

Optical Coherence Tomographic Imaging in a Patient with Granulomatosis with Polyangiitis Presenting with Acute Myocardial Infarction

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Optical Coherence Tomography (OCT) is an imaging modality that produces high-resolution intracoronary images. We used it to see intraluminal thrombi, coronary intima, atherosclerotic plaque morphology, and stent strut coverage.

A 59-year-old woman with a recent diagnosis of granulomatosis with polyangiitis (GPA; previously Wegener's granulomatosis) presented with fever and chest pain. An electrocardiogram showed ST segment elevation in the anterior leads. Emergent coronary angiography demonstrated total occlusion (Figure 1A) of the mid-left anterior descending artery (LAD). Manual aspiration thrombectomy

was performed with removal of a large blood clot (Figure 1B). In view of her vasculitic history, optical coherence tomography (OCT) was performed to evaluate the underlying pathophysiology of the acute myocardial infarction (AMI). OCT demonstrated presence of a large thrombus with an intact coronary intima at the site of mid-LAD (Figure 1C). Because there was no evidence of plaque rupture, the acute occlusion was likely caused by thrombus formation secondary to the underlying coronary vasculitis. Rheolytic thrombectomy was subsequently performed with further reduction in thrombus burden, and normal flow was restored in LAD (Figure 1D).

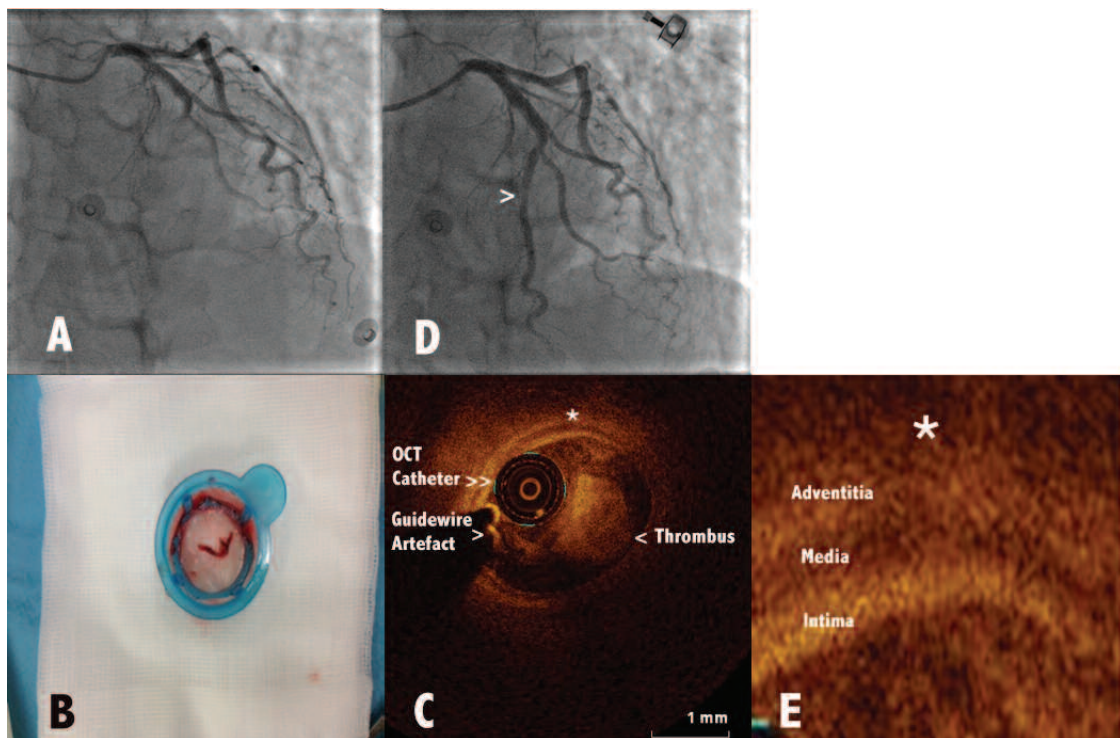


Figure 1. A. Baseline coronary angiography demonstrating acute occlusion of mid-left anterior descending artery (LAD). B. Blood clot removed from aspiration thrombectomy. C. Optical coherence tomography (OCT) image of mid-LAD showing intraluminal thrombus with intact coronary intima (arrowheads denoting the location of thrombus, OCT catheter, and guidewire artefact). D. Final coronary angiography demonstrating restoration of flow in LAD (arrowhead denotes segment of mid-LAD corresponding to OCT image). E. Zoom-in view of normal section of LAD (* indicates magnified section in panel C) showing the 3-layered vessel structure of intima, media, and adventitia.

GPA is a form of systemic vasculitis associated with antineutrophil cytoplasmic antibodies that affects small and medium-sized vessels in various organs. Although uncommon, cardiac involvement in the form of arteritis, pericarditis, myocarditis, and valvulitis have been described in the literature^{1,2}.

OCT is a novel light-based imaging modality³ that produces high-resolution intracoronary images, enabling visualization of intraluminal thrombi, coronary intima, atherosclerotic plaque morphology, and stent strut coverage. As illustrated, OCT imaging was invaluable to gain a better insight on the pathophysiology of AMI in our index patient with GPA. Thus, it guided our revascularization strategy, and negated the need for stent insertion.

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