

# Retrieval of a Disconnected Left Atrial Appendage Occluder with Endoscopic Grasping Forceps

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Left atrial appendage occlusion (LAAO) has been widely accepted as an alternative to oral anticoagulation for stroke prevention in patients with nonvalvular atrial fibrillation (AF). However, the periprocedural complications such as device embolization are still challenging.<sup>[1]</sup> Here, we reported a rare case of an AMPLATZER™ Cardiac Plug (ACP; St. Jude Medical, USA) device disconnection with the delivery cable during the LAAO procedure.

A 58-year-old female with permanent AF was hospitalized for LAAO on June 28, 2016. During the procedure, a 26-mm ACP was prepared to occlude the LAA guided by the transesophageal echocardiography (TEE). The first intension of the lobe employment failed to be orientated into the ideal landing zone [Figure 1a]. We then decided to retract the lobe to “ball” position again. The device, however, was unable to retrieve, and the delivery cable was easily pulled back. An immediate fluoroscopy image showed that the disc part in sheath was already disconnected with the cable [Figure 1b].

Previous reports have mentioned the successful retrieval of dislodged occluders with the help of snares.<sup>[2]</sup> In this case, we first attempted to use the snares, but it failed to fix the disc, which might be due to the small and short tip of the disc connector. The intention of reconnection of the device and the cable in sheath also failed. To avoid open-heart surgery, we decided to utilize the endoscopic grasping forceps [Figure 1d and 1e]. Compared with biopsy forceps, it provides a more firm grip with powerful teeth for removing foreign bodies during endoscopic procedures.<sup>[3]</sup> Till now, it was rarely mentioned in cardiac clinical cases. With the guidance of TEE, we held the delivery sheath close to the LAA ostia in case of a sudden device embolization [Figure 1c]. The forceps (FG-32-L1, Olympus, Japan) were sent through the sheath until it was close to the end tip of device disc. The disc was eventually fixed by the forceps teeth and retracted successfully without damage or deformation [Figure 1f-1h]. After reloading, it was flushed and de-aired again, and finally deployed into the ideal LAA

landing zone [Figure 1i]. The device stability was verified by gentle tug test, TEE, and fluoroscopy before releasing.

The embolization of the LAA closure devices has been mentioned in several previous cases,<sup>[1]</sup> mainly caused by insufficient anchoring. Most of them could be retrieved by snares looping techniques.<sup>[2]</sup> However, the device disconnection in delivery sheath was rarely reported. In this case, we considered that it might be partly due to the asynchronization of the cable and sheath during the orientation of the lobe deployment. And because ACP was not preloaded and had to be prepared step-by-step before procedure, the cable screwing and wire unscrewing might sometimes count for loose connection of the device, which was rarely noticed.

Previous reports demonstrated that the two snares or two transseptal sheaths techniques could help to the successful retrieval of the dislocated LAA occluder.<sup>[2,4]</sup> In the present case, however, the ACP was not completely unsheathed. The snares failed to loop the disc in sheath. And, the attempt of a second transseptal sheath was clearly with a risk of totally device embolization. Therefore, to avoid embolization, it was still feasible if more strong clamps were available. The endoscopic grasping forceps, which have strong jaw teeth, were commonly used in grasping foreign bodies during endoscopic procedures, but rarely reported in cardiac interventional cases. We first reported that the grasping forceps retrieved the disconnected ACP disc successfully without device deformation. It indicated that the endoscopic grasping forceps might provide secure fixing for disconnected or dislodged occlusion devices in

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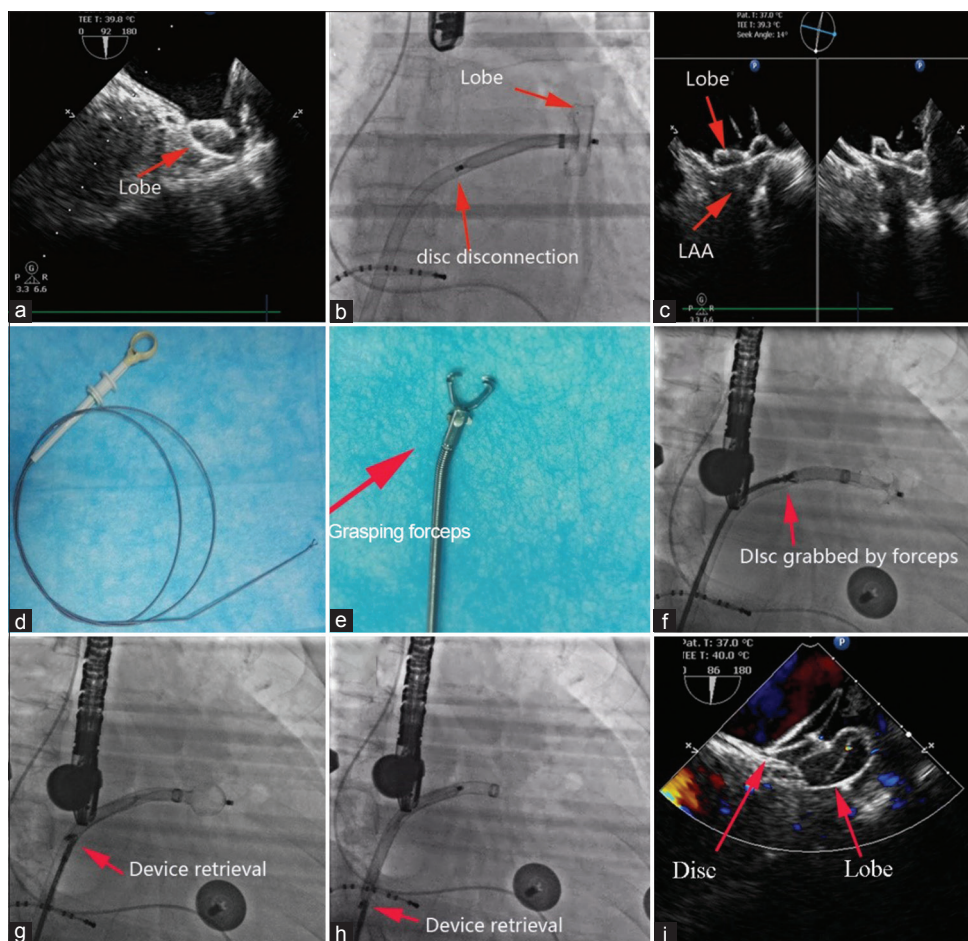
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**Figure 1:** The procedure of the device retrieval and redeployment. (a) The TEE showed the failure of lobe deployment; (b) the fluoroscopy image showed that the disc was disconnected with the delivery cable; (c) the delivery sheath was held close to the LAA ostia in case of a sudden device embolization; (d and e) images of the endoscopic grasping forceps; (f-h) images showed that the occluder was fixed by the forceps and retracted successfully; (i) the device was finally deployed into the ideal LAA zone after refushing and de-airing. TEE: Transesophageal echocardiography; LAA: Left atrial appendage.

cardiac interventional procedures if the snares failed and avoided emergent heart surgery.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understood that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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