

Craniotomy



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Craniotomy

The brain controls the body. You are able to move and feel because of the brain. And it is the brain that makes you able to think, to show emotion, and to make judgments. The brain is protected by the skull, tissue, and fluid.

Before surgery is recommended, several tests are performed to give the best visualization of the brain and blood vessels. Tests may include an MRI scan, CT scan, or an arteriogram. If these tests show that you have significant changes in your brain you may need a craniotomy to address the problem.

Certain problems keep the brain from working correctly. Access to the brain is needed to correct these problems. A craniotomy provides this access. Some types of brain problems include: brain injury, brain tumor, aneurysms, arteriovenous malformation, and hydrocephalus.

BASIC BRAIN ANATOMY

Protecting the brain

Beneath its outer covering of tissue (called the dura), the brain is cushioned and supported by a special fluid. This cerebrospinal fluid (CSF) fills the space between the dura and brain. Arteries and veins carry blood to and from the brain. Without a fresh supply of blood, the brain tissue quickly dies.

Functional Areas of the Brain¹

Motor Area

- control of voluntary muscles

Sensory Area

- skin sensations (temperature, pressure, pain)

Frontal Lobe

- movement
- problem solving
- concentrating, thinking
- behaviour, personality, mood

Broca's Area

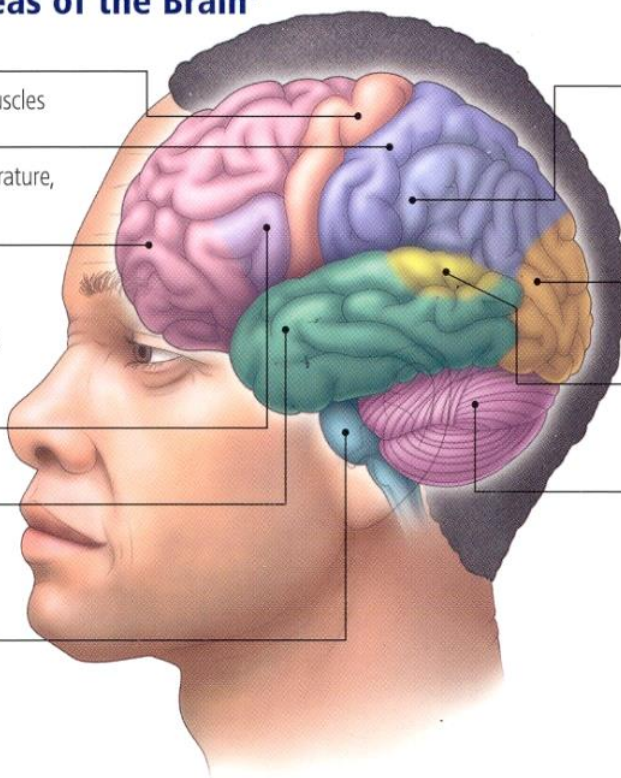
- speech control

Temporal Lobe

- hearing
- language
- memory

Brain Stem

- consciousness
- breathing
- heart rate



Parietal Lobe

- sensations
- language
- perception
- body awareness
- attention

Occipital Lobe

- vision
- perception

Wernicke's Area

- language comprehension

Cerebellum

- posture
- balance
- coordination of movement

WHY IS A CRANIOTOMY NEEDED?

There are several problems that can occur in the brain. Some of the most common problems that can require a craniotomy are as follows.

Brain Injury

A brain injury can result from a direct blow to the head or even whiplash. It can cause tearing, bleeding, and swelling of the brain. The treatment goal is to stop bleeding and reduce pressure inside the skull. Blood and damaged tissue may be removed to alleviate the issue.

Brain Tumor

A tumor is a mass of abnormal cells. A primary brain tumor starts in the brain while a metastatic brain tumor grows from cells that spread to the brain from some other site in the body. The goal is to remove as much of the tumor as possible. Depending on the tumor, other treatments may also be needed.

Aneurysm

An aneurysm is a balloon-like defect in the artery wall. Over time, the defect bulges and weakens the artery wall. This allows blood to leak out causing damage to the brain. The treatment goal is to control damage and prevent future bleeding.

Arteriovenous Malformation

An arteriovenous malformation (AVM) is an abnormal tangle of blood vessels. An AVM prevents normal blood flow through part of the brain. It can also increase the risk of bleeding into brain tissue. Treatment goal is to stop blood flow within the AVM and channel it along the normal route.

Hydrocephalus

Sometimes the brain can produce too much cerebrospinal fluid (CSF) in one of the interconnected cavities of the brain. This overproduction of CSF or lack of flow between the cavities can cause increased pressure on the brain. This pressure on the brain can cause headaches, loss of coordination, impaired vision, difficult bladder control, and memory loss. The goal of the surgery is to decrease pressure on the brain by diverting CSF to the abdomen to be absorbed.

PREPARING FOR SURGERY

There are several important steps that must be completed before your surgery. Please **carefully review** the following information:

Medical Clearance

If you have any health problems, I will require you to see one or more of your physicians for a complete medical examination. Please make this appointment as soon as your

surgery has been scheduled. If you do not have a physician, please call my office. I will be happy to recommend one for you.

Medication, Herbal & Dietary Supplements

It is important to review your current medications before your surgery. Certain medications may cause excessive bleeding during surgery. Please review the following information carefully:

- ▶ **NOTIFY YOUR SURGEON** if you are taking “blood thinning” medications and follow these recommendations:

Coumadin	Stop 5 days prior to surgery
Plavix, Persantine, Ticlid, Aspirin	Stop 2 weeks prior to surgery

- ▶▶ **NOTIFY YOUR INTERNIST OR CARDIOLOGIST** of the above recommendation to insure it is safe for your situation.
- ▶ **STOP TAKING** aspirin, anti-inflammatory drugs (Ibuprofen, Advil, Motrin, Aleve, Naprosyn, Celebrex, Mobic, Arthrotec, Voltaren, etc.), Vitamin E and Glucosamine for 2 weeks prior to surgery.
- ▶ **STOP TAKING** all prescription diet medication or herbal supplements for 2 weeks prior to surgery.
- ▶ **YOU SHOULD CONTINUE** all other medications that you normally take.
- ▶ The Anesthesia Department will let you know in advance which medications you are to take the morning of surgery. If you are advised to take your medication, swallow only the smallest amount of water.
- ▶ **IF YOU ARE DIABETIC**, the Anesthesia Department will advise you on how to take your oral medication or the amount of insulin to take on the morning of surgery.
- ▶ **Please let your surgeon and your anesthesiologist know about alcohol use.** If you drink more than 2 alcoholic beverages a day, you may experience withdrawal symptoms after surgery. Symptoms may include mild shakiness, sweating, hallucinations and other more serious side effects. Interventions can be taken before surgery to minimize withdrawal symptoms. **The best goal is for you to stop drinking alcohol for at least 2 weeks prior to surgery.**
- ▶ **STOP SMOKING. Smoking prevents soft tissue from healing.**

Anesthesia Pre-Screening

One to two weeks prior to your surgery, a nurse from the surgery center will call you to ask questions about your health and medical history. Be sure to inform the nurse of all prescription and “over the counter” medications that you usually take. Include any herbal or dietary supplements that you may use. Remember to include those medications or supplements that you may have already stopped.

SURGICAL CHECKLIST

- Schedule an appointment with your physician, if you have been told that you need a medical clearance for your surgery.
- Return any MRI, myelogram, CT scan or X-ray films to my office prior to surgery.

THE DAY BEFORE SURGERY

Do not eat or drink anything after midnight the night before your surgery.

THE DAY OF YOUR SURGERY

Do not eat breakfast or drink anything the day of your surgery. If the Anesthesia Department advises you to take certain medications the morning of surgery, swallow only the smallest amount of water.

When you arrive at the hospital, go to the registration area and tell the staff that you are my patient and are scheduled for surgery. You will then be escorted to the surgical waiting area. Your family and friends may wait there during the surgery. You will be taken to the pre-op area about one hour before your scheduled surgery. You will be given fluids through an IV and a sedative to help you relax. Once you are in the operating room, the anesthesiologist will administer general anesthesia.

General anesthesia is a medically induced and controlled loss of consciousness and sensation. You will not be in pain or discomfort during the surgery. The medications for the general anesthesia will be given through your IV or inhaled.

Once you are anesthetized, the actual surgery will begin. Some hair will be removed exposing the skin to make a clean incision. An incision will be made on your scalp. Then dime-sized burr holes are drilled in the skull. The bone between the holes is cut and lifted away. The dura is opened exposing the brain. After that, depending on the problem, your problem will be addressed. In some cases certain nerves will be stimulated while the response to the brain is monitored. This is done to make sure that normal brain tissue is not disturbed during the surgery. When the goal of the surgery is met, the dura covering the brain is closed. In most cases the bone flap, originally removed to access the brain, is put back into place. It may be held in place with a wire mesh or screw plates. A small drain tube may be placed in the incision to help manage post-operative wound drainage. The skin is then closed using either stitches or staples.

HOSPITAL CARE

After the surgery, you will be taken to the ICU where your blood pressure, temperature, pulse and breathing will be checked frequently. Meanwhile, I will speak with your family and friends in the waiting room regarding your condition.

Most patients are helped out of bed by the nursing staff on the day after surgery. Physical and occupational therapy may be consulted to provide instructions on the proper ways to move around after surgery. The therapists will also assess your needs for medical equipment to be used at home.

Your wound drainage will be monitored closely. The drainage tube and original dressing are typically removed by the second day after surgery. A new dressing will be placed over your incision. When you return from surgery, you may have a drainage tube (Foley catheter) in your bladder that is connected to a collection bag. This is typically removed on the first day after surgery. Once you are able to drink, eat, and take your pain medication by mouth, your IV line will be removed. Most patients can go home two to three days after surgery.

In some cases, it may take several days before an improvement is noticed. Occasionally, it may even take a few weeks before the symptoms show a notable improvement. Nerves heal very slowly. It is common to still have some discomfort for several weeks after your surgery. Every patient experiences this healing process differently.

Upon waking, you may have a headache and body aches. Your nurses can give you medication to ease the pain. Monitors may be used to measure your heart rate or the pressure inside your skull. You may be wearing special leg stockings to help prevent blood clots. For a short while, you may be placed on a ventilator to help you breathe.

Your healthcare team will work with you to have you eating and walking as soon as possible.

If you are having a hard time performing certain physical activities, physical therapy may be prescribed. Depending on your needs, therapists can work with you to improve balance, strength, speech, and daily living skills.

AT HOME

You must see me in the office approximately two weeks after surgery. Your first post-operative appointment should be made when you schedule your surgery. If you do not have a post-operative appointment, please call the surgical scheduler immediately to schedule your appointment at (512) 314 3888.

The post-operative instructions outlined below have been designed to help give you the best possible chance to have a positive outcome from this surgery.

POST-OPERATIVE INSTRUCTIONS

When you return home after your surgery, you should:

- Please leave your dressing on for three days after surgery
- **IF** your dressing is occlusive using a clear plastic-like covering called Tegaderm you may shower, with your dressing on, beginning post op day #1.
- Otherwise you may shower with the dressing off on day 4 after surgery.
 - you may gently wash the incision with soap and water
 - rinse the incision well
 - blot the wound dry, do not rub.
 - do not apply lotions or creams to the incision
 - you may cover the incision with a light dressing, using a small amount of tape
- In addition to your normal household walking, begin to gradually increase you're walking as your comfort allows.
 - start by walking continuously for 3 to 5 minutes at a time, three to four times a day
 - try to add one minute to each walk every other day
- Sit for no longer than 20 minutes at a time
- Be sure to lie down for short rest periods, several times a day
- **NO driving or riding in a car until after your first post-op visit and cleared by a physician.**

Please follow these instructions for 3 months after surgery:

- **NO lifting** more than 10 pounds.
- **Avoid all strenuous activities**, including but not limited to the following examples:
 - pushing or pulling motions
 - Using a vacuum, lawn mowers and riding mowers
 - walking dogs on leashes
 - pulling luggage
- You may climb stairs as necessary.
- Continue to gradually increase the amount of walking you do each day. Three to four short walks a day are easier to tolerate than one long walk. You may use a treadmill.
- After your post-operative appointment, you may apply Vitamin E lotion or cocoa butter to your incision to soften it.
- You may resume sexual activity as your comfort allows. Please keep in mind the activity restrictions listed above.

You will need to see me periodically in the office during this healing period. We will check your progress by MRI or CT scan at several of your follow up appointments.

SURGICAL RISKS

As with any surgical procedure, there are potential risks. Many precautions are taken to prevent or minimize risks but because human biology is at times unpredictable, no surgery is risk free. Risks of the operation include, but are not limited to: anesthetic complications, bleeding, risks of transfusion, injury to the nerves, paralysis, loss of bowel and bladder control, incomplete resolution of pain, seizure, infection, loss of memory, confusion, swelling or bleeding of the brain, loss of sensation, loss of vision, weakness, and paralysis. Medical problems may include pneumonia, blood clots, heart attack, stroke and death. You must see your primary care medical doctor prior to the surgery to help minimize these complications. Many precautions are taken to prevent complications, but no surgery is risk free or a guarantee of success.

RETURNING TO WORK

Returning to work will depend on your occupation and your employer's acceptance of your activity restrictions.

WHEN SHOULD I CALL MY DOCTOR?

Contact our office at (512) 314 3888 if you have any of the following signs or symptoms:

- Temperature elevation greater than 101° F.
- Redness or drainage from the incision; especially if yellow/green and/or bad smelling
- Edges of your incision start to come apart
- New weakness in your arm, hand or legs.
- If the pain and/or numbness in your buttocks, legs, or feet is becoming unbearable.
- Seizure
- Increased drowsiness
- Extreme headaches

Go to the nearest emergency center:

- If you lose the ability to control your bowels or bladder.

Call 911 immediately:

- If you have shortness of breath or chest pain.

A FINAL NOTE

If you have any questions or concerns, please do not hesitate to call me or my staff during regular business hours, which are 9:00am – 4:30pm, Monday through Friday. In an emergency after hours, our answering service will take your call and notify me.

OFFICE PHONE NUMBER: (512) 314-3888