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# Searching for the Ideal Endobronchial Blocker

*To the Editor:*

We read with great interest the editorial in which Edmond Cohen[1] extensively reviews the use of endobronchial blockers (BBs) *versus* double-lumen tubes. We support his message that the anesthesiologist should be familiar with alternative devices for a double-lumen tube. However, some of his comments on our work[2] on the EZ-blocker (EZB) deserve our attention.

First, Cohen points out that the most important limitation of the EZB is its inability to remove secretions through this blocker or to apply any effective suction. Indeed, the central lumen of the EZB is narrower than that of other BBs. It is, however, doubtful whether thick slimy secretions can be successfully removed through any of the BBs. All BBs are also in a fixed position and cannot be moved forth and back in search of a collection of secretions. Therefore, one needs a larger suction catheter or a flexible bronchoscope that can be used only with a double-lumen tube.

There is no immediate need to aspirate air from the lung with our technique of acquiring lung collapse, *i.e.*, 3-min preoxygenation, followed by disconnection of the single-lumen tube from the ventilator for 60 s (starting just before the surgeon opens the pleural space), then insufflation of the cuff of the EZB. In our study, the quality of lung collapse with an EZB was comparable to that with a double-lumen tube, and it was not necessary to aspirate residual air. In cases outside our study, it proved to be possible to remove residual air through the lumen of the EZB by intermittent suction. This practice must be performed with caution because of the risk of negative pressure edema. Oxygen can be administered through the lumen of the EZB to the collapsed lung with a continuous positive airway pressure system because of a low flow suffices, *e.g.*, when hypoxemia occurs during one-lung ventilation.

Second, there seems to be confusion about some properties of the EZB *versus* those of other BBs. As reported,[1] BBs such as the Arndt blocker, the Cohen blocker, or the Uniblocker have low-pressure, high-volume cuffs. This does certainly not apply to the EZB, which often needs cuff pressures[2] of more than 110 cm $H_20$. Another difference is that the pilot balloons at the proximal end of the EZB are larger. A substantial amount of the volume that is insufflated remains in the pilot balloon and does not contribute to the volume of the distal cuff. Thus, the cuffs of the EZB should rather be classified as high pressure and low volume.

The authors obtained 50 EZ-blockers from the former manufacturer (AnaesthetIQ BV, Rotterdam, The Netherlands) for an equal price as 50 L-DLT's.

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*In Reply:*

I would like to thank Mourisse *et al.*[1] for their comments on my recent editorial. It was not my intention to review the properties of each endobronchial blocker but rather to encourage all anesthesiologists to become familiar with the use of these devices as an alternative to a double-lumen tube (DLT). I appreciate Mourisse *et al.*'s support of this concept.

The first issue raised by Mourisse *et al.* is the feasibility of suctioning through the lumen of the EZ-blocker. I agree that it is more effective to suction through a DLT using a suction catheter because unlike an endobronchial blocker in position, the suction catheter can be advanced and withdrawn. However, the perception that thick secretions can be suctioned through a DLT can be misleading. Suctioning through a DLT is performed using a long 10-French catheter, which is provided in the DLT kit. Figure 1 shows the three 9-French endobronchial blockers (Arndt, Cohen, Uniblocker) and the 10-French suction catheter (provided in a 37-French DLT Mallinckrodt kit; Covidien, Mansfield, MA) in cross-section to show the sizes of the lumens. There is no appreciable difference among the sizes of the lumens. The EZ-blocker has a 7.0-French lumen divided in two, which practically reduces the lumen of each individual suction channel to a bare minimum. This makes it practically impossible to remove secretions when the EZ-blocker is used.

Deflating the endobronchial blocker cuff to allow passive deflation of the lung through the single-lumen tube is

Dr. Cohen developed "The Cohen Flexi tip Endobronchial Blocker" with Cook Critical Care (Bloomington, IN). He receives lectures honoraria from Cook Critical Care.



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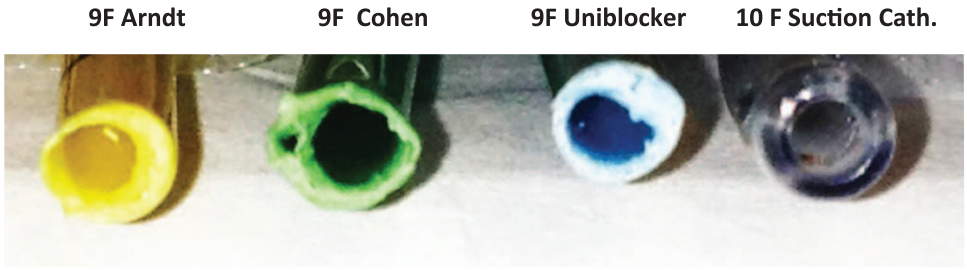


Fig. 1. Cross-section of three 9-French endobronchial blockers Arndt, Cohen, and Uniblocker compared with a 10-French suction catheter.

an option. However, that would expose the patient to the potential risks of contamination when the lung isolation is abolished.

Mourisse *et al.* comment that intermittent suctioning increases the risk of negative pressure pulmonary edema. Intermittent suctioning is the routine practice of many anesthesiologists and one that I have used in hundreds of patients without any complications. Surely, if the risk was significant, the literature would have been flooded with case reports of pulmonary edema.

With regard to the confusion concerning the low-volume, high-pressure cuff of the EZ-blocker, I like to thank the authors for the clarification. The occluding cuff pressure of the Cohen, Arndt, and the Uniblocker is between 30 and 40 cm $H_2O$.[2] If the cuff of the EZ-blocker has a high pressure of 110 cm $H_2O$, I would advise caution when using the EZ-blocker for an extended time to avoid the risk of mucosal damage if the bronchial venous circulation is compromised.

No device is perfect. Anesthesiologists should be familiar with the advantages and the disadvantages of each device and select the one that is best for his/her patient.

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# Cuffed Endotracheal Tubes Are Okay for Neonates

*To the Editor:*

I have read the article by Sathyamoorthy *et al.*[1] and was surprised to hear that they have noticed a higher than expected incidence of stridor after using the Microcuff (Kimberly-Clark, Roswell, GA) endotracheal tube (ETT) in neonates. They reported that on three neonates who after being intubated with these cuffed ETTs, each had significant postoperative stridor. Most interesting to me was that in each of the cases, no attempt was made to establish whether there was a functional leak at ventilation pressures above 20 cm $H_2O$ after intubation. In two of these cases, air was injected into the ETT cuff, and still no measurement was made as to how much ventilation pressure the tube sealed at. After intubation in all pediatric cases, it has always been the standard of care to make sure that the ETT leaks above 20 cm $H_2O$ to ensure that the tube is the correct fit. This is regardless of whether you are using a cuffed or uncuffed ETT. The only difference being that when using a cuffed ETT, you select a smaller size than the traditional formula[2] and inflate the cuff until the leak is at 20 cm $H_2O$. If there is no leak, then the ETT is replaced with the next smaller size and the process is repeated. Recommendations or formulas are only a rough guideline to ETT sizing, and the functional test is always the proper way to minimize errors. In all three of the cases from Sathyamoorthy *et al.*,[1] the likely problem is that the ETT was too large for the given patient. The conclusion by Sathyamoorthy *et al.* to "exercise caution" in using the Microcuff ETTs until evidence confirms they are safe for neonates is not warranted. It would appear that their technique is more likely to be at fault than the Microcuff ETT.

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