

Clinical Case Review

Cardiac Assessment Using a CT Scan with Image Misregistration and Vitrea® Software

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METHOD

The patient was initially imaged in Cairo, Egypt (Aero Medical Council Hospital) and Dr Mazur was asked to review this case.

FINDINGS

Using the Cardiac Arteries protocol, the Vitrea® software generated a 3D color image. A quality assessment of the original CT images was conducted. Low contrast intensity in the ventricle (less than 350 HU) and high intensity in the aorta indicated that the CT scan was triggered too late (see Figure 1).

Evaluation of mid RCA revealed misregistration artifact as well as poor opacification of distal vessel due to late contrast timing.

Axial images enabled assessment of coronary anomalies. The dominate vessel was identified, but remained fully unclassified in the original CT image (see Figure 3).

The sternum appeared intact in the sagittal view, and no respiratory artifacts were observed (see Figure 4).

Vessel tracking revealed left main and LAD free of disease and again, due to poor contrast timing, distal vessel was not well-visualized.

(Figure 4) Intact sternum, excludes breathing artifacts.

Figure 1: Quality Assessment Using Contrast Intensity



Figure 2: Evaluation of Misregistration

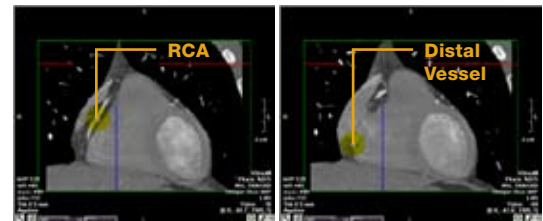
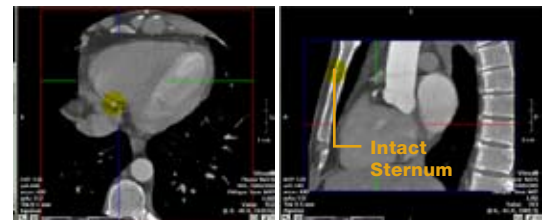


Figure 3: Identification of Dominate Vessel

Figure 4: Evaluation of Respiratory Artifact



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(Figure 5) Poor distal contrast; the image of the vessel in the distal panel is distorted (as a result of curved multiplanar reconstruction of non-isotropic voxels).

Using volume rendering, the coronary branches were then assessed. The venous system appeared to overlap the arterial system in the CT images due to late contrast timing. Manual tracking enabled easy mapping of the coronary branches and avoided jumping into cardiac veins (see Figure 6).

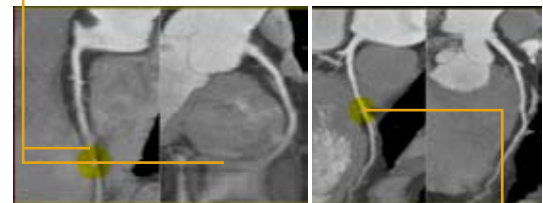
CONCLUSION

The case was reviewed in under five minutes and deemed normal. Distal vessels were not well visualized, but disease was very unlikely in absence of any proximal plaques and coronary calcium.

Figure 5: Analysis of Coronary Systems



Poor distal contrast; the image of the vessel in the distal panel is distorted (as a result of curved multiplanar reconstruction of nonisotropic voxels).



Evidence of Misregistration in the Distal Region

Figure 6: Assessment of Coronary Branches

