Unintentional extraction of a platinum–chromium everolimus-eluting stent by entanglement with a covered stent

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Urgent angiography in a 76-year-old male with acute coronary syndrome revealed calcified tortuous stenosis in the left anterior descending coronary artery (LAD) (Panel A). Coronary perforation occurred at the mid-LAD during rotational atherectomy (Panel B). Intravascular ultrasound (IVUS) revealed that rotational atherectomy created a false lumen. For the bailout of perforation, a 2.5 × 28 mm everolimus-eluting stent (EES) (Promus Premier, Boston Scientific, Natick, MA, USA) was deployed in the mid-LAD. However, there was contrast pooling beside the stent. We decided to bailout the site with a 3.0 × 16 mm covered stent (GRAFTMASTER RX, Abbott Vascular, Santa Clara, CA, USA). Following unsuccessful attempts to advance a covered stent across the mid-portion of the stented segment, the covered stent became trapped. After several attempts, the covered stent and the elongated EES that was previously delivered were withdrawn (Panels C and D). The mid-LAD was successfully re-stented with a 2.5 × 33 mm EES (Xience Xpedition, Abbott Vascular). Since there was no expansion of the contrast pool beside the stent, no further bailout was performed. Final angiography and IVUS demonstrated that the contrast pooling beside the stent was residual flow into the true lumen (Panel E, a–d). Diagnostic angiography at 6 months showed no evidence of in-stent restenosis or aneurysm, and no contrast pooling was observed (Panel F).

Promus stent designs with two connectors between hoops may be susceptible to longitudinal distortion, bunching, or separation of struts and protrusion of struts into the lumen with potential entanglement when pulling back bulky devices such as covered stents.

(Panel A) Urgent angiography showing tortuous calcified severe stenosis of the left anterior descending coronary artery. (Panel B) Coronary perforation occurred after rotational atherectomy (white arrow). (Panels C and D) The everolimus-eluting stent previously implanted in the mid-LAD with severe structural deformation (arrows) was retrieved by entanglement with a covered stent (arrowhead). LAD, left anterior descending coronary artery. (Panel E) Final angiography still demonstrated a small amount of contrast pooling beside the stent (dotted arrow). Intravascular ultrasound demonstrated true-false-true stenting (a–d). T denotes the true lumen (white arrowhead). (Panel F) Six-month follow-up angiography demonstrated no in-stent restenosis or aneurysm. Contrast pooling beside the stent had completely disappeared.

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