



Case Report

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Use of the Myval Octapro+ Balloon-Expandable Valve in Severe Symptomatic Aortic Stenosis: A Case Report

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Abstract

Background: Transcatheter aortic valve implantation (TAVI) is an established treatment option for patients with severe symptomatic aortic stenosis across a broad spectrum of surgical risk. Continuous evolution of balloon-expandable transcatheter heart valve platforms aims to improve procedural predictability, implantation accuracy, sealing, and hemodynamic performance.

Case Presentation: We report the first implantation of the Myval Octapro+ balloon-expandable transcatheter heart valve at our center in a 77-year-old man with severe symptomatic calcific aortic stenosis and concomitant moderate aortic regurgitation. The patient presented with exertional dyspnea, episodes of presyncope, and peripheral edema and was in NYHA functional class III. Transthoracic echocardiography demonstrated preserved left ventricular systolic function with an ejection fraction of 63%, severe concentric left ventricular hypertrophy, peak transaortic velocity of 5.4 m/s, peak and mean gradients of 117 and 70 mmHg, respectively, and an aortic valve area of 0.64 cm². Multidetector computed tomography demonstrated an annular area of 505.4 mm², perimeter of 80.9 mm, and severe valvular calcification with a calcium volume of approximately 1520 mm³. Transfemoral TAVI was performed following balloon predilatation, with implantation of a 26-mm Myval Octapro+ valve under rapid ventricular pacing. The prosthesis was successfully deployed in the intended position without procedural complications. PredischARGE echocardiography showed a peak/mean transvalvular gradient of 21/9 mmHg, a maximum velocity of 2.27 m/s, and only mild paravalvular regurgitation.

Conclusion: This first-in-center experience demonstrates successful transfemoral implantation of the Myval Octapro+ valve in a patient with severe heavily calcified aortic stenosis, with favorable immediate procedural and hemodynamic results.

Keywords: Transcatheter aortic valve implantation, TAVI, aortic stenosis, Myval Octapro+, balloon-expandable transcatheter heart valve, case report

Abbreviations: AS: Aortic stenosis; AR: Aortic regurgitation; AVA: Aortic valve area; CT: Computed tomography; LVEF: Left ventricular ejection fraction; LVOT: Left ventricular outflow tract; MDCT: Multidetector computed tomography; NYHA: New York Heart Association; PVL: Paravalvular leak; TAVI: Transcatheter aortic valve implantation; THV: Transcatheter heart valve.

Introduction

Transcatheter aortic valve implantation has become an established treatment strategy for patients with severe symptomatic aortic stenosis and is increasingly used across a broad spectrum of surgical risk profiles. Parallel to the expansion of clinical indications, transcatheter heart valve technology has undergone continuous development, with newer-generation devices designed to improve procedural accuracy, sealing characteristics, deliverability, and post-implantation hemodynamics.

The Myval platform (Meril Life Sciences, Vapi, India) is a balloon-expandable transcatheter heart valve system available in a wide range of sizes. Newer iterations of the platform have introduced modifications in frame architecture aimed at reducing foreshortening and improving implantation predictability. Published experience with the Octapro generation describes a two-row hybrid cell architecture, reduced foreshortening during

deployment, and internal and external sealing skirts designed to reduce paravalvular regurgitation. myval

Clinical experience with newer valve iterations remains comparatively limited, particularly during the early phase of their adoption in individual centers. We report the first successful transfemoral TAVI performed with the Myval Octapro+ transcatheter heart valve at our institution in a patient with severe symptomatic calcific aortic stenosis.

Case Presentation

A 77-year-old man with arterial hypertension, dyslipidemia, chronic kidney disease, bronchiectatic disease, and known coronary artery disease was referred to our institution for treatment of severe symptomatic aortic stenosis. Several months before TAVI, coronary angiography demonstrated single-vessel coronary artery disease, which was treated with percutaneous coronary intervention of the left circumflex artery using a drug-coated balloon (Figure 1).

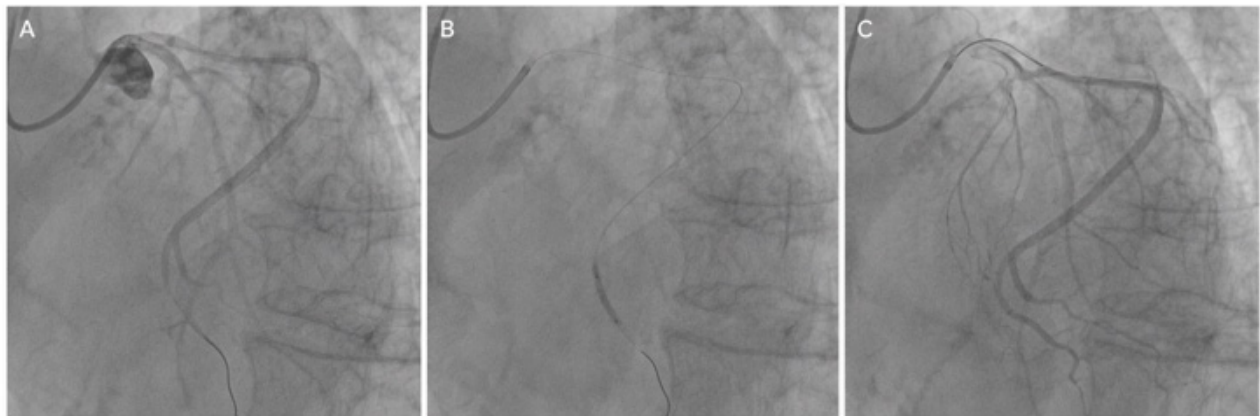


Figure 1: Coronary angiography and PCI of LCx. (A) Baseline angiography demonstrating a significant distal lesion. (B) Angioplasty with a DCB. (C) Final result with restored vessel patency.

The patient reported progressive dyspnea during mild physical activity, episodes of presyncope, and ankle edema. At presentation, he was in NYHA functional class III.

Baseline transthoracic echocardiography demonstrated a non-dilated left ventricle with preserved global systolic function and an LVEF of 63%. Marked concentric left ventricular hypertrophy was present, with interventricular septal and posterior wall thickness of

21 mm. The aortic valve was tricuspid and heavily calcified. Doppler assessment demonstrated a maximum transvalvular velocity of 5.4 m/s, peak gradient of 117 mmHg, mean gradient of 70 mmHg, and calculated AVA of 0.64 cm², consistent with severe high-gradient aortic stenosis. Moderate concomitant aortic regurgitation was also present. Mild tricuspid regurgitation and mildly elevated estimated pulmonary artery systolic pressure were noted (Figure 2).

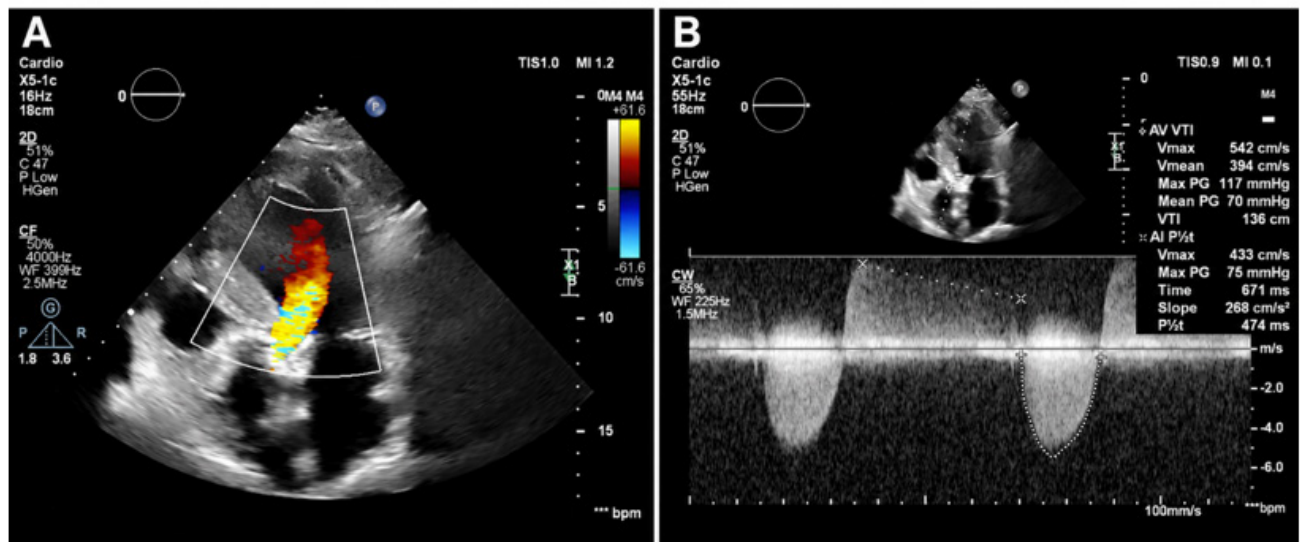


Figure 2: Baseline echocardiographic assessment. (A) Color Doppler demonstrating aortic regurgitation. (B) Continuous-wave Doppler across the aortic valve showing severe aortic stenosis.

Preprocedural multidetector CT was performed for TAVI planning. The aortic annulus had an area of 505.4 mm², a perimeter of 80.9 mm, an area-derived diameter of 25.4 mm, and a perimeter-derived diameter of 25.8 mm. Annular eccentricity was 0.24. The

LVOT mean diameter was 25.4 mm. Coronary ostial heights were 11.7 mm for the left coronary artery and 13.2 mm for the right coronary artery. The sinotubular junction measured approximately 30.7 mm and the ascending aorta 37.0 mm (Figure 3).

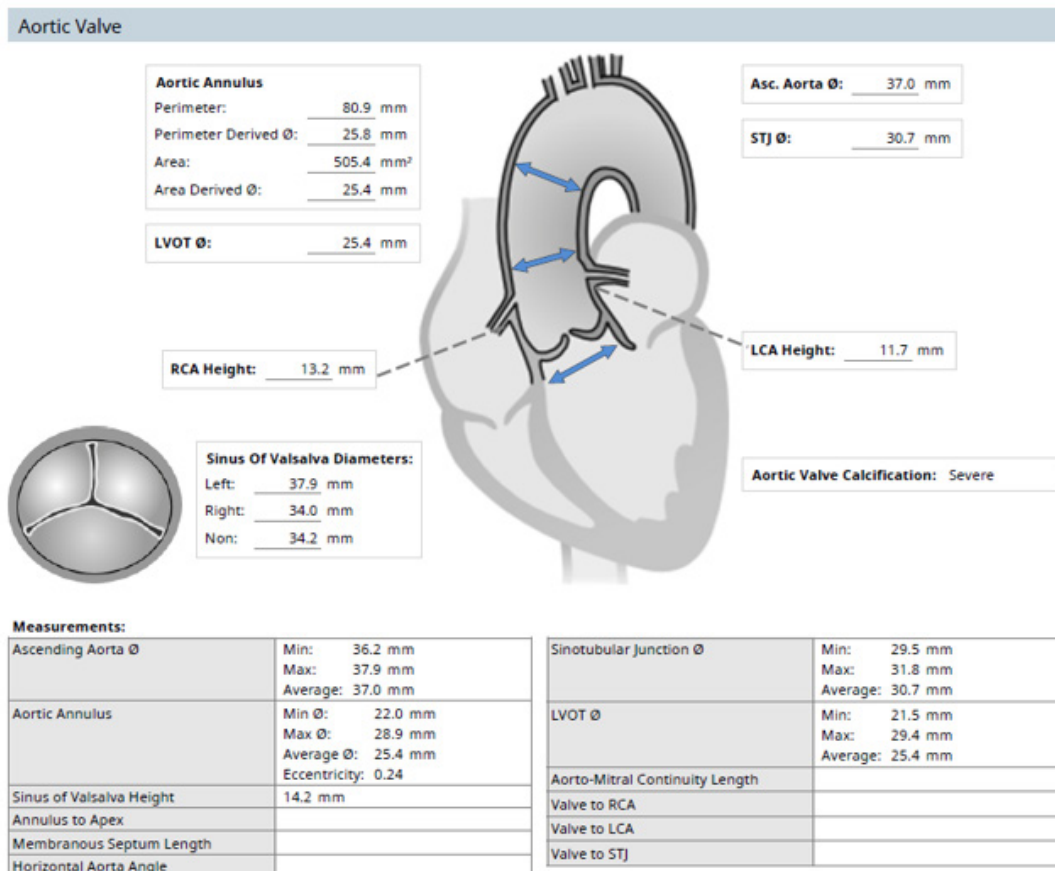


Figure 3: Multidetector CT measurements for TAVI sizing. Aortic annular area was 505.4 mm² with a perimeter of 80.9 mm, corresponding to area- and perimeter-derived diameters of 25.4 and 25.8 mm, respectively. Coronary heights were 11.7 mm for the left coronary artery and 13.2 mm for the right coronary artery.

The aortic valve was severely calcified, with a quantified calcium volume of approximately 1520 mm³, distributed predominantly within the non-coronary cusp. CT evaluation of the iliofemoral

vessels demonstrated dimensions suitable for transfemoral valve delivery (Figure 4).

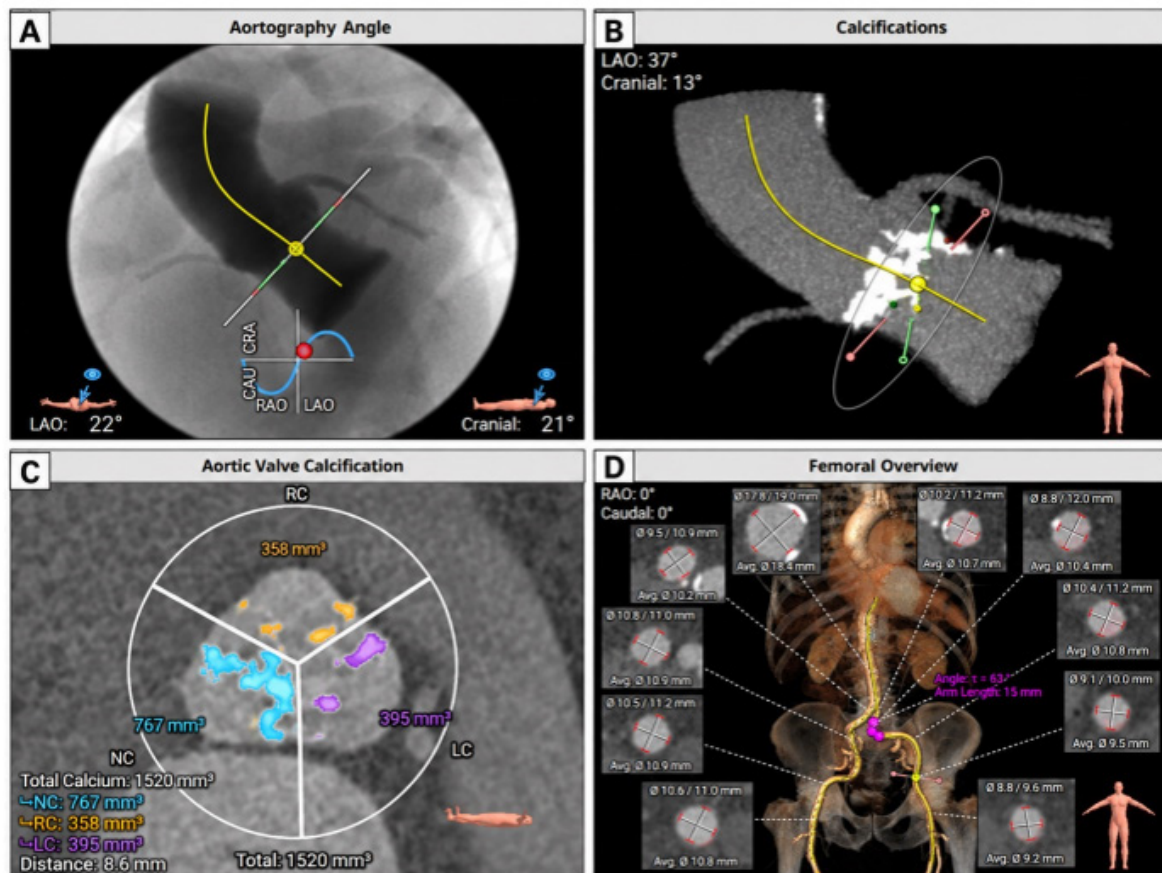


Figure 4: Preprocedural CT planning. (A) Predicted aortographic projection. (B) CT-based assessment of valvular calcifications. (C) Quantification and distribution of aortic valve calcification by cusp. (D) Femoral artery access.

Procedural Planning and TAVI Procedure

Following Heart Team evaluation, transfemoral TAVI was selected because of the patient's symptomatic severe aortic stenosis and elevated risk associated with conventional surgical treatment.

The right femoral artery was chosen as the main vascular access. After crossing the native aortic valve, balloon aortic valvuloplasty was performed under rapid ventricular pacing. A 26-mm Myval Octapro+ balloon-expandable transcatheter heart valve was subsequently advanced across the native valve (Figure 5).



Figure 5: Myval Octapro+ balloon-expandable transcatheter heart valve used in the present case.

The prosthesis was positioned fluoroscopically at the intended implantation depth and deployed under rapid ventricular pacing. Valve expansion and positioning were satisfactory, with immediate angiographic evidence of preserved coronary flow and no significant residual aortic regurgitation. The patient remained

hemodynamically stable throughout the procedure and during the early postprocedural period. No vascular complication, myocardial infarction, stroke, annular injury, or other major procedural complication occurred. Temporary pacing support was maintained following the intervention and removed after 48 hours (Figure 6).

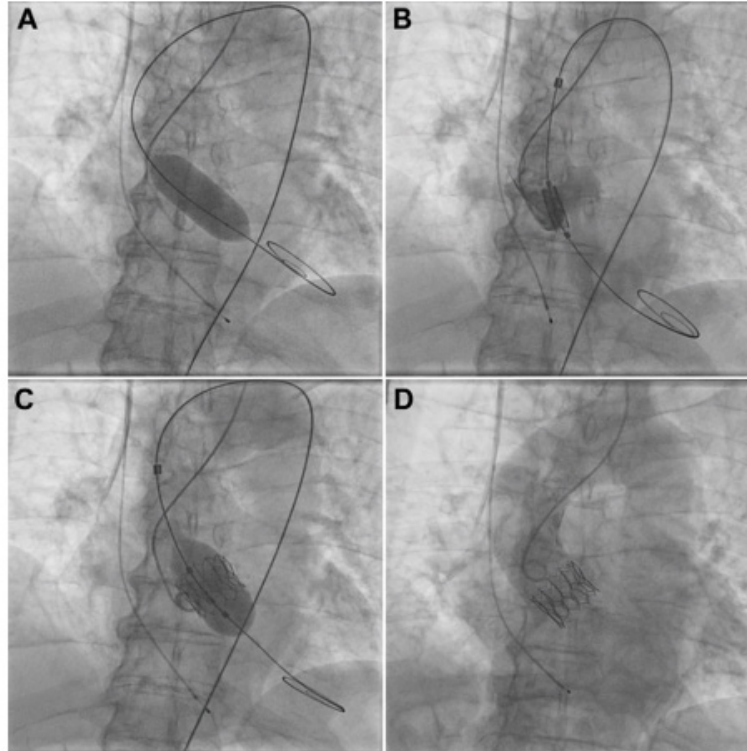


Figure 6: Sequential fluoroscopic steps of Myval Octapro+ implantation.

(A) Balloon aortic valvuloplasty before valve implantation. (B) Advancement and positioning of the Myval Octapro+ prosthesis across the native aortic valve. (C) Valve deployment under rapid pacing. (D) Final fluoroscopic result after successful implantation.

Predischarge transthoracic echocardiography demonstrated satisfactory prosthetic valve function, with a peak transvalvular gradient of 21 mmHg, mean gradient of 9 mmHg, and peak velocity of 2.27 m/s. Only mild paravalvular aortic regurgitation was observed. There was no pericardial effusion. The patient was mobilized early and discharged in stable clinical condition without procedure-related complications [1-12].

Discussion

This case represents the first clinical use of the Myval Octapro+ balloon-expandable transcatheter heart valve at our institution and demonstrates successful implantation in a patient with severe, heavily calcified, high-gradient aortic stenosis. The patient presented with advanced hemodynamic obstruction, with a peak transaortic velocity of 5.4 m/s and mean gradient of 70 mmHg, together with marked left ventricular hypertrophy and NYHA class III symptoms. Despite the substantial valvular calcium burden, CT demonstrated anatomy suitable for transfemoral TAVI and for implantation of a

26-mm balloon-expandable prosthesis. Accurate multidetector CT planning remains a fundamental component of contemporary TAVI. In the present case, annular area and perimeter were 505.4 mm² and 80.9 mm, respectively, while coronary heights were 11.7 and 13.2 mm. In addition to annular sizing, assessment of valvular calcium distribution, coronary heights, aortic root dimensions, and iliofemoral access anatomy allowed a comprehensive procedural strategy to be established before intervention. The Myval family differs from several competing balloon-expandable platforms by offering multiple intermediate and extra-large valve sizes, permitting more tailored matching between prosthesis and annular anatomy. Published descriptions of the preceding Octapro generation report a cobalt-alloy balloon-expandable frame incorporating a two-row hybrid cell design and an intra-annular bovine pericardial valve. The platform was developed to reduce valve foreshortening during deployment and incorporates sealing elements intended to reduce residual paravalvular regurgitation. Reduced foreshortening may be particularly relevant during implantation of balloon-expandable

prostheses because more predictable final valve position can facilitate controlled deployment relative to the annulus, left ventricular outflow tract, and coronary ostia. Published data for the Octapro iteration describe approximately 10–12% foreshortening, compared with 19–20% for Octacor and 21–24% for the first-generation Myval platform.

The present case was characterized by a substantial calcium burden of approximately 1520 mm³. Balloon predilatation was therefore performed before prosthesis implantation. The 26-mm valve achieved stable final positioning and satisfactory expansion without the need for a second valve or further corrective intervention.

The immediate hemodynamic result was favorable. Mean transprosthetic gradient decreased from 70 mmHg before TAVI to 9 mmHg before discharge, while peak velocity decreased from 5.4 m/s to 2.27 m/s. Only mild paravalvular regurgitation remained. These findings fulfilled the expected early hemodynamic performance of a successfully implanted transcatheter prosthesis.

The short-term clinical course was likewise uncomplicated. There was no procedural death, myocardial infarction, stroke, significant vascular complication, or requirement for permanent pacemaker implantation during the index hospitalization. The temporary pacing lead was removed after 48 hours, and the patient was discharged hemodynamically stable.

Importantly, this report should not be interpreted as an assessment of comparative valve performance. A single case cannot establish superiority, safety, durability, or reproducibility of a new platform. Rather, it documents the initial clinical adoption of the Myval Octapro+ system at our center and demonstrates that careful CT-based planning and conventional balloon-expandable TAVI technique enabled a successful result in a patient with severe calcific aortic stenosis.

Further clinical experience and larger prospective datasets will be required to define the procedural performance, hemodynamic characteristics, conduction outcomes, and longer-term durability of this latest iteration of the Myval platform.

Conclusion

The first implantation of the Myval Octapro+ balloon-expandable transcatheter heart valve at our center was successfully performed in a 77-year-old patient with severe symptomatic, heavily calcified aortic stenosis. Careful CT-based procedural planning, appropriate valve sizing, balloon predilatation, and controlled deployment resulted in satisfactory prosthesis positioning, a marked reduction in transvalvular gradients, only mild residual paravalvular regurgitation, and an uncomplicated early clinical course. This initial experience supports the technical feasibility of incorporating the Myval Octapro+ platform into contemporary transfemoral TAVI practice. Additional experience and systematic follow-up are required to evaluate its longer-term clinical and hemodynamic performance.

Conflict of Interest

The authors declare no conflicts of interest related to this publication.

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