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STEMI After TAVR

Procedural Challenge and Catastrophic Outcome

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An 82-year-old woman with severe aortic stenosis, 6 months post-transcatheter aortic valve replacement (TAVR) with a 29 mm CoreValve Evolut (Medtronic, Minneapolis, Minnesota), presented with an anterior ST-segment elevation myocardial infarction. Coronary angiography (CA) using an extra back-up guide catheter (EBU) 3.5 catheter (Medtronic, Minneapolis, Minnesota) via radial access was unfeasible as the stent frame interfered with the guide catheter. Using a 4.0 Judkins left guide catheter (Cordis, Fremont, California) via femoral access, left CA revealed complete occlusion of the distal left anterior descending coronary artery (LAD) (**Figure 1A**). Percutaneous coronary intervention (PCI) using an EBU 3.5 with deployment of a drug-eluting stent was successful (**Figure 1B**). Balloon and guidewire were removed, however, guide catheter recovery was not feasible due to entrapment within the stent frame. Multiple maneuvers to retrieve the catheter failed and resulted in dissection of the left main and the LAD (**Figures 1C and 1D**). Surgical extraction of the catheter was recommended, however, the patient and her family declined further intervention. With the catheter in place, the patient developed cardiogenic shock and her family requested withdrawal of care.

PCI after TAVR is increasing as indications for TAVR expand. Technical difficulties of coronary intervention with supracoronary valves have been described (1). With ex vivo simulation of our case, we concluded that catheter entrapment within the stent frame is more likely if: 1) the guide catheter crosses the stent frame at an acute angle (**Figures 1E and 1F**, Online Video 1); 2) a pre-shaped double curved catheter is used (e.g., EBU); and 3) crossing of the stent frame through a diamond lower than the ostium occurs. We recommend the following for CA/PCI with supracoronary prostheses: 1) crossing the stent frame perpendicularly through a diamond at the same level of the coronary ostium (Online Video 2); 2) using

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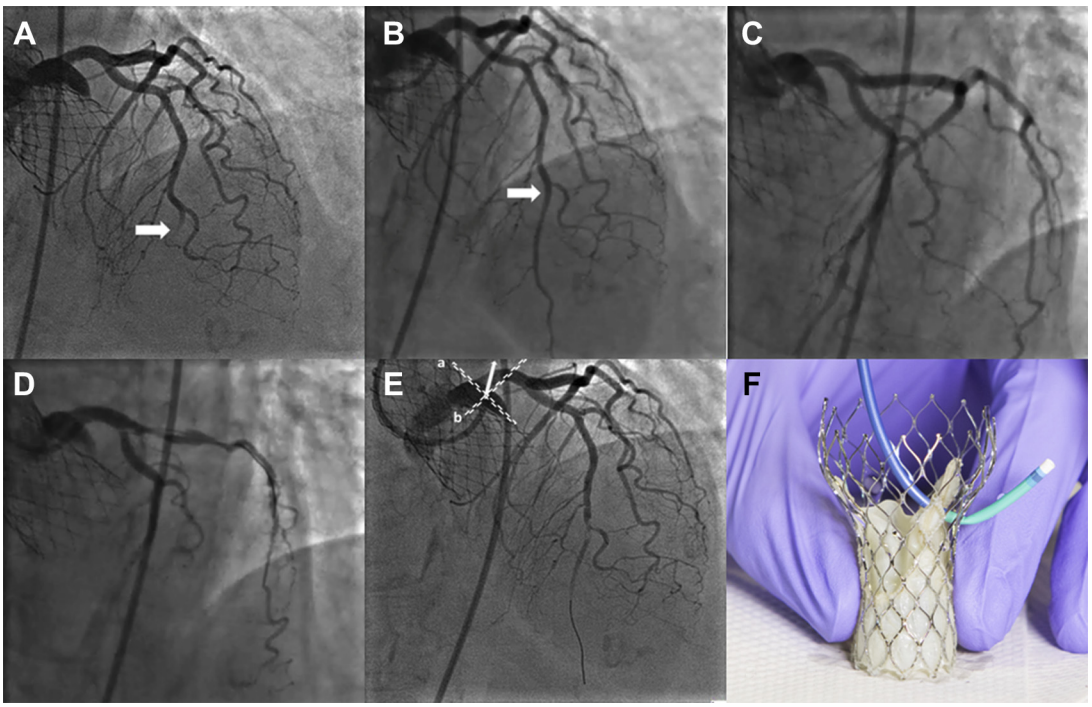
FIGURE 1 Left Coronary Angiography and Ex Vivo Simulation



(A) Left coronary angiography showing total occlusion of the distal left anterior descending coronary artery **(arrow)**. **(B)** Left coronary angiography post-percutaneous coronary intervention and drug-eluting stent deployment **(arrow)**. **(C and D)** Dissection of the left main and left anterior descending coronary arteries. **(E) (a)** Interrupted line showing guide catheter engagement into the left coronary ostium at an acute angle with the vertical axis of the stent frame. **(b)** Interrupted line showing crossing of the stent frame at a perpendicular angle. **(F)** Ex vivo simulation using an extra back-up guide catheter 3.5 guide catheter, showing catheter entrapment within the stent frame when crossed at an acute angle (Online Videos 1 and 2).

catheters with favorable geometry (e.g., left Judkins for left and right Amplatz (Boston Scientific, Marlborough, Massachusetts) for right CA/PCI) (1); and 3) using a balloon and/or a guide wire to back the catheter out of the coronary ostium.

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APPENDIX For supplemental videos, please see the online version of this article.