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Association of Angulation at Stent Edge and Plaque Increase or Negative Remodeling

To the Editor:

With interest we read the article by Dr Kim et al[1] evaluating whether mechanical stress imposed on the stent edge would cause vessel wall injury and inflammation, which may consequently lead to edge restenosis after drug-eluting stent (DES) implantation. At follow-up coronary angiography, the maximal angle between the tangents of 2 adjacent segments inside/outside the stent edge and the difference between the maximal and minimal angles during cardiac cycle were larger in patients with edge restenosis (n=25) than in patients with in-stent restenosis without edge restenosis (n=94).

Using serial volumetric intravascular ultrasound (IVUS), we have shown that plaque increase at the edges significantly correlates with the degree of vessel bending after bare metal stent (BMS) implantation.[2] In addition, several IVUS studies have demonstrated that the behavior of the lumen, plaque and vessel area (remodeling) depend on location (proximal or distal stent edge) as well as stent type (DES or BMS).[3] Restenosis is caused by plaque increase and/or negative remodeling. Therefore, it would be of great help if the authors provided data on whether the degree of vessel bending correlated with plaque increase or negative remodeling at the edges after DES implantation.

References

1. Kim YG, Oh IY, Kwon YW, Han JK, Yang HM, Park KW, et al. Mechanism of edge restenosis after drug-eluting stent implantation. *Circ J* 2013; **77:** 2928–2935.
2. Yamaguchi H, Kaneda H, Ikeno F, Courtney KB, Sonoda S, Sakurai R, et al. Impact of coronary artery bending at stent edges on subsequent plaque proliferation: A serial volumetric intravascular ultrasound analysis (Abstract). *J Am Coll Cardiol* 2004; **43:** A85, doi:10.1016/S0735-1097(04)90354-3.
3. Wakabayashi K, Waksman R, Weissman NJ. Edge effect from drug-eluting stents as assessed with serial intravascular ultrasound: A systematic review. *Circ Cardiovasc Interv* 2012; **5:** 305–311.

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