

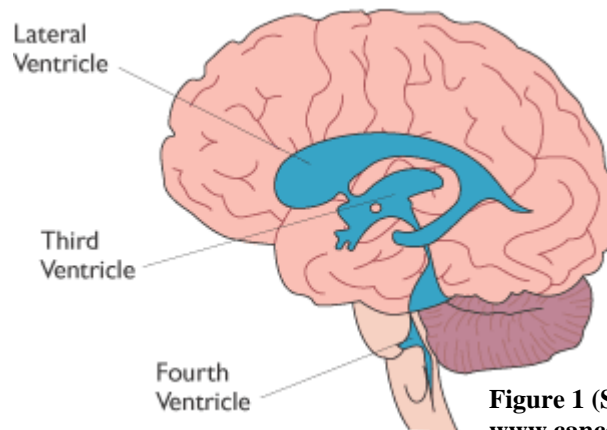
## HYDROCEPHALUS

Hydrocephalus is a condition in which spinal fluid collects in the ventricles of a person's brain (Figure 1), causing them to swell and expand. Usually, children have the condition, but it can also occur in adults and the elderly. The effects of the disorder can be very detrimental, very mild, or anywhere in between.

### Causes

Cerebrospinal fluid (CSF) usually flows through these ventricles and around the brain in the space between it and the skull. Excess fluid can possibly be produced by the body, or the fluid can be blocked from flowing. Pressure is created because of the high volume of fluid in the ventricles that

causes the brain to be forced against the inside of the skull. These problems can be caused naturally or because of a strong force hitting the head. In small children hydrocephalus is connected to

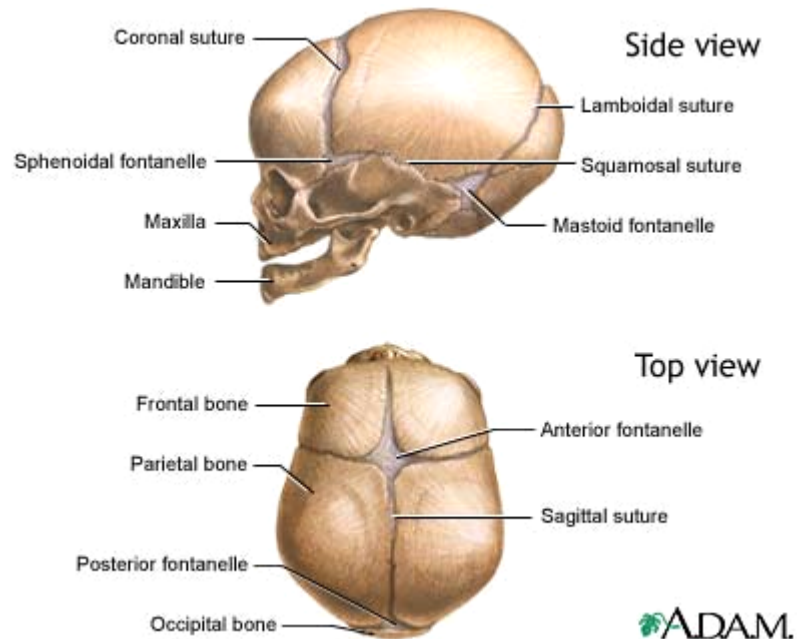


**Figure 1 (Source: [www.cancerhelp.org.uk](http://www.cancerhelp.org.uk))**

pre-birth infections, post-birth trauma, trauma during birth, pre-birth trauma, congenital defects, or tumors in the central nervous system. A disorder called myelomeningocele is strongly related to hydrocephalus: it is a disorder involving the partial closure of the spinal column and therefore blockage of CSF. Causes of hydrocephalus in older children include a history of congenital defects or developmental defects, lesions or tumors in the spinal cord or brain that take up space, trauma, bleeding in the brain, or central nervous system infections.

## Effects

The effects of hydrocephalus vary depending on when it occurs. In infants, the fontanelle (soft spot) on the top of the head will bulge. Since the plates of the baby's skull are not fully connected yet (depicted in Figure 2), the skull will expand; therefore a noticeable increase in the circumference of the head of the child. These skull plates are



**Figure 2 (Source: Medline Plus Medical Encyclopedia)**

completely fused together by age five, and the skull will cease to expand. Vomiting is also a symptom in infants and small children. During the later stages in hydrocephalus, the symptoms consist of irritability or bad temper, and/or uncontrollable muscle spasms. Much later, the symptoms can worsen into problems such as decreased and slower mental function, decreased development of the body and mind, loss of bladder control, slow or restricted movement of the body, and/or difficulty eating or feeding oneself. Because of the pressure, there is a restriction of blood flow to the brain resulting in the retardation of development, movement, and thought. Also, due to the increased amount of pressure from the inside of the head, the eyes of the person may be affected as well. Vision could be greatly worsened, or eyes could become crossed, as well as periodic loss of control of one's eyes. As well as loss of eye control, the person with the condition could also have complete or partial loss of coordination altogether, consequently causing poor walking

patterns. Facial contours, eye spacing, and protrusions in the face may occur as well due to the excessive pressure from the brain. Psychosis and confusion may also occur in the victim.

### **Signs of Hydrocephalus**

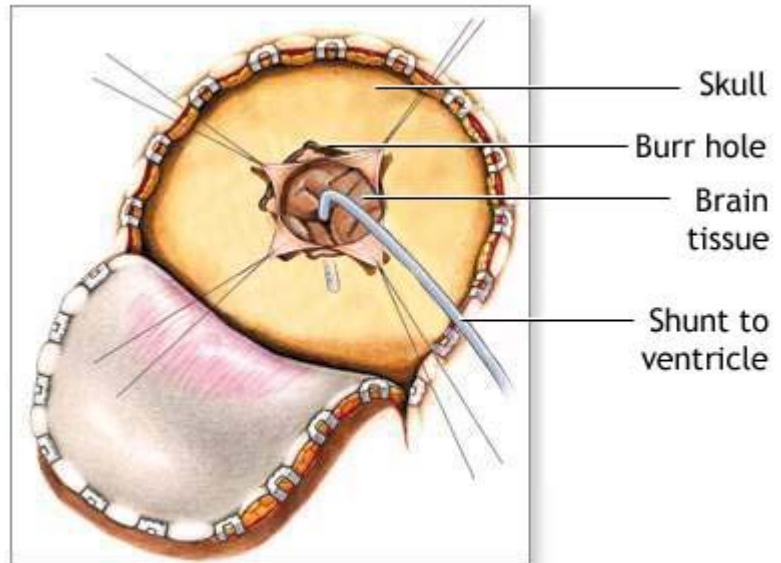
When the skull is tapped by fingertips, abnormal sounds may occur if the person has hydrocephalus due to separation of skull plates and the thinning of the skull bone. Progressive expansion of the head also occurs, specifically in the frontal area. The veins on the scalp will probably be visible and appear to be dilated if the child has hydrocephalus. It could also be strong signs of hydrocephalus if the eyes of the person are “sun setting,” which means that one is able to see the sclera (white part of the eye) above the iris (the colored part of the eye), and/or reflexes are slow for the age of the victim. Professional tests may also be performed to see if the person has hydrocephalus. Transillumination, or shining a light against the head could expose collections of fluid in parts of the brain. Various forms of x-rays and ultrasounds of the head and brain could be used to detect hydrocephalus as well.

### **Treatment and Prevention**

The main treatment for hydrocephalus is surgery. If the surgery cannot rid the spinal column or brain of the blockading mass, then a shunt can be surgically placed into the body of the patient in order to assist with the drainage of fluid. A shunt is a tube put into the ventricles of the brain and goes down into the stomach or the heart of the patient.

When inserting a shunt, a flap is cut into the skin of the scalp (as shown in Figure 3) and

a hole is drilled into the skull. A small tube is put into the ventricles of the brain and a valve is attached to the tube to regulate and assist with the drainage of the fluid.



**Figure 3 (Source: Medline Plus Medical Encyclopedia)**

ADAM.

Hydrocephalus affects a little over 1 out of every 1,000 births in the United States and is the most common birth defect. It affects more than 10,000 babies per year. More than 50% of the cases of hydrocephalus are congenital and 75% of the cases result in some kind of motor disability. Over the past 25 years, the death rate of hydrocephalus has decreased 54% to 5%. Intellectual disability due to hydrocephalus has decreased from 64% of the cases to about 30%. A lot of money is invested by parents with children that have hydrocephalus, and a cure is being worked on. The shunt is only a facilitating and temporary solution. Hydrocephalus is a serious disorder that sometimes has intense effects on the lives of those involved.

## **Bibliography**

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