IMAGES IN CARDIOLOGY

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A forty nine years old man, known diabetic, hypertensive and nonsmoker with body mass index (BMI) of 27 had an elective percutaneous coronary intervention (PCI) to a tight lesion in proximal to mid part of left anterior descending artery (LAD). Two Taxus stents (DES) measuring 3x28 mm and 3x20 mm were deployed in mid and proximal segments of LAD respectively, overlapping each other. Patient was discharged on dual antiplatelet therapy which he took regularly. Three months after this procedure, he presented with exertional chest pain functional class II-III. His conventional angiogram showed total occlusion of stent at its inlet and distal vessel was faintly visualized. He was referred for visualization of LAD on 64 slice Multi Detector Computerized Tomography (MDCT) scan. Below are the MDCT images.

Figure 1:

The first image is a Multi Planner Reformation (MPR) curved image of LAD showing hypo attenuation (white arrows) within the entire length of stent signifying total occlusion of stent starting from inlet of the stent; LAD after the stent is small caliber (1 mm) and hence a poor target for surgical revascularization. The second image is volume rendering (VR) 3D image showing bright metallic stent (black arrow) in the interventricular groove and LAD is not visualized after the stent.

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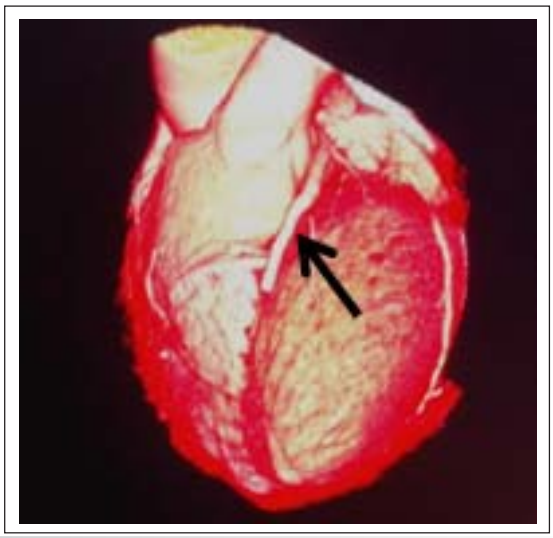

Figure 2:

(J Cardiovasc Dis 2013;11(1):26-27)

The diagnostic accuracy of MDCT in evaluation of coronary stents has gradually increased from the old generation 4, 16 and 40 slice scanners to the new generation 64 slice scanners. Data from 24 studies of which 18 studies were on 64 slice scanners was reviewed.[1] Almost all stents could be evaluated with 64-slice MDCT; overall feasibility and diagnostic accuracy were reported to be 90.4% and 91.9%, respectively. It is expected that newer MDCT and stent generations will further improve our ability to assess coronary stents with this non invasive modality.

The factors responsible for evaluation of stents on MDCT are stent material and stent diameter. Diameters < 3mm were evaluated with difficulty due to metallic artifacts than the stents with diameters > 3mm. The stent strut size causes bloom artifact resulting in difficulty in luminal assessment of coronary artery2.

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