Intracranial Hemorrhage following Spine Surgery

Intracranial hemorrhage (ICH) is a potentially severe spine surgery complication. The occurrence of such complications causes deterioration of the patient's clinical status and delayed discharge from the hospital. Although no specific etiological factors were identified for this complication, multiple risk factors might play role in its development, they include the use of anticoagulants, presence of uncontrolled hypertension, and perioperative patient positioning.

Al-Saadi et al. performed a systematic review of the literature to investigate the prevalence of different types of intracranial hemorrhages in patients who underwent spine surgery.

A literature review was conducted using multiple research databases. Data were extracted using multiple variables that were formulated incongruent with the study aim and then further analyzed.

A total of 79 studies were included in the analysis after applying the exclusion criteria and removing repeated studies, 109 patients were identified where they were diagnosed with intracranial hemorrhage after spine surgery with a mean age of 54 years. The most common type of hemorrhage was cerebellar hemorrhage (56.0%) followed by subdural hematoma and intraparenchymal hemorrhage; 23.9 and 17.4%, respectively. The most common spine surgery was laminectomy (70.6%), followed by fixation and fusion (50.5%), excision of spinal lesions was done in 20.2% of the patient, and discectomy (14.7%).

The data in this study showed that out of 112 patients with ICH, cerebellar hemorrhage was the most common type. ICH post-spine surgery is a rare complication and the real etiologies behind this complication are still unknown, cerebrospinal fluid drainage and durotomy were suggested [1)].

Case series

In this retrospective study, medical records of 1,077 patients who underwent lumbar spinal surgery in a tertiary referral neurosurgery center between January 2003 and September 2010 were studied. The original presentations of the patients before the surgical intervention were herniated lumbar disc, spinal canal stenosis, spondylolisthesis, lumbar spinal trauma, and lumbar spine and epidural tumor. The operations performed consisted of discectomy, multiple level laminectomy, stabilization and fusion, lumbar instrumentation, and lumbar spinal and epidural tumor resection.

Results: Four cases developed intracranial hemorrhage including acute subdural hematoma (one case), epidural hematoma (one case), and remote cerebellar hemorrhage (two cases). The clinical and diagnostic imaging characteristics along with treatments performed and outcomes of these four patients are described and the pertinent literature regarding post-lumbar spinal surgery intracranial hemorrhages is reviewed.

Though rare, intracranial hemorrhage can occur following lumbar spine surgery. This complication may be asymptomatic or manifest with an intense headache at early stages at any time during the first week after surgery. Dural tear, bloody Cerebrospinal fluid fistula, focal neurologic symptoms, and headache are indicators of potential intracranial hemorrhage, which should be considered during or following surgery and necessitate diagnostic imaging [2)].

1)

Al-Saadi T, Al-Kindi Y, Allawati M, Al-Saadi H. Intracranial Hemorrhage following Spinal Surgery: A Systematic Review of a Rare Complication. Surg J (N Y). 2022 Mar 3;8(1):e98-e107. doi: 10.1055/s-0042-1743525. PMID: 35252567; PMCID: PMC8894081.

2)

Khalatbari MR, Khalatbari I, Moharamzad Y. Intracranial hemorrhage following lumbar spine surgery. Eur Spine J. 2012 Oct;21(10):2091-6. doi: 10.1007/s00586-012-2187-1. Epub 2012 Feb 16. PMID: 22349967; PMCID: PMC3463703.