Perforation of the cervical esophagus is a rare and potentially life-threatening complication. Prompt diagnosis and treatment is critical to avoid short- and long-term sequelae. Multiple etiologies including infective esophagitis, perforating lesions, foreign bodies, and trauma have been identified. We present 2 cases of hardware induced cervical esophageal perforation in a 49 year-old man and a 60 year-old woman. Both patients had undergone anterior cervical spine fusion surgery for degenerative spinal conditions. Persistent dysphagia, neck abscess, and esophageal-cutaneous fistula to the left neck prompted surgical exploration. Airway compromise and severe soft tissue involvement were noted. Esophageal examination revealed fibrosis, inflammation, and retraction of the perforated mucosal edges resulting in a mucosal defect. The SOM was sutured to the mucosa edges to fill the defect. Application of halo traction is an option in this setting, providing spinal stability allowing long-term stability and allow for halo-vest removal. Tube feeding continued for 38 days post-operatively and the patient returned to the operating room for posterior cervical spine fixation with hardware to provide nutrition for 25 days until follow-up esophagram demonstrated the absence of leakage and stenosis. The patient is currently able to maintain full oral feeding with good swallowing function.

Management of cervical esophageal perforation involves components of operative and non-operative management. A step wise approach to these sequelae may facilitate a rapid but effective approach to these complex lesions. The time lapse between anterior spine surgery and perforation presentation can be dichotomous set of challenges and issues to be considered in the course of treatment. The magnitude of soft tissue involvement, spinal hardware management, and potential spine instability. Long-term comorbidities including osteomyelitis, poor bone healing and surgical hardware removal can be reinforced by a partial SCM flap and secured to the surrounding soft tissue for additional support. Orthopedic surgery can re-fuse the compromised vertebrae utilizing a posterior approach. The overall, successful management of this unusual complication requires a high index of suspicion coupled with aggressive and early intervention. Multidisciplinary cooperation and a step-wise approach to surgical and post-surgical treatment can avoid potentially devastating patient outcomes.

**OBJECTIVE:** Cervical esophageal perforation from spinal fixation hardware is a rare and potentially life-threatening condition. The purpose of this study is to describe our surgical and post-operative management of sequelae.

**METHODS:** Two cases of spinal hardware induced cervical esophageal perforation are presented. One acute (2 weeks) and the other delayed (22 years). We address spinal hardware induced cervical esophageal perforations in both acute and delayed presentations. We discuss the surgical management and outcomes of these patients.

**RESULTS:** The patient with acute cervical esophageal perforation was successfully treated with resection of the hardware, evacuation of cervical abscess, and primary closure. The second patient with delayed cervical esophageal perforation presented with progressive dysphagia, neck abscess, and esophageal-cutaneous fistula to the left neck. The patient has a history of anterior cervical spine fusion 22 years prior. CT scans of the neck displayed erosion of spinal hardware into the posterior esophageal wall (Figure 3). Subsequent abscess formation and fistula communication between the esophagus and the spinal hardware was identified. Surgical exploration of the neck commenced with entrance into the paravertebral space through the anterior cervical approach. The SOM was sutured to the mucosa edges to fill the defect. The patient was on total parenteral nutrition for 25 days until follow-up esophagram demonstrated the absence of leakage and stenosis. The patient is currently able to maintain full oral feeding with good swallowing function.

**CONCLUSION:** Surgical exploration along with pre and post-operative management differs between acute and delayed cases of cervical esophageal perforation. The presentation of the unusual cervical esophageal perforation may yield variable and uniquely serious implications. Overall, successful management of this unusual complication requires a high index of suspicion coupled with aggressive and early intervention. Multidisciplinary cooperation and a step-wise approach to surgical and post-surgical treatment can avoid potentially devastating patient outcomes.

**Table 1. Reported Complications of Cervical Esophageal Perforation**

<table>
<thead>
<tr>
<th>Complication</th>
<th>Airway Compromise</th>
<th>Dysphagia</th>
<th>Osteomyelitis</th>
<th>Necrosis/Fistula Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Delayed</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Figure 1.** Spinal hardware erosion into the posterior esophageal wall. Figure 2. Halo traction secondary to spinal instability from dislodged cervical spine hardware.

**References**

4. Kelly et al. Spinal Hardware Induced Cervical Esophageal Perforations

**Figure 6:** Representation of the differences in the treatment of esophageal perforations based on the time lapse between surgical and perforation presentation.