



Ken Kozuma, MD, PhD  
Interventional Cardiologist

## Superb crossability of the Sapphire II Balloon Catheter

Doctor Ken Kozuma is an interventional cardiologist at the Teikyo University Hospital, Tokyo, Japan.

### Background

An 81 year old male patient underwent PCI in 2005 with two sirolimus-eluting stents (2.5x23mm & 3.0x28mm) implanted in the LAD artery. His coronary risk factors included hypertension and dyslipidemia. He was referred to the hospital because of effort angina (CCS class 2). Coronary angiogram [Fig.1] revealed a total occlusion at the proximal right coronary artery (RCA).

### PCI Procedure

PCI was performed at the RCA total occlusion via femoral approach using a 7F guiding catheter (SAL 1.0 SH) for strong back-up. The lesion was severely calcified and diffusely diseased. With the support of an Asahi Corsair micro-catheter, a Wizard 1g guidewire could not cross the lesion and was replaced by a Wizard 3g guidewire which managed to advance into the distal lumen. Because Corsair could not cross the lesion, a 1.2x6mm Abbott Mini TREK was chosen to pass the occluded segment but it also failed to do so [Fig.2]. A 1.0x10mm OrbusNeich Sapphire II was then selected and it successfully crossed the distal lesion [Fig.3] for pre dilatation [Fig.4]. An upsized 2.5mm non-compliant balloon was then used to further dilate the vessel (up to 22 atmospheres) for optimal preparation prior to stenting. Three Promus stents (2.5x28, 3.0x23 & 3.0x18mm) were subsequently deployed using buddy wire technique [Fig.5] and the patient has since been free of angina. Follow-up angiogram at 9 months after the procedure showed good results [Fig.6].

### Discussion

In general, there are several devices and techniques which could have been considered for this situation to cross the severe stenosis:-

#### Anchor Balloon Technique

The Anchor balloon technique would normally be the most standard option and could have been the best option for this particular case due to good visibility of the conus branch. However, coaxial alignment of the Amplatz guiding catheter could have been compromised by guidewire and balloon placement to the conus branch; thus advantages of anchor balloon technique, along with disadvantages of the less coaxial back-up as well as the cost of the anchor balloon, were taken into account.

#### Tornus Micro-catheter

The Tornus micro-catheter in general provides good guidewire support and better back-up on some occasions, but it requires tough efforts on multiple rotations to advance the catheter.

#### Use of Stronger Back-up Guiding Catheter

Guiding catheter stability is important, but replacement of a guiding catheter is often technically difficult.

#### Child-in-Mother Technique

The child-in-mother technique provides strong support from deep-seating more distally into the vessel, but the technique could not be applied in this situation because of the proximal location of the lesion.

In retrospect, the use of the Sapphire II balloon from the very beginning of the case would probably have been the best option and should have been selected.

