Post-Mortem Three-Dimensional Reconstruction of the Entire Coronary Arterial Circulation Using Electron-Beam Computed Tomography

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A 50-year-old man died suddenly while exercising on a treadmill at a local health club. He had no known previous cardiac history. During autopsy, a radio-opaque silicone compound was injected into the coronary arteries. The explanted heart was then imaged by electron-beam computed tomography (EBCT) using 3-mm slices. A complete 3D reconstruction was then obtained using commercially available software (Accumage Diagnostics). Figure 1 shows the heart rotated into the equivalent of an angiographic left anterior oblique projection. This view reveals a completely occluded proximal right coronary artery. A significant narrowing involving a diagonal artery is also visible. Figure 2 corresponds to an angiographic right anterior oblique projection. The distal right coronary arterial circulation is supplied by collaterals from the left circumflex artery, and there is significant narrowing at the origin of the posterior descending coronary artery.

Figure 1. Angiographic equivalent of a left anterior oblique projection revealing a completely occluded proximal right coronary artery (solid arrow) and a significant narrowing involving a diagonal artery (dashed arrow).

Figure 2. Angiographic equivalent of a right anterior oblique projection. The distal right coronary arterial circulation is supplied by collaterals from the left circumflex artery (dashed arrow). A significant narrowing can also be seen at the origin of the posterior descending artery (solid arrow).
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