# Scientific Puzzle - Answer

## P. 141

#### Answer: B. Free-floating thrombus

Bubble: Coronary air embolism: latrogenic introduction of air into the coronary vasculature results in coronary air embolism. It is an uncommon complication during cardiac catheterization with an incidence of 0.1–0.3%. Vascular air embolism increases microvascular permeability, and platelet aggregation occurs due to turbulent flow. The primary management of coronary air embolism is prevention. Careful catheter aspiration and flushing of coronary equipment should be performed at all times (1). This is essential to prevent this potentially life-threatening complication. In this case, there was no visualization of air bubbles traversing through the catheter. Therefore, the diagnosis of *coronary air embolism* is not suitable for this case.

Cholesterol crystal embolism/Atheroembolism: The term cholesterol crystal embolism is used synonymously with cholesterol embolism or *atheroembolism*. Cholesterol emboli are characterized by arterio-arterial embolization of cholesterol crystals and atheroma debris from atherosclerotic plaques in the aorta or its large branches to small- or medium-caliber arteries (100–200 µm in diameter); this frequently occurs after traumatic plaque rupture during invasive arterial procedures. The result of such embolization is tissue and organ damage produced by multiple small artery occlusions (e.g., "blue toe" syndrome, retinal ischemia, renal failure, livedo reticularis, and intestinal infarction) (2). Since there is no single clinical, imaging, or laboratory finding pathognomonic of the cholesterol embolism syndrome, a high degree of clinical suspicion is necessary for establishing the diagnosis. Traumatic plaque rupture may be related to blunt trauma or may result from iatrogenic manipulation of arteries, such as during catheterization or cardiovascular surgery. Although plaque debris has been isolated from >50% of guiding catheters in one series, atheroembolism is a relatively rare complication of cardiac catheterization. There is no significant difference among the risks of this complication between femoral access and radial access; this suggests that the ascending aorta is the main source of embolus (3). Nevertheless, the diagnosis cannot be cholesterol crystal embolism/Atheroembolism because of the event visualized at the saphenous vein graft.

Free-floating thrombus: *Free-floating thrombus* is an appropriate diagnosis for this patient. After bolus infusion to saphenous vein graft by catheter, we continued abciximab intravenous infusion for 24 h. After 24 h, cardiac catheterization was performed again, and no thrombus was visualized.

## Kadir Uğur Mert, Gurbet Özge Mert, Can Yücel Karabay, Arzu Kalaycı Department Cardiology, Eskişehir Yunus Emre State Hospital, Eskişehir-*Turkey*

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