

Letters to the Editor

Analysis of How an Aspiration Catheter Is Included in the Bronchial Suture During Lung Resection Surgery[☆]**Análisis de cómo una sonda de aspiración es incluida en la sutura bronquial durante cirugía de resección pulmonar**

Dear Editor:

In anesthesia for thoracic surgery, lung collapse by means of single-lung ventilation provides an immobile surgical field that improves surgical exposure.

During single-lung ventilation through a double-lumen tube, aspiration catheters are used to accelerate lung collapse and/or to improve oxygenation by either aspirating secretions or administering oxygen at low flows to the collapsed lung. Careful tracheal aspiration can become necessary upon re-establishing the bilateral ventilation after lung resection in order to clear away secretions and contribute to improved lung expansion.

We report a critical incident that happened when an aspiration catheter became included within the bronchial stump while a patient underwent left lower lobectomy with open surgery, and we analyze how this could have been avoided.

A 73-year-old male patient was proposed for left lower lobectomy due to a lung mass. In the pre-anesthesia office visit, the patient was cataloged as ASA III.

The surgical intervention was done under single-lung ventilation, and therefore the trachea was intubated with a double lumen tube (n 39 left, Rüsh, Germany) without any incidents, as confirmed with bronchoscopy (Pentax BF 9, Japan).

At one moment of the surgery, the surgeon requested that the bilateral ventilation be re-established. Upon doing so, the patient presented with audible secretions. Thus, when single-lung ventilation was reinitiated, the anesthesiologist inserted an aspiration catheter and aspirated secretions through the tracheal lumen first, then through the bronchial lumen. The patient then required the administration of the neuromuscular blocker, the catheter was forgotten within the bronchial lumen and, when the bronchial suture was performed, the catheter remained included in the stump. This became evident when the surgical piece was removed, so the surgeon opened the suture, released the catheter and redid the bronchial suture manually with stitches, covering the stump with parietal pleura (Fig. 1).

The patient was extubated in surgery and his clinical course was favorable and with no incidents; he was discharged 10 days later.

The anatomic pathology report of the surgical piece revealed the mass was a cavitating lung abscess, a benign disease.

This incident could have had fatal consequences (infection, dehiscence, bronchopleural fistula, short stump, etc.) and, more

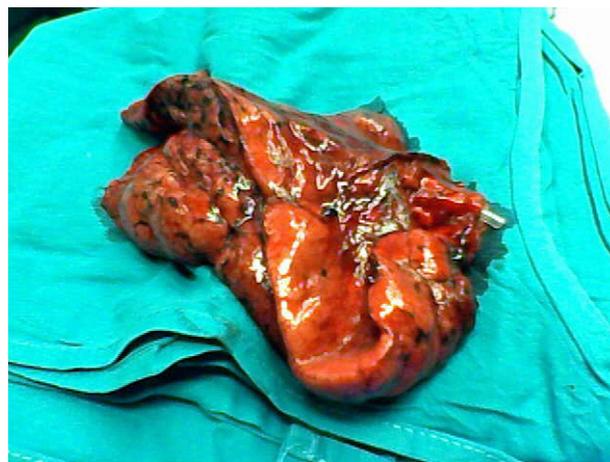


Fig. 1. Surgical piece.

importantly, it should not have occurred, although there are reports of similar situations in the literature.^{1,2}

It should not have happened because, before finishing the bronchial phase of a lobectomy, a test should be done in which the surgeon clamps the surgical bronchus in order to confirm the bronchial resection and the optimal ventilation of the remaining lung. To do so, the anesthesiologist unclamps the double-lumen tube, deflates the balloon of the bronchial blocker or withdraws the single-lumen tube, depending on the case, so the two lungs can be ventilated manually.³ No one stated or asked whether the test had been done. Prior to carrying out bronchial sutures is when devices that are in the airway and could become included in the suture line should be withdrawn or relocated.⁴

Communication among the members of the surgical team (surgeons and anaesthesiologists) is absolutely fundamental.

The distraction of the anesthesiologist brought about a mistaken choice of priorities. First, the patient should have been aspirated before initiating the bilateral ventilation, which should also have been communicated. Second, it was more important to administer the neuromuscular blocker to the patient (who was coughing) than to withdraw the aspiration catheter, which had done its function.

Regarding the use of aspiration catheters that accompany double-lumen tubes, we believe that in order to accelerate lung collapse there are effective maneuvers, such as checking the location of the tube with the bronchoscope, denitrogenating the lungs prior to initiating one-lung ventilation, releasing pleural adhesions or allowing apnea.

In order to improve oxygenation, it is more effective to apply CPAP to the proclive lung and/or PEEP to the declining lung, alveolar recruitment maneuvers, intermittently ventilate the proclive lung, or perhaps other forms of ventilation. Aspiration catheters should be used for what they have been designed for: the aspiration of secretions, when necessary, paying attention to the phase of the surgery.

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Aspiration should be sterile, light and done with care. It should be brief, paying special attention to the hemodynamic response and the anesthetic state of the patient, always withdrawing the catheter when the aspiration is completed.

We conclude that, when in lung resections the surgeon requests that the bilateral ventilation be re-established, he/she should state whether the bronchial suture is going to be done in order to avoid that devices in the airway become trapped in the stump staples (bronchial blockers, left double lumen tube in a left pneumonectomy, aspiration catheters). Nevertheless, if nothing is said, then the anesthesiologist should ask.

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Alternatives to Indicating Roflumilast and the Chronic Obstructive Pulmonary Disease Classification*

Alternativas para la indicación de roflumilast y la clasificación de enfermedad pulmonar obstructiva crónica

Dear Editor:

The current indication for roflumilast should be clarified. As commented in previous publications,¹ the different biological mechanisms by which roflumilast works modify the simple vision of a linear anti-inflammatory effect. Roflumilast has an intrinsic inhibitor effect on phosphodiesterase type 4 (PDE4) that gives it an anticholinergic bronchodilator capacity, which is increased with the use of long-acting anticholinergics (LAMA). A recent meta-analysis confirms that this treatment group is the most effective.² Furthermore, the alteration of PDE4 produces a myriad of effects that overlap with the extrapulmonary manifestations of chronic obstructive pulmonary disease (COPD): anemia, sarcopenia, osteopenia, depression, asthenia, vascular risk and arrhythmias, etc.³ Of these, the only one to have sparked any interest has been the inhibited inflammation of the TNF-alpha pathway, but only partially. The suppression that it exerts on innate immunity, associated with the capacity to inhibit the recruitment of neutrophils, can favor the appearance of infections, a paradoxical effect that is well known by specialists in systemic diseases who use biological therapy. In fact, other phosphodiesterase inhibitors have been used in rheumatoid arthritis, psoriasis, and intestinal inflammatory disease. All these elements have not been evaluated in assays with sufficient duration in order to identify risk or reevaluate the efficacy in chronic patients with exacerbations from infections and who are usually immunosuppressed due to corticosteroids.

As roflumilast widens the concept of COPD, this clarification of the drug equally modifies the vision of the current clinical types defined by the Spanish COPD Guidelines (GESEPOC). If the inflammation seems to be the link between the airway affectation, alveolar damage in emphysema, the PDE4 effect, comorbidities in COPD, and the response to roflumilast, it would be interesting to

again suggest the autoimmunity pathway. For some time, there has been much interest in the autoimmune pathogenesis of COPD, to the point that it has been considered an autoimmune disease that is either triggered or accelerated by smoking. Recently, high levels of antibodies have been demonstrated in extensive cohorts,^{4,5} even in close correlation with the evolution of expiratory flow in the first second (FEV₁) and low weight. In addition, autoimmunity would justify the existence of non-smokers with COPD, as demonstrated in another study.⁶

Therefore, it may be speculated that a COPD subgroup with systemic comorbidity and frequent exacerbations without clear etiology can be explained by autoimmunity, and the response to roflumilast as an anti-TNF medication is expected. In this context, possible infectious complications would have to be monitored. It seems necessary to aim new research toward this field and propose once again a reclassification of COPD beyond the classical types that do not fully explain the complexity of this syndrome.

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