reactive oxygen species during reperfusion, leading to reduced phosphorylation of MAPKs. It is possible that the reduction in ERK and JNK phosphorylation is an epi-phenomenon, and not the mechanism of isoflurane protection.

Finally, Hashiguchi et al. describe two renal ischemia protocols: bilateral renal ischemia for plasma creatinine measurement and histology, and unilateral renal ischemia for immunoblotting studies. Bilateral and unilateral renal ischemia have fundamental outcome differences and should not be used interchangeably (5,6). Although both bilateral and unilateral protocols are presented in the Methods, only the bilateral renal ischemia data were presented in the article.

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In Response:

We appreciate the concerns of Drs. Lee and Emala (1) regarding our article (2). We previously reported that isoflurane protected against renal ischemia and reperfusion injury when it was administered 20 min before ischemia, and continued until 20 min after reperfusion (3). The dose we used was within the clinical range. Therefore, isoflurane might reduce the risk of renal ischemia/reperfusion. We also examined whether the time of isoflurane administration altered its renal protection.

Our model of renal injury is different from that of Lee et al. (4) We followed Pombo et al.'s (5) study of mitogen-activated protein kinases (MAPKs), in which they used unilateral renal ischemia. Several studies suggested that members of the MAPKs family, such as JNK, p38, and ERK, are activated in the kidney after ischemia and reperfusion (6). In our study, we noted that isoflurane blunts the activation of JNK and ERK (2). This reduction, especially in ERK phosphorylation, may be an epi-phenomenon, as the molecular mechanisms, including MAPKs, by which ischemia and reperfusion lead to cell death and tissue damage are not clear (7,8).

We are examining whether the JNK inhibitor affects renal ischemia and reperfusion (9), although we do not suggest that this is the only mechanism of isoflurane protection.

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The Effect of Different Arrangements of T-Piece Parts on Oxygenation of Patients with Tracheostomy

To the Editor:

Patients with tracheostomy spontaneously breathing are oxygenated via a T-piece system consisted of three main parts: T-tube, mixing tube, and Venturi valve. We noted that these three parts are positioned with various arrangements. With IRB approval and written informed consent, we studied the effect of different arrangements of these parts on arterial oxygenation in 11 adult patients with tracheostomy. First, each patient was oxygenated with the arrangement shown in Figure 1A, followed by the arrangement shown in Figure 1B. The mixing tube was then removed, as shown in Figure 1C. Finally, the patients were put back to the first arrangement. Patients were maintained at each arrangement for 30 min, which concluded with a determination of arterial blood gas.

Mean PaO_2/FIO_2 ratio for arrangements A and B were 263.4 (±80.4) and 192.9 (±73.9) mm Hg, respectively ($P = 0.001$). Using arrangement C, mean PaO_2/FIO_2 ratio was 199.4 (±72.4) mm Hg, which differed from Arrangement A ($P = 0.001$) but not from Arrangement B ($P = 0.13$). When patients were

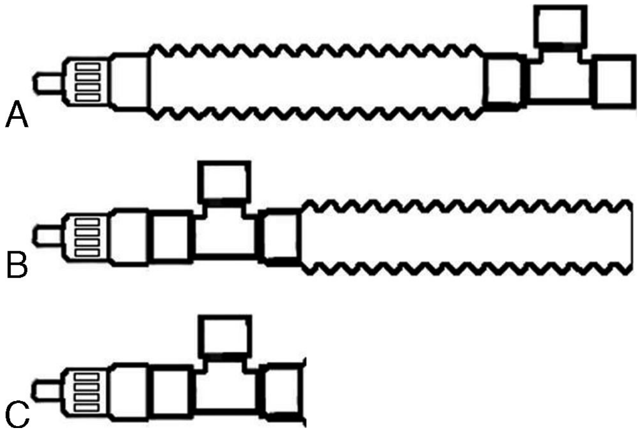

Figure 1. Diagram showing the different arrangements of the Venturi mask, mixing tube, and T-piece.

again oxygenated using Arrangement A, mean Pa_{O_2}/F_{IO_2} ratio was approximately equal with that of the first use of Arrangement A [252.3 ($\pm$ 88.3) mm Hg, ($P = 0.18$)]. No statistically significant differences were found in Pa_{CO_2} or arterial pH during the study.

We thank Ms. Marina Naki for help with the data collection and Mr. George Sermaides for the statistical analysis.

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Percutaneous Dilational Tracheostomy Kit: An Aid to Submental Intubation

To the Editor:

Existing techniques of submental intubation pose several problems. Current techniques involve blunt dissection in the floor of the mouth (with its potential for injury to the vessels/nerves/glands) to create a submental passage through which a reinforced orotracheal tube is pulled after temporarily disconnecting the connector from the tracheal tube (1,2). Disconnection of the connector may expose the wires of the reinforcing coil, increasing the risk of tissue damage from pulling the endotracheal tube through the submental passage (2,3). Holding the endotracheal tube with a forceps while pulling it through the submental passage may also damage the pilot balloon.

To overcome these shortcomings, we used a percutaneous dilational tracheostomy kit (Cook Critical Care, Europe) and modified the technique in two of our patients. We made a small skin incision in the lateral part of the submental area. To create a passage for inserting the endotracheal tube, we enlarged the incision by passing a series of dilators (21F–36F) from the outside, through the incision, into the oral cavity. Then we inserted the endotracheal tube over a smaller diameter dilator into the submental passage. Next, we removed the dilator and passed the endotracheal tube over a tube exchanger inside the trachea. This modification has the following advantages: (a) no need to remove the circuit connector; (b) no need to hold the reinforced endotracheal tube with a forceps during its manipulations; (c) minimal bleeding because of dilators rather than blunt dissection; and (d) minimal scar formation and tissue damage due to reduced tissue dissection.

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Disposable Breathing Circuit Tubing as a Safety Sleeve

To the Editor:

Modern anesthesia practice has undergone revolutionary changes in techniques, equipment, and medications, including changes in anesthesia workstations and monitoring devices (1–3). Our operating rooms are equipped with Datex-Ohmeda Aestiva/five anesthesia work stations. We use transparent breathing circuits to shield and protect our ECG, NIBP, ET_{CO_2}, and Sp_{O_2} cables between the workstation and the patient. (Fig. 1). This simple system protects wires from damage, while facilitating cleaning of the operating room and case turn-over.

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