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Letter to the Editor

Right Coronary Artery Perforation with Subsequent Graft Stent Embolization to the Left Main Coronary Artery: It Never Rains but It Pours!

Sağ Koroner Arter Perforasyonunu Takiben Sol Ana Koroner Artere Greft Stent Embolizasyonu: Yağmur Yağmaz ama Yağınca Sağanak Yağar!

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Dear Editor,

A 72-year-old female patient was hospitalized with acute coronary syndrome. Coronary angiogram (CAG) demonstrated a critical stenosis in the distal right coronary artery (RCA) [posterior descending artery, (PDA)]; the artery was severely tortuous and calcified. The Amplatz 1 guiding catheter was engaged into the RCA. The PDA and posterolateral artery branches were pruned The culprit lesion in the PDA was then predilated with 1.5×12-mm and 2.0×10-mm compliant balloons, respectively. Finally, a 2.5×23-mm DES was implanted in the predilated stenotic segment. However, repeat images demonstrated an Ellis type 3 coronary rupture distal to the PDA at the level of distal bifurcation point. Subsequently, coronary obstruction was induced using a 2.75×10 mm non-compliant (NC) balloon for 3 minutes. Because the perforation persisted on repeat CAG images, coronary occlusion was performed using 2.0 × 6-mm NC and 2.5×10-mm NC balloons, inflated three consecutive times, each for more than 10 minutes. Thereafter, the extra-stiff guidewire was exchanged for a floppy guidewire over a microcatheter to prevent further guidewire-induced perforation. Intravenous protamine was also administered. Due to the failue of all the above-mentioned attempts, we decided to implant a graft stent in the PDA at the level of bifurcation point. However, the stent graft could not be advanced beyond the mid-RCA. We retrieved the balloon-stent system, however, we were not able to discern any stent material over the balloon. Thereafter, we inflated a 1.0×10 mm compliant balloon distal to the system and pulled the system back. However, the stent material remained loose. To our consternation, we were able to identify the stent material in the left main coronary artery (LMCA) CAG images. The patient was transferred for emergency surgery due to persistent coronary perforation and dislodged stent material in the LMCA.

The primary focus of this report is the sequential occurrence of two severe coronary complications in a single patient. This report also underscores that a timely surgical backup is essential during PCI. Although coronary perforations and stent dislodgement are quite

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rare during coronary interventions, they appear to be associated with mortality and poor prognosis. Patients with risk factors for coronary perforation (as mentioned in the Introduction) should be managed carefully. In this context, mitigation of risk factors is imperative. For instance, aggressive guidewire manipulation and oversized balloons should be avoided, particularly in the context of high-risk vessel features (tortuosity, calcification, etc.). On the other hand, hydrophilic and stiff wires should be used only when necessary. Particular care should be taken when handling atherectomy devices or cutting balloons[1,2]. In the case of a coronary perforation, pericardiocentesis (where necessary) and mechanical occlusion with a balloon (inflated at 2-6 ATM for 10-15 minutes) should be performed, followed by preparation of a stent graft with the assistance of a new guiding catheter introduced from the contralateral artery. Anticoagulant therapy should be discontinued in all patients. Emergency surgery should be considered when percutaneous interventions fail[3].

We performed all of the above steps. However, the graft stent was found to have embolized into the LMCA during its advancement through the RCA lumen. Embolized stents can be retrieved with snare catheters, or by advancing a smaller balloon and inflating it within the dislodged stent, or by looping two guidewires through the stent struts and withdrawing them. Capturing devices, such as forceps or a bioptome, can also be used to retrieve embolized stents from coronary arteries. Another plausible option is to embed the dislodged stent into the coronary artery wall in an inappropriate location. However, this method is not recommended. This technique has been found to increase the incidence of myocardial infarction, mortality, and the need for emergency surgery during the procedure[4]. In this case, no further intervention was undertaken to retrieve the embolized graft stent. This was because the patient had an active perforation in the RCA and the embolized stent was in the LMCA. Further attempts to remove the embolized stent material would have delayed either the management of the perforation or the retrieval of the embolized material, thereby increasing the risk of LMCA thrombosis over time. The combination of the two complications and ongoing bleeding from the perforated site led us to consider emergency surgery. Emergency surgery was considered the best option for this patient because percutaneous interventions had failed and two precarious conditions coexisted.

Footnotes

Author Contributions

Surgical and Medical Practices: E.Y., F.K., Concept: E.Y., Ç.K., Design: E.Y., Ç.K., Data Collection and/or Processing: F.K., Analysis and/or Interpretation: E.Y., K.Y., Literature Search: E.Y., F.K., Writing: E.Y., Ç.K.

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