Gossypibomas Mimicking Echinococcal Cyst Disease of the Lung*

Ashokkumar M. Patel, M.D.; Victor F. Trastek, M.D.; F.C.C.P. and Douglas T. Coles, M.D., F.C.C.P.

Gossypibomas, masses of retained cotton materials, may produce a variety of postoperative complications. This case report of hemoptysis of 18 months' duration and cavitating chest masses in a 62-year-old man with previous cardiac operations illustrates several salient features about the presentation, differential diagnosis, and management of gossypibomas. (Chest 1994: 105:284-85)

"Gossypiboma," a term used to describe a mass within the body that is composed of a cotton matrix, most commonly refers to a retained surgical sponge. Gossypibomas may become manifest as either early or late postoperative complications and may produce a variety of clinical and radiologic patterns. Our case illustrates several salient points about the presentation, differential diagnosis, and management of this uncommon entity.

CASE REPORT

A 62-year-old businessman from Spain, who was a 45-pack-year cigarette smoker, presented after an 18-month period of frequent hemoptysis with rusty, brown-colored sputum and a 6.8-kg weight loss without fever, chest pain, or significant exposure history. A mitral valve commissurotomy via a left thoracotomy had been performed at age 43 years for mitral stenosis and was followed by valve replacement (St. Jude prosthesis) via a median sternotomy 14 years later. His local physicians told him that "postoperative seromas" in the left upper chest were seen on chest radiographs obtained after his initial mitral valve commissurotomy. His only medication use was warfarin for his mitral valve prosthesis.

Physical examination findings were unremarkable except for an irregular pulse and occasional inspiratory crackles at the left lung base. Chest radiographs obtained at the time of presentation at our institution revealed two large (6 and 9 cm), dense, inhomogeneous opacities in the left upper chest. These masses were slightly larger than those seen in outside radiographs made 3 years earlier and also contained new air, but no pleural effusion, rib destruction, or gross adenopathy was present (Fig 1). The previous sternotomy, a normally positioned mitral valve prosthesis, and cardiomegaly were evident. Computed tomography scans of the chest demonstrated partial calcification of a 12- by 18-cm thick-walled mass with central cavitation, several calcified mediastinal lymph nodes, and soft-tissue windows supporting a chronic inflammatory process or, less likely, a neoplasm (Fig 2). Sputum and bronchoscopic examinations with washings, cytologic study, and cultures were nondiagnostic. Echinococcal serologic test was positive at a 1:2 dilution. The diagnostic considerations included chronic granulomatous infection or infection of the presumed seromas, neoplasia, gossypibomas, and echinococcal cyst disease.

In view of the patient's persistent symptoms and the possibility of malignancy, surgical exploration was done, with intraoperative precautions taken for excision of an echinococcal cyst. Thoracotomy and left pneumonectomy disclosed two necrotic surgical laparotomy pads embedded in the left upper lung (Fig 3).

DISCUSSION

"Gossypiboma," a term used to describe a mass within the body that is composed of a cotton matrix, most commonly refers to a retained surgical sponge. Other types of gossypibomas reported are surgical laparotomy pads, cotton swabs and buds,1,2 gauzes,1 and vaginal contraceptive devices.1 A

*From the Division of Thoracic Diseases and Internal Medicine and the Section of General Thoracic Surgery, Mayo Clinic and Mayo Foundation, Rochester, Minn.

![Figure 1. Posteroanterior chest radiograph revealing two large, dense masses in left upper lobe.](image1)

![Figure 2. Computed tomography image of chest showing thick-walled mass in left upper lobe with partial calcification (whirling, spongiform pattern) and central cavitation.](image2)

Gossypibomas Mimicking Echinococcal Cyst (Patel, Trastek, Coles)
broad spectrum of clinical symptoms may occur, ranging from none (incidental finding on postoperative radiograph) to fatal, depending on the site and type of complication resulting from the retained foreign body. Although the most common site reported is the abdominal cavity, almost any cavity or surgical procedure may be involved. Other sites reported are the nose, tracheobronchial tree, breast, pancreas, pararenal space, vagina, femur, and spine.

Hyslop and Maull, in their review of the natural history of the retained surgical sponge, emphasized the importance of preventive measures, a higher degree of suspicion, and potential medicolegal ramifications. Although cotton is relatively inert, it may stimulate an inflammatory, granulomatous reaction or lead to secondary infection with subsequent abscess formation. These complications may occur early in the postoperative period or, if unrecognized, later with obstruction, abscess, or fistula formation, or chronic inflammatory changes and fibrosis. Stoll reported a case of a retained sponge after laminection that became manifest 40 years later by cavitary changes in the dorsal bony elements of the lumbosacral spine.

Although the first report of retained surgical sponges appeared in 1884,13 barium-impregnated threads and radiopaque markers were not introduced into the United States until the 1930s.14 The radiologic characteristics (plain radiograph, computed tomography, ultrasonography, and magnetic resonance imaging) of gossypibomas have been reported by several authors.1,17-20 Most gossypibomas appear as well-circumscribed masses containing dense, spongiform material and air. Early in the postoperative period,15 such radiologic findings may be confused with abscess formation or a complicated hematoma or seroma, but later on, the atypical calcification and thick, irregular inflammatory wall of the mass may mimic a chronic infection or granulomatous process or a neoplasm. Acoustic shadowing on ultrasonography is usually due to the retained material itself, calcified regions in the gossypiboma, or pockets of air.

In retrospect, the computed tomographic and plain radiographic features in our patient were typical of those described in the literature, although the possibilities of echinococcal cyst disease and malignancy could not be excluded preoperatively. The positive finding on echinococcal serologic testing (1:2 dilution) was thought to be incidental because there was no histopathologic evidence of echinococcal disease and false-positive findings have been observed (Dr. G. Roberts, personal communication).

As illustrated by our case, gossypibomas, although mostly reported as complications of abdominal surgical procedures, may produce chronic chest masses that radiologically mimic echinococcal cyst disease, chronic granulomatous disease, or malignant disease. Gossypibomas should be included in the differential diagnosis of an atypical chest mass in any patient who has had an operative procedure.

REFERENCES
7 Fornage BD. Sonographic diagnosis of a retained surgical sponge in the breast. JCU 1987; 15:255-58
15 Wilson CP. Foreign bodies left in the abdomen after laparotomy. Gynecol Tr 1884; 9:109-12