

# Transcatheter aortic valve replacement using the ACURATE NEO™ valve to treat pure aortic regurgitation in a degenerated aortic homograft valve

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Homograft aortic root replacement is a surgical technique used in complex aortic surgery such as acute aortic dissection, infective endocarditis, and in aortic valve reoperation. Typically the conduit becomes heavily calcified and makes redo surgery a technically challenging option.

## Case description

A 55-year-old man was referred to our institution for refractory heart failure. He first underwent mechanical aortic valve replacement (AVR) in 1975. In 2002 in the context of a type A aortic dissection he had redo AVR, consisting of an aortic homograft and stentless aortic root repair.

Echocardiography showed severe aortic regurgitation in the absence of significant stenosis secondary to a degenerated aortic valve ([Supplementary material](#) online, *Video S1*). Computed tomography and transoesophageal echography confirmed the sealed type A aortic dissection (*Figure 1*).

The patient was turned down from further surgical intervention due to the high risk of reoperation with a calcified degenerated homograft. Therefore, we planned percutaneous transcatheter aortic valve replacement (TAVR) using the self-expandable ACURATE NEO LARGE™ valve. Reaching the aortic valve was difficult due to the large aortic dissection ([Supplementary material](#) online, *Video S2*). However, an optimal final position was obtained for the TAVR ([Supplementary material](#) online, *Video S3*). Immediate improvement in haemodynamic parameters was observed. Echocardiography confirmed the result of the procedure ([Supplementary material](#) online, *Video S4*). The patient was discharged at Day 4.

## Discussion

In conclusion, percutaneous TAVR is feasible in aortic homograft failure using a self-expandable valve. Failure rates of aortic homograft



**Figure 1** Computed tomography showing a heavily calcified aortic root with sealed aortic dissection.

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are between 10% and 25% at 15 years and nearly 50% by 20 years.<sup>1</sup> In the literature, balloon-expandable TAVR technology has been reported to treat degenerated aortic homograft valves in both an open heart<sup>2</sup> and a percutaneous<sup>3</sup> approach. The ACURATE NEO™ valve offers a novel technology to tackle the challenges associated with this procedure. Further studies are needed to see if it can reduce the risk of annular rupture (associated with balloon-expandable valve) or valve migration (associated with self-expandable valves) which can complicate TAVR in homograft intervention.

## Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

**Consent:** The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

**Conflict of interest:** none declared.

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