

Correspondence



Therapeutic options for cardiogenic shock

To the Editor:

The recently published report describing a case of cardiogenic shock following nasal septoplasty¹ helps to raise our awareness of the issue and suggests that beta blockade can be ineffective and, at times, harmful in that situation. Unfortunately, the authors fail to discuss other therapeutic options which may have been appropriate and should have been considered. Since, as a rule, the effects of single injections of epinephrine are transient, should the ensuing hypertension and tachycardia simply be ignored, or should definitive alpha blockade, either alone or in combination with a beta adrenergic blocking drug, be considered?

This case report also raises the question as to what are the most appropriate resuscitative measures to assume when faced with a cardiac arrest in this scenario. The problem is already postulated to be excess alpha stimulation in the presence of beta blockade; therefore, administering additional epinephrine in this case may not have been ideal. Should the use of beta stimulants (e.g., isoproterenol) to achieve a positive chronotropic effect be considered? The answers to these questions may not be straightforward; however, the authors might have considered discussing the additional treatment options.

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Reference

- 1 Schwalm JD, Hamstra J, Mulji A, Velianou JL. Cardiogenic shock following nasal septoplasty: a case report and review of the literature. *Can J Anesth* 2008; 55: 376–9.

Reply:

I would like to address the insightful questions raised by Dr. Lewis regarding our article.¹

Unfortunately, there is insufficient evidence in support of a particular therapeutic intervention to manage

the hypertensive response induced by the systemic absorption of topical epinephrine. The proposed mechanism leading to cardiogenic shock and pulmonary edema initially involves the increased systemic vascular resistance, secondary to the systemically absorbed vasoconstrictor, combined with the negative inotropic and chronotropic effects of beta-blockers (BB), or possibly calcium channel blockers (CCB). The use of BB for the treatment of the hypertensive response is thought to play a key role in the pathogenesis of cardiogenic shock and pulmonary edema. It has been proposed that no treatment be initiated.² However, if the hypertension is severe and needs treatment, an anti-hypertensive agent other than a BB or non-dihydropyridine CCB can be considered.

Unfortunately, in a few reported cases, medications such as isoproterenol, dopamine, and epinephrine have not been demonstrated to provide significant clinical benefit once the clinical presentation has progressed to cardiogenic shock and pulmonary edema.² It has been suggested that glucagon could be considered to counteract the negative inotropic effects of the BB.²

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- 2 Groudine SB, Holliger I, Jones J, DeBouno BA. New York State guidelines on the topical use of phenylephrine in the operating room. The Phenylephrine Advisory Committee. *Anesthesiology* 2000; 92: 859–64.

Rapid estimation of distance from the tip of the tracheal tube to carina using fiberoptic bronchoscopy

To the Editor:

A tracheal tube should optimally be positioned with its tip at mid-trachea or, in an adult patient, 3–5 cm above



FIGURE (Top) A fiberoptic bronchoscope (FOB) positioned outside an 8.0 internal diameter tracheal tube *in vitro*. The 30 cm marker (|||) of the FOB is shown aligned with the 26 cm surface marker (Δ 26) of the tracheal tube. (Bottom) The FOB positioned within the tracheal tube with the same alignment. At this point, the tip of the bronchoscope is found to extend 4 cm (30 cm minus 26 cm) beyond the leading edge of the tracheal tube.

the carina.¹ There is no reliable method to determine the location of the tracheal tube tip within the trachea with tracheal tube insertion guided only by direct laryngoscopy. The following is a description of one established method to estimate the tracheal tube tip to carina distance utilizing the fiberoptic bronchoscope (FOB).^{2,3} Tracheal tube insertion is accomplished using direct laryngoscopy or alternative intubating techniques. A flexible elbow connector is attached to the tracheal tube to allow FOB insertion without interrupting lung ventilation. The FOB is advanced into the tracheal tube just until the tip of the FOB makes contact with the carina. At that juncture, a piece of tape is placed around the FOB just proximal to the flexible elbow connector. Next, the FOB is withdrawn until the leading edge of the tracheal tube is first visualized, at which point, a second piece of tape is placed around the FOB just proximal to the flexible elbow connector. The distance between the two tape markers corresponds with the distance from the tracheal tube tip to carina. We suggest a simplified method to accomplish the above task. At the point where the FOB tip is in contact with the carina, the operator grasps the FOB shaft between his/her thumb and index finger, just proximal to the flexible elbow connector, and withdraws the FOB until the tracheal tube tip is visualized. The distance from the operator's thumb/index finger to the flexible elbow connector corresponds with the distance from the tracheal tube tip to the carina.

We propose the following alternative to rapidly and accurately estimate the distance from tracheal tube tip

to carina. A FOB (fiberoptic or videobronchoscope) with distance markers along the shaft is advanced through the flexible elbow connector and tracheal tube until it is just in contact with the carina. The Olympus intubating fiberscope LF-GP/TP/DP series (Olympus Optical Co Ltd, Tokyo, Japan) has distance markers along the shaft, as does the Olympus videobronchoscope BF series, and the Pentax videobronchoscope K series (Ashi Optical Co Ltd, Tokyo, Japan). The operator then inspects the distance markers on both the tracheal tube and the FOB. In the *in vitro* demonstration (Figure), the 26 cm marker of the tracheal tube is positioned directly over the 30 cm marker of the FOB. Accordingly, the tracheal tube tip to carina distance is 30 cm minus 26 cm, or 4 cm. This described technique does not require FOB withdrawal and takes less time to accomplish. By using the thumb/index grasp withdrawal technique and estimating the distance from the thumb to the flexible elbow connector, there is a potential for error; for instance, the operator could compress his/her thumb and shift his/her grasping digits during the FOB withdrawal. This technique eliminates the above issues.

In summary, we described a new method to estimate the distance from tip of tracheal tube to carina using a FOB. This method is potentially faster and more accurate compared to the FOB withdrawal method. Clinical studies to compare the duration and accuracy of measurement between these two methods are warranted.

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- 3 Hartrey R, Kestin IG. Movement of oral and nasal tracheal tubes as a result of changes in head and neck position. *Anaesthesia* 1995; 50: 682-7.