PROCEDURE

Ventriculoperitoneal shunting

Ventriculoperitoneal shunting is surgery that drains excess fluid from the brain into the abdomen.

PURPOSE
Divert excess brain fluid and reduce pressure

PROCEDURE TYPE
Therapeutic surgical placement of an internal drainage system

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General anaesthesia

HOW LONG IT TAKES
About 1 to 2 hours

PREPARATION
Fasting and medication review, including blood thinners

RECOVERY
Several hospital days; no driving until cleared

MAIN RISKS
Infection, blockage, bleeding, overdrainage or underdrainage

RESULTS
Pressure control begins immediately; symptom recovery may take longer

Overview

Ventriculoperitoneal shunting, often called VP shunting, is an operation used to treat hydrocephalus. Hydrocephalus is a buildup of cerebrospinal fluid, the clear fluid surrounding the brain and spinal cord.

A VP shunt moves this extra fluid from a fluid-filled space in the brain, called a ventricle, to the abdomen. The lining of the abdomen then absorbs it.

The shunt usually has three connected parts:

The system remains inside the body. Some valves are programmable, meaning their drainage setting can be adjusted from outside the body with a special magnetic device.

- A thin tube placed inside a brain ventricle

- A valve that controls fluid flow
- A second tube that runs under the skin to the abdomen

Why the procedure is performed

A VP shunt is used when excess cerebrospinal fluid needs ongoing drainage. The aim is to lower pressure on the brain and protect brain function.

It may be offered for hydrocephalus present at birth or caused later by bleeding, infection, a tumour, a cyst, an injury or another condition that interferes with normal fluid flow. It is also used for some adults with normal pressure hydrocephalus, which can affect walking, bladder control and thinking.

The operation does not remove the underlying cause in every case. Instead, it provides another route for the fluid to leave the brain.

Who should and should not have it

A VP shunt may be suitable when tests show hydrocephalus and your neurosurgical team expects drainage to improve symptoms, reduce harmful pressure or prevent further problems. Assessment may include brain imaging, physical and neurological examinations, and sometimes temporary fluid drainage.

A shunt may be delayed if you have:

VP shunting may not be the best option if the fluid blockage can be treated with another operation, such as endoscopic third ventriculostomy. Abdominal scarring, infection or other abdominal conditions may also make a different drainage site or procedure more appropriate.

The expected benefits and limitations are different for each person. Improvement can be less predictable when symptoms have been present for a long time or have another cause as well.

- An active infection in the blood, abdomen or planned surgical area
- A bleeding or clotting problem that has not been corrected
- A medical condition that makes immediate surgery or anaesthesia unsafe

How to prepare

Your treating facility's own instructions take priority because fasting times and medication

plans differ between hospitals.

You will usually be told when to stop eating and drinking before general anaesthesia. Tell the surgical team about all medicines, supplements and allergies. Blood thinners and medicines that affect clotting may need a specific plan; do not stop prescribed medicine unless the treating team tells you to.

Before surgery, you may have blood tests, brain imaging and an anaesthetic assessment. Tell the team about fever, a new infection, skin sores or recent illness.

Ask whether any hair will be clipped and what to bring to hospital. Arrange help for your return home and early recovery. You will not be able to drive yourself home.

What happens during the procedure

You are given general anaesthesia, so you are unconscious and do not feel the operation.

The surgeon makes a small cut in the scalp and creates a small opening in the skull. Using imaging or guidance equipment when needed, the surgeon places a soft catheter into one of the brain's ventricles.

The catheter is connected to a valve, usually positioned under the scalp. Another catheter is passed beneath the skin of the neck and chest. A separate abdominal cut allows its end to be placed inside the peritoneal cavity, the space around the abdominal organs.

The team checks the system and closes the cuts with stitches, staples or surgical adhesive. Dressings may cover the scalp and abdominal wounds.

Recovery and what to expect afterward

Pain or tenderness is common around the scalp, neck or abdominal cuts. You may also have a headache. The hospital team can provide pain relief and assess pain that is severe or getting worse.

You may begin with fluids and return to normal food as nausea from anaesthesia improves. Some people have temporary nausea, constipation or reduced appetite.

At first, activity is usually limited to gentle movement and short walks. Follow instructions about wound care, bathing, lifting, exercise and contact sports. Avoid pressing or repeatedly handling the valve beneath the skin.

Do not drive after general anaesthesia or while taking medicine that affects alertness. Because hydrocephalus can affect vision, reaction time or movement, wait until your treating team

confirms that driving is safe and meets local licensing rules.

Time away from work or school is based on your recovery, the reason for the shunt and the physical demands involved. Many people need at least several weeks before returning to strenuous activity, while desk-based activities may be possible sooner.

Risks and possible complications

A VP shunt can control hydrocephalus effectively, but it can develop problems immediately or years later.

Possible complications include:

Children may need revisions as they grow. People of any age may need another operation if the shunt becomes blocked, infected, damaged or no longer drains correctly.

- Infection of the shunt, wound, brain fluid or abdomen
- Blockage, disconnection, movement or breakage of the tubing
- Too little drainage, allowing hydrocephalus to continue
- Too much drainage, which can cause headaches or bleeding around the brain
- Bleeding, brain injury or seizure
- Abdominal complications, including pain, infection, a fluid collection or bowel injury
- Anaesthetic complications

Results and follow up

The shunt begins diverting fluid once it is working, but recovery of symptoms may take days, weeks or longer. Some effects of hydrocephalus may not fully reverse.

The team may use an examination and brain imaging to check the shunt and ventricular size. If you have a programmable valve, its setting may be adjusted during follow-up to balance drainage.

Routine follow-up checks your wounds, symptoms and shunt function. Keep a record of the shunt model and valve setting if available. Some programmable valves require their setting to be checked after an MRI because a strong magnetic field can change the setting.

A shunt often remains in place long term. Even after a stable period, new symptoms that could indicate shunt failure should be assessed promptly.

Alternatives

The realistic alternatives depend on the type of hydrocephalus and why fluid is building up.

Endoscopic third ventriculostomy creates an internal opening so fluid can bypass a blockage. It avoids implanted tubing in selected people, but it is not suitable for every type of hydrocephalus and the opening can close.

Endoscopic third ventriculostomy with choroid plexus cauterization also reduces some fluid production. It is mainly considered for selected infants and is not appropriate in every case.

Temporary external drainage sends fluid to a container outside the body. It allows close monitoring but requires hospital care and carries an infection risk, so it is not usually a long-term solution.

Treating the underlying cause , such as removing a tumour or cyst, may restore fluid flow in some cases. It may not remove the need for drainage.

Monitoring without immediate surgery may be reasonable when hydrocephalus is stable and not causing harmful pressure or progressive problems. It avoids surgery but risks delayed treatment if the condition worsens.

When to call your healthcare team

For routine concerns, contact your surgical team if pain is not gradually improving, you have questions about the wound, or previous symptoms begin to return.

Seek urgent medical advice for:

Call emergency services if you are difficult to wake, collapse, develop new weakness, have a seizure, or have a sudden severe decline. Do not wait for a routine appointment when shunt failure or infection is suspected.

- Fever, wound redness, swelling, warmth, pus or fluid leakage
- A worsening or persistent headache
- Repeated vomiting, unusual sleepiness or increasing confusion
- New vision, balance, walking or bladder-control problems
- Increasing abdominal pain or swelling
- A bulging soft spot, poor feeding or unusual irritability in an infant

Common questions

Will I be asleep?

Yes. VP shunt surgery is normally performed under general anaesthesia, so you are unconscious during the operation.

Can I drive home?

No. You cannot drive home after general anaesthesia. You must also wait for clearance before returning to driving if hydrocephalus or recovery affects your vision, movement, concentration or reaction time.

How painful is it?

You can expect soreness around the scalp and abdominal cuts. Headache, neck discomfort and nausea may also occur. Pain should generally become more manageable during recovery; severe or worsening pain needs assessment.

When will I know if it worked?

The shunt starts draining immediately, but improvement may be gradual. Your team will assess symptoms, examination findings and sometimes imaging during your hospital stay and follow-up.

Can I feel the shunt under my skin?

You may be able to feel the valve under your scalp and the tubing along part of its path. Avoid pressing or pumping it unless your neurosurgical team specifically instructs you to do so.

Will the shunt need to be replaced?

Not on a fixed schedule. Some shunts work for many years, while others require revision because of blockage, infection, damage, growth or changing drainage needs.

Sources

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