Case Report

A 64-year-old man was admitted to our institution on November 7, 2011, complaining of chest pain upon exertion for the previous year. Prior history: hypertension for more than 10 years, highest blood pressure 215/115 mmHg, 30-year history of smoking, 10 cigarettes per day. ECG on admission showed: increased II, III, AVF leads, small electrocardiogram (ECG)’s Q waves (Q), ECG’s ST segment (ST) depression 0.05 mv, T wave inversion. Admission diagnosis: 1) coronary old inferior myocardial infarction, unstable angina, New York Heart Association (NYHA) chronic heart failure (CHF) class II. 2) Hypertension class III. Cardiac catheterization, via the right radial artery: Left Main no stenosis, middle Left Anterior Descending (LAD) is 50% and distal 60% stenosis. Proximal Left Circumflex (LCx) showed 50-60 % stenosis, middle diffuse stenosis 90% . Two collateral circulation pathways were also observed: LAD to septal branch to Right Coronary Artery (RCA) with formation of limited myocardial collateral circulation; however, the LCx to left atrial branch to RCA epicardial collateral circulation showed good collateral blood supply (Figure 1 A). Selective right coronary angiography did not find the opening for the RCA, non-selective angiography suggested that the opening of the RCA could be totally occluded or the origin was abnormal (B). Because the patient refused coronary artery bypass surgery, it was decided to use a retrograde guidewire trapping technique using a “Memory-Snare” device by Shanghai Shape Memory Alloy Co. Ltd., China. A 7F EBU 3.75 guide catheter was placed via the right femoral artery, to the ascending Aorta using a “Memory Snare Device” technique with “Memory-Snare” device in a chronic total occlusion (CTO) case, we found a way to capture the retrograde wire from the Ascending Aorta using a “Memory Snare Device” by Shanghai Shape Memory Alloy Co. Ltd., China, and able to establish an antegrade pathway for placement of stents to restore blood flow. To the best of our knowledge, this is the first reported case of using a retrograde guidewire technique with “Memory-Snare” device in a chronic total coronary occlusion with anomalous origin. Only 10–20% of percutaneous coronary intervention (PCI) involve chronic total occlusion (CTO) lesions. This is the most challenging type of coronary artery disease and has been called the “last bastion for interventional cardiologists to capture”1,2. The selected patient underwent non-selective aortic angiography suggesting either occlusion of the RCA or the presence of an anomalous ostial origin. Therefore, a retrograde guidewire technique was attempted. Unlike other newly developed techniques3, there was no clear antegrade pathway available to reach the CTO. In this case, we found a way to capture the retrograde wire from the Ascending Aorta using a “Memory Snare Device” by Shanghai Shape Memory Alloy Co. Ltd., China, and establish an antegrade pathway for placement of stents to restore blood flow. To the best of our knowledge, this is the first reported case of using a retrograde guidewire trapping technique with “Memory-Snare” device in a chronic total coronary occlusion with anomalous origin.

Keywords
Coronary Angiography; Coronary Occlusion; Collateral Circulation

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Case Report

Retrograde Guidewire Trapping Technique for Total Right Coronary Occlusion with Unusual Ostial Origin

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Analyzing Angiography; Coronary Occlusion; Collateral Circulation

Author contributions
Conception and design of the research: Hong L, Wang H, Wang X; Acquisition of data: Li L, Yin Q, Wang X; Analysis and interpretation of the data: Li L, Wang H, Yin Q, Wang X; Writing of the manuscript: Hong L, Li L, Wang X; Critical revision of the manuscript for intellectual content: Wang X.
Figure 1 - A: Good collateral circulation from left to the RCA. B: The non-selective angiography: no RCA imaging. C: Tip injection within the septal branch. D: Tip injection in circumflex artery - left atrial branch. E: There was good collateral flow from left atrial branch to the RCA. F: The right coronary sinus angiography showed RCA opening variation.

Figure 2 - G: Catching of reverse retrograde guidewire by "Memory-Snare". H: The retrograde wire was pulled out by "Memory-Snare". I: Passing the balloon catheter forward along the guidewire to enlarge lesions. J: Ostial RCA on the left coronary sinus. K: Implantation of RCA stent. L: Postoperative angiography.

Potential Conflict of Interest
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References