

## Case report on Sapphire II Balloon Catheter



Satoru Sumitsuji, MD  
Interventional Cardiologist

Doctor Satoru Sumitsuji is Associate Professor of Advanced Cardiovascular Therapeutics at the Osaka University Hospital, Osaka, Japan.

### Background

The patient was a female in her early 60's with a normal lifestyle. Her CAD risk factors included hypertension, diabetes, dyslipidemia, and a history of smoking. She was asymptomatic, but her ECG at health checkup showed considerable abnormality and further heart examination also showed ischemic signs in stress ECG and stress SPECT.

### PCI Procedure

A coronary angiogram (CAG) was performed and CAG revealed severe triple vessel disease including a total occlusion (TO) in the left anterior descending artery (LAD) [Fig.1]. After discussion with the patient and her family, cardiologists, and cardiovascular surgeons, percutaneous coronary intervention (PCI) was performed.

During the first PCI session, severe stenosis in the right coronary artery (RCA) were treated with a drug eluting stent (DES), but antegrade approach to LAD failed. During the second PCI session, TO in LAD was attempted again starting with the antegrade approach at both the right radial and femoral arteries. For the antegrade approach, a 6F Cordis XB 3.5 guiding catheter, a Terumo Finecross 150cm micro-catheter, and an Abbott PILOT 50 as the first guidewire (GW) for TO wiring were used. The PILOT 50 failed to cross the distal true lumen and was replaced with an Asahi Conquest Pro as second GW but it also failed to cross.

The Retrograde approach was then attempted with a 6F RU guiding catheter, Terumo Finecross micro-catheter, and a Terumo Runthrough Ex Floppy as GW for channel crossing which fortunately easily crossed a retrograde channel from the posterior descending artery of RCA to LAD through a septal branch. Next, we advanced Finecross to cross the channel but it failed and the Corsair micro-catheter also failed to cross the septal channel [Fig.2a]. Since it is of primary importance for device crossing and advancing during retrograde approach, we tried to cross the lesion with a balloon catheter. Thanks to the extraordinary crossability of Sapphire II (1.0x10mm), it advanced through the septal channel where the highly-crossable micro-catheter Corsair failed to do so [Fig.2b], but Sapphire II helped create a channel for Finecross to advance into the LAD [Fig.2c].

Afterwards, routine procedural steps of wire crossing through a TO lesion via retrograde approach and balloon dilatation were performed followed by stenting using DES. Final result is shown in [Fig.3] with LAD being nicely revascularized without any trouble. The case required 2 hours of procedure time, 230ml of contrast, and 50.4 min of fluoroscopy time.

### Discussion

In this case, revascularization of the LAD with the antegrade approach was quite tough because the TO started from the ostium; thus the only way to achieve success was by retrograde approach. The Retrograde approach also posed difficulties, including channel selection, GW and micro-catheter crossing through the channel. Although we already have very advanced and sophisticated micro-catheters (Finecross and Corsair) these days for channel crossing, we sometimes still face challenges. This case demonstrated the crossability of Sapphire II under circumstances which advanced micro-catheters could not perform.

