Successful percutaneous coronary intervention after transcatheter aortic valve implantation with CoreValve bioprosthesis

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We present a case of an 84-year-old male patient who was admitted to our department due to recurrent angina 17 months after transcatheter aortic valve implantation (TAVI) with a 29 mm CoreValve bioprosthesis (Figure 1). Symptoms were increasing in the past several weeks, and on admission the patient was in Canadian Cardiovascular Society class 3. His past medical history included hypertension and chronic atrial fibrillation. Non-invasive diagnostics was initially started with trans-thoracic echocardiography, which did not show signs of left ventricle wall motion abnormalities. Secondly, single-photon emission computed tomography (SPECT) was performed, showing a significant perfusion drop in the left ventricle anterior wall after dipyridamole administration. The patient was referred for coronary angiography. During the examination a critical ostial lesion of the left anterior descending (LAD) artery was discovered with impaired myocardial flow to the distal portion of the artery (TIMI 2). On examination performed 2 months prior to TAVI there were no significant lesions in coronary arteries. Percutaneous intervention (PCI) started with the positioning of a 6 Fr EBU 3.5 catheter between aortic bioprosthesis struts and into the ostium of the left coronary artery (LCA). Afterwards standard PCI with stent implantation was performed. Percutaneous coronary intervention result was good with no significant residual stenosis and restored normal TIMI flow. At discharge, triple antithrombotic therapy was recommended (aspirin, clopidogrel, vitamin K antagonist (VKA)) for 1 month, which should be followed by dual therapy for up to 1 year (aspirin/clopidogrel, VKA). Even though the nitinol frame of the CoreValve bioprosthesis extends to the ascending aorta, the space between the struts is wide enough to ensure coronary access. Navigating through the struts may be burdened with additional difficulties depending on the bioprosthesis final position in relation to the coronary ostia, which may be hidden behind the frame struts or behind the parts of the leaflets sewn to the nitinol frame. Crossing through the gaps may not be necessary when it comes to diagnostic angiography. In some cases sub-selective contrast injection may fully visualize the coronary sinus and coronary arteries, and may be helpful when struts are crossing the coronary ostia. In terms of TAVI, PCI performed prior to the valve implantation is believed to be gold standard, yet the optimal timing of PCI relative to TAVI is still uncertain and is the subject of constant discussion regardless of growing experience. However, due to improvement of long-term TAVI outcomes, increase of frequency of post-TAVI PCI dictated by the progression of coronary artery disease (CAD) is expected. The above-mentioned procedure is achievable, but may prove demanding – especially when valve prostheses' elements/struts are in the close vicinity of the coronary ostia, making it difficult to gain optimal support. Different types of new generation bioprosthesis may have valve-specific crossing and support issues, which make intervention more challenging. Further investigations are necessary to assess the safety of post-TAVI PCI and to develop the best solutions for different patients [1–4].

Conflict of interest

The authors declare no conflict of interest.

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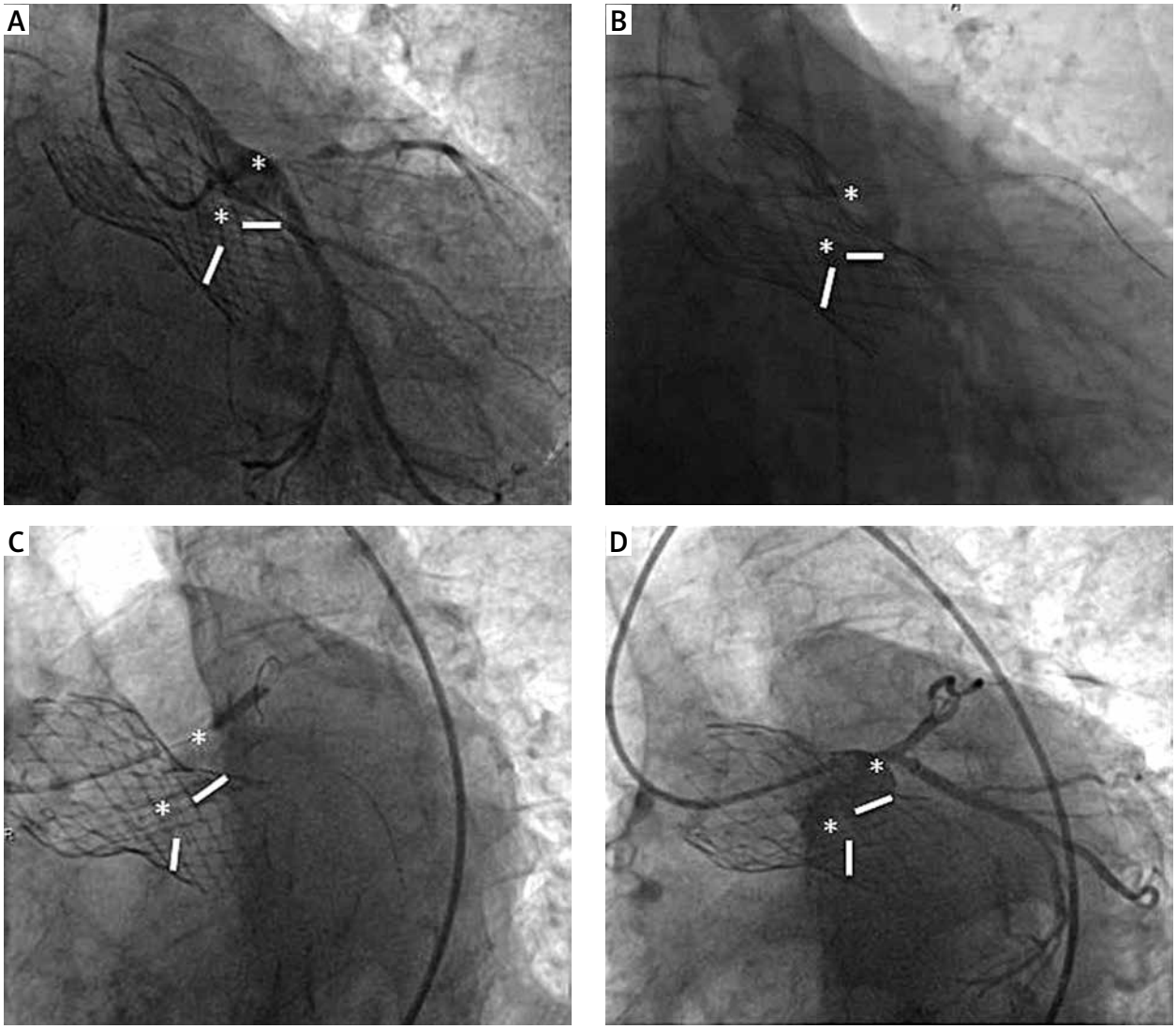

Figure 1. Steps of the procedure: coronary angiography showing critical lesion in the proximal LAD (**A**); catheter placement and wire crossing (**B**); stent implantation (**C**); final result (**D**); *possibile locations of the coronary ostia (RCA – NCC); ▭ – possible locations of the bioprosthetic leaflets

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