A 76-year-old female presented with an acute coronary syndrome manifested by chest pain, a new left bundle branch block, and positive troponin. She had a previous history of aortic valve replacement. Emergent diagnostic coronary angiography via the right femoral arterial approach with a 5-F Left Judkins 4.0 catheter demonstrated significant left main coronary artery (LMCA) stenosis (Fig. 1, Online Video 1). Immediately following the angiogram, the patient became hypotensive, asystolic, and unresponsive. Advanced cardiac life support protocol was started promptly and the patient was intubated. A temporary pacemaker was placed in addition to an intra-aortic balloon pump, via the left femoral approach. Inotropes were started. Aggressive and continuous chest compressions were performed during the entire procedure. A 7-F Left Judkins 3.5 guide catheter was used to engage the ostium of the LMCA. The lesion was crossed with difficulty with a 0.014-inch Whisper high-torque guide wire (Abbott Corporation, San Francisco, California) after multiple guidewires had failed. Pre-dilation was performed with a 2.0 × 15-mm Maverick balloon (Boston Scientific Corporation, Natick, Massachusetts) followed by placement of a 3.5 × 12-mm Driver bare-metal stent (Medtronic Inc., Minneapolis, Minnesota) (Fig. 2, Online Video 2) during chest compressions. Thrombolysis In Myocardial Infarction (TIMI) flow grade 3 was achieved (Fig. 3, Online Video 3) with gradual hemodynamic improvement. The patient had full recovery and was discharged 3 days later on long-term daily doses of aspirin 325 mg and clopidogrel 75 mg. A follow-up angiogram at 3 months demonstrated patency of the LMCA stent.

Diagnostic coronary angiography is a safe procedure with a mortality rate of 0.08% to 0.14% in the National Cardiovascular Data Registry (1). The predominant cause of death in this registry was abrupt LMCA closure. This is a rare but catastrophic event with a grim prognosis (2–4). When left main disease is suspected, nonselective left coronary cusp injection is of value. We reviewed a total of 26,237 percutaneous coronary intervention procedures from Emory University Hospital and Emory Crawford Long Hospital between 2002 and 2008 and identified 5 patients with abrupt LMCA occlusion, of whom, 2 survived. The 2 survivors had abrupt LMCA occlusion in the catheterization laboratory and both patients received cardiopulmonary resuscitation/advanced cardiac life support protocol with continuous, uninterrupted, and aggressive chest compressions, even during fluoroscopy. Because surgery was not immediately available, percutaneous coronary intervention remains the only viable option for these patients.

Newer percutaneous left ventricular assist devices such as the Tandem Heart (Cardiac Assist Inc., Pittsburgh, Pennsylvania) are time-consuming and require trained personnel and interventionists skilled in transseptal puncture. The Impella device (Abiomed, Danvers, Massachusetts) also requires skilled personnel, some degree of left ventricular function, and forward cardiac output. The ISAR-SHOCK (Impella LP 2.5 versus Intra-Aortic Balloon Pump in Cardiogenic Shock) trial demonstrated no advantage of the Impella device over a conventional intra-aortic balloon pump (5). In a patient with cardiogenic shock, asystole, and on-going chest compressions, time is of the essence, and emergent stenting of the LMCA with the goal of establishing antegrade coronary blood flow would be the only hope for survival.
REFERENCES


APPENDIX

For Online Videos 1 to 3, please see the online version of this article.