

Septal branch in heart failure: Significant implications of an insignificant branch

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A 71-year-old male with a history of stroke and diabetes was admitted for left-sided heart failure and non-ST-segment elevation myocardial infarction. Echocardiography revealed a dilated left ventricle with reduced ejection fraction (20%), inferobasal and apical scar, and anteroseptal akinesia with preserved myocardial wall thickness. Later was confirmed on a single-photon emission computed tomography. Coronary angiography showed chronic total occlusion of the right coronary artery, subocclusive non-calcified stenosis of the ostial/proximal and mid segments of the left anterior descending (LAD) artery and significant circumflex artery (Cx) stenosis (Figure 1). The Heart Team opted for percutaneous coronary intervention (PCI) with the PulseCath iVAC 2L support. This was achieved through the left femoral approach while PCI was performed through right femoral access. Following predilatation, the Cx was stented with an Orsiro 2.75/26 mm (Biotronik) drug-eluting stent (DES). Subsequently, after predilatation, the 2.75/26 mm (Biotronik) DES and Ultimaster 3.0/30 mm (Terumo) DES were implanted in the left main and the LAD, followed by the proximal optimization technique (POT)/kissing/POT sequence. A good result was achieved at the left main and LAD level; however, occlusion of a strong first septal branch (SB) occurred. The newly developed right bundle branch block progressed to a complete atrioventricular (AV) block, requiring temporary transvenous electrostimulation.

Negotiating the SB proved to be challenging but was eventually achieved with a Fielder XTA (Asahi) wire over the Sasuke dual lumen microcatheter (Asahi). Recanalization was achieved with semi-compliant 1.5/10 mm

balloon dilatation, which was immediately followed by resolution of conduction abnormalities. The POT proximal to the SB led to SB occlusion, but the procedure was finished after additional SB balloon dilatation (Supplementary material, *Video S1*). The further course was uneventful.

During LAD PCI, SBs are usually neglected [1]. Preferable take-off angle, large collateral network, and small calibers render SB intervention unnecessary. Nevertheless, clinically silent and structurally insignificant SB occlusions do occur [2]. Conversely, experiences from alcohol septal ablation of the first SB suggest that as many as 9%–20% of patients need pacemaker implantation due to a new heart block [2]. This is because both the right bundle branch and the left anterior fascicle of the heart conduction system are supplied exclusively by the first SB [3]. In 2019, Nojima et al. [3] reported a case with a complete AV block developing 3 days following LAD PCI, which resulted in occlusion of the first SB. In a literature review, the authors found only 8 similar cases, rendering such events reasonably rare. Similarly, the SB was reopened with 1.5 mm semi-compliant balloon dilatation over a polymer jacket wire; wiring was achieved with a microcatheter. Negotiation of the SB proved much more challenging in our case. In such a scenario, a double-lumen catheter may provide a crucial aid in achieving optimal angulation for the secondary wire.

Preserving both adequate AV conduction and avoiding a complete bundle branch block in our patient were of vital interest to “do no harm”. Otherwise, resynchronization therapy would have to be considered. This was avoided by successful recanalization of

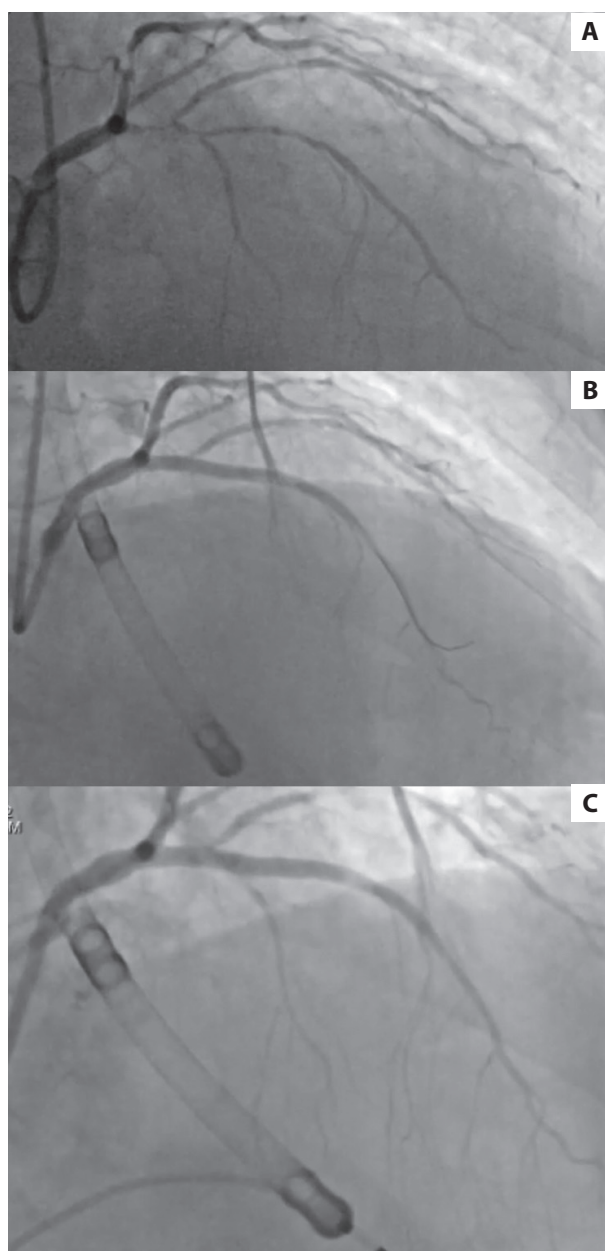


Figure 1. Right anterior oblique view of the left main and left anterior descending coronary arteries. **A.** Initial finding. **B.** After stent delivery; optimal results at the level of the left main and proximal left anterior descending artery; however, occlusion of the septal branch occurred. **C.** After septal branch recanalization

the presumably “insignificant” LAD branch. Strategies to prevent SB occlusion during LAD PCI in heart failure patients should be implemented.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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