

branches in approximately 25 percent, multivessel involvement in approximately 15 percent, and the left main coronary artery in approximately 4 percent. Distal coronary segments are affected more frequently than proximal segments. Patients with SCAD are usually admitted with a suspected diagnosis of acute coronary syndrome. The initial evaluation includes a detailed history and assessment of symptoms, ECG, cardiac biomarkers such as troponin, echocardiography, and coronary angiography. Based on the angiographic appearance, SCAD can be classified into four types.

Type 1 SCAD, or the classic appearance, is characterized by contrast staining of the arterial wall and visualization of a dissection flap, with clearly visible true and false lumens.

Type 2 SCAD, or diffuse stenosis, is the most common type. It usually appears as a long and smooth narrowing, typically extending for more than 30 millimeters. It can be further divided into type 2A, involving the distal segment, and type 2B, extending all the way to the distal end of the vessel.

Type 3 SCAD, or focal stenosis, can closely mimic atherosclerotic disease. These lesions are usually short and focal, and intravascular imaging, such as OCT or IVUS, may be required for diagnosis.

Type 4 SCAD is characterized by complete coronary artery occlusion with absent distal flow.

The clinical presentation of SCAD can range from ST-elevation myocardial infarction and non-ST-elevation acute coronary syndrome to ventricular tachyarrhythmias, congestive heart failure, and sudden cardiac death. The management of SCAD differs from that of conventional ischemic heart disease, and there is still no universally accepted treatment

strategy. Most SCAD lesions heal spontaneously within approximately two months. Therefore, medical treatment and conservative management are generally preferred in stable patients. Unlike conventional acute coronary syndrome, percutaneous coronary intervention and coronary artery bypass grafting are not routinely recommended. There are several reasons for this. First, the guidewire may enter the false lumen and occlude the true lumen. Second, balloon angioplasty and stent implantation may extend the dissection or propagate the intramural hematoma, potentially worsening coronary obstruction. Such extension may result in spiral dissection of the distal vessel or retrograde extension into the proximal segments and adjacent branches, including the left main coronary artery. In addition, because SCAD lesions can be very long, long stents may be required. This may increase the risk of in-stent restenosis and stent thrombosis. As the intramural hematoma is gradually resorbed, late stent malapposition may also occur, potentially increasing the risk of late stent thrombosis. Intravascular imaging can help confirm the diagnosis; however, manipulation of the vessel with a guidewire or imaging catheter may itself worsen the dissection. Similarly, during CABG, it may be difficult for the surgeon to determine whether the graft has been placed into the true lumen.

Conclusion: More than 90 percent of patients demonstrate angiographic healing within approximately one month. Therefore, PCI should not routinely be considered as the first-line treatment. In clinically stable patients, conservative management with close monitoring is generally preferred. Our case demonstrates that even in the presence of complete coronary occlusion due to SCAD, spontaneous healing may occur with conservative treatment in selected stable patients.



Figure 8.

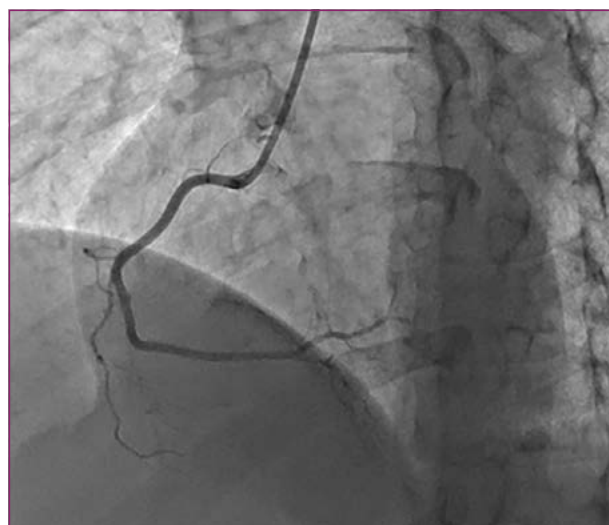


Figure 9.

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Left Circumflex CTO Resistant to Sequential Plaque Modification Techniques

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Introduction and Aim: Severely calcified chronic total occlusion (CTO) lesions are among the most technically challenging complex coronary lesions encountered during percutaneous coronary intervention (PCI), with relatively low technical success rates. We present a case of a complex, severely calcified left circumflex (LCx) CTO in which revascularization could not be achieved despite the sequential use of advanced plaque modification techniques.

Case Report: A 60-year-old man presented to the emergency department with pain originating in the epigastric region and radiating to the

back. Four months earlier, an exercise stress test had been discontinued due to symptoms, and although coronary angiography had been recommended, the patient had not undergone further evaluation. He was admitted with a preliminary diagnosis of unstable angina. His medical history included hypertension, coronary artery disease, and active smoking. Electrocardiography showed sinus rhythm with supraventricular extrasystoles. Echocardiography revealed a left ventricular ejection fraction of 40–45%, with hypokinesia of the lateral and anterior walls. Coronary angiography demonstrated diffuse 40–50% stenosis in the right coronary artery (RCA), 50–60% stenosis in the distal left anterior descending artery (LAD), a chronic total occlusion of the first diagonal branch (D1), and a severely calcified CTO in the proximal LCx.

First Session (April 5, 2026): The LCx was engaged from the left main coronary artery. Despite the use of different coronary guidewires and balloon support, the CTO segment could not be crossed intraluminally. Subsequently, a guidewire was advanced into the obtuse marginal (OM) branch. The proximal calcified segment was sequentially dilated using

1.5×9 mm, 1.5×20 mm, 2.5×25 mm, 2.75×15 mm, 2.75×18 mm, and 2.75×23 mm non-compliant (NC) balloons, followed by a 2.5×20 mm scoring balloon and a 2.5×15 mm cutting balloon. Although the cutting balloon ruptured at 14 atm, adequate plaque modification could not be achieved. Given the development of a limited dissection with preserved TIMI grade 3 flow and the absence of symptoms, the procedure was terminated, and rotational atherectomy was planned.

Second Session (April 8, 2026): The lesion was successfully crossed with the support of a microcatheter. Following predilation, rotational atherectomy was performed using a 1.75-mm burr. Subsequent high-pressure dilations with a 3.25-mm cutting balloon, a 3.0×12 mm NC balloon inflated up to 34 atm, and a 3.5×15 mm NC balloon inflated up to 26 atm failed to achieve adequate lumen expansion. The lesion was considered balloon-undilatable, and repeat intervention with either intravascular lithotripsy (IVL) or an OPN balloon was planned. Following the procedure, new-onset atrial fibrillation developed, and oral anticoagulation therapy was initiated.

Third Session (April 27, 2026): The previously rotatable resistant lesion was re-crossed with a guidewire. A 2.5×15 mm OPN balloon was inflated up to 40 atm, followed by additional high-pressure dilation with a 3.0×20 mm NC balloon. Despite these interventions, persistent balloon waist was observed, and adequate lumen expansion could not be achieved. No perforation, no-reflow phenomenon, or hemodynamic instability occurred during the procedure. Given the failure to achieve technical success despite sequential plaque modification techniques, further attempts at revascularization were abandoned, and optimal medical therapy was pursued. The patient was discharged without cardiac symptoms.

Conclusion: In severely calcified CTO lesions, technical success may not always be achieved despite the sequential use of advanced plaque modification techniques, including rotational atherectomy, cutting balloons, and ultra-high-pressure balloons. This case highlights that balloon-undilatable calcified CTO lesions represent one of the most challenging scenarios in interventional cardiology. Intravascular imaging-guided procedural planning and the timely use of emerging calcium-modification technologies, such as IVL, may represent potential strategies to improve procedural success in similar cases.

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Rotablation-Assisted Complex Left Main Coronary Trifurcation Intervention in Severe Calcification: A Successful IVUS-Guided Complex Percutaneous Coronary Intervention

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Introduction and Aim: Left main coronary artery (LMCA) trifurcation lesions, particularly in the presence of severe calcification, represent some of the most complex interventions in interventional cardiology. In patients who are unsuitable for surgical revascularization or decline surgery, rotational atherectomy-assisted percutaneous coronary intervention may provide a successful alternative.

Case Report: A 69-year-old man was admitted with non-ST-segment elevation myocardial infarction and acute decompensated heart failure. Coronary angiography revealed a severely calcified Medina 0,1,1 LMCA trifurcation lesion, accompanied by a chronic total occlusion of the distal right coronary artery. Although surgical revascularization was recommended by the Heart Team, the patient declined surgery, and a high-risk percutaneous intervention was planned. For lesion preparation, rotational atherectomy was performed using a 1.5-mm burr, followed by implantation of a drug-eluting stent from the LMCA into the circumflex artery. During the procedure, impairment of LAD flow developed and was successfully managed using the T and small protrusion (TAP) technique, followed by final kissing balloon inflation and proximal opti-

mization technique. Intravascular ultrasound confirmed adequate stent expansion and complete apposition. The procedure was completed without complications, with restoration of TIMI grade 3 flow on final angiography. Follow-up angiography demonstrated patent stents, while the patient showed a marked improvement in functional capacity and an increase in left ventricular ejection fraction during follow-up.

Conclusion: This case demonstrates that, in patients with severely calcified LMCA trifurcation lesions, a strategy combining rotational atherectomy, an appropriate bifurcation technique, and IVUS-guided stent optimization may provide a safe and successful treatment option for high-risk patients.

Keywords: Left main coronary artery trifurcation, rotational atherectomy, intravascular ultrasound (IVUS).

SS-18

Management of Aorto-Ostial Stent Protrusion Using the Side Flap Technique in Acute Coronary Syndrome Developing During Chemotherapy: A Case Report

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Introduction and Aim: Aorto-ostial stent implantation is a technically challenging percutaneous coronary intervention due to anatomical considerations and difficulties in achieving optimal stent positioning. Stent protrusion into the aorta may make subsequent re-entry into the stent lumen difficult and compromise adequate catheter support during further interventions. The Side Flap technique is an alternative approach that enables the creation of a new functional lumen by passing through the side wall of the stent in selected cases where re-entry into the original stent lumen is not feasible. In this case, we present the successful management of aorto-ostial stent protrusion using the Side Flap technique during coronary intervention performed for chest pain and elevated troponin levels that developed during chemotherapy.

Case Report: A 65-year-old man with a history of hypertension and coronary artery disease, including previous coronary stent implantation, was admitted for evaluation of chest pain and elevated troponin levels that developed during chemotherapy for lung cancer. Electrocardiography showed sinus rhythm. Echocardiography revealed a left ventricular ejection fraction of 60%, mild mitral and tricuspid regurgitation, and grade I diastolic dysfunction. Coronary angiography demonstrated an 80% stenosis at the LAD ostium, a patent stent in the mid-LAD segment, a 30% stenosis in the CX-OM2 segment, and severe stenoses in the ostial (90%) and mid (95%) segments of the nondominant RCA. Percutaneous coronary intervention (PCI) to the LAD was planned, and the left main coronary artery (LMCA) was engaged with a 7-French 3.5 guiding catheter. After wiring the LAD and CX, balloon angioplasty of the LAD was performed using a 2.0×25 mm balloon. Subsequently, a 3.5×38 mm drug-eluting stent (DES) was deployed from the LMCA ostium into the LAD. The stent was assessed in different angiographic projections and positioned with 1–2 struts extending into the aorta. During stent deployment, the patient took a deep inspiration, resulting in approximately 10 mm of stent protrusion into the aorta. Because of the stent protrusion into the LMCA ostium, inability to re-cross the stent lumen with a guidewire, and compromised CX flow, the guidewire was advanced from the LMCA into the LAD by passing through the edge of the protruding stent struts. At this stage, the Side Flap technique was performed using a 3.5×10 mm balloon, resulting in lateral displacement of the protruding stent segment and creation of a functional lumen. Proximal optimization technique (POT) was then performed in the LMCA using a 5.0×8 mm balloon. A 3.5×23 mm DES was implanted between the two stents in the LAD. The CX was rewired with a floppy guidewire, and the stent struts were dilated using a 2.5×15 mm balloon. A 3.0×34 mm DES was subsequently implanted in the CX using the TAP technique. After kiss-