Recurrent Epidural Abscesses after ACDF in Patients with an Esophageal Diverticulum: Case Report and Literature Review with Suggested Management Guidelines

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Breck Aaron Jones, MD; Jose Espinosa, MD
Southern Illinois University School of Medicine
Division of Neurosurgery
Disclosures

• We have no relevant partnerships or financial relationships to disclose
Introduction

- Anterior Cervical Discectomy and Fusion (ACDF) is one of the most common spine procedures performed today.
- Surgical exposure requires retraction of the esophagus to gain access to the vertebrae.
- An uncommon complication is the development of an epidural infection due to esophageal injury.
- A pharyngoesophageal diverticulum (Zenker’s diverticulum) is an anatomical irregularity that increases esophageal injury risk during dissection.
- These diverticula are mucosal outpouchings of the pharynx between the muscular layers, making them pseudo-diverticula.
- Because the diverticula represent weakened areas of tissue, they may be injured during routine dissection for spine exposure creating an immediate or delayed polymicrobial infection.
- Here, we report a patient with a latent recurrent epidural infection resulting from injury to a pharyngoesophageal diverticulum and present management strategies.
Case Report

• A 64 year old female who presented with a long history of cervical pain and radiculopathy underwent a two level ACDF after failing conservative therapy.
• She experienced significant dysphagia postoperatively that did not entirely resolve.
• 2 years after surgery she returned complaining of headaches and muscle spasms in her neck. Cervical MRI showed subtle enhancing prevertebral soft tissue but she was then lost to followup.
• 5 years after her index surgery she presented with increasing neck pain and quadriparesis. MRI at this time showed abscess in epidural space.
• She underwent a cervical laminectomy to decompress the epidural space. Cultures grew Prevotella and Fusobacterium. Following antibiotic treatment and rehabilitation the patient saw significant improvement to her baseline.
Case Report

- At 6 years after the index surgery she presented again complaining of neck pain with weakness. Her physical exam was remarkable for spasticity and brisk reflexes.
- MRI demonstrated a new epidural abscess with more severe cord compression.
- Barium esophogram demonstrated a large esophageal diverticulum but no leakage.
- An anterior approach was employed that found extensive scarring of the prevertebral planes.
- The cervical plate and inter bodies were removed, the abscess was drained, and the hardware was replaced with bone allograft spacers.
- Intraoperatively the esophagus was found to be scarred to nearby tissues with phlegm around it, but upon inspection no defects were identified.
- Surgical cultures at this time grew Neisseria and Streptococcus viridans.
Case Report

• On postoperative day 1 following the abscess drainage the patient developed extensive subcutaneous emphysema.

• CT and gastrographin studies were performed which showed contrast leakage consistent with a defect in the esophageal diverticulum.

• Surgical exploration with ENT identified the defect as a tear in the diverticulum and this mucosa was repaired primarily then reinforced with a closure of the strap muscles over the defect.

• Repeat gastrographin study one week later showed no leaking.

• The patient received 6 weeks of IV antibiotics and recovered back to her baseline neurologically. At one year followup imaging demonstrated good fusion with no recurrence of infection.
Discussion

• Dr. Ludlow first described a hypopharyngeal diverticulum in 1769, and shortly after Fredrich Von Zenker recognized that increased intrapharyngeal pressure could cause this phenomena, coining the term Zenker diverticulum.

• While patients may have diverticula prior to surgery, it is possible that friction injury following ACDF can lead to fibrotic changes of the hypopharyngeal wall creating adhesions between the esophagus and the surgical field and over time resulting in such a diverticulum.

• While the infection rate of ACDF is believed to be 0.1-1.6%, most of these are minor and occur in the immediate postoperative period. Here we presented a case of polymicrobial infection creating a delayed epidural abscess that could have potentially devastating neurologic complications.

• After performing a literature review of ACDF-related esophageal injury and esophageal perforation, we included a proposed algorithm for the management of such cases.
Summary Points

- Esophageal diverticulum is a risk factor for complications in anterior cervical surgery, but also can be a delayed complication of anterior cervical surgery.
- Emergent decompression is warranted for epidural abscess with neurologic deficits.
- Urgent ENT consultation is recommended for management of esophageal diverticula.