Preventable Shunt Revision Rate

Venable et al proposed a novel quality metric.

An institutional shunt database was queried to identify all shunt surgeries performed from January 1, 2010, to December 31, 2014, at Le Bonheur Children's Hospital. Patients' records were reviewed for 90 days following each “index” shunt surgery to identify those patients who required a return to the operating room. Clinical, demographic, and radiological factors were reviewed for each index operation, and each failure was analyzed for potentially preventable causes.

During the study period, there were 927 de novo or revision shunt operations in 525 patients. A return to the operating room occurred 202 times within 90 days of shunt surgery in 927 index surgeries (21.8%). In 67 cases (33% of failures), the revision surgery was due to potentially preventable causes, defined as inaccurate proximal or distal catheter placement, infection, or inadequately secured or assembled shunt apparatus. Comparing cases in which failure was due to preventable causes and those in which it was due to nonpreventable causes showed that in cases in which failure was due to preventable causes, the patients were significantly younger (median 3.1 vs 6.7 years, p = 0.01) and the failure was more likely to occur within 30 days of the index surgery (80.6% vs 64.4% of cases, p = 0.02). The most common causes of preventable shunt failure were inaccurate proximal catheter placement (33 [49.3%] of 67 cases) and infection (28 [41.8%] of 67 cases). No variables were found to be predictive of preventable shunt failure with multivariate logistic regression.

With economic and governmental pressures to identify and implement “quality measures” for shunt surgery, pediatric neurosurgeons and hospital administrators must be careful to avoid linking all shunt revisions with “poor” or less-than-optimal quality care. To date, many of the purported risk factors for shunt failure and causes of shunt revision surgery are beyond the influence and control of the surgeon. Venable et al propose the PSRR as a specific, meaningful, measurable, and-hopefully-modifiable quality metric for shunt surgery in children [1].

1)
Venable GT, Rossi NB, Morgan Jones G, Khan NR, Smalley ZS, Roberts ML, Klimo P Jr. The Preventable Shunt Revision Rate: a potential quality metric for pediatric shunt surgery. J Neurosurg Pediatr. 2016 Mar 11:1-9. [Epub ahead of print] PubMed PMID: 26966884.