Response to Letter Regarding Article, “Incidence and Clinical Impact of Stent Fracture After Everolimus-Eluting Stent Implantation”

We thank Dr Paul D. Williams, Dr Mama A. Mamas, and Dr Douglas G. Fraser for their interest in our article. First, we investigated the stent fracture after Xience V (Abbott Vascular) and Promus (Boston Scientific). As they note, our results, therefore, do not apply to all everolimus-eluting stents.

Second, they suggest that double stent strut layer shown in Figure 4 is the consequence of stent fracture rather than longitudinal stent deformation. Actually, it may well be that there is considerable overlap between stent fracture and longitudinal stent deformation, because many morphological features and their risk factors are common. We would think that the incomplete stent fracture (partial stent damage) occurs initially, and then the incomplete fractured struts are longitudinally displaced as shown in Figure 4. Thus, the definition of longitudinal stent deformation detected in our article may be different from that previously reported. To our knowledge, however, the stent fracture such as shown in Figure 4 has not yet been reported in the first-generation drug-eluting stent. The mechanism may be specific to the thin-strut drug-eluting stent.

Third, several studies have demonstrated that flexibility is one of the important contributors regarding the incidence of stent fracture, and stents with high flexibility may have a low risk of stent fracture. However, the contributors of stent fracture are not only flexibility but also longitudinal strength because repetitive cardiac contraction exposes the stent to compression, torsion, kinking, elongation, bending, and shear stress. Hence, the stent fracture with longitudinal stent displacement may occur in the stents with high flexibility and low longitudinal strength, and we have to investigate the incidence and clinical impact of stent fracture after those stents implantation in daily practice. Moreover, as they point out, the improvement of 1 stent attribute may adversely affect other attributes in terms of stent platform. We would, therefore, have to consider the optimal balance between longitudinal stent integrity and flexibility in the development of newer drug-eluting stent.

Disclosures

None.

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References


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