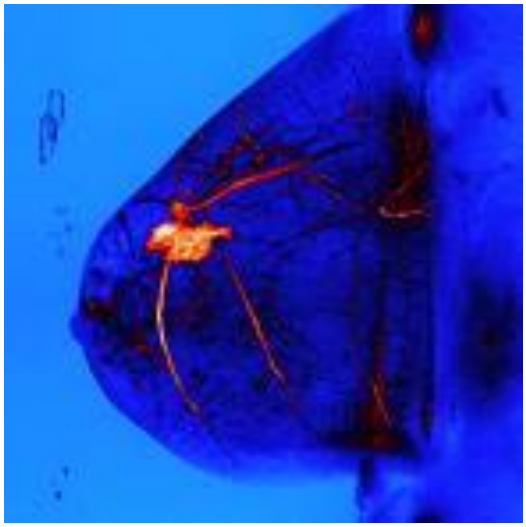
WASHINGTON IMAGING SERVICES, LLC

What is Breast MRI and why is it important to me?



Breast cancer is the most common cancer found in women in the United States and is the second leading cause of cancer-related death. Mammography remains the imaging study of choice for screening for breast cancer and early diagnosis and treatment provide the most successful management of breast cancer. However, 10 to 15% off all breast cancers are not seen on a screening mammogram.

MRI stands for Magnetic Resonance Imaging and are medical imaging studies that use a magnetic field, radio waves, and a computer to produce 2D and 3D pictures of the human body. MRI has been used safely for two decades to detect disease and injury in other areas of the body without the use of ionizing radiation (x-rays.) used in x-ray, mammography and CT.

Technology has now progressed to where **Breast MRI** has become a highly sensitive imaging test used to detect malignant growths within the breast. Radiofrequency waves capture a three dimensional image of the breast pre and post injection of gadolinium and the images are compared. **Breast MRI** does not replace mammography - it is used in conjunction with mammography to provide additional valuable information for the detection and characterization of breast disease.

An important advantage of **Breast MRI** is that it excels in detecting small breast cancers in women with dense breasts, augmented breasts, and breasts that have undergone breast conservation with radiation therapy. Mammography can fail to detect up to 40% of breast cancers in women with dense mammographic patterns. In this situation, particularly for women who are at increased risk due to family history or atypical changes in the breast, MRI can make a difference.

Breast MRI is used routinely for pre-operative staging in women with a known diagnosis of breast cancer who desire breast-conserving surgery and to evaluate for recurrence. It provides more information about a suspicious area detected on a physical exam, mammogram **or** ultrasound.

There is no flattening or compression of the breast in this 30 to 40 minute procedure. The patient lies face-down on a special table insert so the breasts can hang through an opening into a special “coil” that transmits and receives the radio frequency signals that are used in MRI. Once positioned, the patient is moved feet first into the magnet so she can still look to the outside.

There is no special preparation required. However, if you are a menstruating female, the test needs to be performed in the first half of your menstrual cycle for the most accurate results.

1135 116th Ave. N.E. ■ Suite 260 ■ Bellevue, Washington 98004
Phone: 425-688-0100 ■ Fax: 425-454-8911 ■ Email: info@washingtonimaging.com

Some of the more common indications for breast MRI include:

- **Breast cancer staging:** Extent of disease evaluation prior to breast conservation surgery or mastectomy
- **Contralateral breast examination in patients with breast malignancy**: MRI can detect unsuspected disease in the opposite breast in at least 4-5% of breast cancer patients. Often, with negative mammography and physical examination.
- **Lesion characterization**: When conventional breast imaging studies such as mammography, ultrasound or physical examination are inconclusive for the presence of breast cancer
- **Monitoring chemotherapy treatment**: To evaluate chemotherapeutic response and the extent of residual disease prior to surgical treatment
- **Evaluating patients with positive surgical margins for residual disease**: to help determine which patients could be effectively treated by re-excision or whether a mastectomy is required due to the presence of more extensive **disease**.
- **Silicone and non-silicone breast implant evaluation**: Evaluating breast implants for rupture and detecting cancer in women with breast implants
- **Evaluating post-operative scar versus tumor recurrence**
- **Occult breast cancer:** Locating the very small, undiagnosed breast cancer (occult cancer) when a malignant axillary node is found and the origin cannot be determined with mammography or physical examination.
- **Surveillance of high risk patients**: Breast cancer screening in patients with a genetic predisposition to breast cancer

Who is a candidate for breast MRI?

- **Newly diagnosed breast cancer patients**. MRI will provide more accurate information about tumor size and shape, allowing the surgeon to properly plan treatment. MRI will also help assure that there are no additional areas of cancer in the same breast or on the opposite side. Women contemplating lumpectomy often have anxiety about cancer being present in the remaining breast tissue, and there can be a great deal of reassurance to know through MRI that the problem is limited to one site. Also, in this era of "partial breast radiation", the remaining breast tissue away from the lumpectomy site is not treated, so breast MRI is an excellent tool to help patients select this approach.

- **Patients with a past history of breast cancer**. Women who have undergone lumpectomy and radiation often have scar tissue seen on mammography that can mask a recurrent cancer. Incorporating MRI into the follow-up plan vastly improves the chances of early detection. For women who have undergone mastectomy on one side, there is still a possibility of recurrence of the original tumor, plus the other breast is at increased risk for the development of a new primary breast cancer. Again, MRI is the most sensitive method of detection. Women who have already had bilateral mastectomies may still want to continue with MRI follow-up if they

are at risk of local recurrence, especially if they have undergone a reconstruction that can interfere with early detection.

- **Diagnostic problems not settled by conventional imaging**. Usually, breast concerns are completely evaluated through the use of mammography and ultrasound. However, if questions remain, breast MRI can offer great assistance.

- **Implant status**. Breast implants placed as part of cancer reconstruction are studied with MRI as part of routine follow-up, and this is generally covered by insurance. When silicone implants are placed for cosmetic reasons, the FDA under new guidelines recommends breast MRI after 3 years, then every 2 years thereafter, though insurance coverage is less likely here (unless patients qualify for MRI based on other indications).

- **Asymptomatic screening.** Yearly breast MRI, in addition to mammography, beginning at age 30 is now recommended by the ACS for women who:
  - test positive for one of the BRCA genes, or a first-degree relative of a known BRCA mutation carrier,
  - have a documented history of any of the rare genetic disorders in which breast cancer is one component,
  - have a past history of being treated with chest irradiation for Hodgkin's disease between ages 10 and 30, or
  - have been calculated by any of the standard mathematical models to have a 20-25% (or greater) lifetime risk for the development of breast cancer.