Depth, Strip and Grid Electrode Placement for EEG Monitoring in Partial Seizures

Types of Seizures

Seizures can be placed in two broad groups of partial seizures and generalized seizures. Partial seizures begin in a small area in the brain. Generalized seizures happen in many places of the brain. For most patients with seizures, treatment with drugs is the first choice for care. Surgery is an option for some patients, most often those with partial seizures.

Electrodes are placed on the surface of the brain to measure seizure activity. The part of the brain found to be causing the seizures is labeled the “seizure focus”. If only one place is found, that part of the brain is removed. If the test shows more than one seizure focus, surgery may not be helpful.

Who would be helped by Electrode Placement?

Adults and children with seizures are considered for this test to measure seizure activity if they have:

- Partial Seizures--seizures with a fairly small area where seizure begins
- Seizures that are not controlled by any of three anti-seizure drugs
- Seizures which lessen the quality of life
- Seizures that begin at an early age
- Seizures that start in one area and spread to cause a generalized seizure
What are Electrodes?

Electrodes placed under the skull are attached to a monitor. They are used to pick up seizure action in the brain. This tells us the kind of seizure and the part of the brain causing the problem. After finding that part of the brain, your doctor and the brain surgeon can decide if it can be safely removed.

There are three common types of electrodes used. They are depth electrodes, strip electrodes and grid.

**Depth Electrodes** are made of thin wires. These can record seizures which start deep in the brain.

**Strip and Grid Electrodes** are those planted in a thin sheet of plastic. These strips and grids are placed on the surface of the brain. They pick up signs of seizures.

How are the Electrodes Placed?

Depth, strip and grid electrodes are all placed in or on the brain during surgery. A cut is made in the scalp near the area where the electrode will be placed. A small burr hole is made in the skull to place the depth and strip electrodes. A piece of skull is removed to place the grid electrode. The piece of skull is replaced when the grid electrode is removed. You may have one or many electrodes placed to watch for seizure action.

Your hair will be shaved for this test. While the electrodes are in place, you will need to wear a gauze bandage on your head to keep them firmly in place. You will stay in the hospital for many days to monitor the seizures while the electrodes are in place.
Before Surgery

To prepare for this, you will need a health history and physical exam. This includes a review of your health, an exam of your body, and blood tests. The night before and the morning of surgery you will be asked to wash your hair with an antibacterial soap. We often use Hibiclens®.

After Surgery

After placement, you will go to the Intensive Care Unit (ICU) to watch and keep a record of the seizures. You may be given less medicine or it may be stopped in order to cause seizures. If this shows seizures that start in many places or on both sides of the brain, surgery may not be done. If this shows that seizures are starting in a small area of the brain, the surgeon may be able to take out that part of the brain.

Removal of the Electrodes

After we record enough information about the seizures, the electrodes will be removed. Strip and depth electrodes are often removed at the bedside. Grids need to be removed in surgery.

Who to Call with Questions

Whenever you have a question or concern, please call your neurosurgeon or nurse practitioner. You can call:

Department of Neurosurgery at (608) 263-1410