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REPLY: Aggressive Post-Dilation of Coronary Stents and Restenosis



We thank Drs. Chacko and Lim for their interest in and their comments on our study (1). They indicated that “aggressive” post-dilation using noncompliant balloons according to the manufacturer’s instructions did not increase the risk for in-stent restenosis (ISR) in their database of 277 patients.

The concept that bigger is better (which can be achieved only by sizing with a noncompliant balloon) has been in use in coronary artery stent implantations since the introduction of bare-metal stents (2) and is still widely accepted (2) in the era of drug-eluting stents (DES). As a result, intravascular ultrasound guidance for optimization of coronary intervention is recommended by most researchers (3).

In our study (1), we analyzed independent factors for stent fracture that result in ISR. In line with previous studies (4), our results demonstrated that some patients with stent fracture were asymptomatic. The interplay between fractured stent and vessel wall may be predictor of the occurrence of ISR. However, mechanical features of DES (including strut thickness, maximal expansion, so on) predict the risk for stent fracture.

In terms of the “overexpansion” of DES, there are some issues that remain ill defined. First, what is the definition of overexpansion? In practice, we perform post-dilation after DES implantation using a non-compliant balloon with a 1:1 to 1.1:1 ratio (5). Use of a larger balloon is commonly seen when a small-diameter stent is deployed. For example, we found (1) that a balloon/stent ratio of 1:1.5 is associated with high incidence of stent fracture; for example,

a stent 3.0 mm in diameter is overdilated by a balloon 3.5 mm in diameter. Inflation pressure of noncompliant balloons is another concern. Nominal pressures of noncompliant balloons are between 10 and 12 atm. Very high pressure inflation easily leads to edge dissection, which may not be visible on angiography. Furthermore, it is necessary to identify the correlation of “very high pressure post-dilation” with ISR.

In conclusion, our data demonstrate that a balloon/stent ratio <1.15 should be used to avoid the occurrence of stent fracture.

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