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Image of the Issue

Antegrade fenestration and re-entry for bailout treatment of iatrogenic coronary dissection☆

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A 60 year old man was admitted for primary PCI because of acute inferior ST-Elevation Myocardial Infarction (STEMI). Coronary angiography showed occlusion of middle right coronary artery (Fig. 1a; Video 1).

Despite distal wiring with a workhorse coronary wire and multiple balloon dilations, the angiography showed no-reflow due to coronary dissection (Fig. 1b, Video 2).

After failed attempts with the standard true-to-true lumen approach, we were able to gain the true lumen using the recently described antegrade fenestration and re-entry (AFR) technique [1].

Briefly, we positioned a 3.5 mm semi-compliant balloon on the wire inside the false lumen and advanced a second wire (the polymer-jacketed Fielder XT-A™) in front of the balloon. Then, we tried to advance the wire across the fenestrations created by balloon inflation-deflation (Fig. 2a). After few attempts, we were able to gain the true lumen. Finally, a tip injection through microcatheter confirmed the correct position (Fig. 2b; Video 3) and stent implantation was performed with a good angiographic result (Fig. 2c; Video 4).

Although various techniques have been suggested, there is no standardized way to approach iatrogenic occlusive coronary dissection (IOCD) and rates of revascularization failure are high.

Here, we report a new bailout technique to rescue the occluded vessel in this challenging setting.

Antegrade fenestration and re-entry (AFR) was recently described as a technique for the antegrade treatment of coronary chronic total occlusion (CTO). It consists in creating multiple fenestrations of the dissection flap separating the false and true lumen so permitting CTO recanalization. In this case, the same principle of using the instantaneous multiple entry points created by rapid sequences of balloon inflation-deflation was used to gain the true lumen in the different setting of IOCD (Fig. 3).

As in the original report, fenestrations were created in order to create a connection between the false and the true lumen.

AFR technique must be considered in bailout treatment of IOCD when standard approaches to re-entering the true lumen have failed.

Supplementary data to this article can be found online at https://doi.org/10.1016/j.carrev.2018.08.014.

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[1] Carlino M, Azzalini L, Mitomo S, Colombo A. Antegrade fenestration and re-entry: a new controlled subintimal technique for chronic total occlusion recanalization. Catheter Cardiovasc Interv 2018:1–8. https://doi.org/10.1002/ccd.27470.

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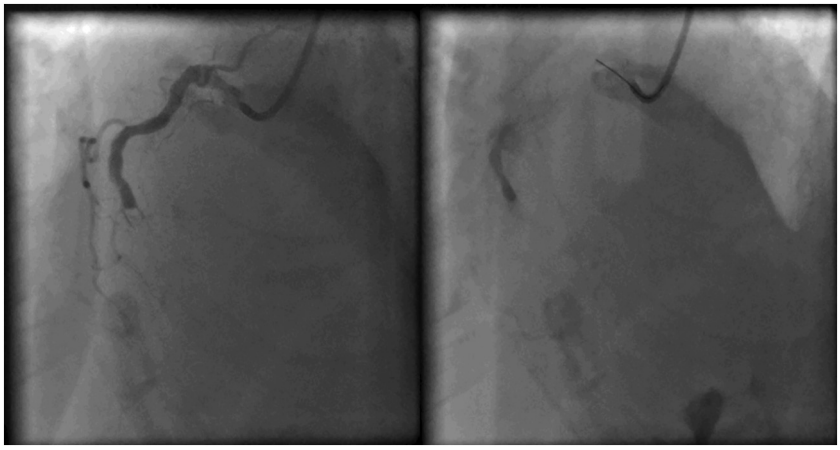

Fig. 1. Right coronary artery (RCA) occlusion and no reflow after PCI attempts. A) Thrombotic occlusion of middle RCA. B) No-reflow due to coronary wire dissection.

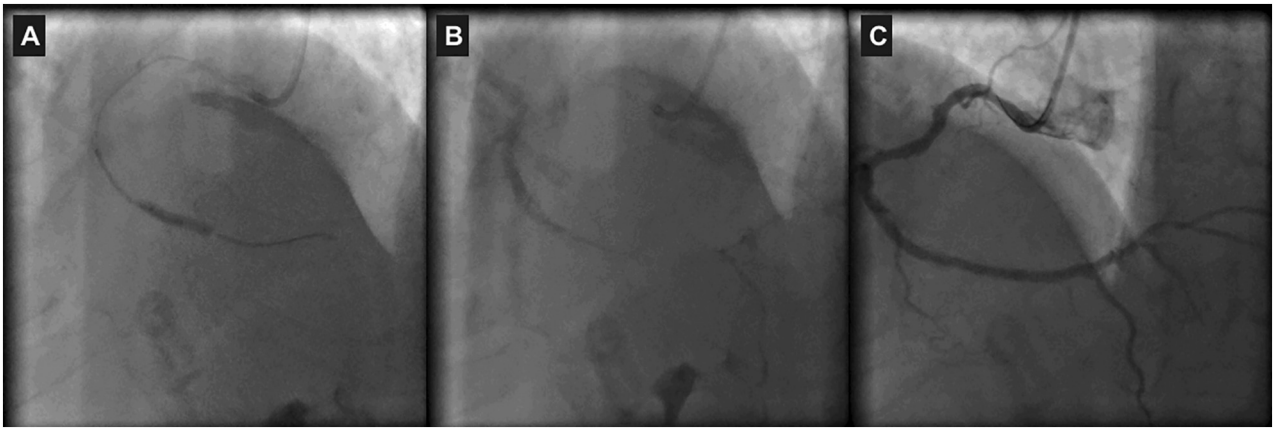

Fig. 2. Antegrade fenestration and re-entry technique. A) Progression of the polymer-jacketed wire in the true lumen across the fenestrations created by balloon inflation-deflation. B) Tip injection through microcatheter confirmed the position in the true lumen. C) Final result.

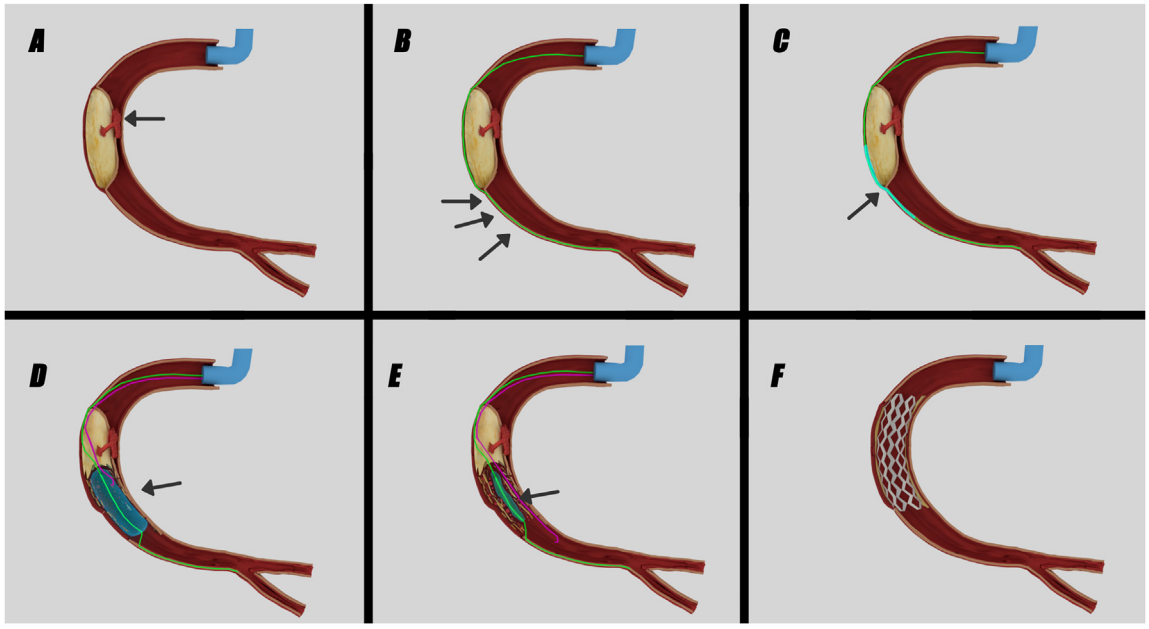

Fig. 3. Schematic representation of antegrade fenestration and re-entry technique application for the rescue treatment of iatrogenic coronary artery dissection. A) Occlusive thrombus (black arrow) located at the mid RCA; B) the first guidewire (green) is unintentionally located distal to the occlusion in the sub-intimal space (black arrows); C) a balloon is advanced in the false lumen on the first guidewire and is placed downstream the supposed entry point of the dissection (black arrow); D) a polymer jacketed guidewire (white arrows) is advanced in the false lumen and placed in front of the balloon (black arrow); E) the balloon is rapidly inflated and deflated, creating connections (white arrows) between the false and the true lumen. During the balloon deflations, the polymer jacketed wire (black arrow) is advanced in the true lumen; F) conventional PCI is performed.