Case report - Thoracic non-oncologic
Chronic percutaneous gallstone discharge following videothoracoscopic decortication

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Abstract
Computed tomographic imaging is not recommended as an essential prerequisite in surgery for pleuro-pulmonary sepsis in the current guidelines. We highlight one consequent pitfall and its sequelae. We report the discharge of gallstones through a healed intercostal drain site four months following video-assisted thoracic surgery for early pleural empyema secondary to missed calculous gallstone disease. The importance of awareness and a high index of suspicion to diagnose the underlying extra-thoracic cause of a right-sided pleural collection in a patient with a previous history of gallstone disease cannot be overemphasised.

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1. Introduction
Computed tomographic (CT) imaging is not recommended as an essential prerequisite in surgery for pleuro-pulmonary sepsis in the current guidelines. We highlight one consequent pitfall and its sequelae.

2. Case report
An 80-year-old female presented with a two-weeks’ history of worsening right-sided pleuritic chest pain and purulent cough following a course of antibiotics by her primary care physician. She developed progressive dyspnoea and a repeat chest radiograph six days later revealed right basal opacification suggestive of an effusion with consolidation of underlying lung. An unsuccessful needle thoracocentesis prompted ultrasound imaging that demonstrated an anteriorly placed loculated effusion. She was referred for urgent thoracic surgical management of her suspected early parapneumonic empyema.

Her past medical history included pelvic floor surgery for faecal and urinary incontinence from complications of childbirth. Two years previously, she underwent endoscopic retrograde cholangio-pancreatography and sphincterotomy for gallstone induced cholangitis and had since been free from symptoms of biliary colic or cholangitis. She was on chronic warfarin therapy for previous recurrent pulmonary emboli.

After converting her warfarin treatment to subcutaneous heparin, she underwent a three-port video-assisted thoracoscopic surgical (VATS) decortication breaking down loculations and draining serous fluid with satisfactory lung expansion. Worsening opacification at the apex of the right hemithorax was noted on sequential postoperative chest radiographs, despite well-placed drains. A 2 g/dl drop in haemoglobin prompted re-exploration of the right chest through a thoracotomy the following day. A clotted haemothorax was evacuated with satisfactory re-expansion of the right lung although the right hemi-diaphragm remained elevated. The early re-introduction of high-dose low molecular weight heparin was implicated in aggravating bleeding from apical pleural adhesions divided at the first procedure.

A week following thoracotomy, she had a persistent pyrexia with raised inflammatory markers. A CT-scan showed no significant pleural collection but demonstrated a fluid collection tracking from the peri-hepatic space to the gallbladder fossa (Fig. 1). A general surgical consult was obtained and a radiologically guided percutaneous drain was placed into the subphrenic collection. Clear fluid was drained. Repeat ultrasound and CT-scanning confirmed significant reduction in the size of the fluid space that now appeared to communicate with the gallbladder. As her pyrexia settled and drainage ceased, the percutaneous drain was removed and she was discharged.

Four months later she developed a tender lump over her anterior intercostal drain site. Surprisingly, digital pressure discharged the gallstones and the swelling disappeared (Fig. 2).

The patient eventually underwent elective open cholecystectomy with exploration of fistula tract with complete resolution and has remained well at one-year outpatient review.

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the bronchial system with broncho-biliary fistulization and bilioptysis [5].

In contrast, a more insidious course is also recognized [6] with spontaneous migration of gallstones left outside the gallbladder as may occur to spilled or dropped gallstones after cholecystectomy (especially laparoscopic) [2–4]. It has been hypothesised that dropped gallstones are not reabsorbed, and can elicit a foreign body inflammatory reaction and consequently migrate [4].

We feel that the occult subphrenic pathology was initially missed on ultrasound scanning in our case and this re-enforces the importance of performing a CT-scan prior to any contemplated surgical intervention for empyema, although it is not deemed an essential investigation in current guidelines for pleuro-pulmonary infection [7].

When the CT-scan was obtained, the unusual non-dependant anterior-basal fluid loculation in the right costo-phrenic region (Fig. 1) could explain the persistent raised hemi-diaphragm. Delco et al. have described occult perforation in an anatomically anteriorly displaced gallbladder usually as a result of adhesions from past recurrent inflammatory episodes [6]. The percutaneously drained subphrenic fluid was not bilious but helped to avoid emergent surgery in an elderly patient who was recovering from recent major thoracic operations.

The migration of stones that eventually eroded into the anterior video-thoracoscopic port/intercostal pleural drain site, may have been facilitated by the imaging guided percutaneous subphrenic drainage procedure [8]. Furthermore, the pleurodesis caused by the surgical intervention in the chest, prevented translocation of gallstones into the chest cavity [5]. Definitive treatment of the underlying cause was concluded only after cholecystectomy and bile duct exploration.

Our case is unique in that there is no report in the literature of late extrusion of gallstones via chest drain site following thoracic surgery in the absence of previous cholecystectomy.

3. Discussion

Hepatobiliary pathologies are an important differential in cases of right pleural effusion. Pleural involvement in hepatobiliary disease may range from sympathetic effusions to empyema thoracis. Rare complications include the abnormal passage of bile and/or gallstones into the pleura or exterior. Congenital (e.g. choledochal cysts [1]), inflammatory or traumatic hepatobiliary conditions and iatrogenic procedures have been implicated as possible aetiologies [2–4].

The clinical course tends to be more acute in suppurrative complication to an obstruction of the biliary tree causing increased pressure of bile that may rupture to form a subphrenic or subhepatic abscess that in turn may acutely decompress across the diaphragm into the free pleural space (thoracobilia or biliothorax). Such acute diaphragmatic perforation characteristically occurs posteriorly in the costo-phrenic recess possibly due to gravity in patients who are often unwell and hence mostly assuming supine decubitus. Prior adhesions between the lung and diaphragm obliterating the pleural space may lead to perforation into the bronchial system with broncho-biliary fistulization and bilioptysis [5].

References