Surgical treatment of acquired tracheocele

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Abstract
Acquired tracheoceles are rare clinical entities that can cause a variety of chronic and recurrent aerodigestive tract symptoms. The management of acquired tracheoceles is primarily conservative, but surgical intervention may be indicated for patients with refractory symptoms. We present a case of acquired tracheocele and describe a method of successful surgical management.

Introduction
Acquired tracheoceles are rare, as fewer than 30 cases have been reported in the world literature. Patients can present with a variety of symptoms, including chronic cough, intermittent dysphagia, vocal fold paralysis, and difficulty with intubation or ventilation during general anesthesia. Because of the rarity of these lesions, there is a paucity of information on surgical treatment. We report a new case of acquired tracheocele and describe a successful method of surgical management.

Case report
A 58-year-old man was referred to us from another facility for evaluation of an intermittent productive cough, dysphagia, and worsening dyspnea. His symptoms had been present for more than 1 year. His medical history was significant for gastroesophageal reflux disease, hypertension, chronic obstructive pulmonary disease, and atrial fibrillation. He reported a smoking history in excess of 100 pack-years, and he occasionally drank alcohol. His medications included fluticasone, albuterol, tamsulosin, diltiazem, digoxin, esomeprazole, and loratadine. He also took 2 liters of oxygen via nasal cannula on an as-needed basis.

Physical examination detected an ill-defined fullness in the right paratracheal region. Findings on the remainder of the physical examination and on flexible fiberoptic endoscopy were unremarkable. Chest radiographs detected a collection of air in the right cervical region that was contiguous with the trachea (figure 1, A). Computed tomography (CT) demonstrated a 2 × 2.5-cm air-filled structure that had a small amount of fluid at its base (figure 1, B). This structure was connected to the right posterolateral aspect of the trachea at the level of the first tracheal ring.

We performed an elective surgical resection of the lesion with the patient under general anesthesia. A transverse cervical incision was made below the level of the cricoid cartilage. The strap muscles were divided on the right. The recurrent laryngeal nerve was identified and preserved. The tracheocele sac was dissected free from the surrounding tissue. The sac was transected sharply at its point of origin on the posterolateral wall of the trachea at the level of the first tracheal ring (figure 2). The tracheal wall defect was closed with 3-0 Vicryl sutures in an interrupted fashion. A closed suction drain was placed, and the neck was closed in three layers.

The drain was removed on postoperative day 1, and the patient was discharged home the following day. According to the final pathology report, the sac consisted of respiratory mucosa with an attenuated wall. One year after the resection, the patient reported alleviation of his symptoms, and he exhibited no evidence of recurrence.

Discussion
The first reported tracheocele was described by Rokitansky in 1838 as an outpouching from the right posterolateral wall of the trachea. Acquired tracheoceles are believed to develop as a result of chronic infection and obstruction of the mucous glands. In 1913, Miller described a weak area between the transverse bands of the tracheal muscle through which the mucosa may herniate secondary to increased intraluminal pressure.

Tracheoceles have a predilection for the right side of the trachea, probably as a result of the positional support of the left posterolateral wall by the esophagus. Only 1 case of a left-sided tracheocele has been reported to date. Although tracheoceles are rare, MacKinnon in 1953 reported 10 cases in a series of 867 sequential routine autopsies.

Tracheoceles can be easily differentiated from congenital tracheal diverticula; tracheoceles are usually single sacs with wide openings, whereas diverticula usually arise as
multiple sacs with narrow inlets. Moreover, tracheoceles are lined with respiratory epithelium, but they lack the cartilage, mucous glands, and smooth muscle that are found in congenital lesions. This fact supports the idea that congenital lesions, which are usually symptomatic early in life, arise from vestigial bronchi or lung buds.\(^3\)

Patients with acquired tracheoceles may present with chronic cough, intermittent dysphagia, vocal fold paralysis, and difficulty with intubation or ventilation during general anesthesia.\(^4,5\) Diagnosis is based on radiographic imaging, as physical examination is often nondiagnostic. A chest radiograph may reveal an abnormality that can be further delineated with CT of the neck and chest.

The management of a tracheocele is primarily conservative. Medical management with a mucolytic agent—and antibiotics when indicated—forms the basis of initial therapy. Untreated tracheoceles may cause recurrent infection, aspiration pneumonia, mass effect, dysphagia, vocal fold paralysis, and pneumomediastinum.

Surgical intervention is indicated for patients who have progressively worsening symptoms despite adequate medical therapy. When surgical treatment is being considered, the patient’s overall health status must be evaluated to assess the proposed procedure’s risk/benefit ratio. In the case described herein, we felt that the tracheocele had contributed significantly to our patient’s worsening pulmonary status by acting as a reservoir for purulent secretions. Despite our patient’s medical comorbidities, the resection was performed safely and resulted in an improvement in his overall pulmonary status.

References