Challenges of Airway Management

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In this issue of *Anesthesia Progress*, Dudaryk et al present an interesting case, “Facial Artery Pseudoaneurysm: Challenges in Airway Management.” The difficult airway is not uncommonly encountered when anesthetizing patients for dental, oral, or maxillofacial surgery. The authors are to be commended for having successfully managed this difficult patient, particularly by having been immediately prepared for an emergent surgical airway in case the intubation technique failed. However, when confronted with a similar difficult airway, I would not have selected the anesthetic technique that was chosen for this case. Below, I offer what I believe is a much better choice if done precisely as written or guided by the same principles with minor variation.

It is unknown whether at the time of this anesthetic the bleeding of the facial artery pseudoaneurysm could have occurred as a result of trauma from passing the nasal endotracheal tube into the oropharynx during the attempted fiber-optic intubation or whether it was caused by opening the mouth and removing the gauze packing that had been controlling the bleeding with continuous biting on the gauze. Regardless, upon opening of the mouth, massive hemorrhage was observed in the previously stable patient. It appears that gently opening the mouth “in an attempt to improve visualization” during nasal fiber-optic intubation under general anesthesia was not a good choice for 2 reasons. First of all, a standard surgical principle dictates that if bleeding is somewhat controlled despite the presence of a foreign object such as a penetrating knife, steel rod, or packed gauze that may be helping tamponade the bleeding, the site of the injury should not be disturbed until the surgeon is ready to make the initial incision to gain direct control. Opening the mouth and removing pressure on the gauze pack apparently disturbed the hemostasis. Secondly, the benefit of opening the mouth during nasal fiber-optic endotracheal intubation is minimal at best, especially in this case with the increased risk of disturbing the pseudoaneurysm site and flooding the fiber-optic view with blood. Finally, in

most circumstances, when intubation of the airway could be difficult and mask ventilation could be compromised by significant infection, facial abnormality, or, in this case, massive bleeding, awake fiber-optic intubation with or without modest sedation is preferred.

This case represents the ideal indication for an awake nasal fiber-optic endotracheal intubation procedure with excellent airway local anesthesia, under minimal to light moderate sedation, using the following technique:

Nasal cannula oxygen is first applied and the patient is then administered nasal spray of 1% lidocaine with 1:200,000 epinephrine to both nares that within a few minutes provides topical anesthesia and vasoconstriction of the nasal mucosa with minimal hemodynamic changes. A second spray application a few minutes after the first provides for more profound topical anesthesia with minimal vasoconstrictor absorption. Then, additional 1% plain lidocaine can be sprayed into the pharynx by gently passing into the nasopharynx either a small gauge urinary catheter or a long flexible intravenous catheter with the needle removed. Finally, 1% lidocaine plain can be injected into the trachea via a cricothyroid membrane to anesthetize the terminal branches of the recurrent laryngeal nerves. Attaining profound topical anesthesia and vasoconstriction of the vessels in the nasal mucosa and anesthetizing the oropharynx, laryngopharynx, and proximal tracheal mucosa are absolutely essential elements for patient comfort and operator ease, especially when accompanied with very modest benzodiazepine or dexmedetomidine sedation. For patients who can open their mouth, unlike the case presented, continuous gargling with 1% viscous lidocaine for approximately 10 minutes is also a very effective alternative for pharyngeal topical anesthesia.

Next, an appropriate-sized soft nasopharyngeal (NP) tube with an attached safety line of sturdy suture material is sliced longitudinally from the trumpet end to several millimeters short of the tip of the beveled distal end and gently inserted through the nasal passage, with the anesthesiologist standing directly behind the patient's head so that the tip of the tube can be precisely

aimed toward the midline and trachea, as if attempting a blind nasal intubation. With the tip of the NP tube now hovering directly over the glottis, the flexible fiber-optic scope that has been previously backloaded with the endotracheal tube is then inserted through the NP tube and easily advanced into the trachea, using the NP tube as a guide. Once the tracheal rings are observed, the already sliced NP tube with its attached safety suture is quickly torn away from the scope and the endotracheal tube is subsequently advanced into the trachea, if necessary with a twist if resistance is encountered at the level of the glottis. Then, general anesthesia can be safely induced without fear of inability to quickly gain control of the airway and without fear of inability to ventilate due to upper airway obstruction, severe nasal

turbinate obstruction, massive hemorrhage, and/or significant aspiration of blood.

Under less than ideal circumstances for attempting nasal fiber-optic intubation (eg, the patient is not profoundly topically anesthetized, there is a lack of nasal mucosal vasoconstriction, the patient is fearful and uncooperative, a larger than necessary endotracheal tube cannot be passed or is forcefully inserted, or the tip of the scope is not positioned in the midline), nasal fiber-optic endotracheal intubation after general anesthesia induction is the only other reasonable option. However, if done correctly, awake nasal fiber-optic endotracheal intubation is generally the best option, if there are any concerns with securing the airway due to infection, bleeding, anatomic abnormality, or other complications.