reason.

Remove jewellery, piercings, hearing aids, removable dental work, and clothing containing metal. Some cosmetics, medication patches, and garments also contain metallic material.

If you are anxious about enclosed spaces, contact the centre beforehand. Support or a sedative may be available. If you take a sedative, arrange transport home and follow instructions about driving.

## What happens during the test

You will change into suitable clothing and complete an MRI safety check. If contrast is required, a cannula is placed into a vein in your arm or hand.

You lie face down on a padded table with your breasts positioned in a breast coil. They are supported but not compressed as they are during mammography.

The table moves into the scanner, which makes loud knocking and buzzing sounds. You will receive ear protection, and staff can see and hear you. Several image sets are taken, usually before and after contrast injection. You must remain still to prevent blurred images. The scan usually takes 30 to 60 minutes.

## Understanding your results

A radiologist reviews the images and reports any masses, areas of contrast uptake, implant changes, or other findings.

Reports often use BI-RADS , a system that links imaging findings to recommended next steps. These may include routine screening, comparison with previous scans, short-term follow-up, another imaging test, or biopsy.

Terms such as "enhancement," "focus," or "mass" do not by themselves mean cancer. A normal MRI is reassuring but cannot exclude every cancer. Contact your healthcare team about any new lump, nipple discharge, skin change, or other persistent breast change, even after normal imaging.

## What affects the results

Menstrual-cycle timing, pregnancy, breastfeeding, menopause, and hormone medicines can increase normal breast enhancement. Recent surgery, biopsy, radiation treatment, infection, inflammation, bruising, or healing can also resemble disease.

Other factors include movement, poor positioning, incomplete contrast delivery, metal or implant distortion, and missing previous scans for comparison. Contrast use may be limited because of pregnancy or kidney concerns.

Give staff accurate information about previous procedures, treatment, menstrual periods, breastfeeding, and hormonal treatment.

## Accuracy and limitations

Contrast-enhanced MRI detects most invasive breast cancers in high-risk screening, but it cannot find every cancer. Small tumours, limited blood flow, movement, or marked background enhancement may hide a finding.

MRI can also produce false-positive results, especially when no earlier MRI is available for comparison. This may lead to ultrasound, mammography, repeat MRI, or biopsy.

Mammography is better at showing some calcium deposits, while ultrasound may be better for assessing a specific lump or guiding a needle. Only a biopsy can determine whether suspicious tissue contains cancer cells.

MRI can detect many silicone implant ruptures, but results must be considered alongside symptoms, examination, implant history, and other imaging.

## Risks and complications

MRI does not use X-rays and is not known to damage breast tissue. However, lying still and face down in an enclosed, noisy scanner can be uncomfortable.

The cannula may cause brief pain, bruising, or swelling. Gadolinium contrast can cause nausea, headache, or a temporary cold sensation. Allergic-like reactions are uncommon.

Seek emergency medical help for severe breathing difficulty, facial or throat swelling, or collapse after leaving the centre.

Contrast can leak into tissue around the vein. Tell staff immediately if you develop pain or swelling. Seek urgent assessment after leaving if swelling becomes severe or you develop

blistering, numbness, worsening pain, or colour changes in your hand or arm.

A rare condition called nephrogenic systemic fibrosis has mainly been linked to certain gadolinium agents in people with severe kidney failure. Kidney checks and modern contrast selection have greatly reduced this risk. Small amounts of gadolinium may remain in the body, although no harmful effect has been established in people with normal kidney function.

Gadolinium is generally avoided during pregnancy unless the expected benefit justifies it. Breastfeeding usually does not need to be interrupted after standard gadolinium contrast, but discuss individual concerns with the imaging team.

## What happens next

You can usually resume normal activities immediately and drink normally unless you have fluid restrictions. After sedation, follow instructions about supervision, driving, work, and alcohol.

A normal or benign result may lead back to routine screening. An uncertain finding may require comparison with previous images, targeted ultrasound, additional mammography, or repeat MRI.

A suspicious result does not confirm cancer. You may need a biopsy, sometimes using MRI guidance. Most follow-up is routine, but severe contrast reactions or serious injection-site symptoms require urgent or emergency care as described above.

## Common questions

Can I drink coffee before a breast MRI?

Usually, unless you were told to fast for sedation. Consider avoiding it if caffeine makes it hard to lie still.

Does the time of day matter?

Usually not. For people who menstruate, the day within the cycle may affect enhancement during a planned screening scan.

Can I exercise beforehand?

Usually, but avoid activity that makes you uncomfortable or unable to lie still.

Will the scan hurt?

It should not be painful, although lying face down may be uncomfortable. The cannula feels similar to a blood-test needle.

What if I am claustrophobic?

Tell the centre beforehand. Communication with staff, music, mirrors, or a mild sedative may help. Not every open MRI scanner can produce suitable breast images.

Can I breastfeed after contrast?

Professional guidance generally says breastfeeding can continue after standard gadolinium contrast. Tell the imaging team that you are breastfeeding.

## Sources

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