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**Priv.-Doz. Dr. Tanja K. Rudolph, MD –  
University of Cologne Heart Center, Germany**

Tanja Rudolph heads the cardiology TAVI program at the University Heart Center Cologne, Germany. Her previous professional experience includes the University Heart Center Hamburg. She is author and co-author of more than 50 scientific publications and has delivered many lectures at international conferences.

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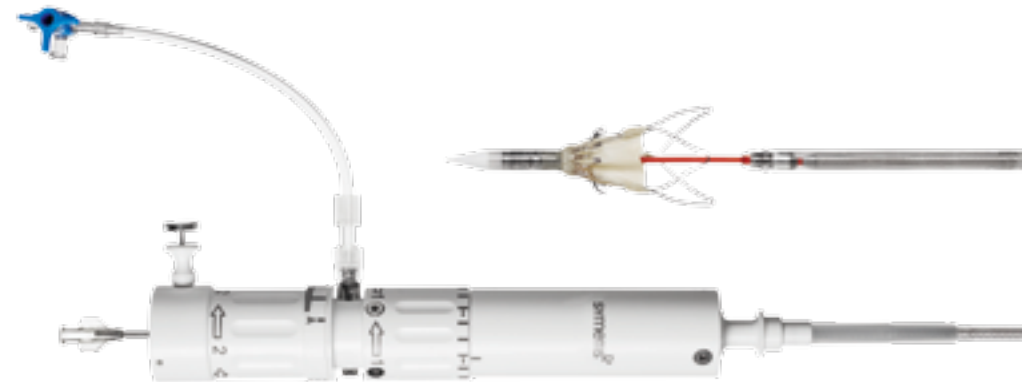
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Patient with small annular dimensions:  
implantation of a Symetis ACURATE neo™

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## TF Case Report



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Priv.-Doz. Dr. Tanja K. Rudolph, MD – Herzzentrum der Universität zu Köln, Germany

## 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<sup>1</sup>. 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  $0.85 \text{ cm}^2/\text{m}^2$ <sup>1</sup>.

The PARTNER trial demonstrated a significant lower incidence of prosthesis-patient mismatch in Transcatheter Aortic Valve Implantation (TAVI) when compared to conventional Surgical Aortic Valve Replacement (SAVR)<sup>2</sup>.

This case report describes the successful treatment of a patient affected by severe aortic stenosis and with a small aortic valve complex.

## PATIENT DATA MEDICAL HISTORY

- Female, 87 Yrs
- No Cad
- BD6:  $1.8 \text{ m}^2$
- LG67: 72 %
- NJ 92 Class III
- EuroD4@C6 II: 3.05 %
- Mean Gradient: 58 mmHg
- Eoa:  $0.6 \text{ cm}^2$
- Small Aortic Annulus
- Perimeter Derived  $\phi$ : 20.3 mm
- LG@E  $\phi$ : 18.9 mm
- Sinus  $\phi$ : 28.4 mm

## 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  $0.6 \text{ cm}^2$  with a mean transvalvular gradient of 58 mmHg. Multislice computer tomography (MSCT) showed an aortic annulus of  $18.1 \times 21.9 \text{ mm}$  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.



Fig. 1: Small annular dimensions

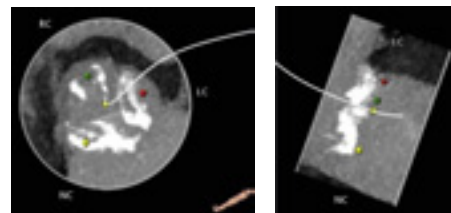


Fig. 2: Moderate calcification of all three leaflets

## CASE STRATEGY & EXECUTION

After performing aortic valve dilatation using a non-compliant  $\phi 18 \text{ mm}$  valvuloplasty-balloon, we carefully positioned the trans-femoral Symetis ACURATE *neo*<sup>™</sup> (Size S,  $\phi 23 \text{ mm}$ ) 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  $1.5 \text{ cm}^2$ .

Indexed EOA was  $0.83 \text{ cm}^2/\text{m}^2$ , 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.

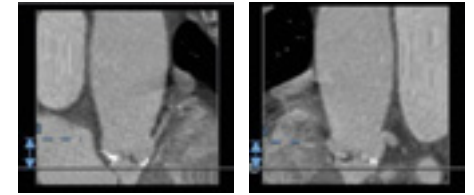


Fig. 3: Distance to RC ostium: 16.6 mm, to LC ostium: 14.3 mm

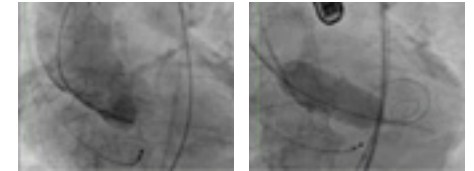


Fig. 4: Para-procedural aortogram and balloon aortic valvuloplasty using a  $\phi 18 \text{ mm}$  non-compliant balloon

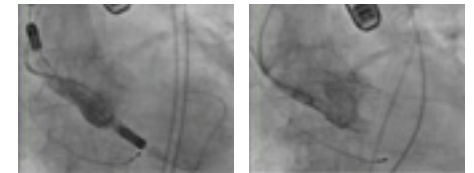


Fig. 5: Implantation of Symetis ACURATE *neo* size S and final result