SELÇUK TIP DERGİSİ
SELCUK MEDICAL JOURNAL
DOI:http:/dx.doi.org/10.30733/std.2025.01843
Selcuk Med J 2025;41(4): 222-224

OPEN

OLGU SUNUMU / CASE REPORT

Tracheal Diverticulum: A Case Series of Three Patients Presenting with Chronic Cough

Trakeal Divertikül: Kronik Öksürük ile Başvuran Üç Olgunun Sunumu

Abdurrahman Koc[1]

[1]Meram State Hospital, Department of Chest Diseases, Konya, Türkiye

ÖZET

Trakeal divertikül (TD), trakea duvarından posterolateral yönde gelişen, genellikle asemptomatik seyreden, nadir görülen bir solunum yolu anomalisi olup çoğu zaman tesadüfen saptanır. Ancak bazı olgularda kronik öksürük, tekrarlayan enfeksiyonlar veya hava yolu obstrüksiyonu gibi semptomlara yol açabilir. Bu çalışmada, kronik öksürük şikayeti ile başvuran üç erişkin hastada saptanan trakeal divertikül olguları sunulmuştur. Tüm hastalar bilgisayarlı toraks tomografisi ile değerlendirilmiş ve tüm hastalara bronkoskopi uygulanmıştır. Divertiküller sağ posterolateral trakea komşuluğunda yer almakta olup, semptomların hafif olması nedeniyle konservatif yaklaşım tercih edilmiştir. TD, nadir görülse de kronik öksürük şikayeti olan hastalarda ayırıcı tanıda göz önünde bulundurulmalı, BT ve bronkoskopi gibi görüntüleme yöntemleri ile tanı doğrulanmalıdır.

Anahtar Kelimeler: Bronkoskopi, kronik öksürük, toraks bilgisayarlı tomografi, trakeal divertikül

ABSTRACT

Tracheal diverticulum (TD) is a rare respiratory tract anomaly characterized by an outpouching from the posterolateral wall of the trachea. It is usually asymptomatic and often detected incidentally on imaging. However, in some cases, TD may lead to symptoms such as chronic cough, recurrent respiratory infections, or airway obstruction. In this case series, we present three adult patients who were evaluated for chronic cough and diagnosed with tracheal diverticulum. All patients underwent thoracic computed tomography (CT), and all of them also had bronchoscopy. The diverticula were located adjacent to the right posterolateral aspect of the trachea. Due to the mild nature of symptoms in all cases, a conservative treatment approach was preferred. Although TD is uncommon, it should be considered in the differential diagnosis of patients presenting with chronic cough, and the diagnosis should be confirmed using imaging methods such as CT and bronchoscopy.

Keywords: Bronchoscopy, chronic cough, thoracic computed tomography, tracheal diverticulum

Geliş Tarihi/Received: 11 April/Nisan 2025 **Kabul Tarihi/Accepted:** 11 October/Ekim 2025 **Yayın Tarihi/Published Online:** 12 December/Aralık 2025

INTRODUCTION

Tracheal diverticulum is a rare anatomical anomaly defined as small, air-filled sacs developing from the posterolateral wall of the trachea (1,2). It is typically localized on the right posterolateral tracheal wall and is often incidentally discovered during thoracic CT examinations (2,3). However, large or infected diverticula can become clinically significant, causing symptoms such as chronic cough, sputum production, voice changes, or recurrent respiratory infections (4). It should be considered in the differential diagnosis of patients presenting with chronic cough and similar non-specific respiratory symptoms (4,5). Flexible bronchoscopy represents a valuable diagnostic approach in patients with chronic cough of undetermined etiology, as it enables visualization of anatomical and functional abnormalities and allows for culture and cellular analysis (6). This case series describes three adult patients presenting with chronic cough who were diagnosed with tracheal diverticulum, evaluating their clinical, radiological, and bronchoscopic characteristics, along with their management approaches.

CASE

Case 1: A 44-year-old female patient presented with a 15-year history of persistent dry cough. Physical examination and laboratory tests were unremarkable. Thoracic CT revealed a 1.5 × 1 cm diverticulum adjacent to the right posterolateral wall of the trachea. Bronchoscopy showed bulging of the posterior tracheal wall, but no distinct orifice was identified (Figure 1). Given the absence of risk factors, it was considered a congenital TD. The

Sorumlu Yazar/Corresponding Author: Abdurrahman Koc, Meram State Hospital, Department of Chest Diseases, Konya, Türkiye
e-mail: koc.abdurrahman@gmail.com

Atıf yapmak için/ Cite this article as: Koc A. Tracheal Diverticulum: A Case Series of Three Patients Presenting with Chronic Cough. Selcuk Med J 2025;41(4): 222-224

Disclosure: *The author has no financial interest in any of the products, devices, or drugs mentioned in this article. The research was not sponsored by an outside organization. Author has agreed to allow full access to the primary data and to allow the journal to review the data if requested.*

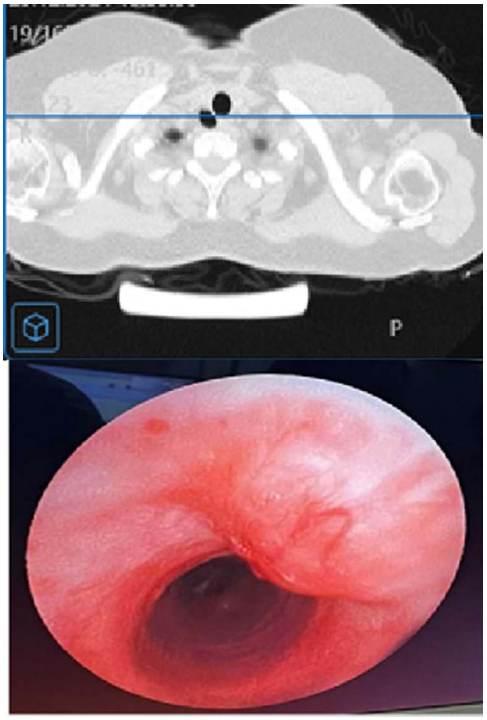

Figure 1. Axial thoracic computed tomography image demonstrating a tracheal diverticulum and bronchoscopic view showing bulging of the posterior tracheal wall (Case 1).

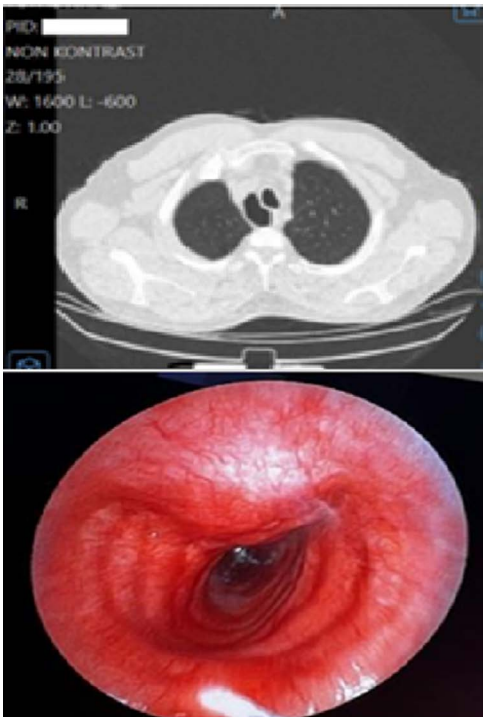

Figure 2. Axial thoracic computed tomography image demonstrating a tracheal diverticulum and bronchoscopic view showing bulging of the posterior tracheal wall (Case 2).

patient was started on conservative treatment, including proton pump inhibitors (PPI) and antacid therapy. Significant improvement in symptoms was noted at the first and third-month follow-up visits.

Case 2: A 67-year-old male patient with a 20 pack-year smoking history presented with a 5-year history of intermittent productive cough. Thoracic CT revealed a 36 × 27 mm diverticulum located on the right posterolateral tracheal wall. Bronchoscopy showed prominent bulging of the posterior wall (Figure 2). A conservative approach was preferred due to the mild nature of his symptoms. The patient was advised to quit smoking. Additionally, mucolytic therapy was initiated for symptoms consistent with chronic bronchitis, and long-acting bronchodilator treatment was prescribed for the mild obstructive impairment observed in pulmonary function tests. Symptom regression was observed at the first and third-month follow-up visits.

Case 3: A 43-year-old male patient, a farmer, with a 20 pack-year smoking history, presented with a 2-year history of cough and intermittent postnasal drip. Thoracic CT at the thoracic inlet level revealed a 19 × 16 mm diverticulum adjacent to the right posterolateral trachea. Bronchoscopy showed bulging of the posterior wall (Figure 3). The patient was started on a combination of antihistamines and a leukotriene antagonist. He was also advised to quit smoking. Significant improvement in symptoms was noted at the first and third-month follow-up visits.

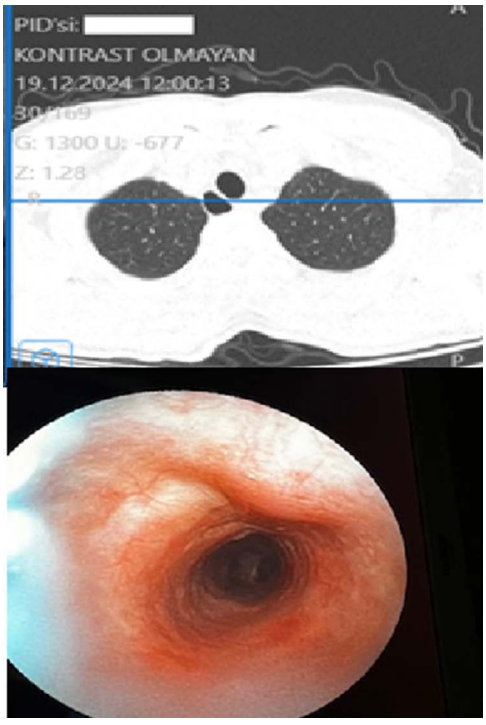

Figure 3. Axial thoracic computed tomography image demonstrating a tracheal diverticulum and bronchoscopic view showing bulging of the posterior tracheal wall (Case 3).

DISCUSSION

Tracheal diverticulum (TD) is defined as a rare but clinically significant airway anomaly, typically localized on the right posterolateral tracheal wall. TD is classified into two types: congenital and acquired. Congenital diverticula are generally narrow-necked, epithelium-lined pouches, whereas acquired diverticula have wider openings and are associated with a weakened tracheal wall (1). Computed tomography (CT) is the gold standard for diagnosing and anatomically evaluating TD. Specifically, thin-slice CT and multiplanar reconstructions clearly demonstrate the diverticulum's connection to the trachea and its location (2). Bronchoscopy is useful for directly assessing the connection between the tracheal lumen and the diverticulum; however, this connection may not always be detectable via bronchoscopy (3).

Although tracheal diverticula are often asymptomatic, they can lead to serious complications in some cases. Infected diverticula can result in recurrent bronchitis, pneumonia, productive cough, airway obstruction, and, rarely, mediastinitis. Furthermore, anesthesia-related complications such as diverticulum rupture and subcutaneous emphysema during intubation have been reported in the literature (2,4). Careful monitoring of patients is recommended given these risks. Conservative treatment (symptomatic approach, bronchodilators, antibiotics, physiotherapy, etc.) may be sufficient for patients with mild symptoms, whereas surgical resection should be considered in cases with severe symptoms or a risk of complications (5).

CONCLUSION

Tracheal diverticulum, though rare, should be considered in the differential diagnosis of patients presenting with non-specific respiratory complaints such as chronic cough. The diagnosis should be confirmed with thoracic CT and, if necessary, bronchoscopy. Treatment should be individualized based on the patient's symptoms. While successful outcomes can be achieved with conservative treatment, surgical intervention may also be preferred in certain situations. Early diagnosis and appropriate management can positively impact the patient's prognosis.

Conflict of interest: *The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.*

Financial conflict of interest: *Author declares that he did not receive any financial support in this study.*

Address correspondence to: *Abdurrahman Koc, Meram State Hospital, Department of Chest Diseases, Konya, Türkiye*
e-mail: *koc.abdurrahman@gmail.com*

REFERENCES

1. Soto-Hurtado EJ, Peñuela-Ruíz L, Rivera-Sánchez I, et al. Tracheal diverticulum: a review of the literature. Lung. 2006;184(6):303-7. doi: 10.1007/s00408-006-0010-7.
2. Tanrivermis Sayit A, Elmali M, Saglam D, et al. The diseases of airway-tracheal diverticulum: a review of the literature. J Thorac Dis. 2016;8(10):E1163-E1167. doi: 10.21037/jtd.2016.10.92.
3. Buterbaugh JE, Erly WK. Paratracheal air cysts: a common finding on routine CT examinations of the cervical spine and neck that may mimic pneumomediastinum in patients with traumatic injuries. AJNR Am J Neuroradiol. 2008;29(6):1218-21. doi: 10.3174/ajnr.A1058.
4. Takhar RP, Bunkar M, Jain S, et al. Tracheal diverticulum: an unusual cause of chronic cough and recurrent respiratory infections. Tuberk Toraks. 2016;64(1):77-82. doi: 10.5578/tt.9700.
5. Sagar AS, Tomeh C, Sagar D, et al. Bronchoscopic Management of Tracheal Diverticulum Using Argon Plasma Coagulation. Ann Am Thorac Soc. 2022;19(3):484-7. doi: 10.1513/AnnalsATS.202108-1001CC.
6. Pekcan S, Köse M, Kiper N, et al. Kronik öksürüklü çocuklarda fleksible bronkoskopi bulguları. Selcuk Tip Derg. 2008;24(4):183-9.