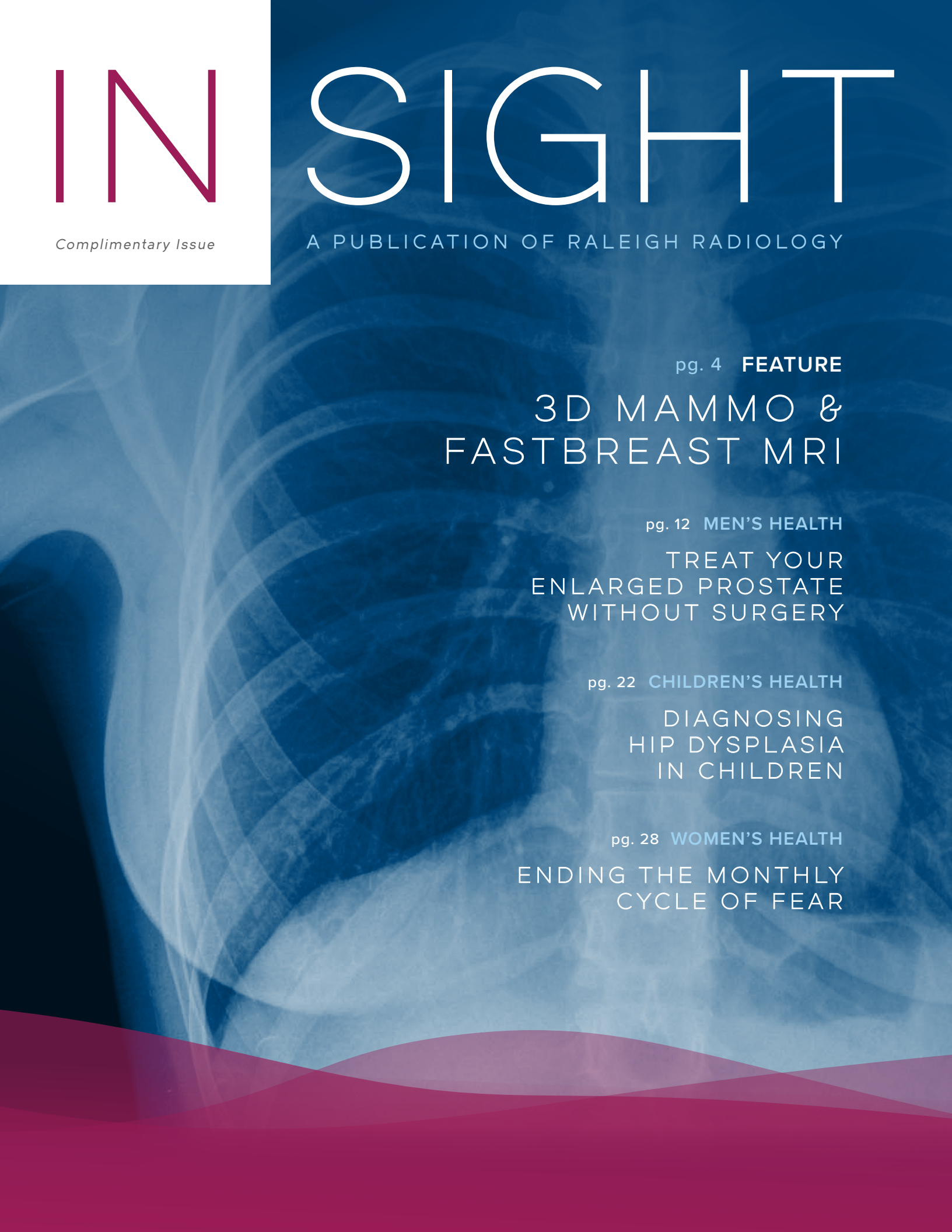
IN SIGHT

Complimentary Issue

A PUBLICATION OF RALEIGH RADIOLOGY



Becoming a board-certified subspecialty-trained radiologist takes years of training.

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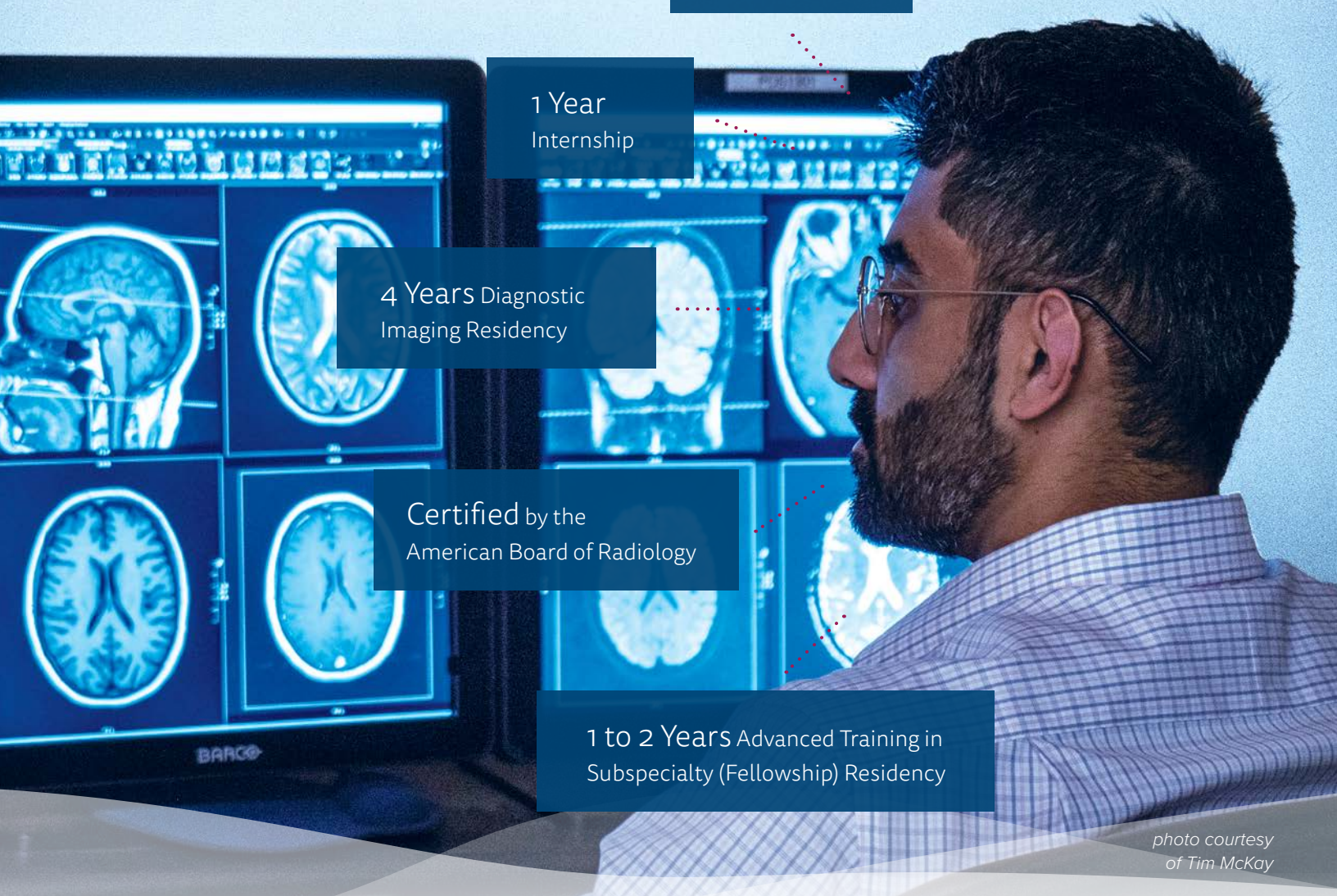

photo courtesy of Tim McKay

MRI, Ultrasound, CT Scan, PET/CT, and Mammography — medical technology is always evolving, and these diagnostic instruments are critical in helping subspecialty radiologists detect and pinpoint illness, injuries, and diseases as early as possible so an effective treatment plan can be developed.

IN SIGHT

In Sight Magazine

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About Raleigh Radiology

A cornerstone in the Wake County medical community since 1950, Raleigh Radiology offers diagnostic imaging subspecialties such as abdominal imaging, breast interventional, vein & vascular/interventional, musculoskeletal, neuro and neurointerventional, nuclear medicine and PET, pediatric radiology, and hospital-based emergency radiology.

To learn more about Raleigh Radiology, scan the QR code or visit *www.raleighrad.com*

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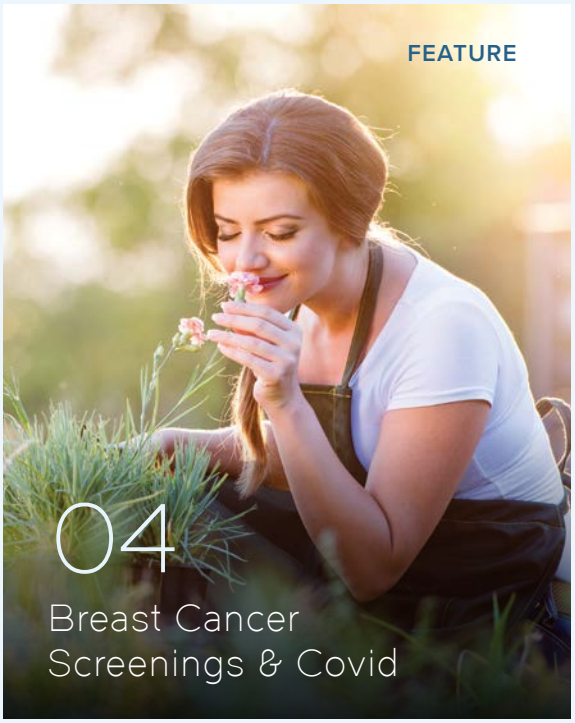


Breast Cancer Screenings & Covid

DELAYED SCREENINGS LINKED TO LATER-STAGE CANCER DIAGNOSES

Results from a new pandemic study comparing screenings before and during Covid showed more women were now being diagnosed with Stage IV breast cancer (1.9% in 2019 and 6.3% in 2020).[1]

Women in the US have a one in eight risk over the course of their lifetime of being diagnosed with breast cancer. Most women know that getting an annual mammogram at age 40 and beyond can help detect breast cancer in its earliest stages when it's most treatable. A 2009 study demonstrated that three-fourths of breast cancer deaths occur in women who don't undergo yearly mammograms. Yet still, approximately 30% of women fail to get their routine mammogram screenings. That figure could be even higher since many women have postponed their annual screening due to the pandemic.

Dr. Julie Taber, board-certified breast interventional radiologist encourages women to get back on schedule: "The pandemic has been around longer than people originally anticipated. If you've delayed your mammogram, waiting for it to be over, it's important that you get back on a regular schedule. There is clear evidence that women who are diagnosed with breast cancer in its early stages are less likely to need a mastectomy and/or chemotherapy — and the cure rates are also higher for cancers detected early." Dr. Taber emphasizes that Raleigh Radiology continues to use stringent cleaning protocols between each patient, and all staff wear masks to provide best safety practices.

A mammogram is a low-dose x-ray of the breast designed to help detect abnormalities in the breast tissue before cancer symptoms begin. While mammography screening for breast cancer has been around since the 1950s, it did not become the gold standard for screening until the 1980s. Since then, research has shown that mammography has helped reduce breast cancer mortality by anywhere from 35 to 50 percent.

[1] UC San Diego Health study: https://health.ucsd.edu/news/releases/Pages/2022-02-15-pandemic-upends-breast-cancer-diagnoses.aspx

2D or 3D Mammography

There are two types of mammography screening tests — either traditional 2D or newer 3D (digital breast tomosynthesis) mammography. Standard 2D mammography will take 4 images of the breast, while digital 3D screening obtains additional images using multiple angles.

There is clear evidence that women who are diagnosed with breast cancer in its early stages are less likely to need a mastectomy and/or chemotherapy...

For women with dense breast tissue, a 3D mammogram can make it easier for radiologists to see around or through dense tissue to better detect abnormalities that could be pre-cancerous or cancerous.

Dr. Taber stresses, "When it comes to mammography, any screening is better than no screening. While there are many organizations with varying recommendations for mammography screening, the American College of Radiology (ACR) and the Society for Breast Imaging (SBI) indicate that women of average lifetime risk — that is, no family history, no genetic risk factors, etc. — should be screened with a mammogram annually starting at age 40."

Women with genetic risk factors, a family history of breast cancer, or those deemed at high risk may start screening as early as age 25. In addition to mammography, a screening breast MRI may also be recommended. Ask your physician what he or she recommends based on your risk factors.

Screening with Breast MRI

A breast MRI may be an appropriate supplemental screening tool in patients who are determined to have a high lifetime risk of breast cancer, as determined by various risk calculators, most commonly with a risk model known as Tyrer-Cuzick. This method assigns patients with a score that correlates to an average, medium or high-risk designation. The calculation is based on a wide range of information such as genetic factors including the presence of the BRCA genes, mammographic breast density, detailed family history, age, onset of menses, age of menopause, use of hormone replacement therapy and age of first live birth.

MRI uses magnetic resonance technology to detect changes in the tissue that may allow the radiologist to diagnose disease before structural changes show up on a mammogram. Unlike a mammogram or ultrasound that are looking primarily at the structure of the tissue, MRI studies can also

evaluate how the breast tissue is behaving, allowing us to potentially differentiate a cancerous vs a noncancerous mass. "Specifically, MRI allows us to look at blood flow patterns within the breast tissue by using contrast agent that is injected into the veins. When cancers grow, they recruit blood vessels to feed them due to their rapid growth, so if we see a mass that takes up a lot of the contrast agent (or highlights), we may have a higher level of concern for cancer. Conversely, if there is a mass that isn't taking up any contrast, we understand that this mass may have little cell growth or activity and that it's less likely to be a cancerous growth," says Dr. Taber.

"Even though it's more 'sensitive,' a breast MRI isn't necessarily 'better' and is rarely used by itself," Dr. Taber explains. Even for women who are referred for a breast MRI study, experts recommend a yearly mammogram to complement the MRI. In these cases, women should stagger their imaging so they are seen every six months — getting a breast MRI followed by a mammogram just six months later so each woman gets two screenings per year. "The information taken from each of these studies will be used together to allow your radiologist to keep a careful watch for any changes that may signal cancerous or precancerous activity."

If you've delayed your mammogram, waiting for it to be over, it's important that you get back on a regular schedule.

The overarching message is that women need to continue being diligent in taking preventative measures such as annual screenings, and if you've gotten off schedule, it's time to get back on. ■

Julie Taber, MD
Breast Interventional Radiologist

Shawn Tubman-Morales, *RT(R)(M), CN-BI*
Miagy Alvarez, *CN-BA*

Raleigh Radiology has two Breast Patient Navigators on staff to help guide women through their care plan, ensure timely diagnosis & treatment, and provide support. Certified by the National Consortium of Breast Centers (NCBC), this further demonstrates a commitment to providing high-quality, high-value care to our community.

Cloudy Skies & Dense Breast Tissue

A COMMON COMPARISON

Imagine you're looking for a tiny white bird in a sky that's filled with thick, white clouds.

Now, imagine you're looking at a clear, blue sky looking for that same tiny white bird. In which scenario do you think it would be easier to see the white bird?

This is the analogy board-certified breast interventional radiologist Dr. Kenneth Crosby often shares with his patients when explaining what it means to have dense breast tissue. While breast interventional radiologists are trained to look for small white masses on a mammogram, in women with dense breast tissue, it's simply harder to detect abnormalities.

When talking breast density, it's first important to understand the various categories of density. Dr. Crosby explains there are four categories as follows:

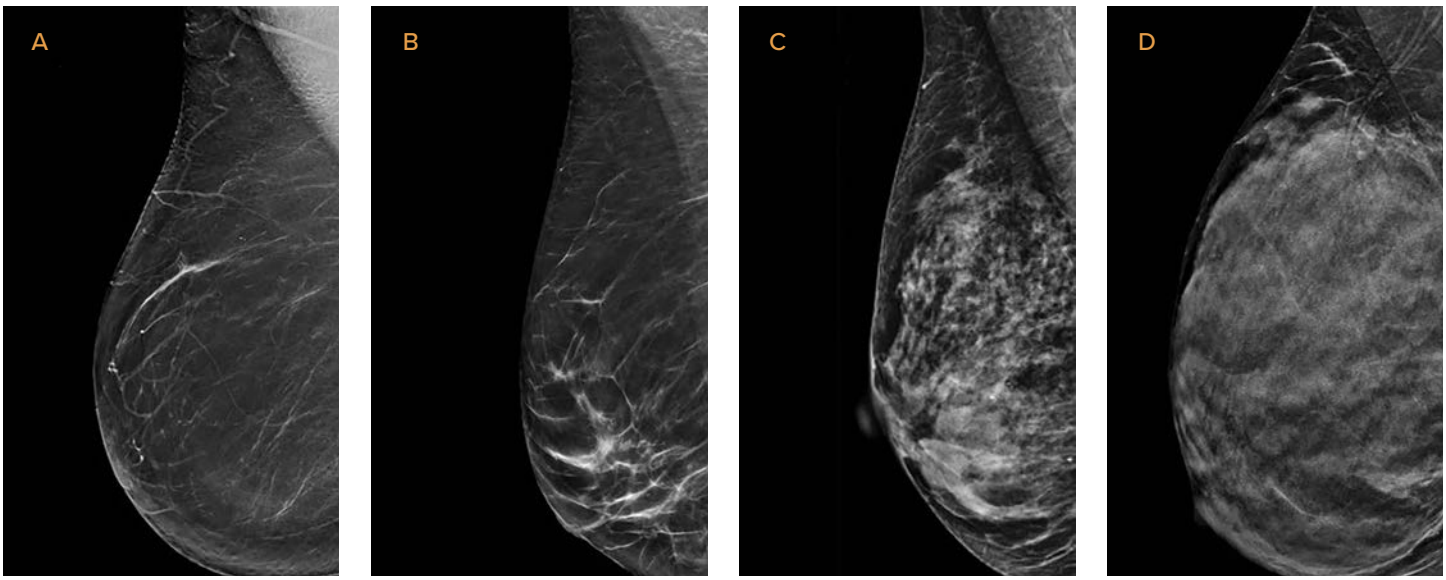
1. **Fatty** breasts mean the breasts are made up mostly fat — this accounts for 10% of women.

2. **Scattered areas of fibroglandular density** means some areas of the breast are dense, but most isn't. This accounts for 40% of all women.

3. **Heterogeneously dense** means most of the breast tissue is dense in nature. This accounts for 40% of women.

4. **Extremely dense** means nearly all the breast tissue is dense. This accounts for just 10% of women.

Four categories of breast density.



(A) Fatty; (B) Scattered; (C) Heterogeneously dense; (D) Extremely dense

Generally, those with heterogeneously dense or extremely dense breasts are those who are considered to have dense breast tissue. In North Carolina, state law mandates that your radiologist include this information in their report. That's because women with dense breast tissue are considered to be at a slightly higher risk for developing breast cancer, although doctors aren't yet sure why this is the case. With that said, dense breast tissue is extremely common — accounting for 50% of all women — most of whom will never develop breast cancer.

3D mammograms allow us to get more images of the various layers of tissue within the breast

Another option for women with Heterogeneously dense or Extremely dense breasts is a Fast Breast MRI Screening. This 15-minute exam can provide more detail when used in conjunction with a 3D mammogram. As this exam is not covered by insurance, Raleigh Radiology offers this at a significantly discounted rate.

Dr. Crosby reiterates that when it comes to breast cancer screening, the mammogram is considered the gold standard. Breast ultrasound or breast MRI are used when there are areas of concern, but women who have a normal mammogram or 3D mammogram and are not at an increased risk of breast cancer due to their personal/family history or other factors don't typically need another level of screening. Still, the Fast Breast MRI is available for that added peace of mind.

Ultrasound and MRI studies are helpful for looking at abnormalities identified on a mammogram. MRI is also used in some patients considered at high risk for breast cancer, to evaluate extent of disease in patients with biopsy proven malignancy and to evaluate for implant integrity in patients with silicone implants.

In addition, Dr. Crosby recommends making sure to stay on schedule for getting an annual screening mammogram and to make sure to have a yearly clinical breast exam from a primary care provider or OB/GYN. Furthermore, women are urged to conduct monthly self-breast exams as recommended by the American Cancer Society. ■

Kenneth Crosby, MD
Breast Imaging Radiologist

What is a Fast Breast MRI Screening?

Fast Breast MRI is a screening tool used for average risk women with dense breasts. There is no radiation used with this imaging procedure. While mammography has been proven to be an effective tool in detecting cancers, finding cancers in a denser breast can be more challenging. A 15 minute breast MRI exam called Fast Breast MRI can provide more detail when used in conjunction with a 3D mammogram in women with dense breasts.

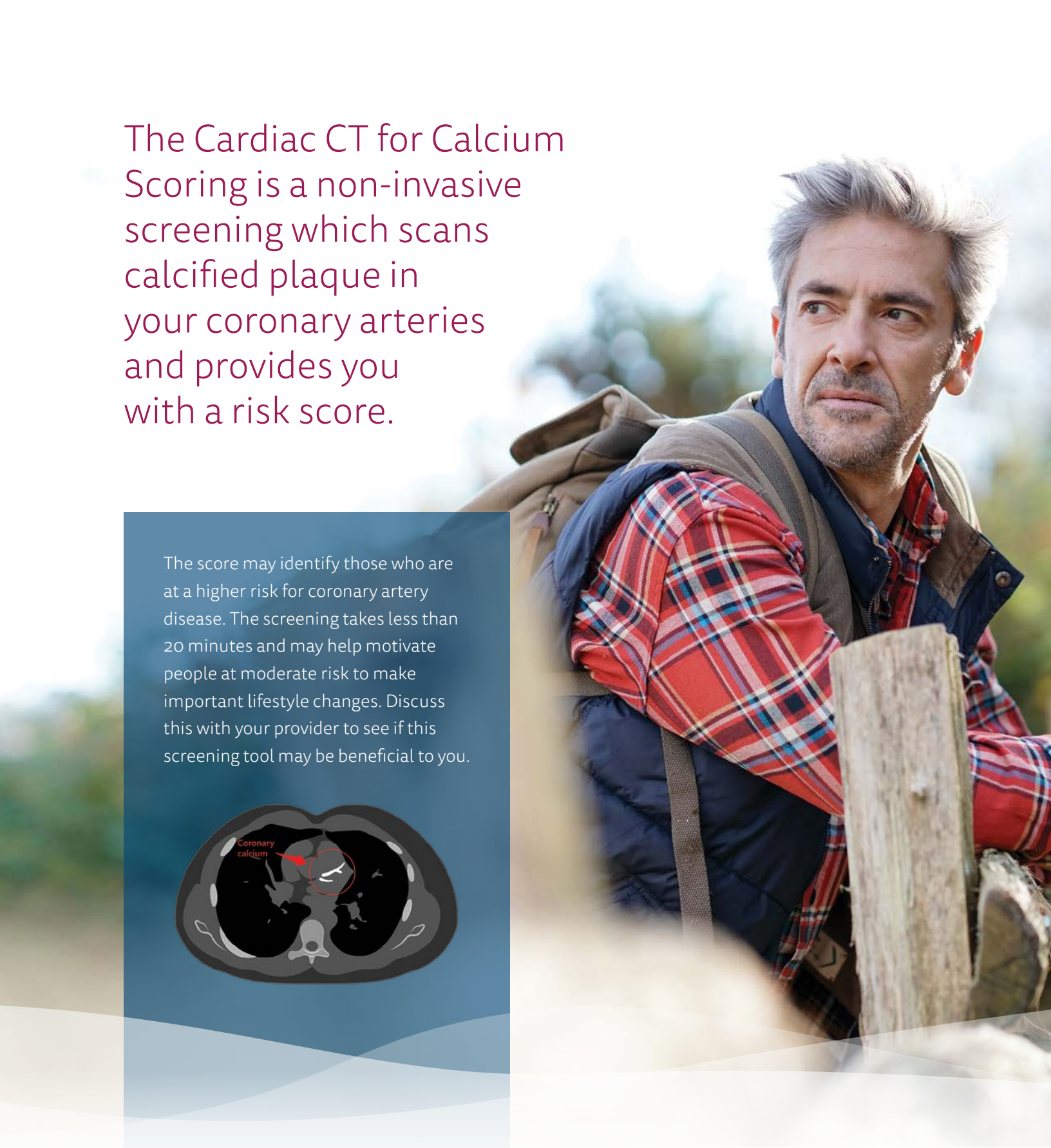
Is this a Screening or a Diagnostic test?

A Fast Breast MRI is a screening exam that uses a contrast dye injection. It's called "fast" because the screening takes less time than traditional breast MRI which takes about 45 minutes. Women who have dense breasts and lower lifetime risk factors who do not qualify for a standard breast MRI Study may find peace of mind with this option.

You should also know:

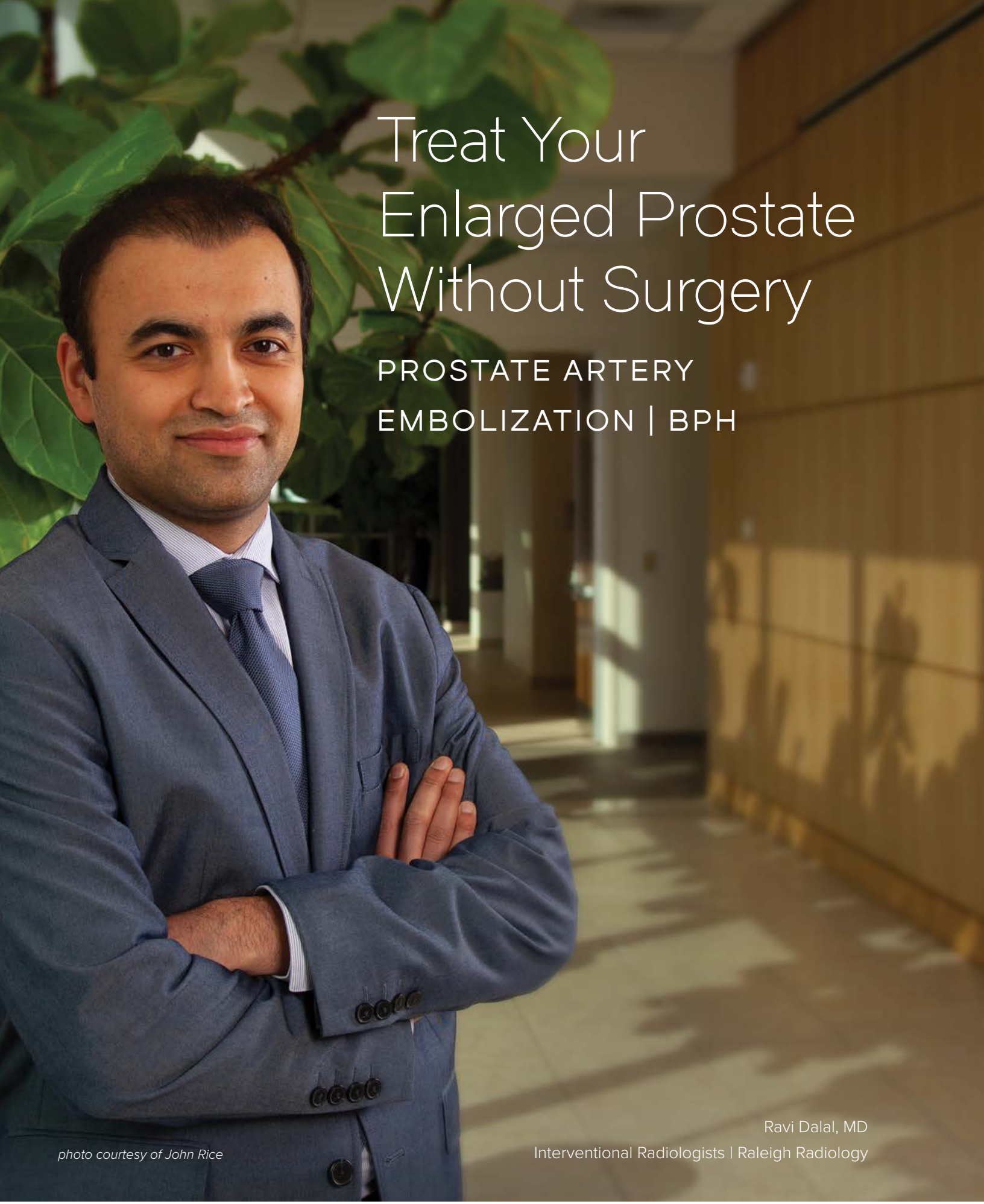
As it is a screening exam, it's important to note that a Fast Breast MRI does not detect the full range of diseases a conventional breast MRI would identified. Breast MRI does not replace the recommendation for annual screening mammography, but is used as an additional screening study to detect early breast cancer. As with any screening study, non-cancerous lesions may be detected which may require follow-up including recommendation for additional imaging and possible biopsy.

The Cardiac CT for Calcium Scoring is a non-invasive screening which scans calcified plaque in your coronary arteries and provides you with a risk score.



The score may identify those who are at a higher risk for coronary artery disease. The screening takes less than 20 minutes and may help motivate people at moderate risk to make important lifestyle changes. Discuss this with your provider to see if this screening tool may be beneficial to you.

If you would like to schedule a $99 Cardiac CT for Calcium Scoring screening at a Raleigh Radiology imaging center, call 919.781.1437.



Treat Your Enlarged Prostate Without Surgery

PROSTATE ARTERY EMBOLIZATION | BPH

photo courtesy of John Rice

Ravi Dalal, MD
Interventional Radiologists | Raleigh Radiology

A common condition among most aging men is benign prostatic hyperplasia (BPH), a noncancerous condition where the prostate becomes enlarged and urinary issues start to take hold.

BPH can have a deeply negative impact on a man's quality of life, leaving him searching for relief. Symptoms include urinary urgency, frequent urination, straining to urinate, urinating multiple times in the night, incomplete emptying of the bladder, and sometimes sexual side effects.

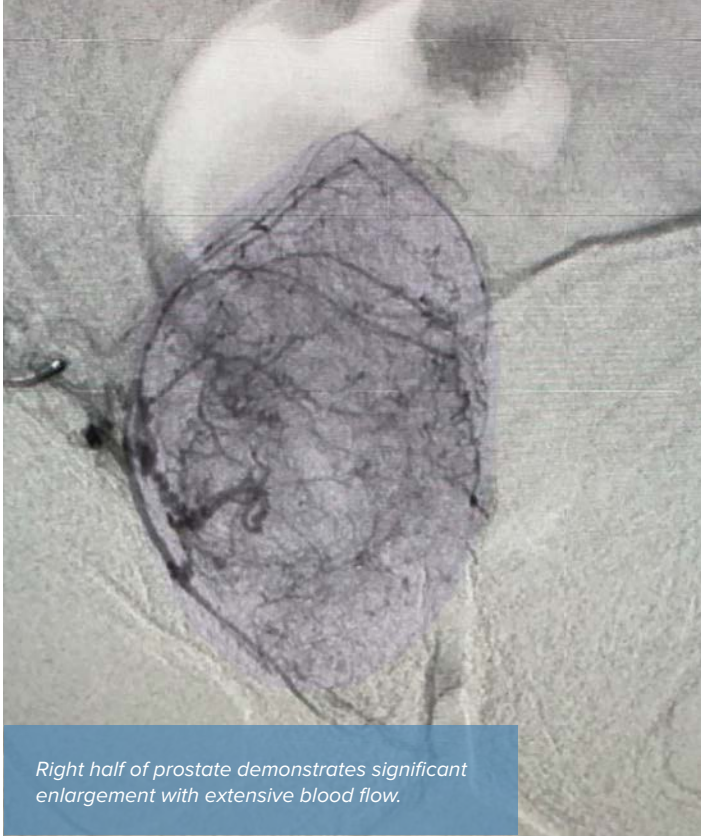
Why Does Urination Become a Problem for Some Men?

The prostate gland sits below the bladder between the bladder and the penis. Running through the center of the prostate is a tube called the urethra which allows urine to flow out of the body. When the prostate becomes enlarged, pressure is placed on the urethra, and a man cannot urinate properly or efficiently. The goal of treatment is to remove this pressure.

Traditional Treatment Options for BPH

Traditional treatment of BPH involves medication as well as several procedural options — some of which require surgery, an inpatient hospital stay, and the potential for unpleasant side effects. Additionally, a patient must meet certain requirements to qualify. Traditional treatment options include:

- **Transurethral Resection of the Prostate (TURP)** — The urologist essentially removes the parts of the prostate gland that are causing problems. While TURP is considered the gold standard and essentially eliminates BPH, it is also major surgery that involves an overnight hospital stay, blood loss, and many potential side effects. Additionally, if the prostate is too large, TURP is not an option.
- **Prostatectomy** — This procedure is a partial or complete removal of the prostate. This treatment option presents the best overall improvement of symptoms, but also involves surgery, a hospital stay, and has potential side effects.
- **Laser Treatment** — Lasers are used to kill the prostate tissue and reduce the size of the gland.
- **UroLift® System** — A permanent device is implanted to lift and hold the enlarged prostate tissue, preventing it from blocking the urethra.
- **Rezum™ Therapy** — This minimally invasive treatment option uses hot steam to attempt to "burn out" the parts of the prostate that are squeezing the urethra.



Right half of prostate demonstrates significant enlargement with extensive blood flow.

After PAE, right half of prostate shows minimal residual blood flow, and prostate will begin shrinking over the next few months.

photos courtesy of Raleigh Radiology

A Minimally Invasive Approach: Prostate Artery Embolization (PAE)

There is a minimally invasive approach that does not involve burning or removing the prostate. With relatively few side effects, prostate artery embolization (PAE) is a newer, intravascular treatment performed by interventional and vascular radiologists.

Introduced more widely within the past ten years, PAE has grown in popularity due to the benefits and its success rate. The patient receives moderate sedation, so general anesthesia is not necessary, and the procedure takes anywhere from 90 minutes to three hours.

Ravi Dalal, MD, board-certified interventional and vascular radiologist with Raleigh Radiology explains, “The idea is that if we shrink the prostate by getting rid of the blood supply on both sides, it will have the same effect as other treatments, but it is safer. Without a blood supply, nutrients can’t reach the prostate, and the cells will die. This is called necrosis. The body’s immune system will then remove the cells and create scar tissue. The prostate will shrink, and the tissue around the urethra will open up allowing urine to flow freely and reducing many symptoms.”

PAE is a highly technical procedure that requires precision and expertise acquired through an interventional radiology fellowship.

The radiologist may decide to perform the procedure trans-radially (i.e., through the wrist) or through the groin. Either option creates no more than a 2 mm incision and requires no stitches. The radiologist will then inject microscopic beads into the artery that runs to the prostate. These beads will ultimately block the blood supply. Multiple techniques are employed during the procedure to ensure the beads are inserted into the correct artery. The patient is in recovery approximately two hours before being sent home with prescribed antibiotics and NSAIDs to help with inflammation and pain.

Positive Results & Improved Symptoms

Before PAE, most men report a variety of negative symptoms that impact their quality of life using a symptom tracking score methodology known as the International Prostate Symptom Score (I-PSS) rubric. The eight-question screening tool tracks and assesses symptoms of patients with BPH by determining a man's difficulty with urination and also helping select the best treatment options. Whether it's sexual dysfunction or urinary symptoms — men want relief and to live their lives to the fullest.

> "I've actually had patients tell me they feel like they are 20 years old again."

"After a PAE, we want to see those screening scores trending in the right direction. Greater than 75 percent of men say they experience an improvement in symptoms after this procedure. Patients also appreciate that PAE comes with few side effects, most commonly mild pain upon urination which usually subsides within days to a few weeks," says Dr. Dalal.

Rarely, post embolization syndrome can occur after PAE (low-grade fever, nausea, chills, discomfort when urinating), but this is temporary and resolves within a week. After the procedure, a patient should meet again with his radiologist to assess progress.

Helping High-Risk Patients Face BPH

Interventional radiologists and urologists are very selective when choosing patients for PAE.

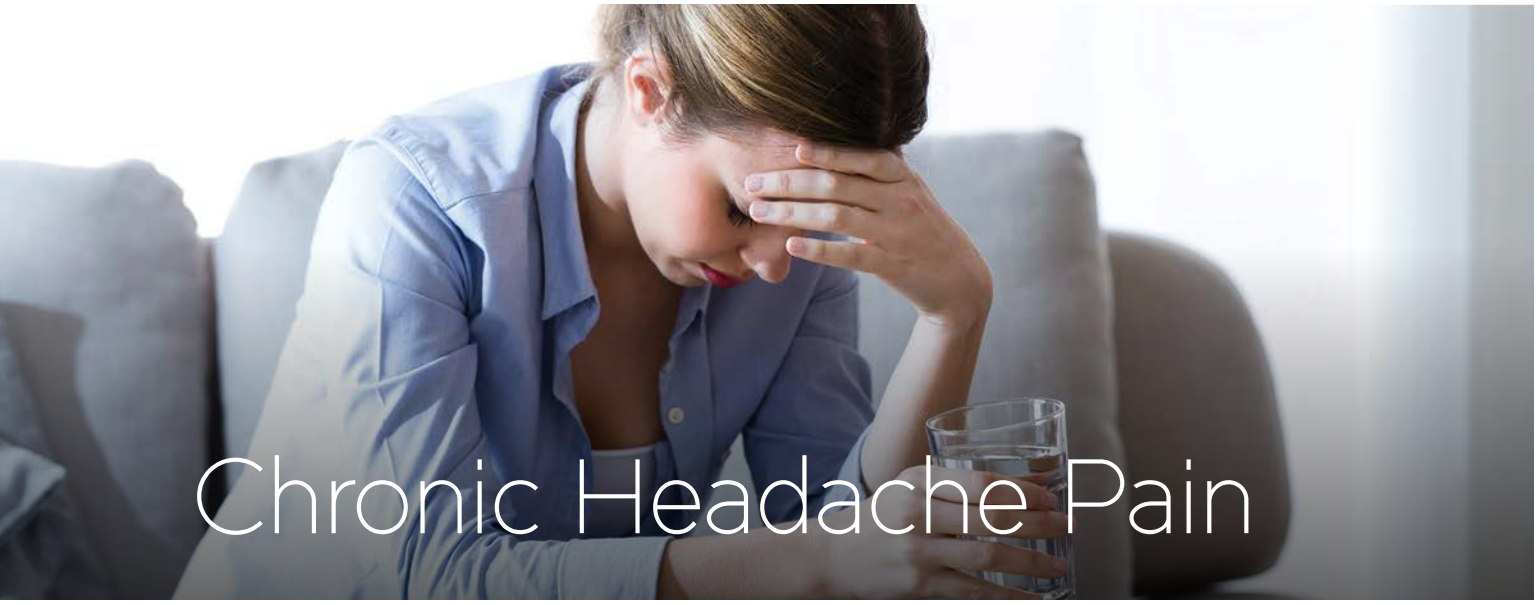
They will assess each patient via CT scan prior to the procedure so they can map out the prostate's anatomy and ensure the blood vessels are healthy enough for a successful PAE. PAE is most helpful in patients who have markedly enlarged prostates. It is also a good option for patients for whom medical therapies have failed and/or who have pre-existing medical conditions such that surgery is not an option (i.e., heart disease and chronic obstructive pulmonary disease).

PAE can also help patients who have chronic indwelling foley catheters by shrinking the prostate and removing the catheter, as well as men who have hematuria, or bleeding from the prostate. By blocking the blood supply, the radiologist can use PAE to help stop the hematuria and shrink the prostate.

"Urologists prefer to avoid surgery with their high-risk patients — which makes PAE a good option. The risk is less for PAE since it only requires moderate sedation, and it is not a surgical procedure," explained Dr. Dalal. The interventional radiologists at Raleigh Radiology will consult with your urologist to develop a multidisciplinary approach and develop the best treatment option for each patient.

"PAE takes a lot of skill and experience. Every patient is different, but I enjoy the challenge," said Dr. Dalal. "The fact that we can treat these patients with a minimally invasive approach and have such a significant impact on their symptoms is very exciting and satisfying. I've actually had patients tell me they feel like they are 20 years old again." ■

Ravi Dalal, MD
Interventional and Vascular Radiologist



Chronic Headache Pain

Located behind the bony structures of the nose, the sphenopalatine ganglion (SPG) is a group of nerves that sometimes causes migraine headaches, face pain, and head pain.

The SPG group contains automatic nerves which control organ functions such as heartbeats, sweat, salivation, gut and bladder movements, tears, and other secretions.

The American Migraine Foundation explains the role of the SPG in headache disorders: The SPG has connections to the brainstem (where cluster and migraine attacks may be generated) and to the meninges (coverings of the brain) by the trigeminal nerve. Inflammation and opening of the blood vessels around the meninges occur, which activate pain receptors that send pain impulses through the trigeminal nerve, eventually to the sensory area of the brain, and are perceived as pain. In migraine and cluster headache, nerves carrying these pain signals pass through the SPG, with some making connections to the autonomic nerves. This explains why in cluster headache, and sometimes in migraine, we see autonomic features including tearing of the eyes and nasal congestion or discharge. We call this the trigeminal autonomic reflex.

When migraines or headaches interfere with your life, an SPG Block may provide immediate and lasting relief. Performed by board-certified interventional and vascular radiologists, this simple 5-minute, painless procedure is often successful without the need for other injections or medicines. It is a low-risk procedure with a high success rate and is covered by Medicare and most insurance companies.

Call The Vein and Vascular Center at Raleigh Radiology at 919.787.1389 to see if this procedure is right for you.

A MAN'S GUIDE

Testicular Ultrasound

When a man experiences pain in his testicles, it may be necessary to have a testicular ultrasound. For many men, the thought of that sounds worse than the pain, and he may delay out of fear or embarrassment.

"Some men will experience new pain and/or swelling in their testicles for several days, waiting until things progress before they visit their doctor," explained Dr. Todd Roth, board-certified abdominal imaging and nuclear medicine radiologist at Raleigh Radiology. "However, I would encourage any man not to wait. In most cases the symptoms he is experiencing will be due to an easily treatable infection or other minor condition. However, the symptoms could be due to a more serious condition such as twisting of the blood vessels (testicular torsion) which, if not treated quickly, could lead to loss of the testicle. If a man notices a new lump without pain it is likely not urgent, but he should still schedule an appointment with his doctor and get it evaluated."

Your primary care physician or urologist may order a testicular ultrasound which is a quick, painless, non-invasive way for body imaging radiologists to evaluate out-of-the ordinary symptoms. The most common symptoms that lead to a testicular ultrasound include pain, swelling, the detection of a lump, and occasionally, an injury to the testicular area. Ultrasound uses sound waves to create still pictures and videos of the interiors of the area.

What happens during the Ultrasound?

Upon arrival, you will remove your clothing from your waist down, cover with a drape, and lie flat on the exam table. The sonographer is specially trained to perform this type of exam and will explain the procedure and answer any questions.

The sonographer will use an ultrasound transducer to scan the area of concern — the testicles and surrounding structures. Areas close to the testicles that are not being examined may be covered for your privacy. The sonographer will send the images to the radiologist for interpretation, and sometimes, the radiologist may come look at the images while the patient is in the room. In total, the testicular ultrasound scan should only take around 15 to 30 minutes. Results will be sent to the referring provider within a few days.

What Do the Ultrasound Images Show?

When reviewing testicular ultrasound scans, the radiologist analyzes many different types of anatomy, including the testicles, the epididymis (tube along the back of each testicle that carries and stores sperm cells), soft tissues in the testicular and surrounding area, as well as the blood vessels that supply blood to the testicles. In particular, he or she will pay close attention to the:

- Symmetry and size of the testicles
- Swelling or enlargement of the testicles
- Density of the testicle (echogenicity)
- Loss or decrease of blood flow

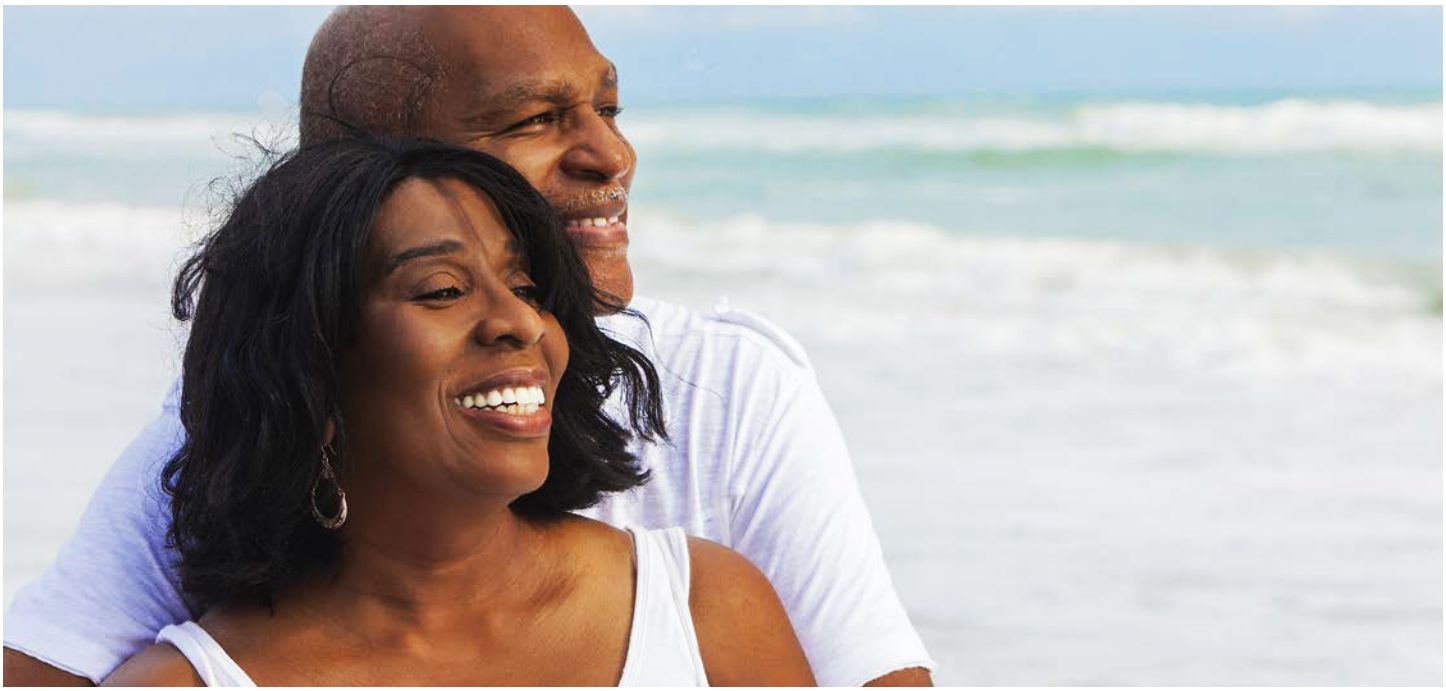
Conditions Diagnosed by Testicular Ultrasound

The most urgent problem the radiologist is looking for is the loss or decrease of blood flow to the testicle, which occurs when the blood vessels become twisted. Although relatively rare, this dangerous condition is called testicular torsion and is of urgent concern requiring immediate evaluation by a urologist and surgery to untwist the blood vessels.

Other, less-concerning conditions that are diagnosed by testicular ultrasound include:

- **Orchitis** — Swelling/inflammation of the testicle due to a bacterial or viral infection
- **Epididymitis** — Swelling/inflammation of the epididymitis due to bacterial or viral infection
- **Varicocele** — Enlargement of the veins within the scrotum (loose sac of skin that holds each testicle)
- **Hydrocele** — A collection of fluid around the testicle
- **Spermatocele** — A round fluid-filled cyst that develops in the epididymis

Inflammation of the epididymis or testicle is usually due to a viral or bacterial infection either from spread of a urinary tract infection or sexually transmitted infection (STI). It is usually treated with antibiotics and medication for pain control. A varicocele is most commonly due to a congenital abnormality in the veins or may rarely be due to vein compression or obstruction. It typically does not cause symptoms or require treatment, but it may sometimes cause swelling/



pain or lead to infertility, in which case surgical treatment may be necessary. A hydrocele is the most common cause of swelling and may be congenital but is usually due to another underlying condition such as inflammation or injury. They will typically resolve on their own and only rarely require minor surgery. The detection of a spermatocele — even though it is not harmful — will typically result in referral to a urologist to decide if the "watch and wait" method will be used or if minor surgery is needed.

On a rare occasion, a malignant lump is detected inside the testicle, and the diagnosis is testicular cancer. The ultrasound images will show a nodule or mass in the testicle that shows the typical features of cancer. If the radiologist suspects a primary testicular cancer, the patient will be referred to a urologist for treatment.

> ...it is important for men who are experiencing any symptoms to get checked out as soon as possible.

Dr. Roth concludes, "While the more serious conditions such as torsion and testicular cancer are generally rare, it is important for men who are experiencing any symptoms to get checked out as soon as possible. This will help eliminate concern and avoid delaying any necessary treatment." ■

Todd Roth, MD
Nuclear Medicine and Abdominal Imaging Radiologist

When Your Child Needs an X-ray

OUR IMAGE GENTLY® PLEDGE PROVIDES PEACE OF MIND

When parents hear their child needs a radiograph (x-ray), CT scan, MRI or ultrasound, it may raise concerns about radiation exposure. Is it safe?

Will my child have any after-effects down the road? The good news is that not all imaging procedures use radiation. The better news is that there are doctors — pediatric radiologists — who actually specialize in child-size imaging procedures for newborns up to 18-year-olds.

You may first encounter a pediatric radiologist when your child is in the hospital and needs diagnostic imaging. Alternately, during a wellness visit, your pediatrician may refer you to a hospital or an outpatient imaging center for some tests. Pediatric radiologists often work in both medical settings. For non-emergencies, choosing an outpatient center will likely provide a significant cost-savings.

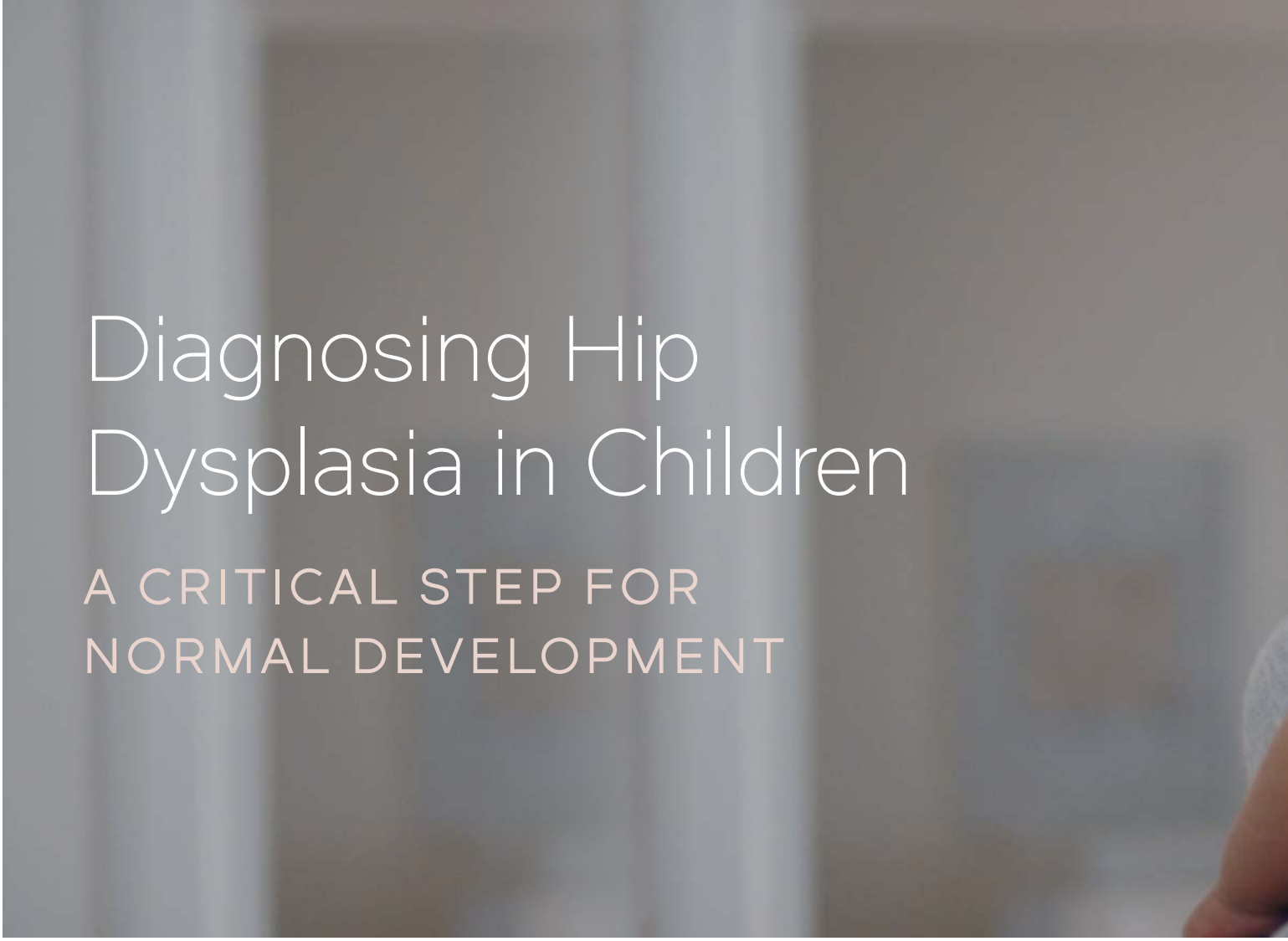
When it comes to medical imaging, there's no one-size-fits-all solution. Children are more sensitive to radiation, so x-rays for children are not the same as x-rays for adults. But when medically necessary, x-rays and CT scans can be performed more safely when imaging technologists use special pediatric techniques to ensure the lowest radiation dose is given to your child. As part of their pledge to imaging safety, pediatric radiologists encourage questions parents have about the safety of these exams.

Ultrasound and MRI procedures do not use ionizing radiation and are also considered safe for children when medically indicated. ■

image gently®

Image Gently is an alliance of medical professionals created to provide safe, high quality pediatric imaging worldwide. Raleigh Radiology has taken the Image Gently Pledge. Learn more at ImageGently.org

Amie McPherson, MD
Pediatric Radiologist



Diagnosing Hip Dysplasia in Children

A CRITICAL STEP FOR NORMAL DEVELOPMENT

From pregnancy to delivery and then subsequent check-ups with the pediatrician, numerous evaluations and assessments are performed to ensure a baby's development is normal and on track. One area closely observed is whether the infant is at risk for developmental dysplasia of the hip (DDH).

A congenital condition, DDH is an abnormal development of the hip that occurs while a baby is *in utero*. The hip is a ball-and-socket joint connecting the femur (thigh bone) to the pelvis. The rounded end of the femur fits into the acetabulum, a cup-like area formed by several bones in the pelvis. In a baby with DDH, something could be wrong with the socket of the joint or the ligaments, tendons, or muscles that hold it together. For instance, the ligaments around the joint could be loose, creating too much mobility or motion.

"Detecting DDH during the early stages of a baby's life is critical for normal development," explained Dr. Robert Llanos, a board-certified pediatric radiologist with Raleigh Radiology. "If DDH is left undetected and untreated,

there is a chance that the hip will not form properly, which could result in a hip or leg that turns outward or one leg could end up being shorter than the other. This will affect how the child walks and could result in a limp. Additionally, if one hip is not functioning normally or developing properly, this could lead to pain and early arthritis damage later in life."

Babies are examined by a provider — typically their pediatrician — for DDH after birth while they are still in the hospital to ensure the infant's legs are the same length, that there are equal folds in the hips, that the hips move appropriately when rotated, and to see what happens when pressure is placed on the hips. If the hips feel unstable with pressure, if there is too much movement, or if a dislocation can be felt, DDH could be the problem. Newborn babies are also continually examined throughout early infancy during their pediatrician well-visits.

Ultrasound is the best way to clearly determine if a baby has DDH. Babies who are sent for a hip ultrasound typically have one of these risk factors:

- An abnormality was detected during an exam
- A family history of DDH (parent or sibling was diagnosed with DDH in the past)
- The baby was in the breech position during the third trimester of pregnancy

During a pediatric hip ultrasound, the parent/caregiver will assist in holding and positioning the baby during the exam to offer comfort and

Ultrasound is the best way to clearly determine if a baby has DDH.

familiarity for the child. The sonographer will then use a special wand (transducer) along with warm gel to take images of the hips from different angles by rolling the baby from side to side.

"This ultrasound exam is a painless experience," explained Dr. Llanos. "The only feeling for the infant will be a feeling of slight pressure when we are examining and taking images of the hips."

After both hips are imaged, the radiologist will review the images and discuss the results with the parents. Ultrasound uses soundwaves rather than radiation and is safe for infants.

DDH Treatment Options

If an abnormality is found after the DDH ultrasound, most pediatricians will refer the infant to a pediatric orthopaedist for further evaluation and a treatment plan. If the findings are mild and the baby is of an early age, the issue might correct on its own. In this case, the infant will be imaged again about a month later, but no other treatments will be given at that time.

If the results are more severe, treatment options could include:

- A harness or soft brace that keeps the hips in an open position and directs the ball of the joint to the socket so that it will grow and develop properly (this is a more common treatment option)
- Less common, in more severe cases, the infant might need a rigid cast placed around the pelvis and thighs, allowing for less motion and flexibility, again, so the ball of the joint is directed to the socket for proper growth and development
- In very severe cases such as dislocation (which are uncommon), the infant will require surgery or the manipulation of the joint while under anesthesia, and then the placement of a rigid cast

"As with most conditions, the earlier these conditions are caught, the higher the likelihood a positive outcome will result. Having a care team that specializes in the area of concern is important at this stage in a child's development," explains Dr. Llanos. ■

Robert Llanos, MD
Pediatric Radiologist

Dual-energy x-ray absorptiometry (DEXA) is a simple, noninvasive procedure that measure bone loss and density.

It is considered the Gold Standard for diagnosing osteoporosis. This 10-minute procedure is safe and painless, using little radiation. The reproducible results allow us to compare past and future results to better understand the changes in bone density.

If you would like to schedule an appointment at a Raleigh Radiology imaging center, call 919.781.1437.

photos courtesy of Tim McKay

Spider veins

Varicose veins

Spider Veins & Varicose Veins

Performed by board-certified Interventional & Vascular Radiologists, spider veins can be treated with just a small injection.

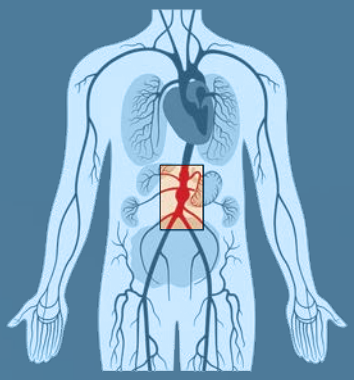
Varicose veins are twisted, enlarged veins that predominantly appear on a person's legs and/or feet. They can cause intense pain and discomfort and lead to other, more serious health concerns, including circulatory problems, blood clots, and ulcers.

Varicose vein treatment at The Vein and Vascular Center is minimally-invasive, highly successful, and devoid of serious side effects. We provide techniques to remove varicose veins including Endovenous Laser Ablation (EVLT), Phlebectomy, and Sclerotherapy.

If you are interested in learning more about vein treatment, call Raleigh Radiology's Vein & Vascular Center at 919.787.1389. ■

An Abdominal Aortic Aneurysm (AAA) occurs when plaque buildup causes the walls of the abdominal aorta to become weak and bulge outward.

Ultrasound is a safe, non-invasive screening that uses soundwaves to detect the presence of an aneurysm. This screening is appropriate for men ages 65 to 75 who have smoked cigarettes at some point and non-smokers with a family history of aneurysm.



To schedule an AAA Ultrasound at a Raleigh Radiology Imaging Center, please call 919.781.1437.

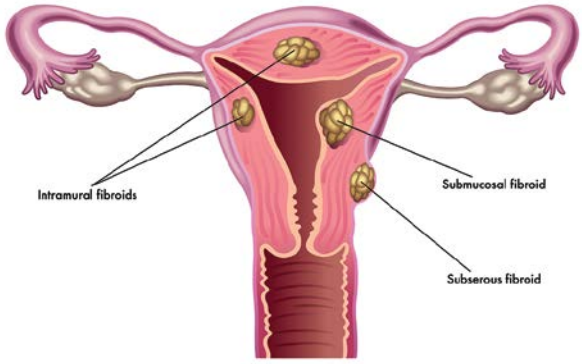
UTERINE FIBROID EMBOLIZATION

Ending the Monthly Cycle of Fear

For many women, uterine fibroids can have a significant impact on quality of life. The fear of excessive and uncontrollable bleeding on the way to work or the store during certain days of their menstrual cycle can make many women just want to stay home. While there are numerous treatment options, most require major surgery that isn't ideal for most women.

What are Uterine Fibroids?

Uterine fibroids are noncancerous tumors or growths that appear in a woman's uterus during her reproductive years. They can cause heavy menstrual bleeding, severe cramping pain, periods that last longer than normal, breakthrough bleeding between periods, and even abdominal pain and pressure, bloating, constipation, frequent urination and pain during intercourse. The National Institute of Environmental Health Sciences says 70 percent or more of women have uterine fibroids by age 50.



Surgical Methods to Treat Uterine Fibroids

The sure-fire way to resolve uterine fibroids is with a hysterectomy — surgically removing the uterus — which ends a woman's menstrual periods, and thus, removing the possibility of becoming pregnant. This procedure requires a complex, invasive surgery with a long recovery time.

A myomectomy is another surgical option wherein the surgeon makes an incision in the lower abdomen and goes through the uterus to cut out portions of or remove entire fibroids. Because women can have many fibroids at once and those fibroids can grow on multiple areas of the uterine muscle, this procedure cannot guarantee the complete removal of all fibroids. Recovery for this procedure typically takes 2–4 weeks.

An Alternative Option: Uterine Fibroid Embolization

Uterine fibroid embolization (UFE) is a minimally invasive, non-surgical option available for treating uterine fibroids. According to Dr. Jamie Doster, chair of Interventional and Vascular Radiology at Raleigh Radiology, this common, alternative treatment option is successful for about 90 percent of patients. It helps patients avoid major surgery and allows for a much shorter recovery time.

Trained to perform UFE during her interventional radiology fellowship, Dr. Doster further explains, "UFE works because we take away the blood supply to the fibroids, which then causes them to shrink and die off. When they shrink, they are no longer hormonally active, which helps eliminate the heavy and breakthrough bleeding. Meanwhile, the shrinkage helps resolve the bulk of the patient's other symptoms. After this procedure, patients can go back to work much sooner. The procedure is often more affordable than surgery as well."

As part of the treatment process, the patient will first receive an MRI to ensure she is a candidate for UFE which includes checking the anatomy of the fibroids, determining where they are

> UFE can be performed trans-radially through a tiny incision in the wrist...

located, and ensuring no other complications (i.e., malignancy) are at play. After the MRI and a pre-planning consult where the MRI results and details of the procedure are discussed, the patient is scheduled for her UFE.

During this very technical and precise procedure, the radiologist uses a catheter inserted through the uterine artery to inject tiny beads into the blood vessels that feed the fibroids. Hence, the blood flow to the fibroids is blocked, and they will all begin to shrink. For 90 percent of patients, UFE can be performed trans-radially (through a tiny incision in the wrist), but for the other 10 percent, the procedure is performed through the groin, also just a tiny incision. With the wrist incision, a patient can get up and walk very soon after her procedure. In total, UFE takes about one to two hours. When the procedure is finished, patients may be discharged that day or stay overnight.

What is Recovery Like?

According to Dr. Doster, the first 24 to 48 hours after UFE, the patient will typically remain in bed for that time and may experience pain, abdominal cramping, fatigue or vomiting. These symptoms usually resolve within a week, and patients are then able to return to work or their normal daily activities. Patients do not experience the total loss of their menstrual periods (amenorrhea) after UFE. However, a smaller and less impactful period remains. Some patients may continue to have slight discomfort and spotting for two to three menstrual cycles before they report a complete improvement.

"The complete resolution of symptoms is our ultimate goal, and most patients come back to tell us their symptoms are gone or significantly improved," said Dr. Doster. "It's remarkable and very rewarding when we can help these women take back their quality of life."

Each patient should have a follow-up appointment with her interventional radiologist one to three months after the procedure. Meanwhile, Dr. Doster's office will call the patient one week later to check on her during recovery. Based on age, a small subset of women may have a recurrence of symptoms within five years, possibly due to the growth of new fibroids. However, these patients are typically younger women (around age 30) who are years away from menopause. Having a second UFE will help. For all women, the symptoms of uterine fibroids will typically resolve with menopause.

"Through this minimally invasive procedure, we can help women stop living in fear of their menstrual periods and give them more freedom to enjoy their lives again," says Dr. Doster. ■

Jamie Doster, MD
Interventional and Vascular Radiologist

Locations

Phone Number: 919.781.1437

BLUE RIDGE

3200 Blue Ridge Road, Suite 100
Raleigh, NC 27612

CARY

150 Parkway Office Court, Suite 100
Cary, NC 27518

CLAYTON

11618 US 70 Business, Suite 106
Clayton, NC 27520

FUQUAY-VARINA

601 Attain Street, Suite 100
Fuquay-Varina, NC 27526

HOLLY SPRINGS

Scheduled Fall 2022
1060 S. Main Street
Holly Springs, NC, 27540

KNIGHTDALE

1101 Great Falls Court
Knightdale, NC 27545

OBERLIN

505 Oberlin Road, Suite 110
Raleigh, NC 27605

WAKE FOREST

11640 Northpark Drive, Suite 110
Wake Forest, NC 27587

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1

540

70

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40

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