

Letters

TO THE EDITOR

Organized Thrombus Mimicking Spontaneous Coronary Artery Dissection



We read with great interest the case by Sengottuvelu and Rajendran (1), published in the *Journal* regarding vascular scaffolds for spontaneous coronary artery dissection (SCAD). A SCAD is an uncommon cause of acute myocardial infarction and has an incidence of 0.1% to 1.1% of all acute coronary syndromes (2,3). In addition to the rarity of this condition, SCAD is also underdiagnosed or misdiagnosed because of the low spatial resolution of angiography along with the lack of physician familiarity with its angiographic variants. The main angiographic findings of SCAD proposed by Saw (2) are: 1) (type I) contrast dye staining of the arterial wall with multiple radiolucent lumen—the pathognomonic angiographic appearance of SCAD; 2) (type II) an abrupt change in arterial caliber, with demarcation from normal diameter to diffuse narrowing; and 3) (type III) in which SCAD mimics atherosclerosis. The prevalence is higher in young women <50 years of age and, in general, with no visible angiographic atherosclerosis. Optical coherence tomography (OCT) findings have been reported as visualization of an intimomedial membrane with a double-lumen or crescent-shaped intramural hematoma (3) with or without intimal tear. Thus, we respectfully disagree with the authors (1) by describing the patient's angiography as suggestive of SCAD. The angiography does suggest a diffuse, filiform, and large burden of intraluminal thrombus alone, substantially diminished with days of antithrombotic drugs. Of note, the presence of such an amount of thrombus is infrequent in SCAD, even in ST-segment elevation myocardial infarction patients. Indeed, myocardial ischemia during SCAD is triggered by pressure-driven expansion of the lumen inducing axial propagation of the dissection and true lumen compression, not related to a thrombotic event. Finally, the OCT findings documented by the authors (1) depict well-organized thrombus, with

multiple channels at some point, with a focal intimal flap; the presence of a typical aforementioned OCT signature in patients with SCAD (i.e., intimomedial membrane with a double-lumen or intramural hematoma) is also lacking in this case. OCT video, either at baseline or post-scaffold implantation (because it may also show residual abluminal hematomas behind the struts in SCAD), will be helpful for the readers to differentiate an actual SCAD from a simple atherothrombotic phenomenon.

Jamil R. Cade, MD

Alexandre Abizaid, MD, PhD

*Adriano Caixeta, MD, PhD

*Hospital Israelita Albert Einstein, and

Escola Paulista de Medicina

Universidade Federal de São Paulo

Rua Napoleão de Barros, 715

04024-002 São Paulo, SP

Brazil

E-mail: adriano.caixeta@einstein.br

<http://dx.doi.org/10.1016/j.jcin.2014.08.004>

REFERENCES

1. Sengottuvelu G, Rajendran R. Full polymer jacketing for long-segment spontaneous coronary artery dissection using bioresorbable vascular scaffolds. *J Am Coll Cardiol Interv* 2014;7:820-1.
2. Saw J. Coronary angiogram classification of spontaneous coronary artery dissection. *Catheter Cardiovasc Interv* 2013 Nov 13 [E-pub ahead of print].
3. Paulo M, Sandoval J, Lennie V, et al. Combined use of OCT and IVUS in spontaneous coronary artery dissection. *J Am Coll Cardiol Img* 2013;6:830-2.

REPLY: Organized Thrombus Mimicking Spontaneous Coronary Artery Dissection



We read the letter from Dr. Cade and colleagues in response to our paper (1) with great interest and would like to share our views. Optical coherence tomography (OCT) with very high resolution can be considered the gold standard (2) to diagnose coronary artery dissection, but in a given case it may be limited by the residual blood, shadowing, or insufficient penetration and intravascular ultrasound may be complementary (3). Demonstration of an intimomedial membrane with double lumen appearance or an intramural hematoma with or without an entry point on OCT is important for diagnosis of spontaneous coronary artery dissection (4). In the case we presented, our angiographic diagnosis was diffuse

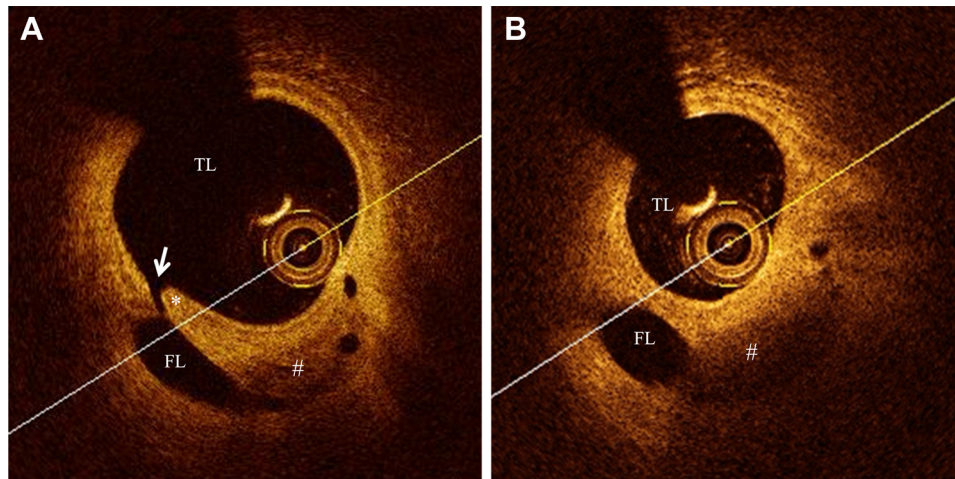


FIGURE 1 Intimo-Medial Discontinuity and Organized Thrombus

(A) Optical coherence tomography from the distal right coronary artery with the catheter in the true lumen (TL) showing the intima-medial discontinuity (arrow indicating the entry point) leading into the false lumen (FL), which has an organized thrombus (*). (B) Double lumen appearance showing true and false lumen with organized thrombus (#) in the false lumen.

organized intraluminal thrombus. This patient presented a few weeks after acute coronary syndrome and hence the typical angiographic contrast staining may not be seen. OCT runs showed areas of clear dissection flap with intramural hematoma and areas of organized thrombus both intraluminal and in the subintimal space (Figures 1A and 1B, Online Video 1). There are also areas of organized intraluminal thrombus with recanalization in other parts of the vessel. In their letter, Jamil et al. have brought out an important point for discussion as both organized intraluminal thrombus and dissection may mimic each other in OCT, and a practitioner needs to consider both in the differential diagnosis and both may be seen in the same patient. The best way to differentiate between them is to study the moving frames of the OCT run to understand its continuity. The other factor to be considered in a possible dissection flap is the documentation of discontinuity within the layers of vessel wall with intramural hematoma. Both these findings in this case favor a diagnosis of spontaneous coronary artery dissection.

Spontaneous coronary artery dissection has been shown to have a high tendency for spontaneous healing, and the process would obviously involve thrombus formation and organization within the intramural hematoma. It is prudent to note that this case was studied a few weeks after acute coronary

syndrome and organized thrombus within the intramural hematoma are seen in various stages of natural healing.

*Gunasekaran Sengottuvelu, MD, DM
Ravindran Rajendran, MD, DM

*Cardiology Department
Apollo Hospitals
21 Greaves Lane
Off Greaves Road
Chennai 600006
India

E-mail: drsgeng@gmail.com

<http://dx.doi.org/10.1016/j.jcin.2014.09.004>

REFERENCES

1. Sengottuvelu G, Rajendran R. Full polymer jacketing for long-segment spontaneous coronary artery dissection using bioresorbable vascular scaffolds. *J Am Coll Cardiol Interv* 2014;7:820-1.
2. Giacoppo D, Capodanno D, Dangas G, Tamburino C. Spontaneous coronary artery dissection. *Int J Cardiol* 2014;175:8-20.
3. Paulo M, Sandoval J, Lennie V, et al. Combined use of OCT and IVUS in spontaneous coronary artery dissection. *J Am Coll Cardiol Img* 2013;6:830-2.
4. Alfonso F, Paulo M, Gonzalo N, et al. Diagnosis of spontaneous coronary artery dissection by optical coherence tomography. *J Am Coll Cardiol* 2012;59:1073-9.

APPENDIX For the accompanying video, please see the online version of this paper.