

# Scabbard trachea

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Scabbard trachea is a rare clinical observation, though commonly present in patients with chronic obstructive pulmonary disease. There is coronal narrowing of the intrathoracic part of the trachea resembling a saber sheath. We herein describe a case of scabbard trachea as a sequel of severe chronic obstructive pulmonary disease with the classical computed tomography and bronchoscopy findings.

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### Introduction

Scabbard trachea is an intrathoracic tracheal deformity where the coronal diameter is less than or equal to one-half of its sagittal diameter. Usually the patient is asymptomatic, unless there is greater than 50% reduction in coronal diameter. The diagnosis is made on radiographic and bronchoscopy study. We present a patient who had an acute exacerbation of chronic obstructive pulmonary disease (COPD) with lower respiratory tract infection, incidentally diagnosed to have scabbard tracheal deformity.

### Case report

A 70-year-old man, with a significant smoking history for 40 years, with acute exacerbations twice a year not requiring hospitalization, presented with fever for 15 days associated with dry cough. He complained of chronic cough with expectoration and seasonal exacerbation for the last few years. As the symptoms persisted after taking antibiotics, a computed tomography (CT) thorax was done which showed left lower lobe centrilobular nodules suggesting probable infection. A fiber-optic bronchoscopy was performed, which showed a peculiar appearance of the trachea (Fig. 1). There was diffuse coronal narrowing of the intrathoracic part of the trachea with simultaneous widening of the sagittal diameter. A review of CT images also showed saber-sheath (scabbard) trachea (Fig. 2), which is seen in patients with COPD. Bronchoalveolar lavage grew *Pseudomonas aeruginosa* sensitive to Piperacillin/Tazobactam, which was initiated, with prompt resolution of symptoms. A postbronchodilator spirometry confirmed severe COPD. Bronchoscopic and CT images showed characteristic appearance of scabbard or saber-sheath trachea [1,2], which is considered to be pathognomic of COPD.

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Equipment used and model type: Video bronchoscope: PENTAX EB-1970K MADE IN TOKYO. PFT: COSMED REF C09068-01-99 MADE IN ROME (ITALY). ABG: COBAS b 221 MADE IN US

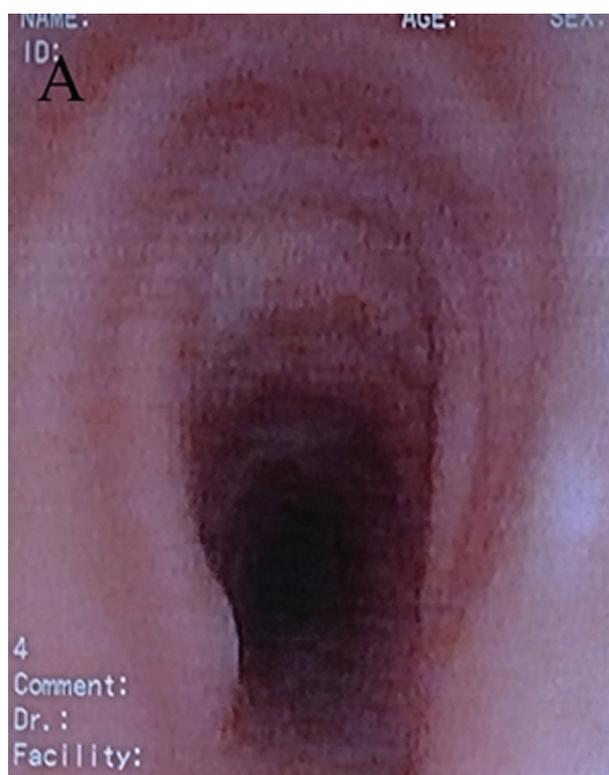
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### Discussion

Scabbard tracheal deformity is commonly seen in patients with COPD. Greene [2] compared 60 men with marked coronal narrowing of intrathoracic trachea with 60 controls and established a strong correlation between scabbard trachea and clinical COPD.

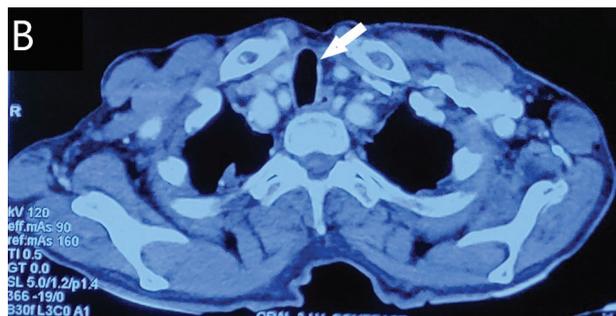
The intrathoracic part of the trachea develops coronal narrowing and sagittal elongation, leading to resemblance to a scabbard or saber. Tracheal index [3], which refers to the ratio of the coronal and sagittal

**Figure 1**



Fiber-optic bronchoscopic image showing scabbard trachea.

Figure 2



Contrast-enhanced computed tomography images showing scabard trachea.

diameter of trachea at the same level, is markedly decreased in saber-sheath trachea. Tracheal index of less than two-thirds is said to have a specificity of 92.9% and sensitivity of 39.1% to diagnose severe obstructive lung disease. Elevated intrathoracic pressure coupled with repeated injury to cartilage inflicted by coughing leads to remodeling of the cartilaginous rings resulting in characteristic shape of the trachea [4]. No essential tracheal weakness is present in patients with COPD, as observed in Rayl [5] in his study on abnormal airway collapse during cough using cine-fluoroscopy. In a study conducted by

Ciccarese and colleagues, it was linked to the functional severity of airway obstruction, but not to other radiological signs of COPD [6]. Thus, evaluation of the trachea at chest radiography in COPD patients is strongly recommended.

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#### Conflicts of interest

There are no conflicts of interest.

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