

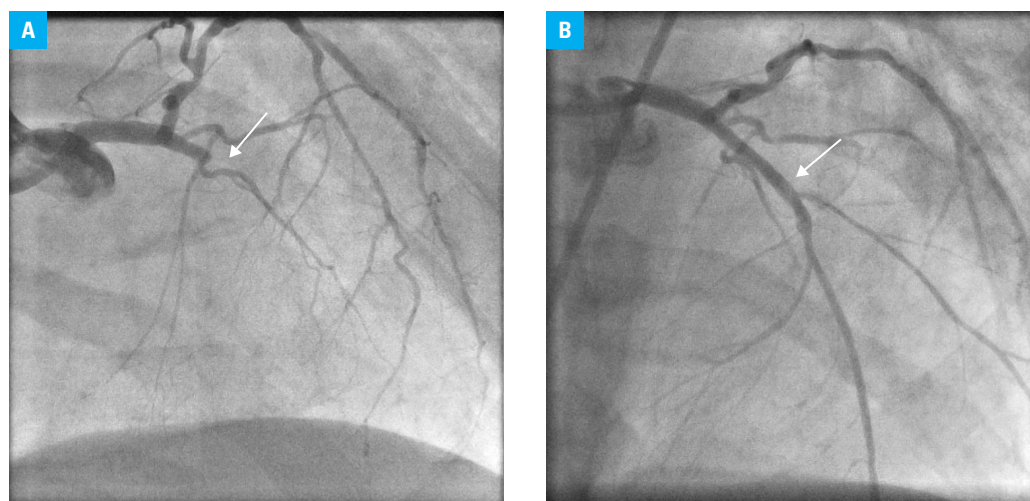
# Outstanding clinical and functional improvement after revascularization of chronic total coronary occlusion

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A 46-year-old man was admitted with symptoms of severe heart failure. Exertional dyspnea occurred 6 months earlier, but it was identified as associated with respiratory disease after a prolonged infection and was unsuccessfully treated with antibiotics. Over the following months, fatigue, exercise intolerance, and dyspnea worsened. On admission, the patient presented with symptoms of heart failure (New York Heart Association [NYHA] class IV) with tachycardia (115 bpm), tachypnea, and severe leg edema. On electrocardiography, a sinus rhythm of 115 bpm and signs of previous myocardial infarction of the anterolateral wall were observed (QS complexes in leads  $V_1$ – $V_4$  and inverted T waves in leads I, aVL,  $V_5$ , and  $V_6$ ). Laboratory tests showed elevated (but not significant for acute ischemia) troponin levels (0.086 ng/ml; 0.077 ng/ml [reference values, 0–0.056 ng/ml]) and significantly elevated

N-terminal pro-B-type natriuretic peptide levels (7671.6 pg/ml [reference values, 0–125 pg/ml]). Echocardiography revealed left ventricular end-diastolic diameter enlargement (68 mm) and global hypokinesis with left ventricular ejection fraction of about 10%. Coronary angiography showed a chronic total occlusion (CTO) of the proximal left anterior descending coronary artery (LAD), with poor collateral circulation (FIGURE 1A) and significant, but not critical, stenosis (75%) in the proximal segment of the right coronary artery (RCA; Supplementary material). Cardiac magnetic resonance imaging showed a viable myocardium (subendocardial enhancement <50% of the wall thickness) in the medial segment of the anterior wall, posterior part of the interventricular septum, and other segments of the posterior and lateral walls, subendocardial enhancement of 50% to 75% of the thickness in



**FIGURE 1** **A** – coronary angiography, right anterior oblique cranial view of the left coronary artery: chronic total occlusion of the proximal segment of the left anterior descending artery (LAD) (arrow); **B** – coronary angiography, right anterior oblique cranial view: the LAD after recanalization and bioabsorbable scaffold implantation (arrow)

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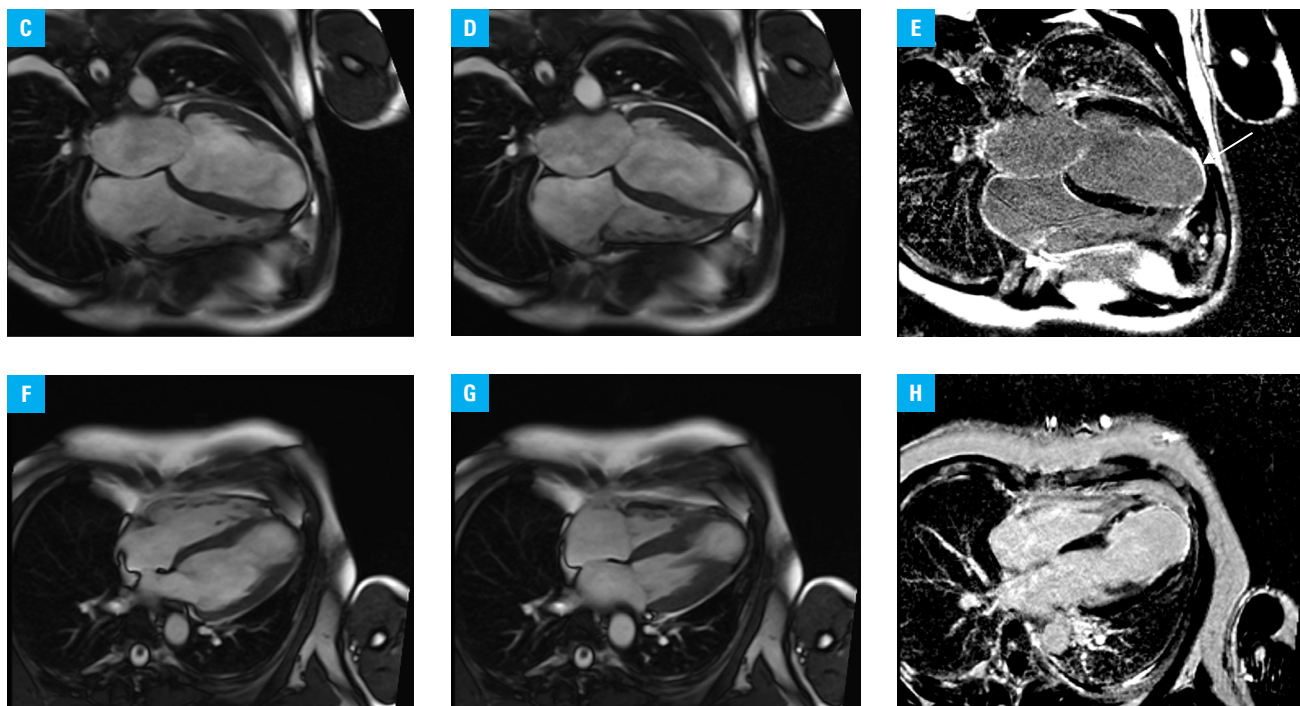
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**FIGURE 1** **C** – cardiac magnetic resonance (CMR) (cine magnetic resonance [cine-MR] sequence), 4-chamber view, diastole, at admission; **D** – CMR (cine-MR sequence), 4-chamber view, systole, at admission; **E** – CMR, late-gadolinium enhancement, 4-chamber view, at admission, transmural enhancement in the apex and all apical segments (arrow); **F** – CMR (cine-MR sequence), 4-chamber view, diastole, after 30 months; **G** – CMR (cine-MR sequence), 4-chamber view, systole, after 30 months; **H** – CMR, late-gadolinium enhancement, 4-chamber view, after 30 months

the anterior part of the interventricular septum, as well as transmural enhancement in the apex and all apical segments (FIGURE 1C–1E).

A decision to perform revascularization of the LAD as the first-line treatment was made. Successful percutaneous coronary intervention (PCI) of the CTO of the LAD (antegrade technique) with bioabsorbable everolimus-eluting scaffold (BVS) implantation was performed (FIGURE 1B). An improvement in the clinical symptoms was observed. The patient was discharged in stable clinical condition (NYHA class II, without angina). The next-step procedure, namely, a PCI of the RCA with BVS implantation, was successfully performed in 4 weeks (Supplementary material). In the following months, a significant reduction in heart failure symptoms (NYHA class I/II), as well as an increase in the left ventricular ejection fraction (up to 37%) and a decrease in the left ventricular end-diastolic diameter to 52 mm, were observed. These good outcomes were confirmed by cardiac magnetic resonance imaging even after 2.5-year follow-up (FIGURE 1F–1H).

The revascularization of the CTO in the area of the viable myocardium is often performed. In many patients, it reduces the symptoms of ischemia.<sup>1,2</sup> The effect on the improvement of left ventricular systolic function and patient survival has not been objectively confirmed in large clinical trials.<sup>3,4</sup> We report a case of the patient who achieved a significant clinical benefit from the full PCI revascularization of the CTO of the LAD. It is unlikely that the RCA angioplasty itself would give such

an effect. Absorb BVSs were used in accordance with current guidelines.<sup>5</sup> A significant improvement in the left ventricular function positively affects the patient's clinical status and prognosis.

## SUPPLEMENTARY MATERIAL

Supplementary material is available with the article at [www.mp.pl/paim](http://www.mp.pl/paim).

## ARTICLE INFORMATION

**CONFLICT OF INTEREST** None declared.

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## REFERENCES

- 1 Brilakis ES, Banerjee S, Karpaliotis D, et al. Procedural outcomes of chronic total occlusion percutaneous coronary intervention: a report from the NCDR (National Cardiovascular Data Registry). *JACC Cardiovasc Interv.* 2015; 8: 245-253. [↗](#)
- 2 Puma JA, Sketch MH, Tchong JE, et al. Percutaneous revascularization of chronic coronary occlusions: an overview. *J Am Coll Cardiol.* 1995; 26: 1-11. [↗](#)
- 3 Henriques JPS, Hoehers LP, Råmunddal T, et al. Percutaneous intervention for concurrent chronic total occlusions in patients with STEMI. *J Am Coll Cardiol.* 2016; 68: 1622-1632. [↗](#)
- 4 Joyal D, Afilalo J, Rinfret S. Effectiveness of recanalization of chronic total occlusions: a systematic review and meta-analysis. *Am Heart J.* 2010; 160: 179-187. [↗](#)
- 5 Lesiak M, Łanocha M, Araszewicz A, et al. Percutaneous coronary intervention for chronic total occlusion of the coronary artery with the implantation of bioresorbable everolimus-eluting scaffolds. *Poznan CTO-Absorb Pilot Registry.* *EuroIntervention.* 2016; 12: 144-151. [↗](#)