

Surgical closure of bronchial stump fistula using a pedicled intercostal muscle flap plug

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Objectives

Treatment of a post-lobectomy bronchial stump fistula is very difficult. Various endoscopic procedures have been reported for fistula closure; however, surgical treatment is required for larger fistulae with empyema. In this study, a bronchial stump fistula was plugged and caulked with a pedicled intercostal muscle flap while simultaneously performing open-window thoracostomy for empyema.

Methods

A 69-year-old man with dysphagia caused by olivopontocerebellar atrophy and emphysema underwent right lobe lobectomy for lung cancer. A chest radiograph obtained on POD15 showed the air-fluid level, and computed tomography revealed the cavity. Bronchoscopy revealed a bronchial stump fistula with a diameter of 5 mm. It was difficult to perform bronchoscopic interventions. Because of the closed fistula and the need for methicillin-resistant *Staphylococcus aureus*(MRSA) infection control to manage the empyema, open-window thoracostomy and surgical closure were performed on POD 36. Direct stump closure from the thoracic cavity side was difficult due to the severe inflammatory changes caused by the infection. The tip of the 6th pedicled intercostal muscle flap was induced in the bronchus lumen from the thoracic cavity, thereby ensuring tight plugging of the hole. The intercostal muscles were sutured and glued to the surrounding tissue with fibrin.

Results

The muscle tissue protruding from the bronchial lumen was smoothened and could not be distinguished from the bronchial tissue. Infection control was achieved without antibiotics and patient discharge was possible on POD 75. However, nine months after fistula stump closure and open-window thoracostomy, the patient succumbed to pneumonia.

Conclusions

The findings of our study suggest that the use of a pedicled intercostal muscle flap as a plug can be effective for closure of large fistulas in the bronchial stump.