



Aborted Endoscopic Third Ventriculostomy – Report of the Anatomical Features, Treatment Options and Clinical Outcomes of 10 Cases of Hydrocephalus

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Introduction

Anatomical abnormalities in the ventricular system can lead to abortion of an endoscopic third ventriculostomy procedure for the treatment of hydrocephalus.

Methods

We retrospectively reviewed the medical records of 211 patients from an institutional database of adult patients who underwent ETV from the year 2000 to 2014. We identified 10 patients who had an aborted ETV. The demographics, clinical presentation, radiological imaging, operative detail and outcomes of these patients were reviewed.

Results

The patients (4 men, 6 women) were aged 27-78 years (average age – 51.9 years). Clinical presentation included headaches 4, gait imbalance 2, congenital hydrocephalus 2, elevations of intracranial pressure 1 and seizures 1. On preoperative brain imaging, 9 patients had triventriculomegaly and 1 patient showed panventriculomegaly. The bifrontal horn distance was 32.1 - 50.6 mm (average - 43.1 mm) and Evans ratio was 0.27 - 0.46 mm (average – 0.36). The etiology of the hydrocephalus included aqueductal stenosis 5, relative aqueductal stenosis 2, posterior fossa outlet obstruction 1, post-ventriculitis 1, and normal pressure hydrocephalus 1. Factors that led to abortion of the ETV procedure included obstruction of foramen of Monro 3, abnormal third ventricular floor anatomy 4, impenetrable membrane of Liliequist 1, ventricular hemorrhage 1 and ventricular collapse 1 patient. Neuronavigation was used in 2 of the cases. The alternative procedures performed after the aborted ETV included 7 ventriculoperitoneal shunts, 1 ventriculopleural shunt and 1 occipital horn-to-subarachnoid space fenestration. One patient had no further surgery. One patient was lost to follow-up while 9 patients were followed for 2 months to 10 years with improvements in symptoms and shunt complications in 3 patients.

Conclusions

Anatomical abnormalities in the lateral and third ventricles and the prepontine space may lead to abortion of an ETV. A shunting procedure as well as endoscopic fenestration is an effective treatment option after an aborted ETV.

Learning Objectives

To present abnormal ventricular anatomical features leading to aborted ETV and patient outcomes.

References

Rohde V, Gilsbach JM. Anomalies and variants of the endoscopic anatomy for third ventriculostomy. Minim Invasive Neurosurg. 2000 Sep;43(3):111-7.

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