Ventriculo-Peritoneal / Lumbo-Peritoneal Shunts
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What is hydrocephalus?

Hydrocephalus is the build up of an excess of cerebrospinal fluid (CSF) within the fluid-filled spaces of the brain (ventricles). The term ‘hydrocephalus’ comes from the Greek language meaning ‘water on the brain’. Hydrocephalus can exist from birth (congenital) such as in spina bifida, or can develop after birth as a result of trauma, brain tumours, haemorrhage, scarring along the fluid flow pathways or meningitis.

Symptoms of hydrocephalus can include:

- Headache.
- Vomiting.
- Deterioration in conscious level.
- Poor coordination.
- Behavioural changes.

There are two main types of hydrocephalus:

- **Obstructive hydrocephalus**, where the flow of CSF from the ventricles, where it is produced, is blocked. This occurs in congenital narrowing of the CSF flow pathways (aqueduct stenosis) and may also occur as a result of tumours or haemorrhage.

- **Communicating hydrocephalus** where there is a failure of CSF absorption. Free blood in the subarachnoid space, as after subarachnoid haemorrhage, blocks up the pores just outside the brain from where CSF is absorbed into the blood, leading to communicating hydrocephalus.

Following a haemorrhage, hydrocephalus can occur in the first 24 hours or days to weeks later.
Diagnosis

The main tests used to confirm hydrocephalus include:

- **CT Scan (Computerised Tomography)** - x-ray images of the brain showing the size and shape of the ventricles and other abnormalities.

- **MRI (Magnetic Resonance Imaging)** – MRI shows the size and shape of the ventricles using magnetic fields to create computer images. MRI also gives detailed images of soft tissue structures and is often particularly useful to help identify the specific cause for hydrocephalus.

- **Lumbar Puncture** - the introduction of a small needle into the lower part of the spine under local anaesthetic to obtain a small sample of CSF and/or to measure CSF pressure.

Treatment with shunts

A shunt is a device that is inserted permanently to treat hydrocephalus. It drains the excess CSF from the ventricles of the brain.

The type of shunt and its placement is based on what your neurosurgeon determines is most appropriate for you, influenced by the type of hydrocephalus and any other existing medical conditions.
Ventriculo-Peritoneal (VP) Shunt

The surgical procedure involves draining the excess CSF via a pressure valve implanted above the ear. It then travels down a catheter (tube) that is tunnelled under the skin to the abdominal cavity, where it is reabsorbed by the lining of the intestines. A second catheter runs between the pressure valve into one of the ventricles of the brain.
Lumbo-Peritoneal (LP) Shunt

The pressure valve is surgically implanted in the lumbar spine (lower part), the excess CSF drains directly from a catheter placed in the spinal canal and then into the abdominal cavity, as above.
Alternative treatments

Hydrocephalus almost always requires surgical treatment. Untreated it can lead to a rise in the pressure inside the head, which is often life-threatening, or to long-term cognitive/behavioural changes, balance and bladder/bowel disturbances.

Endoscopic third ventriculoscopy

Some patients may be offered an endoscopic third ventriculostomy rather than a shunt. In this operation, a small endoscope is passed surgically into the ventricle and a hole is opened at the base of one of the ventricles. This allows the CSF to bypass the obstruction and flow out of the ventricles.

Ommaya reservoir

In some patients, a ventricular access device, also known as an Ommaya reservoir, is inserted. This usually sits under the skin on the right side of the head, and is connected to a short catheter that joins the reservoir to the ventricle.

CSF may be aspirated (drawn off) from the reservoir if your shunt stops working. The reservoir can also be used to measure the pressure in the head and to confirm that the shunt is working appropriately.

After the operation

- Your surgeon may give specific instructions regarding immediate postoperative care such as how much to elevate in bed or when to start mobilising. Your nurse will inform you of any other instructions.
- If you feel unwell at any time or your symptoms return whilst getting up and around you should return to your bed and inform the nursing staff.
- Any clips, sutures or steristrips will either be removed before you go home or you will be advised when to make an appointment at your GP surgery to have them removed by a Practice Nurse.
The VP Shunt clips/sutures from your head and abdomen are often removed at different times. These will be specified by your surgeon.

Observe the wound(s) for any sign of infection, unusual redness or pain, swelling, heat or discharge (pus). Contact your GP if you notice any of these and, if necessary, they will contact your neurosurgeon for advice.

You will need to inform the Driving and Vehicle Licensing Agency (DVLA) of your shunt. There is a minimum restriction of 6 months off driving. However, this can be longer if there are other influencing medical conditions or disabilities.

The DVLA will look at each case individually. Please quote your full name, date of birth and/or driver number (if known). You must also give details of your specific medical condition or disability in order that you can be sent the appropriate medical questionnaire. Contact details below.

By post:
Drivers Medical Group
DVLA
Swansea
SA99 1TU

By fax:
0845 850 0095

By email:
eftd@dvla.gsi.gov.uk

By telephone:
08700 600 0301
(Monday-Friday, 08.00am-5.30pm or Saturday 08.00am-1.00pm)
Normally, an outpatient appointment will be sent to you by post to discuss progress. If you have not heard anything within 6-8 weeks, please contact the secretary of your consultant neurosurgeon.

**Shunts usually work very well. Signs and symptoms of complications with your shunt can include:**

- Headaches.
- Nausea and vomiting.
- Visual disturbances.
- Drowsiness.
- Temperature.

If you get any or all of these you should contact your GP without delay or go to your nearest Emergency Department informing them that you have a shunt. These complications can occur whether your shunt is new or years after its insertion.

Please note this leaflet is for general guidance only. It does not overrule anything your doctor or nurse may tell you. If you are unsure about any advice or instructions you have been given please ask.
References


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