



## Case report

## Migrating gossypiboma mimicking aspergilloma twenty years after mediastinal surgery

Amjad Kanj<sup>a</sup>, Ayman O. Soubani<sup>b</sup>, Hussam Tabaja<sup>a</sup>, Said El Zein<sup>a</sup>, Mirna Fares<sup>c</sup>, Nadim Kanj<sup>d,\*</sup><sup>a</sup> Wayne State University, Department of Internal Medicine, USA<sup>b</sup> Wayne State University, Division of Pulmonary Critical Care and Sleep Medicine, USA<sup>c</sup> Mount Lebanon Hospital, Division of Pulmonary and Critical Care, Lebanon<sup>d</sup> American University of Beirut Medical Center, Division of Pulmonary and Critical Care, Lebanon

## A B S T R A C T

A gossypiboma refers to a surgical sponge or gauze accidentally retained inside a patient during a procedure. It is more commonly encountered after abdominal surgeries. When seen in the thorax, it is usually located within the pleural cavity. We report a case of a 42-year old woman who was found to have a gossypiboma mimicking a simple aspergilloma twenty years after a left thoracotomy. The surgical gauze identified on a CT-scan of her chest appears to have migrated into her lung airways.

## 1. Introduction

Retained surgical equipment are overall uncommon yet their prevalence is difficult to assess due to under-reporting [1]. A gossypiboma (*gossypium*: “cotton” in Latin and *boma*: “place of concealment” in Swahili) refers to a surgical gauze or sponge that is accidentally retained inside a patient during a procedure [2]. We hereby present a case of a migrating intrathoracic gossypiboma mimicking a simple aspergilloma in a female patient admitted with hemoptysis.

## 2. Case presentation

A 42-year old woman who underwent a left thoracotomy for a mediastinal lesion of unknown pathology 20 years ago, was referred to our medical center with one day of mild hemoptysis. She had neither chest pain nor shortness of breath. She was diagnosed with a simple aspergilloma on radiologic imaging few years ago and has been having an episodic productive cough for which multiple courses of antibiotics were prescribed. She also had a similar episode of mild hemoptysis one and a half year prior, which self-resolved. The patient was afebrile, appeared comfortable and was hemodynamically stable. Chest auscultation was unremarkable. A chest radiograph showed a retro-cardiac opacity. An enhanced computed tomography (CT) of the thorax showed

a left lower lobe fungus ball with a meniscus sign, consistent with a simple aspergilloma (Fig. 1). These findings were unchanged when compared to previous scans.

A flexible bronchoscopy was performed and revealed a small amount of blood oozing from the left lower lobe with no visible endobronchial lesions. Cytology on bronchoalveolar lavage taken from that lobe showed benign bronchial cells and few red blood cells. Respiratory cultures grew 60,000 colonies of pan-susceptible *Pseudomonas aeruginosa* and were negative for tuberculosis. IgG and precipitins against *Aspergillus* were also negative. In view of her presumed diagnosis of aspergilloma coupled with recurrent hemoptysis, the patient underwent wedge resection of the left lower lobe lesion. Examination of the specimen showed a white gauze impacted within a dilated bronchus, with peribronchial fibrosis, inflammation and hemorrhage (Fig. 2).

## 3. Discussion

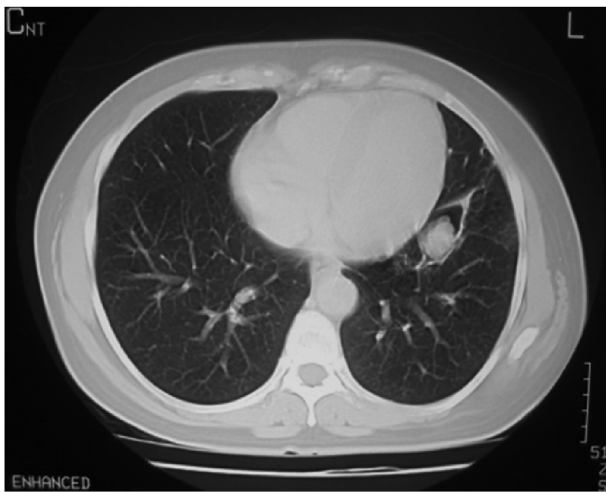
Cotton materials are among the most commonly forgotten objects inside the body after a surgical operation [3]. They have been reported to occur at a rate of 1 in 1500 inpatient operations and account for almost 50% of malpractice claims pertaining to retained equipment after procedures [2,3]. “Gossypiboma” is a term that refers to a retained

\* Corresponding author.

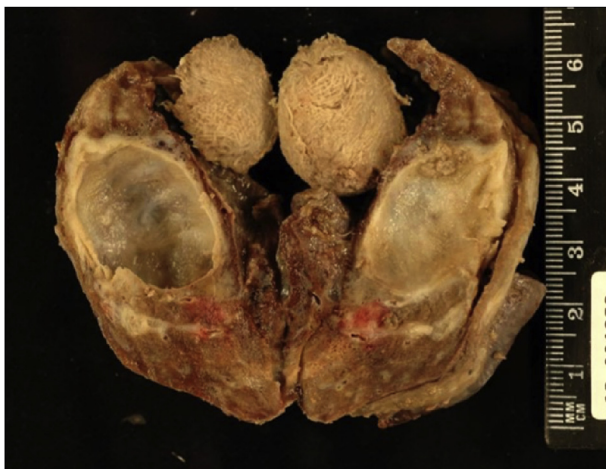
E-mail address: [dk01@aub.edu.lb](mailto:dk01@aub.edu.lb) (N. Kanj).<https://doi.org/10.1016/j.rmcr.2018.08.013>

Received 5 July 2018; Received in revised form 19 August 2018; Accepted 21 August 2018

2213-0071/ © 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Fig. 1.** Transverse section of a thoracic CT-scan showing what appears to be a “fungus ball” within a cavity in the anterior aspect of the lateral bronchopulmonary segment of the left lower lobe.



**Fig. 2.** Lung wedge specimen measuring  $6.3 \times 4 \times 2.8$  cm. A cut section of the specimen reveals a  $3 \times 2 \times 1.7$  cm cavity containing a spherical tan-white surgical gauze that was removed.

surgical sponge. To our knowledge, this term was first used in the title of an article published in the journal *Radiology* in 1978 [4].

Gossypibomas are most commonly encountered after abdominal and pelvic surgeries [5]. In one report, abdominal surgeries and uncomplicated vaginal deliveries were identified in 55% and 28% of cases of gossypibomas, respectively [6]. Nonetheless, retained sponges have been described in other procedures including intrathoracic, intraspinal, orthopedic, and breast surgeries [7–9].

Gossypibomas are more likely to ensue following emergent operations or unforeseen changes in the surgical procedure being performed. Though counting of sponges at the beginning and end of surgeries remains an important standard of practice, in 88% of cases involving gossypibomas, the final sponge count was inaccurately recorded as correct [10].

The gossypiboma in our patient was initially mistaken for a simple aspergilloma. An aspergilloma is a fungal ball contained in a previously formed pulmonary cavity. It is primarily formed from *Aspergillus* hyphae and fibrin and tends to occur more in patients with prior tuberculous and nontuberculous mycobacterial infections. Aspergillomas are more commonly located in the upper lobes [11]. Our patient had no recollection of any previous cavitory lung condition. She also denied any history of pulmonary diseases. The surgical gauze as it appeared on her thoracic CT-scan was contained within a “cavity” in the left lower lobe. The meniscus sign, also known as Monod's sign, was evident on her CT-scan. This sign depicts the crescent-shaped air space separating the fungal ball from the cavity's wall and is pathognomonic for aspergillomas [11].

Gossypiboma misdiagnosed as aspergilloma has been reported in five cases since 1990 (Table 1) [12–16]. In all five subjects, the index lung surgery leading to gossypiboma was performed for the diagnosis or treatment of pulmonary tuberculosis (TB). Furthermore, the utility of a chest CT scan in distinguishing between an aspergilloma and a retained sponge appeared limited due to the lack of specific findings. All cases were diagnosed via lung resection and gross pathology. The time from index surgery to diagnosis ranged from 8 years to 43 years.

Retained intrathoracic sponges can be overlooked, particularly when they migrate to the lung and mimic other conditions such as a simple aspergilloma. This may result in a delay in diagnosis with further medicolegal and health-related implications. When gossypibomas are seen in the thorax, they are generally found in the pleural cavity [8]. However, in our patient the retained gauze appears to have migrated into the lung airways. The underlying mechanism by which the migration occurred remains elusive.

**Table 1**  
Cases of gossypiboma misdiagnosed as simple Aspergilloma in the literature since 1990.

Author	Age (years)/ Sex	Index surgery	Symptoms	Time to diagnosis	Chest CT scan features	Outcome
Taylor et al. [12], 1994	73, male	Partial resection of left lung for pulmonary TB	Recurrent hemoptysis	43 years	3 cm mass with cavitation and fungus ball	Uneventful
Nomori et al. [13], 1996	63, male	Segmentectomy of the upper lobe for pulmonary TB	Massive hemoptysis	40 years	$7 \times 5$ cm homogeneous mass with an air crescent in a thin-walled cavity	Uneventful
Rijken et al. [14], 2005	68, male	Open lung biopsy to confirm TB	Persistent productive cough but no hemoptysis	8 years	5 cm ball within a thin-walled cavity	Uneventful
Park et al. [15], 2006	59, male	Right middle lobectomy for pulmonary TB	Recurrent hemoptysis	31 years	6 cm mass with an air crescent between the central nidus and the peripheral wall	Uneventful
Mir et al. [16], 2012	39, male	Right upper lobectomy for pulmonary TB	Persistent cough and hemoptysis	9 years	Pleural based opacity with mottled air lucencies	Uneventful

## References

- [1] M. Grag, A.D. Aggarawal, A review of medicolegal consequences of gossypiboma, *J. Indian Acad. Forensic Med.* 32 (4) (2010) 358–361.
- [2] L.K. McIntyre, et al., Gossypiboma: tales of lost sponges and lessons learned, *Arch. Surg.* 145 (8) (2010) 770–775.
- [3] J. Umunna, Gossypiboma and its implications, *J. West Afr. Coll. Surg.* 2 (4) (2012) 95–105.
- [4] R.G. Williams, D.G. Bragg, J.A. Nelson, Gossypiboma—the problem of the retained surgical sponge, *Radiology* 129 (2) (1978) 323–326.
- [5] A. Manzella, et al., Imaging gossypiboma: pictorial review, *AJR* 193 (2009) 504–5101.
- [6] C.W. Kaiser, et al., The retained surgical sponge, *Ann. Surg.* 224 (1) (1996) 79–84.
- [7] M. El Khoury, et al., Retained surgical sponge or gossypiboma of the breast, *Eur. J. Radiol.* 42 (1) (2002) 58–61.
- [8] R.E. Sheehan, M.N. Sheppard, D.M. Hansell, Retained intrathoracic surgical swab: CT appearances, *J. Thorac. Imag.* 15 (1) (2000) 61–64.
- [9] F. Ebner, E. Tolly, H. Tritthart, Uncommon intraspinal space occupying lesion (foreign-body granuloma) in the lumbosacral region, *Neuroradiology* 27 (4) (1985) 354–356.
- [10] A.A. Gawande, et al., Risk factors for retained instruments and sponges after surgery, *N. Engl. J. Med.* 348 (3) (2003) 229–235.
- [11] A. Kanj, N. Abdallah, A.O. Soubani, The spectrum of pulmonary aspergillosis, *Respir. Med.* 141 (2018) 121–131.
- [12] F.H. Taylor, et al., Intrapulmonary foreign body: sponge retained for 43 years, *J. Thorac. Imag.* 9 (1) (1994) 56–59.
- [13] H. Nomori, et al., Retained sponge after thoracotomy that mimicked aspergilloma, *Ann. Thorac. Surg.* 61 (5) (1996) 1535–1536.
- [14] M.J. Rijken, A.J. van Overbeeke, G.H. Staaks, Gossypiboma in a man with persistent cough, *Thorax* 60 (8) (2005) 708.
- [15] H.J. Park, et al., Changes in CT appearance of intrathoracic gossypiboma over 10 years, *Br. J. Radiol.* 81 (962) (2008) e61–e63.
- [16] R. Mir, V.P. Singh, Retained intra- thoracic surgical pack mimicking as recurrent aspergilloma, *J. Clin. Diagn. Res.* 6 (10) (2012) 1775–1777.