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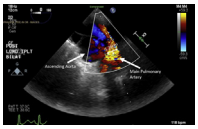

ENSURING PULMONARY ARTERY PATENCY IN DONOR-RECIPIENT SIZE MISMATCH: A COLLABORATIVE CHALLENGE

To the Editor:

The vascular anastomoses of lung transplantation are a growing area of interest. Anastomosing the donor and recipient pulmonary artery (PA) segments is among the most delicate aspects of the surgery, and proper surgical technique is critical to allograft and patient survival. Obstruction of blood flow through the PA may cause graft ischemia, refractory hypoxemia, right ventricular dysfunction, and even death in affected patients.[1] However, the importance of the PA anastomoses has yet to be critically examined in the lung transplant literature.

Yokoyama and colleagues[2] report their surgical techniques in patients with donor-recipient size mismatch of the PA requiring pulmonary arterioplasty to adjust the caliber of the PA. Across a 13-year period, 19 of 263 consecutive lung transplant patients at Kyoto University in Japan required significant adjustment of the caliber of the PA with 1 or more arterioplastic techniques. Direct plication was done in 5 cases; tack suturing was done in 9 cases, stapling was done in 2 cases, and autopericardial patching was done in 9 cases to correct PA–caliber mismatch. Despite special consideration of donor–recipient size mismatch, 1 patient developed PA kinking and required PA stenting. This report demonstrates the importance of appreciating PA donor–recipient mismatch and adjusting surgical technique accordingly. We commend the authors for sharing this important research.

We consider PA patency a critical contributor to lung allograft survival. We would like to impart how cardiac anesthesiologists can contribute to this aspect of lung transplantation with intraoperative transesophageal echocardiography (TEE).

Uncorrected PA donor–recipient size mismatch can cause significant complications after lung transplantation, such as kinking/torsion of the PA and restriction of PA blood flow.[3] Such causes of PA obstruction may not be readily apparent on surgical inspection of the PA anastomoses, but TEE examination may help detect limitations in PA blood flow.[4] In ideal situations, a cardiac anesthesiologist trained in TEE is present to assess the pulmonary vasculature to help quickly remedy any possible flow impedances that may be surgically corrected. Our group published the first comprehensive review of PA abnormalities (eg, kinking/torsion, thrombosis, extrinsic compression, donor-recipient size mismatch, and stricture formation) during lung transplantation.[5] Our systematic review identified that a pressure gradient of >57 mm Hg, peak PA systolic velocity >2.6 m/sec, or a PA luminal diameter <0.8 cm are useful guides for intraoperative TEE imaging and can complement timely surgical inspection of the PA anastomosis. No clinical guidelines are currently available for the diagnosis and correction of PA anastomosis complications during lung transplantation, but we hope that these cutoff values can help guide clinical decision making when encountering a lung transplant patient with concerns for significant donor–recipient PA size mismatch. Although the authors presented cases primarily from living donors, the same issues arise from cadaveric donors.[3] Although a rare occurrence, PA obstruction is a consequential complication from uncorrected donor-recipient PA size mismatch with an alarming mortality rate of nearly 25%.[5] The use of intraoperative TEE monitoring in conjunction with contemporary surgical techniques to ensure PA patency during lung transplantation is worthy of further investigation. At a minimum, the cardiothoracic surgeons and anesthesiologist should possess a greater cognizance of the sequelae associated with PA donor–recipient size mismatch. Combined with greater vigilance, the outcomes from lung transplant patients can be improved.

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