Acute ventriculoperitoneal shunt malfunction following opening of the spinal subarachnoid space

Matthew D. Smyth

Published online: 29 January 2009
© Springer-Verlag 2009

Tubbs et al. present a case series of five patients who experienced ventriculoperitoneal shunt malfunction with intraspinal subarachnoid surgical manipulation implicated as the pivotal factor in conversion of a stable, suboptimally functioning, cerebrospinal fluid (CSF) shunt system into an acutely obstructed one. They conjecture a “siphoning” effect in the subarachnoid cranial–spinal subarachnoid space as causative in proximal shunt obstruction; a likely mechanism. Common intradural spinal procedures in children with hydrocephalus include spinal cord detethering and dysraphism, baclofen pump placement, Chiari and syringomyelia, and dorsal rhizotomy.

Each of their patients underwent preoperative computed tomography scans confirming stable ventricular size before the spinal procedure, suggesting a preexisting clinical suspicion of this potential complication. The authors concluded that the neurosurgeon be aware that acute shunt malfunction may occur after intradural spinal procedures and recommend more careful clinical postoperative follow-up. Other than close postoperative clinical evaluation,

should there be any additional shunt evaluation performed in these patients? Are there any maneuvers to reduce the risk of acute shunt malfunction? Other than the preoperative axial imaging, additional testing of the shunt system would likely be difficult to interpret in an asymptomatic patient (i.e., shunt tap, radionuclide shunt function study). However, repeat postoperative imaging may detect an early acute shunt malfunction prior to discharge from the hospital and might be worth considering in selected patients. Another recommendation I would make, to decrease the risk of acute shunt malfunction, is to position the patient in 10 to 20 degrees of Trendelenburg during the intradural portion of the spinal procedure to minimize loss of CSF or entrainment of air. At St. Louis Children’s Hospital, we have used this position during selective dorsal rhizotomy procedures in approximately 200 patients with hydrocephalus and preexisting shunts and have not seen any acute shunt malfunctions after the intradural spinal procedure (unpublished institutional data).

This commentary refers to the article doi: 10.1007/s00381-008-0788-0.

M. D. Smyth (✉)
Pediatric Neurosurgery,
St. Louis Children’s Hospital,
Washington University in St. Louis,
1 Childrens Pl # 4S20,
St. Louis, MO 63110, USA
e-mail: SmythM@nsurg.wustl.edu