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Consulting Radiologists, Ltd.

Providing Comprehensive, Premier Breast
Screening Technology

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By Marian Deegan

Early detection of breast cancer has made a significant contribution to the decline in breast cancer fatalities over the last decade. New cases of breast cancer, however, are on the rise. According to the American Cancer Society (ACS), one in every eight women will develop invasive breast cancer at some point in her life. North American women have the highest rate of breast cancer in the world. These statistics underscore the ongoing importance of preventative screening and early diagnosis.

CRL Imaging Southdale is committed to improving rates of early detection by providing premier breast screening technology to women in the Twin Cities. “Our goal is to provide accurate, timely and compassionate care in a comforting setting, using the best technology available,” explains Dr. Deborah L. Day. Dr. Day is one of six radiologists and breast imaging specialists at CRL Imaging.

This year, CRL Imaging installed new Hologic digital mammography imaging technology. Only 8% of the nation’s

Dr. Deborah Day reviews breast MRI findings with radiologist Dr. Thomas Ibach.





Dr. Day confirms diagnostic breast findings with an ultrasound before performing a biopsy.

mammography machines are digital. CRL Imaging's Southdale hub is electronically linked to supporting clinics in Edina and Plymouth. CRL's digitally enhanced breast specialty practice offers an extensive range of breast imaging services, and is affiliated with the Piper Breast Center at Abbot Northwestern Hospital for patients requiring MRI-guided biopsies and additional interventional care. "We work with the most advanced mammography imaging technology on the market," says Dr. Day. "We want our patients to have the highest quality of care available anywhere."

CRL's breast imaging services include digital mammography, ultrasound and MRI screenings. Although breast MRI technology is often more accurate than mammography or ultrasound in defining the extent of newly diagnosed cancer, mammography remains the best screening tool for identifying breast cancer in asymptomatic average-risk women.

Dr. Day explains that the advantages of digital mammography technology are particularly notable in detecting breast cancers in susceptible populations: women under 50, premenopausal women and women with dense breast tissue. "Younger women generally have denser breasts with more fibroglandular tissue, which appears white on a mammogram, as do potentially cancerous abnormalities," says Dr. Day. "The

difficulty with identifying white abnormalities against a white background results in a 20% rate of false negatives. DMIST studies have shown that digital mammography technology more accurately discerns between healthy breast conditions and worrisome abnormalities in these women, reducing the number of false positives and false negatives." Scans for premenopausal women also present a diagnostic challenge because estrogen can cause increased blood flow to the breast, paralleling the increased blood flow caused by the development of breast cancer. Estrogen-related blood flow can mask cancer, resulting in a false negative. It can also simulate an abnormality, prompting false positives.

Publicity surrounding breast MRI screening has prompted many patients to question whether an MRI screening is preferable to a routine mammogram. Although breast MRI is a valuable tool, Dr. Day explains that several factors make this technology inappropriate for routine screening of average risk women.

"Breast MRI is a highly sensitive modality," says Dr. Day. "It can be more accurate than ultrasound or mammography in defining the extent of cancer in the involved breast, which makes it valuable in evaluating lumpectomy versus mastectomy surgery options. In 20% of newly diagnosed breast cancer cases, MRIs will show a larger area of cancer involvement than is evident on mammography or ultrasound. This helps

Radiologic technologist Jane Clay, R.T. (R)(M), performs screening digital mammography.



the surgeon and the patient plan the most appropriate surgery for cancer treatment.”

“MRIs find 95 to 98% of infiltrating ductal cancer, which is the most common type of breast cancer,” she continues. “But that same sensitivity is also nonspecific, and will identify many noncancerous abnormalities that look like cancer. This can cause a high number of false alarms and additional tests in routine screening. The cost of an MRI screening combined with the cost of additional biopsies triggered by MRI sensitivity make MRI technology less than ideal for preventative screenings in asymptomatic patients.”

Other factors also discourage the use of MRIs in routine screening. MRI assessments require more time than mammography readings. Availability is an issue as well. “There simply aren’t enough MRI units available to screen every patient currently evaluated,” says Dr. Day.

“Forty percent of our MRI scans are performed on patients with newly diagnosed cancer,” explains Dr. Day. “In March of 2007, the American Cancer Society (ACS) came out with

new guidelines recommending annual breast MRI screening in high-risk women. CRL Imaging has experienced a significant increase in high-risk MRI screenings as a result.

“In 2006, we read about 450 breast MRIs. In 2007, that number increased to 1,020. I don’t think this increase will continue at the same rate, but my sense is that our volume of MRIs will continue to grow. We are also seeing more information in the radiology and oncology journals about the benefits of doing an MRI for women with newly diagnosed breast cancer,” says Dr. Day.

CRL Imaging has made adjustments to its office schedule to address increasing screening demands. A general radiologist handles routine general radiology, plain films, mammography, breast-related ultrasound and fluoroscopy. CRL has expanded its number of weekly interventional breast clinics to provide an additional radiologist to handle interventional procedures including cyst aspirations and ultrasound-guided biopsies.

“The change in breast biopsy procedures over the last 15 years has been significant,” says Dr. Day. In the early ’90s,

Dr. Ibach interprets digital mammography reviewing electronic images.



surgical biopsy was the standard, but that standard evolved to the image-guided needle biopsy. “This was a huge transition,” comments Dr. Day. “Though surgical biopsies are still the gold standard, image-guided biopsies have shown to be as accurate, with advantages not available with surgical biopsy.”

Image-guided needle biopsies can be scheduled more quickly, because operating room and surgeon availability aren’t an issue. They are also less invasive. “With a surgical biopsy, there is scarring on the skin and in the breast,” says Dr. Day. “As a result, there can be some architectural distortion in the breast associated with the biopsy. Distortions in the breast can be problematic because it’s not always obvious that the changes are due to a biopsy. Image-guided needle biopsies reduce the amount of change in the breast, making subsequent screening mammograms easier to evaluate, and reducing false-positive readings.”

When screening identifies an abnormality, patients are understandably apprehensive about the evaluation process. “Our practice puts an emphasis on sensitive coordinated care,” says Dr. Day. “We’ve established a process specifically to handle MRI screening requests. Often patients, and sometimes referring doctors, request MRIs in cases that fall outside of ACS guidelines. They may have heard that MRI screening is a good thing to do, without being aware of the issues caused by lack of specificity. We have developed a screening form for referring doctors to ensure that ACS guideline-approved indications are present. In cases where an MRI is not the best option, we confer with the referring doctor and the patient, providing guidance and a recommendation for an appropriate work-up.

“In cases where an MRI is appropriate, we counsel the patients to be prepared for callbacks to clarify readings,” Dr. Day continues. “Up to a third of our breast MRI patients are called back for additional evaluation using a second-look ultrasound. If we see something with ultrasound, we’ll follow up with an ultrasound-guided biopsy. If the ultrasound can’t further identify an abnormality, we might recommend a follow-up MRI in six months, or proceed to an MRI-guided biopsy.”

Dr. Day also stresses the importance of accessibility to services and convenient office locations. “We can usually get a referred patient in for an MRI screening within 48 hours,” she explains. When an MRI is requested to assess newly diagnosed cancer, this immediacy is essential. For premenopausal, high-risk screening patients, CRL’s scheduling flexibility can be as critical as immediate access. “With premenopausal patients,” explains Dr. Day, “we get more accurate results when the scan is scheduled to occur seven to 10 days after the start of the



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Dr. Deborah Day, Consulting Radiologists, Ltd. — CRL Imaging and Piper Breast Center

menstrual cycle. This is the time when there is the least amount of circulating estrogen in the breast, minimizing the chance that hormone-related blood flow will mask or be mistaken for a cancer-related abnormality. Detail-sensitive coordination can maximize the accuracy of test results.”

Many patients and some referring physicians are not aware of the importance of scheduling a breast MRI at a facility that also has the capability to do MRI-guided biopsies. “Breast MRIs are unlike any other breast imaging or radiologic study in that they are uniquely facility dependent,” Dr. Day explains. “A breast MRI conducted at one facility can’t be used by another facility, even when both facilities use the same imaging equipment. When the MRI study indicates an abnormality, an MRI-guided follow-up biopsy may be necessary to collect tissue for analysis. If the MRI facility handling the scan doesn’t offer biopsy services, the patient must repeat the breast MRI at a biopsy facility before the biopsy can be performed.” With a fee of up to \$2,500 per MRI study, this is a costly procedure to duplicate unnecessarily.

A breast MRI requires more than 1,500 images. Each sequence scans through the breast in 2-3 millimeter-thick slices. Before X-ray dye is administered, a preliminary sequence of the breast is taken, followed by additional sequences at one, two, three, four and five minutes after the dye injection. Sequences demonstrate the movement of dye through the blood vessels in



PHOTO COURTESY OF CONSULTING RADIOLOGISTS, LTD.

The Magnetom Symphony 1.5 Tesla MRI scanner at CRL Imaging in Plymouth

the breast, revealing any areas where dye leaks from abnormal blood vessels. Abnormal blood flow in the breast is an indicator of the potential presence of cancer. The radiologist also evaluates the shape and margin characteristics of breast masses and other areas of increase blood flow.

It is the sheer number of images required for a breast MRI that create the facility-dependent issues. The imaging sequences and postprocessing protocols are unique to each facility. The MRI sequences are named and the naming protocol guides the image postprocessing. The study cannot be interpreted until it has been post-processed. “We use the Siemens MRI scanner,” says Dr. Day. “Other facilities in the area use GE or Phillips MRI scanners. Every MRI manufacturer uses slightly different physics to capture their images. The lack of standardization prevents the exchange of usable MRI scans between facilities, and can cause delays and duplication of these costly scans. The ACS recognizes this as a national problem, and the ACS website urges patients and physicians to have breast MRIs performed at a facility that also offers MRI-guided biopsies. However, if facilities work together to develop identical protocols, MRI scans can be interpreted at all these facilities. This is the case with CRL Imaging and Piper Breast Center at Abbott Northwestern Hospital.”

Detail-oriented patient care is a theme that recurs through Dr.

Day’s discussion of breast health issues, treatments and comparative technologies. “CRL Imaging integrates the best technology with coordinated patient care; the combination is really what makes us unique,” she says. “Women today are very aware of breast health. When screening reveals a potential issue, our patients understand how much is at stake. Accurate, quality treatment is critical, and we feel that it’s also essential to provide care that is compassionate and easy to access in a reassuring setting.”

Dr. Day recalls one case illustrating CRL’s integration of specialty care and individual attention. The patient was in her late 40s when a mammogram revealed a cluster of calcifications in one breast. A stereotactic biopsy confirmed that the cluster was a low-grade cancer, and it was appropriately treated. Subsequently, as a high-risk patient according to the ACS guidelines, she was screened yearly with mammograms and breast MRIs. When one of these MRIs

revealed an unusual pattern in the nonaffected breast, Dr. Day was concerned. “This patient was premenopausal,” she says. “I knew the pattern might simply be diffuse increased blood flow due to circulating estrogen. But this pattern was different enough from what I’d seen on the MRI the year before that I suggested an ultrasound-guided biopsy. We were able to perform the biopsy immediately, and discovered diffuse cancer throughout her breast. This is very unusual, but thanks to early detection, we were able to treat her appropriately.”

Dr. Day looks thoughtful for a moment, then smiles and explains that the patient’s daughter and Dr. Day’s daughter are friends. “My daughter’s friend says that I saved her mom’s life,” says Dr. Day. “This woman’s story illustrates the value of the integrated care we provide.” ■

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