

SPECIALISTFOCUS

Cardiac CT Technology

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Cardiac CT technology has been available since 1999. From four to 16, 64 and now 128-slice and dual-source Cardiac CT scanners, the field has made significant technical advances over the years.

There are still two broad categories of studies possible with Cardiac CT. **They are Coronary Artery Calcium Scoring and CT Coronary Angiography.** The field is evolving and many of the indications are under review as an increasing volume of clinical studies become available.

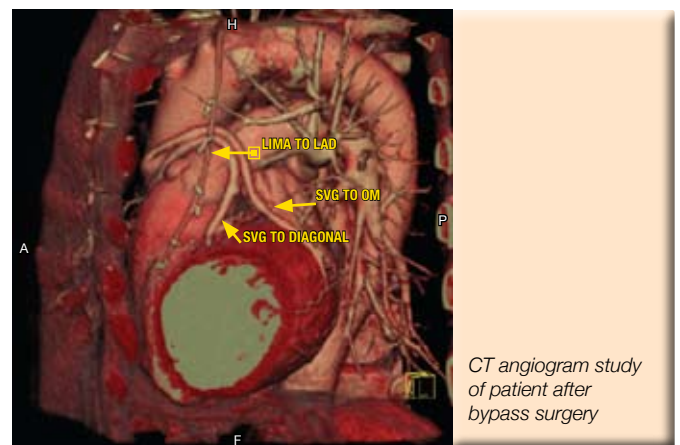
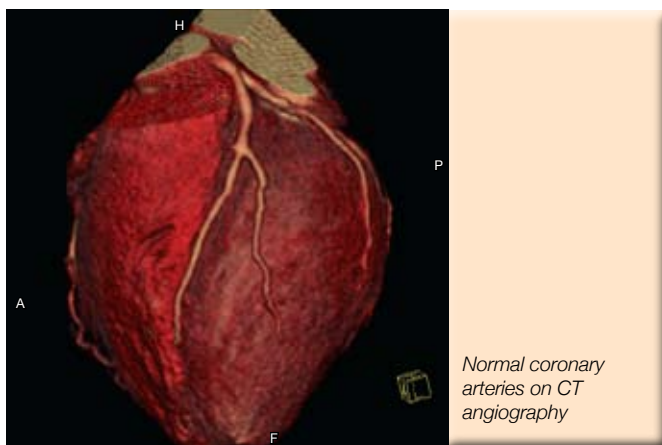
The strengths of the technique include the very rapid acquisition-time of the studies, the relative ease of performance, and the impressive quality of images when well-acquired. On the other hand, there are valid concerns regarding radiation exposure and the avoidance of unnecessary studies.

There has been great interest in the technique from the side of both physicians and patients. However, as with all new technologies, Cardiac CT's exact place in the armamentarium of cardiology investigations needs to be clearly defined. This will happen as new studies on its utilisation and cost-effectiveness are performed.

The following summarises the most-widely accepted indications for Coronary Artery Calcium Scoring and CT Coronary Angiography at the time of publication (ref: AHA Scientific Statement: Assessment of Coronary Artery Disease by Cardiac Computed Tomography. *Circulation*. 2006;114:1761-1791.)

Interpretation and Recommendations for CT Heart Scanning and Coronary Artery Calcified Plaque (CACP) Scoring

1. A negative test (score 0) makes the presence of atherosclerotic plaque, including unstable or vulnerable plaque, highly unlikely.
2. A negative test (score 0) makes the presence of significant luminal obstructive disease highly unlikely (negative predictive power by EBCT on the order of 95 per cent to 99 per cent).
3. A negative test is consistent with a low risk (0.1 per cent per year) of a cardiovascular event in the next two to five years.
4. A positive test (CAC>0) confirms the presence of a coronary atherosclerotic plaque.
5. The greater the amount of coronary calcium, the greater the atherosclerotic burden in men and women, irrespective of age.
6. The total amount of coronary calcium correlates best with the total amount of atherosclerotic plaque, although the true "atherosclerotic burden" is underestimated.
7. A high calcium score (an Agatston score>100) is consistent with a high risk of a cardiac event within the next two to five years (>two per cent annual risk).



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