branches of this nature and provide a better assessment of ulnar arterial supply.

REFERENCES


Ulceration of the Inferior Turbinate: A Complication of Prolonged Nasotracheal Intubation

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Nasotracheal intubation has been a recognized alternative to tracheostomy for long-term endotracheal intubation since the introduction of polyvinyl chloride tubes in the early 1960s.1 Initial damage to the septum while inserting a nasal tube2 and subsequent ulceration of the nares because of its prolonged presence or poor fixation are documented complications.3,4 However, damage within the nose associated with long-term nasotracheal intubation is not documented well. Such a case is described in a 2½-year-old child.

REPORT OF A CASE

A 2½-year-old girl was diagnosed initially at the age of 2 months as having a primitive right ventricle and univentricular heart. At this time her cardiac failure was controlled by binding of the pulmonary artery. She remained well until 2½ years of age, when she was readmitted after three weeks of malaise with subacute bacterial endocarditis and vegetations in the right and left pulmonary arteries. This was treated by appropriate and antibiotic therapy; however, after 2 weeks there was no improvement. She had suffered from repeated infected pulmonary emboli, and her weight, which had been 10 kg on admission, had decreased to 7.0 kg. At this time, surgery was performed for removal of the vegetations during cardiopulmonary bypass.

Ventilation was controlled postoperatively via a 5.0-mm plain Portex nasotracheal tube through the right nostril, and the presence of a leak at the laryngeal level was established. Her general condition remained poor because she had pneumonia and required a dopamine infusion for cardiovascular support during the first 4 postoperative days. These two factors probably combined to give poor tissue oxygenation in the early postoperative period.

At 13 days postoperatively, her condition had improved such that her trachea was extubated, but she still was coughing copious thick secretions. Four days later, she had a large right nasal hemorrhage. Her weight at this time was 7.0 kg and estimated blood volume was 0.34 l. During this event her systolic blood pressure fell to 40 mmHg, heart rate rose to 176 beats/min, peripheral perfusion was poor, and she appeared centrally cyanosed. Her trachea was reintubated orally using a 5.5-mm plain Portex tube. Blood was aspirated from both the stomach and trachea. Bleeding continued in spite of nasal packing. By direct observation there was mucosal ulceration along the length of the right inferior turbinate with diffuse bleeding, but no localized bleeding point was noted. The nose was repacked, ventilation controlled, and sedation instituted, which led to a cessation of bleeding. A total of 500 ml stored blood and two units of fresh frozen plasma were administered. Four days later, her trachea was extubated again and the nasal pack removed, however, she still had a purulent cough. After 4 more days she had a second hemorrhage from the right nose with an estimated blood loss of 40 ml. The nose was again packed, ventilation controlled via an oral endotracheal tube, and, in order to facilitate management of her airway, she subsequently had a tracheostomy.

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Throughout this period, her platelet count, plasma fibrinogen levels, and prothrombin times remained normal.

DISCUSSION

Several factors may have contributed to the development and slow healing of the ulcer. An initial period of prolonged nasoendotracheal intubation resulted in pressure on the inferior turbinates, despite use of a nasotracheal tube of appropriate size for the larynx. The child had nutritional debility and was in a catabolic state secondary to endocarditis and major surgery. She also had poor cardiac and pulmonary function, leading to poor tissue oxygenation. The tendency to hemorrhage was increased by her chronic cough causing venous congestion.

Necrosis of the external nares is a recognized complication of nasal endotracheal intubation in all age groups and is thought to be associated with the fixation and support of the tube. This case illustrates necrosis within the nose, a separate problem, more likely to be associated with the size of the tube. In the neonate a tube of appropriate size for the larynx can be inserted easily through the nose. In patients of older age groups a tube of the smallest diameter through which the patient can ventilate adequately should be used. In adults a relatively small-cuffed tube is employed commonly. Another factor that may be significant is that the turbinates in a neonate are cartilaginous and deformable, but by the end of the first year of life they are replaced by bone. Furthermore, debilitated patients have an increased risk of tissue damage and slow healing. From the experience of this case, recommendations can be made that are applicable to debilitated patients of all age groups. If controlled ventilation is required, a choice must be made as to the safest method of securing the airway in light of the associated clinical problems. In some patients the alternative methods of oral endotracheal intubation or tracheostomy may be appropriate early in the course of the illness. If nasal endotracheal intubation is selected, the tube used should traverse the nasal passages easily. If a difference exists, the larger nostril should be used initially when the patient is the most debilitated. Perhaps the nostril used should be alternated regularly at intervals of several days. This may reduce the amount of damage within the nose and allow some inspection of nasal mucosa.

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REFERENCES


Difficult Extubation of the Trachea


Although reports and reviews of difficult endotracheal intubations are numerous, only a few reports describe difficult extubations. We describe a mechanical complication that resulted in a difficult extubation of the trachea. Although this is an unusual situation, the potential of this occurring may be increasing because the number of oral and maxillofacial surgical procedures is increasing.

CASE REPORT

A 29-year-old man who was involved in a traffic accident had a fractured zygomatic complex and multiple facial lacerations. He was scheduled for an open reduction and internal fixation of this fracture and closure of the facial lacerations. His past medical history and review of systems were normal. In addition to the injuries, the maximum opening between his upper and lower incisor teeth was less than 20 mm (normal being 40-50 mm). A nasal endotracheal tube was inserted by using sedated blind technique utilizing a tracheal indicator whistle without complications. Anesthesia was obtained using narcotic-ni

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Key Words: Extubation, Endotracheal: complications

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