

What about the role of cryoablation for isolation of non-pulmonary vein triggers in long-standing persistent atrial fibrillation?

Dear Editor,

In their recent case report, Aksu et al.^[1] demonstrated additional features of cryoballoon ablation aside from pulmonary vein isolation (PVI) in a patient with long-standing persistent atrial fibrillation (LPAF). Confirmatory to previous studies, they presented a reduction in both antral and posterior complex fractionated atrial electrogram (CFAE) areas just after PVI with cryoballoon-based therapy. They also performed additional ablation for other CFAE areas at anterior left atrium with radiofrequency (RF) energy.

Although PVI is still accepted as the cornerstone for paroxysmal AF ablation, there should be additional interventional approaches to achieve optimal success rates in persistent and LPAF patients. However, the literature is inadequate to recommend a standard technique other than PVI for those patients. Recently, the Substrate and Trigger Ablation for Reduction of Atrial Fibrillation Part 2 (STAR AF 2) study reported by Verma et al.^[2] failed to demonstrate an improvement in ablation success rates by performing additional lines or ablation of CFAEs besides PVI in persistent AF patients. Therefore, electrophysiologists are in search of novel ablation approaches for that patient population. In addition to atrial substrate, non-PV triggers have also aroused interest in recent years. In the OASIS trial, Mohanty et al.^[3] compared 3 ablation approaches in non-paroxysmal AF group (only rotor ablation vs rotor ablation+PVI vs PVI+posterior wall isolation+non-PV trigger isolation). They showed that an extensive ablation approach of PVI+left atrial posterior wall+ablation of non-PV triggers has been the most effective ablation strategy in non-paroxysmal AF population. The popularity of non-PV triggers in

non-paroxysmal AF group was also presented by investigators in BELIEF trial preliminary results.^[4] For the first time, to the best of our knowledge, we also published preliminary results with isolation of non-PV triggers using cryoballoon technique.^[5,6] Aksu et al.^[1] may wish to comment on these novel additional features of cryoballoon catheter aside from PVI and substrate modification. This novel approach may expand the guideline indications for cryoballoon catheter in non-paroxysmal AF patients in the future.

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Authors' reply

Dear Editor,

We are grateful to the authors for their highly scientific comments. As mentioned, recent trials have demonstrated that application of cryoballoon may create

additional ablation sites while achieving pulmonary vein isolation (PVI). At this time, non-PVI effects of cryoballoon may be divided into 2 groups: (1) wide antral ablation effects and (2) non-PV trigger isolation. Our group^[1] and Kenigsberg et al.^[2] demonstrated that cryoballoon application can cause significant posterior left atrial debulking and wide antral ablation. We

also recently published our preliminary results of combined use of cryoballoon and radiofrequency ablation (RFA) in a patient with long-standing persistent atrial fibrillation (LSPAF).^[3] Nineteen patients with LSPAF were included in the study. At 14±9-month follow-up, 68% of all patients had no arrhythmia recurrence (13/19). Three of 5 patients had undergone redo-procedure due to symptomatic AF despite medication. One patient was successfully re-ablated following left atrial tachycardia. After second procedure, 84% of patients were AF-free without antiarrhythmic drugs.

Recently, we learned from Canpolat et al. that cryoballoon may be used to isolate superior vena cava (SVC) or left atrial appendage (LAA).^[4,5] In the first study, a total of 20 patients with persistent AF underwent cryoballoon procedure to isolate both PVI and LAA. Isolation of LAA was achieved in 65% of all cases. In another report, the same group tried to isolate SVC as potential non-PV trigger by using cryoballoon. However, it must be kept in mind that both are safety and feasibility studies, not comparison studies. We hope to see results of comparison of cryoballoon versus RF ablation in eliminating non-PV triggers soon.

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