

# Successful Treatment of a Compromised Patient with Intractable Pneumothorax Using a Semiflexible Thoracofiberscope under Local Anesthesia: A Case Report

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**We herein present the case of a 69-year-old male with intractable pneumothorax, which occurred after gastrectomy, who could not tolerate general anesthesia because of a poor cardiopulmonary reserve and renal and hepatic insufficiency. We performed a ligation of perforated bulla using a semiflexible thoracofiberscope under an intercostal nerve block and subcutaneous anesthesia. The postoperative course was uneventful. The chest tube was removed the next day, and he was transferred to the department of medicine on the 2nd postoperative day. (Ann Thorac Cardiovasc Surg 2010; 16: 442–444)**

**Key words:** intractable pneumothorax, poor general condition, semiflexible thoracofiberscope

## Introduction

Although a medical thoracoscopy using a rigid or flexible scope is today primarily a diagnostic procedure, it can sometimes also be applied to therapeutic purposes.<sup>1,2)</sup> It can be distinguished from video-assisted thoracic surgery (VATS), which is used to perform either a lobectomy or a wedge resection of the lung in a minimally invasive manner. Because medical thoracoscopy can be performed under local anesthesia or conscious sedation and in an endoscopy suite, it is much less invasive and less expensive than VATS. A recent development in thoracoscopic techniques has been the introduction of the thoracofiberscope, which combines the flexibility of the fiberoptic bronchoscope with the rigidity of a conventional thoracoscope. This

semiflexible thoracofiberscope provides an excellent view of the entire pleura, and its semiflexibility makes it easier to control.

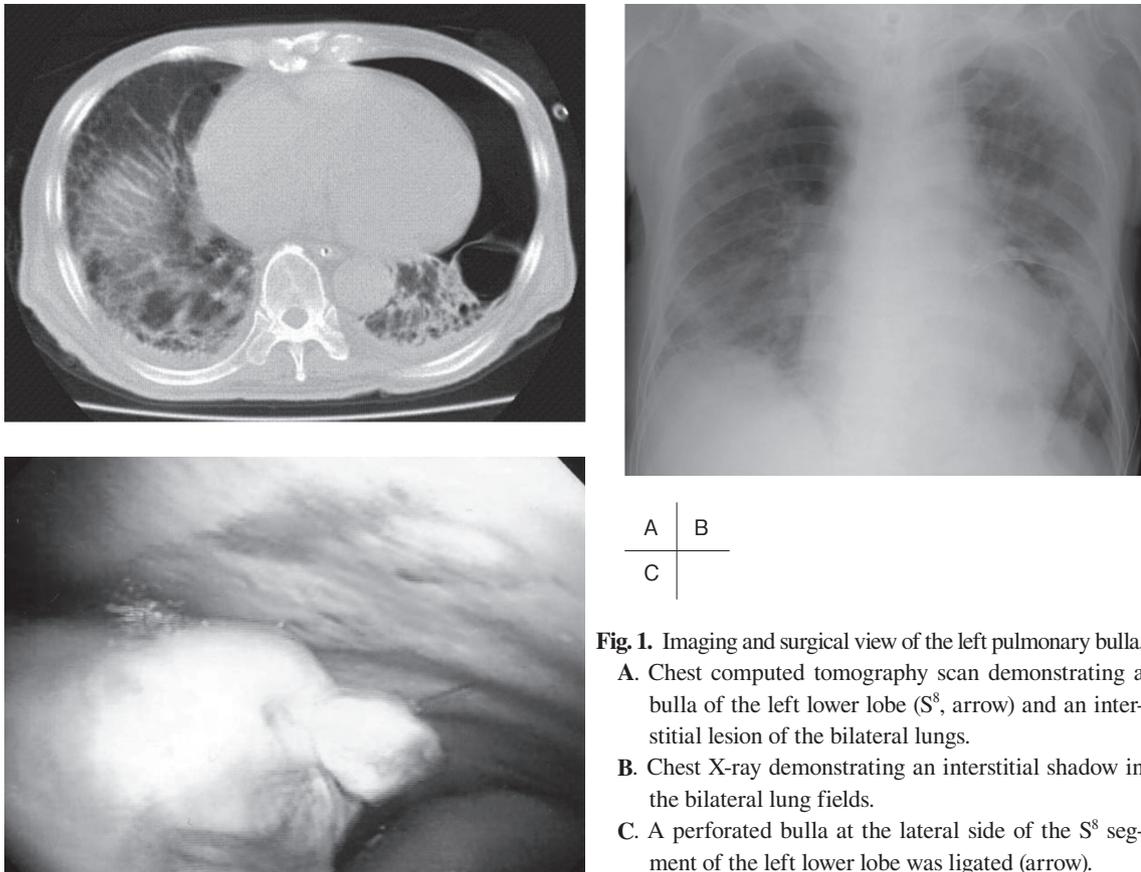
We herein report the findings of a compromised patient who underwent a successful treatment of an intractable pneumothorax by means of this unique instrument called the semiflexible thoracofiberscope.

## Case Report

A 69-year-old man presented by ambulance at our hospital in a state of shock because of a massive hemorrhage resulting from a gastric ulcer. After undergoing an urgent total gastrectomy to treat this disorder, pneumothorax occurred. Minocycline pleurodesis was performed 3 times every two days after a month of continuous chest drainage, but it proved to be unsuccessful. Computed tomography (CT) revealed a bulla of the left lower lobe (S<sup>8</sup>), a thickening of visceral pleura (Fig. 1A). Furthermore, interstitial pneumonia and pulmonary emphysema were also remarkably evident in a chest X-ray (Fig. 1B). The patient also had secondary pulmonary hypertension, severe tricuspid regurgitation (RA-RVPG of 61 mmHg), renal insufficiency (Ccr level less than 20 dl/min) and hepatic insufficiency (albumin level of 2.3 g/dl, ChE level of 27 IU/L), and a heparlastin

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**Fig. 1.** Imaging and surgical view of the left pulmonary bulla.  
**A.** Chest computed tomography scan demonstrating a bulla of the left lower lobe (S<sup>8</sup>, arrow) and an interstitial lesion of the bilateral lungs.  
**B.** Chest X-ray demonstrating an interstitial shadow in the bilateral lung fields.  
**C.** A perforated bulla at the lateral side of the S<sup>8</sup> segment of the left lower lobe was ligated (arrow).

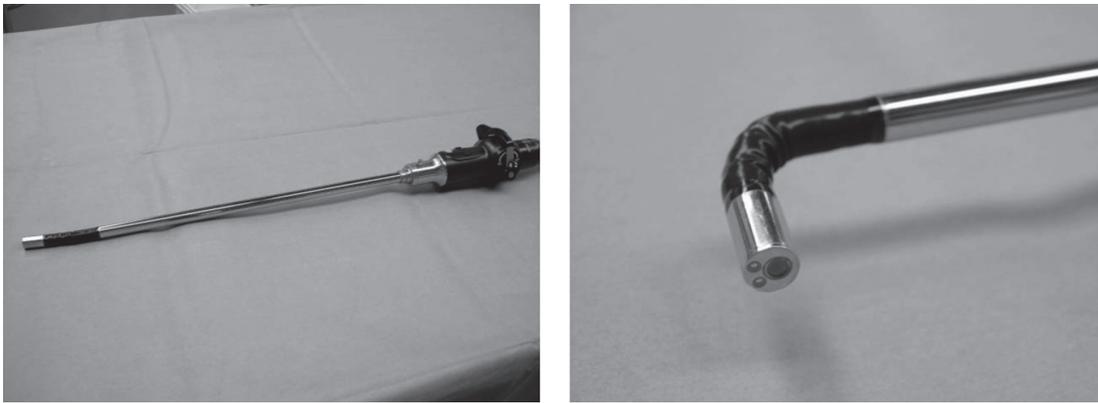
test level of 56%. The New York Heart Association status and the Hugh-Jones status were determined as IV and V, respectively. As a result of a general evaluation, we judged the patient unable to endure a general anesthesia, so we decided to attempt a ligation of the perforated bulla using a semiflexible thoracofiberscope under intercostal nerve block and subcutaneous anesthesia.

Under O<sub>2</sub> administration by face mask, the patient was placed in a dorsal position, and the left 4th–7th intercostal nerve block and subcutaneous anesthesia were performed. Disposable flexible plastic trocar tubes were then inserted through the middle clavicular line of the sixth intercostal space, the anterior axillary line of the seventh intercostal space, and the middle clavicular line of the fourth intercostal space. We next introduced the thoracofiberscope LTF-240® (Olympus Optical Co. Ltd., Tokyo, Japan) into the left thoracic cavity (Fig. 2A, B), and a single perforated bulla was observed on the lateral side of the S<sup>8</sup> segment. The bulla was doubly ligated using an endo-loop (Fig. 1C). The wounds were closed following the insertion of a chest drainage tube through the 6th intercostal space. The operative time was 82 minutes,

and the estimated blood loss was only slight. The postoperative course was uneventful. The chest tube was removed the next day, and the patient was then transferred to the department of medicine on the 2nd postoperative day.

## Discussion

A medical thoracoscopy today is not only a useful diagnostic tool for pleural diseases of this kind, such as tuberculosis, malignant pleural mesothelioma, and lung carcinoma, but it is also a treatment tool for performing such procedures as talc pleurodesis in pleural effusion, for the coagulation of blebs and bullae in pneumothorax, and for adhesion release in acute phase empyema.<sup>1,3,4)</sup> However the limited working range because of a poor collapse of the lung is the critical disadvantage of this modality when using a conventional rigid scope. Regarding the complications of medical thoracoscopy, Boutin<sup>5)</sup> reported several following facts based on his experience in treating 817 cases: (a) persistent air leaks of more than 7 days' duration in 2%, (b) subcutaneous emphysema in 2%, and (c) postoperative fever in 16%. Most of these complications



**Fig. 2.** Instruments used in the treatment.

**A,B.** The Olympus LTF thoracofiberscope is shown with a partial angulation of the flexible tip.

A | B

may be caused by the unfavorable range of view. Moreover, he reported the mortality rate to be 0.24%, and the frequency was comparable to that of bronchoscopic biopsies (0.22% to 0.66%).<sup>6,7)</sup> The semiflexible thoracofiberscope we used in our procedure (LTF-240<sup>®</sup>) had a 27-cm rigid insertion section, including a 5-cm flexible tip that can be deflected two ways with 130° up-/130° downangulation. This unique feature helps to expand the observation range, thus enabling us to perform therapeutic procedures. In this case of a pneumothorax intractable to palliative treatments, general anesthesia could not be performed because of the patient's poor general condition. Thoracoscopic treatment under local anesthesia was thus considered to be the only therapeutic selection, and the treatment was successfully performed.

We therefore consider medical thoracoscopy using a semiflexible thoracofiberscope to provide a safe and effective treatment for an intractable pneumothorax patient who could not tolerate general anesthesia.

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