Bailout of Under expanded Stent in Calcified Lesion Using IVL and OPN Balloon

C-12

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Purpose:Heavily calcified coronary lesions significantly limit optimal stent expansion, leading to poor long-term outcomes. This case demonstrates a successful bailout strategy using intravascular lithotripsy (IVL) and ultra high pressure (OPN) balloon angioplasty in a focal, under expanded stent segment resistant to standard dilation techniques.Method:A 72 year old male with symptomatic, obstructive, and heavily calcified LM-LAD disease underwent elective PCI. IVUS revealed extensive 270^{o} concentric calcium and nodular calcification along the LM and mid LAD, with vessel diameters ranging from 3.0 to 4.0 mm and an MLA of 3.5 mm^2 at the distal LM. Due to clinical instability, rotational atherectomy was deferred. Sequential pre dilation was performed using 2.5 to 3.5 mm non compliant and scoring balloons. Drug eluting stents (3.0/28 mm and 3.5/ 28 mm) were deployed, followed by post dilation with NC balloons.Result:IVUS post procedure identified focal under expansion at mid-LAD (MSA 3.7 mm^2) due to a calcium nodule. IVL (3.5/12 mm, 50 pulses) was administered, followed by high pressure dilation using a 3.0 mm OPN balloon up to 40 atm. Further NC balloon inflations improved expansion. Final IVUS showed satisfactory stent apposition with MSA improved to 7.7 mm^2.Conclusion:In the setting of stent underexpansion due to heavily calcified and nodular lesions, IVL combined with OPN balloon angioplasty can be a valuable bailout strategy when conventional techniques, including high-pressure NC balloons, are ineffective.