

What's New in the Patient Safety World

December 2015

Unique Ignition Sources in Surgical/OR Fires

Far and away the most commonly implicated heat sources in OR/surgical fires have been electrocautery devices (see our December 16, 2014 Patient Safety Tip of the Week “[More on Each Element of the Surgical Fire Triad](#)”). But almost any heat source in a hyperoxygenated environment can lead to an OR/surgical fire.

Earlier this year an OR fire related to a cardioversion procedure occurred in Michigan ([Counts 2015](#)). Though the hospital apparently did not release details of the incident, news releases ([Allen 2015](#)) state that a spark from the cardioverter pad ignited a paper drape and mask covering the patient in an oxygen-rich environment. That resulted in a fire that injured the patient and several staff members.

It's not the first time that a cardioverter or defibrillator has served as the heat source for an OR fire. In 2012 an OR fire in North Carolina that was fatal to a patient was triggered by a defibrillator ([WRAL 2012](#)). And in June 25, 2013 Patient Safety Tip of the Week “[Update on Surgical Fires](#)” we discussed a study from a closed claims database ([Mehta 2013](#)) in which there was one case where a defibrillator was the heat source.

The 2008 ASA Practice Advisory for the Prevention and Management of Operating Room Fires ([ASA 2008](#)) also mentions defibrillator paddles or pad as potential heat sources. Other heat sources mentioned in that advisory include electrosurgical or electrocautery devices, lasers, heated probes, drills and burrs, argon beam coagulators, and fiberoptic light cables.

And in a recent Web M&M, Mehta and Domino ([Mehta 2015](#)) discussed a case where a bag of bladder irrigating solution hanging over anesthesiologist's accessory “slave” monitor dripped onto the power source, producing sparks and flames and filling the OR with black smoke. While the Mehta case was not an “on-patient” fire, it illustrates the same OR fire safety principles and the importance of discussing fire risk during the timeout and doing fire drills that all OR staff participate in. The staff in that case were very familiar with their roles in OR fires and responded promptly and appropriately.

AORN ([AORN 2015](#)) recently had some useful reminders on prevention of surgical/OR fires from Mark Bruley of ECRI Institute:

1. Establish team communication to assess fire risk for every patient.
2. Question if open oxygen is truly needed.

3. Educate every team member about surgical fire risk.
4. Know how to act if a fire occurs.

We have long advocated that the surgical fire risk be discussed as part of the pre-op huddle (or pre-op briefing) and, if the case is considered high-risk, respective roles of all OR participants are called out during the surgical timeout. In our January 2011 What's New in the Patient Safety World column "[Surgical Fires Not Just in High-Risk Cases](#)" we noted the San Francisco VA checklist "[The Surgical Fire Assessment Protocol](#)" ([Murphy 2010](#)). This checklist/protocol is actually printed on the reverse side of their larger preoperative checklist. This is really a very good tool! The fire risk is assessed by a simple numerical scale. If the score is 3 (high risk) the rest of the form is filled out, which basically delineates the respective roles of all those participants. That's a really good way to remind all about their responsibilities if a fire occurred. Bruley, in the AORN article, notes he has seen some surgical fire risk assessments take far too long and recommends teams tailor their fire risk assessment during Time Out to a model created in an algorithm and video from the Anesthesia Patient Safety Foundation ([APSF 2010](#)).

We've discussed Bruley's recommendations on oxygen in several of our prior columns. Perhaps the most important question to ask is "Does the patient need supplemental oxygen at all?". But if supplemental oxygen is required, Bruley notes it is recommended that it be administered through a secure airway via a tracheal tube or through a laryngeal mask, except for surgical cases where the patient must be able to speak during surgery. In such cases, 30% blended oxygen and air should be used to begin with.

Since the majority of surgical/OR fires in recent years seem to occur during relatively minor procedures, many such patients don't have secure airways in place and then the need for supplemental oxygen may arise suddenly. The anesthetist then often simply delivers it via a face mask rather than taking time to use a tracheal tube or laryngeal mask. Therefore, it remains crucial that in all cases the surgeon and anesthesiologist communicate clearly, with the surgeon calling out his/her intention to use the electrocautery device (or other potential heat source such as a laser) and the anesthesiologist informing the surgeon to wait until oxygen has been discontinued and allowed to adequately dissipate before the electrocautery device is used.

In the AORN article Bruley also discusses the importance of educating all team members about the fire risk and what to do if a fire occurs. While we have always stressed that each member of the OR team needs to know their specific role in an OR fire (such as the anesthesiologist turning off the oxygen supply), Bruley notes that there should not be specific roles designated for **extinguishing** a surgical fire because time is of the essence. He stresses that any member of the surgical team should be ready to put out a fire.

The recent AHRQ Web M&M case illustrates the importance of each team member knowing what to do in the event a fire actually occurs. We can't overemphasize the importance of training and drills for OR fires and planning prior to each case. While such fires are still relatively rare, the consequences can be devastating. The only way to be

prepared for responding to such rare events is to have practiced such responses frequently.

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](#)”

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