



Case Report

Post-operative fatal blood aspiration after routine lung surgery

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ABSTRACT

A routine question encountered in medicolegal practice is whether the death of a patient in proximity to a surgical procedure is due to medical malpractice. The case of a 62-year-old man who died two weeks after undergoing a VATS sleeve resection of the upper right lung lobe in conjunction with radical lymphadenectomy, a routine surgical procedure, is reported. To address the issue of medical malpractice, a forensic autopsy was ordered by the investigative authority. During the autopsy, the lungs were removed as a whole and fixed in formalin and were later dissected in cooperation with a thoracic surgeon. In the course of this dissection, a bronchovascular fistula, which had led to the occlusion of the bronchial system with clotted blood, was discovered. Bronchovascular fistulas are a rare complication of bronchial sleeve resections. Because this surgical complication is essentially always fatal, it is highly pertinent to medicolegal practice. The presented case report also lists other important complications associated with bronchial anastomosis and elucidates a pragmatic approach to obtaining an expert clinical assessment of possible medical malpractice after operations through the example of a dissection performed in cooperation with a thoracic surgeon.

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1. Introduction

When patients die shortly after an operation, the question of possible medical malpractice frequently arises. The clarification of medical malpractice claims is, therefore, a regularly encountered task in medicolegal practice. To be able to fulfill this task, medical examiners need to have a good understanding of the common complications that can occur after surgical procedures [13–15]. Although, the aspects that need to be clarified are often only vaguely defined, they may at times be so specific that they require specialist knowledge beyond the scope of the medical examiner's training in general medicine. In these instances, a clinical specialist in the pertinent medical discipline needs to be consulted, and the medical examiner assumes the function of an important intermediary between the investigative authority and the clinician. In this function, there are a number of ways in which the medical examiner can acquire the requisite expert opinion: The clarification of the issue can be entirely relegated to a clinical specialist, who then directly submits an independent expert report to the investigative authority. The clinical specialist can be asked to draft an accessory report, and the expert opinion is subsequently

included in the medicolegal report. Or—and this is the easiest and most pragmatic approach—the problem can be discussed with a clinician and the verbally delivered expert opinion directly included in a “comprehensive” medicolegal report, with the appropriate citation. In the past, the last mentioned approach has proved quite useful, e.g., in interpreting ECGs or radiographs.

In this report we discuss how a similar cooperative approach with a thoracic surgeon was used to clarify a lingering suspicion of medical malpractice in the case of a patient who had died eight days after being discharged from hospital after a VATS sleeve lobectomy of the upper right lung lobe in conjunction with radical lymphadenectomy that had been performed two-and-a-half weeks before his death. We describe the procedure followed to perform a collaborative forensic dissection with the thoracic surgeon, and, further, list possible complications that may occur with this kind of surgical intervention.

2. Case report

A 62-year-old man was found dead at night by his ex-wife in the home they were sharing on an interim basis. The called emergency doctor certified a natural death caused by fulminant hemorrhage due to a bronchial carcinoma of the upper right lung lobe that had been first diagnosed a month earlier. A relative later pointed out the possibility of medical malpractice, due to the circumstance that

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the man underwent lung surgery just two-and-a-half weeks before his death. From the hospital files, which had been provided for the forensic investigation, it emerged that a VATS sleeve lobectomy in conjunction with radical lymphadenectomy had been performed for moderately differentiated adenocarcinoma of the upper right lung lobe (Fig. 1). The man had been extensively informed of all risks connected with the surgical procedure in a timely manner before the operation and had been instructed on how to respond if complaints were to arise after his discharge from hospital (e.g., fever, dyspnea, pain). His post-operative recovery phase was documented as free from complications, and he was discharged from hospital eight days after the operation into outpatient aftercare at the hands of a general practitioner.

The woman told the police that her ex-husband had repeatedly complained about dyspnea after the operation, and that an emergency doctor, who had, at one point, been called, had diagnosed pneumonia. Her ex-husband had, however, refused to be hospitalized. Moreover, although he had been admitted to hospital on another occasion, he had discharged himself on the same day, against medical advice and before obtaining a diagnosis. The exact timing of the incidents described by the ex-wife could not be fully determined by the investigative authorities.

Due to the medical malpractice allegation, a forensic autopsy was ordered. Prior to dissection, a pmCT-scan (postmortem CT) was acquired, which showed occlusion of the trachea and the main right bronchus, with what was most likely thought to be blood, as the main finding. This assumption was later confirmed during the autopsy (Fig. 2). In addition, the left lung was found to be hyper-inflated. Because the pathological assessment required clinical expertise, the lungs were dissected with a cut just above the carina and removed in entirety for further examination through a thoracic

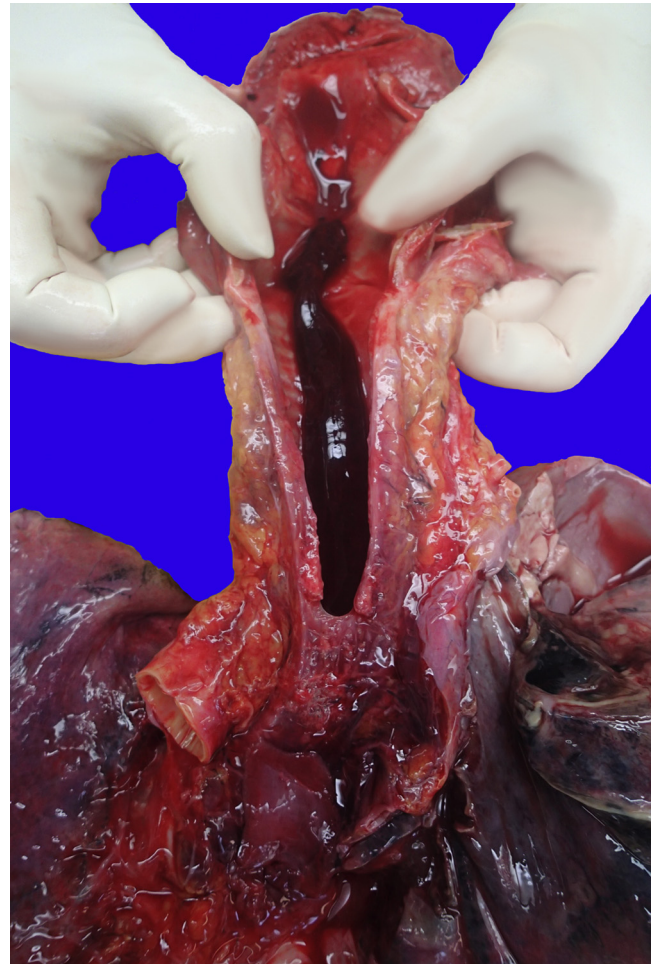


Fig. 2. Trachea found occluded with clotted blood at autopsy.

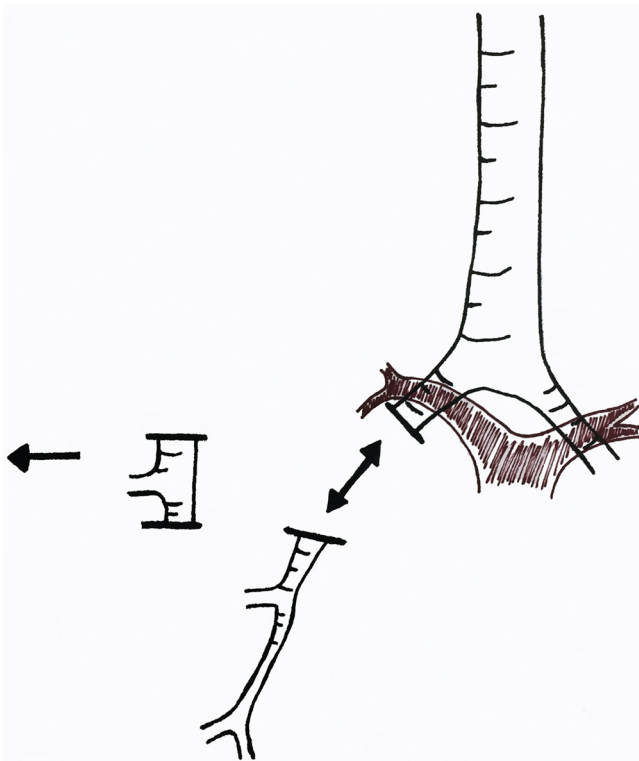


Fig. 1. Schematic of the operation illustrating the proximal and distal incisions to the main bronchus of the upper right lobe, and anastomosis of the bronchial ends (according to Ref. [1]) as well as the position of the pulmonary trunk in respect to the branches of the main bronchus. In lobectomy (without sleeve resection) the upper lobe bronchus is cut close to the main bronchus and the bronchial stump is closed [12].

surgeon. For this purpose, the retained lungs were carefully fixed in formalin via the bronchial system at a pressure of 1 m water column.

Additional findings during the autopsy were incipient left and right cardiac hypertrophy, pronounced three-vessel coronary artery disease, the status after an earlier posterior myocardial infarction, and marked left-convex scoliosis. The surgical incision on the outer right side of the chest showed no signs of inflammation and was almost completely healed. There was no bloody fluid in the right thoracic cavity.

After consultation with the public prosecutor's office and study of the hospital files and operation documentation, the operation site in the formalin-fixed lungs, which had been retained as evidence, was dissected in cooperation with a thoracic surgeon from our university hospital. The wall of the right main bronchus directly adjacent to a surgical suture (anastomosis) showed acute inflammatory changes. After the pulmonary artery adjacent to the bronchus had been opened and carefully probed with a bent probe, a bronchovascular fistula became evident (Fig. 3). The lung tissue at and around the operation site (questionably also in the right and left lower lobe) was brittle. The thoracic surgeon concluded that the operation had been correctly performed to the standards of medical practice and that the correct suture material and suturing technique had been used for the anastomosis of the bronchial ends. Further findings during this dissection were that the lobar bronchi, and some of the smaller ones, were filled with clotted blood. In addition, the left lung was hyper-inflated and signs of blood aspiration were visible on the surface of the cut through the upper

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