



Ventriculoperitoneal (VP) Shunt Placement

Preoperative Patient Information & Instructions

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Purpose of This Document

This document provides comprehensive information regarding your upcoming ventriculoperitoneal (VP) shunt placement. A shunt is a permanent implanted device that drains excess cerebrospinal fluid (CSF) from the brain to the abdomen. Please review this packet carefully prior to surgery.

Understanding the Diagnosis: Hydrocephalus

Cerebrospinal fluid (CSF) is a clear fluid produced primarily within the **ventricles** (fluid-filled cavities) of the brain. CSF circulates around the brain and spinal cord and is normally absorbed back into the bloodstream. When this circulation or absorption is disrupted, CSF accumulates, ventricles enlarge, and pressure on the brain increases — a condition called **hydrocephalus**.

Types of Hydrocephalus

- **Obstructive (non-communicating) hydrocephalus** — physical blockage to CSF flow (tumor, aqueductal stenosis, blood clot, cyst).
- **Communicating hydrocephalus** — impaired CSF absorption (after subarachnoid hemorrhage, meningitis, or unknown cause).
- **Normal pressure hydrocephalus (NPH)** — in older adults, classically presents with the triad of gait difficulty, urinary incontinence, and cognitive impairment.
- **Pseudotumor cerebri / idiopathic intracranial hypertension** — high pressure without enlarged ventricles.

Symptoms of Hydrocephalus

- Headache (often worse in the morning or with position changes)
- Nausea, vomiting
- Vision changes, double vision, papilledema

- Cognitive decline, confusion, memory loss
- Gait imbalance, falls, "magnetic" gait
- Urinary urgency or incontinence
- In infants and young children: rapid head growth, bulging fontanelle, irritability, poor feeding

The Procedure: VP Shunt Placement

A VP shunt is a permanent implanted device consisting of three components:

- **Ventricular catheter** — a small silicone tube placed into one of the brain's ventricles.
- **Valve** — a regulating device, usually placed just behind the ear, that controls the rate of CSF flow. Modern programmable valves allow non-invasive pressure adjustment with an external magnet. Think of it like a Dam; the higher the setting, the less fluid exits from the head.
- **Distal catheter** — tubing tunneled under the skin from the head, down the neck, and into the abdominal (peritoneal) cavity where excess CSF is absorbed.

Surgical Steps

1. General anesthesia is induced.
2. Hair is clipped over a small area behind the ear.
3. A small scalp incision is made; a burr hole is drilled into the skull.
4. Using neuronavigation or anatomic landmarks, the ventricular catheter is placed into the lateral ventricle.
5. The valve is attached and secured under the skin.
6. A second incision is made in the abdomen, and the distal catheter is tunneled subcutaneously from the head incision to the abdomen.
7. The distal catheter is placed into the peritoneal cavity (laparoscopically or via mini-laparotomy).
8. Incisions are closed with sutures (often dissolvable).

Alternatives to VP Shunt

- **Endoscopic third ventriculostomy (ETV)** — a minimally invasive option for obstructive hydrocephalus, creates an internal CSF pathway without an implanted device. Not appropriate for all patients.
- **Ventriculoatrial (VA) shunt** — distal catheter goes into the heart; reserved for patients with abdominal contraindications.
- **Lumboperitoneal (LP) shunt** — drains from the lumbar spine; selected uses.
- **Medical management** — diuretics (acetazolamide) for select cases (e.g., pseudotumor cerebri).
- **Serial lumbar punctures** — temporizing measure or trial for NPH.

Preoperative Medication Instructions

CRITICAL — READ CAREFULLY

Improper medication management may result in cancellation or bleeding complications. Contact our office with any questions.

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 (with a sip of water)
- Antiseizure medications

- Thyroid medication, reflux medications, psychiatric medications
- Acetazolamide (Diamox) — discuss timing with your surgeon

Special Instructions

- ACE inhibitors / ARBs: hold morning of surgery.
 - Diabetes medications: hold metformin; reduce insulin per anesthesia.
 - Diuretics: hold morning of surgery.
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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.

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

- **Continue activity prior to surgery.** 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 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.**

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.
- **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.
- Sleep in clean sheets and clean clothing.
- 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

Keep this page handy — it shows what to do as your surgery date gets closer.

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.

Risks and Potential Complications

General Surgical Risks

- Bleeding, infection (wound, shunt, meningitis)
- Anesthesia complications
- DVT or pulmonary embolism

Shunt-Specific Risks

- **Shunt infection** — 5–10% risk; most occur within 6 months. May require shunt removal, temporary external drainage, antibiotics, and reimplantation.
- **Shunt malfunction** — obstruction, disconnection, fracture, migration. Up to 30% of shunts require revision within 5–10 years.
- **Overdrainage** — subdural hematoma or hygroma, headaches when upright ("low-pressure headaches"), slit ventricle syndrome.
- **Underdrainage** — persistent symptoms of hydrocephalus.
- **Seizures** — risk after any cranial procedure.
- **Bowel injury, peritonitis, abdominal pseudocyst** — rare but recognized peritoneal complications.
- **Catheter erosion or migration** — into surrounding tissues.
- **Neurologic deficit** — usually mild and transient; rarely permanent.
- **Stroke** — rare.
- **Death** — very rare for elective shunt placement.

Reason for Surgery

- Relieve symptoms caused by hydrocephalus.
 - Prevent further neurologic deterioration.
 - Reduce intracranial pressure and protect vision (in pseudotumor cerebri).
 - Reverse cognitive, gait, and urinary symptoms of NPH (in selected responders).
 - Provide a long-term solution when alternatives such as ETV are not feasible.
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Hospital Stay and Discharge Planning

- Expected stay: **1 to 3 days** for routine VP shunt placement.
- Pain is typically mild and well-controlled with oral medication.
- You will be educated on shunt care, signs of malfunction, and signs of infection before discharge.
- **Carry your shunt identification card at all times** — it contains valve type and pressure setting, important for MRI scans and emergencies.
- Plan for a responsible adult to drive you home and stay with you for the first few days.
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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

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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.