Patient with small annular dimensions: implantation of a Symetis ACURATE neo™

TF Case Report

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REFERENCES


INTRODUCTION

Aortic valve replacement in patients with small annular dimensions is challenging as these patients are at higher risk for prosthesis-patient mismatch.

Prosthesis-patient mismatch is present when the effective orifice area of an implanted prosthetic valve is too small in relation to body size and has shown to be a strong predictor of short- and long-term mortality and premature bioprosthetic degeneration. The parameter used to characterize it is the indexed effective orifice area (EOA), i.e. the EOA of the prosthesis divided by the patient’s BSA, with a threshold of 0.85 cm²/m².

The PARTNER trial demonstrated a significant lower incidence of prosthesis-patient mismatch in Transcatheater Aortic Valve Implantation (TAVI) when compared to conventional Surgical Aortic Valve Replacement (SAVR). This case report describes the successful treatment of a patient affected by severe aortic stenosis and with a small aortic valve complex.

CASE PRESENTATION

An 87 years old female patient was referred for the treatment of severe aortic valve stenosis with functional NYHA class III. Due to the patient’s age and reduced mobility, TAVI was selected as the treatment of choice by our Heart Team. Transthoracic echocardiography revealed a preserved left ventricular function and an EOA of 0.6 cm² with a mean transvalvular gradient of 58 mmHg. Multislice computer tomography (MSCT) showed an aortic annulus of 18.1 x 21.9 mm with a perimeter derived effective annulus diameter of 20.3 mm (Fig. 1). All three leaflets showed moderate calcification (Fig. 2) and distances to RC and LC ostia were 16.6 and 14.3 mm, respectively (Fig. 3). The iliac-femoral arteries and the aorta allowed for a safe transfemoral TAVI approach.

CASE STRATEGY & EXECUTION

After performing aortic valve dilatation using a non-compliant ø 18 mm valvuloplasty-balloon, we carefully positioned the trans-femoral Symetis ACURATE neo™ (Size S, ø 23 mm) to its target area (Fig. 4). Keeping the Delivery System on the external aortic curvature for stability, we deployed the bioprosthesis without rapid pacing (Fig. 5).

RESULTS

The post-procedural angiographic check and the patient’s excellent hemodynamics showed no evidence of paravalvular leak (PVL, Fig. 5).

At discharge, trans-thoracic echocardiography confirmed a preserved ejection fraction, no paravalvular leak, a mean transvalvular gradient of 14 mmHg and an EOA of 1.5 cm².

Indexed EOA was 0.83 cm²/m², indicating only a mild prosthesis-patient mismatch. No postprocedural complications were reported.

KEY TAKE AWAYS

Aortic stenosis patients with small aortic valve complex dimensions may benefit from the specific design and characteristics of the self-expanding Symetis ACURATE neo bioprosthesis. Its unique supra-annular valve design enables a large EOA and perfect leaflet coaptation, even in narrow aortic valve complexes, thereby avoiding prosthesis-patient mismatch.