

IMAGES IN INTERVENTION

A Novel Technique for Percutaneous Retrieval of an Embolized Atrial Leadless Pacemaker From the Pulmonary Artery



Helayna Abraham, MD, Manish D. Assar, MD, Yashasvi Chugh, MD

Dislodgement and embolization of leadless pacemakers (LPs) is a rare complication.¹ LP embolization into the pulmonary artery (PA) may result in PA obstruction, perforation, and death.² Retrieval of embolized devices from the PA is fraught with challenges due to an angulated trajectory and the need for large-bore sheaths. We report the first successful percutaneous removal of an embolized AVEIR Atrial LP (ALP) (Abbott Cardiovascular) from the left lower PA (LLPA) using the novel ÖNÖ retrieval system (B. Braun) (Figures 1 and 2A).

CASE OVERVIEW

A 67-year-old man with a remote history of mechanical aortic valve replacement and complete heart block with subsequent transvenous dual-chamber pacemaker insertion recently underwent entire system removal for infection and concomitant AVEIR ventricular LP insertion. A few weeks thereafter, he underwent upgrade to a dual-chamber system with ALP implantation to achieve atrioventricular synchrony. The following day, he presented with a sensation of fluttering in his throat and shortness of breath. Imaging confirmed dislodgement of the ALP into the LLPA with the device fixation helix proximally located (Figures 1A, 1B, and 2A).

PROCEDURE

Following a multidisciplinary discussion, percutaneous retrieval was pursued. The LP was engaged with a 7-F balloon wedge, which was swapped for a 0.035-inch Lunderquist wire (Cook Medical) over which a 26-F short DrySeal (W.L. Gore & Associates) was positioned in the inferior vena cava. A 14-F, 85-cm D’VILL sheath (B. Braun) was placed inside the DrySeal to make the secondary bend into the LLPA. The ÖNÖ retrieval system was partially unsheathed adjacent to the embolized ALP. Using a 6-F multi-purpose guide catheter and the 30-mm Amplatz Goose Neck device (Medtronic), we successfully snared the ALP into the ÖNÖ retrieval system (Figure 2B). The D’VILL sheath, ÖNÖ retrieval system, and snare were pulled into the DrySeal and removed from the right femoral vein without complication (Figures 2C and 2D, Videos 1 to 4).

DISCUSSION

This case highlights a novel technique to successfully retrieve an embolized LP from the PA despite multiple challenges, including: 1) risk for injury to the PA with large-bore sheaths; 2) risk for sheath kinking because of the angulated trajectory; and 3) navigating safely around the pre-existing hardware (right

From the Division of Cardiology, Department of Internal Medicine, The Heart Hospital-Dallas, Baylor Scott & White, Dallas, Texas, USA.

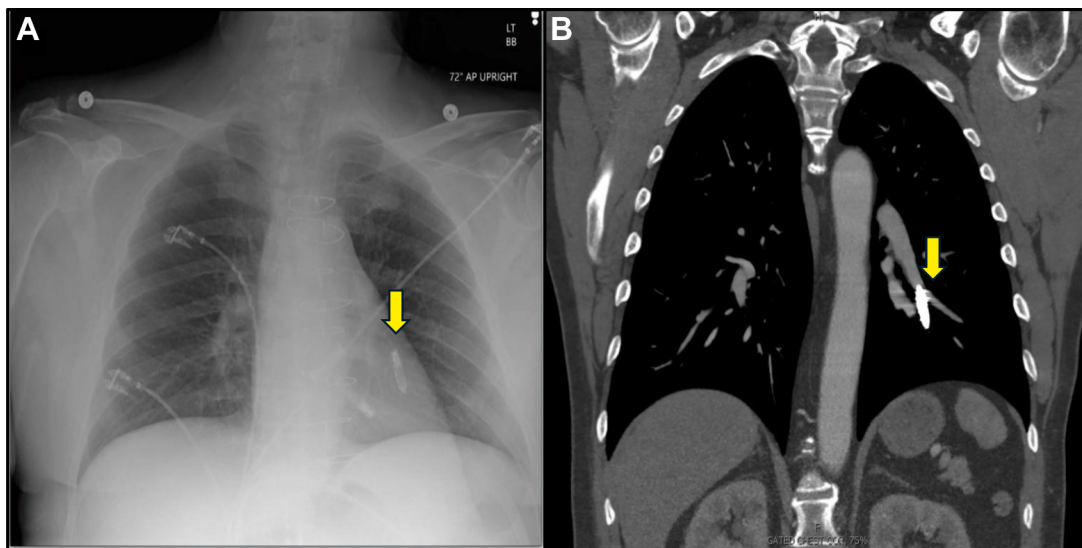
The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors’ institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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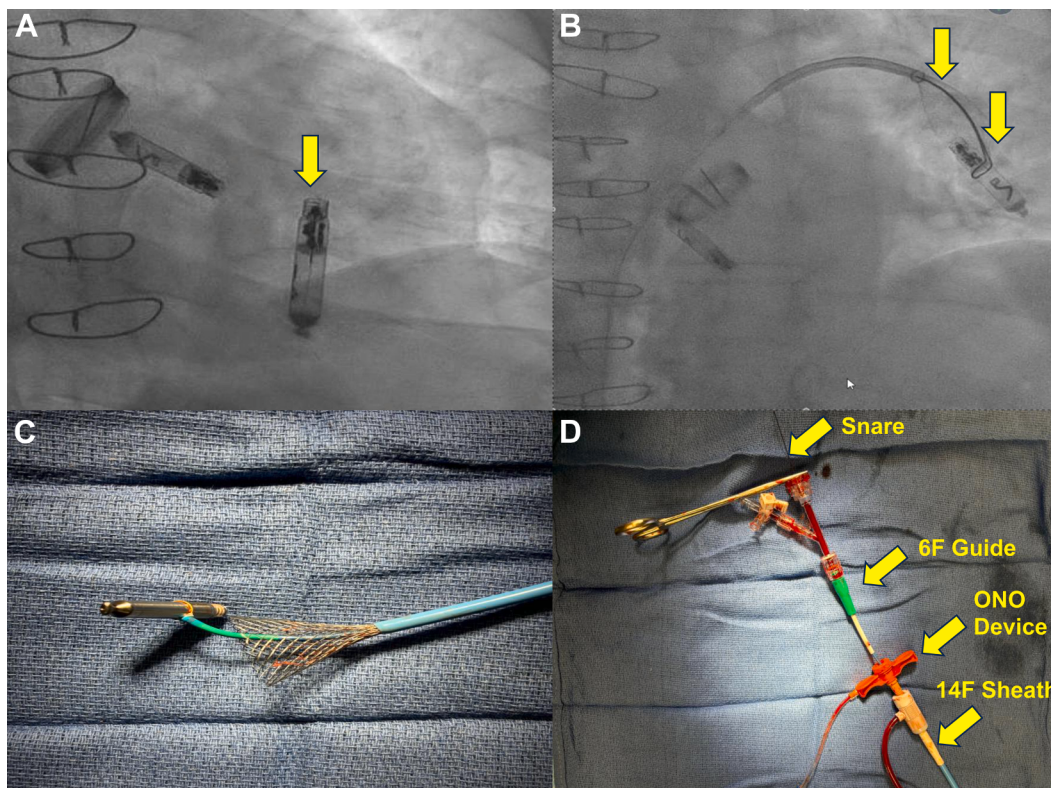
<https://doi.org/10.1016/j.jcin.2026.02.025>

FIGURE 1 Dislodged Atrial Leadless Pacemaker



(A) Chest radiography and (B) chest computed tomography. Arrows point to dislodged AVEIR leadless pacemaker.

FIGURE 2 Successful Retrieval of Atrial Leadless Pacemaker With $\bar{O}\bar{N}\bar{O}$ Device



(A) Device fixation helix proximally located (arrow). (B) Device captured by 30-mm Goose Neck snare and $\bar{O}\bar{N}\bar{O}$ device. (C,D) Retrieval system consisting of a 30-mm Goose Neck snare, a 6-F multipurpose guide, the $\bar{O}\bar{N}\bar{O}$ device, and a 14-F, 85-cm D'VILL sheath.

ventricular LP). The $\bar{O}\bar{N}\bar{O}$ retrieval system's atraumatic basket expands to fill the PA lumen, enabling coaxial alignment and safe device retrieval even in tortuous anatomy.

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ADDRESS FOR CORRESPONDENCE: Dr Helayna Abraham, Division of Cardiology, Department of Internal Medicine, The Heart Hospital-Dallas, Baylor Scott & White, 621 North Hall Street, Dallas, Texas 75226, USA.
E-mail: helayna.abraham@bswhealth.org.

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KEY WORDS AVEIR, leadless pacemaker, retrieval, snaring

 **APPENDIX** For supplemental videos, please see the online version of this paper.