Coronary CTA
5/1/2014

Patient Preparation

- Patient communication is crucial in achieving a high quality scan.
- This entire procedure needs to be thoroughly explained to the patient prior to starting the exam.
- After laying the patient on the table, place their arms at the 10 o’clock and 2 o’clock positions. Place the ECG leads on the patient and verify a good rhythm. If a noisy or unclear rhythm is seen the patient’s chest may need to be shaved or cleaned with alcohol swabs to help guarantee good contact with the leads are made.
- Perform the following prior to performing the procedure:
  - Rehearse the breath hold with the patient and observe the ECG response during the breath hold.
  - Explain the importance of holding still during the exam.
  - Explain the warm flush feeling that may occur during the injection of contrast.
  - Make the patient as comfortable as possible.

Power Injection Protocol

- Power injector is to be loaded with one syringe of 150ml normal saline and one syringe of 100ml Visipaque 320.
- All injections will be injected at a rate of 5ml/sec.

Acquisition Parameters

- Care kV on 120 ref kVp
- Quality ref mAs 160
- Care Dose 4D
- 64 x 0.6
- Rotation Time 0.3s
- Pitch 0.23
Scanning Parameters

- A Calcium scoring should be performed prior to the CCTA. If a patient has had prior coronary stent placement or bypass graft then the calcium scoring should be eliminated.
  
  - Test Dose is used to determine the delay for the CCTA
    - Test dose scan should be performed slightly below the carina with a focus on the ascending aorta.
    - An injection of 20ml Visipaque 320 and 50ml normal saline will be administered.
    - The test dose images will be acquired after a 10 second scan delay and will be acquired until a drop in the peak enhancement of the ascending aorta.
    - These images are then loaded into Dynamic evaluation.
    - Set a 10 second delay in the dynamic evaluation card.
    - Choose the elliptical ROI button and draw an ROI in the Ascending Aorta.
    - Add 4 seconds to the time to peak and you will have the necessary delay for the CCTA.

When evaluating a post bypass graft patient it not necessary to add the 4 second handling delay.

- Coronary CTA scan should start at the level of the carina and extend to below the base of the heart.

  Start the scan above the level of the clavicles when evaluating a post bypass graft.

After the pre-determined scan delay is set the contrast injection of 80ml Visipaque 320 and the scan will start simultaneously.

With approx. 10-15 seconds left on the scan delay the patient will be given full expiration breath hold instructions.

Reconstruction Parameters

After the scan is complete a preview series at the level of the mid heart should be performed.
Choose the R-R interval % with the least amount of motion to perform the following reconstructions.

- Recon 1 (Source Images)
  1 mm slice increment x 1 mm slice thickness
  SAFIRE- 2
  Kernel- l26f medium Smooth

- Recon 2 Reformat
  0.6 mm slice increment x 0.6 mm slice thickness
  SAFIRE- 2
  Kernel- l26f medium Smooth
  Used to create:
    - RCA, LAD, LCX rotational MPRs
    - RCA, LAD, LCX Slab MPRs
    - Colored VR images

- Recon 3 TVA/ Multi-phase reconstruction
  1.5 mm slice increment x 1 mm slice thickness
  SAFIRE- 2
  Kernel- l26f medium Smooth
  Used to perform right ventricular ejection fraction.