

Is Esophageal Temperature Management Needed During Cryoballoon Ablation for Atrial Fibrillation?

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Atrial fibrillation (AF) is one of the most frequently occurring arrhythmias globally. Risk factors such as aging, hypertension, cardiac and pulmonary diseases, alcohol consumption, smoking, obesity and obstructive sleep apnea play an important role in the development of AF.(1-2) AF is a leading cause of ischemic stroke worldwide and is associated with increased mortality. (3) AF management depends on four pillars: risk factor management, anticoagulation depending on the CHA2DS2-VASc score, rate control and rhythm control. (4) The application of thermal energy in ablation, such as in cryoablation, can cause rare complications such as an esophageal injury, esophageal perforation and atrial-esophageal fistula. (5,6). Numerous technologies have been developed to avoid this problem and include esophageal temperature surveillance, using reduced

temperatures, real time visualization of the esophagus in addition to making use of an esophageal cooling device. (7-9)

In the current issue of the Journal of Cardiovascular Electrophysiology, Sink et al. have conducted a single-center pilot study to assess the utilization of an esophageal warming device to avoid the development of esophageal thermal injury (ETI) while utilizing cryoballoon ablation (CBA). Alternative studies have shown that using a cooling device has been beneficial in reducing the risk of ETI formation for patients undergoing RFA. (10,11) Thus, the authors have enrolled 42 patients undergoing CBA with AF refractory to medical therapy and have randomized them into 2 groups. In the first group, 23 patients undergoing CBA used an esophageal warming device such as esophageal heat-exchange tube (WRM) while the other 19 patients undergoing CBA used traditional luminal esophageal temperature (LET) to monitor the esophageal temperatures. The authors have conducted upper endoscopy monitoring of the esophagus the next day and subsequently, classified ETI into 4 grades. They have observed in the WRM group a paradoxical increase in ETI in comparison to the other group which used LET. Moreover, the authors have perceived a direct link between ETI formation, total freeze time and colder temperature usage. However, this study has several limitations, including the small population size. Furthermore, the study results are based on a single device employment which is EnsoETM® device (Attune Medical, Chicago, IL). Therefore, the effects of using other warming devices are not known.

Overall, the authors should be praised on their efforts for conducting the first pilot study to evaluate the effects of using an esophageal warming device for patients undergoing CBA and for providing cardinal insight into the safety of utilizing such a device. In addition, the results of this study have tremendous clinical implications. Certainly, patients undergoing CBA might benefit from using higher temperature (above -51 °) and lower freezing time (<300 seconds) to avert developing ETI. Further studies incorporating more patients should be conducted to elucidate whether using an esophageal warming device is associated with a beneficial or a detrimental effect.

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