

# Percutaneous Retrieval of an Entrapped Ablation Catheter during a Retrograde Approach for a Left Free Wall Accessory Pathway

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## Abstract

A 25-year-old man suffered from repeated attacks of orthodromic atrioventricular reciprocating tachycardia utilizing a left lateral accessory pathway (AP) for retrograde conduction. The catheter was approached through the aorta to map the AP and was entrapped in the mitral valve apparatus, and it had a broken internal wire. A snare-assisted technique was successfully utilized to retrieve the catheter.

**Keywords:** Radiofrequency ablation; Cardiac arrhythmia; Catheters

## Introduction

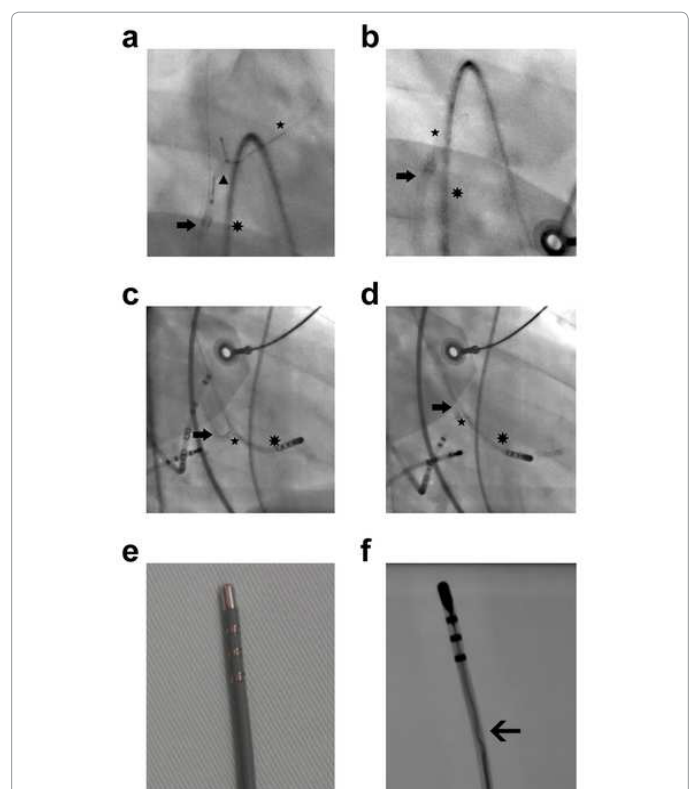
Radiofrequency ablation is currently the treatment of choice for cardiac arrhythmia. The complication rate of radiofrequency ablation is 3.1% [1]. Although a broken internal wire in a radiofrequency catheter is not rare, a catheter's becoming entrapped in the mitral valve apparatus is uncommon during the manipulation of catheters.

## Case Report

A 25-year-old man suffered from repeated attacks of orthodromic atrioventricular reciprocating tachycardia with the use of a left lateral AP for retrograde conduction. A Trans aortic approach was performed with an EPT 4-mm ablation catheter (Blazer II HTD, standard curve, Boston Scientific, USA) constructed with an internal steering wire via a right femoral artery access. While mapping the AP in the mitral sub-valvular area, the catheter dropped into the posterior lateral left ventricle (LV) and could no longer be maneuvered. The catheter was trapped by the mitral valve apparatus and could not be withdrawn directly from the LV. Next, we attempted to use a snare-assisted technique to retrieve the catheter. A 0.018 inch guide wire (choice PT extra-support) with a wire tip shaped into a J-curve and a snare catheter (ev3, Amplatz goose neck, 102 cm, 7 mm) were advanced into the aortic arch over a 6 French multipurpose guide catheter through a 7 French sheath via the left femoral artery access (Figures 1a-1d and 2a-2i). The wire was first looped across the ablation catheter in the aortic arch. The snare catheter was used to catch the wire tip to form a large snare system surrounding the ablation catheter. After holding the snare catheter and withdrawing the wire and snare catheter simultaneously, we clipped the ablation catheter. The snare system was later slid into the LV along the ablation catheter to clip the distal portion of the ablation catheter. With the snare system firmly held, little force was required to smoothly retrieve the tip of the ablation catheter. Although the outward appearance of the ablation catheter was intact (Figure 1e), the internal catheter wire was found to be broken under fluoroscopy (Figure 1f). Next, we proceeded with an ante-grade approach with a trans-septal procedure, and radiofrequency ablation was performed successfully. The echocardiogram 6 months later showed only mild mitral valve regurgitation without structural abnormality. The total procedure time was 3 hours and 20 minutes, the fluoroscopic time was 1 hour and 10 minutes and the total radiation dose received for this entire procedure was 0.286  $\mu\text{Gy} \cdot \text{cm}^2$ .

## Discussion

A trans-aortic approach for the ablation of a ventricular tachycardia with an LV origin or supraventricular tachycardia involving the left



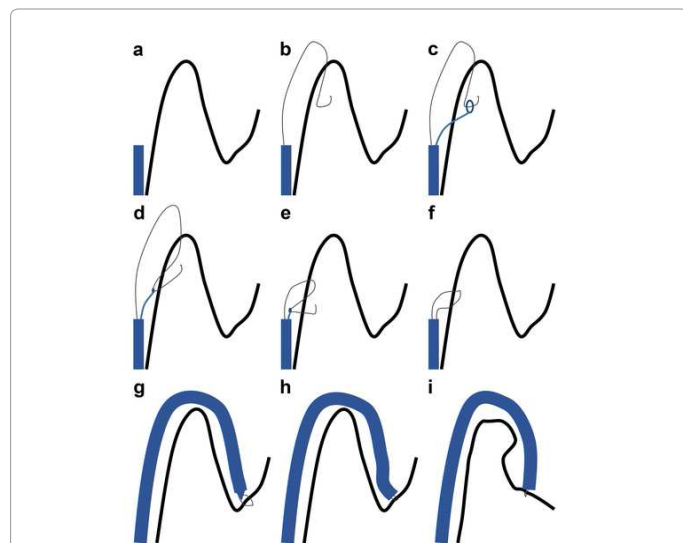
**Figure 1:** The snare catheter (arrow head) over a 6 Fr multipurpose guide catheter (arrow) catching the 0.018 inch wire (small asterisk) in the aortic arch (panel a). The snare system (small asterisk) catching the ablation catheter (large asterisk) in the aortic arch (panel b). The snare system is slid into the LV along the ablation catheter (panel c). The entrapped ablation catheter is extracted by holding force on the snare system (panel d). Gross view of ablation catheter (panel e). The broken internal wire (arrow) of the ablation catheter under a fluoroscopic view (panel f). Panels a-d are in the antero posterior projection.

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**Figure 2:(a-i)** A cartoon diagram of the snare-assisted system to retrieve the entrapped ablation catheter is shown step by step.

AP is useful but poses potential risks. Reports of catheter entrapment in the mitral valve apparatus are rare; however, they may possibly be under-reported [2-4]. The forceful removal of an ablation catheter

may be dangerous due to the risk of rupturing the LV or tearing of the mitral valve apparatus. When a catheter becomes entrapped in the LV, surgical removal is sometimes necessary. The techniques utilizing a snare loop for extracting intravascular foreign objects are the primary choice because of the low complication rate. The risks associated with significant radiation exposure during snare-assisted techniques are acceptable relative to the risks of surgical intervention [5]. In this study, we provide details of a simple self-made wire snare to remove a broken ablation catheter from the LV safely. This technique can be safely performed to address this rare complication.

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