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IMAGING VIGNETTE

ADVANCED

CLINICAL VIGNETTE

Percutaneous Salvage of an Impella Pretzel

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ABSTRACT

This report describes a case in which bedside manipulation of an Impella CP led to device entanglement in the aorta. Using a snare and counter-traction, we were able to untangle and re-deliver it into the left ventricle to restore normal device support. (**Level of Difficulty: Advanced.**) (J Am Coll Cardiol Case Rep 2019;1:254–5) © 2019 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

The Impella CP (Abiomed, Danvers, Massachusetts) is a percutaneous mechanical circulatory support device. It facilitates blood flow from the left ventricular (LV) cavity to the ascending aorta, and can augment cardiac output by as much as 3.5 l/min. When managed in the intensive care unit (ICU), its position is sometimes adjusted at bedside under echocardiographic guidance.

A 57-year-old male with nonischemic cardiomyopathy (LV ejection fraction 13%), presented with persistent cardiogenic shock (blood pressure 70/45 mm Hg, heart rate 71 beats/min) despite maximal medical therapy (including infusion of dobutamine, epinephrine, norepinephrine, vasopressin, and bicarbonate). On examination, he was in acute distress with tachypnea (respiratory rate 30 breaths/min), jugular venous distention, and cool extremities. He was intubated and placed on ventilator support. An Impella CP was then inserted for hemodynamic support via femoral access without complication. A transthoracic echocardiogram (TTE) afterwards in the ICU showed migration of the Impella device into the LV with its distal tip in aggressive contact with the apical endocardium. Adjustments were attempted at bedside with TTE guidance; however, this resulted in the device exiting the LV entirely. Immediate attempts at re-advancing failed, prompting urgent return to the catheterization laboratory.

The Impella console indicated minimal flow. The placement signal was non-pulsatile. The flow was temporarily set to “P2.” On fluoroscopy, the Impella now appeared folded in the aortic root in a pretzel-like formation. To salvage it, a 25-mm Gooseneck snare (Medtronic, Minneapolis, Minnesota) was advanced through a 6-F multipurpose guide (via right radial access) to snare the distal tip of the Impella. Counter-traction was applied via femoral access to untangle the Impella in the descending aorta (Video 1). The snared tip was then redirected into the LV. With its position restored, the Impella resumed normal function. The patient then returned to the ICU without complications.

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The Impella CP hypotube lacks adequate support for reliable repositioning in the event of device exit. This case should serve as a cautionary tale against further bedside manipulation in this situation because it may cause entanglement. Fortunately, use of a snare via radial access was useful in both untangling the device and redirecting it into the LV. The flexibility of the hypotube was advantageous in allowing untangling instead of kinking or fracturing (1,2); the Impella could thus be salvaged for continued use.

ABBREVIATIONS AND ACRONYMS

ICU = intensive care unit

LV = left ventricle

LVEF = left ventricular ejection fraction

TTE = transthoracic echocardiography

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KEY WORDS Impella, percutaneous salvage, snare

APPENDIX For a supplemental video, please see the online version of this paper.