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Editorial Commentary

Cryoballoon ablation: Do we still need real-time recordings?



Cryoballoon ablation (CB-A) has been shown to be effective in the treatment of atrial fibrillation (AF) [1,2], demonstrating results comparable to radiofrequency ablation [3].

Real-time recordings of the pulmonary veins (PV) electrical activity have proven to be an important innovation in the setting of CB-A. Although time to isolation has been shown to be one of the major predictor of persistency of electrical isolation [4,5], real-time recordings might not be visualised in up to 25% of veins [6].

In this setting, a temperature-guided approach, where the main target is to obtain a complete PV occlusion regardless of the presence of PV potentials, has been developed. As widely demonstrated, the attainment of low temperatures during the first time of ablation is associated with better outcomes; in particular, the achievement of -40°C within 60 s proved to be an independent predictors of PV reconnections [5]. Although studies in the literature show similar results to the signal-guided approach, they have been limited by the inclusion a low number of patients or only patients with paroxysmal AF (PAF) [7–9].

In this manuscript, the authors elegantly reported the long-term effect of thermal-guided second generation cryoablation in both patients with PAF and persistent AF. The study included 234 patients, 134 (57.0%) with PAF and 100 (42.7%) with persistent AF respectively. Arrhythmia recurrence could be documented in 80 patients, 38 (28.4%) in patients with PAF and 42 (42.0%) with persistent AF after a long-term follow up (40 ± 9.2 months). The results obtained by the authors are in line with previously published data. Our group described comparable results in patients with PAF using a temperature-guided approach, reporting a freedom from AF of 77.6% [8]. Similarly, we also demonstrated a high success rate in PAF patients undergoing thermal-guided ablation when compared to cohort who underwent cryoablation using a signal-guided approach [7].

Regarding patients with persistent AF, freedom from arrhythmia was significantly lower if compared to patients with PAF ($p = 0.04$). It is well established that clinical outcomes are less encouraging when dealing with persistent AF [10,11]. Furthermore, in the manuscript these patients had a significantly larger left atrial ($p < 0.001$) than patients with PAF; in fact, patients with longer-term AF have been shown to have greater left atrial dilatation, fibrosis and substrate than patients with PAF and the LA dimension is an established predictor of AF recurrence [12,13]. Hypothetically this approach might also lead to cost containment. Effectively, this has the advantage of being a purely anatomical intervention with a consequent considerable simplification and standardization of the procedure. Finally, the authors revealed low complication rate and the most frequent complication was phrenic nerve injury,

which resolved at follow up in all patients. This interesting report underlines once more the safety and efficacy profile of CB-A. The manuscript adds further evidence on the degree of reproducibility and standardisation that operators have reached with the Cryoballoon. However, in our opinion it is too early to completely abandon the “electrophysiological” aspect of PVI with this tool. Real-time recordings often offer the invaluable help of guiding the operator during the ablation if the temperature recordings are not satisfactory. Standardisation and reproducibility are the main success parameters in the wide adoption of a technology, but one must always bare in mind that the balance between simplifying a technique and its oversimplification is very thin.

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