

28 meta-analyses that have compared intravascular imaging-guided versus angiography-guided drug-eluting stent implantation. In the most recent meta-analyses of the randomized clinical trials, intravascular imaging guidance has a mortality advantage compared with angiographic guidance (2), a finding that has also been seen in just about every study comparing intravascular imaging-guided to angiography-guided drug-eluting stent implantation for left main disease (3). Although we acknowledge that intravascular imaging guidance is not Class I in the guidelines, the guideline committees (in both Europe and the United States) have not followed their own rules when it comes to intravascular imaging. Furthermore, we recently surveyed attendees at the 2018 and 2019 Cardiovascular Research Foundation (New York, New York) Interventional Fellows Course as to their preparedness to be independent in the use of intravascular imaging and physiology. Only 15% reported independence in all components of intravascular ultrasound assessment and 18% in all components of optical coherence tomography (4). This is no surprise, given the opinions by an icon such as Bates (1), who commented, “Some of the more than 250 trainees who have had that experience with me may break into a smile if they read this and recall my repetitive exhortations,” including “Don’t overuse intravascular imaging.”

Although we acknowledge and support angiography as the cornerstone of percutaneous coronary intervention, it has several limitations that are overcome by intravascular imaging. Thus, we suggest that “overusing” intravascular imaging is analogous to being “too safe.”

Ziad A. Ali, MD, DPhil

*Gary S. Mintz, MD

*Cardiovascular Research Foundation

1700 Broadway, 9th Floor
New York, New York 10019

E-mail: gsm18439@aol.com

<https://doi.org/10.1016/j.jaccas.2020.01.022>

© 2020 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please note: Dr. Ali has received institutional research grants to Columbia University from Abbott and Cardiovascular Systems Inc.; and has served as a consultant for Abbott, Abiomed, AstraZeneca, and Shockwave. Dr. Mintz has received honoraria from Boston Scientific, Philips, Terumo, and Medtronic.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors’ institutions and Food and Drug Administration guidelines, or patient consent where appropriate. For more information, visit the *JACC: Case Reports* author instructions page.

REFERENCES

1. Bates ER. Requiem by a member of the inaugural generation of interventional cardiologists. *J Am Coll Cardiol Case Rep* 2019;1:886-8.

2. Elgendy IY, Mahmoud AN, Elgendy AY, Mintz GS. Intravascular ultrasound-guidance is associated with lower cardiovascular mortality and myocardial infarction for drug-eluting stent implantation—insights from an updated meta-analysis of randomized trials. *Circ J* 2019;83:1410-3.

3. Elgendy IY, Gad M, Jain A, Mahmoud AN, Mintz GS. Outcomes with intravascular ultrasound-guided drug eluting stent implantation for unprotected left main coronary lesions: a meta-analysis. *Am J Cardiol* 2019;124:1652-3.

4. Flattery E, Rahim HM, Petrossian G, et al. Competency-based assessment of interventional cardiology fellows’ abilities in intracoronary physiology and imaging. *Circ Cardiovasc Interv* 2020;13:e008760.

REPLY: Intravascular Imaging: Too Much or Too Little of a Good Thing?



Overuse and underuse are important concepts in the optimal performance of any medical procedure. My exhortation not to overuse intravascular imaging is made without intellectual or financial bias and is taught in every percutaneous coronary intervention (PCI) training program where appropriate procedure use is emphasized (1). It is not inconsistent with your enthusiasm for the technique, unless you support routine use of intravascular imaging after stent implantation. I strongly support intravascular imaging in selected cases where angiography is insufficient to complete a safe and successful PCI, but routine use is not embraced by 99% of interventional cardiologists, and the concept that it improves outcomes is challenged by the very low stent thrombosis and restenosis rates associated with PCI using current technology. What has decreased is close attention to optimal stent implantation technique by angiographic criteria. The well-trained interventional cardiologist should not need routine intravascular imaging to diagnose underexpansion during routine stent implantation.

*Eric R. Bates, MD

*University of Michigan Medical Center

Internal Medicine-Cardiology
CVC Cardiovascular Medicine
1500 E. Medical Center Drive, SPC 5869
Ann Arbor, Michigan 48109-5869

E-mail: ebates@umich.edu

<https://doi.org/10.1016/j.jaccas.2020.02.001>

© 2020 The Author. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please note: Dr. Bates has reported that he has no relationships relevant to the contents of this paper to disclose.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors’ institutions and Food and Drug Administration guidelines, or patient consent where appropriate. For more information, visit the *JACC: Case Reports* author instructions page.

REFERENCE

1. Bates ER. Requiem by a member of the inaugural generation of interventional cardiologists. *J Am Coll Cardiol Case Rep* 2019;1:886-8.