Correspondence

Fire Risk with Nasal Cannula Oxygen

Dear Editor:

Huddleston et al[1] raise awareness of fire hazards with supplemental oxygen during ophthalmic plastic surgery and succinctly outline the variables that contribute to devastating operating room fires. We question the conclusion that "insisting on nasal cannula use should be our next step toward eliminating surgical fires."

Several studies demonstrate the fire dangers of oxygen supplementation via nasal cannula. The number of locations in the facial field that breach thresholds for combustion risk may correlate directly with flow rate.[2-4] Huddleston et al do not provide flow rates that may be relevant. Nevertheless, even at low flow rates, nasal cannulated oxygen may still cause serious fire hazards during oculofacial surgery with ignition sources such as cautery or laser in close proximity.

Although there are limitations with each, we are aware of 3 strategies to reduce the risk of fire with nasal cannulated oxygen: (1) The Emergency Care Research Institute recommends stopping supplemental oxygen $\geq$1 minute before and during the use of electrocautery devices or lasers, (2) Engel et al[5] describe a modified nasopharyngeal tube to direct oxygen into the posterior pharynx, and (3) we described the use of a midfacial seal drape to achieve a barrier between excess oxygen and the surgical field.[2]

Operating room fires are underreported and represent a preventable cause of morbidity and mortality. Further attention to the topic may clarify the safest methods for oxygen delivery during oculofacial surgery and forestall further devastating events.

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Author reply

Dear Editor:

We appreciate the opportunity to discuss the recent report on innovative draping methods to minimize elevated oxygen concentrations in ophthalmic surgical fields.[1]

We agree that using a standard nasal cannula does not absolutely eliminate the risk of fire during ophthalmic surgery, but we still assert that it is safer than using a face mask. One of the studies cited by Tao and Hirabayashi found oxygen levels higher than atmospheric (25.8%) at the left lateral canthus when delivering oxygen via nasal cannula at relatively high flow rates (6 liters/min).[2] Readings were performed on supine volunteers simulating patients undergoing cervical node biopsy.[2] Near atmospheric oxygen levels were found around the eyes at low to normal flow rates between 2 and 4 liters/min O_2.[2] However, Tao et al[1] found average oxygen levels up to 31.3% in the ophthalmic surgical field using patient simulator mannequins at high flow rates (6 liters/min). In our investigation, we prospectively studied open-face draped patients undergoing ophthalmic plastic surgery receiving oxygen via nasal cannula or face mask.[3] We found that patients receiving oxygen via nasal cannula at normal flow rates had near atmospheric oxygen levels in the periocular area.[3]

To put these results into perspective, when we delivered oxygen via face mask at 5 liters/min O_2, we obtained average readings up to 38.9% O_2 in the periocular area. Our highest average reading was 63.7% O_2 at the glabella, which occurred when providing oxygen at 10 liters/min via face mask. Our original manuscript went into greater detail on the effect of flow rate, but its scope was limited at the journal's request.

We also agree with recommendations put forth by The Emergency Care Research Institute, and find promise in the techniques outline in the recent article by Tao et al.[1] They clearly provide another way to make oculofacial surgery safer. We still stand by our original statement that nasal cannula is a better choice over face mask for ophthalmic plastic surgery.

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Temporal Artery Biopsy

Dear Editor:

The recent article describing the clinical practice patterns for temporal artery biopsy as a mean of diagnosing giant cell arteritis (GCA) by Schallhorn et al[1] provides important data that can inform the current practice. This article evaluated the preferred approach to diagnose GCA by temporal artery biopsy through a survey sent to oculoplastic surgeons, neuro-ophthalmologists, and rheumatologists. However, we believe additional information missed in the article is required to interpret their results.