EP CASE REPORT

# Catheter ablation of atrial fibrillation and left atrial flutter in a patient with a left atrial appendage occlusion device

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Patients with an existing left atrial appendage occlusion device undergoing catheter ablation of atrial fibrillation present a challenge to successful pulmonary vein isolation. Device overlap of the left superior pulmonary vein makes effective ablation difficult. This case represents one strategy whereby anterior and lateral mitral lines in addition to left-sided posterior antral lesions resulted in durable isolation.

**Case report**

A 60-year-old woman with atrial fibrillation (AF) and prior implantation of an Amplatzer Cardiac Plug (ACP) left atrial appendage (LAA) occlusion device after an embolic stroke 15 months prior was referred for catheter ablation after failing rhythm control. Prior to ablation, a transoesophageal echocardiography revealed complete ACP occlusion of the LAA with deformation of the anterior aspect of the left superior pulmonary vein (LSPV) and ligament of Marshall (LOM). Pulmonary vein isolation (PVI) was achieved for the right PVs in a straightforward manner; however, ablation on the anterior aspect of the left PVs and LOM was not possible because of ACP interference. Delivery of radiofrequency (RF) energy near the ACP device resulted in automatic generator shut-off with impedance measurement errors. Sustained mitral annular flutter (MA AFL) was consistently induced with burst pacing. Electrical isolation of the left PVs and LAA together was achieved with the creation of contiguous ablation lesions connecting the anterior MA to the right superior PV and the lateral MA to the left inferior PV in addition to a posterior lesion set around the left PVs (*Figure 1*). Ablation in the coronary sinus (CS) on the lateral line was required to achieve block. Entrance and exit block was confirmed for all PVs and MA AFL was non-inducible. She has since remained AF and stroke free on dabigatran 1 year post-procedure.

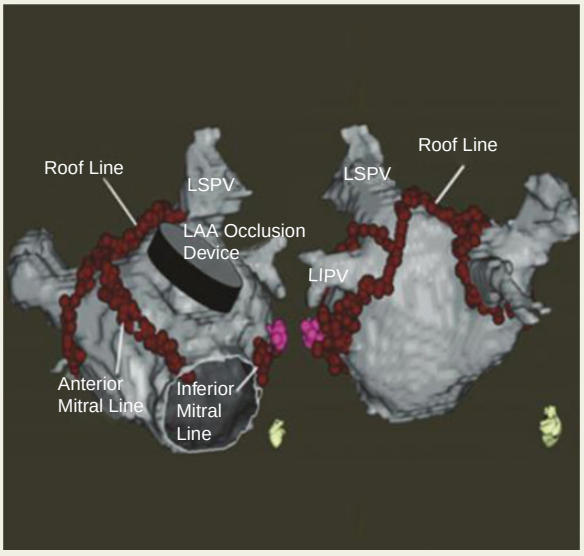


**Figure 1** Post-ablation electroanatomical map. Red dots represent left atrial RF lesions. Pink CARTO dots represent RF lesions delivered from within the CS.

It is important to recognize the difficulties of PVI in a patient with a LAA occlusion device given the increasing prevalence and expanding indications for LAA occlusion procedures and the increasing numbers of AF patients.[1] It has been shown that the LAA is the primary source for thrombus formation and subsequent cardiac emboli in AF patients and the incidence of AF and stroke is only increasing.[2]

In the present case, the overlying disc interfered with catheter placement along the anterior aspect of the LSPV necessitated the use of the anterior and inferior mitral flutter lines to isolate the left-sided veins. This issue may not be apparent in devices that do not have a cap overlying the LOM. Swaans *et al.*[3] reported on four successful repeat PVIs in patients with previously implanted Watchman devices without device interference. Unlike the Watchman, the ACP has a proximal disc that can extend outside the orifice of the LAA towards the anterior LSPV ridge; an area that generally requires higher powered RF ablation lesions to achieve PVI. It may be necessary to ablate within the LSPV to achieve isolation if ostial tissue is unreachable under the overhanging disc of the ACP. Further studies in patients undergoing PVI with an already existing device will be necessary to better elucidate the specific device-related interactions related to PVI.

Our case required a unique ablation set to achieve durable PVI including an anterior and inferior mitral line connected to a more standard approach posterior LSPV circumferential lesion set to isolate the LSPV and LAA together. This successfully terminated MA AFL and resulted in LSPV isolation. This ablation approach may be necessary when dealing with patients having LAA occlusion devices, specifically the ACP.

**Conflict of interest:** none declared.

## References

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