

3.0T: A Vascular Powerhouse

Edison Imaging Finds Major Advantages in Vascular and Neurological Imaging with a 3.0T MRI Scanner

In 1989, the Edison Radiology Group opened Edison Imaging Associates (Edison, NJ) to offer the best available diagnostic imaging services to patients and referring physicians. Today, Edison Imaging is a full-service outpatient center offering MRI, 64-channel CT, nuclear medicine, ultrasound, mammography and a wide range of specialized diagnostic exams.

The MRI equipment at Edison Imaging includes a GE Signa® 3.0T system with advanced imaging applications that include TRICKS™ time-resolved imaging for angiography studies. "We chose a 3.0T system for two distinct reasons," said Lawrence N. Tanenbaum, M.D., Section Chief of MR, CT and Neuroradiology at Edison Imaging and Solaris Health Systems. "First, we sought to maintain our status as a center of excellence and quality practice, and we saw 3.0T MRI as providing a significant boost in quality over 1.5T for virtually all applications.

"Second, since we are affiliated with NJ Neuroscience Institute, we have ample opportunity to make use of unique imaging benefits provided by 3.0T for neurosurgery, neurology and neuro-oncology."

Excellent Vascular Images

Edison Imaging performs about 65 percent vascular and neurological studies, 25 percent musculoskeletal exams and 10 percent body studies. Dr. Tanenbaum crafts all the MR exam protocols and takes part in scanning on some challenging cases.

Among key benefits of GE Signa technology, Dr. Tanenbaum cites, "very powerful gradients that deliver the shortest TR and TE, superb 8-plus-channel surface coils that synergize with the inherently higher signal-to-noise ratio of 3.0T and enhanced parallel imaging capability to deliver superb whole body imaging studies."

"TRICKS provides better spatial resolution than we would be able to obtain with a time-resolved approach by creatively oversampling the center of K-space."

Dr. Lawrence Tanenbaum

Edison Imaging also has been able to consistently deliver spectacular time-resolved imaging, or single-phase high-definition imaging, depending on the clinical need. “The Signa 3.0T MR is really a vascular powerhouse,” Dr. Tanenbaum added.

Many vascular surgeons prefer MRA to other modalities for studies such as lower extremity vascular runoff exams. Dr. Tanenbaum noted, “Time resolved MRA offers significant benefits in diabetic patients where dynamic information – collateral flow and retrograde flow – is important and we expect calcifications in smaller blood vessels below the knees.” For these patients and other angiography studies, Dr. Tanenbaum uses TRICKS time-resolved imaging, an advanced GE application. All MRA studies are complete within a standard 30-minute exam slot.



Subclavian stenosis

Exquisite Image Quality

Dr. Tanenbaum cites the case of a patient with decreased upper-extremity blood pressure on the left side. “We needed an MRA to evaluate for any stenosis of the blood vessels going to that limb.

Instead of doing a single high-resolution pass, we chose to do a time-resolved exam with TRICKS. Time-resolved imaging brings two distinct benefits. One, it removes the variability from the acquisition process. Since we get multiple snapshots, we are not likely to miss the ideal enhanced contrast phase.

Second, we get the same physiologic information that we would traditionally get from conventional angiography in the way the contrast arrives, distributes in the target vessels and departs. That can help in determining the significance of a stenotic lesion.”

This particular exam gives Edison Imaging not only exquisite image quality but also very high spatial resolution. “TRICKS provides better spatial resolution than we would be able to obtain with a time-resolved approach by creatively oversampling the center of K-space. The study combined the benefits of parallel imaging with the four-time acceleration that comes from TRICKS to give us eight times the temporal resolution that we would ordinarily get for this degree of spatial resolution and coverage.” ■



Lawrence N. Tanenbaum, M.D., FACR

Lawrence N. Tanenbaum, M.D., is Chief of MR, CT and Neuroradiology at Edison Imaging and Solaris Health Systems. For over 30 years, the radiologists of Edison Imaging Associates have led the way in providing the medical communities of central New Jersey with a full range of imaging services, utilizing the latest, most advanced technologies, including GE's Signa HDx 3.0T and 1.5T MR scanners.

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