



## Case Report of Coil Embolization for Anomalous RCA Arising From the Pulmonary Artery

Written by Phil Vinall

Bimal Francis, MD, DM, Bahamas Interventional Cardiology Center, Nassau, Bahamas, presented the case of a 56-year-old Bahamian woman successfully treated by coil embolization for anomalous right coronary artery (RCA) arising from the pulmonary artery. The woman arrived at the cardiology center with very limiting palpitations, dizziness, dyspnea, and chest pain with minimal exertion. Her medical history revealed that she had had asthma with chest pain, palpitations, and diaphoresis since childhood, hypertension for 10 years, and diabetes for 1 year. A physical examination found normal vital signs, a body mass index of 33 kg/m<sup>2</sup>, and mild respiratory distress at rest, accompanied by fine crackles at the base of both the left and right lungs. Laboratory results were also normal. Multiple unifocal premature ventricular beats were noted on electrocardiography (ECG). The baseline ECG of the sinus beats showed a right bundle branch block pattern. Echocardiography showed left ventricular function of ~50%. There was no significant mitral regurgitation, no wall movement anomaly, and no abnormal flows.

Because the patient could not be stabilized, coronary angiography was scheduled. The results showed a dilated left coronary artery retrogradely filling a tortuous and dilated RCA through giant collateral vessels. The patient had no other physical cardiovascular signs; there were no murmurs. The RCA was grossly dilated, but the flow was reasonably good. The RCA was draining anomalously into the pulmonary artery, creating a steal effect. The patient tolerated the angiographic study fairly well; however, on returning to the ward, her symptoms worsened, and she was referred to a cardiothoracic surgery team, who determined that she was a poor candidate for surgery and anesthesia.

It was decided to palliate her symptoms by percutaneous closure of the RCA with coil embolization. Eventually 3 coils were put in place. The procedure was well tolerated, with no cardiac enzyme elevation. A 2-dimensional Doppler echocardiographic image revealed posterior ventricular hypokinesia, but the Doppler image detected no abnormal color flowing across the pulmonary artery; the ejection fraction of the patient was 48%. The patient was prescribed antiarrhythmic and antiplatelet medications,  $\beta$ -blockers and angiotensin receptor blockers, and angina medication for cardiac symptoms. She also received treatment for her diabetes and asthma.

Figure 1. Dipyridamole Technetium Sestamibi (Cardiolite) Stress Test



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In the first week following embolization, chest pain and shortness of breath lessened in frequency and severity. Physiotherapy improved her ability to walk by Week 3. A dipyridamole technetium sestamibi (Cardiolite; Lantheus Medical Imaging, North Billerica, Massachusetts) stress test showed no inducible ischemia, normal wall motion, and an ejection fraction of 68% (Figure 1).

Three months after the procedure, the patient was readmitted for respiratory failure from severe asthma. Two years after the procedure (October 2011), she reported chest pains, which were relieved with glyceryl trinitrate. Right and left catheterization was repeated at this time. Angiography showed no atherosclerotic disease, no migration of coils, no recanalization or leak into the pulmonary artery, and an essentially normal ejection fraction of 65%.

## Pilot Study Results Show Promising Results for Renal Denervation in an Afro-Caribbean Population

Written by Maria Vinall

Hypertension is responsible for a significant number of preventable deaths relative to other treatable conditions, such as diabetes, breast cancer, and cervical cancer [National Committee for Quality Assurance 2003]. A. F. L. Liqui Lung, MD, Stichting Teaching Hospital, Willemstad, Curacao Island, presented results from a study showing that antihypertensive medication use was reduced following renal denervation in Afro-Caribbean descendants.

This was a pilot study conducted among 6 subjects of Afro-Caribbean descent from Curacao Island. The objectives of the study were to assess the safety and efficacy

of renal artery ablation in an Afro-Caribbean population and to determine whether medication use could be reduced as a result of the procedure. In addition to being of Afro-Caribbean descent, subjects were required to have hypertension that was resistant to 4 classes of hypertensive drugs, including aldosterone blocking agents, and to be between 18 and 75 years old, with no renal artery stenosis > 5 mm, no calcification or accessory arteries, no secondary hypertension, and an estimated glomerular filtration rate > 45 mL/min. All patients had left ventricular hypertrophy diagnosed by echocardiography and evidence of microalbuminuria, putting them at high risk for cardiovascular problems.

Of the 10 patients who met the study criteria, 6 were selected for participation and flown to the Netherlands for the ablations. Participants had a mean body mass index (BMI) of 42.73 kg/m<sup>2</sup> and were a mean age of 60 years. Four patients had type 2 diabetes; 5, dyslipidemia; 1, paroxysmal atrial fibrillation; and 1, asthma.

All patients had renal nerve stimulation done before and following denervation with the electrophysiology stimulation catheter for evaluation of position and to obtain the results of denervation. The EnligHTN Renal Denervation System (St. Jude Medical, Inc.) was used for renal denervation through right femoral access and under sedation. The system delivers radiofrequency energy from an ablation catheter to create lesions along the renal nerves with the hypothesis that it may lower blood pressure.

There was no change in day or night blood pressure, BMI, or HbA1C 6 months after ablation. A positive response was defined as a 50% lowering of medication dose. For the majority of antihypertensive drugs that the patients were taking, patients either stopped taking them altogether or reduced their dose or frequency. Four of the 6 patients had a positive response. Table 1 shows the percentage drop in medication use after ablation for each patient in the study.

**Table 1.** Percentage Drop in Medication Use After Renal Denervation.

Patient	%
1	83.5
2	52.0
3	16.6
4	25.0
5	50.0
6	62.5

There were no complications. Dose reductions were required for 2 patients immediately after the intervention and for 1 patient within 48 hours of intervention due to hypotension. Neither of the patients (patients 3 and 4) with a BMI > 50 had a positive response.

Dr. Liqui Lung concluded that the pilot results suggest that renal denervation with the EnligHTN catheter may be safe and allow a reduction in antihypertensive medication in patients of Afro-Caribbean decent with drug-resistant hypertension who have a BMI < 50 kg/m<sup>2</sup>, dyslipidemia, and diabetes. The promising results of this pilot study will require verification in well-powered, placebo-controlled trials. Results of the blinded controlled SYMPPLICITY HTN-3 trial, which showed no difference in blood pressure after renal denervation, provide cautionary data stressing the importance of controlled assessments of renal denervation strategies before wider adoption.

## Outcomes of Unprotected LMCA Stenting

Written by Maria Vinall

Approximately 7% of patients who undergo cardiac angiography have left main coronary disease (LMCD). Guidelines as recent as 2012 have recommended surgical revascularization or coronary artery bypass grafting (CABG) over percutaneous coronary intervention (PCI) [Patel MR et al. *J Am Coll Cardiol* 2012]. Some studies evaluating elective PCI with drug-eluting stent (DES) implantation as compared to CABG in unprotected left main coronary artery (LMCA) lesions, however, have reported short- and midterm outcomes that are similar [Chieffo A et al. *JACC Cardiovasc Interv* 2010; Lee MS et al. *J Am Coll Cardiol* 2006].

Antonio Vellegas, MD, Medicina Cardiovascular Asociada, Santo Domingo, Dominican Republic, presented the results of a study that evaluated clinical and demographic characteristics and the outcomes of unprotected LMCA stenting. This was a retrospective, observational case series of 49 patients selected from the Interventional Cardiovascular Department database who received PCI between 2009 and 2013. Outcomes included in-hospital complications, cardiovascular deaths, total deaths, and total days of admission.

The majority of patients were men (69%) with a mean age of 70.3 ± 3.9 years and a body mass index (BMI) of 26.9 ± 11.1 kg/m<sup>2</sup>. Participants were 85% Hispanic and 15% Caucasian. Most patients (86%) presented with hypertension. Diabetes mellitus was seen in 37% of patients, hypercholesterolemia in 27%, and chronic kidney disease in 6%; 16% were smokers. The following