

# E-CHALLENGES & CLINICAL DECISIONS

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## Pulmonary Dysfunction After Lung Transplantation: The Dilemma of Coexisting Mitral Regurgitation

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**P**ROGRESSION of mitral regurgitation (MR) after lung transplantation previously has been found in patients who were unable to be weaned from mechanical ventilation postoperatively.<sup>1,2</sup> In these patients, surgical repair of the mitral valve (MV) led to successful respiratory recovery. The authors report an unusual case of a patient who underwent left single orthotopic lung transplant (SOLT) and postoperative pulmonary compromise. The possible contribution of coexisting MR was a confounding clinical factor that was addressed successfully upon presentation for subsequent right SOLT.

### CASE REPORT

A 63-year-old male with end-stage idiopathic pulmonary fibrosis (IPF) presented for a left SOLT. His past medical history consisted of MV prolapse, hypertension, type-II diabetes, and coronary artery disease. A transthoracic echocardiogram (TTE) 3 months before transplantation showed normal right and left ventricular function, mild left ventricular hypertrophy (LVH), and mild-to-moderate eccentric MR (Fig 1, Video clip 1).

During intraoperative monitoring, the baseline pulmonary artery (PA) pressure was 40/24 mmHg. The intraoperative transesophageal echocardiogram (TEE) showed a flail A1 segment (Figs 2 and 3; Video clips 2 and 3) and an eccentric, posteriorly directed jet of moderate MR (Fig 4, Video clip 4). Such findings were communicated to the surgical team.

### CHALLENGES

(1) Should MR be surgically addressed? (2) Was the MR symptomatic before transplantation?

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### CLINICAL COURSE

Because the preoperative workup had shown mild MR, which was not thought to contribute to the patient's symptoms, and given the commitment to a left SOLT approach, the surgical team decided that the MR would not be addressed surgically.

The intraoperative course was uncomplicated. Post-procedural intraoperative TEE examination showed no significant changes. In the cardiothoracic surgery intensive care unit, the patient was extubated on the first postoperative day and discharged from the hospital on the tenth postoperative day.

One month after surgery, the patient presented in acute respiratory distress. He underwent pulmonary function testing, which showed a reduction in pulmonary function and presence of a restrictive process. Chest radiograph showed a left pleural effusion. Upon hospital admission, a thoracostomy tube was inserted with minimal drainage, a transbronchial biopsy was negative for rejection, and respiratory cultures were negative. After further forced diuresis, the patient was discharged on supplemental oxygen.

The presence of persistent hypoxemic respiratory failure, with no evidence of allograft rejection or infection with compromised functional status, and concerns for mediastinal shift attributable to right lung IPF, prompted placement on the transplant list for right SOLT.

Eight weeks after his initial transplantation, the patient underwent a right SOLT. Intraoperative baseline PA pressure was 25/18 mmHg. The TEE showed severe eccentric MR with a posteriorly directed jet, flail A1 segment (Fig 5, Video clip 5), and a 7-mm vena contracta (Fig 6).

### CHALLENGES

(1) Should MR be addressed surgically this time? (2) Were the preoperative symptoms attributable to MR?

### CLINICAL COURSE

In light of the severity and progression of the MR, and given the feasibility of surgical approach, it was decided that the MV would be repaired. After dissection of the right native lung, the patient was placed on cardiopulmonary bypass (CPB). Artificial chords were placed for supporting the A1 leaflet, and an MV annuloplasty performed with a 26-mm semi-rigid ring. After MV repair, the right SOLT was completed and CPB was

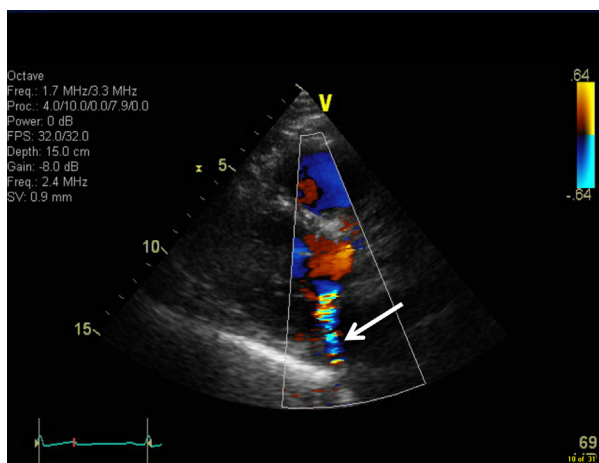


Fig 1. Transthoracic parasternal long axis view showing an eccentric jet of mitral regurgitation (arrow) on transmitral color-flow Doppler.

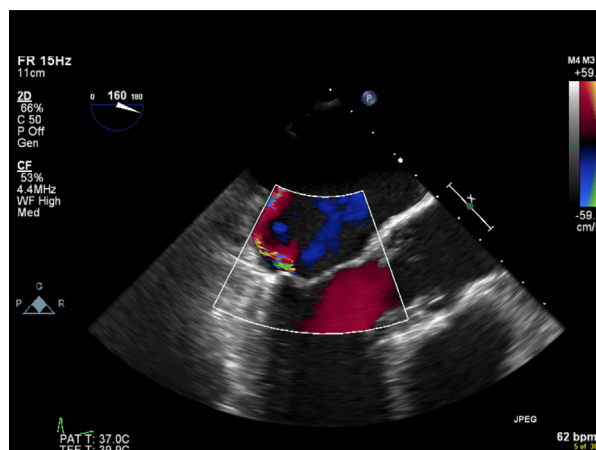


Fig 4. Midesophageal long-axis view of the mitral valve showing an eccentric jet of mitral regurgitation.

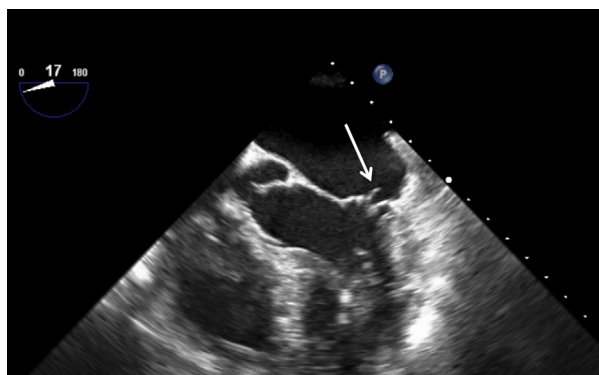


Fig 2. Midesophageal five-chamber view, showing a flail anterior mitral leaflet (arrow) before left single orthotopic lung transplant.

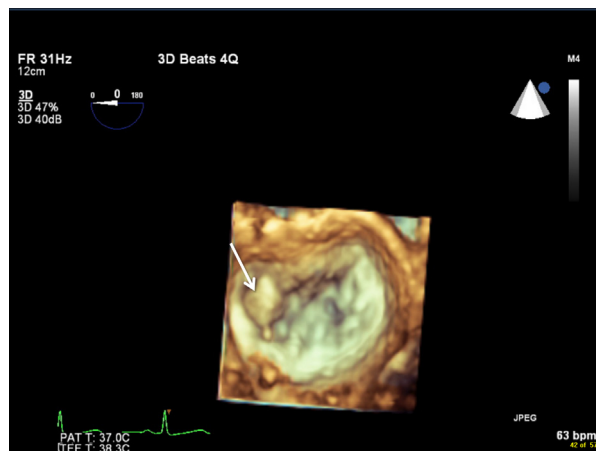


Fig 5. Still frame image of a three-dimensional echocardiographic en face view of the mitral valve with a flail A1 scallop (arrow) before right single orthotopic lung transplant.

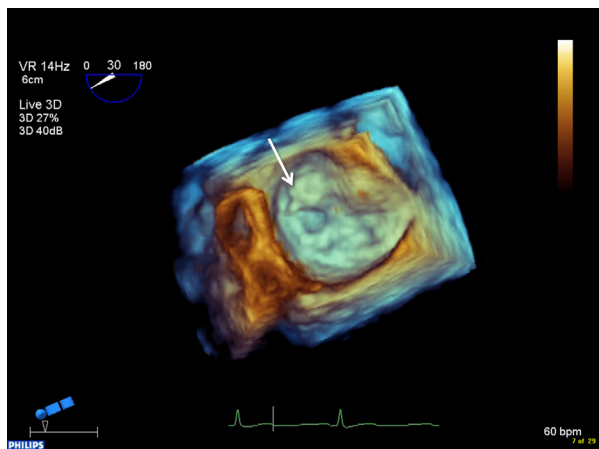


Fig 3. Still frame image of a three-dimensional echocardiographic en face view of the mitral valve with a flail A1 scallop (arrow) before left single orthotopic lung transplant.

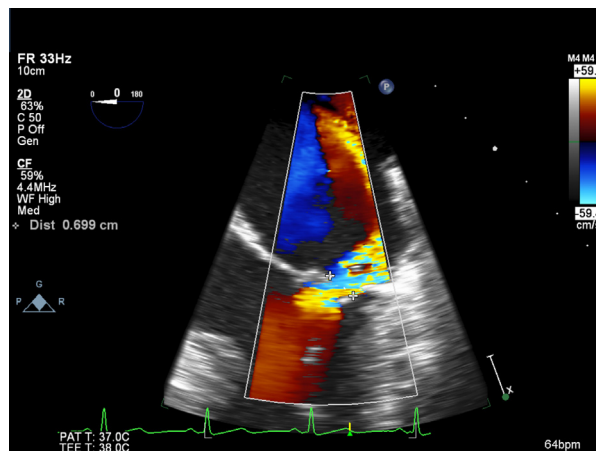


Fig 6. Vena contracta measurement of the mitral regurgitant jet.

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