

Bay Imaging Consultants

MRI & CT News

Eastern Division

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Contra Costa Imaging Center

Located on the John Muir Medical Center, Concord Campus
MRI & CT Services
2410 High School Avenue
Concord

TAX ID# 68-0202020

Hours of Operation:

MRI: 7:00 am - 5:00 pm

M-F and Weekends

CT: 7:30 am - 4:00 pm M-F

Neuroscan

Located in the Yosemite Bldg at John Muir Medical Center, Walnut Creek
CT Services

115 La Casa Via, Suite 202
Walnut Creek

Tax ID# 68-0017617

Hours of Operation:

Mon-Fri 7:00 am - 6:00 pm

Closed Weekends

John Muir Magnetic Imaging Center

Located on the John Muir Medical Center, Walnut Creek Campus
MRI Services - 1.5T and 3T
1601 Ygnacio Valley Road
Walnut Creek

Tax ID# 68-0202020

Hours of Operation:

Mon-Fri 6:30 am - 8:00 pm

Sat-Sun 7:00 am - 5:00 pm

The *First* 3T MRI in Contra Costa County



Ron Chan, M.D.
Medical Director
John Muir Magnetic Imaging Center
Walnut Creek
MSK Sub-specialty Director

3T

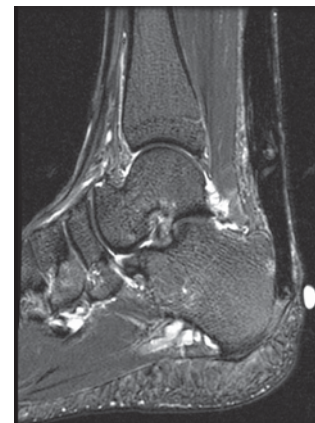
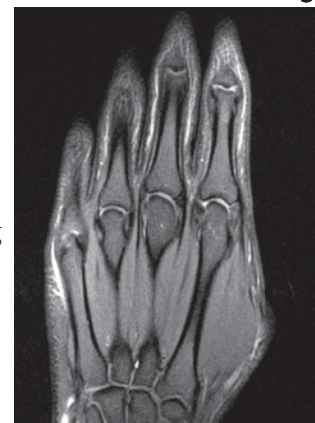
MRI (3 Tesla MRI) service at John Magnetic Imaging Center, Walnut Creek is the only one of its kind in Contra Costa County. Advanced imaging technology that had only been seen in academic institutions is now available at our facility. The higher resolution of the new 3T

scanner improves the diagnostic capabilities of nearly all body part studies, including spine, brain, breast, abdominal and pelvic structures. Additionally, the greater speed afforded by the increased power of the 3T MRI allows for more patient comfort.

In the area of musculoskeletal imaging, we have paired our 3T MRI with equally advanced receiver coils, including specialized knee, wrist, and small parts coils. Challenging diagnosis such as wrist trangulofibrocartilage complex tears and hip labral injuries can be made with more clarity and certainty.

As we have added more scanning capacity with the addition of the 3T scanner to our existing 1.5T MRI scanner, patients can now be seen usually within a day or two.

Our sub specialist panels of radiologists are always available to answer your MRI questions. We are excited by the prospect of improved patient care delivered by this technological advance, and we look forward to providing this service to our area physicians and their patients.





Robert M. Schick, M.D.
 Medical Director
 Contra Costa Imaging Center
 Chairman
 Diagnostic Imaging at John Muir Medical Center

“CTA allows direct visualization of the wall of the vessel, not possible with catheter angiography.”

CTA (Computerized Tomographic Angiography) The Basics

CTA is a wonderful example of progress in imaging. Catheter based diagnostic angiography, although improved in the 80's with the advent of better catheter and guidewire systems and same day procedure, nonetheless carried the risk of arterial injury resulting in stroke, dissection, or emergency surgery. The advent of thinner CT detectors, measuring 0.5-0.625 mm in thickness, improved x-ray tubes for CT allowing faster scanning, dual-head power injectors, automated intravenous bolus detection for scan triggering, and 3D post processing that has made diagnostic catheter angiography a rare procedure these days. Most miraculous has been the attainment of successful diastolic gated CTA imaging of the coronary arteries, a procedure whose full potential is still to be clinically realized.

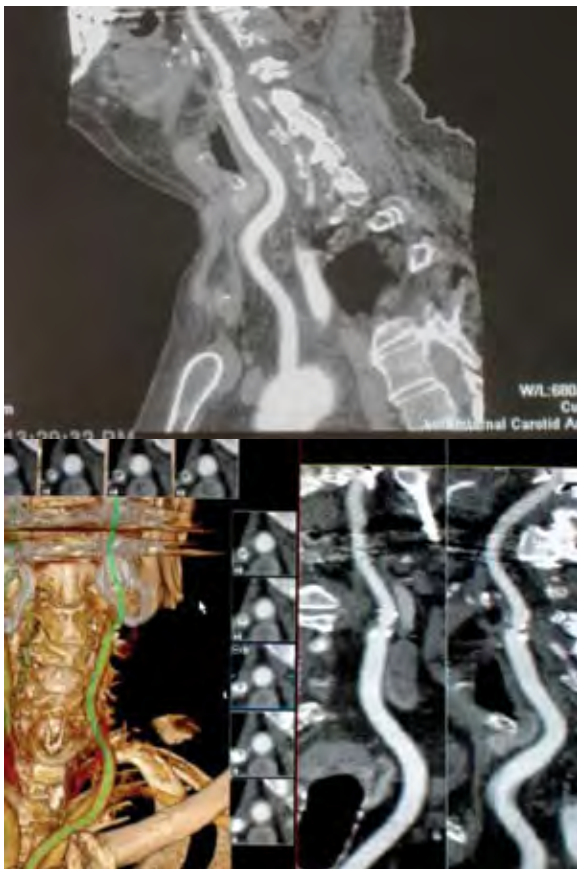
The patient experience in CTA is quite different than the Catheter angiography. A breath hold while lying on the CT scanner couch during intravenous injection of contrast comprises the entire study. The heavy lifting occurs while the patient is driving home from the imaging facility. The helically acquired 3D dataset is reconstructed and uploaded to a workstation where segmentation of the brightly enhanced vessels from the much less dense soft tissues is accomplished. These vessels can be reconstructed in volumen rendered 3-dimensional views, untangling complex and overlapping anatomy that so often was superimposed at catheter angiography. Software can also trace single vessels and create curved planar reconstructions using the curving vessel as the center of the reconstruction universe, creating precisely orthogonal views with respect to the vessel axis and allowing better measurement of stenosis.

CTA allows direct visualization of the wall of the vessel, not possible with catheter angiography. In the coronary circulation, the presence of soft atherosclerotic plaque can be visualized as causing positive vessel wall remodeling, long before anatomic stenosis has developed. With the capability of CTA to see more than the lumen of the vessel, the measurements of aneurysms and characterization of intraluminal thrombus are also more complete.

CTA patients must receive consideration of renal functional status, allergy history, and Metformin therapy, as with any contrast enhanced CT examination. However, the dose of contrast can be significantly less for a CTA, especially if the examination is performed on a 64 channel scanner. The additional detectors allow greater head-to-foot coverage per x-ray tube rotation. With 64 channels at 0.5 mm detector thickness ($64 \times 0.5 \text{ mm} = 3.2 \text{ cm}$ total array thickness, or 4 times thicker than on a 16 channel scanner) and 2.5 x-ray tube rotations per second, the scanner can cover 8 cm per second of head to foot anatomy. Typical injection rates for satisfactory intravenous contrast for CTA are 4-5 ml/sec. As a

result, to cover the 30cm of the thorax requires only 4 seconds and correspondingly reduced dose of intravenous contrast.

CTA does utilize ionizing radiation with attendant risk of carcinogenesis. As such, the guiding principle of carefully determined medical necessity, as compared to alternative approaches, should be used to attain the lowest cumulative dose for any individual patient. MRA has the advantage of using radio waves rather than x-rays and these lower energy members of the electromagnetic spectrum have not been linked to carcinogenesis. MRA provides inferior spatial resolution compared to CTA but for specific indications. The MRA may provide all the information needed for clinical decision making. MRA of the brain, arterial or venographic, is typically done without contrast; the contrast-enhanced study providing superior image quality. MRA of the Abdomen, Pelvis, or Extremities is typically performed with intravenous contrast. MRA of the thorax is not yet clinically widespread. The MRA contrast agent (gadolinium based) was at one time thought to be safer in patients with advanced chronic kidney disease. With the recent discovery of the rare but uniformly fatal nephrogenic systemic fibrosis (NSF), the use of MRA contrast in patients with severe chronic kidney disease (eGFR<30) now appears to have greater risk than that of transient creatinine elevation with the CT contrast agent (iodine based). MRA is not limited by dense calcifications, as may rarely be the case with CTA. On the other hand, CTA can show the interior of arterial stents which are generally unreadable at MRA.



The common uses of CTA include:

- CTA of the neck for occlusive arterial disease
- CTA of the head for aneurysms, stenosis, malformations, arteritis, venous sinus thrombosis
- CTA of the thorax for embolic disease, aortic aneurysm, pulmonary venous anatomy pre ablative therapy
- CTA of the abdomen for aortic aneurysm, renal/mesenteric arterial occlusive disease
- CTA of the pelvis and lower extremities for aneurysm or occlusive disease



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For questions, please call Ava Rivers, Physician Services Manager at (925) 296-7152 or email at arivers@bmmi.net