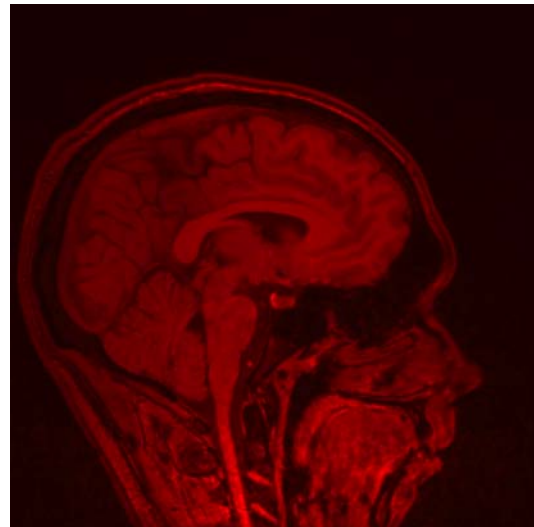
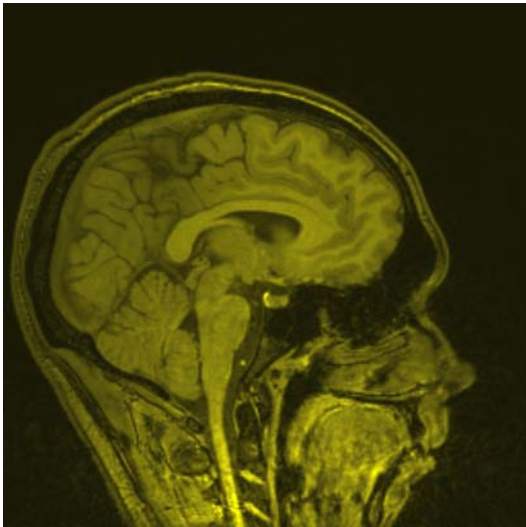
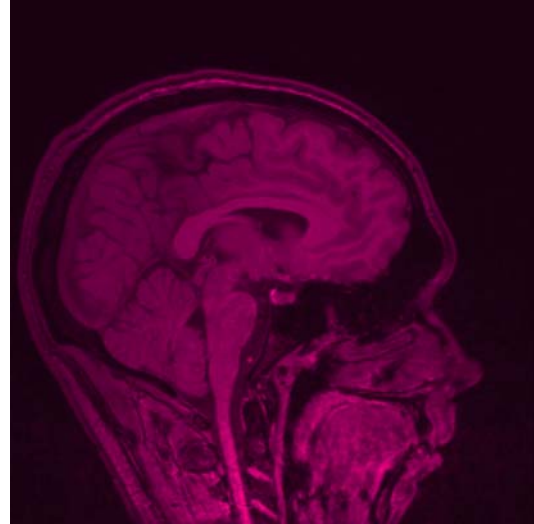
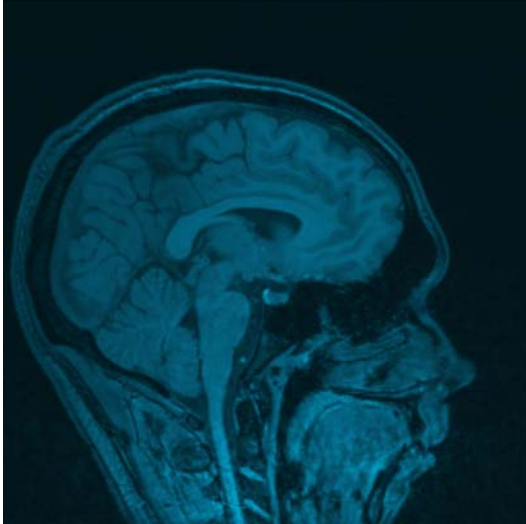


A PATIENT'S GUIDE TO BRAIN SURGERY



**DEPARTMENT OF NEUROLOGICAL SURGERY
THE OHIO STATE UNIVERSITY
MEDICAL CENTER**

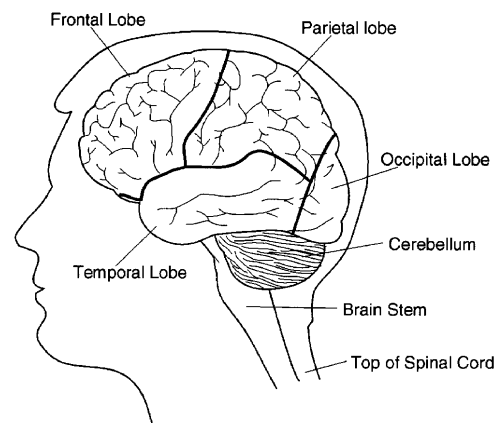
You may be reading this guide because you or someone you love has been told that they will have brain surgery. You are not alone, and will require a dedicated medical team for help.



THE BRAIN

Cerebrospinal Fluid (CSF): Cerebrospinal fluid surrounds the brain in a space between the arachnoid and pia. It provides a protective cushion. The fluid is normally clear and looks like water. It is made inside the brain and provides nutrients to the brain.

The Cerebral Cortex (Cerebrum): The cerebral cortex makes up the largest portion of the brain. It is divided into two identical halves called the right and left hemispheres. The left hemisphere controls the right side of the body and right hemisphere controls the left side of the body. Each hemisphere is divided into 4 lobes. These lobes are the frontal, parietal, temporal and occipital. Each lobe controls specific body functions. The



Brain Stem: The brain stem is located beneath the cerebral cortex. It connects the cerebral cortex to the spinal cord. It is responsible for transmitting messages back and forth from the cerebral cortex to various parts of the body. The brain stem also controls functions such as breathing, heart rate and blood pressure. Twelve pairs of nerves, called cranial

nerves, emerge from the base of the brain and brain stem. These nerves control smell, hearing, eyesight, taste, swallowing, coughing, eye movements and other body functions. The Cerebellum: An area of the brain that lies at the back of the skull beneath the cerebral cortex is the cerebellum. It helps to coordinate movement of the arms and legs and plays a role in allowing a person to maintain balance and stand upright.

DIAGNOSTIC TESTS

There are many different tests used to diagnose a brain condition, locate a brain injury and evaluate your brain before and after surgery. Depending on your brain condition, you may need:

- **Computed Tomogram (CT):** A CT scan provides a two-dimensional map of tissues and organs in the body using an x-ray beam. If you are allergic to contrast dye, have kidney problems or are diabetic, you should make your surgeon aware of this.
- **CT Myelogram:** Lumbar puncture performed to inject dye into the spine in order to look for partial or complete obstruction of cerebral spinal fluid (CSF) flow in the spine.
- **Electroencephalogram (EEG):** Multiple electrodes placed on the scalp to examine electrical activity in the brain

- **Magnetic Resonance Imaging (MRI):** The MRI creates a detailed picture of the spine and surrounding structures using a powerful magnetic field. If you have a pacemaker or metal implanted in your body, you should make your surgeon aware of this.
- **Electromyogram (EMG):** Tests how the muscles work by measuring the electrical signals that they produce.

TYPES OF SURGICAL PROCEDURES

Based on your diagnostic tests and physical exam, your surgeon has already discussed what choices you have to treat your problem. Your surgeon may also have discussed having surgery to treat your problem. Depending on the location of the problem you may have:

- **Craniotomy:** a surgical opening of the skull to provide access to the brain.
- **Craniectomy:** excision of a portion of the skull to provide access to the brain without replacement.
- **Cranioplasty:** repair of the skull to reestablish the contour and integrity of the skull.
- **Microsurgery:** any surgery performed with the assistance of an operating microscope.

- **Steriotaxis:** pertains to precise localization of a specific target point based on three-dimensional target coordinates.
- **Transphenoidal Approach:** this approach creates access to the pituitary gland by means of an incision that is made in the upper lip. This allows the surgeon access to the pituitary with the least amount of damage to the brain.
- **Ventricular Shunt Placement:** A primary catheter, one-way valve, and a terminal catheter are implanted surgically to provide drainage of excess CSF fluid.

BEFORE SURGERY

Even before your surgery starts, the planning begins to help make your hospitalization comfortable and your recovery safe. A few things will need to be done before your surgery:

Pre-operative assessment: In addition to the tests mentioned before, you will have an exam by the anesthesia team; these are OSU anesthesiologists who are in direct communication with your surgical team at the Outpatient Pre-Operative Assessment Center (OPAC). The purpose of this exam is to review your health conditions and risks of surgery. You will also be asked to consent for anesthesia. The OPAC is located at Martha Morehouse Tower, 2050 Kenny Road, Columbus, OH 43221; phone 614-366-4087.

Bring the name, telephone number and address of your Primary Care Physician in order to facilitate care.

Medication review: Bring a list of your medications (include dose, times taken) or the actual bottles to your OPAC appointment as well as on the day of surgery. The OPAC team will review them and make any recommendations to temporarily hold medications before surgery. These would include aspirin, aspirin-containing products, blood thinners, anti-inflammatories and drugs that would impact wound healing such as steroids.

Notify surgeon's office if you develop a cold, sore throat, cough, fever or illness before surgery.

If you smoke cigarettes, it is advised you stop smoking completely. Smoking adversely affects healing and as a result will delay the recovery process following your procedure and/or contribute to post-operative wound complications.

Make sure you get plenty of rest, eat healthy and drink plenty of clear fluids before your surgery. Post-operative pain medications can cause constipation, urinary hesitancy, dry mouth, blurry vision, and nausea. You may consider taking stool softeners for a few days prior to your surgery to make sure that you are not uncomfortable following surgery and during your hospitalization.

There are certain precautions that should be taken before your surgery including:

- If you are on blood thinners you should stop taking them a week before your surgery.
- Do not eat or drink anything after midnight the day of your surgery.
- You will be given soap that you should wash with twice the day before your surgery.

DAY OF SURGERY

On the day of surgery, you should not eat or drink after midnight. You may have a few sips of water to take any of your regular medications unless you have been instructed otherwise. Also please bring a list of any medications you are currently on along with the dosage you are taking, it would be appreciated if this could be typed.

You will be instructed of what time you should plan on arriving to the hospital, usually at least **two hours** before your surgery is scheduled to begin. After you arrive at the hospital, you will be asked to check in to the admitting department. From there, you will be transported to the ambulatory surgery unit (ASU). The ASU will ensure that all paperwork is in order. Approximately 30 minutes prior to your surgery, a member of the anesthesia team will meet you in the pre-operative waiting area to talk to you about your health and to insert intravenous (IV) catheters.

Your family members will be asked to wait in the designated waiting area. Your surgical team will provide updates to the desk attendant in the waiting area and monitors will update them throughout the waiting period.

AFTER SURGERY

Immediately following surgery, you will be taken to the post-anesthesia care unit (PACU) to recover from your anesthesia for approximately 1-2 hours. Once you have recovered, you will be transported to the neurosurgical nursing floor where your family will be able to meet you. A nurse and patient care assistant will help get you situated in your room.

- Within a few hours after surgery, you should begin to drink fluids on your own. You will need to ask your nurse or patient care assistant for help to walk to the bathroom.
- You may feel nauseated after surgery. Your nurse can provide you with antinausea medications.

- You will have an incision with sutures, staples or steri-strips that will be covered by a dressing. This will be left on for one day. Your surgery team will remove it the morning following your operation. You will be given instructions on how to take care of this at home. Generally, the area should be kept clean and dry. You should notify your surgery team of any discharge, odor, redness, warmth or opening to this area.
- Your home medications will be restarted according to your home schedule.
- You will have pain following surgery. We will not be able to entirely eliminate it; however, medications will be given to make it tolerable. You will be asked to rate your pain so that we can measure any changes or effects of pain medications.

Your successful recovery from surgery will require many people working together, including you! Here are some of the responsibilities each person will have:

Surgeon/Nurse Practitioner

- Examine patient daily for wound appearance, side effects of surgery and physical functioning
- Review health changes since previous day
- Communicate orders to nursing staff
- Prepare discharge instructions, prescriptions
- Respond to questions from patient/family

Nurse/Patient Care Assistant

- Regular assessments of vital signs, activity levels, nutrition
- Manage IVs, foleys
- Monitor and address pain issues
- Assist patient to sit in chair or walk to bathroom or on floor
- Begin patient teaching related to home care
- Communicate with surgical team for changes to health
- Respond to questions from patient/family

Physical Therapist

- Assess current physical status
- Recommend appropriate safe environment at discharge, either home or rehabilitation center
- Assist with getting patient out of bed as soon after surgery as possible
- Respond to questions from patient/family

Patient Care Resource Manager/Social Worker

- Prepare discharge paperwork, including instructions and recommendations
- Assist with any discharge referrals recommended by the team
- Coordinate any placements to skilled nursing facilities or acute rehabilitation centers
- Answer questions regarding insurance, disability and income concerns
- Provide coping strategies for impact of surgery on you and your family

Patient/Family

- Inform team of pain issues related to surgery
- Avoid laying in bed throughout your hospitalization
- Attempt to walk with assistance throughout your hospitalization
- Listen to and follow surgical team recommendations
- Ask questions related to safety, pain, function to surgery team
- Assume control for post-op care and outlook of patient

AFTER HOSPITAL DISCHARGE

You will be discharged when the medical team, including yourself, feels that you can safely continue recovering outside of the hospital. On average, brain procedures are one hospital day unless medical concerns arise. This does not always mean that you are pain-free or that you are able to return home. Most people are tired when they leave the hospital. Try to remember that every day will not necessarily be better, but every week should.

Your discharge paperwork will have your follow-up appointments listed.

Care of your incision

Your incision may be slightly red around any staples or sutures. This is normal.

You will be given instructions about when and where to have these removed. Some patients will have their primary care providers remove them. Be sure to call their office before going in. If your primary care office cannot remove them, you may return to your surgeon's office to have them removed at the instructed time.

If you have Steri-strips in place, they will fall off on their own in 1-3 weeks. You may, or may not want to pull them off.

Follow your surgeon's recommendations regarding getting your wound wet. Most importantly, you should keep the surgical area clean and dry until it is completely healed, which could be up to 2-4 weeks after the sutures, staples or steri-strips are gone. You should still shower just remember do not let the incision soak in the water and to pat it dry when you are done.

If there is drainage, redness or swelling around your wound, please call your surgeon.

Walking and exercise

Walking as much as tolerated is recommended. It prevents post-operative complications such as pneumonia or blood clots in the leg. Pace yourself and do not allow yourself to become overly tired. Start with short distances and gradually work yourself up to 30 minutes of walking daily.

Avoid lifting more than 10 pounds for six weeks. No heavy housework for four to six weeks. You should use caution when climbing stairs.

When you should call your surgeon

If you experience any of the following symptoms at home, please call your doctor immediately.

- Increased weakness or numbness of the face, arm or leg on one side of the body.
- Vision changes including loss of vision, sudden blurred vision or double vision.
- Loss of speech or difficulty talking or swallowing.
- Sudden, severe headache with no known cause.
- Increased sleepiness or confusion.
- Painful, frequent urination or unable to urinate.
- Temperature greater than 100.5°.
- Bleeding from the surgical wound.
- Signs of infection (redness, swelling, draining wound).
- Leg calf pain or tenderness.

Important phone numbers to remember

Once you leave the hospital, you may have questions for any of the people who have cared for you. Here are some important numbers:

The Ohio State University Medical Center is (614) 293-8000. You can reach any extension from this number.

Between 8 AM and 5 pm Monday through Friday, you can call your surgeon's number: 614-293-0689. After hours, you will be given to an answering service to have the resident paged.

FREQUENTLY ASKED QUESTIONS

Q: Will I need to continue seeing the doctor who performed my surgery?

A: You will be asked to come back to your surgeon's office 6-weeks after your surgery

Q: How long does the surgery take?

A: Two to three hours.

Q: Is it normal to feel pain for weeks after the procedure?

A: In order for your surgeon to remove parts of your spine, the layers of tissue and muscle must be cut. This will result in pain. Each patient rates their pain differently. Every effort will be made to lessen your pain. We cannot, however, promise that you will ever be pain free. The main goals of surgery are to improve your function and keep your independence and provide stability. In many instances, your pre-surgery pain should improve, but will not completely go away.

Q: Will my neurosurgeon give me pain medications?

A: When you are discharged from the hospital, you will be given a prescription for pain medications and instructions for use based on your procedure, pain rating and hospitalization. In some cases this will be plenty to cover your post-operative pain. In some cases, it may not be. We encourage you to let us know if the pain is getting worse instead of better. If your pain persists beyond a reasonable recovery time, we will refer you to a pain specialist to manage your pain as we are not here to provide chronic pain medications. Some patients return to their primary care providers who manage their chronic pain issues.

Q: What precautions should be followed after surgery?

A: During the first six to eight weeks after surgery you should avoid lifting, bending, and twisting movements.

Q: When can I return to work?

A: An assessment and decision will be made at your 4 week follow-up appointment.

GLOSSARY OF TERMS

Ambulatory Surgery Unit (ASU): Area of the hospital dedicated to preparing patients for surgical procedures.

Anesthesia Team: Health care professionals who specialize in pain management and putting patients to sleep during procedures and operations.

Diagnostic Test: Information gathered to determine the cause of a problem.

Neurologist: A medical doctor who specialized in problems of the brain and nervous system.

Neurosurgeon: A medical doctor who specializes in operating on structures of the brain and spine.

Recurrent: An activity that continues to happen, or disappears and comes back again.

Side Effects: Any unwanted result of taking a medication, such as rashes, fatigue, or headache.

Pain Management Specialist:

Shunt: A passage which moves, or allows movement of fluid from one part of the body to another.

Admitting Department:

Post Anesthesia Care Unit (PACU):

Staples: Specialized staples that are used in surgery in place of sutures.

Steri-strips: Are surgical strips that are placed across an incision. They keep the edges of a wound together as it heals.

Suture: A medical device that is used to hold skin together. There are absorbable sutures (made of materials that are broken down in tissue) and non-absorbable sutures (made of materials that are not broken down in tissue).

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