



VIDEO PRESENTATIONS

[VP-1]

Retrograde Paravalvular Leak Closure Using the Arteriovenous Loop Technique: A Case Report

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Aim: Paravalvular leak (PVL) is defined as a leakage occurring between the prosthetic valve and the native annulus following surgical or transcatheter valve implantation. It is more frequently observed in mechanical valves compared to bioprosthetic valves and may lead to significant morbidity in symptomatic patients. Currently, percutaneous PVL closure techniques are increasingly being used, particularly in patients with high surgical risk. Advanced imaging modalities and appropriate device selection play a crucial role in procedural success.

Case Report: A 64-year-old male patient was admitted to the cardiology outpatient clinic with complaints of exertional dyspnea and fatigue. His functional capacity was assessed as New York Heart Association class III. His medical history revealed mitral valve replacement surgery performed approximately 10 months earlier. Coronary angiography performed prior to surgery had demonstrated normal coronary arteries. Electrocardiography showed sinus rhythm with non-specific ST-segment changes. Transthoracic echocardiography revealed a left ventricular ejection fraction of 55%. A mechanical prosthetic valve was visualized in the mitral position. The mitral valve gradient was measured as 21/10 mmHg. Severe paravalvular mitral regurgitation, moderate tricuspid regurgitation, and an estimated systolic pulmonary artery pressure of approximately 45 mmHg were detected. Batrial enlargement was also present. Transesophageal echocardiography (TEE) demonstrated a severe PVL localized between the 1 and 3 o'clock positions around the metallic mitral prosthesis (Figure 1). Three-dimensional TEE imaging allowed detailed assessment of the anatomical localization of the defect. Percutaneous PVL closure was planned. During the procedure, transeptal puncture was successfully performed under TEE guidance using a Brockenbrough needle. A posterior-inferior transeptal approach was preferred. Multiple attempts were made to cross the defect using various catheters supported by a hydrophilic guidewire; however, due to the septal localization of the defect, the antegrade approach was unsuccessful, and a retrograde strategy was adopted. Using an AL1 catheter via the femoral artery, access to the left ventricle was obtained. Subsequently, the defect was crossed with a noodle wire. The wire was captured using a snare introduced through the previously positioned transeptal catheter and externalized to create an arteriovenous loop (Figure 2). After achieving system stabilization, the sheath and the Occlutech PLD device were advanced through the transeptal route. Following deployment of the ventricular disc within the left ventricle, the device was gently retracted and positioned across the defect. Device stability was assessed using the push-pull (Minnesota) maneuver. Three-dimensional TEE Doppler imaging demonstrated only minimal residual leakage. After confirming unrestricted movement of the mechanical mitral valve leaflets, the device was successfully released. Post-procedural fluoroscopic and echocardiographic evaluations were repeated (Figure 3). Prosthetic valve motion remained normal, and a significant reduction in paravalvular regurgitation was observed.

Conclusion: Percutaneous PVL closure represents a strong alternative to surgery when performed with appropriate patient selection and advanced imaging guidance. It is a safe and effective treatment option, especially in patients with high surgical risk. However, procedural success remains highly dependent on operator experience.

Keywords: Paravalvular leak, mitral prosthetic valve, percutaneous closure, arteriovenous loop, 3D TEE

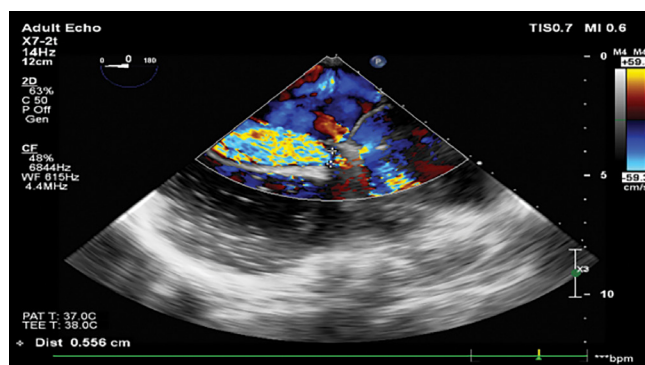


Figure 1. Transesophageal echocardiography image demonstrating a severe paravalvular leak localized between the 1 and 3 o'clock positions around the metallic mitral prosthesis

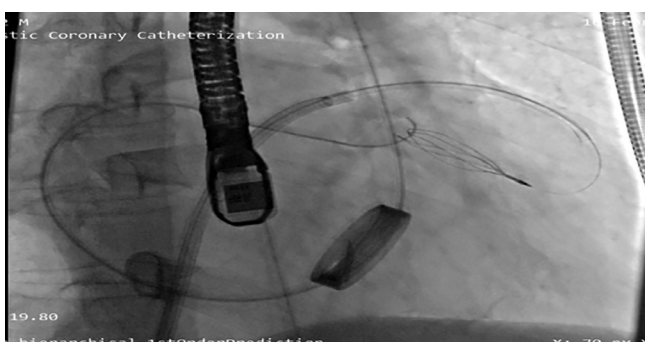


Figure 2. Capturing the noodle wire with snare



Figure 3. Post-procedural fluoroscopic evaluation

[VP-2]

A Challenging Calcified PCI: Managing Sequential Complications

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Aim: Severely calcified coronary lesions remain among the most challenging scenarios in contemporary percutaneous coronary intervention (PCI). Adequate lesion preparation is often required to achieve optimal stent expansion, and advanced plaque modification techniques such as rotational atherectomy are frequently employed. Despite technological advances, complex calcified PCI is associated with an increased risk of procedural complications that may require rapid decision-making and familiarity with bailout strategies.

Case Report: We report the case of a 74-year-old man who underwent coronary angiography after carotid Doppler ultrasonography suggested severe bilateral internal carotid artery stenosis. While carotid angiography demonstrated only mild plaque formation, coronary angiography revealed severely calcified lesions involving the ostial right coronary artery (RCA), ostial-proximal left anterior descending artery (LAD), mid-LAD, and ostial circumflex artery (Cx).

Ad-hoc PCI with drug-eluting stent implantation was successfully performed in the RCA. Due to extensive calcification in the left coronary system, a staged PCI strategy was planned. Rotational atherectomy of the ostial-proximal LAD was successfully performed to facilitate lesion preparation. However, during high-pressure balloon predilatation of the Cx ostial lesion, balloon rupture occurred, leading to slow coronary flow and ventricular fibrillation requiring immediate defibrillation. Emergency left main-circumflex bifurcation stenting using a crush technique was performed as a bailout strategy under hemodynamic instability. Subsequently, coronary flow deteriorated and attempts to rewire the LAD were unsuccessful. Subintimal tracking and re-entry using a Pilot 200 guidewire (STAR technique) enabled restoration of distal vessel access. During further balloon dilatation, balloon shaft rupture occurred, leaving a fragment in the mid-LAD. Final angiography demonstrated TIMI-2 flow in the LAD.

Conclusion: This case illustrates a rare cascade of procedural complications during complex calcified PCI, including balloon rupture, ventricular fibrillation, loss of wire position, and device failure. Successful management required rapid recognition of complications and the application of multiple bailout techniques, including emergency bifurcation stenting and the STAR technique. The case highlights the importance of operator experience and preparedness for managing unexpected complications during complex coronary interventions.

Keywords: Percutaneous coronary intervention, calcified coronary lesion, rotational atherectomy, coronary procedural complications

[VP-3]**Complex Carotid Stenting Using A Balloon Anchor Technique**

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Aim: Aortic arch anatomy, particularly the type III variant, poses significant challenges during endovascular carotid artery interventions. The steep angulation of the left common carotid artery (CCA) origin from the aortic arch complicates cannulation and limits catheter support. The side-branch balloon anchoring technique, frequently employed in percutaneous coronary interventions for tortuous and complex lesions, was planned in this case to facilitate guiding catheter placement into the left CCA after conventional cannulation methods had failed.

Case Report: An 87-year-old male patient, who had suffered an ischemic stroke ten days earlier, demonstrated diffusion restriction in the left hemisphere on cranial MRI (Figure 1). Carotid Doppler ultrasound revealed a soft plaque in the proximal segment of the left internal carotid artery (ICA), causing 90-95% luminal stenosis over a 3 cm segment. MR angiography demonstrated a type III aortic arch and a 99% ulcerated plaque in the left ICA (Figure 2). Cannulation of the left CCA was attempted using a 5-F right catheter, 6-F AL1 and AL2 catheters, 5-F Sim 1 and Sim 2 catheters, and 0.035- and 0.038-inch guidewires. However, due to the steep angulation of the left CCA origin from the aortic arch, all attempts were unsuccessful. Subsequently, a Sim 2 catheter was advanced telescopically through a 7-F right guiding catheter, allowing cannulation of the proximal left CCA. Through the Sim 2 catheter, a 0.014-inch floppy wire (TaHa Biomedical) was advanced into the distal superficial temporal artery, a branch of the external carotid artery (ECA). Over this wire, a 3.0×20 mm balloon was inflated at 12 atm to provide anchoring support. With distal balloon anchoring, the 7-F right guiding catheter (TaHa Biomedical) was advanced over the Sim 2 catheter into the left CCA. A 5.5 mm SpiderFX™ (Medtronic) distal embolic protection device was deployed in the left distal ICA. Predilatation was performed with a 3.0×20 mm Ryurei™ (Terumo Medical Corporation) coronary balloon at 10 atm. An 8×25 mm Roadsaver stent (Terumo Medical Corporation) was then successfully implanted, followed by postdilatation with a 5.0×12 mm Mozec™ (Medical Corporation) coronary balloon at 12 atm. Full luminal expansion was achieved. The filter was retrieved, and the procedure was completed without complications.

Conclusion: This technique, particularly in patients with Type III aortic arch anatomy and ostial plaque in the left CCA, enables safe and effective intervention. Guiding catheter placement into the left CCA using a telescopic approach combined with ECA balloon anchoring provides stabilization and facilitates successful carotid stenting.

Keywords: Type III aortic arch, Left common carotid artery (CCA) cannulation, endovascular carotid intervention, balloon anchoring technique, telescopic catheter approach

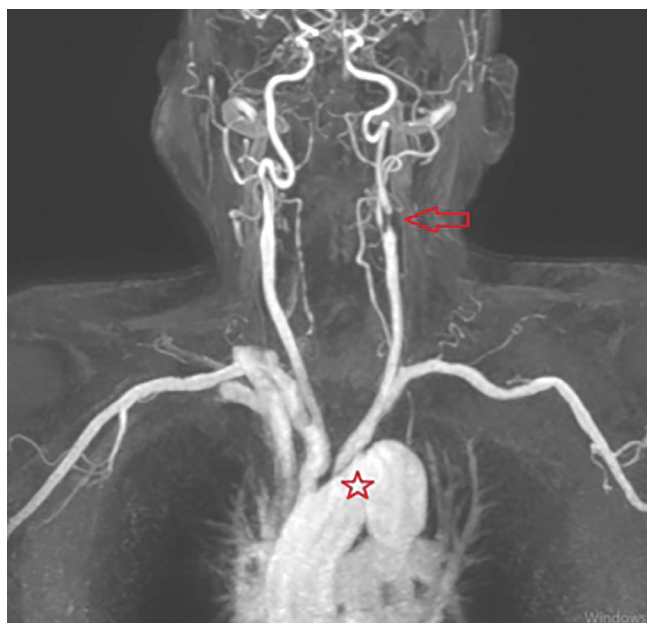


Figure 1. MR angiography demonstrated a type III aortic arch and a 99% ulcerated plaque in the left ICA

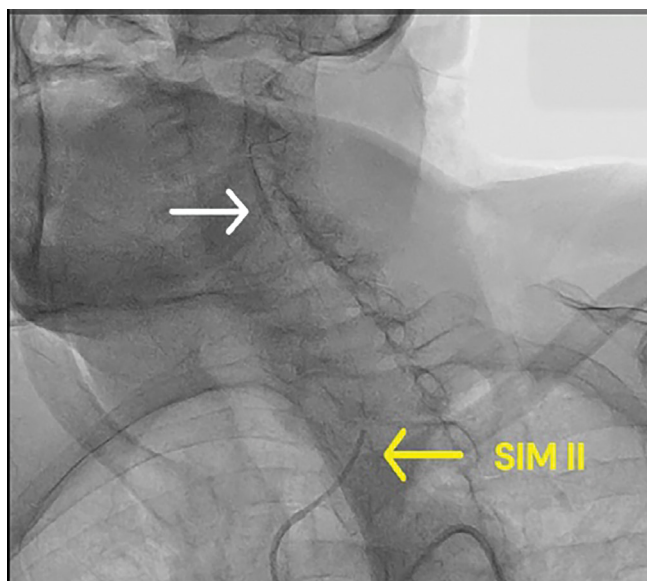


Figure 2. Over this wire, a 3.0×20 mm balloon was inflated at 12 atm to provide anchoring support

[VP-5]

Delayed Right Ventricular Perforation Secondary to an Implantable Cardioverter-Defibrillator Lead: A Case Report

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Aim: Implantable cardioverter-defibrillators (ICDs) are well-established device therapies proven to reduce the risk of sudden cardiac death due to malignant ventricular arrhythmias and are widely used for both primary and secondary prevention. However, ICD implantation is associated with both early and late complications. Early complications include pneumothorax, hemothorax, vascular injury, hematoma, infection, and lead dislodgement, whereas late complications may involve lead fracture, device-related infection, sensing or pacing abnormalities, and, less commonly, cardiac perforation. Delayed right ventricular perforation is an exceptionally rare but clinically significant complication that may lead to severe morbidity and mortality if unrecognized. Its clinical presentation ranges from asymptomatic cases to cardiac tamponade, arrhythmias, diaphragmatic stimulation, and device malfunction. Electrical noise, impedance alterations, loss of capture, and inappropriate ICD shocks are important warning signs suggestive of lead-related complications. In this report, we present a case of delayed right ventricular perforation occurring approximately one year after ICD implantation, emphasizing the role of device interrogation, multimodal imaging, and surgical management in diagnosis and treatment.

Case Report: A 58-year-old female patient presented to the emergency department after receiving inappropriate ICD shocks. Her medical history was significant for hypertension, diabetes mellitus, and heart failure. Coronary angiography performed in 2024 revealed normal coronary arteries, and a single-chamber VVI-ICD was implanted in 2025 for primary prevention. On admission, her vital signs were stable and physical examination was unremarkable. Electrocardiography demonstrated prominent pacemaker spikes without subsequent ventricular depolarization, consistent with loss of pacing capture (Figure 1). Device interrogation revealed reduced sensing amplitude, loss of pacing capture, increased lead impedance, elevated pacing thresholds, high-frequency electrical noise, and inappropriate ICD shocks, all of which suggested a mechanical lead complication (Figure 2). Transthoracic echocardiography showed a left ventricular ejection fraction of 45%, with

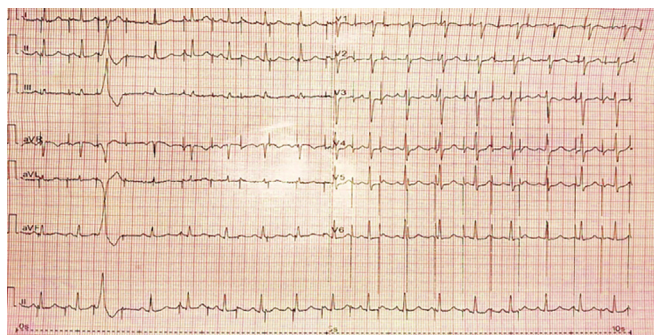


Figure 1. Electrocardiogram demonstrating prominent pacing spikes without subsequent ventricular depolarization, consistent with loss of pacing capture

segmental hypokinesia and mild valvular regurgitation. No pericardial effusion was detected. In addition, subcostal imaging demonstrated a right ventricular lead appearance consistent with perforation (Figure 3). Due to suspected abnormal lead positioning on chest radiography, cardiac computed tomography was performed. The CT scan demonstrated that the ICD lead had perforated the right ventricular free wall, traversed the pericardial space, and extended into an extracardiac location (Figure 4). A multidisciplinary heart team evaluated the patient, and surgical intervention was selected due to full-thickness perforation with extracardiac lead migration. Intraoperatively, the lead and device were removed, and the right ventricular free wall defect was repaired primarily. The postoperative course was uneventful, and the patient was discharged in stable condition.

Conclusion: ICD lead perforation is a rare complication with an estimated incidence of 0.1-0.8%, yet it carries significant clinical importance. Delayed perforations are typically associated with chronic mechanical stress, continuous lead motion, and myocardial thinning over time. Recognized risk factors include female sex, advanced age, low body mass index, and the use of active-fixation leads. In this case, female sex was considered a contributing predisposing factor. Anatomically, the right ventricular apex and free wall are the most common sites of perforation due to their relatively thinner myocardial structure and higher mechanical stress exposure. In contrast, the interventricular septum is thicker and more structurally stable. Although apical positioning is technically easier during implantation, it is associated with a higher risk of perforation. Septal positioning may provide more physiological ventricular activation but is limited by operator dependency and challenges in accurate lead placement confirmation. Changes in device parameters are critical for early detection. Increased impedance, decreased sensing, loss of capture, and electrical noise should raise suspicion for lead perforation. While echocardiography and chest radiography are initial diagnostic tools, cardiac computed tomography remains the gold standard due to its superior spatial resolution, particularly in demonstrating extracardiac lead extension. Management is individualized according to clinical stability and perforation severity. Percutaneous extraction may be considered in stable cases with limited perforation; however, surgical intervention is preferred in cases of full-thickness perforation and extracardiac lead migration. In our patient, surgical management was chosen accordingly. Delayed ICD lead perforation is a rare but serious complication. Device parameter abnormalities are crucial for early recognition. Cardiac computed tomography is the most valuable imaging modality for definitive diagnosis. Apical lead placement carries a higher risk of perforation. A multidisciplinary approach is essential for optimal management and favorable outcomes.

Keywords: Implantable cardioverter-defibrillator (ICD), right ventricular perforation, device-related complications

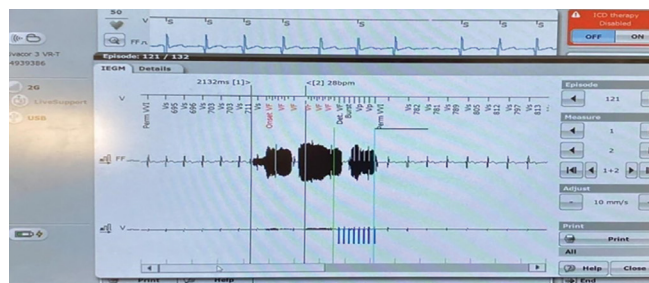


Figure 2. Device interrogation showing reduced sensing amplitude, increased lead impedance, elevated pacing thresholds, and high-frequency electrical noise associated with inappropriate ICD shocks

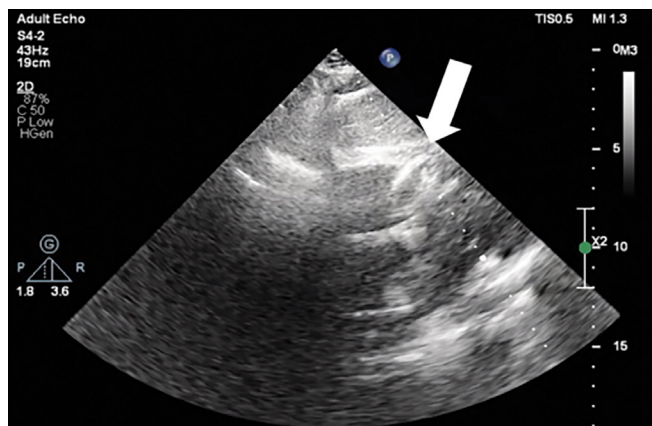


Figure 3. Transthoracic echocardiography (subcostal view) demonstrating a right ventricular lead position suspicious for myocardial perforation

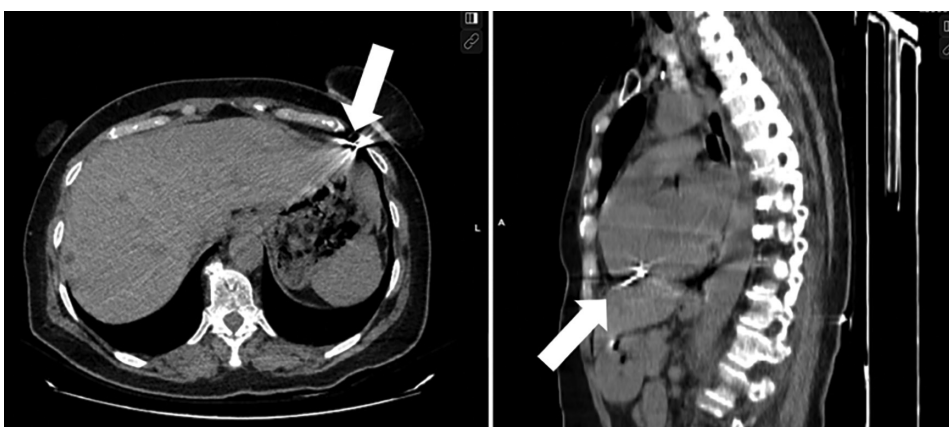


Figure 4. Cardiac computed tomography revealing perforation of the right ventricular free wall by the ICD lead, extending through the pericardial space into an extracardiac location

[VP-6]**First the Septum, Then the LAD: A Sequential Percutaneous Strategy in a Complex Coronary Case**

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Aim: Hypertrophic obstructive cardiomyopathy is characterized by asymmetric septal hypertrophy and dynamic left ventricular outflow tract obstruction, leading to symptoms such as dyspnea, fatigue, dizziness, and syncope. Alcohol septal ablation is an established percutaneous treatment option for symptomatic patients who remain refractory to optimal medical therapy. Although uncommon, the coexistence of significant coronary artery disease may further complicate management and require concomitant revascularization.

Case Report: A 51-year-old male presented with complaints of fatigue, easy fatigability, and dizziness. Electrocardiography demonstrated findings consistent with left ventricular hypertrophy. Blood pressure was within normal limits. Transthoracic echocardiography revealed asymmetric septal hypertrophy with a septal thickness of 19 mm, positive systolic anterior motion of the mitral valve, and significant LVOT obstruction. The resting LVOT gradient was 85 mmHg, increasing to 123 mmHg with provocation. Beta-blocker therapy was initiated and the patient was scheduled for follow-up after one month. During this period, he experienced a syncopal episode and persistent symptoms. Therefore, alcohol septal ablation was recommended and the procedure was scheduled. During coronary angiography performed prior to the procedure, a significant stenosis was detected in the left anterior descending (LAD) artery. A decision was made to perform alcohol septal ablation and coronary revascularization in the same session. The second septal branch was identified as the dominant septal vessel supplying the hypertrophied region. A 2.0×12 mm over-the-wire (OTW) balloon was positioned and inflated in this branch, followed by contrast and saline injection. Echocardiographic imaging confirmed increased echogenicity in the LVOT region, verifying the target myocardial territory. A temporary pacemaker was placed in the right ventricle. Subsequently, 5000 IU of unfractionated heparin was administered. A total of 2.5 mg of 96% ethanol was slowly injected through the OTW balloon into the septal branch. The balloon remained inflated for 10 minutes. A transient atrioventricular block occurred but sinus rhythm recovered spontaneously. Control angiography demonstrated cessation of flow in the septal branch. After balloon removal, the patient received 600 mg clopidogrel and 300 mg acetylsalicylic acid. Percutaneous coronary intervention of the LAD was then performed with implantation of a 3.0×28 mm drug-eluting stent, followed by post-dilatation with a 3.0×15 mm non-compliant balloon. Final angiography demonstrated TIMI III flow without complications. The patient was transferred to the intensive care unit for monitoring and was discharged in stable condition the following day. Before discharge, echocardiography showed a significant reduction in LVOT gradient, measuring 20 mmHg at rest and 30 mmHg with provocation. The peak troponin level was 6500 ng/L (upper reference limit: 14 ng/L), consistent with the expected myocardial injury following septal ablation.

Conclusion: The coexistence of significant coronary artery stenosis and hypertrophic obstructive cardiomyopathy is uncommon but may be encountered in clinical practice. In appropriately selected patients, alcohol septal ablation and coronary revascularization can be safely and effectively performed in the same session, resulting in symptom relief and significant reduction of LVOT obstruction.

Keywords: Hypertrophic obstructive cardiomyopathy, coronary artery disease, septal alcohol ablation, coronary revascularization

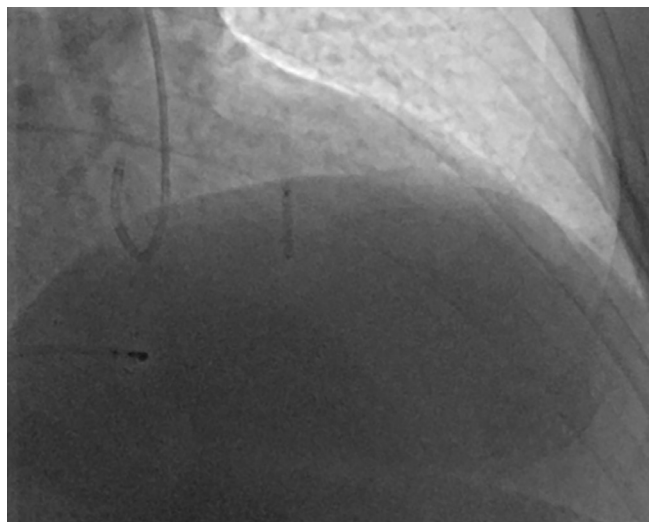


Figure 1. Septal ablation procedure

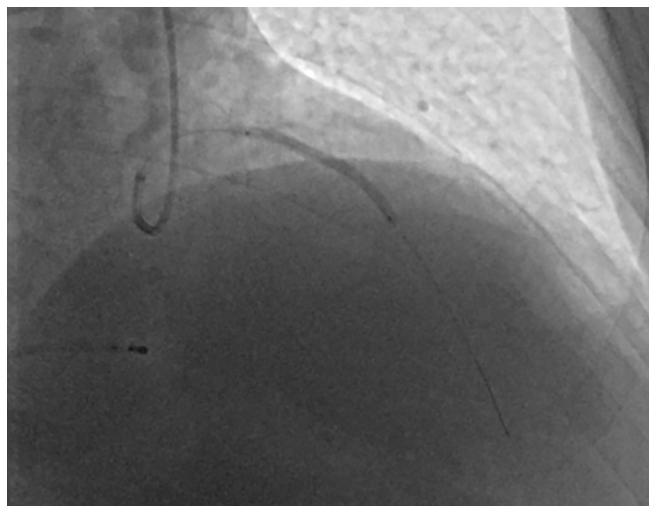


Figure 2. LAD PCI procedure