

resuscitation (CPR).<sup>1</sup> 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.<sup>2</sup>

Barotrauma and subcutaneous emphysema are recognized complications of mechanical chest compression and positive pressure ventilation.<sup>3</sup> 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 Vézina *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.<sup>4</sup> However, instruction and training of staff before the emergency use of this potentially live-saving device is essential.

Peter Krafft MD  
Michael Frass MD  
Vienna, Austria  
Allan P. Reed MD  
New York, USA

## References

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- 2 Eldor J, Ofek B, Abramowitz HB. Perforation of the oesophagus by tracheal tube during resuscitation (Letter). *Anaesthesia* 1990; 45: 70-1.
- 3 Hillman K, Albin M. Pulmonary barotrauma during cardiopulmonary resuscitation. *Crit Care Med* 1986; 14: 606-9.
- 4 Reed AP. Current concepts in airway management for cardiopulmonary resuscitation. *Mayo Clin Proc* 1995; 70: 1172-84.

## 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.*

Daniel V ezina MD  
Martin Lessard MD FRCPC  
Claude Tr epanier MD FRCPC  
Qu ebec (Qu ebec), Canada