

Left main coronary artery perforation with rescue stentgraft implantation, complicated by circumflex artery occlusion promptly treated with intentional stentgraft puncture

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Coronary artery perforation (CAP) is an infrequent, yet life-threatening, complication of percutaneous coronary interventions (PCIs). The incidence of CAP is estimated at 0.4%–0.7% of all PCIs, with a 7%–17% mortality rate [1, 2].

CAP can be rated according to its location and severity using the Ellis classification [3]. Perforations are more frequent in female and older patients and depend on coronary anatomy, use of oversized balloons or stents, atheroablative devices, hydrophilic guidewires, and postdilatation with high pressure. The risk of CAP increases with procedure complexity up to 2.9% in chronic total occlusion interven-

tions [4]. Prompt recognition and adequate treatment of CAP are crucial [5].

We report a case of an uncommon treatment approach that allowed to maintain flow in both left anterior descending (LAD) and circumflex (Cx) arteries after perforation of the left main (LM) coronary artery. A 75-year-old female after previous LAD PCI, with bare metal stent implantation in 2013 was admitted to the Department of Cardiology for acceleration of angina symptoms. We performed coronary angiography and diagnosed multi-vessel disease — critical stenosis of the? obtuse marginal artery (OM) and significant stenosis of the proximal LAD. Since the patient refused

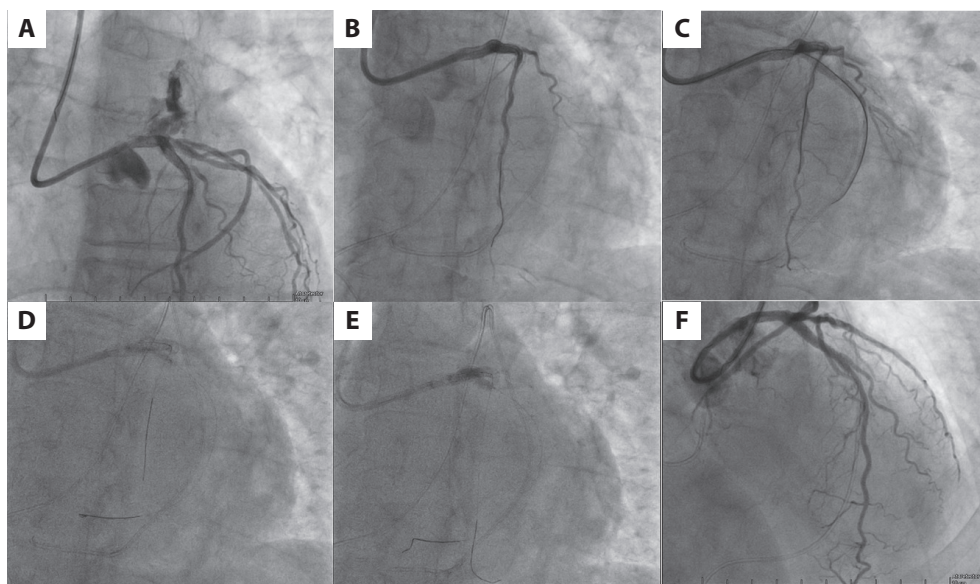


Figure 1. A. Left main coronary artery perforation. B. Sealed site of bleeding and closure of the circumflex artery (Cx) after stentgraft implantation. C. Insertion the wire through the stentgraft into the Cx. D. Inflations of progressively increasing sizes of balloons in the Cx ostium. E. “Kissing balloons” technique in the bifurcation of the left main coronary artery. F. Final result

bypass surgery, we performed uneventful OM PCI with drug-eluting stent (DES) implantation. The next day, the patient reported chest pain, with no apparent ECG changes, yet we decided to perform control coronarography that revealed a? patent stented OM, so, considering the symptoms, we targeted the LM bifurcation. After predilatation, a DES (Promus PREMIER 3.5 × 20 mm) was implanted from the LM into the Cx. Afterward, during implantation of the second DES (Ultimaster 4.0 × 38 mm) from the LM to the LAD, CAP occurred, resulting in tamponade. Despite immediate pericardiocentesis (yielding 150 ml of blood) and prompt stentgraft (Papyrus 3.5 × 20 mm) implantation, cardiac arrest in the pulseless electrical activity mechanism occurred with the return of spontaneous rhythm after resuscitation. The next contrast injection revealed a sealed bleeding site and closure of the Cx at the same time. We attempted to open the Cx. After a few trials with hydrophilic wires, stentgraft membrane, and struts we went through the stentgraft with chronic total occlusion dedicated wire (Confianza PRO). Afterward, a lumen in the stengraft membrane was created with inflations of progressively increasing sizes of balloons (from 1.2 × 15 mm to a noncompliant 3.0 × 15 mm balloon). Next, the “kissing balloon” technique was performed (with a noncompliant 3.5 × 20 mm balloon in the Cx and a noncompliant 4.0 × 12 mm balloon in the LAD). Finally, the proximal optimization technique (POT) was performed with a noncompliant balloon 4.5 × 12 mm, resulting in TIMI 3 flow, with no dissection and no pericardial bleeding.

In the following days, the patient remained stable on mechanical ventilation and catecholamines, with left ventricular ejection fraction of 45% and no pericardial effusion. The troponin level decreased after the initial peak of 8333 ng/l. However, despite proper anticoagulation with

enoxaparin, on the 15th day post-intervention, the patient suffered a severe fatal ischemic stroke.

The presented infrequent example of optimizing the effect of bifurcation PCI procedures demonstrates an approach to managing possible treatment complications. We should keep in mind, however, the increased risk of stroke in post-PCI patients.

Article information

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