Patient with severe calcification of the aortic root implanted with an ACURATE neo™ transfemoral TAVI.

TF Case Report

REFERENCES


2. ACURATE TA in a patient with extreme calcifications. PD Dr. Christoph Huber and the Inselspital Bern TAVI team


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Prof. Dr. Christian Hengstenberg holds the position of associate director and head of the cardiology TAVI program at the German Heart Center, Munich, Germany. His previous professional experience includes the University Hospitals in Marburg and Regensburg. Prof. Hengstenberg is author and co-author of more than 250 scientific publications and he is a valued presenter at international conferences.
INTRODUCTION

Transcatheter Aortic Valve Implantation (TAVI) is an established therapy option for patients affected by severe aortic valve stenosis at high risk for conventional surgery.

However, calcification of the device landing zone and its extension into the Left Ventricular Outflow Tract (LVOT) is still a major concern due to the high risk of annulus rupture during TAVI as well as its link to paravalvular regurgitation. Self-expanding valves are more favorable in patients with severely calcified annulus as they allow a more progressive expansion and compliant adaptation to the native annulus by being less sensitive to oversizing and generating less stress on the calcified annulus.

This case presents a patient with massive calcification, successfully treated with the ACURATE neo™, a self-expanding valve featuring an hourglass shape, which allows for optimal positioning with the waist lodging the calcified leaflets.

CASE STRATEGY & EXECUTION

The heavy calcification pattern of the native aortic valve was located mostly on the free edges of the leaflets with two extensions into the LVOT (see Fig 3 & 4).

Pre-dilatation with a 24mm valvuloplasty balloon was performed using effective rapid pacing. The ACURATE neo™ size M was positioned perfectly within the native aortic annulus (Fig 5). After post-dilatation with a 24mm valvuloplasty balloon, the result showed only a trace paravalvular leak (Fig 6).

RESULTS

At discharge, echocardiography showed no relevant aortic regurgitation and a normal left ventricular function. No post-procedural complications occured.

KEY TAKE AWAYS

The choice of ACURATE neo was crucial for the procedural success in this patient with severe calcification of the aortic root due to its:
- self-expanding deployment design
- unique hourglass shape

PATIENT DATA

- 81 Year-Old Male
- NYHA Class II
- BMI: 32.8
- LVEF: 60%
- Mean Gradient: 56 mmHg
- AVA: 0.77 cm²
- EuroSCORE I: 6.21 %
- EuroSCORE II: 1.36 %

MEDICAL HISTORY

- Severe Calcification of Aortic Root
- Perimeter derived Ø: 24.7 mm

CASE PRESENTATION

A 81 year-old male patient with severe aortic stenosis was referred to our institution with functional NYHA class II. Due to the patient age and frailty, TAVI was selected as the treatment of choice. Echocardiography showed a normal left ventricular function, an aortic valve area of 0.77 cm² and a mean gradient of 56 mmHg, while MSCT revealed an aortic annulus of 20.9 mm x 28.4 mm, with a perimeter-derived effective diameter of 24.7 mm. The iliac-femoral & abdominal arteries allowed for a safe transfemoral TAVI approach.

Fig 1: Measurement of the aortic annulus with the CT scan

Fig 2: Angiography showing valvuloplasty with a 24mm balloon

Fig 3: Heavy calcification

Fig 4: Heavy calcification

Fig 5: First step of the valve deployment

Fig 6: Final angiography shows only trace of aortic regurgitation