Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Gastroenterology

When Swallowing Provokes Cough: Esophagobronchial Fistula Revealed by Upper Gastrointestinal Endoscopy in Sarcomatoid Lung Carcinoma

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DOI: https://doi.org/10.36347/sjmcr.2026.v14i05.041 | **Received:** 02.04.2026 | **Accepted:** 15.05.2026 | **Published:** 18.05.2026

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Abstract **Case Report**

Esophagobronchial fistula is a rare and potentially fatal complication observed in patients with thoracic malignancies. It may result from direct tumor invasion, treatment-induced necrosis, or a combination of both. Sarcomatoid lung carcinoma is an uncommon and aggressive subtype of non-small cell lung cancer, frequently associated with poor prognosis and complex local complications. We report the case of a patient with locally advanced thoracic sarcomatoid carcinoma undergoing concurrent chemoradiotherapy, and a family history of esophageal cancer. The initial clinical presentation included progressive dyspnea, nocturnal dry cough, dysphagia, and rapid weight loss. An initial esophagogastroduodenoscopy was unremarkable. During follow-up, the patient developed worsening dysphagia associated with postprandial cough. Repeat endoscopic evaluation revealed an esophageal orifice with ulcerated periorificial mucosa, suggestive of an esophagobronchial fistula. Thoracic imaging subsequently confirmed the diagnosis.This case underscores the importance of maintaining a high index of suspicion for esophagobronchial fistula in patients with aggressive lung cancers presenting with dysphagia and postprandial cough during treatment. Early recognition and prompt radiological and endoscopic assessment are essential to reduce morbidity and improve clinical outcomes.

Keywords: Esophagobronchial fistula, Sarcomatoid lung carcinoma, Chemoradiotherapy, Dysphagia, Case report.

INTRODUCTION

Esophagobronchial fistula (EBF) is an uncommon but severe complication in patients with thoracic malignancies. Lung cancer represents one of the main etiologies, particularly in advanced stages or following radiotherapy.

Sarcomatoid lung carcinoma is a rare histological subtype of non-small cell lung cancer characterized by aggressive behavior, rapid progression, and resistance to conventional therapies. The occurrence of EBF during chemoradiotherapy in such patients is exceptional and poses significant diagnostic and therapeutic challenges.

We report a case of EBF revealed by dysphagia and postprandial cough in a patient with sarcomatoid bronchogenic carcinoma undergoing concurrent chemoradiotherapy.

CASE PRESENTATION

A 57-year-old male with a history of type 2 diabetes mellitus on oral antidiabetics and chronic tobacco use (30 pack-years) presented with progressive dyspnea (mMRC grade 3), nocturnal dry cough with emetic episodes, dysphagia, and a 6 kg weight loss over one month. Family history was notable for esophageal cancer in a sister.

Clinical examination revealed left cervical lymphadenopathy; otherwise, unremarkable. Biopsy of the lymph node in September 2025 confirmed locally advanced thoracic sarcomatoid carcinoma. The patient commenced concurrent chemoradiotherapy.

An initial upper gastrointestinal endoscopy performed several months prior showed no abnormalities. However, with progressive dysphagia and the onset of postprandial cough, repeat endoscopy revealed an orifice approximately 29 cm from the dental arches with ulcerated periorificial mucosa, suggestive of an esophagobronchial fistula (Figure 1). Subsequent thoracic computed tomography confirmed the presence

of a right esophagobronchial fistula (Figure 2), and revealed findings consistent with aspiration pneumonia (Figure 3), and demonstrated the previously known right hilar mass (Figure 4).

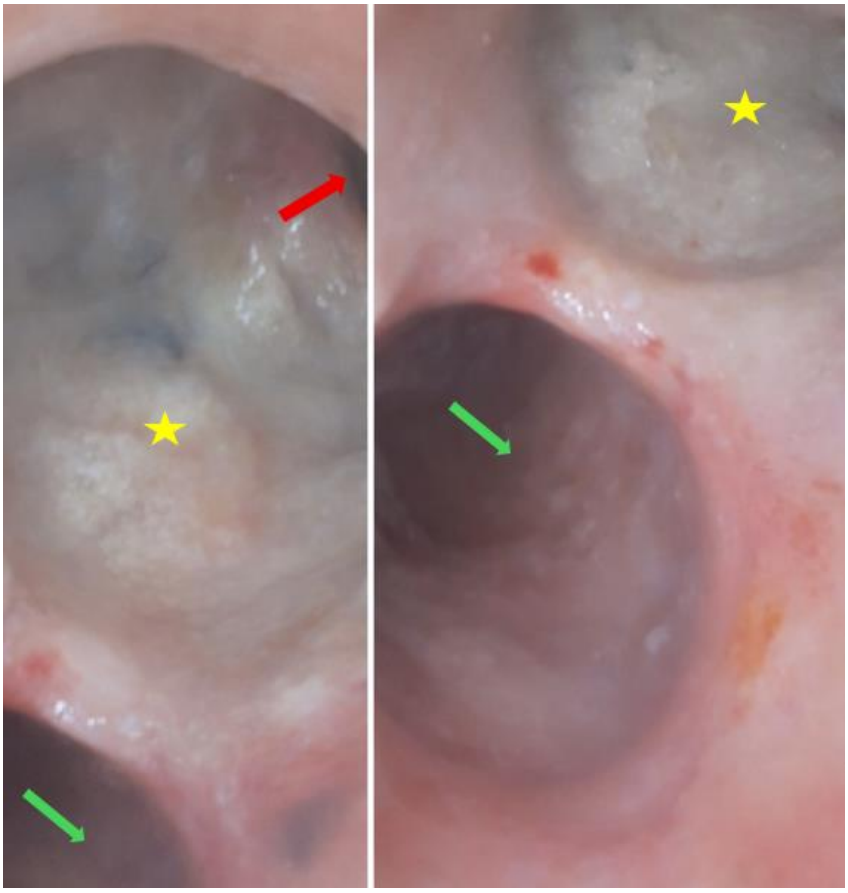

Figure 1: Endoscopic image of the oesophagobronchial fistula (Green arrow: esophageal lumen, red arrow: internal fistula orifice, yellow star: fistulous tract)

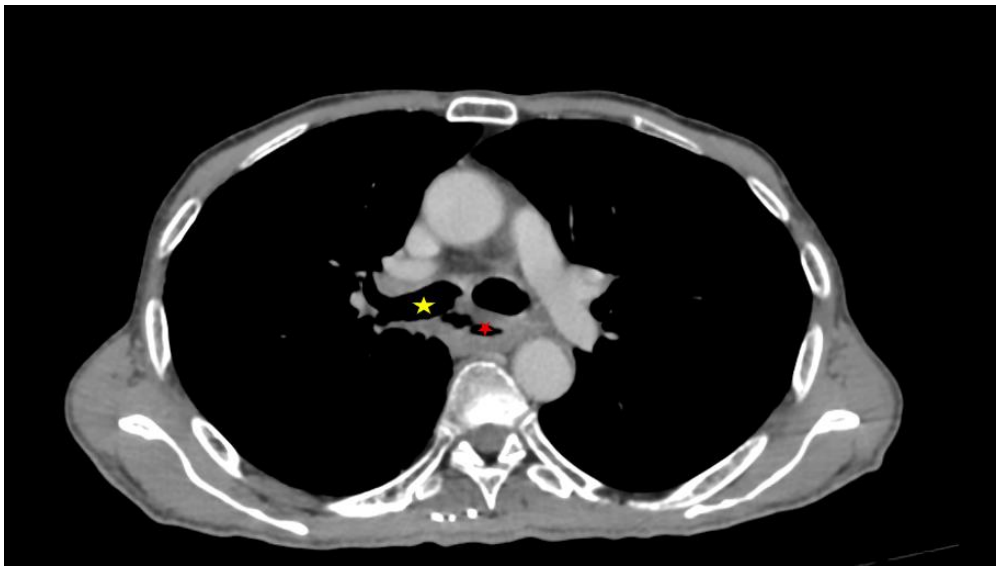

Figure 2: Axial contrast-enhanced CT image demonstrating communication between the oesophagus (red star) and bronchial tree (yellow star) consistent with an oesophagobronchial fistula

Figure 3: Axial chest CT scan demonstrating posterior basal consolidation with associated bronchiolitis, suggestive of aspiration pneumonia.

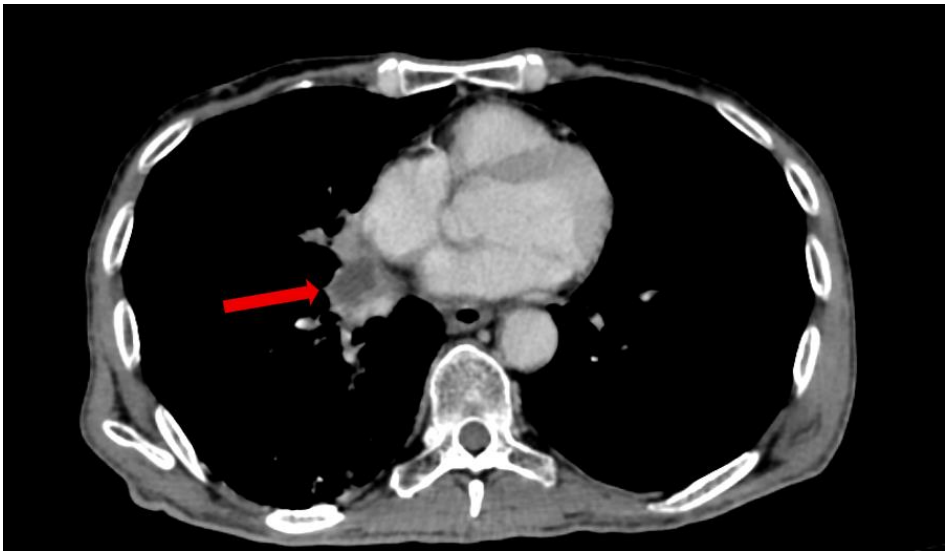

Figure 4: Axial chest CT image showing the known right hilar mass with spiculated margins and periesotracheal fat infiltration (Red arrow)

DISCUSSION

Introduction

Esophagobronchial fistula (EBF) is a rare and serious pathological communication between the esophagus and the bronchial tree. It represents a devastating clinical condition that may result in significant morbidity and mortality due to recurrent aspiration, pneumonia, and nutritional compromise. Respiratory–digestive tract fistulas are most commonly described in association with esophageal carcinoma, where they may arise both from direct tumor invasion and as a complication of therapeutic interventions such as chemoradiotherapy. The incidence of esophageal fistula in esophageal cancer patients treated with definitive chemoradiotherapy has been reported to range from approximately 10 % to nearly 30 % in some series, particularly when the tumor invades adjacent mediastinal structures [1].

Pathophysiology

In contrast, esophagobronchial fistulas complicating primary lung cancers are far less frequent. Cases have been documented in various histological subtypes of lung malignancy, including squamous cell carcinoma and other non-small cell lung cancers, with the fistula occurring during or after multimodal therapy [2] . Recent reports also demonstrate that fistulas can develop in the context of modern oncologic agents, including chemotherapy and immunotherapy

combinations [3]. Despite these isolated reports, the mechanism underlying EBF formation remains controversial and may involve a combination of direct tumor necrosis, local tissue ischemia, or treatment-induced injury.

Tumor-related factors include direct invasion and necrosis of the esophageal or bronchial wall, while treatment-related factors include radiation-induced tissue injury, mucosal ulceration, and impaired healing caused by cytotoxic chemotherapy [1]. In this case, the exact etiology of the fistula remains uncertain, as it could be secondary to the aggressive tumor itself, treatment-induced tissue necrosis, or a combination of both. This uncertainty underscores the importance of careful clinical monitoring during chemoradiotherapy, particularly in patients with high-risk features such as sarcomatoid histology, large tumor burden, and prior comorbidities like diabetes mellitus.

Clinical aspects

From a clinical perspective, the presentation of malignant esophagobronchial fistula is often insidious. Symptoms are typically progressive and nonspecific, which may delay diagnosis. Dysphagia is usually the earliest manifestation, followed by coughing episodes triggered or exacerbated by swallowing, particularly after liquid or semi-liquid intake. This so-called postprandial cough is highly suggestive of an abnormal communication between the digestive and respiratory tracts [4].

Associated features such as dyspnea, recurrent respiratory infections, nocturnal cough, and weight loss further reflect the combined impact of aspiration and advanced malignancy. In our patient, the association of worsening dysphagia with postprandial cough constituted a pivotal clinical clue.

Thoracic sarcomatoid carcinoma is an uncommon subtype of non-small cell lung cancer, accounting for less than 1% of cases, and is characterized by marked aggressiveness, rapid locoregional extension, and limited sensitivity to systemic therapy [5]. These biological characteristics favor early involvement of mediastinal structures, including the esophagus and bronchial tree, thereby increasing the risk of fistulization during the natural course of the disease or under oncological treatment.

Endoscopic Features

Upper gastrointestinal endoscopy remains a key diagnostic tool, allowing direct assessment of the esophageal mucosa.

In the present case, the initial upper gastrointestinal endoscopy performed early in the disease course was normal, despite patient-reported dysphagia, highlighting that early fistula formation may be subtle or endoscopically unapparent. Subsequent upper gastrointestinal endoscopy, prompted by the onset of postprandial cough and worsening dysphagia, revealed a definitive orifice with surrounding ulcerated mucosa, confirming the suspected EBF. This underscores the diagnostic value of repeat endoscopy in patients with persistent or evolving symptoms.

Beyond diagnosis, upper gastrointestinal endoscopy allows characterization of the fistula's location, size, and mucosal condition, which are critical for planning interventions such as endoscopic stenting or clipping. In selected patients, therapeutic endoscopy can provide symptom relief, prevent aspiration, and enable enteral nutrition without the need for immediate surgery. Moreover, endoscopy can facilitate biopsy of the surrounding mucosa to rule out tumor progression or treatment-related necrosis.

Finally, upper gastrointestinal endoscopy is minimally invasive, widely available, and repeatable, making it an essential tool for monitoring the evolution of EBFs during follow-up. In combination with radiological imaging, endoscopy ensures accurate diagnosis, staging, and individualized management planning, particularly in complex cases involving aggressive tumors such as sarcomatoid lung carcinoma.

Imaging findings:

Imaging plays a pivotal role in the detection and evaluation of esophagobronchial fistulas, particularly in patients with thoracic malignancies, in whom clinical presentation may be nonspecific or misleading. Contrast-enhanced thoracic computed tomography (CT) is considered the cornerstone of radiological assessment, as it allows detailed visualization of mediastinal structures, tumor extension, and relationships with adjacent organs. Typical CT findings may include direct evidence of an abnormal communication between the esophagus and the bronchial tree, focal interruption of the esophageal wall, presence of air within the mediastinum, or leakage of oral contrast into the airway.

Beyond direct signs, CT imaging is essential for identifying indirect manifestations of fistulization, such as recurrent aspiration pneumonia, segmental or lobar consolidations, ground-glass opacities, or bronchiectasis secondary to chronic aspiration. Imaging also provides crucial information regarding tumor progression, post-radiotherapy tissue necrosis, and inflammatory changes induced by chemoradiotherapy, all of which are recognized contributors to fistula development.

In selected situations, contrast esophagography may complement CT by outlining the fistulous tract and confirming esophagorespiratory communication, particularly when CT findings are inconclusive [2]. Overall, imaging constitutes an indispensable component of the diagnostic strategy, guiding therapeutic decision-making, evaluating complications, and assisting in follow-up assessment.

Therapeutic Management:

Management of EBF is challenging and requires a multidisciplinary approach. Treatment options depend on the patient's general condition, tumor stage, and fistula characteristics. Endoscopic interventions, such as esophageal or bronchial stenting, can provide symptom relief and prevent aspiration, while surgery is often reserved for selected cases. Supportive care, including nutritional optimization and infection control, remains essential

Endoscopic placement of a covered self-expanding esophageal stent is currently considered the treatment of choice in most cases, as it allows rapid occlusion of the fistula and symptomatic relief. When airway compromise is significant, combined esophageal and bronchial stenting may be required. Nutritional support is essential and may necessitate enteral feeding via gastrostomy or jejunostomy if oral intake cannot be safely resumed.

Surgical repair is rarely feasible due to the advanced stage of the malignancy and the poor general condition of affected patients [6]. Ultimately, prognosis is largely determined by the underlying tumor rather than by the fistula itself.

CONCLUSION

In conclusion, although esophagobronchial fistula is an infrequent complication in sarcomatoid lung carcinoma, early detection is crucial to enable timely management and reduce related morbidity. Additional studies are needed to better identify risk factors and to optimize therapeutic strategies in this patient population. The presence of persistent or newly emerging digestive and respiratory symptoms in individuals with thoracic malignancies should prompt thorough reassessment, even when previous evaluations were normal. Early diagnosis plays a central role in optimizing supportive care, enhancing patient comfort, and potentially improving clinical outcomes.

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