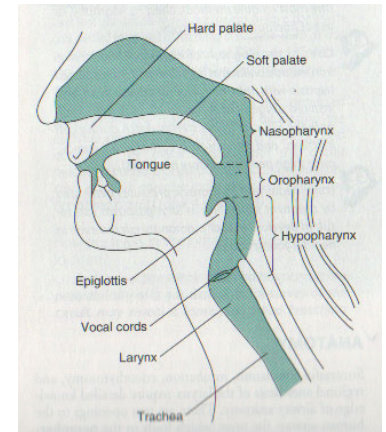


Airway Fire Fact Sheet

What is an Airway Fire?

An airway fire is a type of surgical fire that may occur during surgery on or near the airway of a patient (as shown in Fig. 1). Airway fires can cause serious and even fatal injuries to patients and staff. Approximately 650 surgical fires are reported in U.S. hospitals each year, and another three to four times as many are “near misses” or unreported events.⁴ Head and neck, or ENT (ear, nose and throat), surgical procedures are at high risk of surgical fire due to the presence of exposed supplemental oxygen around flammable materials. The occurrence of surgical fires have been reported during tracheotomy, Adenotonsillectomy (removal of the adenoids and tonsils) and skin surgery of the head and neck.¹⁻³



How Do Airway Fires Occur?

Airway fires require a “classic triad” of elements to occur: an **ignition source** to create the spark, **fuel** (or something to burn), and an **oxidizer**. Electrosurgical units, lasers and light cords are potential ignition sources for fires. Common sources of fuel in an operating room fire include endotracheal tubes (tube inserted into a patient’s trachea in order to ensure that the airway is not closed off and that air is able to reach the lungs), operating room drapes or towels, sponges and alcohol preparation solutions.⁵ The presence of an oxidizing agent such as oxygen or nitrous oxide is the final key factor in the triad. If all three of these elements are present, there is a risk of an airway fire.

Reducing the Risk of Airway Fire

Limiting any one of the arms of the “fire triad” reduces the risk of an airway fire. Recent studies comparing the risk of airway fire for an electrosurgical device and a Coblation® wand, which are commonly used during ENT procedures, showed that electrosurgical devices present a significant risk of airway fire during open cavity surgery in oxygen-enriched environments. However, the studies found that the risk of airway fire appeared to be eliminated with Coblation⁶ – an advanced technology that combines gentle bipolar radiofrequency energy with a saline solution to dissolve target tissue at temperatures typically around 40°-70°C. Unlike traditional heat-based techniques, like electrosurgery, which utilizes temperatures up to 450°C, Coblation produces minimal thermal penetration, thereby minimizing burning and damage to surrounding healthy tissue. The studies suggest that Coblation does not produce the “spark” necessary to ignite a fire thereby limiting one of the necessary arms of the “fire triad.”

Media Contact:

Janet Kim
Porter Novelli Life Sciences
(310) 444-7043
janet.kim@porternovelli.com

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