



R. Mark Richardson, MD, PhD, Director of the Epilepsy and Movement Disorders Program, answers questions about epilepsy and how surgery can help.

Q: What is the definition of Epilepsy?

It's important to understand the relationship between epilepsy and seizures. A seizure is a sudden, abnormal electrical discharge from cells in the brain that can cause changes in behavior, movement, sensation, or consciousness. A person is considered to have epilepsy if they have had two unexplained seizures occurring more than 24 hours apart. So, many patients with epilepsy do not realize they have this disease, due to historical stigmas, but the bottom line is that if you take medications to prevent seizures, then you have epilepsy. This is difficult for many patients to accept, and I see patients all the time in my clinic who say no one ever told them they have epilepsy, despite the fact that they have been treated for years for their "seizure disorder."

Q: How common is Epilepsy?

Epilepsy is very common. It affects more than 3 million people of all ages in our country, about 1% of the population. To put it into perspective, that's more people than have multiple sclerosis, cerebral palsy, muscular dystrophy, and Parkinson's Disease combined. In the U.S., epilepsy is as common as breast cancer, and it takes as many lives. Anyone with a brain can have epilepsy...and this disease affects people from all walks of life.

Q: How does epilepsy affect people's day-to-day lives?

The effect can be mild, devastating, or somewhere in between. First of all epilepsy can kill. The overall risk of dying is up to three times higher in people with epilepsy than in the general population. But a lot of people still don't realize how serious a seizure can be. Seizures can cause physical injuries, cognitive problems as a result from repeated seizures, or even death. People with epilepsy may not be able to function well at work, or may face getting fired because of having a seizure at work, even though otherwise they are doing well at their job. Imagine what it would be like to never know when you, or your spouse or child, were going to have an event where you suddenly lose consciousness. In many cases, a seizure can transform an everyday event like cooking or taking a shower or bath into something extremely dangerous.

Q: What are the conventional methods for treating epilepsy?

Anyone who has had two unexplained seizures occurring more than 24 hours apart is typically started on an antiepileptic medication. If the patient has a breakthrough seizure, an additional medication is added. Many of these medicines can cause some pretty bad side effects, and medications are often changed for this reason. But a major problem is created when patients who still have seizures despite taking medication are cycled repeatedly through many different drugs, because we know that after a patient has failed to respond to two appropriate medications, their chance of ever being seizure free on medication alone is close to zero. And this happens to about 30% of people with epilepsy. The American Academy of Neurology recommends that these patients who are not seizure after trying two different

medications should be referred to a comprehensive epilepsy center, like our program at UPMC, for further evaluation, rather than be continued on multiple medications.

Q: What should people do if medications do not stop their seizures?

The goal in treating patients with epilepsy is no seizures and no side effects. Anyone who has taken more than one medication and still has had seizures needs to be evaluated at a comprehensive epilepsy center, including an evaluation by an epilepsy surgeon. The reason for this is that the only cure for epilepsy is to remove the abnormal part of the brain that is causing seizures, if in fact there is one focal spot, so patients deserve the opportunity to find out if they might qualify for epilepsy surgery. Our job as a comprehensive epilepsy center is to make sure we do everything we can to figure out if there is one place in the brain where seizures are coming from, and at UPMC we have all of the modern techniques available to do this. If a patient turns out to be a candidate for epilepsy surgery, it's up to them to decide whether they want to have the surgery. And if patients are not candidates for removal of the seizure focus for some reason, we can offer them a novel treatment called Responsive Neurostimulation, which is a minimally invasive implanted brain stimulation device. But going through the evaluation process itself is very empowering for patients, because they can take some control over their disease for a change, rather than just waiting for the next seizure to happen.

Q: How safe is epilepsy surgery?

Epilepsy surgery is much safer than living with recurrent seizures. Surgery is about improving quality of life...and people are expected to be essentially the same after surgery, except hopefully without seizures, or with a dramatic reduction in their seizures. The reason this is possible is that the area of the brain causing seizures does not function normally, and experienced epilepsy surgeons know how to operate safely in many different parts of the brain to remove the seizure focus without damaging any of the normal areas.

In most cases, the brain actually works better once the part causing seizures is removed. I've operated on many patients who were previously told that surgery was too dangerous, but who are now seizure free and living normal lives. And studies have shown that epilepsy surgery is actually expected to increase a person's life span, but all of this is underappreciated, both by patients and by many physicians, which is a shame. The majority of patients who would benefit from diagnostic or therapeutic epilepsy surgery do not ever get referred, and sadly for those that do get referred, the average time it takes to get to surgery after the onset of repeated seizures is about 20 years.

Q: Why choose UPMC for epilepsy care?

UPMC is the only epilepsy center in western Pennsylvania that can provide patients with every modern diagnostic and surgical technique that is currently available. There are not that many centers in the country, actually, that can do everything that we do here, not to mention that we are performing cutting edge epilepsy research at UPMC. And I think you would be hard-pressed to find a team that cares more about improving quality of life for our patients and stopping seizures. We treat everyone individually, and we do not give up.