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Esophageal fistula complicating thyroid lobectomy

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Abstract

Thyroidectomy is associated with low morbidity and mortality. Esophageal perforation following thyroidectomy has been reported only three times previously, with subsequent fistulization occurring in two of these cases. The authors present the first such case report in the English-speaking literature.

INTRODUCTION

Esophageal perforation is associated with high morbidity and mortality, varying from 5 to 31% [1]. Perforation of the cervical esophagus is most commonly a complication of endoesophageal procedures or intubation [2, 3], but can also result from injury during operations directly involving or in close proximity to the esophagus. The development of esophago-cutaneous fistula has been reported secondary to esophageal perforation [4], following penetrating trauma and esophagectomy and as a consequence of anastomotic leak. Esophageal perforation during thyroid surgery has only been reported three times in the literature, with subsequent fistulization occurring only twice [5–7].

CASE REPORT

A 56-year-old female was noted to have a solitary left thyroid nodule, discovered incidentally on CT scan following neck trauma. The patient’s past medical history was significant for hypertension, hyperlipidemia, gastroesophageal reflux and depression. The patient reported no symptoms of dysphagia, history of neck irradiation or symptoms of thyroid dysfunction and denied family history of thyroid disease, including thyroid cancer. Neck ultrasound demonstrated a dominant, heterogeneous, 2.9-cm solid nodule with microcalcifications. Ultrasound-guided, fine-needle aspiration cytology revealed a follicular lesion of undetermined significance. The patient was referred to a local general surgeon and underwent left thyroid lobectomy. According to the operative report, the recurrent laryngeal nerve was identified and preserved throughout its course. The patient tolerated the procedure well and was noted to have normal speech following the operation.

The original thyroid lobectomy operation was performed by a general surgeon who typically performs half-dozen thyroidectomies a year at a rural hospital. The surgeon described the original operation as ‘uneventful’ in a letter accompanying the patient, and a detailed review of the operative report by the authors reveals no mention of any inflammatory reaction or fibrosis surrounding the tumor. The original pathology report describes a well-differentiated papillary thyroid carcinoma 3.0 × 2.5 × 1.5 cm (Staging classification T2 N0 M0). There was no lymphatic or vascular invasion (V0). There was no extra capsular extension and margins were negative (R0). A normal parathyroid gland was identified, but no lymph nodes were seen.

On the third postoperative day, however, the patient returned to the surgeon’s office with complaints of neck pain and swelling. A CT scan of the neck performed at that time revealed a 7.7 × 3.7 cm fluid collection in the left neck (Fig. 1). The patient was taken emergently to the operating room, where upon opening the incision a large amount of purulent fluid was evacuated. There was a...
thick, yellowish exudate adherent to the involved surfaces, and
the strap muscles were noted to be thickened, stiff and friable. In-  
spection of the esophagus revealed no obvious injury, but sur-  
rounding tissues were noted to be discolored and inflamed, 
making visualization of the esophagus difficult. The recurrent la-
ryngeal nerve, which had been identified during the initial op-
eration, was not seen.

To better characterize the nature of the injury, the wound was  
filled with sterile water, and air was instilled into the esophagus  
via placement of an orogastric tube. Air was then seen bubbling  
into the wound. Indigo carmine diluted in water was instilled  
to the esophagus, whereupon blue-tinged fluid was seen leaking  
into the wound from an upper esophageal defect. A 3.0 silk  
suture was placed in the area of the defect, and the repair but-
tressed with omohyoid muscle. The strap muscles were closed  
in the midline, and two Jackson–Pratt drains were placed for  
wide drainage.

The patient soon demonstrated a recurrent esophageal leak  
(Fig. 2), which was managed by maintaining the patient nil per  
os, providing nutrition via a feeding tube, and applying negative  
pressure to the wound. The esophageal leak gradually resolved,  
as evidenced by multiple contrast esophagrams, permitting re-
moval of the patient’s drains. Prior to discharge from the hos-
pital, barium esophagram showed no evidence of contrast  
evrasation.

Pathology demonstrated a 3-cm, well-differentiated papillary  
thyroid carcinoma with negative margins and no lymphatic or va-
scular invasion (T2, N0, M0, R0 and V0). The patient was referred to  
an experienced endocrine surgeon at a tertiary care institution for  
completion thyroidectomy; that surgeon performs 

DISCUSSION

In experienced hands, thyroidectomy is a safe procedure asso-
ciated with low complication rates. The most common complica-
tions include recurrent laryngeal nerve injury, neck hematoma  
and hypoparathyroidism. Numerous large retrospective studies  
have examined the incidence of postoperative complications fol-
lowing thyroidectomy, with definitive morbidity rates ranging  
from 2.8 to 16.4% [8–10]. Thyroid cancer operations are consist-
ently associated with higher complication rates than operations  
performed for benign disease. While esophageal perforation may  
occur spontaneously, most studies implicate iatrogenic causes in  
the majority of cases [2, 4]. Other causes include blunt and pene-
trating trauma, Boerhaave syndrome, malignancy and inadvert-
ent injury during surgery [4]. Esophageal perforations have  
been reported in association with pneumonectomy, vagotomy,  
hial hernia repair, cervical spine operations and atrial surgery.

The clinical spectrum of esophageal perforation is broad.  
Commonly presenting signs and symptoms include chest pain,  
dysphagia, dyspnea, subcutaneous emphysema and epigastric  
pain [3]. In the setting of recent endoscopy or surgery, these clin-
ical manifestations should raise suspicion for esophageal perfor-
ation. Because of variability in clinical presentation, however,  
early diagnosis is often difficult, which may lead to treatment de-
lays. Chest and neck radiographs should be obtained immediate-
ly, and in those patients whose clinical presentation and radiography  
are suggestive of esophageal perforation, CT or water-soluble con-
trast esophagram should be performed for definitive diagnosis [3].

Traditionally, esophageal perforations have been managed  
operatively [1], depending on the location and nature of the in-
jury. Conservative management, which includes bowel rest,
nasogastric tube placement and broad-spectrum antibiotics, has been described for select patients with well-contained perforations, minimal contamination and no underlying malignancy, obstruction or sepsis. The role of conservative management is limited, however, since most esophageal perforations are not self-contained and therefore require operative intervention [2]. Traditional teaching emphasizes the importance of intervention within 24 h of perforation, and a recent review found a near doubling of mortality when treatment is delayed by more than 24 h [3]. Prompt diagnosis and intervention continue to be of critical importance.

Esophageal perforation is a life-threatening complication with a high mortality rate, and must be promptly diagnosed and appropriately managed to prevent further complications and death.

CONFLICT OF INTEREST STATEMENT
None declared.

REFERENCES