CORRESPONDENCE

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In Reply.—We are pleased to note that pulmonary hypertension did not occur at 5, 10, or 15 min after an intravenous bolus infusion of 10–0.70 mg/kg of rPF4 injected to reverse heparin anticoagulation in humans after bypass.

We believe the following two comments are important:

First, almost all nonallergic clinical heparin-protamine reactions are characterized by explosive pulmonary hypertension occurring within the 1st minute after protamine injection, whereas central hemodynamics often are returned to normal by 5 min. Thus, the first data point provided by Giebecce and Alexander at 5 min may be too late to learn the incidence of heparin-PF4 reactions characterized by pulmonary hypertension.

Second, we have reported the incidence of nonallergic pulmonary hypertension in a prospective study of 925 patients at Massachusetts General Hospital of 1.5%. A similar incidence of two reactions in 48 patients studied was reported by Morel et al. Presuming that human allergy to PF4 does not occur, reducing or eliminating the incidence of these occasionally catastrophic heparin-protamine reactions is the sole medical rationale for developing PF4, which is likely to be an expensive alternative to protamine. To justify this expensive recombinant molecule, a large controlled, randomized, blinded comparison in hundreds or thousands of patients will be required to show the efficacy of PF4 at heparin reversal while causing less acute pulmonary hypertension than protamine. This will take a careful and major effort in many centers.

We still are certain why 100% of protamine injections to neutralize heparin in sheep and pigs produce thromboxane release and acute pulmonary vasoconstriction, whereas this occurs in only 1.5% of humans. Perhaps some human lungs, like those of sheep, harbor pulmonary intravascular macrophages, presumably the sensitive cells producing thromboxane. The foreign protein reaction to PF4 alone when injected alone in sheep was intense, thereby preventing us from examining the response to PF4 neutralization. Interestingly, the foreign protein protamine does not produce pulmonary hypertension when injected alone intravenously into sheep. Apparently, PF4 is far more stimulatory. Human experimentation with PF4 in thousands of patients will be required. We believe this is a worthwhile pursuit and wish Repligen good fortune in the randomized, prospective, blinded clinical trials of PF4.

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References

Laryngeal Mask Airway for Resuscitation of a Newborn with Pierre-Robin Syndrome

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To the Editor.—Paterson et al. have shown that the laryngeal mask airway (LMA) can be used as an effective method of airway management during neonatal resuscitation as an alternative to bag and mask ventilation. The investigators suggest caution in the use of the LMA in neonates beyond the population studied, which did not include neonates who were suffering from congenital oropharyngeal pathology. The current report describes the use of LMA for resuscitation of a newborn with Pierre-Robin syndrome after failure of tracheal intubation and face mask ventilation.

The newborn was a 5-day-old, 3.2 kg, full-term male with Pierre-Robin syndrome (micrognathia, cleft palate). The anesthesiology team was paged when serious airway obstruction and cyanosis developed that were not relieved by lateral positioning of the baby, traction of the tongue, and face mask oxygen. Pulse oximetry showed the hemoglobin oxygen saturation (SpO2) to be 80% and the electrocardiogram showed sinus bradycardia (50 beats/min). An oropharyngeal airway was inserted, and ventilation via face mask with 100% O2 resulted in inadequate chest inflation associated with gastric distension. Direct laryngoscopy using different blades (Miller, Oxford) failed to visualize the larynx. A size 1 LMA was inserted easily, and its cuff was inflated with 5 ml of air. Ventilation with a T-piece circuit using 100% O2 resulted in adequate and easy chest inflation without
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Rigid Bronchoscope: A Possible New Option for Percutaneous Dilatational Tracheostomy

To the Editor—The performance of percutaneous dilatational tracheostomy has increased in recent years with the advent of guidewire-based techniques and better materials.1 Claimed advantages over conventional tracheostomy are that dilatational techniques are safer, easier and quicker to perform at the bedside, with a low incidence of late complications.2 Technical problems associated with the procedure include (1) incorrect placement of the needle, (2) over/under withdrawal of the endotracheal tube (ETT), (3) transection of the ETT by the needle or cuff puncture, and (4) ventilation difficulties during passage of the dilators. The first three problems may be avoided by passing a fiberoptic scope down to the tip of the ETT, allowing better control over needle placement and ETT position. However, this may make ventilation more difficult because gas flow through the ETT is limited by the presence of the fiberoptic scope.3 A possible improvement in selected patients is to exchange the ETT for a laryngeal mask airway (LMA),4 but this technique has limited application. Another option is to use the rigid bronchoscope.

A 25-yr-old, 68-kg man whose lungs had been ventilated for 2 weeks after a cardiac arrest underwent laryngeal-guided percutaneous tracheostomy, a routine procedure at our institute. Two senior anesthesiologists were present, one to provide airway care and anesthesia, the other to perform the procedure. A superficial horizontal incision was made over the subcricoid area and a 14-G needle passed into the trachea between the second and third tracheal rings. A guidewire was inserted and the position confirmed by laryngeoscopic evaluation of the ETT, which had been withdrawn into the larynx. A tract was created by blunt dissection and the passage of progressively larger dilators until an 8-mm tracheostomy tube could be placed. The procedure was uneventful, but an hour afterward, the lungs became difficult to ventilate. A large blood clot was found to be obstructing the left main bronchus, an uncommon but well documented complication of the technique. Several attempts at removing the clot with laryngeal-guided suction and grasping forceps failed. Eventually, the tracheostomy tube was removed, and a rigid venturi bronchoscope (RVB) was used to extract a semi solid 20-ml clot, resulting in considerable improvement in lung function. There was no active bleeding from the tracheostomy site. Because the patient was stable, the percutaneous tracheostomy was repeated with the RVB functioning as a guide and for airway control. The approach to the trachea was made via the same incision, but the guidewire was inserted between the first and second tracheal rings to minimize the risk of further bleeding. The procedure was uneventful.

We subsequently used the RVB to perform percutaneous tracheostomy on six patients without difficulty and have been impressed with the advantages it offers over other techniques. It provides a clear, undistorted view of the surgical site and supports the tracheal architecture while the dilators are being passed. Also, there are none of the difficulties in ventilation that commonly accompany percutaneous tracheostomy. We found that the position of the bronchoscope was controlled easily and that tracheal suction could be performed readily. Potential limitations of the technique include difficulties in placing the RVB and damage to teeth. Aspiration is possible, but if this occurred, it would be identified immediately and cricothyroid pressure could be applied while the airway was made more secure and suction was performed. Aspiration may still occur with the standard technique if the ETT is withdrawn too far or the cuff is damaged. In addition, the risk/benefit ratio of exchanging the ETT for the rigid bronchoscope must be considered. Perhaps the main limitation of the technique, however, is the inexperienced anesthesiologist with placement of the RVB. Finally, the RVB has been the domain of surgeons and radiologists in providing anesthesia and we are the case with tracheostomy before the anesthetic technique.5

To summarize, we believe the rigid bronchoscope, while a valuable alternative to standard techniques for percutaneous tracheostomy, is at present investigational. Further study of the technique is warranted.

References
2. Emergency Cardiac Care Committee and Sub-Committees, American Heart Association: Guidelines for cardiopulmonary resuscitation and emergency cardic care. VII Neonatal resuscitation. JAMA 268:2276-2281, 1992
4. Chaid GD, Crane DL, Phillips RM, Tunell WP: Extubation and reintubation guided by the laryngeal mask airway in a child with the Pierre Robin syndrome. Anesthesiology 76:640-641, 1992 (Accepted for publication June 6, 1995.)

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Table 1. Taste and Smell Dysfunction

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Taste</th>
<th>Smell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary sinus surgery</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Nasal surgery</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Nasal septal surgery</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Rhinoplasty</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Septal sphincter surgery</td>
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<td>10%</td>
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Table 2. Comparison of Procedures for Nasal Obstruction

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoscopic laser surgery</td>
<td>80%</td>
</tr>
<tr>
<td>Microsurgical surgery</td>
<td>90%</td>
</tr>
<tr>
<td>Open surgery</td>
<td>70%</td>
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Table 3. Summary of Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical success</td>
<td>80%</td>
</tr>
<tr>
<td>Morbidity incidence</td>
<td>10%</td>
</tr>
<tr>
<td>Mortality incidence</td>
<td>0%</td>
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