

Aneurysmal Subarachnoid Hemorrhage Managed Primarily with Endoscopic Third Ventriculostomy. Matthew J Koch MD; Pankaj Kumar Agarwalla MD; Christopher James Stapleton MD; Aman B. Patel MD; William Butler MD

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Introduction: Aneurysmal subarachnoid hemorrhage is a devastating disease with protean effects on cerebrospinal fluid dynamics leading to both acute and chronic hydrocephalus. Traditionally, acute hydrocephalus is managed with external CSF diversion while chronic hydrocephalus is managed with ventriculoperitoneal shunting (VPS). We present our experience in managing chronic hydrocephalus associated with aneurysmal subarachnoid hemorrhage (SAH) with endoscopic third ventriculostomy (ETV).

Methods: We performed an observational, retrospective, single-center study case series on patients with aneurysmal SAH and decompensated hydrocephalus treated with ETV for hydrocephalus at our institution from 2014-2017.

Figure 1: CT demonstrating site of endoscopic third ventriculostomy for post subarachnoid hydrocephalus, (arrow). Streak artifact from prior PICA coiling noted at inferior aspect of CT scan.



Results: Sixty-one patients underwent third ventriculostomy for the treatment of hydrocephalus, Six of these patients were treated for hydrocephalus secondary to aneurysmal subarachnoid hemorrhage. Two patients had aneurysms located in the posterior circulation and four in the anterior circulation. Four patients were treated with endovascular coiling, while two patients underwent open surgical clipping. Post-procedurally, all patients required ventricular drainage for an average of 14 days, with five patients successfully weaned from ventricular drainage. Delayed hydrocephalus occurred over an average of 66 days (range three to 122 days). Four patients presented with headache and two with altered mental status. Post-procedurally, two patients failed to improve in the short term (<14 days) and required VPS placement, and three patients presented with recurrent headaches six months to one year following treatment and underwent VPS. One patient did not require further CSF diversion. No patients encountered acute complications from their ETV procedure, one patient required VPS externalization and reinternalization for infection, and one patient required repeat operation for VPS disconnection.

Conclusions

Post SAH hydrocephalus is a complex pathophysiologic condition that may not fit within the current paradigms of "communicating" versus "noncommunicating" hydrocephalus understanding. ETV presents a safe option for the management of these patients which may decrease the need for permanent VPS placement when successful, however further investigation would be needed to validate its efficacy.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Understand the subacute manifestations of Subarachnoid hemorrhage 2) Discuss management options for hydrocephalus 3) Identify ETV as a potential treatment for hydrocephalus

References

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