after initiation of the vasoactive drug infusion and absence of any high-pressure alarm from the infusion pump led the EA to believe that the problem reported by the TA was inconsequential.

At the end of the surgery, the patient was moved to the intensive care unit (ICU) where infusion was continued through the distal port of the CVC and was titrated to maintain a mean arterial pressure above 65 mmHg. A chest x-ray obtained immediately after the patient’s arrival in the ICU (3 h from the time of CVC insertion) showed the tracheal tube and CVC to be in situ, with an additional radio-opaque line running in line with the CVC shadow that was attributed to an electrocardiogram electrode or artifact by the ICU staff (Fig 1). The next morning, the chest x-ray was seen by a fresh intensivist, who suspected the additional radio-opaque line running along the CVC to be the guidewire, based on the following observations. First, this additional radio-opaque line was much more radio-opaque than the CVC and could be differentiated within the CVC shadow all along its length. Second, the CVC shadow appeared to suddenly thin down at about 2 cm below the carina (Fig 1), indicating the CVC tip, while the more radio-opaque line continued beyond this point, indicating the presence of another object in addition to the CVC. Immediately, the distal lumen along with the guidewire were clamped with an artery forceps, vasoactive drugs were shifted to a peripheral intravenous route, and the CVC and the guidewire were removed under aseptic precautions.

It is interesting to note that the guidewire did not embolize despite infusion of around 12 to 15 mL/h of vasoactive substances for more than 11 hours through the same lumen, and that the infusion pump did not give any high-pressure alarm. Sutures at the box clamp prevented embolization of the guidewire into the circulation, thus avoiding further complications. The difference between the outer diameter of the guidewire (0.89 mm) and the inner diameter of the 16-gauge distal lumen (1.291 mm) enabled unhindered infusion of vasoactive drugs through the distal lumen despite the presence of the guidewire.

There are a few important learning points from this experience. If aspiration of blood from the distal port of a multi-lumen CVC is difficult in the presence of easy aspiration through the other lumen, accidental retention of the guidewire should be considered. The presence of a more radio-opaque line within the CVC along its course extending beyond its tip should raise suspicion of a retained guidewire. The difference between the diameters of the guidewire and the distal lumen of the CVC allows for unhindered infusion of volume through traditionally used infusion pumps without activating high-pressure alarms.

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Bronchial Blocker Versus Double-Lumen Tube for Lung Isolation With Massive Hemoptysis During Cardiac Surgery

To the Editor:

Airway management in life-threatening massive hemoptysis is a critical first step. The threshold for blood loss to define massive hemoptysis is not well established, and the values in the literature vary from 100 to 1,000 mL.1 In a survey by the American College of Chest Physicians in 2000, 28% of respondents had a patient die from massive hemoptysis in the previous year, and nearly half of the respondents favored using a double-lumen tube (DLT).2 The authors present a case in which both available devices were used for lung isolation. First, they used an endobronchial blocker (EBB) to prevent spillage of blood as a temporary measure, and then they used a DLT to identify and control the source of bleeding and long-term ventilation.

A 5-ft 3-in. 152-lb 87-year-old woman underwent a ministernotomy for aortic valve replacement. Her platelets and coagulation lab values were within normal limits. A pulmonary artery catheter (PAC) was placed, which was 50 cm at the hub, and it was not locked. She was intubated with a size 8 single-lumen endotracheal tube (ETT). Transesophageal echocardiogram showed that the tip of the PAC was in the right PA. While the patient was on cardiopulmonary bypass, bright red blood began pouring out of the ETT. The PAC then was pulled out. A flexible fiberoptic bronchoscopy was...
performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

Three attending cardiothoracic anesthesiologists arrived for assistance. Under the recommendation of 1 anesthesiologist, a size 9-French Cohen EBB was passed into the right mainstem bronchus with good lung isolation. Later, a recommendation was made by another anesthesiologist to replace the EBB with a DLT. This resulted in a debate (Table 1) and the team decided to exchange the single-lumen ETT for a size 35-French left-sided DLT using a tube exchanger. Good lung isolation was established again, and 700 mL of blood were suctioned out of the right tracheal side of the DLT. Bleeding from the right lower lobe was identified with flexible bronchoscopy, and 30 mL of 1:1000 epinephrine was instilled through the tracheal lumen of the DLT. Later, protamine was administered and the clot had to be taken out with a rigid bronchoscope. In addition, PAR may lead to hemothorax, and risk losing the airway.

A pulmonary angiogram is a definitive test for the localization of bleeder vessels, and the authors believe that a pulmonary angiogram should be performed in patients with PAR to exclude the long-term complication of PA pseudoaneurysm formation. However, the patient in the present case did not have an angiogram performed before discharge. A novel therapeutic approach by interventional cardiology using vascular plugs also has been described. Extracorporeal membrane oxygenation also has been used to manage patients with massive hemoptysis. A recent case was described in which bleeding could not be controlled with a bronchial blocker, epinephrine lavage or an angiogram, and massive hemoptysis was managed by clamping of the ETT to tamponade the bleeding while the patient was placed on extracorporeal membrane oxygenation.

#### Table 1. Advantages and Disadvantages of Bronchial blockers versus Double-Lumen Tubes During Lung Isolation in Patients With Massive Hemoptysis

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchial Blockers</td>
<td>Double-lumen Tubes</td>
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<tr>
<td>Advantages</td>
<td>advantages</td>
</tr>
<tr>
<td>Bleeding controlled by tamponade</td>
<td>Allow direct visualization of source of bleeding</td>
</tr>
<tr>
<td>Can be used for selective lobar isolation for</td>
<td>Provide more appropriate seal than EBBs</td>
</tr>
<tr>
<td>source of bleeding</td>
<td></td>
</tr>
<tr>
<td>Multiple bronchial blockers can be used</td>
<td>Take less time for insertion than bronchial</td>
</tr>
<tr>
<td>simultaneously for more than 1 source of</td>
<td>blockers</td>
</tr>
<tr>
<td>bleeding^1</td>
<td></td>
</tr>
<tr>
<td>Disadvantages</td>
<td>Disadvantages</td>
</tr>
<tr>
<td>Cannot be used to suction blood^4</td>
<td>No guidelines exist on whether right or left or</td>
</tr>
<tr>
<td>More prone to dislodgement and proximal</td>
<td>which size DLT should be used in this emergency</td>
</tr>
<tr>
<td>migration</td>
<td>situation</td>
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<tr>
<td>Blood stagnation in the lung has</td>
<td>DLT placement requires that clinicians remove</td>
</tr>
<tr>
<td>long-term side effects</td>
<td>the single-lumen endotracheal tube and risk</td>
</tr>
<tr>
<td></td>
<td>losing the airway</td>
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<td></td>
<td>Right-sided DLTs require more time to position</td>
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<td></td>
<td>and they have a smaller margin of safety with</td>
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<td>regard to right upper lobe collapse and</td>
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<td>obstruction^6,8,15</td>
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<td></td>
<td>After stabilization, DLTs may need to be</td>
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<tr>
<td></td>
<td>exchanged for a single-lumen tube if patients</td>
</tr>
<tr>
<td></td>
<td>require postoperative ventilatory support^4</td>
</tr>
</tbody>
</table>

[^1]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^2]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^3]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^4]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^5]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^6]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

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[^8]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^9]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^10]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^11]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^12]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^13]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^14]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.

[^15]: performed and it revealed bleeding from the right mainstem bronchus, but the exact source of bleeding could not be identified.
EBB as a temporary measure and then the DLT for more definitive airway management.

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The Problems of Using Unreliable Evidence in Consensus Group Decision-Making

To the Editor:

Landoni and colleagues report the work of an International Consensus Group and present evidence-based non-surgical recommendations to reduce perioperative mortality.1 The International Consensus Group has recommended that aprotinin should not be used in cardiac surgery and cites as evidence the significant increase in mortality associated with aprotinin compared to the lysine analogues that was reported in the BART study.2 Ultimately, the quality of any recommendation depends on the quality of the evidence upon which it is made, and evidence from the BART study may be unreliable.

Health Canada reviewed and re-analyzed the data from the BART study and, subsequently, so did the European Medicines Agency (EMA). Both drug regulatory agencies found concerning limitations to the published results regarding mortality.3,4 After randomization, there had been an unexplained exclusion of 131 patients from the statistical analysis.3 Most importantly, the mortality trend of these excluded patients was opposite to that of the included patients.3 Reanalysis of the data including these originally excluded patients, reduced the mortality signal for aprotinin to statistically nonsignificant.3 Furthermore, the findings of the BART study have not been replicated; when data from other RCTs were analysed together with exclusion of all the BART study patients, aprotinin was not associated with a higher risk of death compared with other antifibrinolytics.4

Given the major inaccuracies in the published paper that have been identified by Health Canada and the EMA, the International Consensus Group should not have considered the BART study to assess aprotinin as it has perversely influenced their decision making. Consensus groups and other bodies making recommendations about clinical practice need to ensure that they use evidence of a reliable quality.

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