

# Severe angulation of the descending aorta with a kink: Buddy wire is key for a successful transfemoral transcatheter aortic valve replacement

Sarah Mauler-Wittwer<sup>1</sup>, Marc Arcens, Stephane Noble<sup>1</sup>

Department of Medicine, Cardiology Division, Structural Heart Unit,  
University Hospitals of Geneva, Switzerland

An 81-year-old lady, known for non-disabling stroke and slowly progressive interstitial lung disease, was admitted for symptomatic severe high-gradient aortic stenosis with normal ejection fraction. CT scan assessment showed a calcium score of 1800 HU and an aortic root anatomy, suitable for different transcatheter heart valves (THV). Aortic reconstructions demonstrated severe angulation of the descending aorta with a kink but calcium only on the outer curve of the severe angulation. (Figure 1A, B). After the heart team discussion, she underwent transfemoral transcatheter aortic valve replacement (TAVR) with a 26 mm Medtronic Evolut-Pro +.

While advancing a 260 cm ADVANTAGE-TERUMO 0.35 stiff wire, the vessel was partially straightened (Figure 1C). However, we failed to advance the Evolut-Pro + on our usual 270 cm INNOWI-SYMEDRIX stiff wire. It could not cross the kink, therefore we inserted in the contro-lateral 5F-pigtail catheter a 180 cm LUNDERQUIST stiff wire which almost completely straightened the descending aorta, allowing the THV to smoothly advance (Figure 1D, E). Finally, the THV implantation was successful (Figure 1F, Video 1).

The buddy wire in the pigtail was key to straightening the aorta and facilitating the THV navigation. Transfemoral access is the only class I access for TAVR. The latest version of the Evolut THV, the Evolut-FX (softer delivery system) might have been easier to advance, as well as the very soft and steerable delivery system of the Abbott Navitor or the Boston Scientific Acurate NEO2 THVs. By forcing the way through a severe aortic angulation, there is a risk of aortic rupture which can be treated, if anticipated, by endovascular stent grafting.

**Funding:** No funding related to this report.

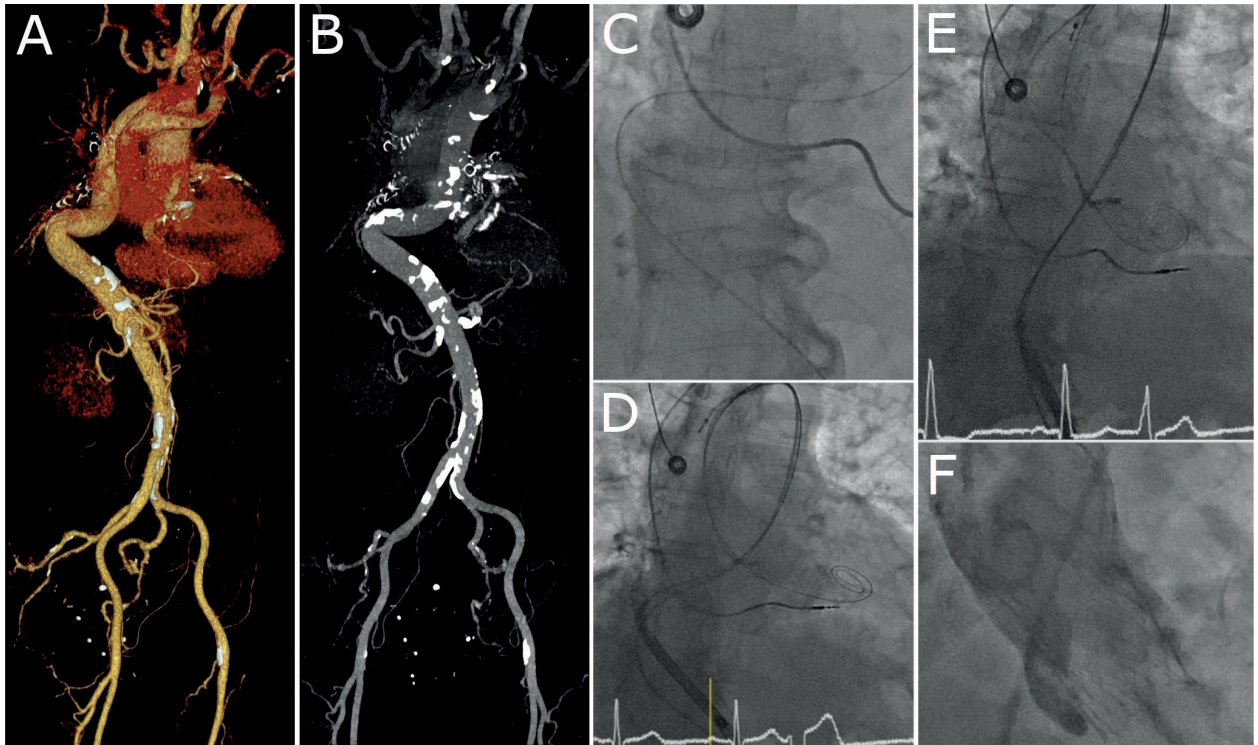
**Conflict of interest:** S. Noble reports to be a proctor for Medtronic. There are no conflicts of interest for the other authors.

**Supplementary material:** Video 1. Legend: 1. 3D CT reconstruction of the aorta; 2. Regular Cordis soft guidewire; 3. Terumo Advantage 0.35 guide wire; 4. Failure to cross the angulation using an INNOWI wire; 5. Buddy wire in the pigtail (Lunderquist guidewire); 6. Successful navigation through the angulation; 7. Final result of the 26 mm Evolut Pro+ implantation.

**Address for correspondence:** Stephane Noble, MD, Structural Heart Unit Cardiology Division Department of Medicine, University Hospitals of Geneva, Rue Gabrielle-Perret-Gentil 4, 1211 Geneva, Switzerland, tel: +41 795533149, e-mail: stephane.noble@hcuge.ch

Date submitted: 29.04.2024 Date accepted: 15.09.2024

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**Figure 1.** **A.** 3D Volume Rendering CT image of the aorta showing a severe angulation of the descending aorta with a kink; **B.** 3D CT (maximum intensity projection) showing the severe angulation with calcium on the high portion of the outer curve of the angulation; **C.** Terumo Advantage 0.35 guide wire with minor effect on the angulation of the descending aorta; **D.** Failure to cross the angulation using an INNOWI wire; **E.** Buddy wire in the pigtail (Lunderquist guidewire) which straightened the descending aorta and allowed the valve to advance through the severe angulation; **F.** Final result of the 26 mm Evolut Pro+ implantation (annulus perimeter: 68 mm, annulus area: 360 mm<sup>2</sup>, and sinus of Valsalva diameter: 30 × 29 × 29 mm)