Asymptomatic Expectoration of Surgical Staples Complicating Lung Volume Reduction Surgery*

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Lung volume reduction surgery (LVRS) has recently been introduced as a palliative treatment for patients with severe emphysema. The most common postoperative complication is persistent air leak requiring prolonged tube thoracostomy. We describe a unique case of a patient with severe emphysema who underwent LVRS and presented, about a year later, with the repeated expectoration of surgical staples.

Key words: lung volume reduction; reduction pneumoplasty; surgical staples

Abbreviation: LVRS = lung volume reduction surgery

LVRS usually, as in our case, entails the resection of 20 to 30% of the lung unilaterally or bilaterally. Mortality rates range from 2.4 to 7% and 4 to 17%, respectively.2–4 The complication rate of LVRS has been reported to be low. Persistent air leak, respiratory failure, pneumonia, and reexploration are the commonly reported complications.5 We report a unique case of asymptomatic expectoration of surgical staples subsequent to LVRS.

CASE REPORT

A 61-year-old man and former smoker, with a total of 30 pack-years, presented with severe emphysema and home-oxygen dependency. A CT scan of the chest demonstrated upper-lobe-predominant centriacinar emphysema. He underwent bilateral LVRS via median sternotomy. A bovine pericardium-reinforced staple suture line (Peristrips; Biovascular; St. Paul, MN) was applied on the right, predominantly over the anterior segment of the right upper lobe and middle lobe and on the left anteriorly, predominantly above the lingula. His postoperative course was unremarkable.

He continued to improve with a diminishing oxygen requirement. One year after surgery, he reported expectoration of metallic staples covered with yellow material (Fig 1). He was treated with antibiotics for several episodes of purulent bronchitis/pneumonia. Subsequently small sections of bovine pericardium and bronchi were traversed by the reinforced suture line.

Figure 1. Expectorated surgical staples linked by bovine pericardium.

He clinically improved but remained oxygen dependent. One year after surgery, he reported expectoration of metallic staples covering with yellow material (Fig 1). He was treated with antibiotics for several episodes of purulent bronchitis/pneumonia. He coughed several staples attached by strips of bovine pericardium without evidence of hemoptysis, dyspnea, or chest pain. A repeat CT scan did not detect any significant abnormalities, and he continued to improve with a diminishing oxygen requirement.

DISCUSSION

LVRS has recently reemerged as a possible surgical option for the treatment of severe emphysema in selected patients.1,3–4 Proposed mechanisms of improvement include increased elastic recoil, decreased airway resistance, and improved respiratory muscle function.5,6 The procedure can be performed using several surgical approaches, including video-assisted thoracoscopic surgery, median sternotomy, and, less commonly, lateral thoracotomy.2 LVRS usually, as in our case, entails the resection of 20 to 30% of the lung unilaterally or bilaterally. Mortality rates vary among series, and reported early and late mortality rates range from 2.4 to 7% and 4 to 17%, respectively.2–4 The more common postoperative morbidity includes persistent air leak (chest tube for >5 days) with a prevalence of 30 to 40% in reported series.3,4,7 Other significant reported complications include pneumonia (9 to 12%), GI disturbance (2 to 15%), respiratory failure (2.5 to 13%), and the need for surgical reexploration (2.5 to 10.5%).2–4,7 Rarer complications even include development of a giant bulla.8 We believe that this represents a previously unreported complication of this surgery. Interestingly, enough repeated radiographic studies did not reveal any untoward findings and no evidence of air leak. Furthermore, the patient remained asymptomatic and even showed gradual clinical improvement. The mechanism of the staple expectoration is unclear. We speculate that relatively larger bronchi were traversed by the reinforced suture line. Subsequently small sections of bovine pericardium and attached staple(s) may have eroded into these bronchi and separated, allowing their expectoration. This may have been facilitated by a local infectious inflammatory reaction. Fortunately, enough healing apparently had taken place to obviate the development of a bronchopleural fistula.

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Manuscript received April 18, 2000; revision accepted June 15, 2000.

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