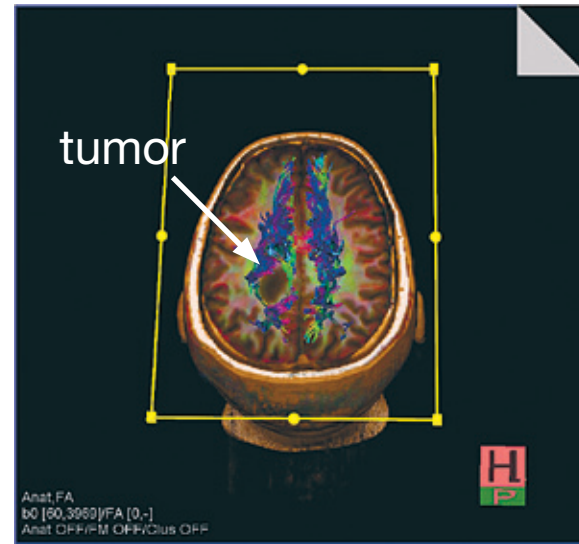
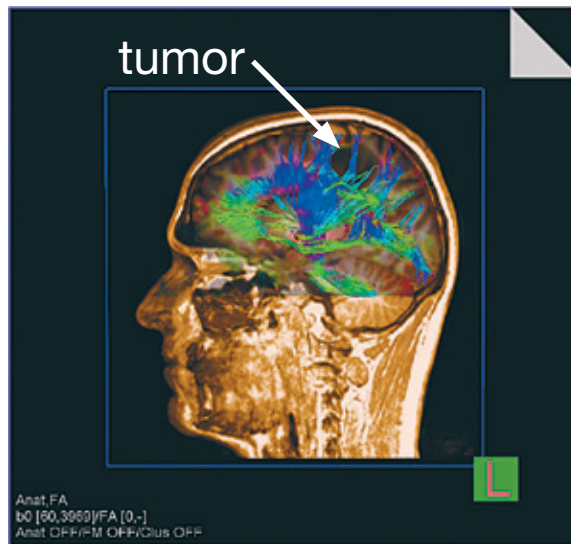
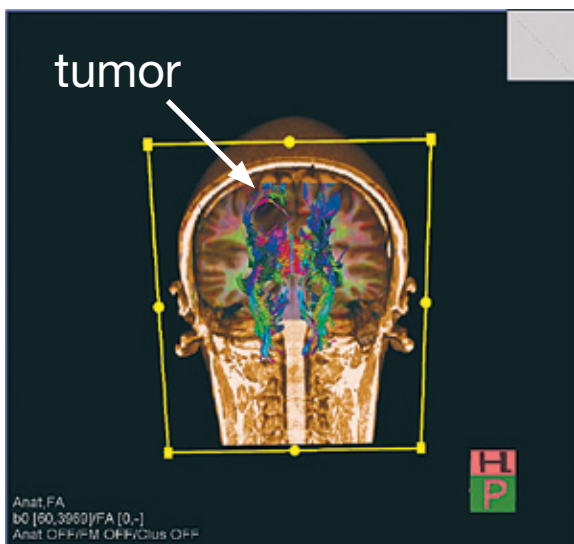


# New MRI exam for brain eases planning for brain tumor surgery

## Zilkha Radiology

Written by Alain Zilkha, M.D. D.A.B.R. & Albert Zilkha, M.D., D.A.B.R.



**T**o plan surgery for a brain tumor, there is a new MRI exam that has recently emerged to help for optimal surgical planning. This exam is called "MR Tractography" or "Diffusion Tensor Imaging (DTI)" and is best performed on an ultra high field 3.0 Tesla MRI.

The brain is a highly complex organ. The most important functions of the brain include your mind, sense of self, thinking, communication and planning and initiating movement. The most important cell of the brain is the neuron. Neurons communicate with each other via electrical and chemical messages. The axon is a specialized portion of the neuron that helps neurons communicate with each other. Think of it as a long "thin wire" that for practical purposes "connects" one neuron to the next. A group of axons traveling together is called a fiber tract. Fiber tracts help one area of the brain communicate with another part of the brain. If fiber tracts are disrupted, this can lead to neurological deficits. The mind will not work as well as before.

Tumors can arise anywhere in the brain. Many times, brain tumors can displace or push the fiber tracts. In

certain instances, particularly in malignant tumors, there is disruption and invasion of the fiber tracts. The fiber tracts are not seen on routine brain MRI. MR Tractography is a specialized test that looks at fiber tracts. Tractography shows where the fiber tracts are. It is best performed on an ultra high field 3.0 Tesla MRI.

In tractography, the MRI is instructed to take pictures and precisely define where the fiber tracts are in relation to the tumor. This is very important for surgical planning. When the neurosurgeon knows where the fiber tracts are in relation to the tumor, this may help decide how to approach the tumor. With ultra high field 3.0 Tesla MRI scanner, images are of higher resolution, highly detailed and are acquired rapidly. No dye is needed to acquire the images.

The images in this article were obtained on one of our 3.0 Tesla MRI scanners in a patient with a benign brain tumor. In this instance, the tumor displaces the fiber tracts and without damaging the tracts. Fiber tracts can travel from the top to the bottom of the brain and from side to side as well as from front to back. The different fiber tracts are assigned a different color for evaluation depending on their orientation.

Fiber tractography is a new technique that represents a major breakthrough in 3.0 Tesla ultra high

field MRI imaging. It is a very important and necessary tool for successful surgical planning. There are other indications for fiber tractography of the brain including developmental abnormalities, neurodegenerative diseases, strokes etc. Zilkha Radiology is the first radiology group on long Island to offer MR Tractography on the 3.0 Tesla open bore MRI.

Besides MRI, we do multidetector CT, PET CT, arthrograms (MRI and CT), virtual colonoscopy, CT urograms, digital mammography, ultrasound, digital X-ray, nuclear medicine, fluoroscopy (upper GI, Barium enemas, hysterosalpingograms), IVP's and DEXA scans. Zilkha Radiology offers Ultrasound and MRI Guided biopsy including breast and thyroid biopsies.

*The offices of Zilkha Radiology are conveniently located next to major parkways. The West Islip office is located right off of Robert Moses Parkway on Montauk Highway just across the street from Good Samaritan Hospital. The East Islip office is located just off of the Heckscher Parkway adjacent to the East Islip Library. There is plenty of parking in both offices. The offices are open from 7AM to 8PM Monday through Friday. On Saturday, the office hours are from 7AM to 3PM. Call 631-277-1600 or visit [www.zilkhadiology.com](http://www.zilkhadiology.com)*

# Women's +health



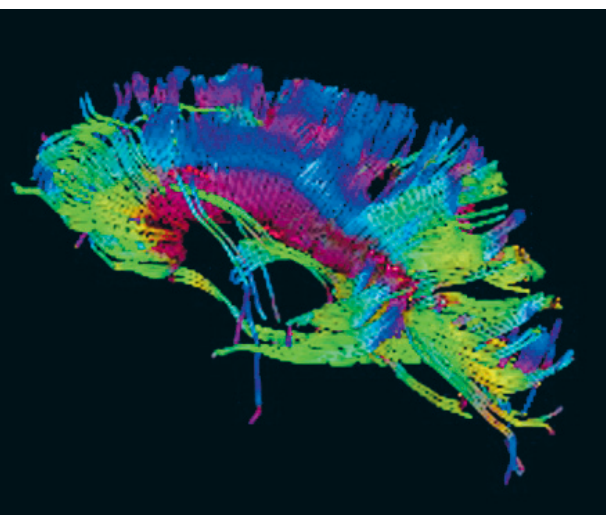
## The new 3.0 Tesla MRI systems come to Zilkha

**H**as your doctor told you that you need an MRI? There are important facts to know before you get an MRI. Did you know that not all MRIs are the same? There are significant differences in quality between MRIs. There is the Rolls Royce of MRIs and there is the old clunker of MRIs. They both cost you the same. Which would you rather be scanned on?

Let us discuss what makes a high quality MRI. As you know, the engine of an MRI is a magnet. Magnet strength is measured in Tesla or "T." Magnets come in different strengths or different "T." Different magnet strengths include the 0.3T, 1.0T, 1.5T and the most powerful of all, the 3T. Why does magnet strength matter? The stronger the magnet, the higher the quality of the MRI and the more detailed the images. When images are of such high quality, the radiologist can see the problem much clearer.

There are other benefits to the 3T MRI. Because the magnet is so powerful, scans are so much faster. On the older, less powerful, slower MRIs, a study could take up to 45 minutes. On the 3T MRI, most studies are completed in 15 minutes or less. A cervical spine MRI takes less than 9 minutes.

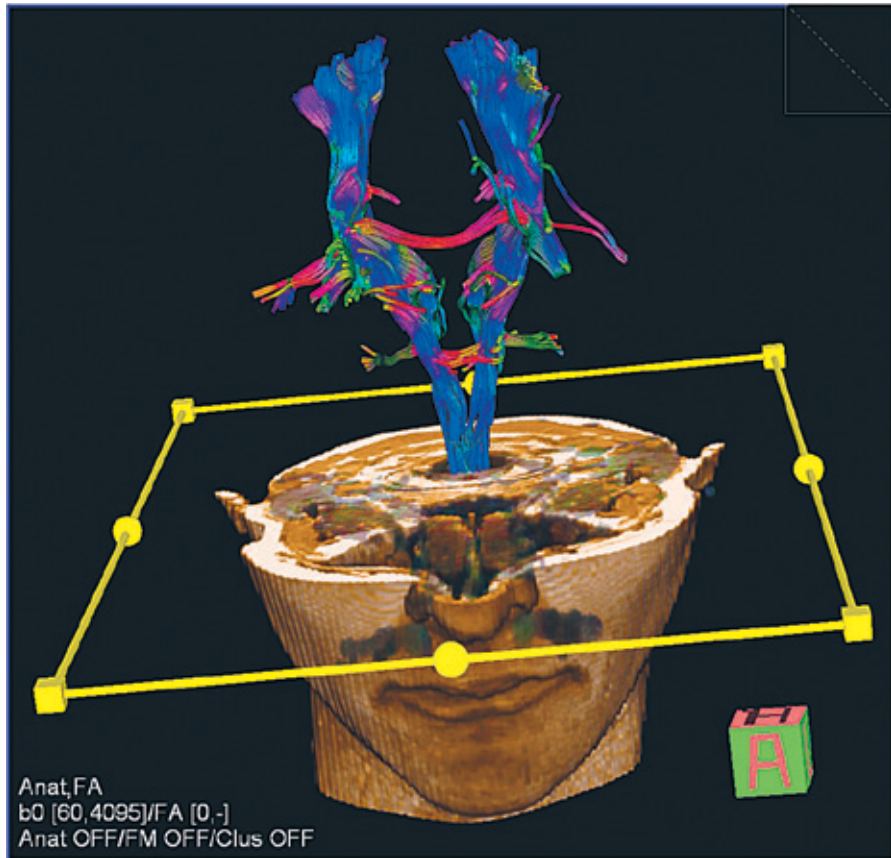
Among the 3T MRIs, there are differences. There are the older model "closed" MRIs such as the "Trio" and there is the newest of the 3T MRIs called the "Verio." Both are made by Siemens medical solutions. The Verio was developed as the successor to the older Trio and the weaker 1.5T "Espree." Why is the Verio more advanced than the Trio? The Verio is the newest generation 3T MRI; the Trio belongs to the prior generation. The technologic differences are vast. The Verio has "open bore" technology which means that the opening of the MRI is much larger than the closed MRI Trio. This translates into increased patient comfort and is ideal for claustrophobic patient, children and patients weighing up to 550 pounds.



There is another advantage that the Verio has over the older model 3T MRIs. During scanning, MRIs deposit energy into the body. Specific absorption rate or "SAR" is a measure of the energy deposited into the body by the MRI. This deposited energy can result in tissue heating resulting in patients feeling warm. To combat SAR, older model 3T MRIs must have longer scan times and even "cooling delays." Compared to the old 3T MRIs, the new Verio 3T MRI deposits 40 percent less energy. The Verio has shorter scan times and no need for cooling delays. What does this mean to you? You will spend much less time on the scanner.

If you are being scanned on a Trio or an Espree, you are being scanned on yesterday's technology. The latest 3T MRI technology is the Verio. Take control of your healthcare. Ask about the magnet strength.

Some radiology groups are now making the transition to 3T MRI technology. These groups typically have a mixture of 3T MRIs and the weaker 1.5T MRIs. Which scanner will they put you on? Ask them. Make sure you are being scanned on a 3T MRI and make sure your 3T MRI is the Verio.



### ZILKHA'S NEW TECHNOLOGY

There is only one radiology group on Long Island that has made the leap to complete 3T technology and that is Zilkha Radiology. We are the first group to acquire the new Verio 3T MRI by Siemens. We no longer have a single weak MRI scanner. We decided to get rid of all of them. With our group, you never have to worry about which type of scanner you will be put on. We only have the most advanced 3T MRI technology and we have it in both of our offices.

The technologist performing the MRI is vital to image quality. Our technologists have vast experience with MRI. Some of these technologists have been with our group for more than 15 years. They are required to attend seminars and obtain education credits yearly.

The radiologist reading your scan is probably the most vital piece to obtaining a diagnosis. All of our radiologists are board certified and fellowship trained including in the fields of neuroradiology (an expert in brain and spine imaging) and musculoskeletal (an expert in joint, bone and muscle imaging) radiology. A board certified radiologist is a physician who has passed all of the required exams at the end of residency. A fellowship trained radiologist is a physician who has spent an additional year (musculoskeletal) or two years (neuroradiology) becoming a subspecialist in a certain field of radiology.

If you ever need an MRI, at Zilkha Radiology you will be in great hands with regard to the scanners we have, the technologists who scan you and the physicians reading your films. We promise.

Besides MRI, we do multidetector CT, PET CT, arthrograms (MRI and CT), virtual colonoscopy, CT urograms, digital mammography, ultrasound, digital X-ray, nuclear medicine, fluoroscopy (upper GI, Barium enemas, hysterosalpingograms), IVP's and DEXA scans.

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