

## What is Endoscopic Third Ventriculostomy (ETV)?

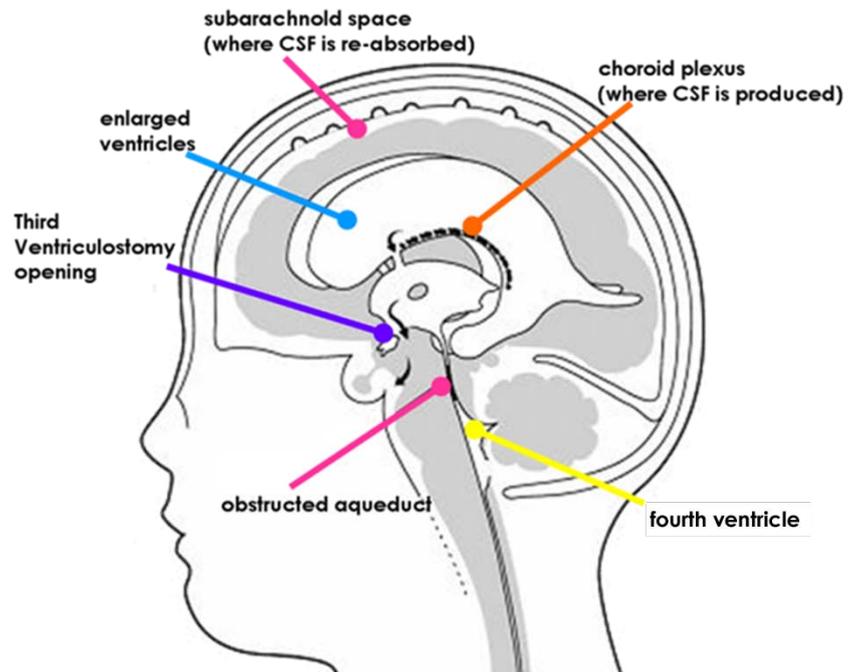


Endoscopic Third Ventriculostomy (ETV) is a one-time procedure; an opening is created in the floor of the third ventricle using an endoscope placed within the ventricular system through a burr hole. This allows the movement of cerebrospinal fluid (CSF) out of the blocked ventricular system and into the interpenducular cistern (a normal CSF space) thereby shortcutting any obstruction. ETV is used to treat certain forms of obstructive Hydrocephalus, such as aqueductal stenosis.

The objective of this procedure is to normalise pressure on the brain without using a shunt. ETV is not a cure for Hydrocephalus, but rather an alternate treatment.

Although open ventriculostomies were performed as early as 1922, they became a less common method of treating Hydrocephalus in the 1960s, with the advent of shunt systems. Despite recent advances in shunt technology and surgical techniques, however, shunts remain inadequate in many cases. Specifically, extracranial shunts are subject to complications such as blockage, infection, and over-drainage, often necessitating repeated surgical revisions. For this reason, in selected cases, a growing number of neurosurgeons are recommending endoscopic third ventriculostomy in place of shunting.

The ultimate goal of ETV is to render a shunt unnecessary. Although Endoscopic Third Ventriculostomy is ideally a one-time procedure, evidence suggests that some patients will require more than one surgery to maintain adequate opening and drainage.



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### Who Is a Candidate for ETV?

Recent studies point to three factors most responsible for successful ventriculostomies:

- Age (the individual should be over six months old)
- The prior presence of a shunt
- A diagnosis of non-communicating Hydrocephalus (obstructed ventricular pathways)

### New Technologies

The revived interest in ventriculostomy as a viable alternative treatment approach is largely due to the development of a new technology called neuroendoscopy, or simply endoscopy. Neuroendoscopy involves passing a tiny viewing scope into the third ventricle, allowing images to be projected onto a monitor located next to the operating table. The neurosurgeon thus has a clear view of the inside of the ventricular system during surgery.

### How Is Success Defined?

“Success” in terms of this procedure is usually considered (by patients and doctors alike) to be avoiding a shunt in a patient who would otherwise require one. Most doctors would categorise endoscopic third ventriculostomy as successful if a patient later shows clinical evidence of normal intracranial pressure (ICP) and structural evidence of stable or decreased ventricular size. If a patient was previously shunted, the shunt must be either removed or proved non-functional to demonstrate success.

### What Are the Potential Complications?

With new technologies, such as high-resolution MRI allows doctors to clearly perceive the absence of flow through a stenosed or occluded aqueduct, while neuroendoscopic procedures offer unprecedented views from within the ventricular system.

The most common complications of endoscopic third ventriculostomy are fever and bleeding. There can be an increase in CSF temperatures, sometimes causing fever due to the equipment used during this procedure. Attempts to perforate the ventricular floor can lead to bleeding, as can damage to ventricular walls or perforation of the basilar artery. Large bleeds due to vessel injury under the third ventricle may occur but they are rare.

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Short-term memory loss is another potential complication of endoscopic third ventriculostomy, since the procedure may affect the areas responsible for memory. However, given time, an individual usually recovers from any short-term memory loss.

Because the area of the third ventricle where the opening is made is responsible for some hormonal function, there is also a possibility of sexual dysfunction this is often short-lived. Diabetes insipidus is another transient complication.

Although endoscopic third ventriculostomy can ideally lead to the much-desired result of a shunt-free life, doctors caution that this procedure is not appropriate for everyone. Still, for those who meet the criteria, endoscopic third ventriculostomy offers the possibility of freedom from shunt dependency.