A man with end-stage dilated cardiomyopathy had undergone orthotopic heart transplantation followed by heterotopic heart transplantation at the age of 52 years in 2001. After the procedure, he had lived uneventfully with the cooperation of 2 donor hearts working in his body. In 2009, 8 years after transplantation, the patient underwent scheduled cardiac catheterization. Retrograde cannulation of the left ventricular cavities of both hearts was performed by means of 2 pigtail catheters through a femoral arterial approach, with the third pigtail catheter being placed at the ascending aorta (Figure 1 and Movie of the online Data Supplement). Simultaneous pressure recording revealed that the orthotopic donor heart had a higher pumping rate and was the predominant heart to lead the aortic pressure (Figure 2). All the peaks of aortic pressure tracing corresponded to the peaks of the left ventricular pressure tracing of the orthotopic donor heart synchronously (Figure 3). By contrast, the heterotopic donor heart had a slower pumping rate and contributed to periodic augmentations on the aortic pressure tracing (Figure 4). In addition, the rhythms of both hearts could be recognized separately on surface electrocardiograms: the upright QRS complexes denoted the orthotopic donor heart, whereas the negative QRS complexes denoted the heterotopic donor heart in lead 1 of the electrocardiographic tracings (Figures 2–4 and Figure 5). These traces demonstrate the way 2 independent hearts work together in patients undergoing heterotopic heart transplantation.

Disclosures

None.

Reference

Figure 2. Simultaneous pressure recording, including left ventricle of orthotopic donor heart (solid arrow), left ventricle of heterotopic donor heart (open arrow), and ascending aorta (arrowheads).

Figure 3. Simultaneous pressure recording between left ventricle of orthotopic donor heart (solid arrows) and ascending aorta (arrowheads).
Figure 4. Simultaneous pressure recording between left ventricle of heterotopic donor heart (open arrow) and ascending aorta (arrowheads).
Figure 5. 12-lead electrocardiogram demonstrating individual hearts. In lead 1, the upright QRS complexes denote orthotopic donor heart (solid arrows) and the negative QRS complexes denote heterotopic donor heart (open arrows).
The Duet Played by Two Donor Hearts Beating Simultaneously in a Patient
Chao-Lun Lai, Kuan-Ming Chiu and Shu-Hsun Chu

Circulation. 2010;121:341-344
doi: 10.1161/CIRCULATIONAHA.109.879817
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2010 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/121/2/341

Data Supplement (unedited) at:
http://circ.ahajournals.org/content/suppl/2010/01/06/121.2.341.DC1

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/