1047 **Aggressive wire recanalization in calcified atheroma and dilation technique for calcified nodule of coronary artery.**

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Calcified nodules (CNs) are challenging lesions to manage using percutaneous coronary intervention (PCI), and they associated with poorer clinical outcomes following PCI. As the effects of debulking techniques, such as RA and OAS, depend on the bias of the guidewire, optimal plaque modification with sufficient debulking for CN lesions is less certain. The ARCADIA technique that idea of intentionally creating the new route using a guidewire is efficient for reducing the volume of calcification by using debulking devices. A 77-year-old woman with a history of angina pectoris, sick sinus syndrome, and type 2 diabetes mellitus presented to the emergency department with the chief complaint of worsening chest pain. We performed coronary angiography to diagnose acute coronary syndrome. The patient had received first PCI in the left anterior descending coronary artery 8 years previously and second PCI in the right coronary artery (RCA) by RA using a 1.75-mm Rotablator several years previously. Coronary angiography revealed severe stenosis with delayed flow in the mid-RCA. IVUS demonstrated the eccentric CN in the most stenotic segment. Following pre-dilation using a 2.75-mm scoring balloon, the coronary flow was improved to the thrombolysis in myocardial infarction grade 3. However, luminal gain remained insufficient on both IVUS and angiography, and suboptimal lesion preparation is related to stent underexpansion. Although debulking devices are necessary to reduce the eccentric CN and optimize lesion preparation; their use on unstable plaques and thrombus can lead to slow flow. To minimize the risk of complications, we decided to perform additional procedures the following day.

We performed an additional procedure for the RCA 1 week after the first procedure. An eccentric CN was located on the ventricular side according to angiography and IVUS, and wire bias was not suitable for RA or OAS. Moreover, the patient was already treated with RA using 1.75-mm Rotaburr several years previously. We attempted to puncture and insert another guidewire into the CN and expand the lesion from inside the CN. The proximal end of the CN that started from the distal edge of the previous stent was clearly visualized using IVUS from the residual lumen, and the Conquest Pro 12 Sharpened Tip (CP12ST) supported by a microcatheter could enter the CN using real-time IVUS guidance using tip-detection method. We intentionally controlled the CP12ST using 3-D wiring while referring to projections from two perpendicular directions. CP12ST was in intraplaque on IVUS immediately after CN, but CP12ST could not reenter the residual lumen from the CN. The location of CP12ST was closed to the residual lumen, but the radiopaque part of CP12ST was separated because the component of the core wire was damaged by severe resistance from the lesion. The CP12ST was pulled out without complete separation to cover the radiopaque part using the microcatheter as much as possible.

We changed the guidewire from CP12ST to Gaia Next 4 (GN4) to repuncture the CN using real-time IVUS guidance. GN4 ended up in the CN through a route similar to that of CP12ST and finally re-entered the residual lumen through the CN using 3-D wiring. IVUS after pre-dilating 1.5-mm balloons revealed that the new hole made by GN4 was at the center of the CN (Figure 6-A). After RA using a 1.75-mm Rotablator and additional dilation with a 3.25-mm scoring balloon, optimal concentric expansion and acute lumen gain were confirmed on IVUS images. A 3.5-mm everolimus eluting stent was implanted, and the final angiography showed sufficient coronary flow without any complications.