JACC: CARDIOVASCULAR INTERVENTIONS
VOL. 8, NO. 15, 2015
© 2015 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
ISSN 1936-8798/$36.00
PUBLISHED BY ELSEVIER INC.
http://dx.doi.org/10.1016/j.jcin.2015.07.036

IMAGES IN INTERVENTION

Progression of Intimal Hyperplasia and Multiple-Channel Formation After Fogarty Thrombectomy

Insight Into Vasculopathy From Optical Coherence Tomography and Intravascular Ultrasound Findings

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Given the marked increase in the number of patients with atrial fibrillation (AF) (1), more than 80% of acute limb ischemia (ALI) cases are now due to cardiac embolism associated with AF (2). Fogarty thrombectomy is the gold standard treatment of ALI.

An 87-year-old man with a chronic AF who underwent Fogarty thrombectomy for ALI due to cardiac embolism in his right leg 1 year earlier was hospitalized in our department for the treatment of right calf claudication (**Figures 1A and 1B**). His ankle-brachial index (ABI) was 0.69 on the right. Enhanced computed tomography (CT) revealed a severe focal stenosis in the right superficial femoral artery that had been patent at the ALI onset of 1 year ago (**Figure 1C**). Angiographic findings were consistent with CT findings (**Figure 2A**). Optical coherence tomography (OCT) and intravascular ultrasound (IVUS) demonstrated intraluminal narrowing due to significant intimal hyperplasia with a multiple-channel appearance (**Figures 2B to 2G**). The lesion was successfully dilated with balloon angioplasty. The patient's ABI increased to 0.94 and calf claudication resolved with no recurrence of symptoms during 6 months of follow-up.

These imaging findings support a previous experimental animal study reporting that Fogarty balloon injury could increase intimal hyperplasia (3), which enhances our awareness of the mechanism of recurrent occlusive lesions after Fogarty thrombectomy. Intimal hyperplasia was also enhanced by thrombus, the recanalization of which was associated with a multiple-channel appearance on IVUS, as reported in previous studies (4). An increasing awareness of the potential for peripheral artery disease after Fogarty thrombectomy may be important in the management of patients with a history of ALI.

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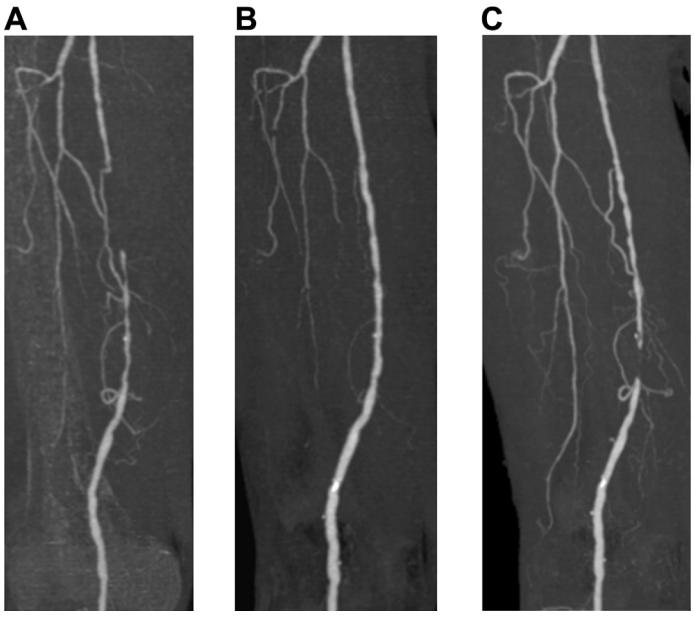
From the Department of Cardiovascular Medicine, National Cerebral and Cardiovascular Center, Osaka, Japan. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received July 24, 2015; accepted July 31, 2015.

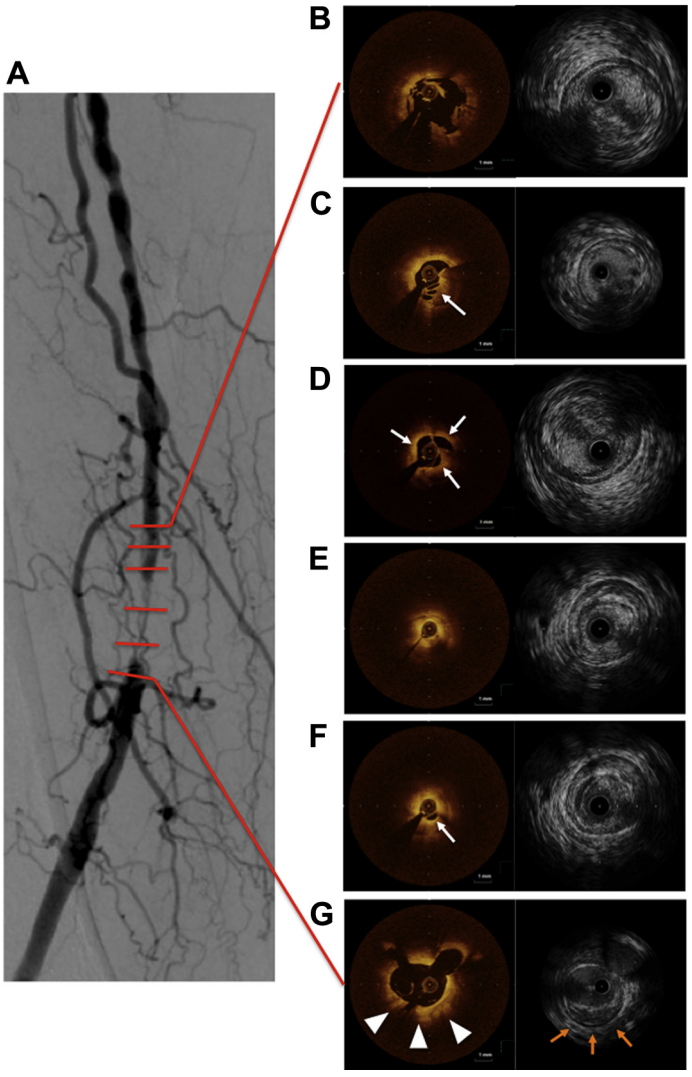
JACC: CARDIOVASCULAR INTERVENTIONS VOL. 8, NO. 15, 2015
DECEMBER 28, 2015:e251–3

FIGURE 1 Enhanced Computed Tomography 1 Year Earlier and on Admission



(A) Right superficial femoral artery occlusion at the onset of acute limb ischemia 1 year earlier (data at first admission and before Fogarty thrombectomy). **(B)** No significant stenosis 1 month after successful Fogarty thrombectomy removing the thrombotic occlusion. **(C)** Development of a focal stenosis in the superficial femoral artery on the second admission that had been patent at the first admission for acute limb ischemia 1 year earlier.

FIGURE 2 Angiographic and Intravascular Imaging of OCT and IVUS



(A) Angiographic finding of severe focal stenosis in the right superficial femoral artery, which was consistent with enhanced computed tomography findings. **(B)** Fragment of thrombus or intima. **(C,D)** Moderate stenosis with multiple channels observed by OCT **(white arrows)**. **(E)** Severe stenosis due to developing intimal hyperplasia. **(F)** Severe stenosis with a microchannel observed on OCT **(white arrow)**. **(G)** Echolucent plaque on IVUS **(orange arrows)** and low-intensity plaque on OCT **(arrowheads)** suggesting lipid-rich plaque. IVUS = intravascular ultrasound; OCT = optical coherence tomography.

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KEY WORDS acute limb ischemia, imaging, peripheral artery disease