

A Case Report of a Mediastinal Fistula with Liver Abscesses as a Complication of Aortic Valve Replacement Surgery

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Abstract

We report a case of mediastinal fistula with liver abscesses detected by thoracic and abdominal computed tomography as a complication of aortic valve replacement surgery.

Keywords: Aortic valve; Computed tomography; Fistula; Liver abscess

Case Report

In May 2015, a 79-year-old man, with treated hypertension, moderate chronic obstructive pulmonary disease (COPD) and

familiarity with coronary artery disease (CAD), was hospitalized to undergo an aortic valve replacement. The clinical history of the patient reported a previous ascending aorta aneurysmectomy (July 2007) and the implant of an aortic Hemaschild tube. In March 2015 the patient started to refer a difficult and uncomfortable breathing associated with activity (dyspnea) and underwent a Color Doppler Ultrasound exam.

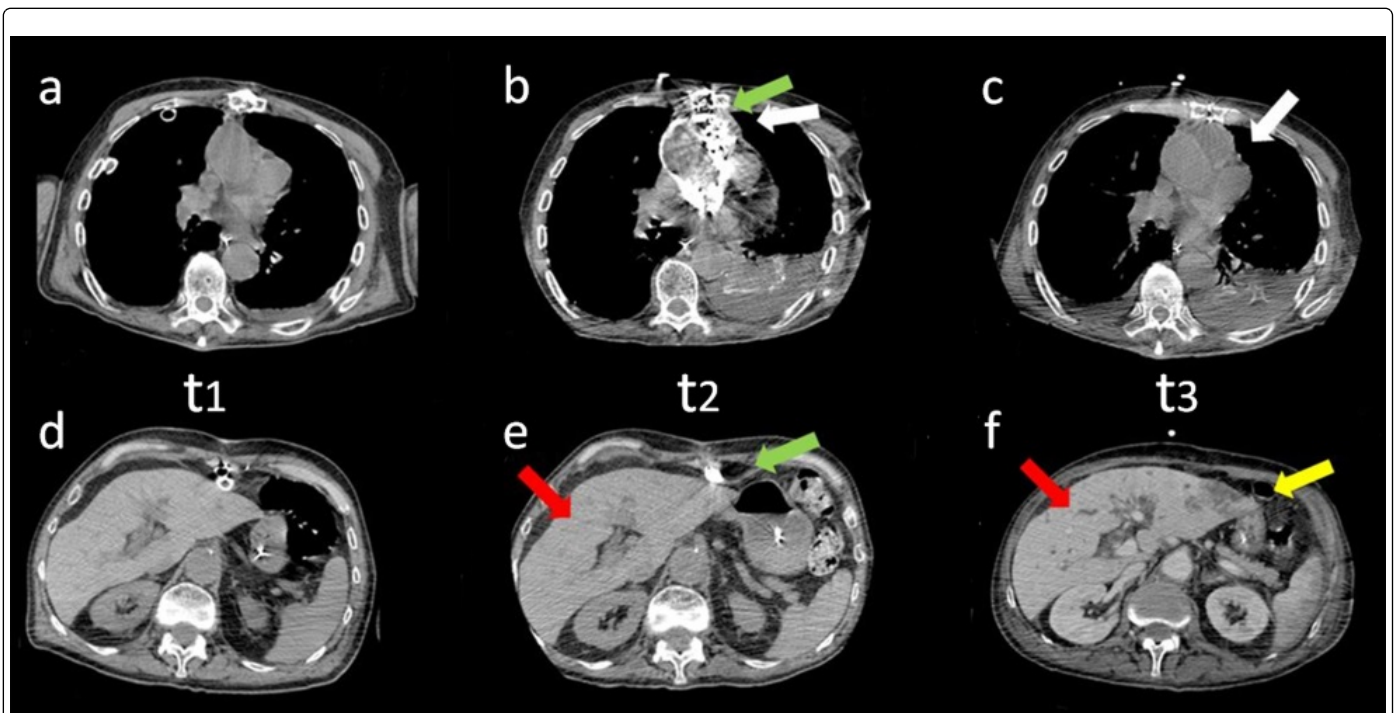


Figure 1: Axial CT images at 3 different time points are provided: few weeks after surgery (first column - t1), one month after t1 (CT guided fistulography) (second column - t2), and two weeks after t2 (third column - t3). At t2, a spontaneous hyper dense exudational-bloody-nature tissue (30 H.U.) is visualized in front of the aortic tube (white arrow, b) that appears reduced in the following CT (c). The green arrows (t2) tract the fistulous course close to the left hepatic lobe (e). The red arrow highlights the mild ectasia of the intrahepatic biliary ducts (e,f) and the yellow arrow points at the liver abscess present in the left hepatic lobe.

It showed a tricuspid junctional ectopic tachycardia and a mild-severe reduction in the aortic diastolic flux across the descending aorta ($V_{max}=19$ cm/s). In the first days of May 2015 the patient performed a chest x-ray and a coronarography that revealed the presence of an ascending aorta aneurysm and a moderate/severe aortic valve insufficiency. Two weeks later, he was hospitalized and underwent the aortic valve replacement surgery with a biological prosthesis and a

redo aortic grafting procedure. A pleural drainage was inserted during the main surgery with a subxiphoid route and, due to constant breathing difficulties, the patient underwent also tracheotomy. A chest CT scan was performed after the procedure (t1) (Figure 1). A month after surgery (t2), a CT guided fistulography was programmed because of repeated serous fluid losses from the mediastinal drainage.

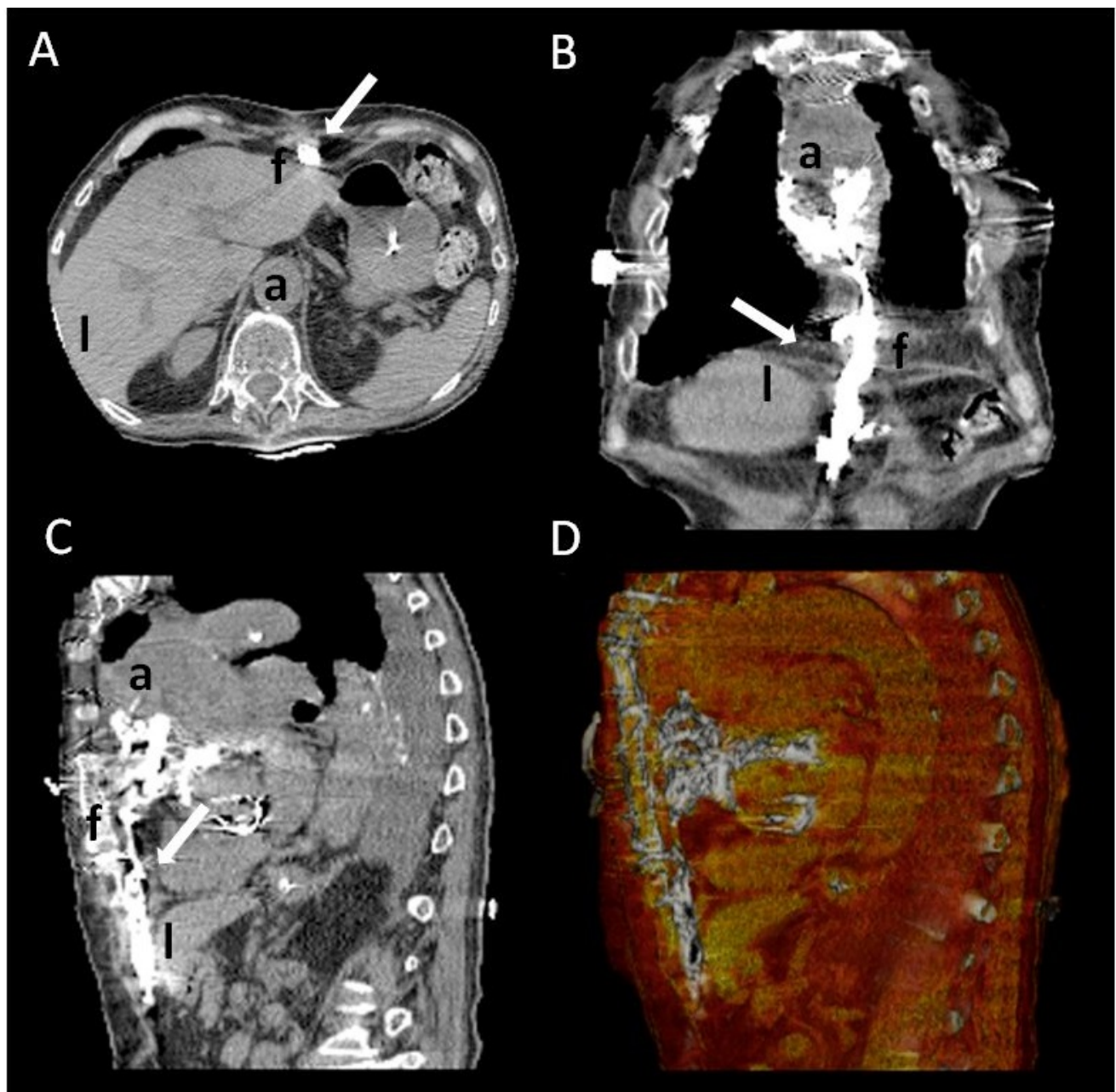


Figure 2: CT guided fistulography at t2: (A) axial image; (B) MPR coronal reconstruction; (C) MPR sagittal reconstruction; (D) 3D volume rendering. The fistulous course is highlighted (white arrows): from the anterior abdominal wall to the anterior mediastinum and, through the pericardium, it reaches the ascending aorta. a=aorta; l=liver; f=fistula.

The exam showed, unlike the previous CT, a spontaneous hyperdense exudational-bloody-nature tissue (30 H.U.) in front of the aortic

tube (Figure 1). After the transcutaneous injection of the contrast medium, a fistulous course was noted: from the anterior abdominal

wall to the anterior mediastinum and finally, through the pericardium, it reached the aforementioned hyper dense tissue. In the month of July the patient started to refer abdominal pain and resulted positive to the Murphy's sign. An urgent abdominal ultrasound revealed a patchy echogenicity, the liver presented increased dimensions. That day, thoracic and abdominal CTs were also programmed because of the worsened abdominal symptomatology and hemodynamic compensation of the patient (t3). While the former revealed a reduction in the hyperdense tissue previously found in front of the aortic tube, the abdominal CT showed several hypodense lesions, mainly located to the left hepatic lobe, showing a peripheral enhancement after contrast medium infusion and suspected for liver abscesses (Figure 1). At this point, the conditions of the patient were critical. An emergency laparotomy was performed. It confirmed an acute cholangitis with hepatic abscesses probably due to the fistula passage next to the small hepatic lobe. After few days, unfortunately, the patient passed away for a septic shock (Figure 2).

Discussion

Valvular replacement can be performed by conventional surgery or, more recently, by the Trans catheter aortic valve implantation (TAVI). Despite the main advantages of TAVI approach, it is only reserved to a selected group of patients. For this reason, the open heart surgical replacement of the aortic valve is still performed with its several postoperative complications, sources of morbidity and mortality [1]. Among the most common, gastrointestinal complications usually

consist of upper gastrointestinal bleeding, gastroesophagitis, colitis, enteric ischemia [2,3]. Here, we described a rare postoperative infectious complication consisting of a mediastinal-abdominal fistula. The abdominal course of the fistula ran parallel to the subxiphoid drainage tube suggesting a relationship between the postoperative complication and the chronically infected tube tract [4,5]. Moreover, the close relationship between fistula pathways and the small hepatic lobe, the prevalence of CT alterations on the left hepatic lobe and the macroscopic adherences found during emergency laparotomy between these structures addressed the fistula as the main cause of the infectious complication.

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