

Successful Debulking of a Coronary Calcified Nodules by Directional Coronary Atherectomy with Histopathological Confirmation

Tomomi Hashimoto¹

Shinya Fujita¹, Saya Hirata¹, Wakaba Kobayashi¹, Yuichiro Tomida¹, Yusuke Shirai¹, Daisuke Kashiwagi¹, Natsuko Hosoya¹, Kohei Sawasaki¹, Masahiro Muto¹, Atsushi Sakamoto², Hayato Ohtani², Yuichiro Maekawa²

¹ Department of Cardiology, Hamamatsu Medical Center, Japan

² Division of Cardiology, Internal Medicine III, Hamamatsu University School of Medicine, Japan

Calcified nodules (CNs) are associated with a higher incidence of target lesion revascularization than other types of atherosclerotic lesion types. Even with contemporary treatment using rotational atherectomy (RA) following drug-eluting stents, outcomes remain suboptimal, suggesting that insufficient lesion modification may contribute. However, the optimal debulking strategy for CNs has not been established. We report a case of a coronary calcified nodule in which RA failed to achieve adequate debulking, but successful debulking was achieved with DCA. A 65-year-old man presented with chest discomfort. Coronary angiography revealed 90% stenosis with haziness in the proximal right coronary artery. Intravascular ultrasound identified CNs at the culprit lesion. Initial RA

(1.75-mm burr at 180,000 rpm) failed to achieve adequate debulking because of insufficient wire bias. Further debulking was required for adequate lumen enlargement; intravascular lithotripsy was considered unsuitable. Because the CNs was located on the outer curvature of the vessel, sufficient modification was also considered unlikely with orbital atherectomy. Directional coronary atherectomy (DCA; 9-mm Atherocut L, NIPRO, Japan) was therefore performed, successfully removing the CNs. The procedure was completed using a cutting balloon followed by a drug-coated balloon.

Histopathology of the resected specimen demonstrated calcification surrounded by fibrin deposition, consistent with CNs. Follow-up angiography at 8 months showed no significant restenosis at the DCA-treated segment.

Given the characteristic structure of CNs, DCA may provide effective debulking in selected cases when conventional calcium-modifying devices are insufficient.