BAY IMAGING CONSULTANTS

Bay Imaging Consultants
MRI & CT News
Alta Division

Volume 1, Issue 1 November 2009

Magnetic Imaging Affiliates
MRI Services - 1.5T & 3T
5730 Telegraph Avenue
Oakland, CA 94609

TAX ID# 94-2965646

Hours of Operation:
M-F: 6:00 am - 8:00 pm
Sat: 8:00 am - 3:00 pm

Phone (510) 204-2744
Fax (510) 658-1277

Alta CT
(at Herrick Hospital)
CT Services
2001 Dwight Way
Berkeley, CA 94704

Tax ID# 94-2965646

Hours of Operation:
M-F: 7:00 am - 5:00 p m
Closed Weekends

Phone (510) 204-3439
Fax (510) 204-5622

Convenient and Easy Walk-In CT Service at Herrick

Effective November 3rd

Alta CT at Herrick Hospital is pleased to offer you and your patients *Walk-In CT* Service. No appointment is necessary for Non-Contrast CT studies. IV-Contrast CT studies may be performed when patients are 2 hours NPO (no food or drink by mouth except water and medication).

How to Refer Patients for *Walk-In* CT Service:

Step 1. Fax the order to (510) 204-5622 or enter the order electronically using our online referral system.

**Any required insurance authorizations must be obtained prior to the exam to avoid billing issues for the patient. Authorization assistance is available upon request.

**Patients that are to have an exam with IV-Contrast and are age 60 or older, or have kidney disease, or are diabetic will need to obtain BUN/Creatinine labs one hour prior to their exam. Lab work performed within the last three months is acceptable.

**Patients with asthma or history of IV-contrast allergy may need to be pre-medicated with prednisone, which requires a dose the evening before and the day of the exam. To comfortably accommodate these patients, an appointment should be scheduled.

Step 2. Simply give your patient a copy of the order and then send them directly to Alta CT at Herrick Hospital, 2001 Dwight Way in Berkeley.

It's that easy and convenient. *Walk-In* patients are Monday - Friday welcome from 8:30 A.M. - 1:30 P.M. Final reports are available within 24 hours. Scheduled appointments are always available.

Please contact us at (510) 204-3439 for any questions that you may have.

Scanner Upgrade Brings State of the Art CT Imaging to Herrick Hospital

Scott Lipson, M.D.
Diagnostic Radiology
Alta CT at Herrick Hospital, Berkeley
Magnetic Imaging Affiliates, Oakland

Helical CT: start of a CT revolution The advent of spiral (helical) CT scanners in the mid 1990's revolutionized CT imaging. Prior to this time CT scanners were limited by the amount of time it took to obtain a slice. This often resulted in poor quality scans with motion artifact and limited spatial and contrast resolution. Helical scanning changed that and resulted in an amazing jump in image quality. New applications such as CT angiography, pulmonary embolus evaluation, appendicitis and renal stone studies were created to take advantage of the new technology.

MDCT: The next step in CT technology: A second revolution in CT technology began early in the decade with the advent of multidetector scanner (MDCT). The key to this technology is a new type of detector that allows multiple images to be acquired at the same time. Previous generation helical scanners could obtain approximately one image every second. MDCT scanners now available can obtain up to 64 images in as little as 350 milliseconds.

Better Image quality for all applications: This increased speed improves every aspect of CT image quality. Since the time needed to acquire a data set is no longer a limiting factor, we can obtain much thinner slices than before. Improved resolution allows the radiologist to visualize structures better than ever and improves diagnostic accuracy. In addition, artifacts and motion are dramatically reduced which also improves accuracy. The improved data acquisition now allows us to obtain volumetric data sets for all types of examinations. This allows us to reconstruct images in any plane, and to perform 3D volume reconstructions when appropriate.

Dose Reduction, the next frontier: Current scanners have advanced new technology to limit radiation exposure to patients. The Herrick CT scanner can automatically measure how thick a body region is and adjust the radiation dose in theX,Yand Z axis automatically to the appropriate level. This means that in the same helical scan acquisition the dose for the thinner body regions such as the chest will be much less than through thicker regions such as the shoulders or hips, and the dose is adjusted for every patient.

New Frontiers in CT Imaging: The following are just a few of the many applications possible with our current MDCT:

CT angiography (CTA): This is probably the most exciting new capability of CT. We are now able to provide noninvasive vascular exams throughout the body with quality that rivals, and at times can even exceed catheter angiography. Target areas of evaluation include the cervical carotid arteries, the circle of Willis, the pulmonary arteries, the renal arteries and the thoracic and abdominal aorta, and the peripheral runoff vessels.

Figure 1: 3D Volume rendered image of the aorta in a patient with aortic and right common iliac artery aneurysms. The osseous landmarks are included as a ghost image.

Figure 2: 3D MIP image demonstrate bilateral occlusions of the superficial femoral arteries with distal reconstitution.

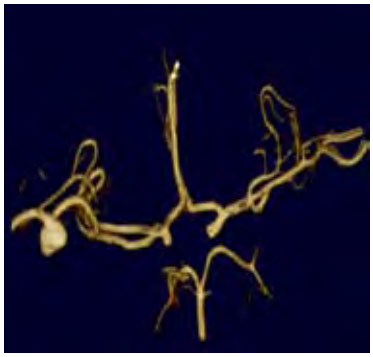


Figure 3: 3D volume reconstruction of a large MCA aneurysm.

Body and Urologic Imaging: Image quality for all body applications is dramatically improved, particularly for multiphase and high resolution exams such as the liver and pancreas. New exams include the CT Urogram which has replaced the IVP and CT enterography.

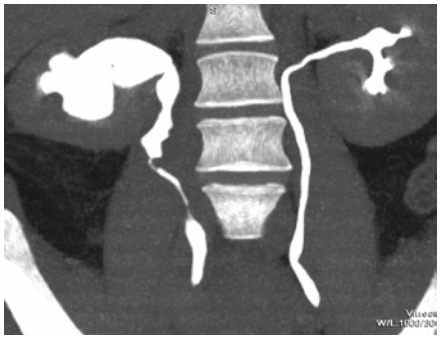


Figure 4: MIP reconstruction of a patient with hydronephrosis and a ureteral stricture.

Figure 5: Unresectable pancreatic cancer with vascular encasement on CTA.

Orthopedic Imaging: Imaging of extremities is greatly improved. 3D reconstructions can be performed to document fractures and deformities, and new reconstruction algorithms have dramatically decreased the amount of artifact from metal.

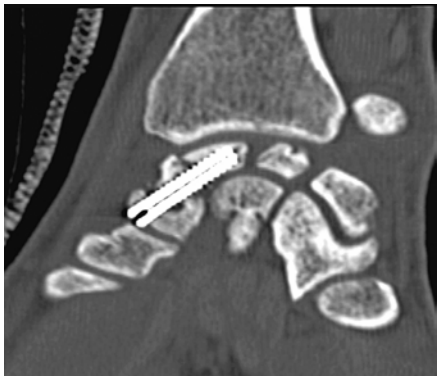


Figure 6: Oblique coronal reconstruction of a nonunited scaphoid fracture with a pin in place.

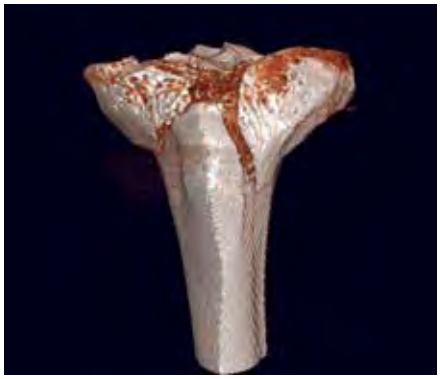


Figure 7: 3D volume reconstruction of a comminuted tibial plateau fracture.

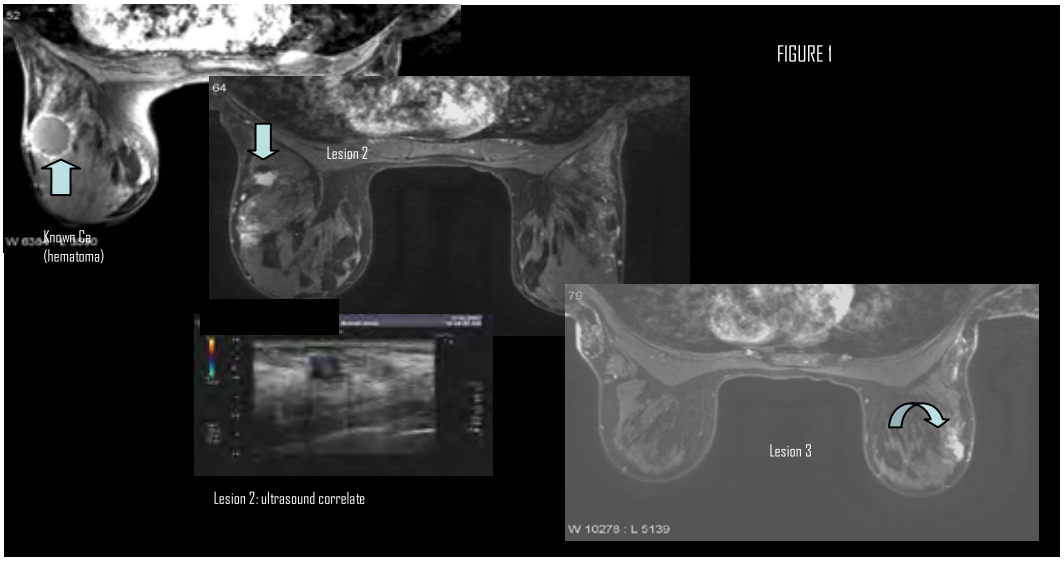
James Brenner, M.D.
Breast Imaging Director
Magnetic Imaging Center Affiliates, Oakland
Carol Ann Read Breast Center, Oakland

Breast MRI at Magnetic Imaging Affiliates

The new Breast MRI program at MIA advances imaging to unsurpassed state of the art with a panel of radiologists specializing in this field performing interpretation and procedures. Particularly high spatial resolution is achievable with recent hardware and imaging protocols that have not been available to this community in the past. In addition to identifying unknown primary malignancies and providing MRI-guided interventional procedures—two clinical circumstances originally described in the literature by members of our imaging team—staging and evaluation of extent of known malignancy as well as screening in high risk patients are the usual indications for studies. When properly combined and integrated with conventional imaging and expertise, a cost-effective approach toward breast care is the hallmark of the program.

"Particularly high spatial resolution is achievable with recent hardware and imaging protocols that have not been available to this community in the past."

Illustrative examples:



CASE 1, FIGURE 1
A middle aged woman had had a biopsy performed in the right breast demonstrating invasive ductal carcinoma. Breast MRI was performed to evaluated the extent of disease, given positive margins of the lumpectomy site following initial surgery. The hematoma from the operation is seen. The MRI demonstrates a second rapidly enhancing mass with irregular "margins" in the same quadrant, representing multifocal malignancy (straight arrow), following biopsy. In addition, a contralateral malignancy as represented by another rapidly enhancing mass with irregular "margins" was identified (curved arrow). Across multiple published studies from Europe and North America an incidence of synchronous bilateral malignancy following the diagnosis of breast cancer can be expected in 3-5% of cases.
MRI is fundamentally a map of contrast perfusion, diffusion, and vessel density,

which explains why benign lesions may enhance (vessel density) and malignant lesions enhance (neovascularity causing increased perfusion/diffusion). The images, if obtained early and with sufficient high resolution, may demonstrate what appears to be, and is functionally referred to, as a "mass" so that "margins" can be evaluated as smooth or irregular, in a manner analogous to a more anatomically defined imaging modality such as mammography. Diffusion will obscure margins which is why both high spatial and temporal resolution are critical to analysis as well as injection rate of contrast.
The subsequent ultrasound demonstrated a sonographic correlate to lesion 1 which provides a more ready access for image-directed biopsy. When there is not ultrasound correlate to an MRI lesion, the likelihood of malignancy is substantially lower, but not low enough to avoid biopsy if the MRI features are suspicious. The contralateral lesion was subject to MRI-guided biopsy showing invasive ductal carcinoma.

MRI compatible obturator is placed such that its tip (arrow) which is seen as a signal void—black--will be in the center of the breast biopsy device when inserted through an introducer. Image on left is the axial view and image on right is the sagital view that confirms proper obturator location of the lesion seen in figure 1.

Figure 2

CASE 2, FIGURE 2
When lesions are sufficiently suspicious by MRI criteria that they require biopsy and cannot be imaged by conventional means such as mammography and ultrasound, special MRI grids are available to help guide a biopsy device to the correct location based on calculations of a specific location. Axial and sagital views demonstrate a black signal void representing an MR-compatible biopsy obdurator which was introduced to the central portion of the enhancing lesion and confirmed by imaging. A biopsy device, similar to those used in ultrasound and stereotactic procedures, then replaces the obdurator such that the central biopsy trough into which tissue will be placed corresponds to the tip of the imaged obdurator. Such biopsies are limited by anatomic location (eg. Chest wall) and breast thickness, but are amendable to most situations.

Bay Imaging Consultants
175 Lennon Lane • Suite 100
Walnut Creek, CA 94598

Online Scheduling…

Easy as 1 - 2 - 3

Referral Management System (RMS) allows electronic referrals and immediate communication with our outpatient facilities through our secure Web-based software.

Simply:

1. Complete the online form

2. Click Submit

3. View patient status

We will call your patient to schedule the MRI or CT exam when the order is received. Authorization assistance is available.

Request access to RMS for your physician's office.

Call (925) 296-7152

View Patient Images *Anywhere*

IntegradWeb (iWeb) provides Web-based software that allows physician offices, consulting physicians and hospital-based clinical staff to securely view imaging studies performed by Bay Imaging Consultants anywhere from a Web-accessible PC. With the viewer, you'll be able to access your patients' entire imaging history at Bay Imaging Consultants—simply by logging on to a PC.

The viewer uses the same tools our radiologists use for image interpretation. The tools are easy to use, yet they have significant functionality for users at all experience levels.

The Web-based PC technology gives you tremendous flexibility by allowing you to view exams—in the privacy of your office, at your home or in the exam room for patient consultation. As patients become increasingly Internet-savvy, they will appreciate the way you have embraced the latest advances in technology.

To get started with IntegradWeb (iWeb):

⇒ Go to www.bayimagingconsultants.com

⇒ Select "Referring Physicians: Learn more about secure on-line access to images" at the bottom of the homepage.

⇒ Complete the registration and confidentiality forms.

Your physician account will be confirmed via email within 72 hours.

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