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## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

## Long-term survival with a stentless free-hand Batista pericardial aortic valve prosthesis: A case report



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### ARTICLE INFO

#### Article history:

Received 11 August 2014

Received in revised form

12 November 2014

Accepted 12 November 2014

Available online 15 November 2014

#### Keywords:

Heart valve

Bioprosthesis

Surgery/techniques

Geriatric

### ABSTRACT

**INTRODUCTION:** Stented bovine pericardial prosthetic valves are a good option for older patients, except when there is a fragile small aortic annulus, when, if there is no contraindication to anticoagulation, a mechanical prosthesis may be indicated.

**PRESENTATION OF CASE:** We report a 72 year-old man who underwent coronary bypass grafting and aortic valve replacement with a stentless valve fashioned from bovine pericardium using the Batista technique. Despite early sternal infection and dehiscence, and renal and respiratory failure during 15 years follow-up, he remains alive and self-sufficient. Echocardiography demonstrates a well-functioning aortic valve.

**DISCUSSION:** When Batista reported his first 60 patients, concerns were raised about the surgical feasibility of constructing the valve and its long-term durability. Our case perhaps addresses both concerns.

**CONCLUSION:** Replacement of the aortic valve with a free-hand Batista pericardial valve is a feasible option in a suitable and carefully selected patient.

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### 1. Introduction

Stented bovine pericardial prosthetic valves do not require anticoagulation therapy, and are associated with good long-term results in older patients.<sup>1–3</sup> However, a small aortic annulus is an important contraindication, which can be resolved by insertion of a bileaflet mechanical prosthesis if there are no contraindications to anticoagulation, or by enlarging the aortic root, which increases the operative risk in frail elderly patients because of the need for prolonged cardiopulmonary bypass and ischemic time.<sup>4–5</sup> The aim of this present report is to describe an alternative operative approach that can be used in an older patient with a small aortic annulus and a contraindication to anticoagulation.

### 2. Case report

A 72 year-old man, who was diabetic, hypertensive, and a smoker, presented in poor general health. He was admitted with symptomatically severe calcified aortic valve stenosis (area of aortic valve orifice 0.5 cm<sup>2</sup> with a gradient across the aortic valve of 55 mm Hg), single vessel coronary artery disease, and left

ventricular dysfunction (left ventricular ejection fraction of 38%). He had a previous history of gastrointestinal hemorrhage.

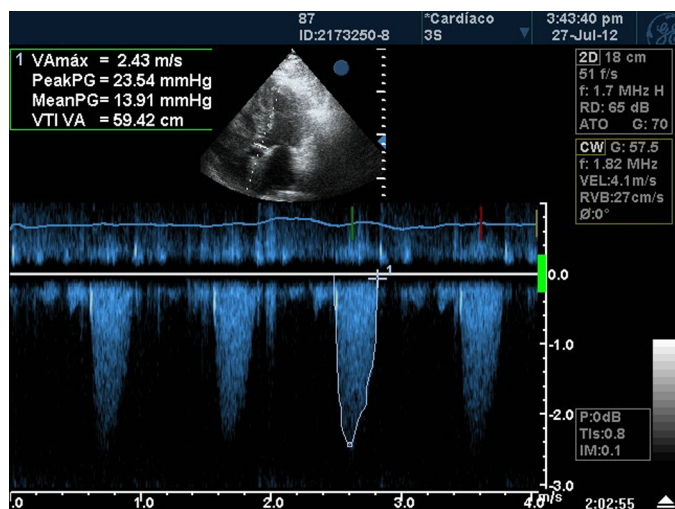
Operation on September 24th, 1997, confirmed all of the above cardiac conditions plus a small aortic annulus. In view of his poor general condition, no attempt to enlarge the aortic annulus was undertaken and, since there was a contraindication to anticoagulation therapy, it was decided to fashion a stentless biological prosthetic valve using glutaraldehyde-treated bovine pericardium (Braile Biomedica, Sao Jose do Rio Preto – SO, Brazil) which was inserted using the technique reported by Batista.<sup>4</sup> A coronary bypass graft was performed to the left anterior descending artery using saphenous vein. After valve replacement, intraoperative echocardiography showed no regurgitation and no gradient across the valve.

The patient's early postoperative course was complicated by a sternal infection and dehiscence, which responded well to treatment. During follow-up of 15 years he developed (i) chronic renal insufficiency with two episodes of acute renal failure requiring therapy in an intensive care unit, (ii) chronic obstructive lung disease due to prolonged tobacco use, and (iii) diabetic retinopathy.

At the time of this report, now aged 87 years, he remains active and self-sufficient in New York Heart Association Functional Class II, with no angina. Echocardiography shows an ejection fraction of 73%, with a mean aortic valve gradient of 13.9 mm Hg, and a maximal velocity of 2.43 m/s, which corresponds to mild stenosis (Fig. 1).

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**Fig. 1.** Echocardiogram showing mean aortic gradient of 13.9 mm Hg and maximum velocity of 2.43 m/s.

The prosthesis now shows moderate calcification, but with only mild regurgitation.

### 3. Discussion

In April 1986 at the 65th Annual Meeting of the American Association for Thoracic Surgery, Batista reported his first 60 patients who had undergone aortic valve replacement with glutaraldehyde-treated bovine pericardium fashioned into a prosthetic valve. At that time, although opinion was that this was a “very elegant way to construct a three-leaflet valve”,<sup>6</sup> concerns were raised about the surgical feasibility of constructing the valve and its long-term durability.

Our case report perhaps addresses both concerns. First, the operation described here was carried out with a good result by a cardiovascular surgeon with 12 years experience working in a public health hospital in an underdeveloped country. Second, follow-up at 15 years indicates the durability of the valve, which continues to function well and which on echocardiography resembles a native valve. Although the patient is suffering from chronic renal failure, he has survived well beyond the expected 75 year median age for men in Chile.<sup>7</sup>

We have been unable to find a report of long-term follow-up of a bovine pericardial Batista aortic valve prosthesis in the English or Spanish language medical literature. We would suggest that this procedure should be considered whenever a suitable and carefully selected patient presents.

**Addendum:** 17 years after operation, the patient remains alive and well at age 89 years.

### Conflict of interest

Authors declare to have no conflict of interest

### Funding

None.

### Ethical approval

Written informed consent is available.

### Author contributions

Study and design, and writing the paper: Valentina Becerra; Study concept: Javier Labbe; Data collection: Javier Labbe, Antony Cataldo; Echocardiographic follow up: Antony Cataldo; Case operator (surgeon): Eduardo Becerra; Data analysis: Valentina Becerra, Eduardo Becerra.

### Acknowledgements

We express our gratitude to Professor D.K.C. Cooper of the Department of Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, for assistance in the preparation of this report.

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