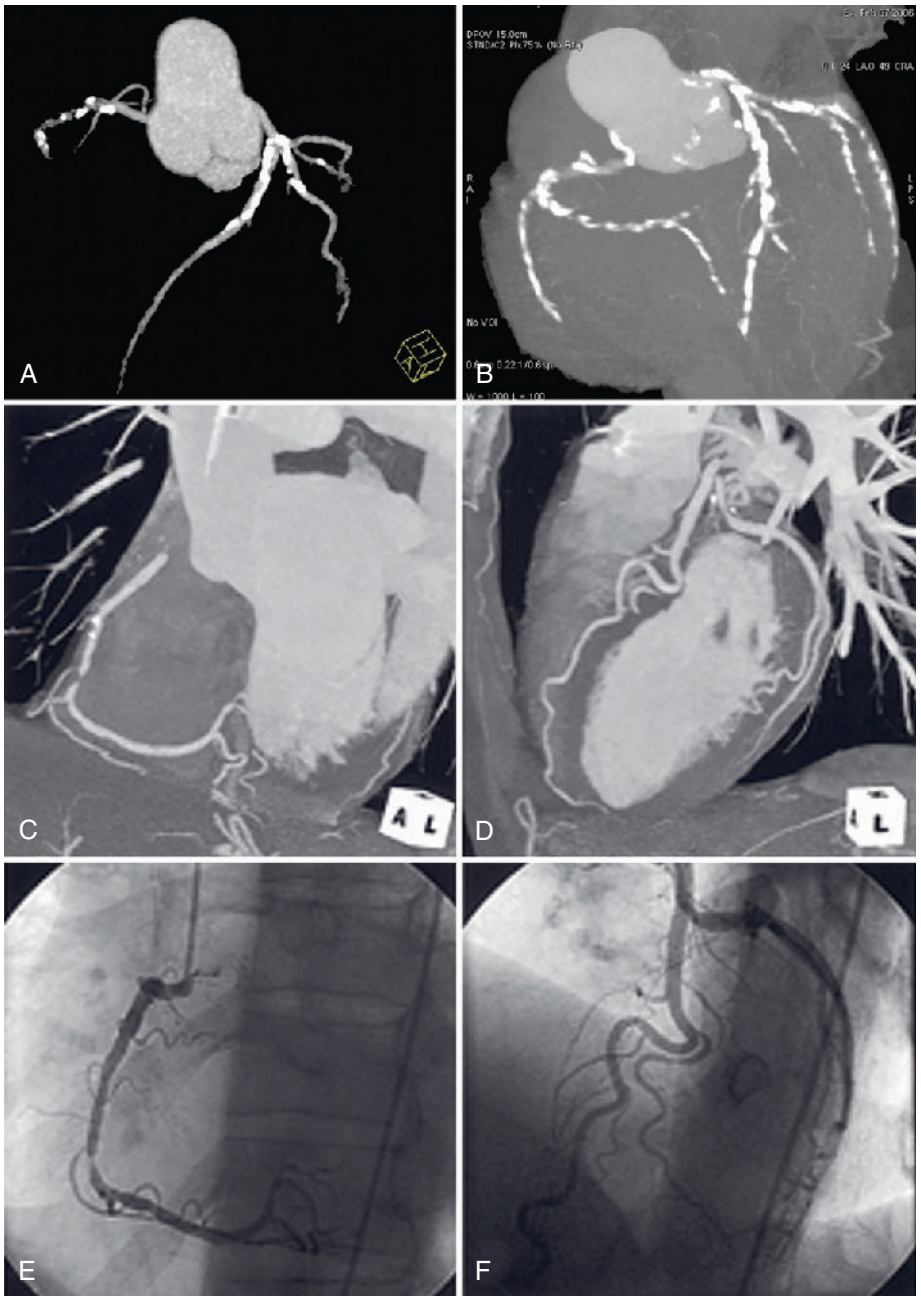

FIGURE 4-19 Computed tomography coronary angiography compared with conventional radiographic contrast angiography. **A** and **B,** Volume-rendering technique demonstrates stenosis of the right coronary artery and normal left coronary artery. **C** and **D,** Maximal intensity projection of the same arteries demonstrates severe noncalcified plaque in the right coronary artery with superficial calcified plaque. **E** and **F,** Invasive angiography of the same arteries. (From Raff GL, Gallagher MJ, O'Neill WW, et al: Diagnostic accuracy of noninvasive coronary angiography using 64-slice spiral computed tomography, J Am Coll Cardiol 46:552–557, 2005.)

with one imaging study. Formal evaluation of this hypothesis needs to be undertaken. Detractors of cardiac CT most frequently cite the risks of radiation and contrast exposure and the lack of prospective studies showing improvement in outcome with this testing modality. The calculated radiation exposure of cardiac CTA is about double that of a diagnostic invasive coronary angiogram, but it is similar to that of a typical nuclear myocardial perfusion scan. The future role of cardiac CTA in routine clinical practice remains uncertain.

Noninvasive Vascular Testing

Assessment for the presence and severity of peripheral vascular disease is an important component of the cardiovascular evaluation. Comparison of the systolic blood pressure in the upper and lower extremities is one of the simplest tests to detect hemodynamically important arterial disease. Normally, the systolic pressure in the thigh is similar to that in the brachial artery. An ankle-to-brachial pressure ratio (i.e., ankle-brachial index) of less than or equal to 0.9 is abnormal. Patients with claudication usually have an index ranging from 0.5 to 0.8, and patients with rest pain have an index less than 0.5. In some patients, measuring the ankle-brachial index after treadmill exercise may help to determine the importance of borderline lesions. During normal exercise, blood flow increases to the upper and lower extremities and decreases in peripheral vascular resistance, whereas the ankle-brachial index remains unchanged. In the presence of a