



**Flash Fires during Facial Surgery:
Recommendations for the Safe Delivery of
Oxygen**

Sir:

In nonintubated patients undergoing facial surgery, supplemental oxygen is most commonly delivered via nasal cannula. However, this may not be the safest method. A flash fire in the operating room, caused by nonvisible sparking between the electrocautery device and the patient's tissues in the presence of delivered

oxygen, is a known complication.^{1–3} Oxygen delivery by nasal cannula can increase the risk of a flash fire during facial surgery.

Reyes et al.⁴ showed how commonly used combinations of oxygen flow and electrocautery can ignite if the nasal cannula is displaced from the nostril. However, a properly placed nasal cannula within the nostril does not ignite at any combination of oxygen flow and electrocautery setting. A poorly secured nasal cannula can easily be displaced from the nostril during facial surgery, thus setting up a potentially dangerous situation.

Previously, the senior author routinely used a nasal cannula to deliver oxygen during facial surgery. However, a flash fire incident nearly 20 years ago (that fortunately did not harm the patient) prompted the senior author to change his technique of oxygen delivery. A recent second flash fire during a routine lower lid blepharoplasty led to a further refinement in the technique.

The senior author now routinely uses an 8-French feeding tube (Kendall Curity, Tyco Healthcare, Mansfield, Mass.) inserted through the naris into the posterior nasal airway to securely deliver oxygen into the nasopharynx during facial surgery. The length of tubing needed to safely deliver oxygen into the pharyngeal space is estimated. The optimal intranasal length of tubing should be greater than 7.5 cm, the approximate distance from the nasal vestibule to the choanae.⁵ Additional precautions instituted to ensure that the catheter is passed properly within the posterior nasal airway include the following: pulling back the tube if a gag reflex is elicited, passing the catheter further if excess oxygen flow is heard at the external naris, and switching nares if there appears to be curling of the catheter due to a nasal airway obstruction. Steri-Strips (3M, St. Paul, Minn.) secure the catheter at its entry into the naris, at the chest drapes, and at its connection to the oxygen delivery tubing.

After the second incident, the senior author added a compressible earplug (Flents, St. Charles, Mich.) to the above technique. The earplug is passed alongside

the feeding tube and then allowed to expand in the naris (Fig. 1), effectively blocking any oxygen from escaping one naris. In addition, a concerted effort is now made to titrate the oxygen flow and set the electrocautery device to the lowest possible settings.

In summary, supplemental oxygen is usually necessary during operations performed under sedation anesthesia.

Electrocautery, even at low settings, can produce nonvisible sparking, which if exposed to oxygen, can cause flash fires. However, oxygen can be safely used in combination with electrocautery in the nonintubated patient if additional precautions are taken to ensure its delivery into the nasopharynx.

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