Response to Letters Regarding Article, “MRI-Induced Stent Dislodgment Soon After Left Main Coronary Artery Stenting”

The authors would like to thank Dr Porto et al and Dr Lederman et al for their interest in the case report. Dr Porto et al have raised 2 issues. The first issue relates to the rationale of clinical decision making and appropriateness of techniques used for percutaneous coronary intervention of the left main stenosis, and the second issue relates to the effects of MRI on the Cypher stent. Dr Lederman et al are also skeptical about the stent migration observed and would like to attribute this to iatrogenic or natural causes. Dr Lederman et al also share their experiment with a single 3.0x28 mm Cypher stent in a 1.5T MRI scanner that showed a deflection of 5° after an unspecified duration of exposure.

The authors would like to clarify that left main lesion was angiographically significant with evidence of myocardial ischemia on non-invasive imaging to guide management decisions. In addition, the intravascular ultrasound showed a lumen cross-sectional area of 5.1 mm², a left main cross-sectional area best treated by revascularization for improved long-term prognosis. For the percutaneous coronary intervention technique, the angiographic and intravascular ultrasound images confirm the appropriate selection of stent length and diameter, with excellent procedural result substantiated final angiographic and intravascular ultrasound images showing complete lesion coverage including ostium, adequate stent apposition, symmetrical stent expansion, and no residual stenosis. Therefore, there remains little doubt for the immediate procedural success and absence of iatrogenic causes for observed complication.

With regards to the second issue for the safety of coronary stents in the MRI environment, the authors would agree that all 316L stainless steel stents are weakly ferromagnetic, and available evidence confirms the safety of MRI for most patients after stenting. However, it is important to note that interactions of stent implants with MRI environment are dependent on the strength of the magnetic field, duration of exposure, the degree of stent ferromagnetism, as well as the size, location, orientation, and geometry of the implanted stent. All confounding parameters of a clinical setting may be difficult to replicate in the experimental testing commonly used to study this phenomenon. Hug et al have previously investigated movement, heating, and artifact for bare metal stents after 30 minutes of exposure in a 1.5T MRI environment and reported stent deflection in the range of 1° to 3°. Similarly, Shelloch and Forder reported a deflection of 5°4 for a drug-eluting stent after 20-minute exposure in the 3T MRI scanner, findings similar to those noted by Dr Lederman et al. Because of the variability of interaction between different stent platforms and MRI environment, Food and Drug Administration continues to mandate extensive preclinical evaluation for MRI safety of stent implants.

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References

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