TITLE: Devastating Postoperative Bowel Complications after Neurosurgical Procedures: Case Series and Literature Review

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ABSTRACT:
Postoperative intestinal ileus, volvulus, obstruction, and/or perforation after neurosurgical procedures are relatively rare events, with reported incidence of <1-6.2% in various published series. Further, the majority of these series consist of anterior or lateral lumbar spine approaches, with rare reports of direct bowel injury after cranial surgery, usually a complication of ventriculoperitoneal shunt placement. Risk factors for such complications include anterior spinal approach, male gender, higher preoperative comorbidity scores, prolonged hospital stay, preoperative constipation, prior abdominal surgery, and higher intraoperative morphine equivalents.

To date no series has reported on surgical management of postoperative bowel complications in neurosurgical patients. We reviewed our institutions Morbidity and Mortality data since July 2016 to identify devastating postoperative bowel complications involving either bowel perforation and/or the need for surgical management. A retrospective chart review was then performed to identify neurosurgical factors, patient comorbidities, anesthesia variables, perioperative management, and postoperative surgical management in this series. Seven patients with average age 50 years old (range 34-60) and no apparent sex predilection had severe postoperative bowel complications after a total of 10 neurosurgical procedures. Initial neurosurgical procedures were spinal (50%), cranial (30%), and endovascular (20%), performed for neoplastic (50%), degenerative (20%), vascular (20%), or infectious (10%) etiologies. Patients had high degree of comorbidities with 6/7 preoperative ASA class 3 or 4 (range 2-4). Total intravenous anesthesia (TIVA) was used for 80% of the neurosurgical procedures. Operative time averaged 5.5 hrs (range 3-14 hrs) and EBL was 570 ml (range 0-3600 ml). Average time to first ambulation was 3.4 days with first bowel movement by 5 days postoperatively (range 1-7 days).

Bowel complications occurred about one week postoperatively (range 5-13 days), and time between radiographic diagnosis of the complication and either surgery or death was 1.3 days (range 0-4 days). Bowel perforation occurred in four patients and five patients underwent a total of eleven abdominal surgeries for definitive treatment. Four of the seven patients died, with three deaths as a direct result of the bowel complication.

We found that devastating postoperative bowel complications in neurosurgical patients, while rare, are not limited to spinal surgery, tend to occur in systemically ill patients, and carry a high risk of mortality even when promptly diagnosed and aggressively managed.