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Video 1. Transoesophageal echocardiographic image of the ISLH.

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DOI: 10.14744/AnatolJCardiol.2018.04264



Case Report

A 44-year-old male with complaints of dyspnea and chest pain was admitted to emergency department. No additional findings were observed in physical examination and laboratory parameters. His medical history showed that a stent was implanted in the Cx artery after he experienced myocardial infarction in 2012, and that implantable cardioverter defibrillator (ICD) was implanted in 2015 for primary prevention due to ischemic cardiomyopathy. He was receiving optimal medical treatment. Electrocardiography revealed sinus rhythm with a QS pattern in the V1-V3 leads. Echocardiography also showed dilated left ventricular diameters (end-diastolic diameter, 60 mm; end-systolic diameter, 44 mm) and ejection fraction of 38% with septum, anterior wall and apical hypokinesis. Along with the diagnosis of unstable angina pectoris, coronary angiography also revealed the CTO of LMCA with well-developed right-to-left collaterals and an absence of significant stenosis in RCA (Fig. 1a, 1b; Video 1). The SYNTAX score was calculated to be 29. Thallium SPECT and fluorodeoxyglucose PET viability scintigraphy showed viable tissue and ischemia >5% on anterior myocardial area. Therefore, the heart team decided to perform revascularization. Mortality as per the surgical risk scores was 2.9% in STS and 2.7% as per EuroSCORE-II. After the patient decided not to be treated with the surgery, the heart team selected PCI with the approval of the patient.

Coronary angiography was performed with bilateral femoral access using a 7F sheath. The retrograde and antegrade filling and CTO lesion length were determined. After premedication with ASA, ticagrelor, and unfractionated heparin, a 7F left Judkins catheter was placed in the LMCA ostium. Initially, the "Gaia second" wire successfully passed the LMCA lesion and was directed to the Cx artery with the support of a Corsair microcatheter. First, the Cx artery was predilated with a 2.5×30-mm Sprinter Legend balloon (Medtronic Inc., Minnesota, USA). Then, the "Gaia second" wire was passed through the LAD lesion with the support of the Corsair microcatheter. However, due to the limitations of the microcatheter, the LAD lesion could only be passed using the anchoring balloon technique at the Cx artery. After passing the LAD lesion, the lesion was predilated with a 2.5×30-mm Sprinter Legend balloon. Further, a 3.0×38-mm resolute integrity drug-eluting stent (Medtronic Inc., Minnesota, USA) was implanted in the Cx distal lesion and a 3.0×16-mm resolute integrity drug-eluting stent in the Cx proximal lesion. After the Cx proximal stent was crushed with a 2.75×15-mm balloon, a 3.0×38-mm resolute integrity stent was implanted in the LAD lesion. The LAD proximal was postdilated with a 4.0×12-mm Emerge NC balloon (Boston Scientific, USA), and the LAD-Cx final kissing balloon technique was performed. Finally, proximal optimization technique was performed with a 4.0-12 mm Emerge NC balloon in the LMCA lesion. In the final angiogram, the stents in the LMCA-LAD-Cx were visualized at the optimal

Percutaneous intervention of left main coronary artery chronic total occlusion: A case report

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Introduction

Chronic total occlusion of left main coronary artery (LMCA) is a rare finding in angiograms and is described as a total lack of antegrade blood flow to the coronary arteries with retrograde collateral circulation (1, 2). A majority of the myocardium is under ischemic load and is associated with high mortality ratio. Although CABG operation is the standard revascularization method, recent studies show that PCI can alternatively be safely performed for certain patients (3, 4).

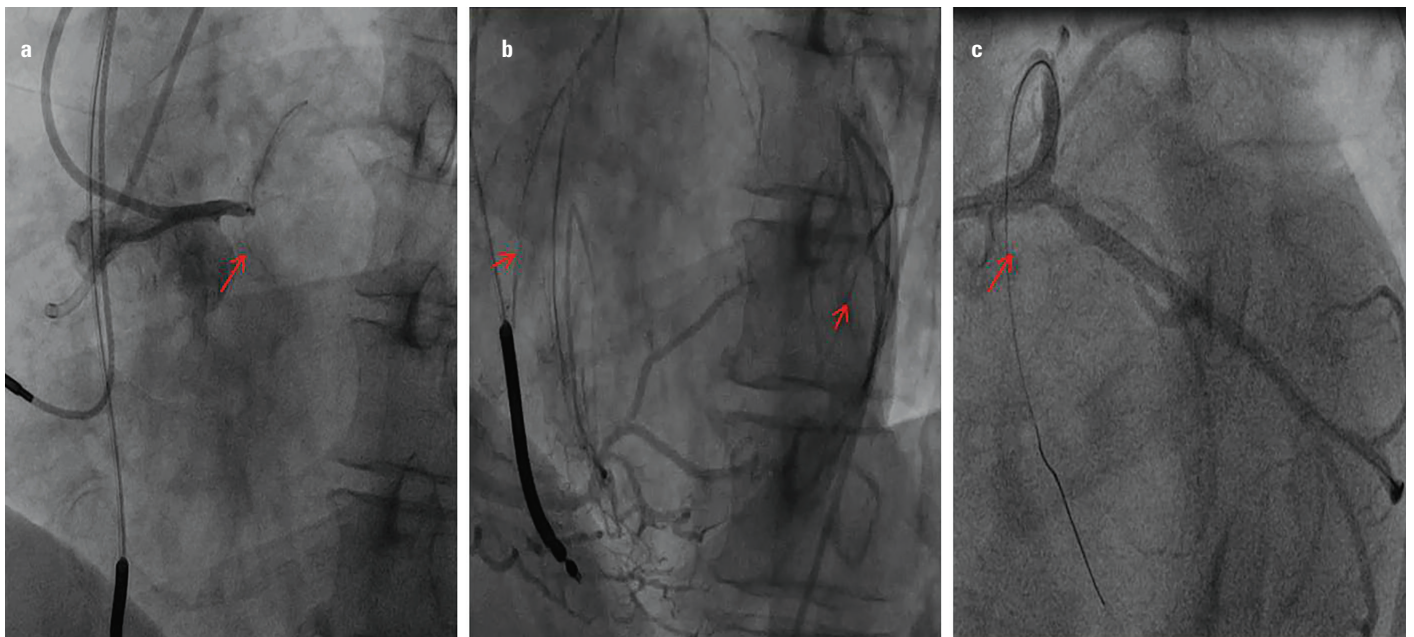


Figure 1. (a) Angiographic imaging of LMCA chronic total occlusion. (b) Angiographic imaging of LMCA CTO retrograde filling from the right coronary artery. (c) Angiographic imaging of revascularized LMCA

opening, and TIMI-3 flow was detected (Fig. 1c; Video 2). However, we could not confirm the optimal stent expansion because of the lack of an IVUS catheter. The patient's treatment was optimized, and he was discharged after three days. The patient was asymptotically followed-up for 6 months under optimal medical treatment.

Discussion

In patients undergoing revascularization of LMCA stenosis, the PCI and CABG techniques are associated with a comparable risk. Although surgical intervention in the LMCA occlusion is an important treatment modality, it has been shown that there is no significant difference in the long-term outcomes between the two techniques provided the patient and procedure selection is appropriate (3, 4). Additionally, in the SYNTAX trial subgroup analysis for LMCA revascularization, there was no significant difference between the PCI and CABG groups for a year (5). PCI was successfully applied in our patient, due to he did not approve of the surgery, although the SYNTAX score and patient clinic status seemed appropriate for the surgical treatment. To the best of our knowledge, this is one of the few cases wherein LMCA CTO was successfully and percutaneously revascularized. De Caterina et al. (6) reported a similar case in 2013, wherein they successfully revascularized the LMCA CTO with the guidance of IVUS. Despite the fact that the final angiographic image was satisfactory, we could not confirm the optimal result with IVUS due to technical problems.

Conclusion

The long-term outcomes of CABG surgery in patients with high SYNTAX score or complex coronary anatomies were better. However, PCI or CABG surgeries have appropriate revascularization options in patients with low to intermediate SYNTAX score, as in our case. It should be considered that LMCA CTO lesions may be successfully revascularized with PCI by appropriate patient selection and under IVUS guidance.

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Video 1. Imaging of the chronic totally occluded LMCA

Video 2. Imaging of percutaneous intervention of LMCA and successful revascularization

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DOI:10.14744/AnatolJCardiol.2018.92693

