LETTER TO THE EDITORS

# To procure or not to procure. . .that is the question, a case of heart procurement after pulmonary embolism

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Dear Editors,

Orthotopic heart transplantation remains the gold standard treatment for end-stage heart failure. However, standard criteria cardiac transplantation (SCCT) is strict, and there is a global shortage of suitable donors fitting these criteria.

We present a case of a 25-year-old woman diagnosed during her first pregnancy with end-stage heart failure (HF) due to a dilated cardiomyopathy of unknown cause. She had a history of ICD implantation and received a left ventricular assist device (LVAD) as a bridge to transplant in January 2017. In August 2018, a 21-year-old female donor was found with brain death due to cerebral hypoxia in a neighboring country. Upon arrival at the donor center, the heart was inspected and we found that a central pulmonary embolectomy had been performed a few days before. Because of good ventricular function and low inotropic support, procurement of the heart was continued despite of this surprising factor. After enucleation of the heart, we encountered an old, large, and fibrotic thrombus adherent to the inner wall of the right atrium and superior caval vein. This thrombus was removed and the right atrium rinsed with saline. (Fig. 1) The heart was transported on ice and implanted in the acceptor patient with a cold ischemia time of 3 hours and 45 minutes. Initial postoperative recovery was without complications. The patient was extubated 12 hours postsurgery and could leave the intensive care unit after 7 days. Initial cardiac ultrasound showed a slightly diminished right and left ventricular function. On the twelfth postoperative day, a resternotomy was needed for hematopericardium and left-sided hematothorax. Bleeding originated from the LVAD implantation site. 12 hours later, the patient was extubated and had a good recovery. She was discharged from hospital after 23 days. 18 months after transplantation, the patient is doing well and is in sinus rhythm. Cardiac function on transthoracic echocardiography is estimated with an ejection fraction of 60%.

Orthotopic heart transplantation (HTx) remains the gold standard in the treatment of end-stage HF, with 10- and 20-year survival rates of 76 and 43% in experienced centers [1]. However, because of a significant shortage of suitable donor hearts, the overall effect of HTx is limited. In the United States, each year 150000

**Figure 1** Thrombus enucleated out of the right atrium.


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patients with HF could be eligible for HTx but only 2200 are transplanted. Furthermore, overall transplant waiting list mortality of 17% has been described [2]. Therefore, HTx is limited to a selection of patients who are younger and have less comorbidities. Nevertheless, due to an aging population, there are more patients with severe HF each year while the number of donors remains equal. Alternative therapies such as LVADs as destination therapy have shown increased reductions in morbidity and mortality [3]. Another possible solution is the use of extended criteria cardiac transplantation (ECCT) opposed to standard criteria cardiac transplantation (SCCT). This includes using marginal donor organs for recipients who have comorbidities that would otherwise categorize them as ineligible for HTx. So far, there have been no reports of the use of heart specimens after pulmonary embolism, let alone with remaining intracardiac thrombus. However, the case presented in this report shows that if function is good, successful transplantation is feasible.

## Conflict of interest

No conflict of interest to report.

## Disclosure

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