

Let's Talk About...

Hydrocephalus and shunts

Hydrocephalus (hi-drow-SEF-uh-luss) is an abnormal accumulation of fluid, called cerebrospinal fluid (or CSF), within the ventricles of the brain. Our brains continuously produce and absorb about a pint of CSF every day. Normally, the brain keeps a delicate balance between the amount of CSF it produces and the amount that is absorbed. With hydrocephalus, this balance is disrupted. Sometimes this is caused by a problem at birth, such as spina bifida, that prevents the normal flow of CSF in the brain. Sometimes this is caused by a congenital problem (present at birth) that prevents the normal flow of CSF in the brain. It can also be caused by head injuries, brain tumors, or brain infections that cause swelling and block the normal flow and absorption of CSF.

What are the signs and symptoms of hydrocephalus?

The most obvious sign of hydrocephalus in infants is abnormal enlargement of the baby's head. The soft spot on the head may be full, tight, or bulging, and the scalp may appear thin and shiny, with obvious veins. Other symptoms to watch for include vomiting, sleepiness, irritability, seizures, and downward deviation of the baby's eyes (called "sunsetting sign").

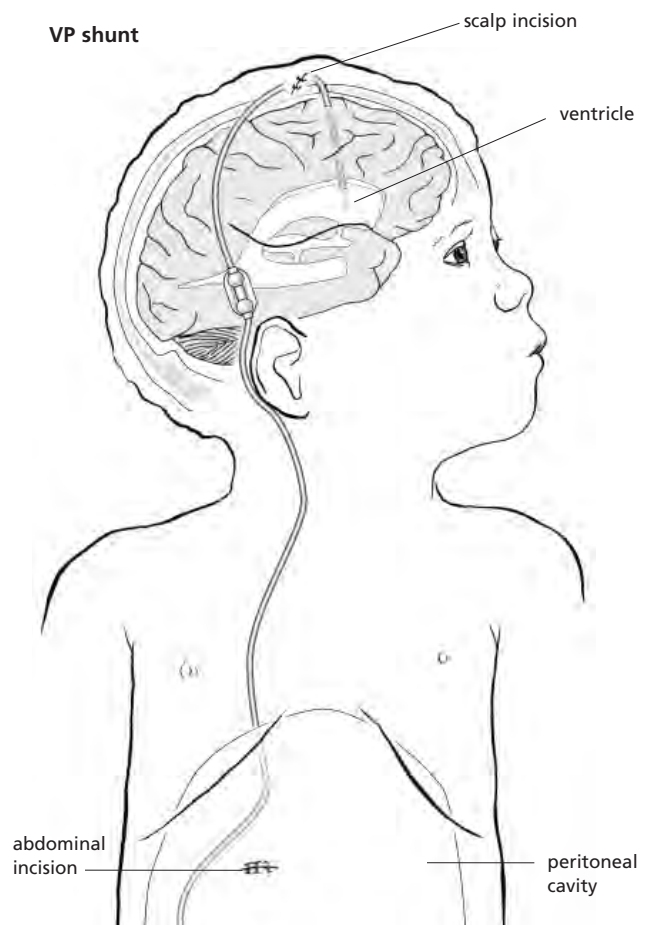
Older children, whose brains are more formed, may show additional signs and symptoms of increased pressure in the brain—including headaches, nausea, vomiting, and sometimes blurred or double vision. The child may have trouble with balance, walking, or talking. He may also show a change in personality and have trouble concentrating, remembering things, or even staying awake.

How is hydrocephalus treated?

The treatment for hydrocephalus is placement of a shunt (a flexible tube) in the child's CSF system. The shunt carries the extra accumulated CSF from the ventricle of the brain to other areas of the body.

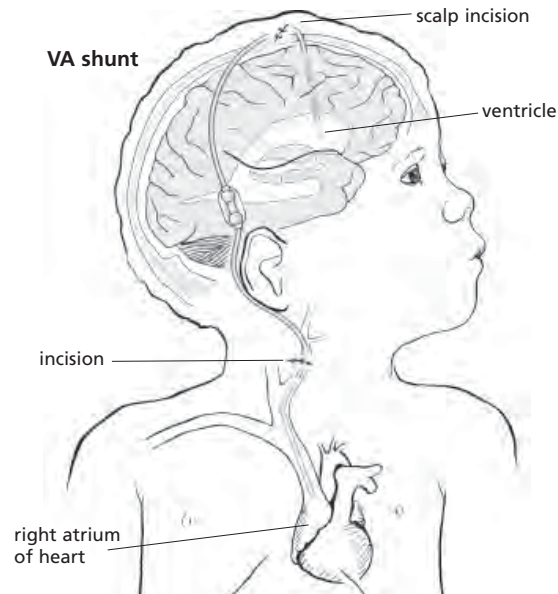
Doctors place your child's shunt during surgery. Your child receives medicines to help him sleep during the surgery. A small spot on your child's head is shaved in the area where the shunt will be inserted. The two most common shunt placements are the VP and VA, described below.

1 A ventriculoperitoneal (ven-TRICK-you-low-pair-it-tow-NEE-ul) or VP shunt carries CSF from the brain into the peritoneal cavity, which is the space in the abdomen where the organs that digest our food lie. The fluid that flows into this area is reabsorbed into the blood stream (*see illustration below*).



The VP shunt is tunneled under the skin down to the peritoneal cavity in the abdomen. The shunt can be felt under the skin.

2 A ventriculoatrial (ven-TRICK-you-low-AY-tree-ul) or VA shunt carries extra CSF from the ventricle of the brain into the right atrium of the heart. A catheter is placed into a vein in the neck and is then gently advanced through the vein and into the atrium of the heart. From there, the CSF passes directly into the blood stream. (see illustration below)



The VA shunt is tunneled under the skin and placed into a large vein that carries blood to the heart. The shunt can be felt under the skin.

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

Shunt placement surgery itself usually involves minimal physical pain for your child. Some children may have some neck or abdominal tenderness. Usually Tylenol is given after surgery.

After surgery, your child may also experience the following:

- **Headache.** Usually the headache is relieved when the shunt is placed, but may continue and is usually relieved with Tylenol.
- **Vomiting.** Vomiting may occur after surgery. If your child is vomiting, her diet will be changed to clear liquids and other liquids and solid foods will be added as tolerated.

- **Stitches.** When your child has his follow-up visit at the doctor's office, his doctor will remove stitches that were placed during surgery.
- **Emotions.** Older children may be upset, scared, or confused. They may think their incision is ugly. Be open and honest in explaining the purpose and need for the surgery for the shunt.

Are there any possible complications of shunt surgery?

The most common complications following shunt surgery are:

- Obstruction of the shunt, resulting in partial or complete blockage
- Infection

Knowing what symptoms to watch for will help you become more at ease. However, keep in mind that some of these signs and symptoms may be normal experiences after shunt placement (e.g., vomiting). Also, symptoms of a shunt malfunction can vary from child to child. If a sudden malfunction happens, a child may develop symptoms rapidly.

The early symptoms of shunt malfunction or infection are:

- Fever
- Vomiting
- Irritability and/or sleepiness

Other signs to watch for include:

- Redness along the shunt tract
- Swelling along the shunt tract
- Loss of coordination or balance
- Vision problems

In an infant, signs and symptoms of complications may also include:

- Swollen or raised soft spot
- Fussiness, irritability, or a high-pitched cry
- Feeding problems

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



All of the information contained in the *Let's Talk About...series* is for educational purposes only. This educational information is not a substitute for medical advice or for care from a physician or other health care professional. If you have questions about your child's health, contact your health care provider.

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