

Percutaneous Coronary Intervention for Double Ostial Lesion Presenting with ST-Segment Elevation Myocardial Infarction: Chronic Total Occlusion at Left Main Ostium and Plaque Rupture at Right Coronary Artery Ostium

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At least one chronic total occlusion (CTO) has been known to occur in more than a quarter of obstructive coronary artery disease (CAD). The successful recanalization of CTO lesions is known to be associated with the improvement of survival at 2 years and the decreased likelihood of subsequent coronary artery bypass graft (CABG) surgery.¹ How-

ever, CTO located in the left main coronary artery (LMCA) has a very low frequency.¹ As it is recognized as a high-risk lesion, surgical strategies are mainly applied for that lesion. We introduce an intriguing case about LMCA CTO lesion with plaque rupture of right coronary artery (RCA), presenting as a ST-segment elevation myocardial infarction

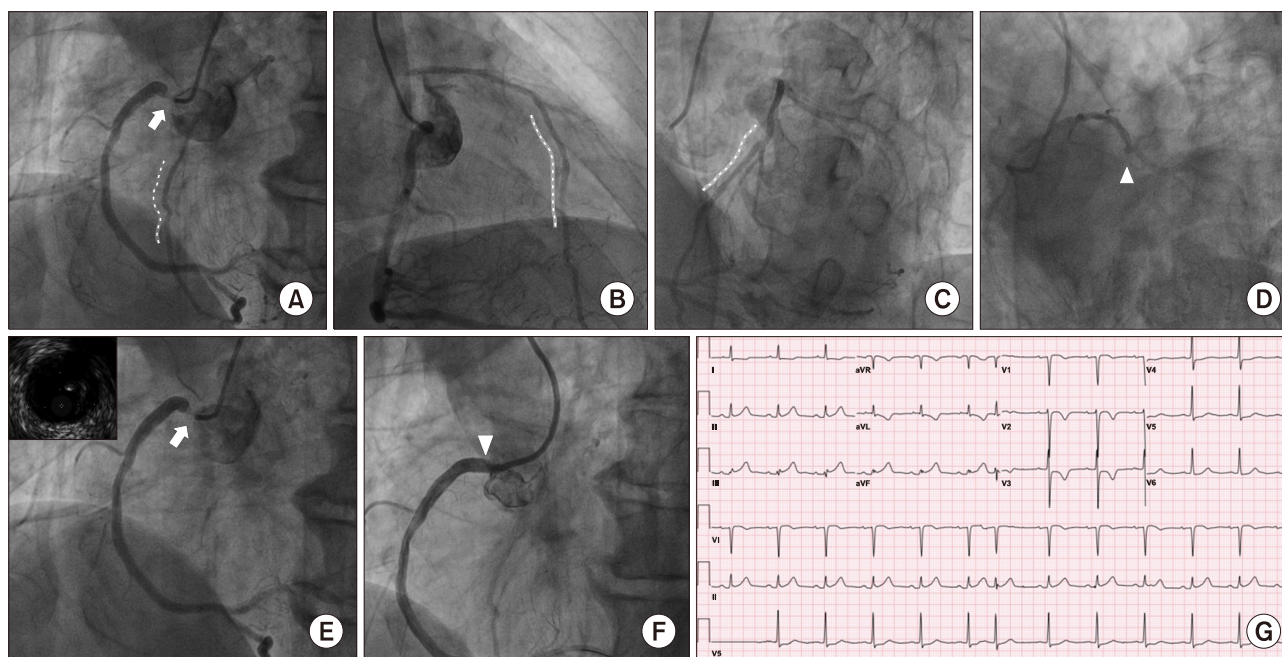


FIG. 1. The initial 12-lead electrocardiogram showed ST-segment elevation on inferior leads (G). Emergent coronary angiography revealed critical stenosis at the right coronary artery ostium (A, arrow) with grade III collateral flow (A-C, dotted line) to left main ostium (D, arrow head). The left main ostium was not found by a Judkins left diagnostic catheter. Intravascular ultrasound (IVUS) was done for target lesions for the right coronary artery (RCA; E, arrow) which revealed a large amount of plaque with plaque rupture (minimal lumen area 3.9 mm² and plaque burden 73.9%). Percutaneous coronary intervention was done for the RCA using a 4.5×15 mm durable polymer drug-eluting stent, and follow-up coronary angiography (F, arrow head) with IVUS showed good distal flow with good stent apposition.

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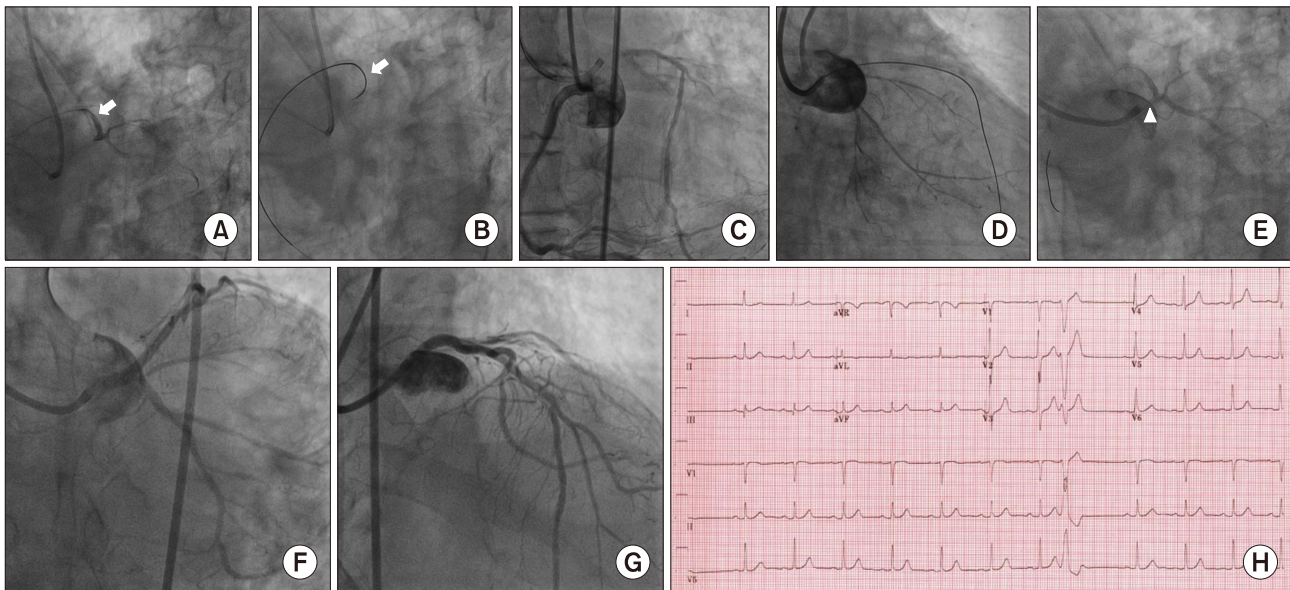


FIG. 2. Percutaneous coronary intervention for chronic total occlusion (CTO) at the left main (LM) was initially tried by the retrograde approach with microcatheter backup (arrow, Caravel[®]). The retrograde approach failed to pass a wire beyond the CTO lesion (A, B). We successfully passed a wire through the CTO lesion by antegrade approach with bilateral injections using Gaia second[®] wire (C, D). After balloon angioplasty, antegrade flow was restored at the left main ostium (E, arrow head). Percutaneous coronary intervention (PCI) was done for the LM using a 3.5×15 mm durable polymer drug-eluting stent, and follow-up coronary angiography with intravascular ultrasound showed good distal flow with good stent expansion (F, G; minimal stent area 9.7 mm²). Post-PCI 12-lead ECG showed disappearance of ST-segment elevation on the inferior leads (H).

which was successfully treated by the percutaneous coronary intervention (PCI).

A 72-year-old male patient visited our hospital, and a 12-lead electrocardiogram showed ST-segment elevation on inferior leads (Fig. 1). Therefore, we decided to commence primary PCI. Coronary angiography (CAG) revealed critical stenosis at the right coronary artery (RCA) ostium with grade III collateral flow to the ostium of the LMCA (Fig. 1). We thought that spontaneous thrombolysis occurred at the ostium of RCA. We examined intravascular ultrasound (IVUS) for RCA and there was a large amount of plaque with plaque rupture. PCI was done for RCA using a 4.5×15 mm Resolute Onyx[®], and follow-up CAG showed good distal flow (Fig. 1). Since the patient was stable after PCI for RCA, we tried immediate PCI for chronic total occlusion (CTO) at the LMCA, however, the retrograde approach failed to pass a wire beyond the CTO lesion. Alternatively, we successfully passed wire through the CTO lesion by antegrade approach with bilateral injections using a Gaia second[®] wire (Fig. 2). After balloon angioplasty, antegrade flow was restored at the LMCA ostium. PCI was done for LM using a 3.5×15 mm Resolute Onyx[®], and final CAG with IVUS showed good distal flow with good stent expansion (Fig. 2). A post-PCI 12-lead electrocardiogram showed disappearance of the ST-segment elevation in inferior leads (Fig. 2).

As mentioned above, the prevalence of CTO at LMCA ostium is very low.¹ There are few reports regarding PCI for

CTO at the LMCA ostium because bypass surgery is the best option for this high-risk lesion.²⁻⁴ The patient in this case presented with a ST-segment elevation myocardial infarction, and received successful PCI for both critical lesions at the RCA ostium and CTO at LMCA ostium using an antegrade approach.

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CONFLICT OF INTEREST STATEMENT

None declared.

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