Postoperative Airway Obstruction in a Low Resource Setting: A Case Report

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A 2-month-old girl with abnormal facial features and malnutrition presented for placement of a gastrostomy tube. The surgery was performed under general anesthesia using a laryngeal mask airway (LMA); however, after removal of the LMA, the patient had recurrent airway collapse, requiring repeated insertion of the LMA. The authors describe the management of this problem with the use of a tongue suture and anterior traction in the postoperative period in a resource-limited setting. (A&A Practice. 2018;11:112–3.)

Airway obstruction in the perioperative period is common. Often the use of basic airway maneuvers can overcome this problem. However, in some cases, the airway obstruction can present the anesthesia provider with unique challenges for which creativity is required to provide life-saving ventilation. We present a case of a child with abnormal airway anatomy at our hospital in rural Burundi, who had recurrent airway obstruction after surgery. Written consent for this publication was obtained from the child's mother.

CASE DESCRIPTION

A 2-month-old girl presented to the operating room for placement of a gastrostomy tube for enteral feedings. The child was born with abnormal facial features (Figure 1) and later diagnosed with choanal stenosis. After 1 month of life, the child was admitted to the hospital with breathing difficulty and severe malnutrition. The child was placed on oxygen and antibiotics. On the day of surgery, the child was noted to have proptosis and retrognathism. Breathing was noted to be partially and intermittently obstructed. Oxygen saturation on room air was 91%, and the child's weight was 2.45 kg.

Given our lack of rescue airway equipment, the decision was made to proceed with general anesthesia without paralysis. After preoxygenation followed by induction with propofol and fentanyl, 1 attempt was made at direct laryngoscopy with a Miller 0 blade, which revealed a grade 4 view. Bag-mask ventilation was impossible; therefore, the decision was made to place a size 1 laryngeal mask airway (LMA). After insertion of the LMA, ventilation was adequate, and the gastrostomy tube placement was performed under isoflurane anesthesia.

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After completion of the surgery, the isoflurane was discontinued, and on emergence from anesthesia, the child began opening her eyes and moving spontaneously. The LMA was removed, which resulted in immediate airway collapse. Despite the child appearing awake, bag-mask ventilation was impossible, even after placement of an appropriately sized oral airway, and the child desaturated rapidly. The LMA was reinserted and ventilation was again possible and the oxygen saturation returned to 100%. After approximately 10 minutes, another attempt was made at LMA removal, this time followed by the same course, including inability to ventilate and desaturation and finally reinsertion of the LMA. A third attempt was made and this time the child was placed in the prone position immediately after LMA removal in hopes that this would open her upper airways with the aid of gravity; however, this also failed and

Figure 1. Patient before surgery.

the LMA was again reinserted. After discussion with the surgical team, the decision was made to place a 2-0 vicryl suture in the tongue, as is performed after cleft palate surgery at our institution, in an effort to maintain the tongue in an anterior position. After suture placement, the LMA was removed and with gentle anterior traction on the tongue, the airway was able to be maintained open. The child was transferred to our recovery room and monitored for the next 3 hours by the attending anesthesiologist, using a pulse oximeter donated to our hospital by Lifebox. The child continued to have intermittent episodes of upper airway obstruction which were relieved each time by anterior traction on the tongue suture (Figure 2). After approximately 3 hours, the child appeared to be more awake and, although her airway continued to be obstructed, she began to recover spontaneously without tongue traction. Later that day, the tongue suture was removed and the child was transferred to the pediatric service (Figure 3).

DISCUSSION

Cases of airway obstruction are common in the perioperative period. Children born with genetic abnormalities and abnormal facial features are at high risk of being difficult to intubate and ventilate. Given our lack of genetic testing, this patient's underlying disorder remains unknown; however, a careful preoperative evaluation noted signs worrisome for difficult intubation and ventilation. This case highlights the importance of advanced preparation even in a low-resource setting, as well as strong communication between the surgical and anesthesia teams. Also highlighted is the importance of having a dedicated recovery room to monitor and treat cases of postoperative airway obstruction. Unfortunately, while our hospital has a recovery room, it is unstaffed, which resulted in the attending anesthesiologist

Figure 2. Tongue suture with anterior traction.

Figure 3. Patient after removal of tongue suture.

being tied to this patient for several hours after surgery and unavailable for other responsibilities. An alternative to placing a tongue suture in this child would have been to transport the patient to the recovery room with the LMA in place until the child was able to maintain her airway open spontaneously. Again, given our limited staffing and monitoring capacity, the risk of dislodgement of the LMA or laryngospasm was thought to be greater if the LMA had been left in place. While it is possible that correction of the patient's choanal stenosis may improve her ability to tolerate general anesthesia, especially with regard to her postoperative ventilation, it seems likely that her airway obstruction was occurring from generalized upper airway weakness and collapse of her tongue against the posterior oropharynx. ■

DISCLOSURES

Name: Gregory C. Sund, MD.

Contribution: This author helped care for the patient and write the manuscript.

Name: Samuel Nizigiyimana.

Contribution: This author helped care for the patient.

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