



Craniotomy for Brain Tumor

Preoperative Patient Information & Instructions

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This is comprehensive information regarding your upcoming craniotomy for brain tumor resection. Please read this material in its entirety and contact our office with any questions prior to your surgery.

Understanding Your Diagnosis: Brain Anatomy

The brain is the central organ of the nervous system, housed within the skull and protected by three layers of tissue (meninges): the dura mater, arachnoid mater, and pia mater. The brain is organized into distinct regions, each responsible for specific functions:

- **Cerebrum (frontal, parietal, temporal, and occipital lobes):** Controls voluntary movement, sensation, language, vision, memory, personality, and higher cognitive function.
- **Cerebellum:** Coordinates balance, fine motor control, and posture.
- **Brainstem:** Regulates cardiorespiratory function, consciousness, and cranial nerve activity.
- **Ventricular system:** A network of cavities producing and circulating cerebrospinal fluid (CSF), which cushions the brain.

What Is a Brain Tumor?

A brain tumor is an abnormal growth of cells within the cranial vault. Tumors are categorized as:

- **Primary tumors:** Originating from brain tissue itself (gliomas, meningiomas, pituitary adenomas, schwannomas, etc.).
- **Metastatic tumors:** Spread to the brain from cancer originating elsewhere in the body (lung, breast, melanoma, renal, colon, etc.).
- **Benign tumors:** Slow-growing, non-cancerous, but may cause symptoms by compressing adjacent structures.
- **Malignant tumors:** Aggressive, infiltrative, and often require multimodal therapy.

Your specific tumor location, size, and suspected pathology have been reviewed in detail during your consultation. The tumor must be removed (or biopsied) to obtain a definitive tissue diagnosis, relieve mass effect on the brain, and enable additional treatment such as radiation or chemotherapy when indicated.

The Procedure: Craniotomy for Tumor Resection

A **craniotomy** is the surgical opening of the skull to access the brain. The term "crani" refers to the skull, and "otomy" means to cut into.

Surgical Steps

1. **General anesthesia** is induced, and your head is secured in a three-point fixation device (Mayfield head holder) to prevent movement.
2. **Neuronavigation** (intraoperative GPS) is registered, often using your preoperative MRI, to precisely localize the tumor.
3. A **scalp incision** is made, typically following the contour of the hair to optimize cosmetic outcome. Hair is clipped only where necessary.
4. A **bone flap** is created using a high-speed drill and saved sterilely.
5. The tumor is identified using anatomic landmarks, neuronavigation, intraoperative ultrasound, and—when indicated—awake mapping.
6. The tumor is **resected** using microsurgical technique. The goal is maximal safe resection while preserving eloquent neurological function.
7. The dura is closed; the bone flap is replaced and fixed with titanium plates. The scalp is closed in layers. Titanium is non-magnetic and does not set off metal detectors.

Reason for Surgery

Your surgery is recommended for one or more of the following reasons:

- **Tissue diagnosis:** to definitively identify the tumor type via histopathology and molecular profiling — essential for guiding chemotherapy, radiation, and prognosis.
- **Mass effect reduction:** to decompress adjacent brain and relieve symptoms such as headaches, weakness, seizures, or visual changes.
- **Cytoreduction:** maximal safe resection improves outcomes for many tumor types (gliomas, meningiomas, metastases) and prolongs survival.
- **Seizure control:** removal of tumors causing medically refractory seizures.
- **Prevention of progression:** untreated tumors may grow, hemorrhage, or cause irreversible neurologic injury.

Alternatives to Surgery

- **Observation with serial imaging** — appropriate for small, asymptomatic, presumed benign lesions.
- **Stereotactic radiosurgery (Gamma Knife, CyberKnife)** — for small lesions or when surgery is contraindicated and there has been a confirmed diagnosis.
- **Stereotactic biopsy alone** — when resection is unsafe but diagnosis is required.

Your surgeon has reviewed these alternatives, and craniotomy with resection has been determined to be the most appropriate option for your tumor.

Adjunct Technologies You May Encounter

Technology	Purpose
Neuronavigation	MRI-guided surgical mapping for precise tumor localization.
Intraoperative neuromonitoring (IONM)	Real-time monitoring of motor, sensory, and language pathways.
Awake craniotomy	Used when the tumor is near eloquent cortex (speech/motor) to map function in real time.
Intraoperative ultrasound	Real-time imaging to verify extent of resection.

Risks and Potential Complications

Every operation carries risk. The risks of craniotomy must always be weighed against the consequences of leaving the tumor untreated. The following is not exhaustive, and your individual risk profile will be discussed during informed consent.

General Surgical Risks

- Bleeding requiring transfusion or reoperation
- Infection (wound, meningitis, bone flap osteomyelitis) — overall risk 1%
- Adverse reaction to anesthesia
- Deep vein thrombosis or pulmonary embolism
- Cardiac, pulmonary, or renal complications

Neurosurgical Risks Specific to Craniotomy

- **Neurologic deficit:** weakness, sensory loss, language disturbance (aphasia), visual field cut, or coordination problems — depending on tumor location
- **Seizures:** new-onset or worsening; antiepileptic prophylaxis may be prescribed
- **CSF leak:** through the wound or nose, occasionally requiring repair
- **Hydrocephalus** requiring shunt placement
- **Stroke** from injury to a blood vessel — risk varies by tumor location
- **Cognitive changes:** memory, attention, or personality alterations
- **Cosmetic deformity** of the skull or scalp
- **Incomplete resection** when the tumor abuts eloquent or vascular structures
- **Tumor recurrence** — dependent on pathology
- **Death** — overall mortality is low for elective tumor surgery but is not zero

Preoperative Medication Instructions

CRITICAL — READ CAREFULLY

Improper medication management before surgery may result in cancellation or serious bleeding complications. When in doubt, call our office.

Medications to STOP Before Surgery

Medication Class	When to Stop
Aspirin (81 mg or 325 mg)	7 days before surgery
Clopidogrel (Plavix), ticagrelor (Brilinta), prasugrel (Effient)	5-7 days before surgery
Warfarin (Coumadin)	5 days before surgery — bridging may be required
Apixaban (Eliquis), rivaroxaban (Xarelto), dabigatran (Pradaxa), edoxaban (Savaysa)	72 hours before surgery (per cardiology)
NSAIDs (ibuprofen, naproxen, meloxicam, celecoxib, diclofenac)	7 days before surgery
SGLT2 Inhibitors (Jardiance, Farxiga, Invokana)	Hold 3-4 days prior to surgery (check with the anesthesia team)
Fish oil, vitamin E, ginkgo, garlic, ginseng, turmeric, CBD	7 days before surgery
GLP-1 agonists (Ozempic, Wegovy, Mounjaro, Zepbound)	1 week before surgery (anesthesia aspiration risk)
Hormone replacement, oral contraceptives	Discuss with surgeon — increases DVT risk
Recreational marijuana, nicotine products	Stop completely; nicotine impairs bone and wound healing

Medications to CONTINUE

- **Antihypertensives** (beta-blockers, calcium channel blockers, ARBs) — take with a sip of water the morning of surgery.
- **Antiseizure medications** — never miss a dose; take morning doses with a sip of water.
- **Steroids (dexamethasone/Decadron)** — if prescribed for peritumoral edema, continue exactly as directed.
- **Thyroid medication, levothyroxine** — take as usual.
- **Reflux/PPI medications** — continue as scheduled.

Medications That Require Special Instructions

- **ACE inhibitors / ARBs** (lisinopril, losartan): hold the morning of surgery unless otherwise instructed.
 - **Diabetes medications:** hold metformin 24 hours prior; reduce insulin per anesthesia guidance — typically half your basal dose the night before.
 - **Diuretics:** hold the morning of surgery.
 - **SSRIs/SNRIs and chronic psychiatric medications:** continue unless explicitly told to stop.
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Preoperative Optimization Pathway

Getting Ready for Surgery — Simple Steps for Less Pain & a Faster Recovery

Patients who follow these steps tend to have **less pain, need less medication, heal faster, and return home sooner**. Please start as early as you can — ideally **4 weeks before** your surgery date.

1. Eat Well & Hit Your Protein Target

- **Eat more protein.** Include eggs, fish, chicken, dairy, beans, or a protein shake at every meal. Protein is what your body uses to heal wounds, knit bone, and keep muscle strong.

Daily protein goal: about 1.5 grams per kilogram of body weight.

Quick guide: a **150 lb person** should aim for roughly **100 g of protein per day**, spread across meals (about **25–35 g each**). Your care team can tailor this for you.

Note: patients with significant kidney disease (advanced CKD) should discuss protein targets with their nephrologist before increasing intake.

- **Choose healing foods.** Vegetables, fruit, and whole grains lower inflammation. Cut back on sugar, processed food, and alcohol.
- **Drink plenty of water** in the days before surgery. Clear liquids are usually allowed up to 2 hours before you arrive.
- **Carbohydrate drink.** Unless you are diabetic, a clear carbohydrate drink (such as ClearFast or unconcentrated Gatorade) **2–3 hours before** surgery reduces stress and nausea. Your team will advise on the specifics. (Check with the Anesthesia Team)

2. Plan for Comfort & Pain Control

- **We use several mild medicines together** so we can keep you comfortable while using as little opioid medication as possible.
- **Bring a full list of your medicines.** Some blood thinners, anti-inflammatories, supplements, and diabetes/weight medicines (including GLP-1 agonists such as Ozempic, Wegovy, and Mounjaro) may need to be paused.
- **Tell us if you take pain medication regularly.** A simple plan helps us keep you comfortable afterward and prevents withdrawal symptoms.

3. Helpful Supplements (but Not Necessary)

- **Protein shake or powder** — the easiest way to reach your protein goal if appetite is low. Whey or plant blend with ~20–30 g per serving.

- **Vitamin D3** — low vitamin D is linked to slower bone healing and more pain after spine surgery. We may check your level and suggest a dose (often **1,000–2,000 IU daily**).
- **Iron** — only if you are anemic or low on iron. Correcting it before surgery lowers transfusion risk. We will test first.
- **Vitamin C and zinc** — support wound healing. A daily multivitamin usually covers both.

STOP these supplements about 1 week before surgery

Fish oil, vitamin E, high-dose garlic, ginkgo, turmeric (high-dose), and CBD — these can increase bleeding. Review every supplement with your surgeon before starting or stopping anything.

4. Keep Moving & Prepare Your Home

- **Walk every day.** A 20–30 minute walk builds strength and stamina. More active patients recover noticeably faster.
- **Practice the basics.** Rehearse getting in and out of bed, using a walker if needed, and slow deep breathing exercises with an incentive spirometer.
- **Set up your home.** Clear walkways, keep items within easy reach, and arrange a ride and a helper for the first day or two.

5. Other Important Steps

- **Stop smoking and nicotine.** This is the single most powerful change you can make. Quitting even 4 weeks before surgery greatly improves healing and lowers complications.
- **Control blood sugar.** If you have diabetes, work with your doctor to keep it well managed before surgery. Target HbA1c < 7.5% for elective cases.
- **Rest and relax.** Aim for 7–8 hours of sleep nightly. Worry can make pain feel worse — gentle breathing exercises (4-7-8 breathing), guided imagery, and mindfulness apps help.
- **Prevent infection.** You will be asked to wash with chlorhexidine (Hibiclens) antiseptic soap the night before and morning of surgery. **Please do not shave the surgical area** — this can cause micro-abrasions that increase infection risk.
- **Manage other conditions.** Keep blood pressure, heart, and breathing problems under good control with your regular physicians before surgery.

6. What to Bring on Surgery Day

- **Photo ID and insurance card.** Plus a list of all your medicines and doses.
- **Loose, comfortable clothing** and flat, non-slip shoes that are easy to put on.
- **Your CPAP machine** if you use one for sleep apnea, and any braces or walking aids.
- **A responsible adult** to drive you home and stay with you for the first 24 hours.
- **Leave valuables and jewelry at home.** Remove nail polish and contact lenses before arrival.

Day Before & Day of Surgery

Day Before Surgery

- **Nothing to eat after midnight.** Clear liquids (water, black coffee, apple juice) are allowed up to **2 hours before** arrival unless told otherwise.
- **Chlorhexidine (Hibiclens) shower** the night before — focus on the planned surgical area.
- Pack your bag: ID, insurance card, complete medication list, CPAP if applicable, loose-fitting clothing for going home, slip-on shoes.
- **Do not shave** the planned surgical site at home.

Day of Surgery

- Arrive at the time given (usually 2 hours before surgery).
- **Repeat the chlorhexidine shower** the morning of surgery.
- Brush teeth but do not swallow water.
- **Do not** wear makeup, lotions, perfumes, nail polish, or jewelry.
- Wear loose, comfortable clothing.
- Bring this packet and your medication list.
- Have a responsible adult drive you home and stay with you for the first 24 hours.

Your Countdown to Surgery

4-2 Weeks Before — BUILD STRENGTH	1 Week Before — GET READY	1-2 Days Before — FINAL STEPS
✓ Stop smoking & nicotine	✓ Confirm medicines to pause	✓ Antiseptic (chlorhexidine) soap wash
✓ Eat more protein (~1.5 g/kg/day)	✓ Arrange ride & helper	✓ Clear carbohydrate drink (non-diabetics)
✓ Walk 20-30 min daily	✓ Practice breathing exercises	✓ Clear liquids up to 2 hours prior
✓ Manage blood sugar & BP	✓ Keep eating protein	✓ Take pre-op medicines as instructed
✓ Correct any anemia	✓ Avoid alcohol	✓ Rest & arrive on time

Questions?

Call your care team at **301.718.9611**. Always follow the specific instructions from your surgeon and anesthesiologist — those instructions come first. This guide is for patient education and does not replace advice from your doctor.

Hospital Stay and Discharge Planning

- Expected hospital stay: **2 days**, but depends on tumor location and recovery.
- You will typically spend the first **night in the neurosurgical ICU** for close monitoring.
- A postoperative MRI is performed **~24 hours** to assess extent of resection.
- Physical, occupational, and speech therapy will evaluate you in-hospital and recommend home services, outpatient therapy, or rehab if needed.
- Arrange in advance: a responsible adult to drive you home and stay with you for at least 1-2 days after discharge.

Contact Information

Provider: Lekhaj Daggubati, MD

Practice: Washington Brain & Spine Institute

Main Phone (All Locations): 301.718.9611 — business hours

After-Hours / Urgent Concerns: 301.718.9611 — answering service will contact the on-call provider

Clinical Office Locations

Rockville: 3202 Tower Oaks Boulevard, Suite 100, Rockville, MD 20852

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Frederick: 198 Thomas Johnson Drive, Suite 17, Frederick, MD 21704

White Oak: 11886 Healing Way, Suite 401, Silver Spring, MD 20904

Emergency: Call **911** or proceed to the nearest emergency department for life-threatening symptoms — severe difficulty breathing, sudden weakness or paralysis, loss of consciousness, seizure, severe sudden headache, chest pain, or stroke-like symptoms.