Ventriculoperitoneal shunt for idiopathic intracranial hypertension

Shunting procedures have a high failure rate when used to treat patients who have failed medical therapy. This failure is believed to be attributable to the collapsibility of the ventricular system when exposed to increased differential pressure gradients in the cerebral spinal fluid compartments caused by ventriculoperitoneal shunts (VPS).

Lumboperitoneal shunting had been favored by many investigators for CSF diversion in IIH for decades; however, it has been associated with various side effects. Because of the small ventricular size adequate positioning of a ventricular catheter is challenging.

Case series

2017

Hermann et al., investigated the usefulness of electromagnetic guided ventricular catheter placement for ventriculoperitoneal shunting in IIH.

Eighteen patients with IIH were included in this study. The age of patients ranged from 5 to 58 years at the time of surgery (mean age: 31.8 years; median: 29 years). There were 2 children (5 and 11 years old) and 16 adults. Inclusion criteria for the study were an established clinical diagnosis of IIH, lack of improvement with medication, and the presence of small ventricles. In all patients EM-navigated placement of the ventricular catheter was performed using real-time tracking of the catheter tip for exact positioning close to the foramen of Monro. Postoperative CT scans were correlated with intraoperative screen shots to validate the position of the catheter.

In all patients EM-navigated ventricular catheter placement was achieved with a single pass. There were no intraoperative or postoperative complications. Postoperative imaging confirmed satisfactory positioning of the ventricular catheter. No proximal shunt failure was observed during the follow-up at a mean of 41.5 months (range: 7-90 months, median: 40.5 months).

EM-navigated ventricular catheter placement in shunting for IIH is a safe and straightforward technique. It obviates the need for sharp head fixation, the head of the patient can be moved during surgery, and it may reduce the revision rate during follow-up 1).

2005

Woodworth et al., describe the frameless stereotactic VP shunting technique for IIH in 32 procedures. Outcomes following shunt placement, time to shunt failure, and etiology of shunt failure are reported.

A total of 21 patients underwent 32 ventricular shunting procedures (20 VP, 10 ventriculoatrial, 2 ventriculopleural). One hundred percent of shunts were successfully placed into slit ventricles, all requiring only one pass of the catheter under stereotactic guidance to achieve the desired location and CSF flow. There were no procedure-related complications and each ventricular catheter showed rapid egress of CSF. All (100%) patients experienced significant improvement of headache immediately after shunting. Ten percent of ventricular shunts failed at 3 months after insertion, 20% failed by 6 months, 50% failed by 12 months, and 60% failed by 24 months. Shunt revision was due to distal obstruction in 67%, overdrainage in 20%, and distal catheter migration or CSF leak in 6.5%. There were no shunt revisions due to proximal catheter obstruction or shunt infection.
In this experience treating patients with IIH, frameless stereotactic ventricular CSF shunts were extremely effective at treating IIH-associated intractable headache, and continued to provide relief in nearly half of patients 2 years after shunting without many of the shunt-related complications that are seen with LP shunts. Placing ventricular shunts using image-guided stereotaxis in patients with IIH despite the absence of ventriculomegaly is an effective, safe treatment option 2).
