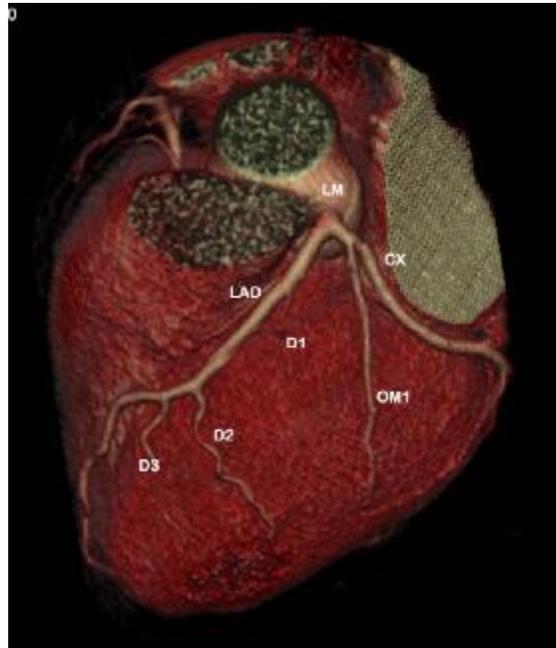




# Cardiac CT

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

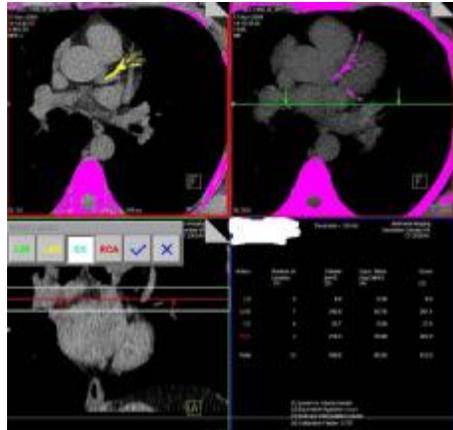


A regular CT has a tube rotation speed of 1 or .75 seconds. This CT has tube rotation speed of 330ms, i.e. approximately 3 rotations per second. This allows extremely fast scans of the body, such that routine chest and abdomen

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.

