Impella Device Success: Walking Home after Cardiogenic Shock from Ventricular Fibrillation

5:00-5:15 pm

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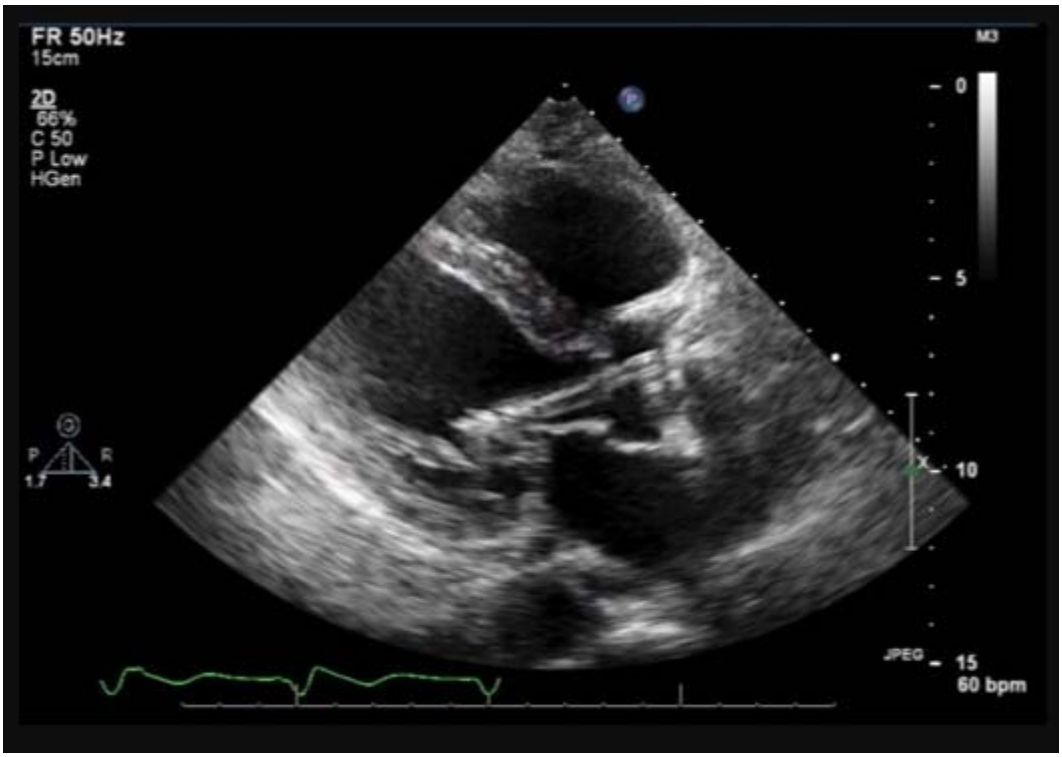
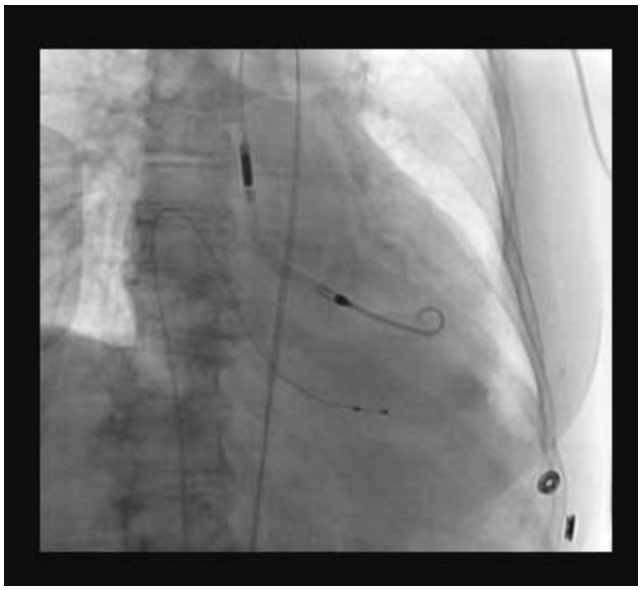
Abstract	Introduction: Ventricular fibrillation can quickly progress to cardiogenic shock and subsequent death. This fatal arrhythmia is associated with a severe drop in cardiac output. Managing patients after cardiac arrest is often challenging, but newer left ventricular assist devices (LVAD) are proving to be an excellent adjunct to inotrope and vasopressor therapy. Case Presentation: The patient is a 75-year-old Caucasian female with a medical history of atrial fibrillation, hypertension, and obstructive sleep apnea (OSA) who presented after being found unresponsive. Upon initial assessment, the patient was apneic and pulseless. Initial rhythm on telemetry was ventricular fibrillation. Physical exam revealed minimally reactive pupils to light, negative corneal reflex, negative gag reflex, bilateral positive Babinski sign, and intermittent lower extremity clonus. The patient was successfully resuscitated with electric defibrillation, intubated, and required vasopressor support to maintain mean arterial pressure greater than 65. After return of spontaneous circulation, the patient's vitals were: Temperature 97.7°F, blood pressure 92/66, heart rate 136, respiratory rate 22, and oxygen saturation 97% on mechanical ventilation. Chest radiograph revealed pulmonary congestion, unchanged from previous radiographs. Head CT demonstrated no acute intracranial findings. The patient was placed on a targeted temperature management protocol for the next 48 hours. An emergent left heart catheterization revealed no signs of occlusive coronary disease. Left ventricular ejection fraction (LVEF) was 5-10%, likely from stunned myocardium. The patient continued to clinically decline, and the decision was made to place an LVAD for further hemodynamic support. Final Diagnosis: Cardiogenic Shock from Ventricular Fibrillation Outcome: The patient progressively improved throughout her hospitalization and the LVAD was removed and an automatic implantable cardioverter defibrillator (AICD) was placed. Repeat echocardiogram revealed an improved LVEF of 45-50%. The patient ultimately demonstrated significant improvement over the next 6 months and maintained close outpatient follow-up with her cardiologist.
Learning Objectives	1. Discuss cardiogenic shock from ventricular fibrillation 2. Identify the potential benefit of left ventricular assist device in the setting of cardiogenic shock from ventricular fibrillation
References and Resources	1. Maini B, Gregory D, Scotti DJ, Buyantseva L. Percutaneous cardiac assist devices compared with surgical hemodynamic support alternatives: Cost-Effectiveness in the Emergent Setting. Catheter Cardiovasc Interv. 2014. 83(6): 183-192. 2. Cheung A, Danter M, Gregory D. Comparative economic outcomes in cardiogenic shock patients managed with the minimally invasive Impella or extracorporeal life support [abstract]. J Am Coll Cardiol. 2012. Abstract TCT-385. 3. Ouweneel DM, Eriksen E, Seyfarth M, et al. Percutaneous mechanical circulatory support versus intra-aortic balloon pump for treating cardiogenic shock: meta-analysis. JACC 2017; 69(3): 358–360. 4. O'Neill WW, Kleiman NS, Moses J, et al. A prospective, randomized clinical trial of hemodynamic support with Impella 2.5 versus intra-aortic balloon pump in patients undergoing high-risk percutaneous coronary intervention: The PROTECT II study. Circulation 2012. 126: 1717–1727.
Disclosures	The author has no relevant financial relationships to disclose. The author does not intend to discuss an off-label/investigative use of a commercial product/device.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