



Lighting Up While On Oxygen: Emergent Intubation in the Setting of Self Induced Airway Fire

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Abstract

Airway fires can result in respiratory compromise and have fatal consequences if quick evaluation and appropriate interventions are delayed. We report a case of an acute airway fire in the setting of oxygen and tobacco use requiring emergent intubation.

Keywords: Emergent Intubation; Airway Fire; Hypertension

Case Report

A 54-year-old male with a past medical history of asthma, hypertension, hyperlipidemia and tobacco use presented to the emergency room complaining of shortness of breathe. He was found to be saturating in the low 90s, heart rate of 89/min, and blood pressure of 143/87 mmHg. He was placed on oxygen nasal cannula with improvement of his oxygen saturation to the high 90s. While awaiting the remainder of his evaluation, the patient decided to light up a cigarette. This resulted in an immediate combustion reaction and significant facial burns. The emergency room team quickly removed the patient's oxygen and extinguished the fire. The patient was noted to have facial, nasal, and oropharyngeal burns as well as edema. He was brought to the operating room for emergent intubation. An awake fiber-optic intubation was performed and a 7.5 oral endotracheal tube was placed (Figure 1). The ENT team was also present for an emergent invasive airway approach in case the regular intubation was not successful.

Discussion

Airway fires require rapid identification and termination, while ensuring establishment of adequate ventilation. Evidence of airway or inhalation injury after a burn incident include singed facial or nasal hair, carbonaceous deposits, blisters, or edema in the oropharynx, burns on the face or neck, hoarseness, or stridor. These clinical signs indicate the possibility of impending airway obstruction and a secure airway should be considered. Anesthesiologists encounter airway fires in the setting of inhalation injuries from smoke, heat, or chemical exposure as well as in the operating room, particularly when uses of electro cautery or lasers are near the airway [2-4].

In order for a fire to occur, three elements, commonly known as the "fire triad," must converge simultaneously: 1) an oxidizing agent, 2) a fuel source, and 3) an ignition source. Once an airway fire has been identified, immediate efforts should be made to curtail further damage by removing elements of the triad. The American Society of Anesthesiologists have designed an algorithm for fires

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Figure 1: Fiber-optic intubation.

that occur in the operating room, which include measures to prevent fires, identify high risk situations, and execute actions necessary to manage operating room fires. If a fire occurs, all gas flows should be discontinued, flammable materials removed, fire extinguished with saline, and if an endotracheal tube is in place at the time of the fire, it should be immediately removed. Ventilation should be reestablished as soon as safely possible with room air. Not every burn patient requires intubation, however if airway patency is of concern, intubation should not be delayed [1-4].

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