

Black-pooling sign: A novel intravascular ultrasound imaging marker that predicts the stent edge hematoma growth

A 62-year-old Japanese man with left ventricular dysfunction was admitted to our hospital. Coronary angiography findings revealed 90% stenosis in the right coronary artery (Fig. 1a), and a percutaneous coronary intervention was performed on him. We deployed a drug-eluting stent (DES: SYNERGY 2.5/30 mm; Boston Scientific, USA) after predilatation using a 2.0-mm balloon catheter (Ryurei; Terumo, Tokyo, Japan). Although the coronary angiography findings were satisfactory (Fig. 1b), intravascular ultrasound (IVUS) image (AltaView, Terumo, Tokyo) revealed a black-pooling sign within the hematoma at the distal edge of the stent (Fig. 1e, Video 1). The presence of an uncovered entry site was suspected because this sign could be due to a contrast agent. However, a guidewire artifact (Fig. 1d) obstructed our view of the site. We performed optical coherence tomography (OCT), which clearly visualized the massive flap (flap thickness 330 μ m) and hematoma at the distal stent edge (Fig. 1c-1e). Due to the fact that antegrade coronary dissection is a risk to acute coronary obstruction or thrombosis, we decided to deploy a DES (SYNERGY 2.5/12 mm; Boston Scientific, USA) (Fig. 1e, 1f). A deep vessel wall injury at the stent edge with a thin dissection flap (>0.31 mm) can adversely affect the long-term clinical outcome and promote restenosis

or thrombosis (1). The black-pooling sign observed on IVUS image could be used to predict the stent edge hematoma growth in clinical settings where OCT examination cannot be performed.

Informed consent: Written informed consent was obtained from the patient.

Video 1. Intravascular ultrasound image shows black-pooling sign within the hematoma

Reference

1. Bouki KP, Sakkali E, Toutouzas K, Vlad D, Barmperis D, Phychari S, et al. Impact of coronary artery stent edge dissections on long-term clinical outcome in patients with acute coronary syndrome: an optical coherence tomography study. *Catheter Cardiovasc Interv* 2015; 86: 237-46. [\[Crossref\]](#)

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Available online at www.anatoljcardiol.com

DOI:10.14744/AnatolJCardiol.2020.49921

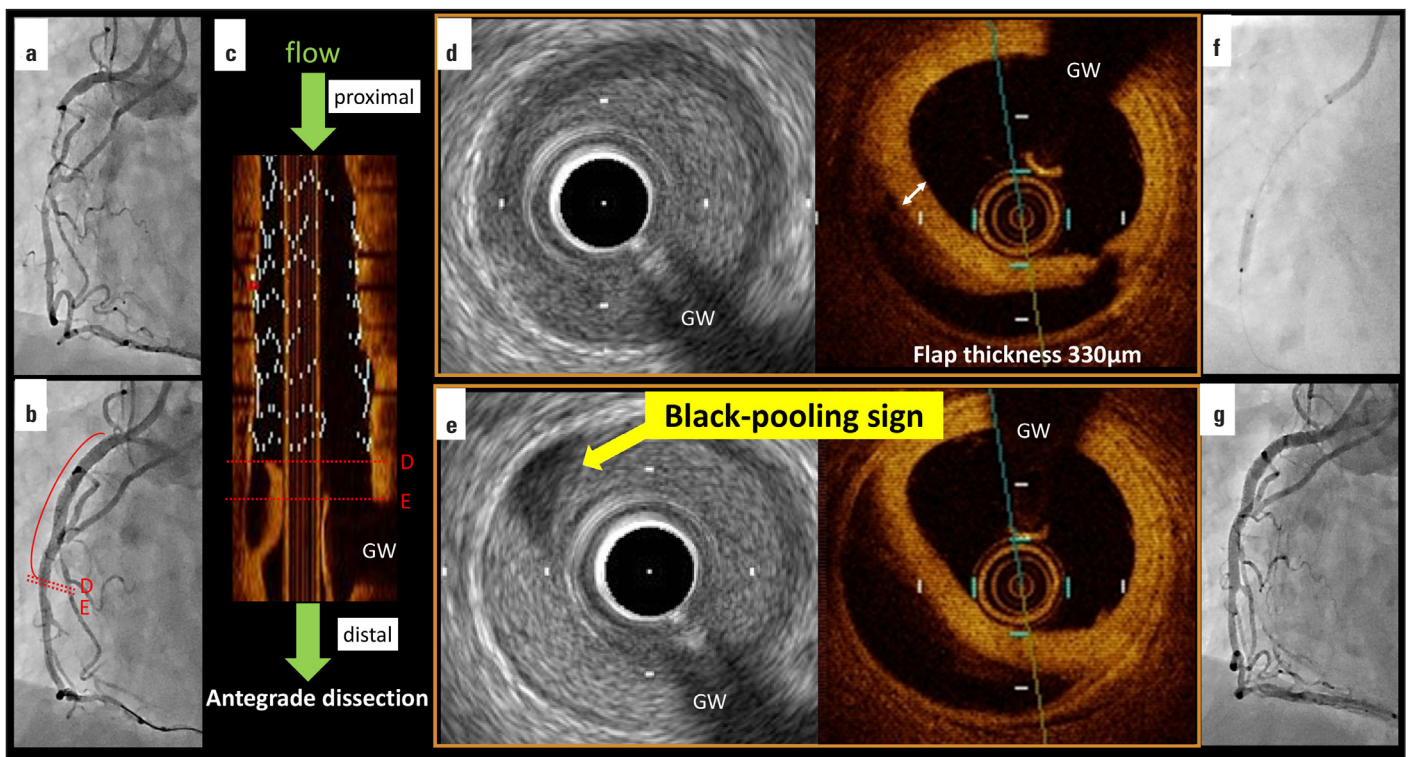


Figure 1. (a) Coronary angiography (CAG) findings reveal significant stenosis in the right coronary artery. (b) CAG findings appear satisfactory after stent implantation. (c, d) Intravascular ultrasound image showing black-pooling sign within the hematoma. Optical coherence tomography image showing a massive flap (flap thickness 330 μ m) and hematoma at the distal stent edge. (e, f) Another DES was deployed. GW - guidewire artifact