

# Hemispherectomy

## What is a Hemispherectomy?

A hemispherectomy is where half of your child's brain is either totally or partly removed or disconnected from the rest of the brain. It is a rare surgical procedure done for epilepsy not responsive to medications.

The "hemi" part of "hemispherectomy" means "half" and refers to the cerebral (brain) hemisphere – half of your brain.

## Why is a hemispherectomy performed?

A hemispherectomy is typically done in children and occasionally in adults. In these patients, the whole hemisphere is abnormal and responsible for causing seizures.

## Who benefits from a Hemispherectomy?

Your child might need a hemispherectomy if they have these symptoms:

- Seizures (epilepsy), not controlled with medication.
- Weakness on one side of their body. Also, they can't use their hand as well and they might lose their peripheral vision.
- Abnormal finding on brain MRI that usually affects one side of the brain.
- Developmental delay because of seizures.

Two-thirds of children who undergo hemispherectomy are completely seizure-free and another 15-20% have a substantial reduction of seizures. If a child has persistent seizures after an initial procedure, they should be carefully evaluated to see if they could benefit from a repeat surgery.

## How A Hemispherectomy Helps

There are two types of hemispherectomies: anatomic and functional (disconnective).

- **Functional (disconnective):** The functional technique involves removing a smaller area of the brain and disconnecting the side from the rest of the brain. It has less risk for complications. Hemispherotomy is a term used when the tissue removed is small.
- **Anatomic:** Anatomic hemispherectomies are usually performed on children who have persistent seizures despite the "functional/ disconnective" hemispherectomy. This type of hemispherectomy is where the frontal, parietal, temporal and occipital lobes of the brain are removed. This procedure has higher risk for complications – there

can be extra blood loss and fluid buildup.

The two types have fairly equal success. However, when a functional hemispherectomy does not lead to seizure freedom, redoing as an anatomic hemispherectomy may lead to seizure freedom in a third of patients.

## **What to Expect with a Hemispherectomy**

A hemispherectomy is irreversible and will have your child in the hospital for up to a week. Then, your child will either go to a rehabilitation facility or go back home. Your provider will discuss this in-depth with you.

Most children have excellent long-term results following a hemispherectomy. Occasionally, however, some complications may occur:

- Early complications, which occur either while the operation is happening or immediately after it, include blood loss, electrolyte changes, hypothermia and aseptic meningitis.
- Fluid buildup in brain, also called hydrocephalus - in less than 5% with disconnective / functional hemispherectomy, and slightly higher risk with anatomic hemispherectomy.

## **Preparing for Surgery**

You can help make sure your child has the best possible surgery outcome by understanding what to expect before, during and after a hemispherectomy surgical procedure at Gillette Children's. Here are a few resources to help you feel more prepared:

- Review tips to prepare for surgery at Gillette.
- Understand the amenities available at Gillette.

### **A Week Before Surgery**

A week before the surgery, we will contact you to:

- Gather a health history, including details about medicines (name, dose, frequency), pharmacy and primary care doctor.
- Discuss what to expect on the day of surgery and during the hospital stay.
- Let you know what you'll need when your child leaves the hospital.
- Overall health can affect how well and how quickly your child recovers from surgery. In general, kids should maintain regular levels of activity and physical therapy leading up to surgery.
- Before and after the surgery, make sure your child eats enough food with iron, calcium and vitamins C and D. Fresh colorful fruits and vegetables, dairy food, and other products with added iron and calcium offer great ways to get these nutrients.

- Gillette is a latex-free facility. However, we still want to know if your child has a latex allergy or has ever had a severe reaction to latex.

Sometimes fears, behavior or expectations related to upcoming surgery can cause stress for families. Our child life specialists can provide emotional support and distractions, such as toys and movies in the waiting area before surgery begins. Child life specialists can also meet with your child's siblings to address their feelings and concerns. Knowing what to expect can help everyone feel more prepared. We'll take time to clarify short- and long-term expectations for outcomes following surgery.

## **During Your Hospital Stay**

## **Arrival**

The perianesthesia staff welcomes you when you arrive. We weigh your child, and ask them to change into a hospital gown. We also check temperature, pulse and blood pressure. A child life specialist helps your child feel more at ease with toys, crafts or movies.

## **Surgery Preparation**

Next, you and your child meet with the surgery team, which includes:

- Pediatric neurosurgeon
- Nurse anesthetist
- Anesthesiologist
- Nurses

This is a chance for you to raise any questions or concerns. The anesthesiologist discusses how anesthesia and pain medicine are used during surgery. You can talk about your child's experiences with pain and request medicine or other techniques to help them relax.

## **Surgery**

A hemispherectomy takes place under general anesthesia, which means your child is asleep throughout the procedure. The neurosurgeon will perform a craniotomy, opening the skull to access the brain.

During the procedure, the surgeon:

- Removes a piece of the skull
- Peels back a section of the dura, the tough membrane that protects the brain
- Uses special instruments to remove a hemisphere of brain or disconnect the hemispheres
- Replaces the dura
- Uses stitches or staples to secure the skull bone back into place

## **Hemispherectomy Rehabilitation and Recovery**

Every child heals differently, and outcomes depend on the neurologic condition of your child before surgery.

After epilepsy surgery, your child will spend two to three days in the pediatric intensive care unit (PICU) for close monitoring. Antiepileptic medications will be continued.

A brain CT or MRI may be performed on the first morning after the operation to assess your child's brain. Once the surgical drains are removed, your child will be transferred to a regular pediatric nursing floor. PT, OT and speech therapy will be consulted based on the child's needs. An average hospital stay slightly varies between patients and

usually ranges from five to seven days. Length of stay decisions are made by the surgical team and are based on your child's condition and recovery.

Upon discharge, rehabilitation services are often required to enhance recovery from hemispherectomy. Your child may be transferred to a rehab facility for intensive physical, occupational and speech therapy. This is usually followed by home or outpatient services. Outpatient therapy can be provided through hospitals and free-standing facilities and schools. Check with your individual school system to see if this is a service provided.

## **Integrated Care**

If your child or family member has epilepsy, they may find relief with a hemispherectomy surgical procedure. Gillette Children's is one of a few hospitals in the area to offer this type of surgery to treat epilepsy.

Your child will work with a wide range of specialists. Along the way, they may receive care from internationally recognized experts in areas including:

- [Neurosurgery](#)
- [Neurology](#)
- [Pediatric Rehabilitation Medicine](#)
- [Neuropsychology](#)
- [Child life](#)
- Psychiatry
- [Psychology](#)
- Rehabilitation therapies
- [Radiology and imaging](#)
- [Social work](#)

We provide lifelong support and education in a family-centered environment. Our multidisciplinary team will work closely with you to develop a customized treatment plan to fit the specific needs of your child.

## **Explore Additional Resources**

### **Deep Brain Stimulation (DBS)**

Deep Brain Stimulation (DBS) involves implanting a medical device called a neurostimulator under the surface of the skin in the abdomen or chest.

[Learn More](#)

## The Hemispheric Surgeries

The main goal of a hemispherectomy is to stop the seizures by completely disconnecting one cerebral hemisphere from the other in order to prevent seizures from spreading to other parts of the brain.

[Learn More](#)

[Appointment: 651-290-8707](#) [Refer a Patient: 651-325-2200](#) [Pediatric Expert Consult](#) [More Ways to Contact Us](#)

This information is for educational purposes only. It is not intended to replace the advice of your health care providers. If you have any questions, talk with your doctor or others on your health care team.

If you are a Gillette patient with urgent questions or concerns, please contact Telehealth Nursing at [651-229-3890](#).