Fluoroless cryoballoon ablation of atrial fibrillation using the novel mapping system

Ana Jordan*, **Ante Lisičić**, **Sanda Sokol Tomić**, **Nikša Bušić**, **Ivica Benko**, **Fran Rode**, **Šime Manola**, **Nikola Pavlović**

Dubrava University Hospital, Zagreb, Croatia

KEYWORDS: cryoablation, flouroless, pulmonary vein isolation.

CITATION: Cardiol Croat. 2022;17(9-10):176. | https://doi.org/10.15836/ccar2022.176

***ADDRESS FOR CORRESPONDENCE**: Ana Jordan, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia . / Phone: +385-98-613-086 / E-mail: anazovko4@gmail.com

ORCID: Ana Jordan, https://orcid.org/0000-0003-4996-2203 • Ante Lisičić, https://orcid.org/0000-0002-4365-9652
Sanda Sokol Tomić, https://orcid.org/0000-0002-4551-9231 • Ivica Benko, https://orcid.org/0000-0002-1878-0880
Fran Rode, https://orcid.org/0000-0002-8787-2455 • Šime Manola, https://orcid.org/0000-0001-6444-2674
Nikola Pavlović, https://orcid.org/0000-0001-9187-7681

Introduction: Pulmonary vein isolation (PVI) is the cornerstone of atrial fibrillation (AF) ablation. Radiofrequency point-by-point ablation (RFA) in conjunction with 3D mapping systems uses minimal or no fluoroscopy, while cryoballon ablation (CBA) still requires longer use of fluoroscopy.[1] KODEX-EPD (3D mapping system) is a cardiac imaging system that can be used to guide CBA. With its ability to assess the dielectric properties of structures around an inserted catheter, 3D maps can be made, and the system can assess the occlusion of PVs without the use of fluoroscopy or iodine contrast[2]. The aim of our study was to test the feasibility and safety of this relatively new dielectric imaging system in reducing fluoroscopy and contrast use during CBA.

Patients and Methods: Consecutive patients undergoing CBA were enrolled with the intention to perform flouroless procedures. The KODEX-EPD navigation system was used to image the anatomy of the right atrium (RA). A single transseptal puncture was performed guided by intracardiac echocardiography. Mapping of the pulmonary veins and LA was performed by navigation with an inner lumen circular mapping catheter. The degree of PV occlusion with the inflated CB was verified using the "occlusion tool" software module and additionally with the use of saline injection.

Results: During the two months, 15 consecutive patients undergoing CBA were enrolled (age 60±11; 6 women; mean left atrial diameter 39±4 mm). The average procedural and fluoroscopy times were 105±32 minutes and 3.5 ±3 1.8 minutes, respectively. In 7 patients (46,6%) procedure was performed with no use of fluoroscopy, while in 8 (53,4%) fluoroscopy was used due to the difficult crossing of the interatrial septum. No fluoroscopy was used after achieving LA access in all patients. In all patients, PVI was achieved with a mean total freezing time of 18.5± 4 minutes. PV occlusion was verified using the system's occlusion tool successfully in all but one patient in whom 16 ml of iodine contrast was used to verify the PV occlusion. No complications have occurred.

Conclusion: Although still a small number of patients were included, the results show promising effects of this novel electroanatomic system in performing CBA with no or minimal use of fluoroscopy and a significant reduction in the use of iodine contrast.

RECEIVED:
November 2, 2022

ACCEPTED:
November 10, 2022

LITERATURE

1. Tovia Brodie O, Rav-Acha M, Wolak A, Ilan M, Orenstein DJ, Abuhatzera S, et al. Anatomical accuracy of the KODEX-EPD novel 3D mapping system of the left atrium during pulmonary vein isolation: A correlation with computer tomography imaging. J Cardiovasc Electrophysiol. 2022 Apr;33(4):618-625. https://doi.org/10.1111/jce.15391
2. Schillaci V, Stabile G, Arestia A, Shopova G, Agresta A, Poggi S, et al. Fluoroscopy and contrast media use in cryoballoon ablation of atrial fibrillation using a novel imaging system. Heart Vessels. 2022 Jan;37(1):115-120. https://doi.org/10.1007/s00380-021-01902-2