

Epilepsy Surgery

The Path to Epilepsy Surgery

The Path to Epilepsy Surgery was written by Dr. David Steven (@epilepsysurgeon). Dr. Steven is a neurosurgeon in London, Ontario. He is the co-director of the Epilepsy Program at the London Health Sciences Centre.

Although most patients with epilepsy have excellent seizure control with medications alone, 20 – 30% have seizures that are not controlled with medications. Though it is not an option for everyone, many of these patients may be candidates for epilepsy surgery – a special type of brain surgery performed by neurosurgeons to help treat epilepsy that cannot be treated with medications.

The most common type of epilepsy surgery is performed on patients with focal epilepsy, which means their seizures are coming from a specific location in the brain. Surgery for this type of epilepsy usually involves removing the part of the brain responsible for the patient's seizures. Surprisingly, many parts of the brain can be removed without causing any problems and, fortunately, most cases of focal epilepsy occur in these non-essential areas. However, all cases are treated individually and the risks and benefits of surgery need to be weighed thoroughly for each patient.

Patients being considered for epilepsy surgery are normally seen first by a neurologist who specializes in epilepsy. All patients have an MRI scan and a test called an electroencephalogram (EEG), which measures the brain's electrical activity. Next, patients are admitted to a special ward in the hospital that is used to monitor their seizures. They are hooked up to an EEG and monitored by a camera 24-hours a day. The goal is to capture seizures on video and for the neurologist to see what the brain activity looks like at the same time. Many other tests may be done during this hospital stay, including additional brain scans and psychological testing. The admission to the epilepsy unit lasts about a week, but

Fact: Carefully chosen surgery candidates have about an 80% chance of being seizure-free after surgery.



can be longer in some circumstances. This hospital admission is often memorable and eye opening for patients as they meet other people with epilepsy and share stories with them and their families. They often realize that they are not alone.

After the hospital admission, the doctors meet to discuss the test results to decide if a patient is eligible for surgery. Occasionally, additional tests are required in order to reach a final decision. In about half of patients, it is decided that a more detailed EEG is required, one with intracranial electrodes. Unlike the regular EEG, which uses electrodes on the scalp, these electrodes are surgically placed inside the skull and may be either on the brain (called subdural electrodes), or in the brain (called depth electrodes). It is during this stage that patients will meet their surgeon and can discuss the details of the procedure and what risks may be involved. Patients are then brought back into the hospital for an operation to insert the electrodes. After surgery, they stay in the same epilepsy unit as before, only this time it is often a longer stay, lasting a week or two or even longer. Once the intracranial EEG is completed, the electrodes are removed and the patient is discharged. The doctors will then meet again to discuss the results of the tests and make a final decision about surgery.

Once a final decision is made about surgery, the doctor

will meet with the patient to explain all of the test findings and let them know whether they are eligible for surgery. Not all patients turn out to be eligible for surgery. This can be due to the fact that the seizures are coming from too wide of an area or that they are coming from an important part of the brain that cannot be removed. This can be very disappointing, especially for those patients who have gone through the intracranial EEG phase. However, even though they are disappointed, most of these patients are content that they at least know with certainty that surgery is not an option for them. For the majority of people, however, surgery is possible and these patients then go on to meet the surgeon if they have not done so already.

The surgeon will explain the exact procedure in detail, the likelihood that the surgery will work and outline any potential side effects. Most patients have a general anesthetic for the procedure, however some patients need to be wakened during surgery to test brain function.

On the eventual day of surgery, patients are often nervous. After months of preparation, the actual surgery may last for only a few hours and the hospital stay only a few days, after which patients can go home, hopefully seizure free!

What should I expect following surgery?

You will be transferred to the Neurosurgery Ward where you will be in a special observation unit for one to two days before being moved to a regular hospital room. You will probably feel unwell after the operation with headache, nausea, and tiredness.

This usually disappears after two to three days and most patients feel well apart from mild fatigue when they are discharged within a week after surgery. Most patients return to full activity, including work, within one month of surgery. Your medication regime will remain unchanged post discharge until the results of the surgery are evident.

How will the surgery affect my epilepsy?

The best result of surgery is to be seizure free. This occurs in 3 out of 4 patients after temporal lobectomy and is less likely after other types of surgery. Some patients benefit from a reduction in seizures and antiepileptic medication but continue to have occasional

seizures. You should be prepared for the possibility that you may not be helped by surgery. About 10% of people fail to gain any improvement at all.

In particular, generalized tonic clonic seizures may not decrease following surgery and in rare individuals may increase in frequency. Although freedom from seizures during the first weeks or months following surgery is encouraging, this does not necessarily predict long-term control. This can be determined more reliably if patients remain seizure free for one to two years.

Conversely, occasional seizures during the early post-operative months can disappear with time. Some patients continue to experience their aura or warning following surgery but this rarely progresses to full seizures.

What are the risks of surgery?

The general risk of infection, bleeding or stroke associated with any surgery involving the brain is less than 1% with epilepsy surgery at University Hospital.

A visual field defect or blind spot involving both eyes off to the side opposite the operation may occur particularly following temporal lobectomy but most people are unaware of it and it has no effect on day to day seizures.

Where is epilepsy surgery performed in my community?

- London Health Sciences Centre, London (Adult) <http://www.cnsuwo.ca/programs/epilepsy/>
- Children's Hospital of Western Ontario (Pediatric)

If you would like to speak to someone who has had epilepsy surgery, we can help make that connection. Send an email to: info@clinetcommunity.ca

Questions for you to ask your health care provider:

- Have there been sufficient efforts to control my seizures with medications?
- Do I have the type of seizure that can be helped by epilepsy surgery?
- Will my seizures get better without surgery?
- Could my seizures get worse without surgery?
- What are my risks if my seizures are not improved with medication?

Adapted from: Provincial Guidelines for the Management of Epilepsy in Adults and Children (Epilepsy Implementation Task Force); Clinical Neurological Sciences, Western University, Canada - London Ontario.(August 25, 2016). Epilepsy Surgery Information. <http://www.cnsuwo.ca/programs/epilepsy/>