

## EDITORIAL COMMENT

# Effect of Sex Differences in Atrial Fibrillation After the Combined Procedure

## Predisposed or Impartial?\*

Qi Jiang, MD,<sup>a</sup> Nan Wu, MD,<sup>b</sup> Ming-long Chen, MD<sup>b</sup>



Catheter ablation treatment of atrial fibrillation (AF) has been an established approach for patients with AF. However, no solid data have clearly shown that AF ablation can reduce the long-term risk for ischemic stroke in this patient population. Therefore, left atrial appendage closure (LAAC) and radiofrequency catheter ablation (RFCA) were combined in patients with AF,<sup>1</sup> especially those at high risk. Given its better symptom control and stroke prevention, the so-called one-stop procedure may be additionally beneficial to high-risk patients because of its treatment on both sides of AF. In a study published in this issue of *JACC: Asia*,<sup>2</sup> pulmonary vein isolation and additional ablation were performed first, and LAAC subsequently, termed the RFCA-first procedure. Because of acute tissue edema at the ridge area attributable to the permeability of radiofrequency energy, the shape and size of the left atrial appendage ostium were changed. The inaccuracy of device size with the Watchman (Boston Scientific) could then increase the risk for peridevice leak after edema subsided.<sup>3</sup> Therefore, transesophageal echocardiographic and 3-dimensional computed tomographic reconstruction of the left atrium is

essential to postoperative follow-up. So far, there has been no randomized control trial, or even a large-scale registry, comparing LAAC alone with the one-stop procedure regarding procedural complications and long-term preventive outcomes. Such studies are rather urgent.

In reality, sex differences can be observed throughout the course of AF. Women have an overall lower incidence rate of AF; however, the prevalence of AF is higher among women >75 years of age.<sup>4</sup> Pregnancy, a female-specific factor, plays a role in AF development. Compared with no pregnancies, the risk for AF increases with parity,<sup>5</sup> suggesting that exposure to pregnancy contributes to the sex differences in the pathologic progress of AF. The clinical characteristics in the present study lack relevant data on pregnancy, which can affect the left atrium through inflammatory and hormonal stresses.<sup>6</sup> However, older female patients with AF often have greater extent of atrial fibrosis and left atrial endothelial dysfunction.<sup>7,8</sup> This is why, all else equal, higher CHA<sub>2</sub>DS<sub>2</sub>-VASc scores are obtained in women compared with men. If voltage mapping data from the present study could be produced to assess the sex difference, the study would be more comprehensive. There was a higher incidence of minor complications in women than in men, attributable to anatomical differences. Propensity score matching is necessary because women in this study were 3 years older than men.

Reduction in quality of life (QoL) is relevant to AF development. In addition, women with AF have lower QoL scores than men, and somatization, depression, and personality traits might be the contributing factors.<sup>9,10</sup> In enrolled patients after the one-stop procedure, greater benefit from rate and symptom control was observed in women, leading to

\*Editorials published in *JACC: Asia* reflect the views of the authors and do not necessarily represent the views of *JACC: Asia* or the American College of Cardiology.

From the <sup>a</sup>Department of Cardiology, The Third Affiliated Hospital of Soochow University, Changzhou, China; and the <sup>b</sup>Department of Cardiology, The First Affiliated Hospital of Nanjing Medical University, Nanjing, China.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

significantly improved QoL scores. However, this benefit could be diluted by long-term recurrence. On the whole, on the basis of the adequate safety and efficacy of the one-stop procedure, it is worth generalization and dissemination in both women and men. Despite the sex differences involved in etiology, mechanisms, symptoms, treatments, and risk for stroke, an optimized strategy of combined RFCA and LAAC for patients with AF should be applied impartially.

## FUNDING SUPPORT AND AUTHOR DISCLOSURES

The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

**ADDRESS FOR CORRESPONDENCE:** Dr Ming-long Chen, The First Affiliated Hospital of Nanjing Medical University, 300 Guangzhou Road, Nanjing 210029, China. E-mail: [chenminglong@njmu.edu.cn](mailto:chenminglong@njmu.edu.cn).

## REFERENCES

1. Su F, Gao C, Liu J, et al. Peri-procedural outcomes associated with use of a left atrial appendage occlusion device in China. *JAMA Netw Open*. 2022;5(5):e2214594.
2. Chen M, Sun J, Li W, et al. Sex differences in the combined ablation and left atrial appendage closure: results from LAACablation registry. *JACC: Asia*. 2023;3(1):138-149.
3. He B, Jiang LS, Hao ZY, Wang H, Miao YT. Combination of ablation and left atrial appendage closure as "one-stop" procedure in the treatment of atrial fibrillation: current status and future perspective. *Pacing Clin Electrophysiol*. 2021;44(7):1259-1266.
4. Schnabel RB, Yin X, Gona P, et al. 50 Year trends in atrial fibrillation prevalence, incidence, risk factors, and mortality in the Framingham Heart Study: a cohort study. *Lancet*. 2015;386(9989):154-162.
5. Westerman S, Wenger N. Gender differences in atrial fibrillation: a review of epidemiology, management, and outcomes. *Curr Cardiol Rev*. 2019;15(2):136-144.
6. Wong JA, Rexrode KM, Sandhu RK, Conen D, Albert CM. Number of pregnancies and atrial fibrillation risk: the Women's Health Study. *Circulation*. 2017;135(6):622-624.
7. Wong GR, Nalliah CJ, Lee G, et al. Sex-related differences in atrial remodeling in patients with atrial fibrillation: relationship to ablation outcomes. *Circ Arrhythm Electrophysiol*. 2022;15(1):e009925.
8. Odening KE, Deiss S, Dilling-Boer D, et al. Mechanisms of sex differences in atrial fibrillation: role of hormones and differences in electrophysiology, structure, function, and remodeling. *Europace*. 2019;21(3):366-376.
9. Paquette M, Roy D, Talajic M, et al. Role of gender and personality on quality-of-life impairment in intermittent atrial fibrillation. *Am J Cardiol*. 2000;86(7):764-768.
10. Ong L, Irvine J, Nolan R, et al. Gender differences and quality of life in atrial fibrillation: the mediating role of depression. *J Psychosom Res*. 2006;61(6):769-774.

**KEY WORDS** atrial fibrillation, catheter ablation, left atrial appendage closure, quality of life, sex differences, stroke