

Let's Talk About...

Hydrocephalus and Shunts

Hydrocephalus (hi-drow-SEF-uh-luss) is a condition of too much fluid in the brain. The ventricles are spaces in the brain that usually have just the right amount of fluid in them. This fluid is called cerebrospinal fluid (CSF). CSF normally moves around and inside the brain. Usually, the brain keeps a balance between the amount of CSF made and the amount that drains. With hydrocephalus, this balance is off. Sometimes this is from a problem from birth (for example spina bifida). A head injury, brain tumor, or brain infection can cause hydrocephalus, too.

What are the symptoms of hydrocephalus?

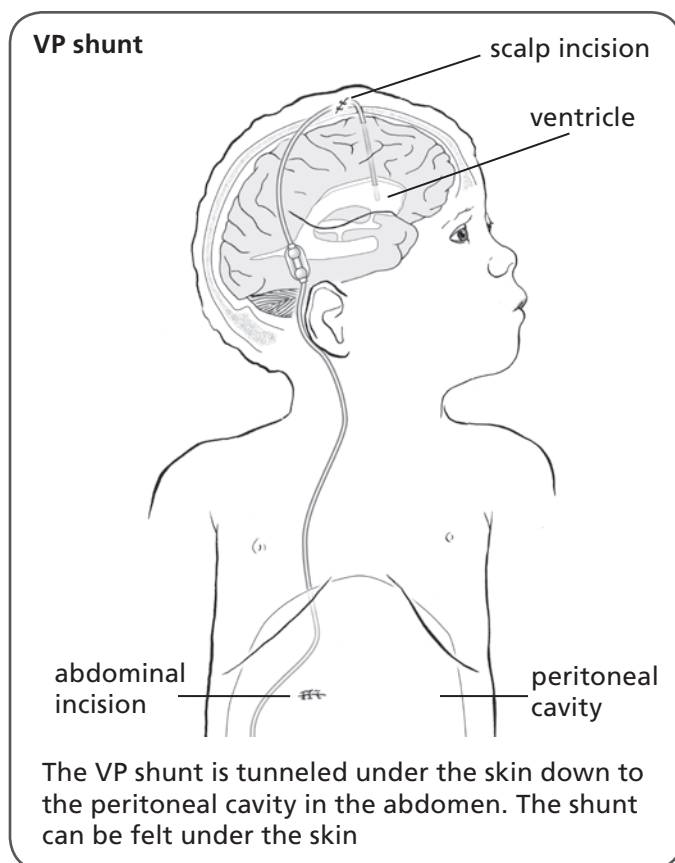
Infants have an increase in their head size more than normal. The soft spot on the head may be full, tight, or bulge out, and the scalp may appear thin and shiny with obvious veins. Infants may throw up, be sleepy, irritable, have seizures, and have a downward shift of their eyes.

Older children may have headaches, be sick to their stomach, throw up, and sometimes have blurred or double vision. The child may have trouble balancing, walking, or talking. He may also have a personality change, or have trouble focusing, remembering, or staying awake.

How is hydrocephalus treated?

One treatment for hydrocephalus is surgery where the surgeon places a shunt (a flexible tube) in the child's CSF system (see picture). The shunt carries the extra CSF from the ventricle of the brain to other areas of the body where it is then absorbed.

The surgeon will place your child's shunt during surgery in the operating room. Your child will receive medicine to help him sleep during the surgery. A small spot on your child's head will be shaved in the area where the shunt will be. The two most common shunt placements are the VP and VA, described below.

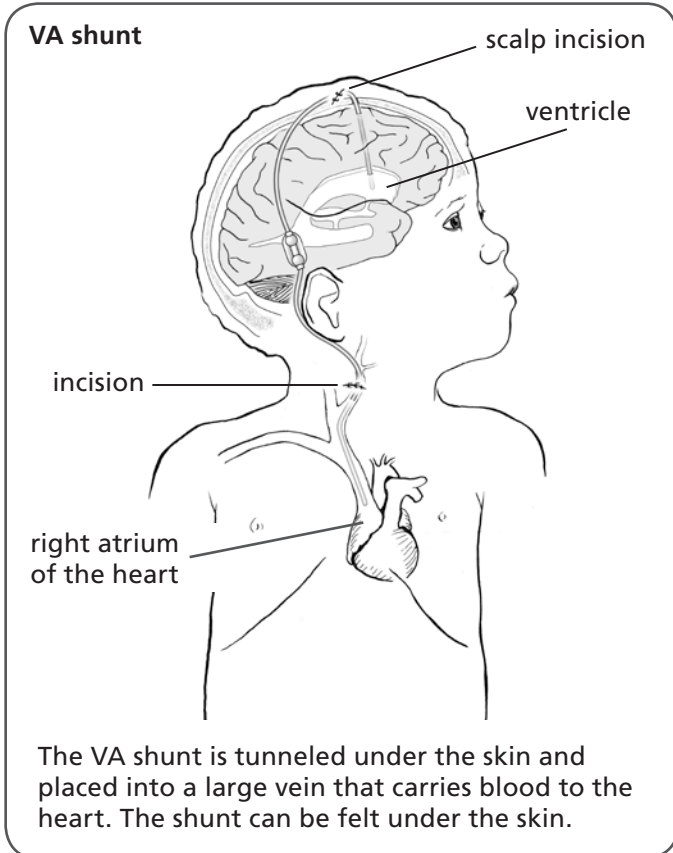


- A **ventriculoperitoneal** (ven-TRICK-you-lowpair-it-tow-NEE-ul) (VP) shunt CSF from the brain into the peritoneal cavity, which is the space in the belly where the belly organs are. The fluid flows into this area and then absorbs naturally into the veins (see illustration above).
- A **ventriculoatrial** (ven-TRICK-you-low-AYtree-all) (VA) shunt carries extra CSF from the ventricle of the brain into the right atrium of the heart. The surgeon puts a catheter into a vein in the neck and then gently pushes it through the vein and into the heart. The CSF passes from the ventricle and into the blood stream (see illustration below).

What will my child feel during and after a shunt placement?

There is very little pain involved in shunt placement surgery. Some children may have some neck or belly

tenderness. After surgery, the doctor may order Tylenol® or a narcotic he can take by mouth. Right after surgery, the doctor may order stronger medicine for pain such as morphine. The day after surgery, your child may have a fast MRI, CT scan or x-ray to make sure the shunt is working properly.



Are there other things to take care of after surgery?

Your child may have the following issues after surgery:

- **Headache.** Usually headaches go away after shunt surgery. If the headaches continue, Tylenol® usually helps.
- **Vomiting.** Your child may vomit (throw up) after surgery. If your child vomits, her doctor will change what she eats to clear liquids. Your child's doctor will add other liquids and solid foods as she is able to eat them. If needed, you child's doctor may order medicine to control nausea or vomiting.

- **Stitches.** Your child's surgeon will remove the stitches after your child is discharged from the hospital, during a visit to the surgeon's office.
- **Emotions.** Older children may be upset, scared, or confused. They may think their surgery site is ugly. Be open and honest in explaining the purpose and need for the surgery.

Are there any possible complications of shunt surgery?

The most common complications after shunt surgery are:

- A blocked shunt (part way or completely)
- Infection

It is important to know what to look for after surgery. However, some of these symptoms may be normal after shunt surgery (for example, vomiting). Also, symptoms of a shunt that is not working are different in different children. If a shunt problem happens suddenly, a child may develop symptoms suddenly, too.

The early symptoms of a shunt malfunction (shunts that are not working) are:

- Headache
- Vomiting
- Irritability or sleepiness

Infants can have these extra symptoms:

- Swollen or raised soft spot
- Fussy, irritable, or a high-pitched cry
- Feeding problems

Symptoms of a shunt infection are:

- Fever
- Redness or swelling along the shunt tract (the shunt tract is the place where the shunt is under the skin)

If your child has these symptoms, or if you have any concerns, call your doctor or go to the nearest emergency room.

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