Late thrombosis is a rare but potentially catastrophic complication of coronary stenting procedures. It is recognized to occur in both bare metal and drug-eluting stents and seems to occur at a low incidence (≈0.6% per year) for at least 3 years postprocedure. Intravascular imaging with optical coherence tomography (OCT) can provide high-resolution images (10 to 20 μm) of the coronary vessel wall and is being increasingly used to provide insight into the risks and mechanisms of late stent thrombosis (ST). Covered stents are occasionally used in situations where percutaneous intervention has caused coronary perforation or rupture. We present a case of ST within a covered stent associated with an unusual finding of a mobile within-stent luminal flap demonstrated by OCT.

A 68-year-old man with a long history of chronic stable angina and coronary disease underwent percutaneous coronary intervention to a bifurcation stenosis of the left anterior descending coronary artery and its first diagonal branch. After deployment of a 3.5×16-mm drug-eluting stent over the stenotic area within the left anterior descending, attempts to rewire the diagonal branch led to extraluminal wire passage and dye extravasation. A 3.5×18-mm polytetrafluoroethylene-covered stent (Graftmaster, Jostent, Abbott Vascular Devices, Santa Clara, Calif) was then successfully deployed over the first stent to seal the perforation.

Sixteen months after the deployment of the covered stent, the patient represented with an acute anterolateral ST elevation myocardial infarction. Angiography during primary percutaneous coronary intervention demonstrated thrombosis within the left anterior descending stent (Figure 1A). OCT demonstrated a flap in the proximal portion of the covered stent (Figures 1B and 2). The appearances suggested dissection or detachment of the neointima or dehiscence of fabric from the covered stent. An export catheter was used to aspirate thrombus before deployment of a 3.5×24-mm drug-eluting stent over the proximal segment of the previously covered stent with a good angiographic (Figure 1C) and OCT (Figure 1D) result. The patient recovered rapidly and remains well at long-term follow-up.

Covered stents like all other stent types may rarely be complicated by late ST. The mechanism of the late ST is multifactoral and is likely to relate to an interaction of mechanical factors such as stent apposition, with patient factors such as vessel remodeling, neointima formation, and reendothelialization. In this covered stent, the OCT appearances raised the possibility of fabric detachment or dehiscence, though the polytetrafluoroethylene cover is sandwiched between 2 stents rather than being adherent to the stent surface. This case illustrates that the high resolution of OCT imaging may provide insight into important and unusual mechanisms relevant to the cause of late ST.

Figure 1. A, Coronary angiogram at acute representation showed in stent thrombotic subtotal occlusion (arrow) at the site of the previous covered stent. B, OCT before passage of an angioplasty wire demonstrated an intimal flap (arrow) with thrombus (asterisk) at the site of the occlusion. After thrombus export, a 3.5×24-mm drug-eluting stent was deployed with a good angiographic (C) and OCT (D) result.
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References


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