



## Thoracoscopic resection of a bronchogenic cyst in intradiaphragmatic position: A case report

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### ABSTRACT

Bronchogenic cysts are congenital anomalies arising from the abnormal budding of foregut during gestation. They are usually found in the mediastinum or lung parenchyma. Intradiaphragmatic location of bronchogenic cysts is very rare. We present the computed tomography findings, surgical specimen and pathologic features in a male patient who underwent thoracoscopic excision of an intradiaphragmatic bronchogenic cyst, which was then confirmed by pathology.

**Key words:** Bronchogenic cyst, intradiaphragmatic

### Introduction

Bronchogenic cysts are developmental foregut-derived congenital abnormalities arising from the abnormal budding of foregut between the 26th and 40th days of gestation [1]. They are usually found in the mediastinum or lung parenchyma [2] and are mostly located in the middle mediastinum [3]. Bronchogenic cysts may also be found in the abdominal cavity, retroperitoneum, and neck. Intradiaphragmatic bronchogenic cysts are very rare [4]. They could be in connection with other pulmonary malformations like sequestration or lobar emphysema [5]. We present an unusual case of a left-sided intradiaphragmatic bronchogenic cyst that was found incidentally.

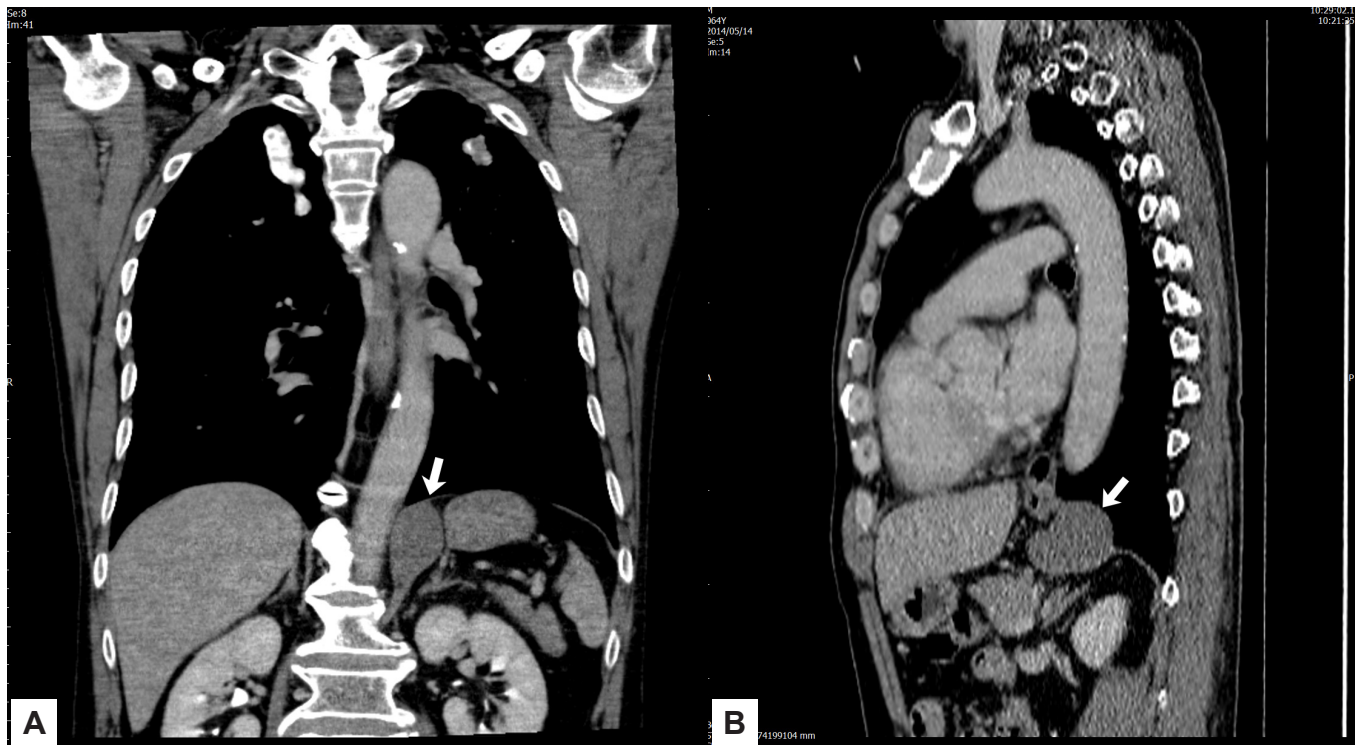
### Case Report

A 64-year-old male presented to the pulmonary clinic for evaluation of chronic productive cough for years without significant shortness of breath. The patient was a smoker with a 40 pack-year history. He did not complain about any abdominal discomfort, and his appetite was fair, too. Twenty years before presentation, he had a diagnosis of pulmonary tuberculosis. His vital signs were stable, and the results of his physical examinations were within normal limits. A subsequent chest computed tomography (CT) revealed a  $2.6 \times 3.6 \times 4.5$  cm mass in the left upper abdominal region, abutting the diaphragm and protruding into the inferior portion of the lung (Figure 1). Attenuation of the lesion was about 40 Houns-

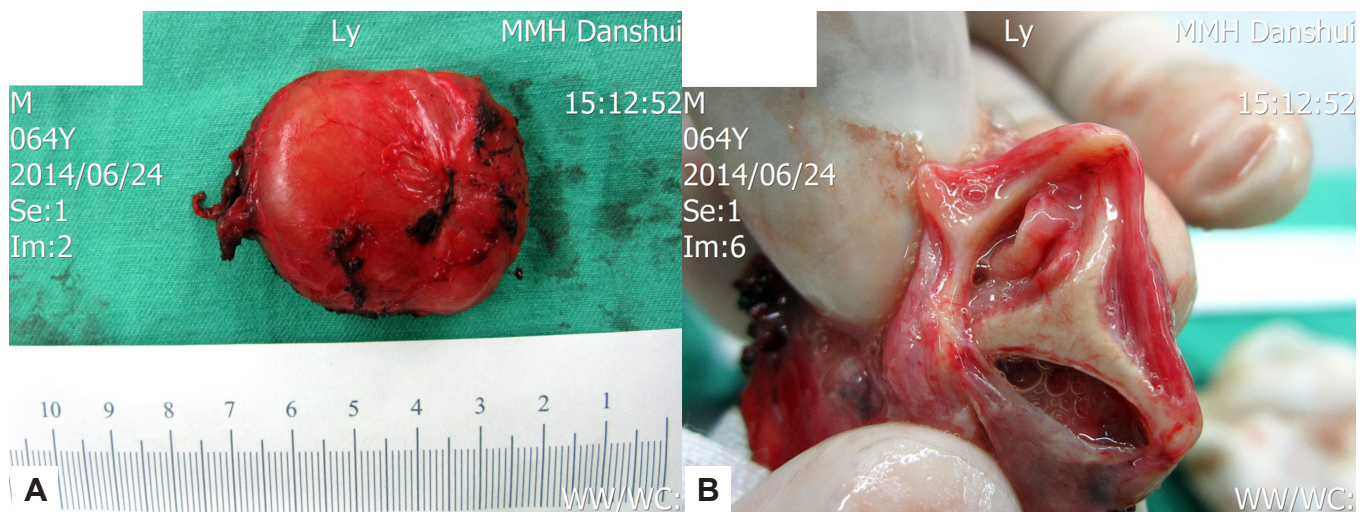
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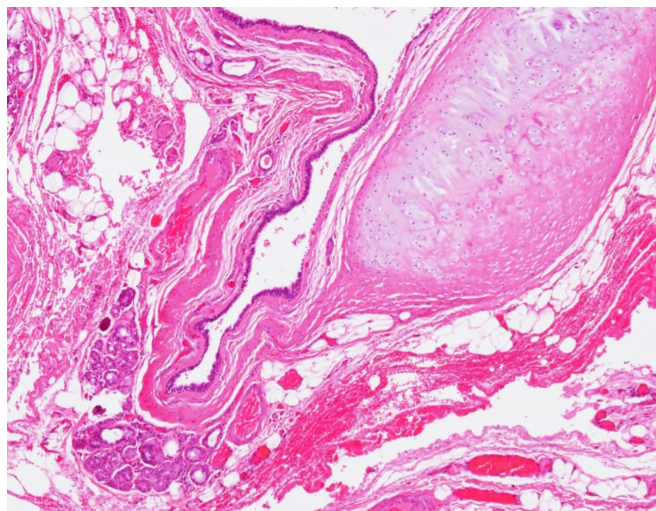
**Figure 1.** Coronal image (A) and sagittal image (B) showing a lobulated soft tissue mass (white arrow) without enhancement in the left upper abdomen abutting the diaphragm and protruding into the inferior portion of the lung.



**Figure 2.** A lobulated soft tissue mass measuring about  $2.6 \times 3.6 \times 4.5$  cm (A); cross-section revealing the cartilage component in the cystic lesion and white sticky fluid (B).

field units (HU), and the consistency was homogenous. There was neither calcification nor enhancement post-contrast within the lesion. The patient underwent video-assisted thoracoscopic excision of the cyst with general anesthesia. Initially, the patient was orally intubated with a double-lumen endotracheal tube. One 4-cm single incision was made followed by the introduction of a wound protector. Insufflation of CO<sub>2</sub> was installed at a pressure of up to 10 mmHg. A 5-mm high-definition camera (Telescope, Olympus) was then inserted with 30-degree angulation for inspecting the thoracic cavity.

After the diaphragm lesion site was both opened and identified, the cyst was excised completely. Hemostasis was achieved, and the estimated blood loss was less than 3 ml. The lesion was cystic with approximately 25 ml of white and viscous fluid (Figure 2A). Also, the cystic lesion had a cartilaginous component (Figure 2B). The pathologic diagnosis was a bronchogenic cyst in the intradiaphragmatic location. Microscopically, the specimen revealed a bronchogenic cyst, resembling normal bronchi, being lined with respiratory-type epithelium and underlying both seromucinous glands and mature



**Figure 3.** Microscopically, the specimen shows a bronchogenic cyst, resembling normal bronchi, lined with respiratory-type epithelium, and underlying both seromucinous glands and mature cartilage (40X).

cartilage (Figure 3). The postoperative recovery was uneventful and the postoperative drainage tube, a 28 Fr. chest tube, was removed after seven days. The patient was discharged ten days after the operation.

### Discussion

Intradiaphragmatic bronchogenic cysts have been reported by Kessler and Maier since 1955 [9]. Most bronchogenic cysts are incidental findings as in this patient. Related symptoms may include pain due to compression of adjacent structures or fever due to infection [6]. The CT findings of bronchogenic cysts can reveal soft tissue or water attenuation. Most cases show homogeneous attenuation; however, heterogeneous attenuation could also be found [3]. Calcification can be seen in approximately 10 percent of bronchogenic cysts cases [3]. In this particular case, there was neither enhancement nor calcification in the cyst, and the attenuation was around 40 HU. A CT scan plays a limited role in the differential diagnosis of bronchogenic cysts, especially when the lesion is located in or below the diaphragm [7]. Therefore, neurogenic tumor, cystic lymphangioma, diaphragmatic tumor, hepatic tumor, esophageal diverticulum, gastrointestinal duplication cyst, cystic pulmonary sequestration, cystic teratoma, or hydatid cyst can be misdiagnosed by imaging studies [4,7].

The histopathologic finding is that the cyst wall is lined with ciliated pseudostratified columnar epithe-

lium resembling the respiratory tract, and containing bronchial mucous glands, cartilage, and smooth muscle. They are filled with the gelatinous, mucoid, or translucent material [3].

Surgical excision of bronchogenic cysts is the treatment of choice because of the unclear diagnosis, symptomatology, and infectious complication. The surgical operation could be performed by thoracoscopy or laparoscopy effectively and safely if patients are appropriately chosen [8].

### Conflict of interest statement

The authors have no conflicts of interest to declare.

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