Ambient Oxygen and Its Effect on Surgical Fires

In a new article in Anesthesia Progress, researchers study the correlation between oxygen saturation levels and the increased risk for surgical fires during oral surgery. The researchers found that the higher the oxygen saturation and flow rate, the more likely a surgical fire is to occur.

LAWRENCE, Kan. (PRWEB) May 15, 2018 -- Anesthesia Progress – As office-based oral surgeries are becoming more common, the need for updated safety procedures is a growing concern for practitioners. During oral surgery, the use of anesthesia is not unusual, and with high oxygen saturation levels comes the increased risk for surgical fires. It is therefore necessary that dental anesthesiologists, as well as oral and maxillofacial surgeons, establish and follow standards to decrease the risk of combustion during surgery.

Researchers from the Riley Hospital for Children/Indiana University School of Dentistry, Indiana University School of Medicine and Purdue University in Grand Rapids, Michigan, recently published a study in the current issue of Anesthesia Progress that examines the effect of ambient oxygen on surgical fire occurrence.

In a controlled environment, under a vented chemical hood, the researchers performed 30 trials at each oxygen saturation level (60%, 80% and 100%) with flow rates of either 4 or 10 liters per minute (L/min) to detect latency time to combustion. To mimic the oral cavity, they used a raw chicken carcass, which allowed for the use of an oxygen-supplied tube to be secured and two gauze sponges to be placed, creating a more realistic surgical setting. Additionally, a standard electrosurgical tip, a commonly used dental tool, was inserted to provide an ignition source. The researchers were able to obtain real-time data with the use of a thermometer, dew point hygrometer and oxygen sensor, which were all connected to a computer during each trial. The readings obtained confirmed that conditions were consistent throughout all trials.

The researchers categorized their data according to specific occurrences during the trials: the time to the first event, the time to the first pop and the time to the first flash or fire. The results indicated that the total number of fire events increased significantly as the oxygen saturation levels increased; specifically, saturation levels at 60% were much lower than at 80% or 100%. It was also noted that there was a correlation between the flow rate and the time to the initial fire event, as the flow rate of 10 L/min did increase the number of events. Ignitions were found to be significantly higher at 100% than at 60% or 80%; similarly, ignitions were much higher at the 10 L/min flow rate with 100% oxygen than at the 4 L/min rate.

Overall, the higher the oxygen saturation and flow rate, the more likely a surgical fire is to occur. Dr. Leah Davis, one of the researchers involved in this study, commented, “This research is interesting and exciting to me because dental anesthesia is something that is becoming more widely used every day, but cannot be taken lightly. More research and regulations need to be put in place to make sure all procedures will keep patients safe.”

The study confirms that the previously recommended oxygen saturation levels and flow rates remain safe. However, the researchers suggest future study is warranted to determine the minimum concentration and flow rates that could cause combustion during oral surgery. The current literature regarding surgical fires during oral surgery is lacking, and as more office-based surgeries are occurring, more data points are needed to set a standard of care.

About Anesthesia Progress
Anesthesia Progress is the official publication of the American Dental Society of Anesthesiology (ADSA). The quarterly journal is dedicated to providing a better understanding of the advances being made in the science of pain and anxiety control in dentistry. The journal invites submissions of review articles, reports on clinical techniques, case reports, and conference summaries. To learn more about the ADSA, visit: http://www.adsahome.org/.
Contact Information
Dominique Scanlan
Allen Press
http://www.allenpress.com
+1 (785) 865-9226

Online Web 2.0 Version
You can read the online version of this press release [here](#).