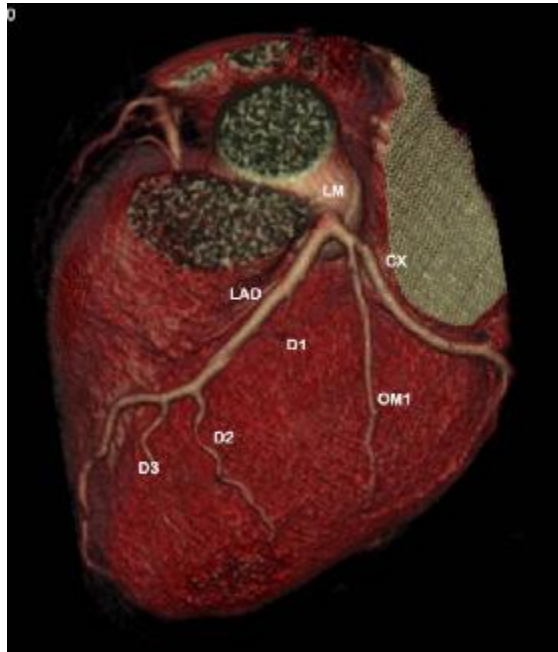




Cardiac CT

Calcium scoring
Coronary artery imaging
Wall motion and ejection fraction



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Disclaimers:

- Cardiac CT for coronary arteries is essentially a screening tool.
- The negative predictive value is greater than 95%. That means that when the study is normal, it is almost definite that there is no coronary artery disease.
- In an abnormal study, coronary CT has a tendency to overestimate or underestimate stenoses and lesions by 10-15%, especially when there is calcium as well as in vessels less than 1.5mm in size.
- If contrast is seen distal to a stenotic lesion, occlusion cannot be excluded, since there is no flow information.
- It may not be possible to accurately assess in-stent lumens in stents < 3mm in diameter.
- Soft plaques are best seen on CT and may not be seen on a conventional coronary angiogram.
- The functional information tends to be underestimated by 5-10% as compared to MRI, the

Machine Characteristics

- 3 tube rotations / second
- 10-12 secs scan time
- 64-slice CT
- 194 slices per second
- 330 ms rotation time

Why is it called Ultra-Fast CT

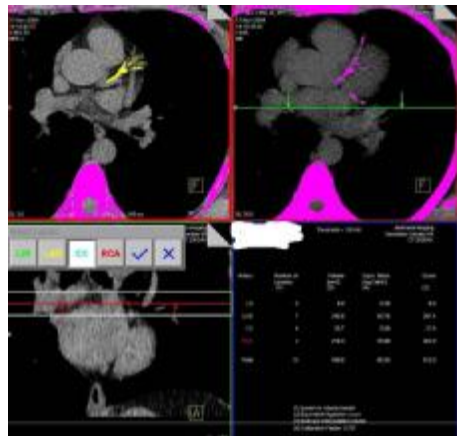


A regular CT has a tube rotation speed of 1 or .75 seconds. This CT has tube rotation speed of 330ms, i.e. approximately 3 rotations per second. This allows extremely fast scans of the body, such that routine chest and abdomen

sequences can be completed in 3-5 seconds. That is why it is called Ultra-Fast CT

How does cardiac CT work?

With such a fast scanner, it is possible to "freeze" the heart. The new 64-slice scanner obtains almost 194 slices per second. After gating with the ECG, it is possible to scan the heart in 10-12 seconds and to extract information about the coronary arteries and cardiac function from the dataset.



What preparation is involved?

- 4 hours fasting before the procedure
- Stabilization of heart rate with a beta-blocker
- Getting all old cardiac related information

What does the procedure involve?

Once the heart rate is stabilized

- A vein is cannulated
- Breathing instructions are given so that the patient can hold his/her breath for around 12 seconds
- A calcium scoring study is performed

- The "dye" is injected and the angiogram study is performed

The angiogram time is 10-12 seconds. The entire procedure takes between 15-60 minutes depending on the heart rate.

What are the various parts of the study?

The following 3 parameters are studied

- Calcium scoring
- Coronary artery assessment
- Functional assessment (wall motion and ejection fraction)

What are the indications?

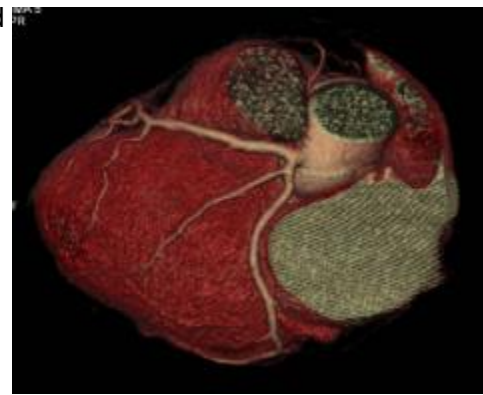
- Patients at high risk for developing coronary artery disease (high triglycerides, family history, smoking)
- Follow-up of known mild to moderate untreated disease

- Post-bypass assessment

When is it difficult to perform a cardiac CT

In patients with

- Ectopic beats and an irregular rhythm
- Those who can't hold their breath for more than 10 seconds
- Pregnant women



Are there any dangers of CT scanning?

Though X-rays involve radiation, there are no dangers, in practice. In women who are pregnant, however, CT scanning should be done after weighing all the risks and benefits.

What is the injection that I will receive?

The majority of patients will

be injected with a "dye" which enhances the ability of CT scans to pick up abnormalities. This is routine. Only a non-ionic dye (the safest) is used.

Are there any complications of the "DYE"?

0.5% percent of patients may get nausea and redness of the skin. Though severe reactions are known, these are very rare and uncommon.

Are there other instructions?

Please get all old X-rays, sonography, CT and MR films along with other papers, operative notes, discharge cards, etc. relevant to the case. There should, preferably be an accompanying friend or relative.

- Please inform the doctor, nurse or the receptionist, if you are at high risk for "dye" injection, as described above, i.e. if you have a history of drug reactions, bronchial asthma, cardiac or kidney disease, etc.

- Please inform the doctor, nurse or the receptionist if you are pregnant or think you may be pregnant.

