CLINICAL VIGNETTE

High-risk coronary angioplasty protected by an Impella pump combined with simultaneous iliac artery angioplasty

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A 66-year-old man with severe systolic heart failure (left ventricular ejection fraction, 22%), a severe chronic obstructive pulmonary disease, type 2 diabetes, hyperlipidemia, laser cordectomy due to laryngeal cancer, and with a history of nicotine dependence presented symptoms of class III angina according to the Canadian Cardiovascular Society Angina Grading Scale and symptoms of class II heart failure according to the New York Heart Association Functional Classification. Coronary angiography revealed right coronary artery occlusion in the middle segment and significant left main coronary artery stenosis as well as critical stenosis in the left anterior descending coronary artery (FIGURE 1A). His SYNTAX Score was 35, and according to SYNTAX Score II, 4-year mortality was 82.4% for percutaneous coronary intervention (PCI) and 66.1% for coronary artery bypass graft.[1] After consultation with the heart team, the patient was qualified for PCI protected by mechanical circulation support with a percutaneously implanted Impella CP heart pump (ABIOMED Inc., Danvers, Massachusetts, United States). The minimal width of the femoral and iliac arteries required to perform this procedure is more than 6 millimeters.[2] The Doppler ultrasonography revealed bilateral external iliac artery stenosis with a minimum diameter of about 3 mm. After consultation with an angiologist, a decision was made to perform a simultaneous angioplasty of the right iliac artery and coronary angioplasty with left ventricular support. After obtaining surgical access to the right femoral artery, balloon angioplasty was performed with a 6.0/60 mm balloon, with a good outcome (FIGURE 1B). The Impella CP pump was inserted through the dilated vessel and placed correctly without blood supply disturbances in the area of the right lower limb. Then, PCI was performed via right radial access using a 6F diameter catheter. Two drug-eluting stents were implanted within the left anterior descending artery and the left main coronary artery (Xience Alpine 2.5/38 mm, Abbott Vascular, Santa Clara, California, United States, postdilated by a 3.0 mm noncompliant balloon and Xience PRO 4.0/12 mm, Abott Vascular, postdilated by a 4.5 mm balloon, respectively) (FIGURE 1C). After the PCI, the correct apposition of stents was confirmed on intravascular ultrasound. The supporting pump was removed and 2 self-expanding stents, COOK 7.0/80 mm and 8.0/80 mm (COOK Medical, Bloomington, Indiana, United States), were implanted in the right iliac artery, with the optimal angioplasty effect (FIGURE 1D). After the angioplasty, the right femoral artery access site was closed surgically. The patient was discharged home in good condition on the sixth day after PCI.

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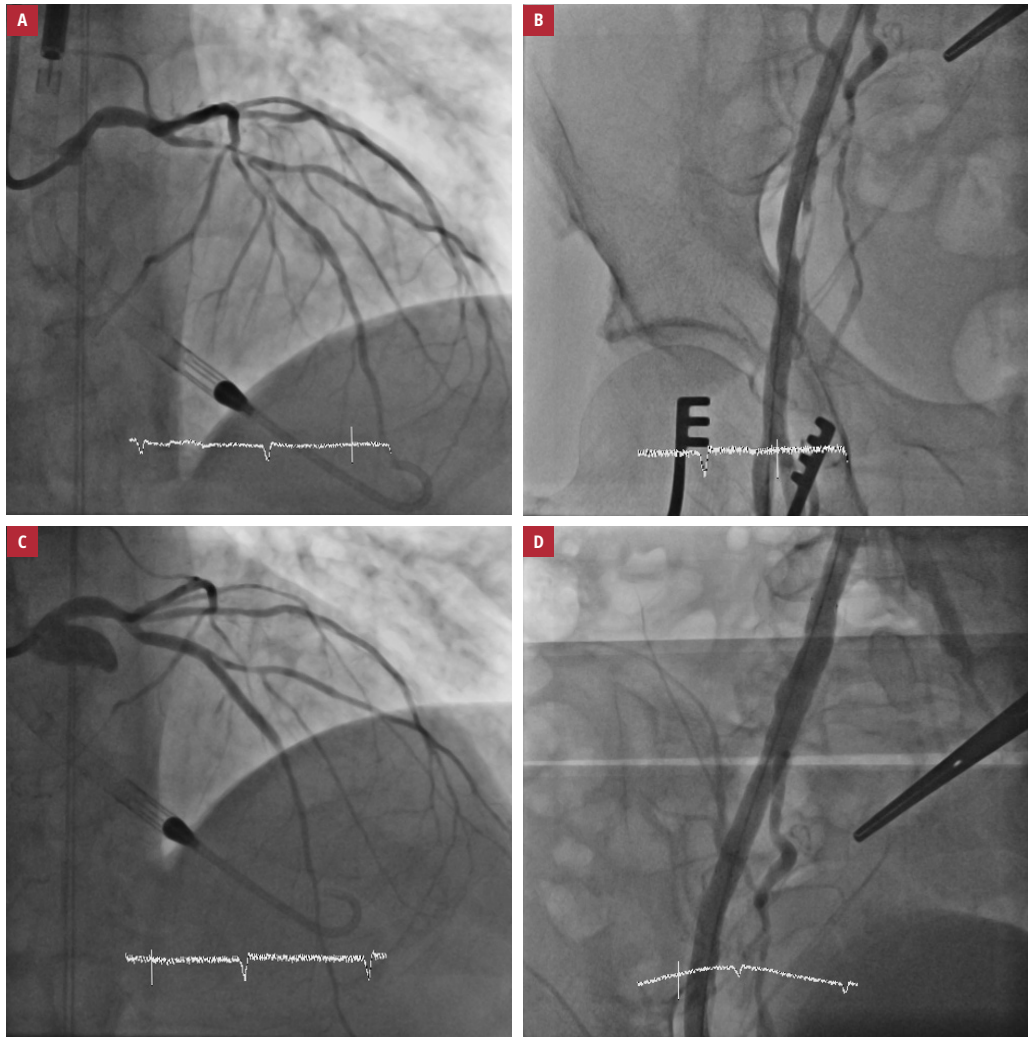

FIGURE 1 Angiography images: **A** – the left coronary artery before percutaneous coronary intervention; **B** – right iliac artery after balloon angioplasty; **C** – left coronary artery after percutaneous coronary intervention with the implantation of 2 drug-eluting stents; **D** – right iliac artery after the implantation of 2 self-expanding stents

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