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Image of the Issue

Subocclusive Ostial Left Main Disease After Transcatheter Aortic Implantation with Bail-Out Valve-in-Valve

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Transcatheter aortic valve implantation (TAVI) is beneficial in high-risk patients with severe aortic stenosis [1]. Yet, complications may occur even with these new devices [2–5]. We hereby describe the case of a patient in whom valve-in-valve (VIV) TAVI had been performed for valve dislodgement, later complicated by subocclusive left main stenosis (Fig. 1).

A 79-year-old woman with severe aortic stenosis was referred to us (Panel A: transthoracic echocardiography showing significant aortic valve stenosis). After multidisciplinary appraisal, and in light of increased surgical risk (Logistic EuroSCORE 16%), TAVI with a Portico (Abbott Vascular, Santa Clara, CA, USA) device was planned via percutaneous transfemoral access. Preprocedural imaging with computed tomography angiography and tridimensional reconstruction (3mensio Structural Heart, Esaote, Genova Italy) showed that right coronary artery height was 17.0 mm, left coronary artery height was 13.9 mm, sinus of Valsalva diameter was 30.2 mm, sinotubular junction diameter was 30.5 mm, and ascending aorta diameter was 37.8 mm (Fig. 1S). In keeping with such measurements [6,7], we did not anticipate a high risk of coronary occlusion, despite the presence of a surgical bioprosthesis, which is already by default a risk factor for this complication.

Following aortography (Panel B and Movie 1S), predilation was performed with a 20 × 40 mm VACS III (Osypka, Rheinfelden, Germany) balloon, and then a Portico 27 was successfully implanted (Panel C: implantation; Panel D and Movie 2S: post-implantation aortography). During postdilation with a 25 × 40 mm Osypka balloon (Panel E), the nurse inadvertently interrupted rapid pacing, leading to device embolization in the ascending aorta (Panel F and Movie 3S). Despite repeat attempts to further pull distally the device with a gooseneck snare and an inflated balloon to free the coronary ostia (Panel G), the device remained in the ascending aorta. Another Portico 27 device was implanted distally as bail-out, achieving a satisfactory angiographic and hemodynamic result, without coronary compromise (Panel H and Movie 4S).

Three months later the patient referred anginal pain for minimal exertion, with ECG at rest showing ST-T changes suggestive for myocardial ischemia. Echocardiography showed good prosthesis functioning, but worsening systolic function (Panel I). The patient underwent aortography, which showed significant ostial left main stenosis in the valve-in-valve region (Panel J). After selective angiography with a JL4 6 French guiding catheter (Cordis, Miami, FL, USA) (Panel K), wiring the left main through the two valves using a 0.014″ BMW (Abbott Vascular) guidewire and repeat predilation, a 3.5 × 15 mm Ultimaster (Terumo, Tokyo, Japan) drug-eluting stent was implanted successfully (Panels L and M). Clinical, ECG, echocardiographic (Panel N) and computed tomography imaging follow-up 3 months later did not disclose left main restenosis (Panels O and P). Notably, Panel O is probably subject to paralax error, and we accordingly reached the coronary ostium more proximally. Indeed, accessing the lesion proved timeconsuming, but given the low profile of the balloons used for predilation and the Ultimaster stent, support provided by the JL4 6 French guiding catheter proved eventually adequate.

This unique case highlights the complexity of TAVI [1,4], and the need for meticolous technique and attentive follow-up after VIV, especially if performed in bail-out situations [5]. Yet, thanks to technological developments in devices (e.g. large cells of Portico, and extremely low profile of Ultimaster), this vignette suggests that even severe procedural complications can be safely and effectively managed today. Notably, the field of percutaneous coronary

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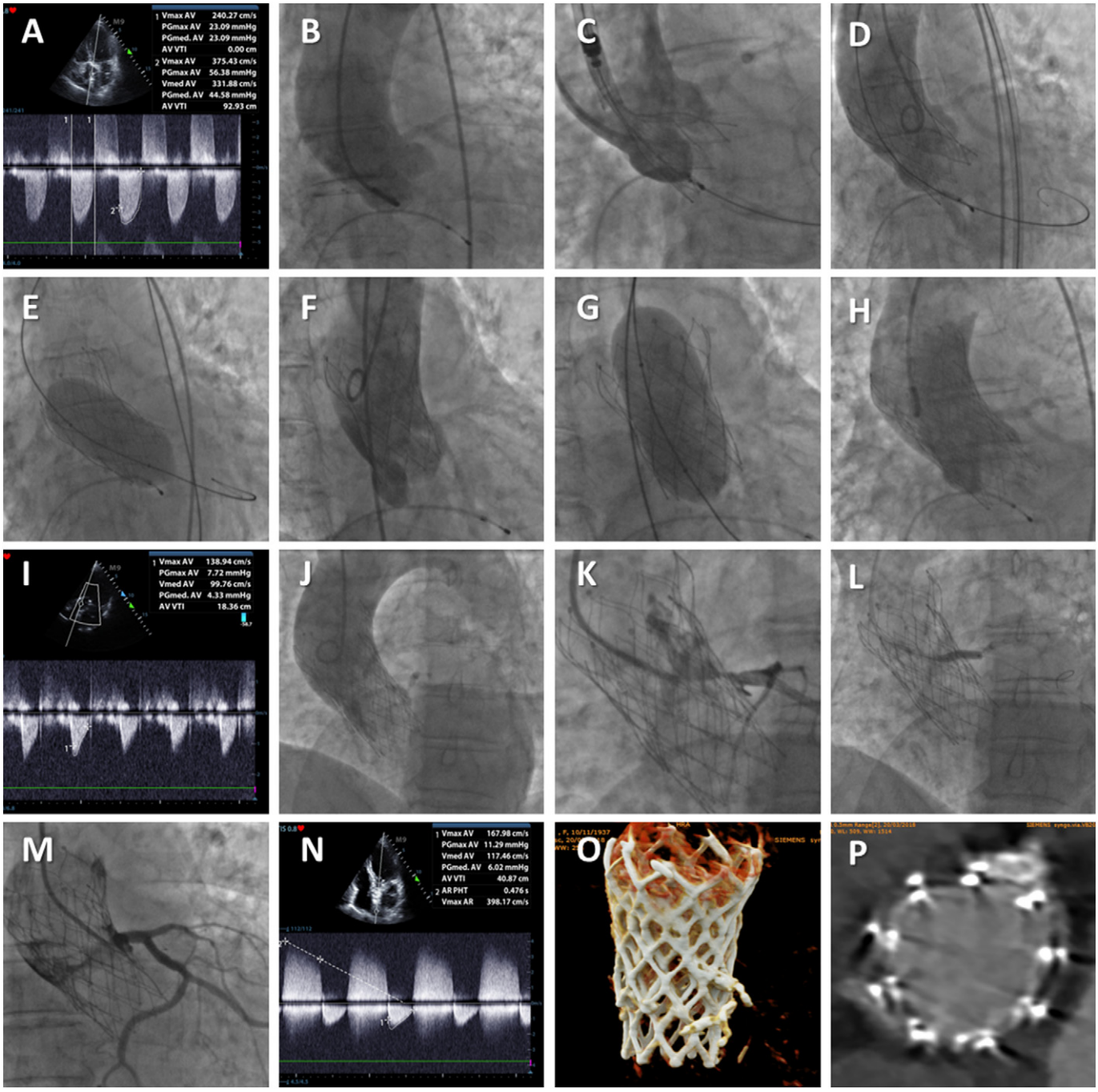

Fig. 1. Transcatheter aortic valve implantation with a Portico valve complicated by device dislodgement and embolization during postdilation, requiring implantation of another device. Three months later, subocclusive ostial left main disease was treated with implantation of an Ultimaster drug-eluting stent (Panel descriptions are provided in the text).

intervention following TAVI has grown rapidly in recent years, and several useful approaches have been standardized already, as clearly summarized by Yudi et al. [8] In addition, other pioneering approaches including the BASILICA technique can be considered in carefully selected cases [9].

Supplementary data to this article can be found online at https://doi.org/10.1016/j.carrev.2019.04.003.

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Conflicts of interest

Prof. Biondi-Zoccai has consulted for Abbott Vascular and Bayer.

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