Indian Association of Pediatric Surgeons

Patient Information Sheet

HYDROCEPHALUS

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What is hydrocephalus ?

The brain is bathed by a thin layer of fluid (cerebrospinal fluid-CSF) which serves many functions and protects the brain. CSF is produced in hollow spaces in the brain called ventricles. Excess accumulation of fluid in these spaces causes is hydrocephalus. In common parlance it is referred to as 'water in the brain'.

What causes hydrocephalus and how common is it ?

Hydrocephalus can be caused by a block in the channels that take the fluid out of the ventricles as a result of defects during brain development. The channels that empty this fluid into blood vessels may also be blocked in some babies following a brain infection or bleeding into the brain. Rarely there may be excess fluid production or a brain tumor can cause a block to the outflow. Whatever the mechanism, the effect is an increase in pressure within the brain which causes all the signs and symptoms of hydrocephalus. It is also associated with spina bifida - an abnormality of the spine.

What are the symptoms ?

A baby may be born with a head size that is larger than normal. The head may gradually become disproportionately bigger with time if left untreated. Because of this, some babies are unable to attain 'head holding'. They may also have feeding difficulty and choking episodes and the vision may also be affected. Rarely they can develop fits. Mental retardation can also set in.

When to see your doctor ?

If the problem is detected before birth, the doctor who examines the baby at birth will evaluate and refer the baby to a pediatric surgeon. If it develops later in infancy, parents may notice the symptoms and then take child to the pediatrician.

How is it diagnosed ?

It can be picked up during pregnancy by ultrasound scan. If the baby is premature and in ICU after birth or develops some infection, then there may be signs which will make the treating pediatrician do a scan of the baby's head followed by MRI scan of the brain to confirm.

What are the treatments available ?

All babies may not need intervention. Some may need medicines to prevent fits. In some, when the head size is growing, fluid may be removed from the head directly by a syringe and needle if baby is very premature and of low weight and sick. The definite treatment is by surgery.

Are there any alternatives to surgery ?

In mild conditions, there is a possibility of using medication to reduce the secretion of brain fluid. Alternative to standard surgery is keyhole surgery (ventriculoscopy) without need for shunts in some select children.

What does the operation involve ?

The operation involves making a small hole in the skull bone and placing a tube into the brain cavity (ventricle). This tube is then tunnelled under the skin right down into abdomen so that excess brain fluid drains into the abdominal cavity. This fluid gets easily absorbed from the abdomen. This procedure is called ventriculo-peritoneal shunt.

Alternatively, a hole can be drilled in one of the ventricles for the CSF to flow out into spaces around the brain from where it is absorbed into the blood stream.

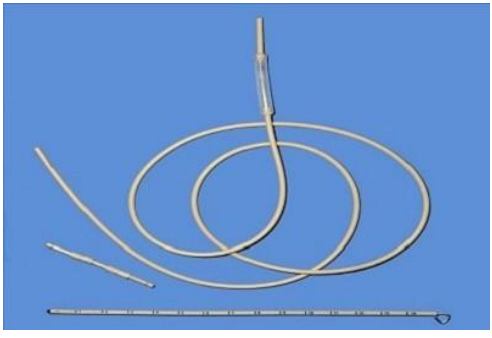
What are the possible complications / what happens after the operation ?

Most common complication is the tube slippage, blockage or infection. When any of these happens, the baby

What is the outlook or future of these children ?

In mild cases, the outlook is good. In severe cases, the growth and development of the baby may be affected and they may have delayed mental milestones. In those with associated spina bifida, there are additional difficulties related to the lower limbs, urinary bladder and defecation.

Child with hydrocephalus.
Tell tale signs include large head, sparse hair, dilated veins and open fontanelle and sutures



The shunt tube is commercially available. It has a unidirectional valve mechanism which allows the CSF to flow out but not come back.