

Answers About Breast MRI

Q What occurs during the breast MRI procedure?

A During a breast MRI, a patient lies on the scanning table in a prone position with her arms above her head. Her breasts are suspended in a depression in the scanning table. These contain a coil or antenna that detects a signal from body tissues. This signal is transformed into an image. The scanning table is moved into the bore of the MRI. After the first series of images, the patient will be given an intravenous contrast agent to improve the visibility of a tumor. The exam takes 20–30 minutes to an hour.



Q What other details do I need to know?

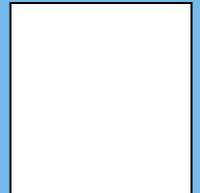
A The Breast MRI procedure must be done between days 7 and 10 following the first day of her last menstrual period. Otherwise high estrogen levels will cause too much enhancement in the tissue which can hide a tumor. A patient who has been taking hormone replacement therapy or birth control pills is encouraged to wait up to six months before having a breast MRI. However, if clinical indications or the risk of cancer support doing the study sooner, her referring physician can make this known at the time of scheduling and the exam can be performed right away.

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MRI and Breast Cancer

By Philip Benedetti, M.D.

Breast cancer screening and mammograms may seem synonymous to many physicians, but in a recent study published in *Cancer, Journal of American Cancer Society*, researchers found that few women get yearly mammograms. The study involved 72,417 women of all ages at Massachusetts General Hospital and found that only 6% of women who received a mammogram in 1992 received mammograms annually for the next 10 years.

In the years 1963 through 1997, multiple randomized trials evaluating the usefulness of mammography in breast cancer screening were performed on nearly 600,000 women. The data from these studies, when collated, showed an approximate 20% reduction in breast cancer mortality for the age groups 40 through 74. These studies did not differentiate average-risk from high-risk patients. Given the obvious benefit, low cost and easy accessibility of mammography, the American Cancer Society currently recommends annual mammography beginning at age 40. Even though mammography is still regarded as the mainstay of screening for breast cancer, it has known limitations.

Recent advances in breast MRI have made this relatively new modality indispensable in both problem solving and more recently in high risk screening for breast cancer. In a study published in the *New England Journal of Medicine* in 2004, physicians at six cancer centers throughout the Netherlands have found that MRI scans reveal nearly twice as many tumors as mammograms in women at high risk for breast cancer. The study also showed that MRI may make monitoring a more acceptable option for women who otherwise might have their healthy breasts removed as a preventative measure.

In this report, researchers examined 1909 Dutch women with a higher than average risk for breast cancer. Of these women, 358 had one of the BRCA genetic mutations (which are known to significantly increase the risk for breast and ovarian cancer). In this study, women were screened in three ways: a) breast exam by a physician every six months, b) annual mammograms, and c) annual MRI scans. Researchers were blinded to each other's results. After an average of approximately three years, 45 tumors were found

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Oregon Advanced Imaging

is a local community partnership between Rogue Valley Medical Center, Providence Medford Medical Center, and Medford Radiology Group. This partnership provides MRI and PET scan services to patients, physicians, and healthcare providers throughout southern Oregon. We provide uncompromising standards of customer service, integrity, reliability, and accuracy. The entire team at Oregon Advanced Imaging is committed to providing the highest quality imaging services.

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A Grateful Survivor



Cancer survivor Cathy Then discusses the benefits of breast MRI: "Because the cancer was detected at a very early stage, I didn't have to have chemotherapy."

In June of 2003, Cathy Then, age 51, went to her physician for a routine exam and mammogram. Everything came back normal. Several weeks later however, she found a lump near her right clavicle.

"Even though it didn't have the characteristics of cancer, Dr. Hansen recommended a breast MRI," Cathy said. "I went into Oregon Advanced Imaging to have this procedure. The lump itself was benign, but the MRI found evidence of small cancer tumors in my right breast the mammogram had missed."

MRI uses powerful magnetic fields and radio wave to create images of the breast. It can achieve views in any plane and orientation without repositioning the patient. Unlike mammography, MRI does not require x-ray radiation. MRI is highly sensitive to small abnormalities, like the ones found in Cathy Then's exam. It can also show whether the cancer is multi-focal and/or in the chest wall. Mammography is still

recommended as the primary screening tool for breast cancer. When a mammogram is less than optimal, a breast MRI may be indicated, particularly in women with dense breast tissue or implants.

The breast MRI at OAI uses a breast coil, which allows a patient to lie on her stomach during the exam. It takes 20-30 minutes to perform. A contrast material called Gadolinium DTPA is injected into the arm to improve the quality of the breast images.

One of the greatest values of breast MRI is to guide the choice of therapy. By using Cathy's MRI images, the surgeons were able to pinpoint the cancerous cells and remove them via a lumpectomy. Her surgery was followed up with radiation treatment. "Because the cancer was detected at a very early stage," Cathy said. "I didn't have to have chemotherapy. We have a great medical community here and I'm grateful we have such amazing technology available here." ■

of which 32 were identified by MRI, including 22 that had not been visible on mammograms. Only 18 of the 45 tumors were seen on mammograms. Although this study showed that MRI scans found more tumors than mammograms, it also found that MRI could produce more false positives which may lead to unnecessary biopsy. In this study, the sensitivity and specificity for breast cancer detection was found to be 18% and 98% respectively for clinical breast exam, 33% and 95% respectively for mammography, and for MRI 80% and 90% respectively.

Multiple other studies have confirmed the great potential of breast MRI in certain circumstances, but how is all of this viewed by insurance carriers? The following is an excerpt taken directly from Regence BlueCross BlueShield of Oregon, dated 8/3/04:

Policy/Criteria

MRI of the breast may be considered medically necessary as a screening technique for breast cancer in patients who meet one of the following criteria:

1. *Known BRCA1 or BRCA2 mutation in patient or relatives.*
2. *Pattern of breast cancer history in at least two first-degree relatives consistent with a high probability of harboring BRCA mutations or other hereditary breast cancer.*
3. *In women 30 years of age and younger with prior history of radiation therapy in childhood or adolescence to fields encompassing the supraclavicular, mediastinal, axillary, or pulmonary hilar lymph nodes.*
4. *For the detection of breast cancer when mammography is limited (i.e., dense breasts, implants, scarring after treatment for breast cancer).*

MRI of the breast for diagnostic or problem solving evaluation may be considered medically necessary in the following clinical situations:

1. *For detection of a suspected occult breast primary tumor in patients with axillary nodal adenocarcinoma and negative mammography and physical exam.*
2. *For presurgical planning in patients with locally advanced breast cancer before and after completion of neoadjuvant chemotherapy. MRI may be considered medically necessary before and after completion of neoadjuvant chemotherapy to permit tumor localization and characterization.*

3. *For presurgical planning to evaluate the presence of multicentric disease in patients with clinically localized breast cancer who are candidates for breast-conservation therapy.*

4. *To determine the presence of pectoralis major muscle/chest wall invasion in patients with posteriorly located tumor.*

5. *When used for imaging suspected implant rupture when the presentation is suggestive of significant silicone extravasation or intracapsular leak.*

6. *For the diagnosis of low suspicion findings on conventional testing that are recommended for short-interval mammography follow-up instead of immediate biopsy.*

MRI of the breast is considered investigational for other indications such as screening in women at average risk for breast cancer. Also, MRI should not be used as a method to avoid biopsy when felt indicated based on results of traditional imaging such as mammogram or ultrasound.

Aetna has a very similar policy statement (<http://www.aetna.com/cpb/data/CPBA0105.html>).

Multicentric cancer (policy statement #3), i.e., cancer in more than one quadrant of the breast, usually requires mastectomy. If a lumpectomy is planned, especially in a patient with dense tissue limiting mammogram, it is important to consider MRI prior to surgery.

In those patients with dense breast tissue or at high risk for cancer who cannot tolerate a breast MRI exam, ultrasound could be considered as an alternative. Six large patient series totalling nearly 43,000 patients have demonstrated that ultrasound can find additional cancers not seen on mammography but ultrasound is not as sensitive or specific as MRI and produces many false positives requiring follow up or biopsy.

With the refinement of older modalities and the emergence of new modalities which show great promise but sometimes limited specificity, one can understand the difficulty in selecting the best tests for both breast cancer screening and for problem solving when a clinical abnormality is present. Hopefully, this article has provided some background information to help guide clinicians in the right direction. Please do not hesitate to call Oregon Advanced Imaging to speak with a radiologist involved in MRI or mammography for information specific to your patient's needs. ■

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Dr. Benedetti graduated from Wayne State University School of Medicine in Detroit, MI and completed postgraduate training at St. Mary's Hospital in San Francisco. Dr. Benedetti completed his Radiology residency and MRI Fellowship at UC Davis Medical Center in Sacramento. Dr. Benedetti is board certified as a Neuroradiologist and is the Medical Director at OAI.

