Surgical repair of both atrioventricular valves in congenitally corrected transposition of the great arteries with dextrocardia

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Patients with congenitally corrected transposition of the great arteries (CCTGA) have a morphologically right ventricle (mRV) that supports the systemic circulation. In these patients, regurgitation of the systemic tricuspid valve (TV) is one of the strongest risk factors for congestive heart failure and mRV dysfunction. Herein, we report the case of a patient with CCTGA plus dextrocardia who underwent TV replacement, mitral annuloplasty, and the Cox maze procedure with an excellent postoperative outcome.

CLINICAL SUMMARY

A 70-year-old woman was admitted to our hospital because of dyspnea in New York Heart Association class IV and was diagnosed with situs solitus CCTGA, dextrocardia, and chronic atrial fibrillation. Echocardiography demonstrated CCTGA (Van Praagh [S,L,L]), severe regurgitation of the TV (TR), moderate regurgitation of the pulmonary mitral valve (MV), and mRV dysfunction with an ejection

fraction of 27% by the modified Simpson method. After a median sternotomy, the mRV was located in an anterior position and the cardiac apex was directed to the right. After cardiopulmonary bypass had been established with aortic and superior vena caval cannulation, the heart was decompressed. This provided further exposure, allowing inferior vena caval cannulation. After aortic crossclamping, the MV was exposed in an upside-down fashion through a right atriotomy in a manner similar to standard mitral exposure (Figure 1, A), except for lifting up the apex (Figure 1, B). Mitral annuloplasty was performed with a 27-mm SJM Tailor Flexible Band (St Jude Medical, Inc, St Paul, Minn). Cryoablation was performed for the isthmus between the mitral annulus and coronary sinus to the inferior vena cava.

The TV was approached via the large left atrial appendage from the left side of the patient (Figure 2). The TV leaflets were preserved and tacked to the tricuspid annulus, and a 27-mm Mosaic bioprosthesis (Medtronic, Inc, Minneapolis, Minn) was implanted. The Cox maze procedure, including isolation of the pulmonary vein and the tricuspid annulus lesion, was performed by cryoablation. The pulmonary arterial pressure measured with a Swan-Ganz catheter (Edwards Lifesciences, Irvine, Calif) decreased from 62/28 mm Hg preoperatively to 36/12 mm Hg postoperatively.

The patient was discharged on postoperative day 12 in sinus rhythm. Postoperative echocardiography revealed no TR and trivial MV regurgitation with mRV dysfunction with an ejection fraction of 24%. At the 20-month follow-up, the patient was in New York Heart Association class I.

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Disclosures: Authors have nothing to disclose with regard to commercial support. Received for publication March 18, 2011; revisions received April 23, 2011; accepted for publication June 7, 2011; available ahead of print July 15, 2011.

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J Thorac Cardiovasc Surg 2011;142:e135-6

0022-5223/\$36.00

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doi:10.1016/j.jtcvs.2011.06.013

FIGURE 1. Intraoperative view (A) and sketch (B) taken from the patient's right side showing the pulmonary mitral valve through a right atriotomy by lifting up the apex. RA, Right atrium; LV, left ventricle; SVC, superior vena cava.

FIGURE 2. Intraoperative view (A) and sketch (B) taken from the patient's left side showing annular dilatation of the systemic tricuspid valve. *mRV*, Morphologically right ventricle; *IVC*, inferior vena cava; *SVC*, superior vena cava; *LAA*, left atrial appendage.

DISCUSSION

In patients with CCTGA, TR increases and mRV dysfunction often develops progressively with time.¹ There is a close relationship between TR and mRV dysfunction, leading to congestive heart failure.² Van Son and associates³ reported an association between mRV dysfunction with an ejection fraction of less than 44% and poor early and late prognosis, even after surgery. On the basis of this report, it may have been too late for surgery in our patient, but she is currently doing well. Possible reasons for her good recovery include the following: (1) well-developed papillary muscles were preserved in the TV; (2) the MV regurgitation was repaired; and (3) the chronic atrial fibrillation was eliminated with the Cox maze procedure.

Situs solitus CCTGA with dextrocardia is very uncommon, but it influences all technical aspects of the surgical procedure, from cannulation to exposure of both atrioventricular valves. In such rare cases, the TV can be replaced via the left atrial appendage from the left side of the patient, while the MV is repaired from the right side by lifting the apex during aortic crossclamping.

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Migration of retained right ventricular epicardial pacing wire into the pulmonary artery: A rare complication after heart surgery

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Temporary atrial and ventricular epicardial pacing wires have been routinely placed after cardiac surgery to diagnose and treat arrhythmia, and assist in optimizing hemodynamics.¹ These wires are routinely removed from

patients before discharge; however, they are occasionally cut at skin level and allowed to retract into the pericardial sac when they cannot be removed. Rare complications may occur from retained wires.¹ We observed one such complication of a migrated epicardial pacing wire found in the right ventricle extending to the pulmonary artery giving rise to shortness of breath.

CLINICAL SUMMARY

A 65-year-old man was admitted to the hospital for progressive bilateral lower-extremity swelling, weakness, and urinary retention. His medical history was significant for myocardial infarction, hypercholesterolemia, ischemic colitis, and peripheral vascular disease with arterial stenosis in

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Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication April 27, 2010; accepted for publication May 24, 2010; available ahead of print July 1, 2011.

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J Thorac Cardiovasc Surg 2011;142:e136-8
0022-5223/\$36.00

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doi:10.1016/j.jtcvs.2010.05.058