The Effect of Postoperative Epidural Hematoma following Surgical Management of Lumbar Spinal Stenosis

Peter Ahorukomeye[1], Nicholas Utchan Ahn, Christina Cheng, Zachary L Gordon[2], Christopher George Furey
[1]Case Western Reserve University, [2]University Hospitals Cleveland Medical Center

INTRODUCTION:
The development of a postoperative epidural hematoma following lumbar spinal stenosis surgery is an uncommon but potentially devastating complication. It is unclear what the long-term clinical and economic impacts are related to the additional surgical care needed to treat these adverse events. The purpose of the current study is to define the incidence of acute postoperative epidural hematomas requiring subsequent surgical evacuation following primary decompressive laminectomy surgery, as well as the perioperative risk factors, effect on short and long-term outcomes, and the economic impact due to the need for the additional care required.

METHODS:

This is a retrospective analysis of 610 consecutive patients who underwent surgical management for lumbar spinal stenosis and had a minimum 10-year postoperative follow up. Patients who developed a symptomatic epidural hematoma within the acute postoperative period (4 weeks from the index procedure) were identified and multiple perioperative risk factors were assessed for significance with a multi-variate regression analysis. The clinical and economic impact of the hematoma and need for subsequent surgery need for a second surgery were compared to the cohort of patients who underwent surgery during the same time period but did not develop a hematoma.

RESULTS:
An acute postoperative epidural hematoma occurred in 21 patients (3.7%). The presence of a symptomatic hematoma occurred at an average of 6.5 days (range 3-21 days) postoperatively. The most common symptoms associated with a hematoma were worsening back pain (100% of patients), increased leg pain (90%), new onset leg weakness (52%), and urinary retention (29%). An MRI confirmed the clinical diagnosis in 11 of 21 patients (52%). Clinical risk factors significant ($p<.05$) for the development of a hematoma included age greater than 80 years old, body mass index greater than 30, history of diabetes, rheumatoid arthritis, a connective tissue disorder requiring preoperative steroid, and osteoporosis. Notable factors not significant included duration of surgery, the need for a spine fusion, number of surgical levels fused or decompressed, a diagnosis of degenerative scoliosis or degenerative spondylolisthesis, the preoperative us of pharmacologic anticoagulation, the use of BMP or other bone graft substitute. No significant correlation could be found between the development of an epidural hematoma and the use of a postoperative subfascial drain, the amount of postoperative drainage, nor the duration the drain was kept in place. At 3-month follow up, all patient-reported outcome measures were significantly less favorable in those patients who had an epidural hematoma. However, by 6 months following surgery and at the time of latest follow-up (minimum 10 years), there was no significant difference in any patient-reported outcome measure. Length of stay was increased an average of 4.3 days and cost of hospitalization was greater by an average of $140,000.

DISCUSSION AND CONCLUSION: A postoperative epidural hematoma following lumbar spinal stenosis surgery occurred in 3.7% of 610 consecutive patients. Older, unhealthier patients were more prone to the development of a hematoma. With the need for surgical evacuation, the initial patient-reported outcome measures and patient satisfaction rates were significantly lower, but ultimately no long-term difference was noted when compared with a cohort of patients without a hematoma. Prompt identification and surgical evacuation appears to be effective in lowering any long-term morbidity associated with the development of a postoperative epidural hematoma.