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

Respiratory Medicine

Mucoepidermoid Carcinoma of the Tracheobronchial Tree: A Rare and Challenging Case in Interventional Pulmonology

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DOI: https://doi.org/10.36347/sjmcr.2025.v13i01.019 | **Received:** 20.11.2024 | **Accepted:** 26.12.2024 | **Published:** 13.01.2025

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Abstract **Case Report**

Mucoepidermoid carcinoma of the tracheobronchial tree is extremely rare and presented as similar to other respiratory diseases. In our case, a 19-year-old lady presented with cough with mucoid sputum production, wheezing, and breathlessness for 6 months. She also complained of low-grade fever for 1 month. Initially treated with antibiotics and bronchodilators but treatment was not satisfactory. Then after further workup, it showed tracheal growth covering 80% of the lumen. An urgent bronchoscopic debulking was done by Snare and Argon plasma coagulation. A complete resection was done and no subsequent surgical excision was required. Histopathology showed that it was mucoepidermoid carcinoma. After 1 year of follow up showed an excellent prognosis and no further growth was seen. Interventional pulmonology can play a big role shortly. A good expertise in interventional pulmonology is a prerequisite.
Keywords: Mucoepidermoid Carcinoma, Tracheal Tumor, Interventional Pulmonology, Airway Obstruction, Rare Disease.

INTRODUCTION

Mucoepidermoid carcinoma (MEC) is a rare, low- to intermediate-grade malignant neoplasm that primarily arises from the salivary glands. However, it has been reported in various other locations, including the trachea, bronchi, and lungs. The occurrence of MEC in the trachea is exceedingly rare, with only a small number of cases documented in the literature. Typically, MEC is associated with slow growth and a favourable prognosis when diagnosed early and treated appropriately. It can present with nonspecific respiratory symptoms, such as cough, wheezing, and shortness of breath, which may lead to delays in diagnosis, especially when more common respiratory conditions like asthma or chronic bronchitis are suspected. Tracheal MEC may often present as an asymptomatic or minimally symptomatic lesion, which complicates its diagnosis. Its clinical presentation depends largely on the size and location of the tumor, with large lesions causing airway obstruction and potentially life-threatening symptoms such as respiratory distress. As it is a rare condition, its diagnosis frequently requires a high index of suspicion, supported by imaging studies such as computed tomography (CT) and confirmed through bronchoscopy and histopathological examination. Given its rarity and the challenge in clinical differentiation from other respiratory diseases, clinicians need to consider tracheal tumors like MEC in the differential diagnosis of persistent respiratory symptoms, particularly in young, otherwise healthy individuals who do not respond to standard treatments. Early detection, combined with prompt surgical intervention is crucial for a favourable outcome. This case report describes a 19-year-old female who presented with chronic respiratory symptoms and was diagnosed with mucoepidermoid carcinoma of the trachea. The management and postoperative outcome of this rare malignancy are discussed in detail, with an emphasis on the importance of recognizing rare causes of airway obstruction in clinical practice [1].

CASE PRESENTATION

A 19-year-old female presented with a 6-month history of persistent cough, worsened at night, with seasonal variation. The cough was associated with mucoid sputum production, particularly in the morning. Additionally, the patient reported low-grade fever for the

past month and progressive shortness of breath over the last 6 months, more pronounced at night and while lying flat. Three months ago, she was admitted to a local hospital for acute shortness of breath.

The patient's medical history was unremarkable. On examination, her respiratory rate was 26 breaths per minute, and wheezing was audible. Bilateral coarse crackles were present, which were altered with coughing. No palpable lymph nodes were found. Blood tests showed neutrophilic leukocytosis and a raised eosinophil count. A high-resolution CT scan of the chest revealed bilateral central bronchiectasis and extensive bronchiolitis, along with a fungal ball in the tracheal lumen. Sputum for Gene-Xpert MTB/RIF was negative, and bacterial cultures yielded no growth.

Fiber-optic bronchoscopy revealed a large cauliflower-like growth arising from the posterior wall of the trachea, which obstructed about 80% of the lumen. There was no evidence of mediastinal invasion or distant metastasis. The findings suggested a neoplastic process and a tracheal tumor was suspected.

Management and Procedure

The patient underwent debulking of the tracheal growth under sedation with IV Midazolam and Propofol. The tumor was excised using a snare and Argon plasma coagulation. The procedure was successful, and the patient experienced significant improvement in her symptoms postoperatively, including resolution of the cough and wheezing. There were no complications during or after the procedure.

Histopathological Findings

Histopathological examination of the excised tissue revealed a tumor composed of predominantly intermediate cells, with a size and appearance between basal and larger epidermoid cells. These cells were arranged in sheets and clusters, with the presence of mucinous cells. The tumor exhibited low-grade nuclear atypia and prominent nucleoli. Respiratory epithelium lined the tissue, which was consistent with mucoepidermoid carcinoma.

Follow-up and Outcome

The patient was monitored for one year after the procedure, with no recurrence of the tumor. The patient remained symptom-free and had no evidence of metastasis or recurrence on follow-up imaging. She resumed normal daily activities and reported substantial improvement in her quality of life.

DISCUSSION

Among all tumors of the salivary gland mucoepidermoid carcinoma is the most common in adults and children [2], but in the lung it is extremely rare, comprising only 0.1–0.2% of primary lung cancers and less than 1% of primary malignant bronchial tumors, that originates from the submucosal glands of the tracheobronchial trees [3, 4]. Usually presented with cough, hemoptysis, wheezing, and post-obstructive pneumonia. Sometimes MEC can mimic that of bronchial asthma [5]. The constitutional symptoms of pain, weight loss, and malaise, which were frequently observed in the series by Turnbull and colleagues [6], are categorized into high-grade or low-grade mucoepidermoid carcinomas based on their histologic features. Low-grade tumors typically have a cystic component, and microscopic invasion into the pulmonary parenchyma is uncommon. Mild cytologic atypia may be present, and metastasis to regional lymph nodes is rarely seen. Radical surgery, similar to lung cancer treatment, is often performed for mucoepidermoid carcinomas (MECs) of the lung, with video-assisted thoracoscopic surgery (VATS) becoming increasingly common in recent years [7]. Treatment may involve lobectomy, sleeve resection, local resection, segmental resection, or even endoscopic removal. When complete resection is achieved, most patients experience a favorable outcome [8]. High-grade MEC carries a higher risk of distant metastasis and worse prognosis even with surgery [2-9].

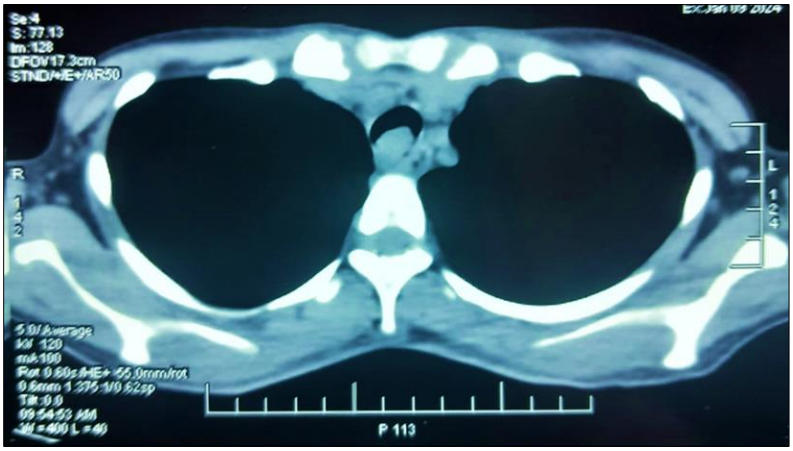

Figure I: Computed tomography (CT) findings revealed a smooth surface soft tissue mass measuring 20×18 mm on the posterior wall of the thoracic trachea

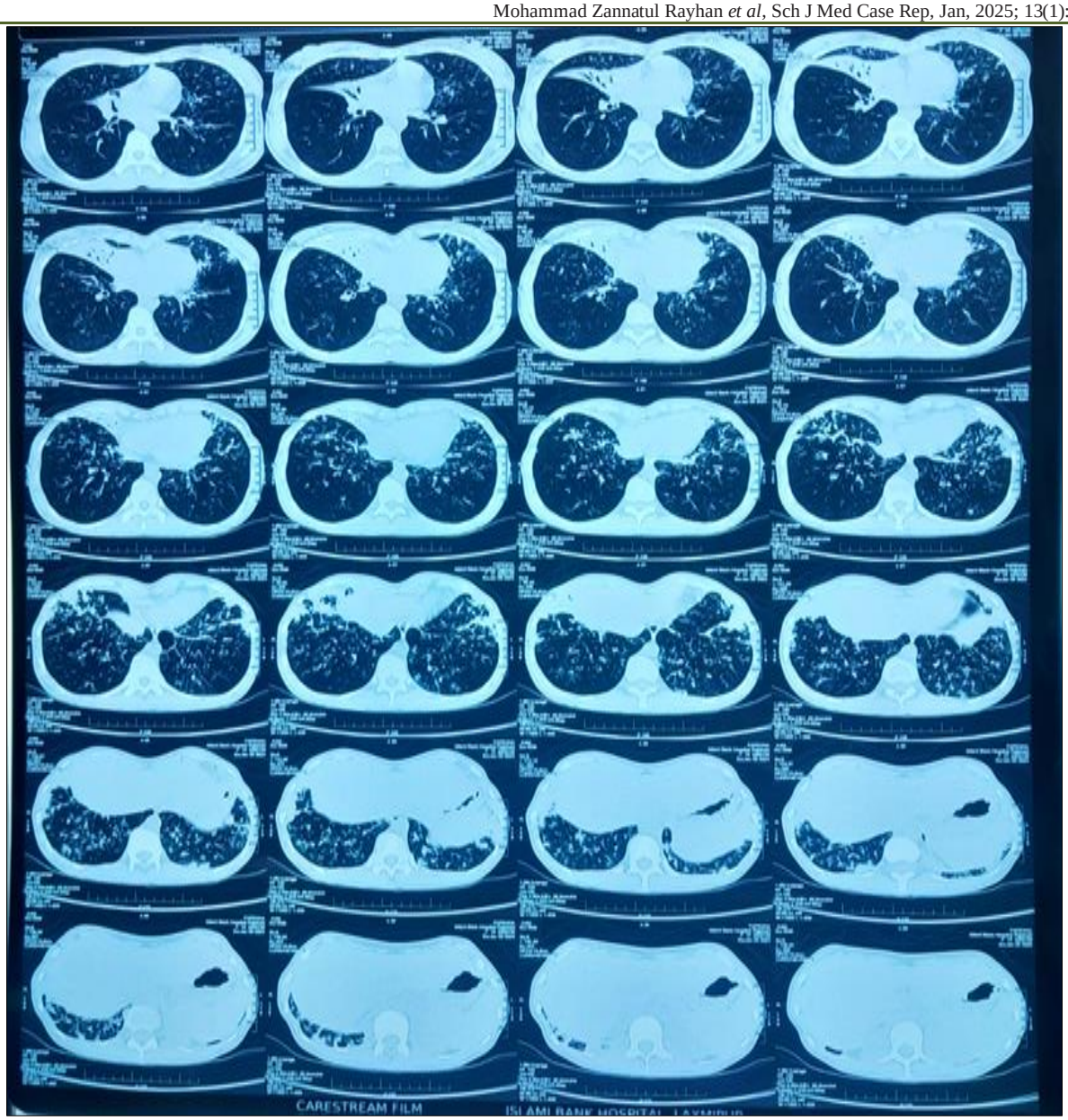

Figure II: A multi axial HRCT chest showing extensive thick-walled dilated bronchi at bilateral lower lobes and perihilar regions. Extensive tree in bud density areas is seen in all segments of both lower lobes. Areas with air bronchogram seen in right middle lobe with evidence of volume loss.

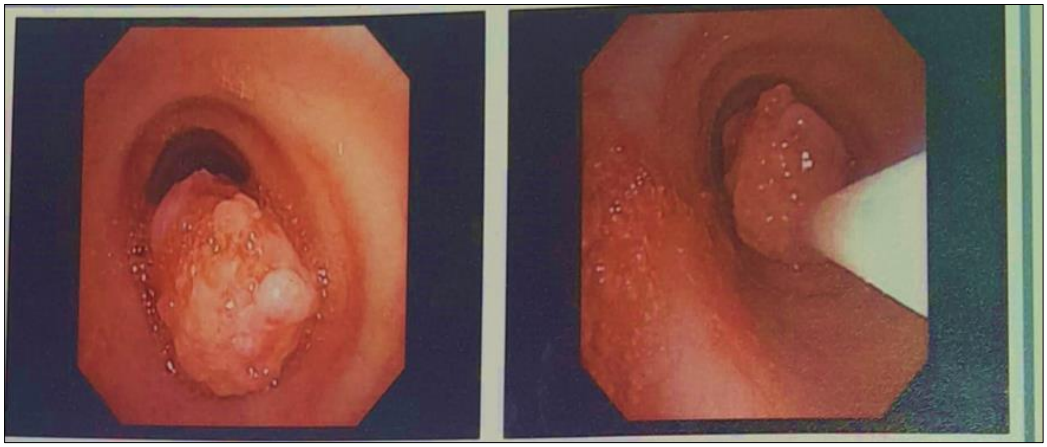

Figure III: Bronchoscopy showed a large cauliflower like growth was seen arising from posterior wall of trachea (A) Tumor accounted about 80% area of tracheal lumen and bronchoscopy probe cannot passing beyond the probe (B)

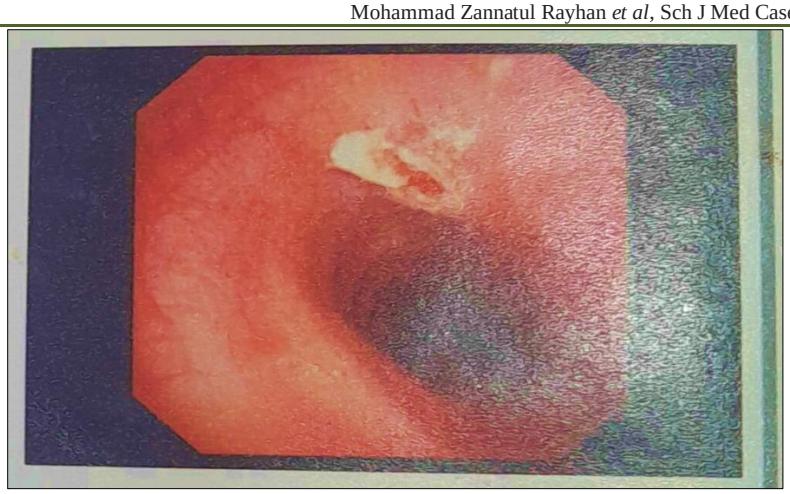

Figure IV: Bronchoscopy showed a cutting edge after debulking by Snare and Argon plasma coagulation

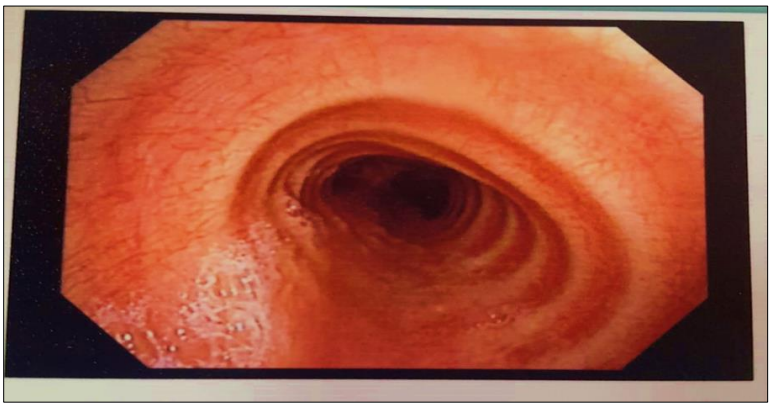

Figure V: Bronchoscopy after 1 year of debulking procedure showed normal findings. No growth found.

CONCLUSION

Mucoepidermoid carcinoma of the trachea, though rare, should be considered in young patients with persistent and unexplained respiratory symptoms. This case illustrates the importance of early diagnosis through imaging and fiber-optic bronchoscopy, followed by prompt surgical resection. With appropriate treatment, the prognosis can be favorable, as demonstrated in this patient who had no recurrence after one year of follow-up.

REFERENCES

1. Mondal, A., Bairwa, J. K., Joshi, M., & Singh, S. (2024). Primary Mucoepidermoid Carcinoma of Trachea− A Rare Cause of Chronic Cough in the Young. *The Journal of Association of Chest Physicians*, *12*(3), 137-139.
2. Jones, A. V., Craig, G. T., Speight, P. M., & Franklin, C. D. (2008). The range and demographics of salivary gland tumours diagnosed in a UK population. *Oral oncology*, *44*(4), 407-417.
3. Saleh, W. K. A., Aljabbari, O., & Ramchandani, M. (2015). Mucoepidermoid carcinoma of the tracheobronchial tree. *Methodist DeBakey cardiovascular journal*, *11*(3), 192.
4. Shen, C., & Che, G. (2014). Clinicopathological analysis of pulmonary mucoepidermoid carcinoma. *World Journal of surgical oncology*, *12*, 1-6.
5. Patel, R. G., & Norman, J. R. (2004). Unilateral hyper lucency with left lower lobe mass in a patient with bronchial asthma. *Chest*, *107*, 569–570. doi: 10.1378/chest.107.2.569.
6. Brambilla, E., Travis, W. D., Colby, T. V., Corrin, B., & Shimosato, Y. (2001). The new World Health Organization classification of lung tumours. *European respiratory journal*, *18*(6), 1059-1068.
7. Santambrogio, L., Cioffi, U., De Simone, M., Rosso, L., Ferrero, S., & Giunta, A. (2002). Video-assisted sleeve lobectomy for mucoepidermoid carcinoma of the left lower lobar bronchus: a case report. *Chest*, *121*(2), 635-636.
8. Pires, F. R., De Almeida, O. P., De Araújo, V. C., & Kowalski, L. P. (2004). Prognostic factors in head and neck mucoepidermoid carcinoma. *Archives of Otolaryngology–Head & Neck Surgery*, *130*(2), 174-180.
9. Kawano, O., Yuki, D., Fukai, I., & Tsubota, N. (2015). Successful treatment of mucoepidermoid carcinoma in the left main bronchus. *Surgical Case Reports*, *1*, 1-3.