

Batista Operation with Aortic Valve Replacement for Valvular Cardiomyopathy

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We performed a successful Batista operation with aortic valve replacement (AVR), graft replacement of the ascending aorta, and tricuspid annuloplasty for a patient with valvular cardiomyopathy with severe aortic stenosis, an ascending aortic aneurysm, and grade 3 tricuspid regurgitation. (Ann Thorac Cardiovasc Surg 2003; 9: 138–41)

Key words: Batista operation, severe aortic stenosis, valvular cardiomyopathy

Introduction

Partial left ventriculectomy, the so-called Batista operation, is accepted as an option for the treatment of patients with end-stage cardiomyopathy. However, reports of the clinical results of partial left ventriculectomy for valvular cardiomyopathy are rare. We performed a successful Batista operation with aortic valve replacement (AVR), graft replacement of the ascending aorta, and tricuspid annuloplasty for a patient with valvular cardiomyopathy who had severe aortic stenosis, an ascending aortic aneurysm, and grade 3 tricuspid regurgitation.

Case Report

A 50-year-old male was well until April 1999, when shortness of breath and dyspnea developed. He was seen at another institution and underwent a chest X-ray examination, which demonstrated cardiomegaly and pleural effusion. He was referred to our hospital for further evaluation. On admission, his blood pressure was 140/100 mmHg and his pulse was 110/min and regular. He had prominent symmetrical carotid pulsations and bruits

and a grade 3/6 systo-diastolic murmur at the right sternal border. A chest X-ray showed an enlarged heart (70% cardiothoracic ratio) with signs of congestive heart failure and an ascending aortic aneurysm (Fig. 1). An electrocardiogram revealed left ventricular (LV) hypertrophy. Echocardiogram demonstrated a grade 3 aortic regurgitation with a measured transvalvular gradient of 38 mmHg, a grade 1 mitral regurgitation, and a grade 3 tricuspid regurgitation. The left ventricular diastolic dimension (LVDd) was 62.3 mm, the left ventricular systolic dimension (LVDs) 60.5 mm, and the left ventricular ejection fraction (LVEF) 6% (Fig. 2). A dobutamine stressed echocardiogram showed an increase in the LVEF from 6% to 13%. Enhanced computed tomography revealed an ascending aortic aneurysm with a transverse diameter of 50 mm, marked LV enlargement, and right pleural effusion. Coronary angiography showed normal coronary arteries. Despite treatment with vasodilators and diuretics, shortness of breath upon slight exertion continued. On the basis of these findings, surgical intervention combined with Batista operation was offered to the patient and he elected to proceed, despite the operative risk.

At the time of surgery, cardiopulmonary bypass was conducted with proximal aortic arch and bicaval cannulation. The ascending aorta had enlarged by 50 mm in diameter. The heart appeared generally enlarged. The ascending aorta was cross-clamped, and antegrade and retrograde cold blood cardioplegia was administered. The aorta was opened. The three aortic cusps were thickened and markedly calcified. The aortic orifice was quite small. Therefore, the cusps were extirpated and a 23-mm SJM

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Fig. 1. Chest X-ray showing an enlarged heart (70% cardiothoracic ratio) with signs of congestive heart failure and an ascending aortic aneurysm.

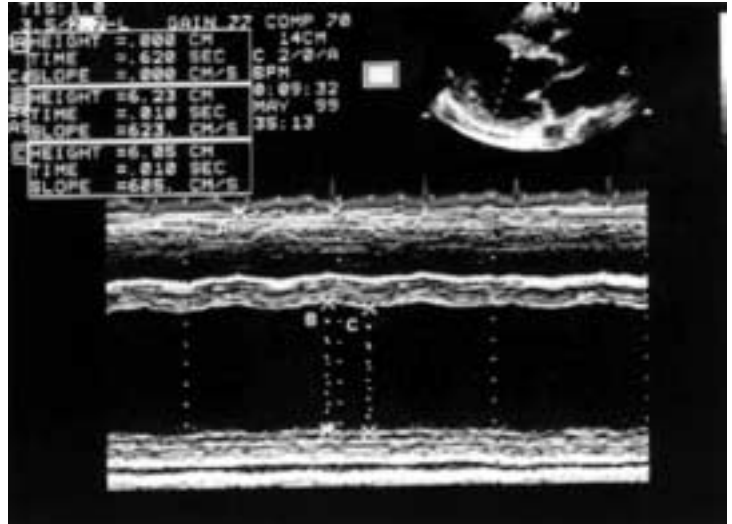


Fig. 2. Echocardiogram showing that the LVDD was 62.3 mm, LVDs 60.5 mm, and LVEF 6%.

(St. Jude Medical, Inc., St. Paul, MN, USA) aortic prosthesis was fixed there. The ascending aorta was replaced with a 26-mm Gelseal (Sulzer Vascutek Ltd., Renfrewshire, Scotland, UK) Dacron graft. The dilated tricuspid annulus was then reduced from 40 to 28 mm by DeVega's annuloplasty method. The posterolateral wall of the LV between the anterior and posterior papillary muscles was resected. The resected portion of myocardium weighed 45 g (Fig. 3). The LV was then repaired with a double 2-0 polypropylene suture anchored in Teflon felt strips. Antegrade leukocyte-depleted terminal cardioplegia was administered and antegrade warm blood perfusion was started. The body temperature was gradually elevated and the heart was defibrillated with DC shock. The aorta was declamped. The patient was weaned from bypass without the use of intraaortic balloon pumping. The total cardiopulmonary bypass time was 256 min, and the aortic cross-clamp time was 181 min.

The postoperative course was uncomplicated. The LVDD and LVEF improved to 48.8 mm and 53.8%, respectively (Fig. 4). A postoperative aortogram revealed smooth blood flow in the ascending aorta. The patient was discharged and has continued to do well in NYHA class I during a 3-year follow-up (Fig. 5).

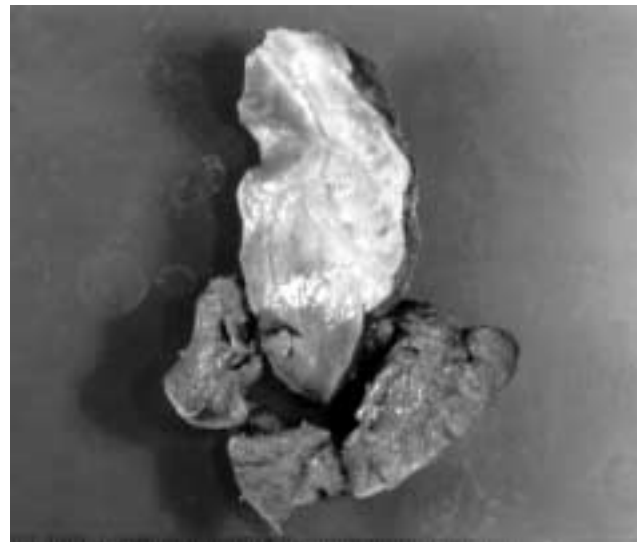


Fig. 3. The resected portion of myocardium.

Discussion

Partial left ventriculectomy, the so-called Batista operation, is accepted as an option for the treatment of patients with end-stage cardiomyopathy. However, reports of the clinical results of partial left ventriculectomy for valvular cardiomyopathy are rare. McCarthy and associates²⁾ reported on one patient with valvular cardiomyopathy who underwent transplantation five months after partial left

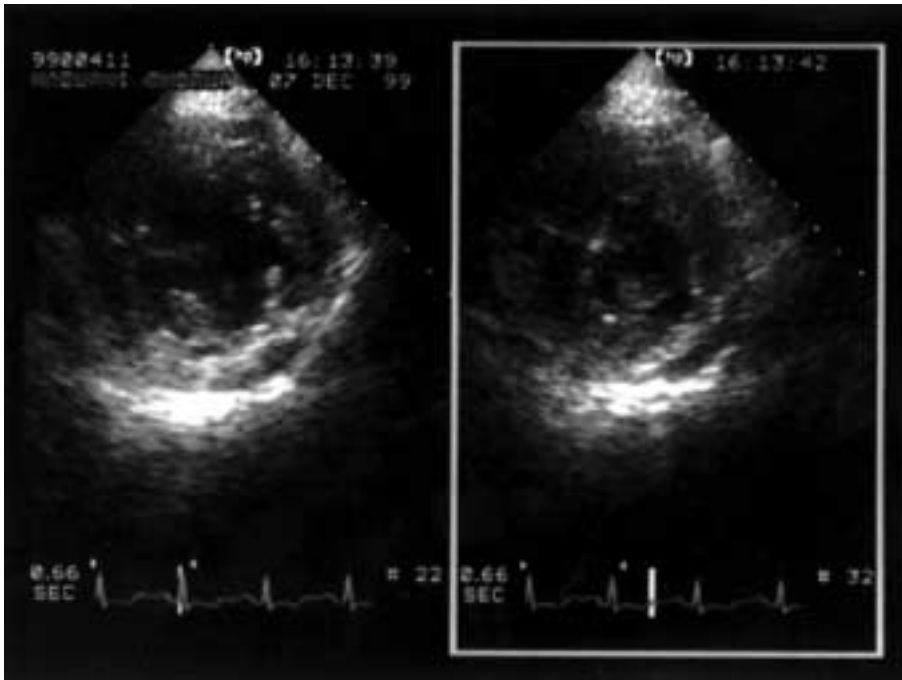


Fig. 4. Postoperative echocardiogram showing LVDd 48.8 mm, LVDs 35.3 mm, and LVEF 53.8%.



Fig. 5. Postoperative chest X-ray showing 48% cardiothoracic ratio (after 3 years).

ventriculectomy. The patient died eight days after transplantation from right heart failure caused by pulmonary hypertension resulting from chronic mitral valve disease. Suma and associates³⁾ also reported on three patients with valvular cardiomyopathy who underwent partial left

ventriculectomy, but the details of their conditions were not described.

The important point with regard to our patient was whether he required Batista operation or only AVR. Severe aortic stenosis carries a dismal prognosis when associated with congestive heart failure, with an expected survival of less than two years when treated medically.⁴⁾ AVR is the only effective treatment, but the operative risk increases with the development of LV systolic dysfunction. Connolly and associates reported that the perioperative (30-day) mortality in these cases was 21% (11 of 52 patients).⁵⁾ Adding Batista operation to AVR may decrease the number of such cases of early death, because reducing the LV diameter, by Laplace's law, decreases myocardial oxygen consumption from the early postoperative period. Because our patient's preoperative dobutamine stressed echocardiogram showed an increase in the LVEF from 6% to 13%, we added Batista operation to the surgical procedure.

Intravenous administration of dobutamine has been proposed as a method of determining surgical outcome in patients with low-output low-gradient aortic stenosis, when there is uncertainty about the severity of aortic stenosis.⁶⁾ Because the patient had markedly depressed LV function caused by severe aortic stenosis, we chose cold blood cardioplegia with antegrade and retrograde infusion, followed by leukocyte-depleted terminal cardioplegia, for

myocardial protection.⁷⁾ Although the patient has done well in the three years since his operation, we will continue to observe him closely in the future.

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