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# Edwards Intuity Elite In a Patient With Bicuspid Aortic Stenosis and Ventricular Septal Defect

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**Abstract**

This study reports on 65-year-old male with a bicuspid Aortic Stenosis (AS) low flow, low gradient and a congenital Ventricular Septal Defect (VSD) of pars membranosa. A ministernotomy and Cardiopulmonary Bypass (CPB) by aorto-femoral cannulation was performed. The VSD was below the commissure between right and non coronary sinus. It was decided to correct it by a stitch with a pericardial patch and a further safer coverage by the stent of an Intuity Elite aortic valve. To the best of our knowledge this was the first time that a VSD could be covered with a suturless valve for two reasons: anatomical site and conformable configuration of the valve.

## INTRODUCTION

Althouh patients with low flow, low gradient severe AS have considerable operative risks, the available data suggest that those with true stenosis with concentric Left Ventricular (LV) hypertrophy and contractile reserve (defined as => 20% increase in stroke volume or => 10 mmHg increase in mean transvalvular gradient with dobutamine) can expect a better outcome than similar patients treated medically [1]. Ventricular septal defect is one of the most common congenital heart lesions, with a reported prevalence of 4 per 1000 live births [2, 3]. The membranous defects are also called perimembranous, conoventricular or subaortic. The natural history of untreated ventricular septal defect is related to the size of the defect. An additional cardiac lesion, most commonly a bicuspid aortic valve, as in our case, or coarctation of the aorta, was present in 27% of cases. Serious complications were described in 25%, including infective endocarditis in 11%, progressive aortic regurgitation requiring surgery in 5%, and age-related syntomatic arrhytmias, primarily atrial fibrillation, in 8% [4].

## CASE PRESENTATION

The case was a 65-year-old male with a bicuspid Aortic Stenosis (AS) low flow low gradient and a congenital Ventricular Septal Defect (VSD) of pars membranosa (Fig 1). The patient had class NYHA III and an Euroscore of 1.33. Mean and max gradient were respectively 15 and 25 mmHg with a LVEF of 35%, ventricular telediastolic volume of 250 mL and ventricular telediastolic diameter of 63 mm. Echo showed a moderate aortic regurgitation and a mild mitral insufficiency. After echo dobutamine, an increase of gradients up to 25 and 40 mmHg were noted. The coronarography was negative. It was then decided to perform a ministernotomy at the 3rd intercostal space

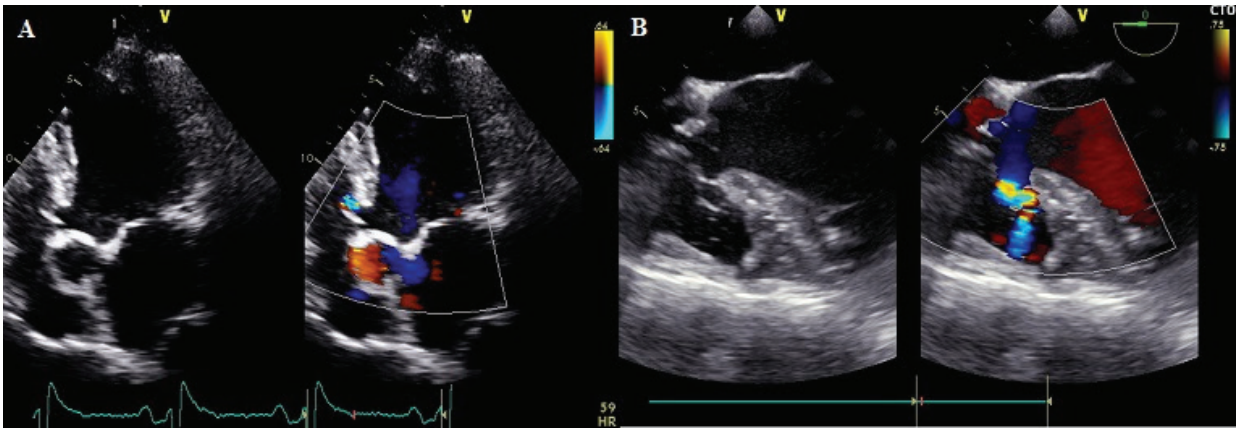


**Figure 1:** Ventricular Septal Defect in A, Transthorasic Echocardiography and B, Transesophagial Echocardiography Views

(previous experience of authors indicated 70% of minister-notomy on 125 Intuity valve implantation). The cannulation was through percutaneous femoral vein and ascending aorta with the ventricular vent inserted by right superior pulmonary vein. After cardioplegia, an oblique aortotomy was performed that showed a calcified bicuspid aortic valve and after its excission, the VSD was observed immediately below the right-non coronary commissure in a context of a very frial tissue. It was then decided to use an autologous pericardial patch to repair the defect, for the location of which, it could be excluded by a suturless aortic valve with a sealing-stent conformable for the left ventricular outflow tract. A 27 Intuity Elite (Edwards Inc) was then implanted. The CPB and cross clamp time were 67 and 51 minutes, respectively. The post-operative trans-oesophageal echocardiography control didn't detected a paravalvular leak or a residual VSD for complete coverage of perimembranous zone by intuity aortic valve.

## DISCUSSION

This case was unique because generally the association between aortic regurgitation and VSD is more common in young males [5]. The natural history of isolated VSD depends on the type of defect, its size, and associated anomalies. Defects can close spontaneously (some incompletely). Persistent defects, however, may predispose patients to endocarditis, arrhythmias, heart failure, aortic regurgitation, and pulmonary hypertension. Aortic regurgitation is believed to be 2.5 times more frequent in patients with subarterial VSD. It could be suggested that this suturless valve is a good solution for a short CPB and clamp time and for the particular configuration of this patient, it was ideal for coverage of this specific VSD.

## ACKNOWLEDGEMENTS

None.

## CONFLICTS OF INTREST

Authors declare that they had no conflict of interest.

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