A 58-year-old patient presented to our hospital with an anterior ST-segment–elevation myocardial infarction. His medical history included placement of 2 overlapped stents in the left anterior descending coronary artery, and 1 in the first diagonal branch (DG) 3 years before. Current coronary angiography revealed thrombotic occlusion of the first DG stent, patency of the remaining stents, and absence of de novo lesions (Figure 1A, 1, asterisk; Movie I in the Data Supplement). Thromboaspiration with Pronto thrombectomy catheter (Vascular Solutions, Inc, Minneapolis, MN) was attempted with no success because of inability of passing the device through the proximal portion of first DG. During its removal, the thrombectomy catheter was hooked with the endothelized left anterior descending stent, inadvertently dislodging and extracting it entirely (Movie II in the Data Supplement). Tissue prolapse (Figure 1A, 2), a large coronary dissection (Figure 1A, 3, yellow asterisk), stent struts (blue arrowheads), and neointimal dissected tissue floating within the lumen (red asterisk) was suspected by angiography (Movie III in the Data Supplement) and confirmed by optical coherence tomography. A drug-eluting stent was implanted in the left anterior descending covering the dissected endothelium, remaining a small proximal edge dissection (Figure 1B, 1–3), and balloon-angioplasty was performed in first DG, achieving excellent immediate results (Movie IV in the Data Supplement). Clinical evaluation at 6 months was unremarkable, but still incomplete stent endothelialization was noticed (Figure 1C; Movie V in the Data Supplement). Partial coverage of first DG by the left anterior descending stent (not visible by fluoroscopy) was identified in the postprocedural 3-dimensional optical coherence tomography reconstruction (Figure 1D; Movie VI in the Data Supplement). Tissue trapped within the extracted stent (Figure 2) was analyzed. Besides thromboaspiration, other techniques must be considered to prevent this complication, like during directional coronary atherectomy, passage of imaging devices throughout underexpanded/malpositioned stents, crossing jailed side-branches or bifurcations, or in-stent restenosis treatment with cutting balloon. To achieve correct wiring through the previously stented segment or bifurcation, creating a loop in the tip of the guidewire as it passes through the old stent, and then straightening it to advance to the distal vessel, decreases the possibility that the wire has passed through a cell of a stent that lies proximal to the ostium of the side branch.

Disclosures

None.

Key Words: complications • myocardial infarction • stents • thrombosis

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Figure 1. Descriptive angiographic and optical coherence tomography (OCT) images of the case. Angiographic and OCT images showing thrombotic occlusion of first diagonal branch (DG; A1, asterisks), endothelium denudation (A2), and avulsion of neointimal tissue of left anterior descending (LAD) (A3, red asterisks). A large coronary dissection (A3, yellow asterisks) and struts (A3, blue arrowheads) of the remaining LAD stent can be identified. Final result after balloon-angioplasty to first DG and stent implantation in LAD, remaining small areas with endothelial dissection (B1), but achieving complete endothelial tissue apposition (B2) and adequate stent expansion (B3). At 6-month follow-up, the angiographic evolution was excellent but with still incomplete neointimal coverage of stent struts by OCT (C). Three-dimensional OCT image reconstruction of first DG partially jailed by the LAD stent (D).

Figure 2. Pathological images and histological analysis. Immunohistochemical staining for smooth muscle actin of extracted tissue in the stent (A–C), demonstrating smooth muscle fibers (yellow arrowheads), endothelial cell nuclei (red arrows), endothelial cells (black arrows), and muscle cell nuclei (yellow arrowheads). Orcein staining for elastic fibers (D) showed the internal elastic lamina (black arrows) and smooth muscle cells (blue arrowheads).
Unintentional Extraction of an Endothelized Coronary Stent With an Aspiration Catheter During Primary Percutaneous Coronary Intervention
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