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# Hemoptysis Due to Squamous Cell Endobronchial Lesion in a Covid-19 Patient, The Effects of Delayed Therapy During the Covid-19 Pandemic

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***Abstract***

*Patient: Male, 49-year-Old*

*Final Diagnoses: Squamous cell carcinoma of the lung, COPD, Covid 19, Hemoptysis, COPD*

*Symptoms: Hemoptysis, hypoxemia*

*Medication: Epinephrine injection, Remdesivir, Dexamethasone*

*Clinical Procedure: Fiberoptic bronchoscopy, double lumen tube, endotracheal intubation, and Mechanical ventilation.*

*Specialty: Pulmonary & Critical Care Medicine*

*Objective: Unusual clinical course*

***MeSH keywords:*** *Hemoptysis, Endotracheal intubation, COVID-19, Squamous cell carcinoma, Fiberoptic bronchoscopy, pandemic, Delta variant, Respiratory failure.*

## Background:

The Covid-19 pandemic is causing havoc in the management of chronic diseases worldwide. Many patients are opting not to seek medical treatment, leading to missed diagnosis, lost opportunities to treat, lack of therapy and increase in preventable deaths. Currently with the rapidly spreading Delta variant in the southern states of the United States, many healthcare systems have been overwhelmed with high numbers of COVID-19 patients. The CDC formulates a national ensemble forecast of new reported COVID-19 cases over the next 4 weeks, it predicts 550,000 to 1,600,000 new cases are likely to be reported in the United States for the week ending September 25, 2021. Thus, decreasing the ability to do elective bronchoscopy and other outpatient endoscopies creating lost opportunities for diagnosis and therapy. Furthermore, many specialists have been geared to inpatient care as Pulmonary Critical Care specialist, decreasing outpatient availability for pulmonary evaluations. We present a case of massive hemoptysis in a COVID-19 patient that presented to the emergency department with acute COVID Pneumonia, and massive hemoptysis. Patient was intubated and stabilized with mechanical ventilation. Fiberoptic bronchoscopy was performed that revealed an endobronchial lesion on the right main airway 1.2 cm from the carina. The area was injected with an aqueous epinephrine solution enabling the bleeding to stop. The patient remained on the ventilator for 7 days and was treated for COVID-19 with steroids, antibiotics and Remdesivir. Subsequently he was stabilized and was successfully extubated.

## Case Report:

49-year-old male presented to the emergency room after practicing social distancing due to having COVID-19 infection. The patient complained, of cough, fever, and progressive shortness of breath for the past three weeks. Patient did not get vaccinated, had a BMI of 47, a history of smoking 60-packs of cigarettes per year and COPD. The cough was purulent and with considerable hemoptysis. He reports emptying half a cup of bloody secretions every couple of hours. Patient was living in an endemic area with COVID-19 Delta variant. He was referred to the pulmonologist 3 months ago, but unfortunately his appointment was delayed. The patient was not able to have an evaluation for a “spot” found on his lung. Patient was seen in the emergency room, he presented increased oxygen requirements with a saturation of 83% that corrected with supplemental oxygen 5 liters to 94%. PCR test confirmed the diagnoses of COVID-19. Chest radiograph revealed bilateral ground glass opacities. Despite injection of steroids, Remdesivir and antibiotics. His overall condition continued to decline. A chest tomography angiogram was ordered, it showed a 3.6 x 4.0 right upper mass with lymphadenopathy bilaterally, with no evidence of pulmonary embolism. The WBC was 17 x10 3., Beta Natriuretic Peptide of 50 pg./ML, ferritin of 1232 ng/L and a D dimer <1.0. the rest of the chemistries were within normal limits. Prothrombin and Partial thrombin time were both normal and liver functions were also normal on admission. Patient was tachycardic and despite further fluids and oxygen he required mechanical ventilation, and intubation for airway stabilization. We set up the glide scope and had a double lumen tube in case we needed to

isolate the side of the bleeding. Patient was placed on the ventilator. During mechanical ventilation, a large quantity of secretions with blood were suction up to 150 cc. After the airway was stabilized with an 8.0 endotracheal tube. Fiberoptic bronchoscopy was performed to confirm the location of the bleed. The fiberoptic bronchoscope was passed through the endotracheal tube and an endobronchial mass was seen in the right main stem bronchus. We were not able to pass the tip of the scope beyond the mass as it was obstructing the main airway. We were not able visualize the right middle lobe or the basilar lobes. After several washing with saline solution, several endobronchial biopsies were performed and sent for surgical pathology. The area was instilled with epinephrine solution which was injected at the base. Several washings with saline were performed and the bleeding stopped. No need at that point for selective intubation through the double lumen tube. The patient remained on the ventilator, on antibiotics, steroids and continuous monitoring of oxygenation. Standard therapy with steroids, Remdesivir and antibiotics were continued, the patient was extubated after one week on the ventilator. Oncological consultation was obtained for further evaluation. The endobronchial lesion biopsy showed squamous cell carcinoma of the lung, non resectable stage IIIB.

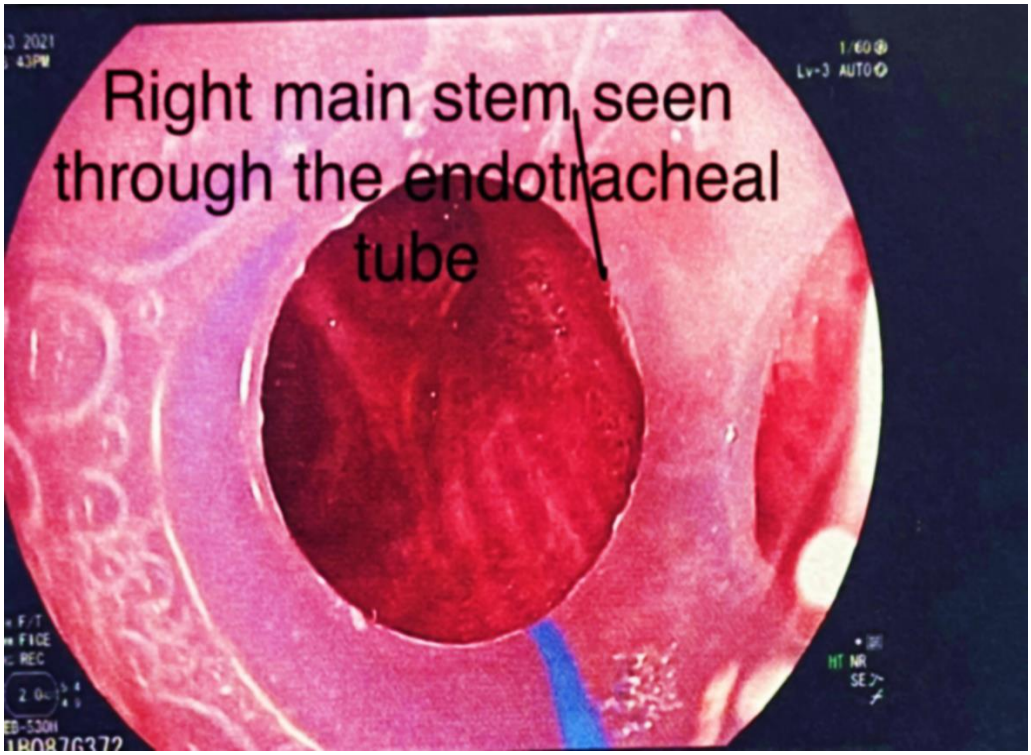


**Figure 1:** Fiberoptic view through the endotracheal tube of this patient's airway. You can see the friable mucosa that is abnormal.


**Figure 2.**: Right endobronchial lesion obstructing the entrance of the right main stem. The distance fron the carina is 1.2 cm. Tissue is friable and bleeds easily

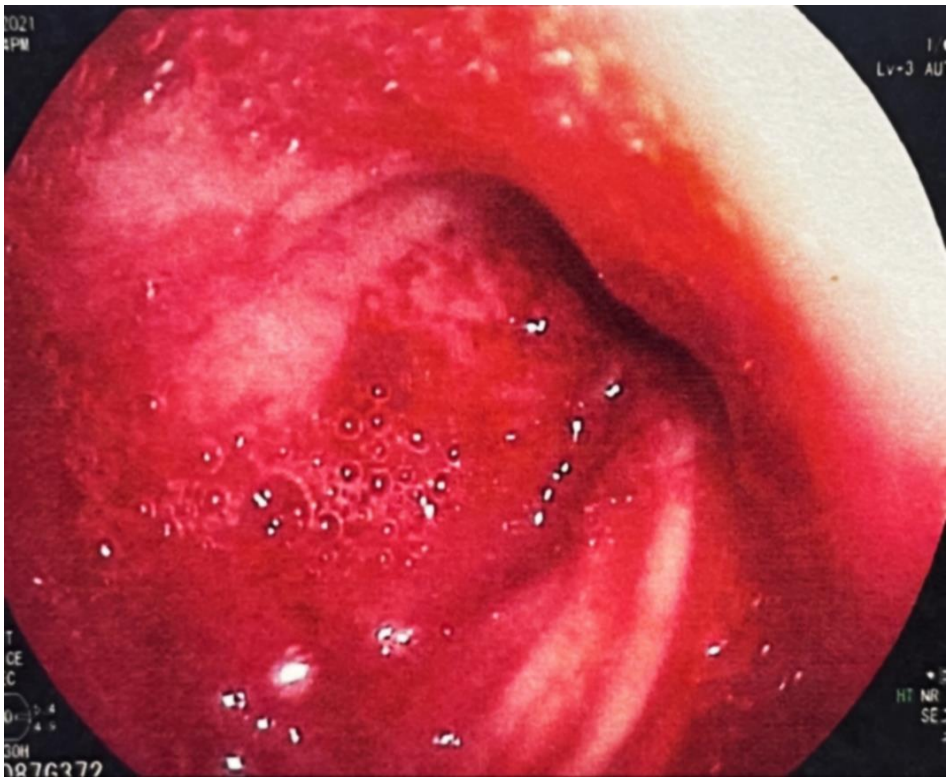


**Figure 3:** Right endobronchial squamous cell carcinoma with fresh blood.

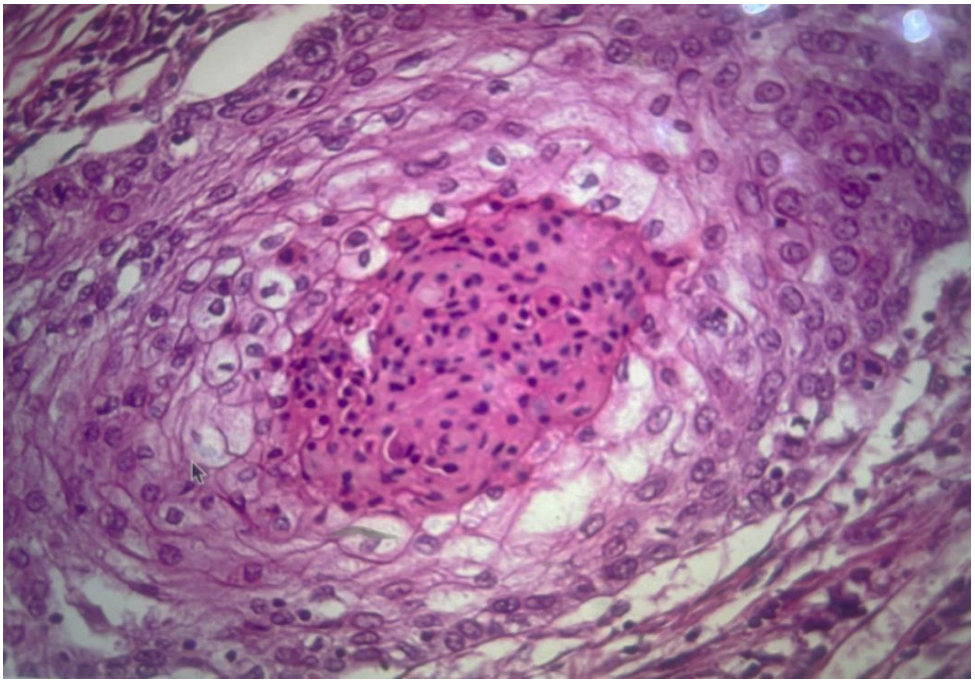

**Figure 4**. Micrograph from biopsy showing Squamous Cell Carcinoma.

## Conclusion:

Massive hemoptysis is a major emergency in the intensive care unit. Massive hemoptysis in conjunction with COVID-19 can be an added severe comorbidity, this patient is already immunocompromised due to the malignancy, in addition he also presented morbid obesity and lack of vaccination. The acute bleed creates an inability for the lungs to extract oxygen resulting in a V/Q mismatch. Prompt control of the bleeding is necessary to assure the patient's survival.

When a tumor is diagnosed on time, growth may be controlled with prompt chemotherapy and radiation. This patient unfortunately did not have follow up after the initial "spot" was detected. He tried several times to see different pulmonary physicians for continuation of care and diagnosis of the spot on the lung. The spot was subsequently identified as squamous cell carcinoma after the emergent bronchoscopy. His tumor eroded into an artery causing him to have active bleeding, leading to respiratory failure. He was treated and diagnosed with the use of a fiber optic bronchoscope.

There will be more cases much like this where chronic disease will present in more advanced stages due to the inability of surgeons, specialist, and endoscopists to provide a prompt biopsy or to complete a workup and provide therapy. Having our intensive care unit beds, operating rooms and specialist tied up with COVID-19 care is a serious problem for society, as illustrated by this case. Currently, a viable solution is difficult to find amidst a fourth COVID-19 surge being experienced in the United States at the time of this case report. There are already several reports in major cities where patients are not

getting the services they require as the capacity of beds and operating theater is limited due to the pandemic and lack of health care workers. Lung cancer requires coordination from pulmonologist, oncologist, thoracic surgeons, and radiation oncologist. Nevertheless, the pandemic has made this difficult due to lack of access for workups and lack of hospital space for outpatient elective biopsies and procedures.

The American Cancer Society reports lung cancer as the top cause of death from cancer in the US for both men and women. As our population keeps aging in the world with COPD and lower respiratory diseases being the 3rd cause of death, more cases like this may occur. Intensive care physicians trained in bronchoscopy need to stabilize the patient's airway prior to starting the bronchoscopy. As massive hemoptysis will cause worsening of V/Q mismatch, hypoxemia and may lead to other complications such as ARDS, pneumonia or refractory hypoxemia. The prompt visualization of the airway is recommended for locating of the source or sources of bleeding. In some severe cases, coiling by interventional radiology may also be needed. Double lumen tube or selected lung ventilation may be required and must be readily available for the intensivist to isolate bleeding and prevent acute death from asphyxia.

Prompt stabilization, localization and bleeding controlled is crucial to assure patient survival. In the presence of an acute COVID infection, standard protocol for acute hypoxic respiratory failure must be follow. Assuring lung protective strategies, pressors, antibiotics and synchrony of the ventilator support. Unfortunately, at the time a tumor erodes a main vessel like this patient is a non-resettable cancer. Palliation, advanced directive and comfort measurements may be considered if bleeding is not stabilized or if oxygenation does not improve.

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