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Wire Entrapment and Unraveling in the Aorta: Snaring Technique for the Nonvisible Filament

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Wire Entrapment and Unraveling in the Aorta

Snaring Technique for the Nonvisible Filament

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A 66-year-old man was referred for percutaneous coronary intervention of a left anterior descending coronary artery chronic total occlusion (**Figure 1A,** Video 1). The occlusion was crossed with antegrade wiring using a Gaia III next wire (ASAHI Intecc), but no microcatheter would pass. We pulled the wire and wired the diagonal branch, then de-escalated to a Runthrough wire (Terumo). We ballooned the diagonal branch to crush the cap (open sesame technique) (**Figure 1B**), but microcatheters still failed to cross antegrade. We then crossed with the retrograde approach, but the microcatheter would not cross. We knuckled around the proximal cap and performed an external crush to facilitate the crossing of the retrograde microcatheter that finally succeeded (**Figure 1C**). After stenting of the left anterior descending coronary artery, the Runthrough wire became entrapped in the diagonal branch. During attempts to remove it using a low-profile microcatheter, the wire spring coil unraveled, leaving a segment extending into the ascending aorta. Multiple attempts at retrieving the wire failed, including trapping the wire in the guide and removal en bloc and snaring the wire using gooseneck microsnares (Medtronic) (**Figure 1D,** Video 2). We decided to snare the wire from the ascending aorta with a 27 × 48-mm Ensnare (Merit Medical). The filament was not visible by cineangiography; so we advanced the Ensnare around the aortic arch to swallow the wire filament. We used the guide reaction to verify the successful snaring of the filament (the guide dives towards the coronary ostium when we pull on the snare). We advanced a 6-Fr guide catheter extension to tighten the snare around the filament. This technique successfully pulled the entire wire fragment (**Figures 1E, 1F, and 2,** Video 3). A demonstration of the procedure in a model is shown in Video 4.

We present a novel technique to retrieve unraveled spring coil in the aorta using a large 3-loop snare. Challenges of snaring the unraveled wire in the aorta include the non-visibility of the wire segment and the possibility of fracturing the wire during snaring, and the snare would retrieve only a small part of the wire. Our technique could resolve these issues by using a large Ensnare that would occupy the aorta and swallow the invisible wire fragment while using the guide reaction to ensure successful snaring. Using a guide extension catheter with tighter tolerance around the snare allows for better grasp of the captured wire fragment. In cases

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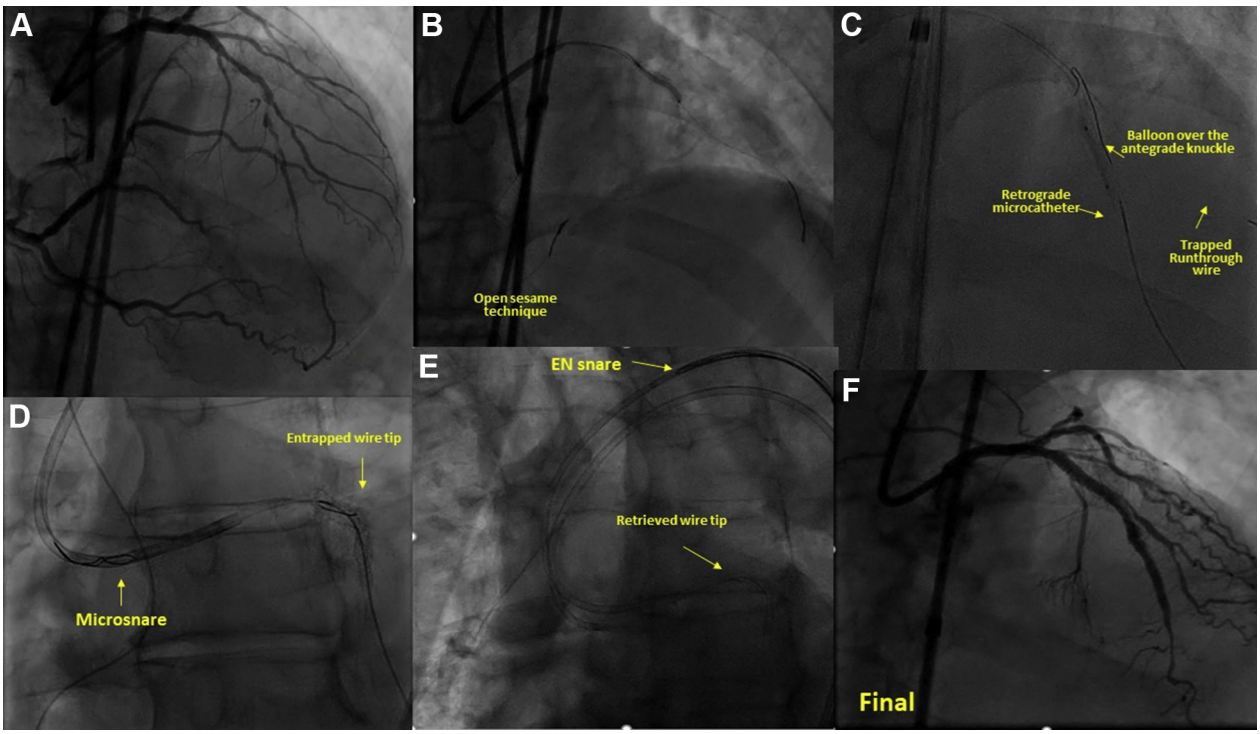
FIGURE 1 **Chronic Total Occlusion Percutaneous Coronary Intervention of the Left Anterior Descending Artery**



Chronic total occlusion (CTO) of the left anterior descending coronary artery (LAD) **(A)**; inflation of a balloon in the diagonal branch across the proximal cap **(B)**; external crush of the proximal cap over a knuckled wire **(C)**; failed attempt to snare the entrapped Runthrough wire using a microsnare **(D)**; successful snaring of the wire fragment using an Ensnare (EN) in the aorta **(E)**; final angiographic result **(F)**.

of separation of the wire tip from the unraveled coil, further imaging techniques are necessary to guarantee the absence of remaining fragments (eg, computed tomography scan).

FIGURE 2 **Entrapped Wire Retrieved With the Ensnare**

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Dr Basir has been a consultant/speaker for Abbott Vascular, Abiomed, Cardiovascular Systems, Chiesi, Procyrion, and Zoll. Dr Brilakis has received consulting/speaker honoraria from Abbott Vascular, American Heart Association (associate editor *Circulation*), Amgen, Asahi Intecc, Biotronik, Boston Scientific, Cardiovascular Innovations Foundation (board of directors), ControlRad, CSI, Elsevier, GE Healthcare, IMDS, InfraRedx, Medicure, Medtronic, Opsens, Siemens, and Teleflex; is an owner of Hippocrates LLC; and is a shareholder in MHI Ventures and Cleerly Health. Dr Alaswad has received consulting/speaker honoraria from Boston Scientific, Cardiovascular Systems Inc, Abbott Vascular, and Teleflex. Dr Megaly has reported that he has no relationships relevant to the contents of this paper to disclose.

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KEY WORDS chronic total occlusion, CTO, PCI, snaring, wire entrapment, wire unraveling

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