(23% incidence): fluid leak into the protective sheath (2); catheter clotting (2); coiling in the ventricle (1); arrhythmia (2); and inability to obtain a pulmonary artery occlusion waveform (PAOP) (24). There were no pneumothoraces or deaths. The inability to obtain a PAOP waveform is disconcerting since an inability to measure or interpret a PAOP trace might lead to errors in patient management. In the experience of the senior author, inability to obtain a PAOP trace is rare and the high rate we detected suggests a lack of experience or ignorance in the interpretation of haemodynamic data by physicians at all levels and nursing personnel.[3] In tertiary care teaching intensive care units, the PAC is usually inserted by the ICU resident under supervision. If inaccurate data are utilized in decision making, the results may lead to inaccurate, inadequate, or erroneous therapy with potentially disastrous consequences.[1] We wish to make you aware of these results since we suspect our experience is not unique and suggest that other practitioners may wish to examine their own experience.

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## *"The Charlottetown LMA Twist"*

To the Editor:
We have never been satisfied with the classical insertion technique for the LMA. We have developed an easier, faster and less traumatic approach. Since the LMA represents the ultimate oral airway, it might be inserted in the same way.

Using our technique the LMA is held so that the long axis is perpendicular to the posterior pharyngeal wall of a supine patient with the breathing grille opening caudally. The body of the LMA now has a slight cephalad curve. The LMA is now rotated 180° so that the grille opens in a cephalad direction. With the patient anaesthetized and the LMA lubricated and minimally inflated, the head is extended backward with the left hand on the forehead to open the mouth. Holding the stem with the right hand, the LMA is introduced into the mouth and pushed into the hypopharynx. This is easy as the natural deflection is now caudal and the inflated cuff makes a softer, blunter and easier presentation to the airway. The LMA is felt as it enters the hypopharynx. Whilst firmly pushing firmly on the stem of the LMA, it is rotated 180°, twisting the breathing grille toward the glottis. A distinct pop is felt by the introducing hand. The rotation is initiated as soon as the distal part of the LMA is seen or felt to be engaged in the hypopharynx and while there is still a forward motion of the LMA.

We present this as the "Charlottetown Twist" technique of LMA insertion.

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## *Liquid crystal temperature indicators - a potentially serious problem in paediatric anaesthesia*

To the Editor:
Liquid crystal temperature indicators (LTCI) placed on the forehead of children are often used to measure the child's temperature during induction of anaesthesia. We have observed that if a heating lamp is placed over the child's head, even at the prescribed distance of 28 inches (71 cm), the temperature values on the LTCI can increase quickly and alarmingly. The first time we observed this dramatic temperature rise we called for the malignant hyperpyrexia cart. Fortunately, we stopped short of treating a non-existing disease when we ascertained that both tympanic membrane and oesophageal temperature measurements showed the child's temperature to be normal. We bring this potential problem to your readership's attention.

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## *Complications with the Combitube*

To the Editor:
Vezina *et al.*[1] reported subcutaneous emphysema during use of the Combitube® (ETC) for cardiopulmonary

resuscitation (CPR).[1] We are pleased that the ETC was successful for oxygenation and ventilation in all but one of the 1,139 patients undergoing pre-hospital CPR performed by emergency medical technicians. Subcutaneous emphysema was observed in eight patients (0.7%), four underwent postmortem examination of whom three (0.3%) demonstrated oesophageal laceration.

Fatal outcome was not ascribed to oesophageal injury in any of these patients. Furthermore, a 0.3% incidence of complications that might be related to airway management seems low, considering the pre-hospital conditions faced by the technicians. Oesophageal perforation during conventional tracheal intubation in emergency situations has also been reported.[2]

Barotrauma and subcutaneous emphysema are recognized complications of mechanical chest compression and positive pressure ventilation.[3] Furthermore, none of the ETCs employed in these four patients was used according to the manufacturer's recommendations. Oesophageal balloon inflation volumes up to 40 mL of air were employed (recommended maximum - 15 mL). Pharyngeal balloons were inflated to 140 mL instead of 100 mL recommended. Insertion should be performed cautiously without force and might be facilitated by bending the ETC between pharyngeal balloon and cuff (personal observation M.F.).

The retrospective report by Vezina *et al.* does not preclude the use of Combitubes during emergency medical care and we recommend its continued inclusion in the algorithm of airway management for cardiopulmonary resuscitation.[4] However, instruction and training of staff before the emergency use of this potentially live-saving device is essential.

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## *Reply:*

*Although we agree with most of the comments of Krafft et al., we believe that their interpretation of our data goes beyond the limitations of the study. First, we did not report that the ETC was "successful for oxygenation and ventilation in all but one of the 1139 patients". The success rate of the ETC and its ability to provide adequate oxygenation was not examined while reviewing the 1139 CPR records. Second, and most importantly, it is inappropriate to use our data to determine the incidence of subcutaneous emphysema or oesophageal laceration associated with the use of the ETC. Our methodology used a retrospective examination of the CPR files filled by the EMTs. Most of these patients were declared dead on arrival to the hospital and autopsy studies were not performed on most of them. Subcutaneous emphysema and oesophageal laceration might have occurred without being recognized by the EMTs.*

*We agree that the clinical experience with the use of the ETC for airway management during CPR appears positive and justifies its continued use in pre-hospital CPR. However, oesophageal laceration is a very serious and potentially lethal complication. The report of complications associated with the use of a new medical device does not preclude its use. However, clinicians should be aware of the complication so they can apply to the ETC the risk-benefit analysis that should be performed for any medical device to determine its place in airway management.*

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