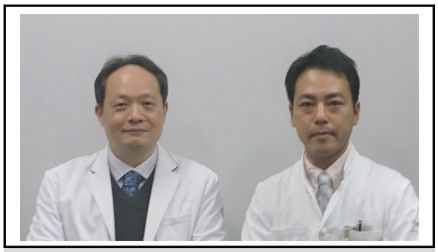
See Article page 652.

Commentary: Paving the way with visualization of the invisible craftsmanship

Shota Nakamura, MD, and
Toyofumi F. Chen-Yoshikawa, MD



Toyofumi F. Chen-Yoshikawa, MD, PhD (*left*), and Shota Nakamura, MD (*right*)

CENTRAL MESSAGE

Lung transplantation can be performed successfully in selected patients with CF with severe asymmetric chest cavities, and bilateral transplantation can provide good long-term outcomes.

Cystic fibrosis (CF) affects a large proportion of patients undergoing lung transplantation; however, patients sometimes develop severe asymmetric chest cavities in the course of their disease.[1] Although asymmetric chest cavities, in general, should not be considered a contraindication for lung transplantation, many transplant centers are reluctant to accept these patients because of a high perioperative risk in addition to surgical difficulty. Many patients with a long-standing chest asymmetry have limited compliance and mucus clearance can be impaired in the early postoperative period, which can lead to prolonged respiratory weaning and recurrent infections. Another main concern is the confusion regarding the surgical modality to be applied from among the 4 types described by Sinn and colleagues.[2]

In the decision regarding surgical options, size matching with the assessment of the correct dimensions is essential.[3] Sinn and colleagues[2] tried to perform 3-dimensional computed tomography (3D-CT) volumetry of recipient CT scans retrospectively to better quantify the volume of both chest cavities; however, it was unfortunate that only less than half of CT scans were electronically available. Because 3D-CT volumetry might be a useful tool for living-donor lobar lung transplantation,[3,4] for patients with asymmetric chest cavities, preoperative evaluation using 3D-CT volumetry is recommended in addition to the consideration of the shape and configuration of the chest by an experienced surgeon.

In this issue of the *Journal*, Sinn and colleagues[2] provided persuasive data on short- and long-term outcomes in 13 patients with CF with severe asymmetric chest cavities undergoing lung transplantation. Several reports of successful lung transplantations for patients with CF and asymmetric chest cavities were sporadically performed, but none of them provided long-term follow-up and survival data. Although the number of patients was small, this is the first report with the largest number of patients of this kind. Sinn and colleagues[2] also showed that bilateral lung transplantation was superior to single lung transplantation in terms of short- and long-term outcomes.

One of the challenging topics is pneumonectomy, especially in cases with a shrunken and consolidated lung. Single lung transplantation is usually contraindicated in patients with CF because the remaining bronchiectatic lung inevitably endangers the graft especially in patients who are colonized with multidrug-resistant pathogens. The concept of single lung transplantation combined with a contralateral pneumonectomy was developed, and delayed pneumonectomy after single lung transplantation might be preferred because of a shorter operating time and a reduced risk of complications such as bleeding. Furthermore, a distinct subgroup of the cohort

From the Department of Thoracic Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan.

Disclosures: 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.

Received for publication Sept 29, 2021; revisions received Sept 29, 2021; accepted for publication Sept 30, 2021; available ahead of print Oct 12, 2021.

Address for reprints: Toyofumi F. Chen-Yoshikawa, MD, Department of Thoracic Surgery, Nagoya University Graduate School of Medicine, 65 Tsurumai-cho, Showa-ku, Nagoya 466-8550, Japan (E-mail: tyoshikawa@med.nagoya-u.ac.jp).

JTCVS Open 2021;8:664-5
2666-2736

https://doi.org/10.1016/j.xjon.2021.09.043

of this study was patients who had undergone pneumonectomy. Few reports on these challenging cases were found in the literature, and therefore this report would provide novel skill for single lung transplantation after a previous pneumonectomy to the lung transplant surgeons in the world.[5]

Again, Sinn and colleagues[2] are congratulated on their challenging spirit regarding difficult lung transplantation for patients with CF with asymmetric chest cavities. They presented excellent long-term outcomes with the superiority of bilateral lung transplantation to single lung transplantation.

References

1. Bell SC, Mall MA, Gutierrez H, Macek M, Madge S, Davies JC, et al. The future of cystic fibrosis care: a global perspective. *Lancet Respir Med*. 2020;8:65-124.
2. Sinn K, Stork T, Schwarz S, Stupnik T, Kurz M, Jaksch P, et al. Outcome of lung transplantation in cystic fibrosis patients with severe asymmetric chest cavities. *J Thorac Cardiovasc Surg Open*. 2021;8:652-63.
3. Chen F, Kubo T, Shoji T, Fujinaga T, Bando T, Date H. Comparison of pulmonary function test and computed tomography volumetry in living lung donors. *J Heart Lung Transplant*. 2011;30:572-5.
4. Chen-Yoshikawa TF, Date H. Three-dimensional image in lung transplantation. *Gen Thorac Cardiovasc Surg*. 2018;66:19-26.
5. Le Pimpec-Barthes F, Thomas PA, Bonnette P, Mussot S, DeFrancquen P, Hernigou A, et al. Single-lung transplantation in patients with previous contralateral pneumonectomy: technical aspects and results. *Eur J Cardiothorac Surg*. 2009;36:927-32.