

# A 65-Year-Old Man With an Endobronchial Gossypiboma After Lobectomy for Abscessing Pneumonia

Michael Kreuter MD, Ralf Eberhardt MD, Matthias Wiebel MD, Martin R Schulz MD, Klaus-Michael Mueller MD, and Felix JF Herth MD

**We present a case of a 65-year-old man with recurrent hemoptysis and weight loss for 6 months. Thirty-two years earlier, lobectomy of the right lower lobe had been performed for abscessing pneumonia. Due to recurrent pulmonary infections after lobectomy the patient had to retire at the age of 46. A diagnostic procedure to explain the hemoptysis was performed. A computed tomogram revealed a suspicious formation in the bronchus intermedius, and the patient was referred to our department with the suspicion of lung cancer. During bronchoscopy an endobronchial mass was detected and extracted whole with a foreign-body forceps. Textile fibers of a sponge in the histology specimen led to the final diagnosis of gossypiboma (also known as textiloma). After removal of the gossypiboma no further pulmonary infections occurred.** *Key words: gossypiboma; textiloma; lung cancer; bronchoscopy; foreign body; hemoptysis; pulmonary infection.* [Respir Care 2010;55(7):933–936. © 2010 Daedalus Enterprises]

## Introduction

Gossypiboma (synonymous with textiloma) is a rare but important complication after surgery, with important clinical and legal implications. Gossypiboma can present as a tumor-like lesion and should be included in the differential diagnosis of suspicious chest findings in any patient who has undergone thoracic surgery. Diagnosis of gossypiboma is usually delayed and should be considered in patients with relapsing pulmonary infections after thoracic surgery, especially when the workup fails to confirm other more common causes.

---

Michael Kreuter MD, Ralf Eberhardt MD, Matthias Wiebel MD, Martin R Schulz MD, and Felix JF Herth MD are affiliated with the Department of Pneumology and Respiratory Critical Care Medicine, Thoraxklinik, University of Heidelberg, Heidelberg, Germany. Klaus-Michael Mueller MD is affiliated with the Institute of Pathology, Ruhr-Universität Bochum, Germany.

The authors have disclosed no conflicts of interest.

Correspondence: Michael Kreuter MD, Department of Pneumology and Respiratory Critical Care Medicine, Thoraxklinik, University of Heidelberg, Amalienstrasse 5, D-69126 Heidelberg, Germany. E-mail: michael.kreuter@thoraxklinik-heidelberg.de.

## Case Report

A 65-year-old man was referred to a pulmonary clinic with a 6-month history of productive, purulent cough, dyspnea, relapsing hemoptysis, weight loss, and moderate night sweats. A course of oral antibiotics was completed without substantial improvement of his symptoms. Thirty-two years earlier, lobectomy of the right lower lobe had been performed for abscessing pneumonia. The patient was a former truck driver, who retired at the age of 46 because of relapsing pulmonary infections. His health history also included pancreatitis from ethanol abuse, and intracerebral bleeding, but without persistent neurologic limitations. His medications consisted of phytotherapeutic drugs, terazosin, and lipase supplementation. He had smoked about 20 pack-years, until the age of 34. His family history was not contributory.

Physical examination revealed a patient in a good general condition other than moderate weight loss. Body temperature was normal, but he was tachycardic, with a heart rate of 115 beats/min, and his blood pressure was elevated, at 150/80 mm Hg. Lung examination demonstrated wheezing. The remainder of his examination was normal.

Laboratory analysis showed normocytic anemia. The white-blood-cell count and its differential and the C-reactive protein were within the normal ranges, and there was no sign of infection. Other laboratory results were also

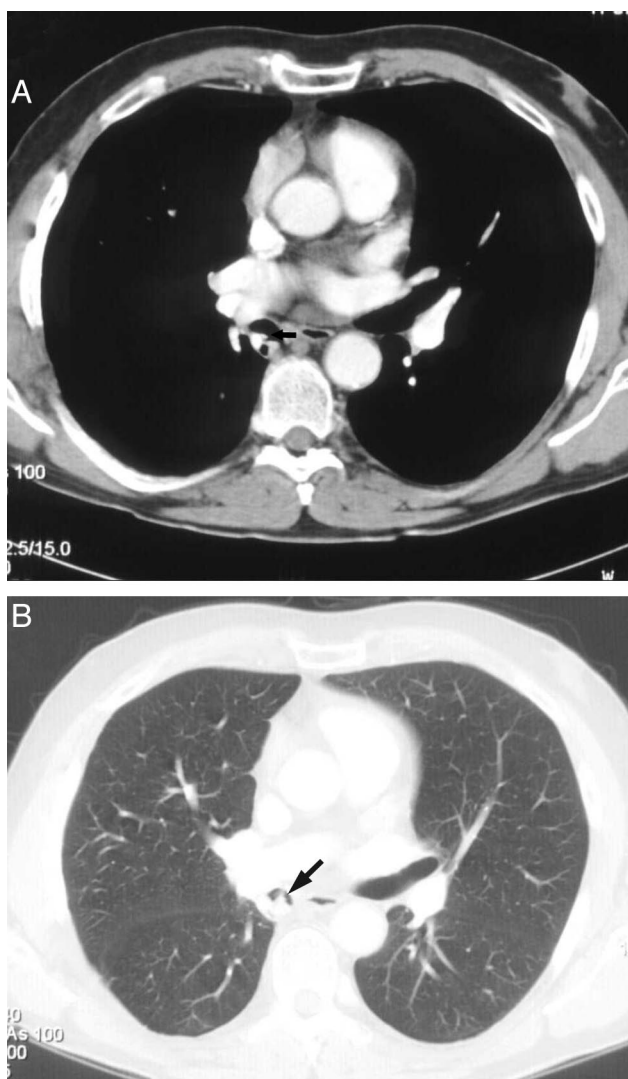


Fig. 1. Computed tomogram shows a suspicious formation in the bronchus intermedius (arrow), without substantial mediastinal lymph node enlargement.

normal. Pulmonary function tests demonstrated small-airways disease (reduced mid-expiratory flow rate). The arterial blood gases were within normal limits. Prior to referral, a computed tomogram had revealed a suspicious formation in the bronchus intermedius, without substantial mediastinal lymph node enlargement (Fig. 1).

Bronchoscopy with a rigid bronchoscope found an endobronchial mass resembling a tumor in the right bronchial tree, in the bronchus intermedius. The lesion was first biopsied and then removed whole with a foreign-body forceps. A final control confirmed complete removal of the lesion. (Fig. 2).<sup>\*</sup> Afterwards, the bronchus intermedius



Fig. 2. Bronchoscopy reveals an obstruction of the bronchus intermedius by a mass with similarities to a tumor, and with signs of purulence.

was reopened, and macroscopically granulomatosis at the resection margin of the right lower lobe was detected. Microscopically, the extracted lesion showed granulomatous and necrotizing inflammation and attached fungal structures, but no evidence of malignancy. Cultures were negative for bacteria and mycobacteria. Polarizing microscopy (Fig. 3) found textile fibers of a sponge in the lesion, leading to the final diagnosis of gossypiboma/textiloma.

### Discussion

Gossypiboma is the technical term for a retained surgical sponge. It is derived from the Latin word “gossypium” (cotton) and the Swahili word “boma” (place of concealment). A commonly used synonym is textiloma. Gossypibomas are rare but potentially serious complications following surgery. The estimated incidence is one case per about 5,500 to 19,000 operations.<sup>1,2</sup> Older studies suggest that textiloma occurs in one per 1,500–3000 operations performed. Reasons for that incidence decrease might be the institution of policies for better accounting and detecting of surgical equipment, such as radiopaque sponges.<sup>3</sup> Gossypibomas are mostly reported after abdominal surgery, but can appear after any surgical procedure. Thoracic gossypibomas count for about 11% of the cases.<sup>3,4</sup> Furthermore, a mortality rate of about 15% has been described.<sup>5</sup> Symptoms reported by patients with thoracic gossypibo-

<sup>\*</sup> See the video at [www.rcjournal.com](http://www.rcjournal.com).

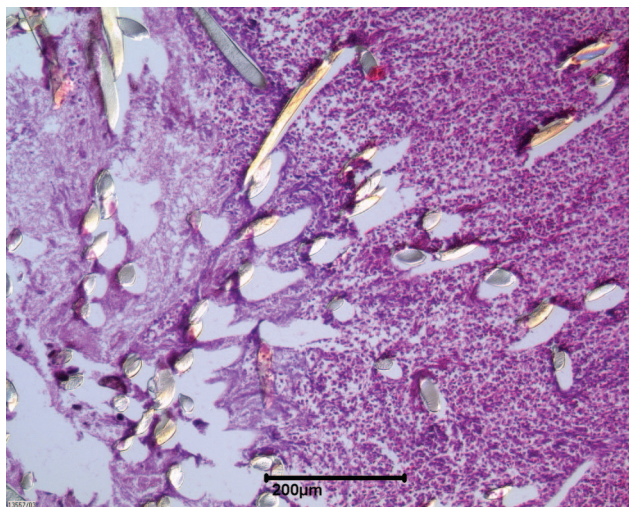


Fig. 3. Polarizing microscopy of the removed mass shows granulomatous and marked necrotizing inflammation, and attached fungal structures, without evidence of malignancy but with sponge fibers.

mas are cough, expectoration, recurrent hemoptysis, chest pain, low-grade fever, and weight loss,<sup>3,6-8</sup> which our patient also complained of. The clinical presentation of a thoracic gossypiboma depends on the location of the sponge and the type of reaction it causes. Typically the acute presentation consists of a local inflammatory reaction. In the case of infection, usually an abscess develops and fistulas may form. In such cases the differential diagnoses of a postoperative collection, hematoma, or non-foreign body abscess have to be excluded. However, alternatively, delayed symptoms can develop months or even years after the initial surgery, as in our patient.<sup>3</sup> The median time to discovery is reported to be about 7 years, which may lead to missed diagnosis and treatment delay.<sup>3</sup> Adhesions and encapsulation are common, and the lesion may present as a tumorous mass or obstructive endobronchial lesion. In these cases the differential diagnosis typically includes malignant tumor. Histologically, aseptic fibrous response with encapsulation, granuloma formation, or an exudative reaction leading to abscess formation can be detected.<sup>7</sup> Polarization microscopy can reveal the textile fibers of the sponge, as shown in Figure 3.

The typical radiologic appearance of gossypiboma includes a whirl-like pattern of radiopaque thread. On computed tomogram, especially in abdominal formations, gas trapped within the sponge might be visible, and after some time calcifications in the gas-cavity walls can be found. Furthermore, rim enhancement may be seen. Reports on gossypibomas in the pleural space have described a lack of gas lucencies, due to air resorption by the pleura. Thoracic gossypiboma can also resemble thoracic aspergilloma.<sup>5-11</sup> However, the radiologic findings, although very specific, are not pathognomonic, often leading to misinterpretation

as bronchiectasis, abscesses, cysts, or neoplasm.<sup>8,11,12</sup> Magnetic resonance imaging might be helpful in problematic cases such as in distinguishing a textiloma from cancer. Here a sponge may present as a soft tissue mass with a thick, well-defined capsule and whorled internal configuration on T2-weighted imaging.<sup>13</sup> Positron emission tomography was reported to result in false-positive findings, with fluorodeoxyglucose (FDG) uptake similar to that of a neoplasm.<sup>14</sup>

The possibility of aspiration of a foreign body also has to be discussed. Foreign-body aspiration can occur during dental or medical procedures, and such foreign bodies are usually found in the right bronchial tree.<sup>15</sup> In our patient, arguing against the aspiration hypothesis was his history of thoracic surgery and the lack of anamnestic evidence of foreign-body aspiration. However, other mechanisms, such as transluminal migration of a foreign body from other locations through the tracheobronchial wall, have been reported, even for surgical gauze.<sup>16</sup> Yet the detection of the sponge close to the resection margin of the right lower lobe might argue for retained gauze directly in the bronchial tree.

The legal implications of a textiloma are important, as patients might experience chronic pain or chronic infection, resulting in early retirement, as in our patient.

Our patient's clinical findings were suspicious for a cicatricial carcinoma. However, during endoscopy a retained surgical sponge was detected and removed, after which the patient recovered rapidly from his symptoms, without any reported relapsing pulmonary infections.

In conclusion, gossypiboma is a rare but important complication after surgery, with important clinical and legal implications. It can present either in clinical (eg, radiographic) findings as a tumor-like lesion or with symptoms of infection. Therefore it should be included in the differential diagnosis of suspicious chest findings and in relapsing hemoptysis and pulmonary infections in any patient who has undergone thoracic surgery.

#### ACKNOWLEDGMENTS

We thank Daniela Krause MD, Massachusetts General Hospital, Boston, Massachusetts, for critical review of the manuscript.

#### REFERENCES

1. Cima RR, Kollgengode A, Garnatz J, Storsveen A, Weisbrod C, Deschamps C. Incidence and characteristics of potential and actual retained foreign object events in surgical patients. *J Am Coll Sur* 2008;207(1):80-87.
2. Gawande AA, Studdert DM, Orav EJ, Brennan TA, Zinner MJ. Risk factors for retained instruments and sponges after surgery. *N Engl J Med* 2003;348(3):229-235.
3. Wan W, Le T, Riskin L, Macario A. Improving safety in the operating room: a systematic literature review of retained surgical sponges. *Curr Opin Anaesthesiol* 2009;22(2):207-214.

4. Rappaport W, Haynes K. The retained surgical sponge following intra-abdominal surgery: a continuing problem. *Arch Surg* 1990; 125(3):405-407.
5. Liessi G, Semisa M, Sandini F, Roma R, Spaliviero B, Marin G. Retained surgical gauzes: acute and chronic CT and US findings. *Eur J Radiol* 1989;9(3):182-186.
6. Sheehan RE, Sheppard MH, Hansell DM. Retained intrathoracic surgical swab: CT appearances. *J Thorac Imaging* 2000;15(1):61-64.
7. Kopka L, Fischer U, Gross AJ, Funke M, Oestmann JW, Grabbe E. CT of retained surgical sponges (textilomas): pitfalls in detection and evaluation. *J Comput Assist Tomogr* 1996;20(6):919-923.
8. Suwatanapongched T, Boonkasem S, Sathianpitayakul E, Leelachaikul P. Intrathoracic gossypiboma: radiographic and CT findings. *Br J Radiol* 2005;78(933):851-853.
9. Yamato M, Ido K, Izutsu M, Narimatsu Y, Hiramatsu K. CT and ultrasound findings of surgically retained sponges and towels. *J Comput Assist Tomogr* 1987;11(6):1103-1106.
10. Madan R, Trotman-Dickenson B, Hunsaker AR. Intrathoracic gossypiboma. *AJR* 2007;189(2):W90-W91.
11. Nomori H, Horio H, Hasegawa T, Naruke T. Retained sponge after thoracotomy that mimicked aspergilloma. *Ann Thorac Surg* 1996; 61(5):1535-1536.
12. Poncelet AJ, Watremez C, Tack D, Noirhomme P. Paracardiac opacity following inferior- and middle-lobe resection for bronchogenic carcinoma. *Chest* 2005;128(1):439-441.
13. O'Connor AR, Coakley FV, Meng MV, Eberhardt SC. Imaging of retained surgical sponges in the abdomen and pelvis. *AJR Am J Roentgenol* 2003;180(2):481-489. Erratum in: *AJR Am J Roentgenol* 2003;180(4):1179.
14. De Llanos CG, Navarro PC, Gilart JF, Suarez PP, Serhald MH, Saavedra TR. Intrathoracic gossypiboma interpreted as bronchogenic carcinoma: another false positive with positron emission tomography. *Arch Bronconeumol* 2007;43(5):292-294.
15. Limper AH, Parkash UB. Tracheobronchial foreign bodies in adults. *Ann Intern Med* 1990;112(8):604-609.
16. Tabuena RP, Zuccatosta L, Tubaldi A, Gasparini S. An unusual iatrogenic foreign body (surgical gauze) in the trachea. *Respiration* 2008;75(1):105-108.