

What's New in the Patient Safety World

July 2019

Surgical Fire – A New Risk Factor

Our numerous columns on surgical fires have focused on the 3 elements of the “fire triad” – an oxidizer, a fuel, and an ignition source. We’ve pointed out that avoiding free flow of oxygen is an extremely important facet of prevention of surgical fires.

We’ve pointed out that many of the surgical fires in recent years have occurred in relatively “minor” operations. One of the reasons is that oxygen is often delivered in such cases by nasal prongs or a loosely fitting mask. That results in the presence of free oxygen in an operative field. Preventing free oxygen by use of a secure airway (laryngeal mask or endotracheal tube) is thought to be the safest way to ensure free oxygen won’t be available to contribute to a fire.

But, a recent report of a surgical fire ([Rettner 2019](#)) highlighted an unusual source of free oxygen. A 60 y.o. man with COPD was undergoing surgery for an aortic dissection. He was intubated and on a ventilator. During the surgery, the surgeons encountered bullae attached to the sternum. Despite efforts to avoid the bullae, one was punctured. Apparently, the supplemental oxygen was increased to prevent hypoxia. But, when an electrocautery device was used during the procedure, a fire was ignited on surgical gauze within the field. The fire was quickly doused with saline and there was apparently no injury to the patient. Despite the fire incident, the rest of the surgery went well, and the aortic tear was successfully repaired.

This case was presented at the Euroanaesthesia Congress, the annual meeting of the European Society of Anaesthesiology in Vienna, Austria. Lead author of the report, Dr. Ruth Shaylor, noted there have been only seven previous cases of chest cavity fires reported in the medical literature. All seven cases involved the presence of dry surgical materials (such as sponges or gauze); electrocautery devices and increased supplemental oxygen concentrations. All of the patients had COPD or preexisting lung disease.

Thus, a key lesson here is that, during our fire risk assessment (done both in the pre-op “huddle” and the surgical timeout) we need to add COPD as a risk factor in cases of thoracic surgery. The other key lesson is that the surgeon and anesthesiologist still need to coordinate to minimize supplemental oxygen when electrocautery (or other heat

source) is about to be used. Even if supplemental oxygen were temporarily stopped here, it's still possible there would have been enough free oxygen from the leak to contribute to the fire risk. Hence, recognition of the risk and having a ready supply of sterile saline to extinguish a fire is also critical.

Our prior columns on surgical fires:

- December 4, 2007 “[Surgical Fires](#)”
- April 29, 2008 “[ASA Practice Advisory on Operating Room Fires](#)”
- November 2009 “[ECRI: Update to Surgical Fire Prevention](#)”
- January 2011 “[Surgical Fires Not Just in High-Risk Cases](#)”
- March 2011 “[APSF Fire Safety Video](#)”
- November 2011 “[FDA Initiative on Preventing Surgical Fires](#)”
- December 13, 2011 “[Surgical Fires Again](#)”
- April 24, 2012 “[Fire Hazard of Skin Preps Oxygen](#)”
- April 2013 “[Reminder: Hand Sanitizers Are Flammable](#)”
- June 25, 2013 “[Update on Surgical Fires](#)”
- October 1, 2013 “[Fuels and Oxygen in OR Fires](#)”
- August 12, 2014 “[Surgical Fires Back in the News](#)”
- December 16, 2014 “[More on Each Element of the Surgical Fire Triad](#)”
- December 2015 “[Unique Ignition Sources in Surgical/OR Fires](#)”
- January 10, 2017 “[The 26-ml Applicator Strikes Again!](#)”
- January 9, 2018 “[More on Fire Risk from Surgical Preps](#)”
- June 2018 “[ISMP on Fire Risk from Skin Preps](#)”
- July 2018 “[FDA on Surgical Fires](#)”
- September 11, 2018 “[Lessons from a Surgical Fire](#)”
- May 7, 2019 “[Simulation Training for OR Fires](#)”

References:

Rettner R. Rare 'Flash Fire' Ignites in Man's Chest Cavity During Surgery. Live Science 2019; June 3, 2019

<https://www.livescience.com/65615-chest-cavity-fire-surgery.html>



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