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A 74-year-old man with a history of hypertension, diabetes mellitus, and chronic kidney disease presented with effort angina pectoris and was scheduled to undergo staged percutaneous coronary intervention (PCI) for severe stenosis of the proximal-to-mid left anterior descending artery (LAD). He had no history of prior PCI. Transthoracic echocardiography demonstrated a reduced left ventricular ejection fraction of 30% with hypokinesis of the anterolateral left ventricular wall. Pre-procedural coronary computed tomography angiography revealed severe calcification and marked tortuosity involving a large septal branch (SB). Coronary angiography demonstrated a heavily calcified Medina 1,1,1 bifurcation lesion with 99% stenosis involving the large SB in the mid-LAD. The bifurcation angle between the LAD and SB was approximately 90°. No significant stenosis was identified in the right coronary artery, and the left circumflex artery supplied a relatively small myocardial territory. Based on these findings, staged PCI of the LAD lesion was planned. PCI was performed via the right femoral artery using a 7-Fr backup guiding catheter (Hyperion SPB 3.75). Owing to the severe angulation between the LAD and SB, a floppy guidewire was initially advanced into the SB through a microcatheter and subsequently exchanged for a Rota-wire. Rotational atherectomy was then performed using a 1.5-mm burr. Thereafter, the guidewire was successfully redirected into the LAD using the reverse wire technique. Intravascular ultrasound (IVUS) demonstrated circumferential severe calcification in the proximal LAD. Pre-dilation was performed with a 2.5-mm balloon. Repeat IVUS revealed persistent circumferential calcification with a calcified nodule in the mid-LAD. Although upsizing the rotational atherectomy burr was considered, severe vessel tortuosity and suboptimal wire bias raised concerns regarding procedural safety and procedural success. Therefore, the calcium modification strategy was switched to intravascular lithotripsy (IVL). IVL was performed using a 2.5-mm balloon catheter with a total of 80 pulses, followed by dilation with a 2.5-mm cutting balloon. Finally, a drug-eluting stent (2.75 x 38 mm, SYNERGY XD) was successfully implanted, achieving an excellent angiographic result.