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Lobar transplantation To the Editor:

In their communication detailing their observations of the detrimental effects of hyperinflation of transplanted lungs, Kozower and colleagues¹ speculate that patients receiving lobar transplants may be at even greater risk for this complication due to the greater potential for size disparity between lobe and hemithorax. This is indeed the case as we have recently reported.² We believe the mechanism to be as described by Kozower's group. We also believe this size disparity is even greater than would otherwise be predicted as the anterior-posterior dimension in cystic fibrosis patients increases because of lung hyperinflation during the period of bony development of the thorax.³ We have observed that this physiology is more apparent and the hemodynamics are more severely affected with increasing size disparity. Early in our experience, the breath stacking occasionally became severe enough to cause severe hemodynamic depression as a result of the altered respiratory mechanics.²

These observations have led us to modify our postoperative management for lobar transplantation as follows²:

1. In the operating room, 4 chest tubes are placed (2 in each hemithorax) and

connected to water-seal with no negative pressure.

2. Positive end-expiratory pressure is applied in the operating room (5-10 cm H₂O as tolerated) and continued in the intensive care unit.
 3. Negative pressure is applied to the chest tubes in sequence: 5 to 10 cm H₂O to each tube, in 1-hour intervals, rotating for the first 24 hours. Later, each tube is placed on continuous suction that is gradually increased to -20 cm H₂O over the next 48 hours as tolerated.
- Using the above procedure on all lobar transplant patients, we have minimized the hemodynamic consequences of the donor-to-recipient size discrepancies inherent in this procedure and have not seen similar acute deterioration in the last 90 to 100 lobar transplantation cases.

Steven Haddy, MD^a

Vaughn A. Starnes, MD^b

Departments of Anesthesiology^a

Cardiac Surgery^b

Keck School of Medicine

University of Southern California

Los Angeles, CA 90033

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Reply to the Editor:

We are grateful for the confirmation provided by the letter and the case report by Haddy and colleagues. Readers interested in this phenomenon are encouraged to read their article¹ for a clear and methodical description of an event that sounds identical to our "index case" in 1997. After several sporadic observations over 3 years, we attempted to capture the phenomenon in a

prospective fashion and the result is our own brief report.²

Our only disagreement with their letter is with the University of Southern California protocol for avoiding the stacking of breaths in transplant recipients with undersized grafts. In our experience, chest tubes placed to water-seal can still elicit the phenomenon when there is no air leak from the visceral pleural surface. This absence of air leaks may be uncommon after bilateral transplant, but we still begin with 1 tube on each side unconnected and thus open to atmospheric pressure. Also, the subsequent application of negative pressure to 1 of 2 chest tubes seems equivalent to applying it to both tubes: either the pleural pressure is negative or it is not. Two tubes on suction should only make a difference in pleural pressure if there are large air leaks and the removal of air from the pleural space is faster with 2 tubes on suction. If one tube is placed on suction and breath stacking does not happen immediately, our experience suggests that it will not occur.

Otherwise, we are reassured that our observations are validated by a simultaneous and independent report from a distinguished team of lung transplant experts.

Benjamin Kozower, MD

Bryan Meyers, MD

Division of Cardiothoracic Surgery

Washington University School of Medicine

St Louis, MO 63110-1013

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Brachial artery cannulation To the Editor:

In their report Galajda and colleagues¹ describe their technique of brachial artery cannulation for two patients with type A aortic dissection. One patient was cannu-

lated through left brachial artery, and the authors mentioned that they performed the operation without circulatory arrest. Preferring the left brachial artery instead of right for cannulation site may limit the use of open distal repair technique when necessary. Our group has reported 104 cases of arch repair using right brachial artery where open distal repair was easily performed by reducing the flow and applying atraumatic vascular clamps to the innominate and left carotid arteries.²

The authors have reported using 20F cannulas during their two operations. According to our experience, a 20F cannula is too large for the great majority of patients. We preferred using the Calmed non-wire reinforced venous return catheter (California Medical Laboratories, Irvine, Calif), the tip of which can be trimmed to 16F to 18F diameter according to the size of the patients' brachial artery due to its conical shape.

The authors suggest that the end of the inserted cannula should not extend beyond the origin of the subscapular artery to protect collateral circulation of the upper limb. We inserted the catheter into the brachial artery as its tip is positioned 5 to 7 cm proximal to the arteriotomy, which in most cases extended beyond the origin of the subscapular artery, but this did not cause upper limb ischemia in any of our patients.

We are in complete agreement with the authors that the brachial artery is an easily accessible site for cannulation. In our current practice it is the standard for the repair of aneurysms and dissections of the aortic arch.

Seref A. Kucuker, MD

Oguz Tasdemir, MD

Department of Cardiovascular Surgery

Turkiye Yuksek Ihtisas Hospital

Sihhiye

Ankara, 06100, Turkey

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Reply to the Editor:

We would like to thank Seref A. Kucuker and Oguz Tasdemir for their comments on our article. Unfortunately, when we sent our material to the editorial office we were not aware of their publication.¹ The editorial office of the *Annals* accepted their publication on February 7, 2002, while the article sent by us arrived at the JTCS editorial office on May 3 of the same year.

Our surgical team started the experimental laboratory work for brachial artery cannulation in 1999 for the purpose of ensuring cardiopulmonary bypass and antegrade perfusion in the aortic arch, mainly in the acute aortic dissection operations. This was an interdisciplinary investigation carried out jointly with the Applied and Clinical Anatomical Laboratory, Department of Anatomy, Histology, and Embryology, from the Semmelweis University of Budapest (this laboratory is led by Dr Lajos Patonay); the clinical examinations were performed in the Hand Microcirculation Functional Laboratory from the Medical and Health Science Center, University of Debrecen (Dr Zoltán Csiky and Dr Ildikó Garai). On the basis of the morphological and hemodynamical laboratory investigation results, in 2001 it became possible for us to ensure cardiopulmonary bypass just through brachial artery cannulation.²

In our first patient we carried out left-side brachial cannulation because in addition to the 2 femoral arteries, the right subclavian artery was also effected (namely, the pressure measured in the right side brachial artery was 50 mm Hg lower). In both cases we were able to use 20-F cannulas with the technique described by us (naturally this can vary between 16- and 20F-sized cannulas depending on the patient's build).

It must be mentioned that during cardiopulmonary bypass the pressures measured in the arterial line are higher, therefore we always endeavored to use the thickest cannulas.

Despite there being no immediate clinical consequences from not maintaining the collateral circulation in the subscapular artery, on the basis of the above-mentioned laboratory and clinical hand circulation examinations, we consider it important and worthwhile to position the cannula such that the collateral circulation through the subscapular artery is maintained. It is possible that longer reperfusion under normo-

thermia could lead to temporary neurological complications due to the reduced hand perfusion.

Besides this, it is expedient to cannulate the brachial artery as distally as possible, so that the possible iatrogenic dissection caused by the cannula remains at some distance from the aortic arch. We are convinced that the manufacturing companies, jointly with the clinicians, will further develop the manufacture of this kind of cannula.

Again, we thank Kucuker and Tasdemir for their extremely interesting and valuable work.

Zoltán Galajda, MD, PhD

István Szentkirályi, MD

Árpád Péterffy, MD, PhD

Department of Cardiac Surgery

Medical and Health Science Center

University of Debrecen

Debrecen, Hungary

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Medical resources and capital punishment

To the Editor:

The editorial in the March 2003 issue of the *Journal* on heart transplantation for convicted felons¹ made interesting reading. McKneally and Sade agreed that human life should be preserved without question.

A similar dilemma confronted me once, when a prisoner awaiting death sentence was brought in for a valve replacement while his application for mercy was being considered. Irrespective of his clinical status, he would later be hanged to death. The dilemma was whether we were doing the right thing in replacing the valve so that he could face his death sentence soon. Would it have been preferable to reserve these resources for someone whose death was not so imminent? In any case, we replaced his aortic valve. The patient is now alive 6 years after the operation, and his death sentence has been commuted to life imprisonment. He is brought for regular fol-