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Editorial

Is ICE-Guided Cryoballoon Ablation for Atrial Fibrillation a New Advancement?

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▸ See the article "Clinical Outcomes of Intracardiac Echocardiography-Guided Contrast Agent-Free Cryoballoon Ablation in Atrial Fibrillation Patients With Renal Insufficiency" in volume 54 on page 113.

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Treatment of atrial fibrillation (AF) has seen numerous developments, as early rhythm control has been shown to improve clinical outcomes compared to rate control only.[1] Treatments like radiofrequency catheter ablation and cryoballoon ablation (CBA), as well as the more recent pulse-field ablation, have been utilized as various energy sources to treat AF. Among these, CBA has become particularly popular due to its short learning period and procedure time. In Korea, the widespread use of CBA led to the reporting of real-world clinical practice data from three centers in 2022.[2] The result of the study shows that CBA is an efficient, effective, and safe procedure for treating AF patients. Consequently, the Korean Heart Rhythm Society has collected multicenter registry data, and continuous publication of de-novo CBA from major institutions has been published.[3][4]

The study titled 'Clinical Outcomes of Intracardiac Echocardiography-Guided Contrast Agent-Free Cryoballoon Ablation in Atrial Fibrillation Patients With Renal Insufficiency' published in the current issue of the *Korean Circulation Journal* provides a noteworthy comparison of the outcomes of CBA in patients with chronic kidney disease and those without. It also evaluates changes in renal function following CBA over a 12-month period.[5] Patients with chronic kidney disease often have concerns about the use of contrast agents in procedures like cryoablation. Thus, if CBA performed by an experienced operator can avoid this issue, it could become a valuable therapeutic option for patients with AF and chronic kidney disease.

For CBA treatment, it is crucial for the cryoballoon to precisely fit into the pulmonary vein and occlude the blood flow. This is typically confirmed using fluoroscopy to check the position and shape of the balloon, and contrast is injected through the balloon catheter tip to ensure accurate fitting and occlusion. However, this process can increase radiation exposure and concerns about kidney function due to the contrast. The authors have previously suggested a solution by using an ICE-guided technique,[6] which significantly reduces radiation exposure and contrast volume, thereby alleviating concerns in chronic kidney disease patients. The current report further enhances our understanding of clinical outcomes in chronic kidney disease patients undergoing CBA.

However, the implementation of ICE-guided, contrast-agent-free CBA requires considerable expertise, which may limit its widespread application. Electrophysiology centers not familiar

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with ICE could experience a negative impact on procedural outcomes if they attempt ICE-guided CBA without a sufficient learning period. Additionally, as equipment and techniques for treating AF become more diverse, the best method for treating AF may vary depending on the technology and equipment available to the physician or center, as well as the patient's individual circumstances. Nevertheless, as demonstrated in this paper, such advancements are, I believe, significant steps forward in the progress of AF ablation.

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