

The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.



**REPLY: ENSURING
PULMONARY ARTERY
PATENCY IN DONOR--
RECIPIENT SIZE**



**MISMATCH: A COLLABORATIVE
CHALLENGE**

Reply to the Editor:

Vascular anastomosis during lung transplantation is a critical issue that directly affects postoperative graft function. The use of transesophageal echocardiography (TEE) to establish clear criteria for a possible size mismatch between donor and recipient pulmonary artery (PA) diameters at the time of lung transplantation, as reported by Kumar and colleagues¹ in this study, is a method that holds great promise for the future. We introduced 4 new PA vascular anastomosis techniques that could be implemented upon recognition of a size mismatch in PA diameter at the time of lung transplantation; however, we failed to discuss how a surgeon may optimize technique selection.² When a size mismatch occurs, the recipient's main PA is often dilated; information on the diameter of the recipient PA, before anastomosis, on TEE may inform the surgeon's choice. It should be noted that the recipient PA diameter could not be well assessed on preoperative computed tomography.

Of note, Kumar and colleagues' systematic review asserts that a pressure gradient >57 mm Hg, peak PA systolic velocity >2.6 m/s, or PA lumen <0.8 cm on TEE following PA anastomosis is an abnormal finding.³ One caveat here is that despite good blood flow immediately following anastomosis, the anastomosis may still incur some narrowing after chest closure, from compression by the lungs or from other anatomical factors. In a case of post-transplant PA stenosis that we encountered, the stenosis was confirmed immediately following reperfusion, resulting in the re-suturing of the anastomosis; however, PA stenosis recurred

following chest closure, necessitating PA stent placement.⁴ In addition to compression, there is also the possibility of thrombosis at the site of anastomosis. Moreover, there are reports that indicate the difficulty in performing TEE at the anastomosis of the left PA. Thus, differences arising from the laterality of the procedure and other factors are issues for future investigation.⁵

The greatest advantage of TEE is that it provides real-time intraoperative information on the PA's anatomy. If we had information on the recipient PA diameter before anastomosis, information on blood flow and PA diameter immediately following anastomosis and reperfusion, and clear criteria for blood flow and PA diameter immediately following chest closure, it would enhance decision-making and ultimately contribute to the patient's surgical outcome. Transplantation is teamwork among medical and allied professionals and is not something that can be achieved by surgeons alone. In the future, we think that it will be paramount for cardiac anesthesiologists to collaborate with us in determining more established transesophageal echocardiographic criteria before and after pulmonary artery anastomosis during transplantation.

Yuhei Yokoyama, MD
Hiroshi Date, MD, PhD
Department of Thoracic Surgery
Kyoto University
Kyoto, Japan

References

1. Kumar N, Flores AS, Hussain N, Essandoh M, Iyer MH, Whitson BA, et al. Ensuring pulmonary artery patency in donor-recipient size mismatch: a collaborative challenge. *J Thorac Cardiovasc Surg Tech.* 2022;15:206-7.
2. Yokoyama Y, Chen-Yoshikawa TF, Nakajima D, Ohsumi A, Date H. Various techniques for anastomosis of pulmonary arteries with size mismatch during lung transplantation. *J Thorac Cardiovasc Surg Tech.* June 18, 2021 [Epub ahead of print].
3. Kumar N, Hussain N, Kumar J, Essandoh MK, Bhatt AM, Awad H, et al. Evaluating the impact of pulmonary artery obstruction after lung transplant surgery: a systematic review and meta-analysis. *Transplantation.* 2021;105:711-22.
4. Chen F, Tazaki J, Shibata T, Miwa S, Yamazaki K, Ishii H, et al. Stent angioplasty for a kink in the pulmonary artery anastomosis soon after living-donor lobar lung transplantation. *Ann Thorac Surg.* 2011;92:e105-6.
5. Abrams BA, Melnyk V, Allen WL, Subramaniam K, Scott CD, Mitchell JD, et al. TEE for lung transplantation: a case series and discussion of vascular complications. *J Cardiothorac Vasc Anesth.* 2020;34:733-40.

<https://doi.org/10.1016/j.jxct.2021.08.003>