

Intracardiac Echocardiography Operational Experience of Chinese Interventional Cardiologists in Conducting Radio-Frequency Catheter Ablation for Cardiac Arrhythmias: A Cross-Sectional Survey Study

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INTRODUCTION

- Atrial fibrillation (AF) is the most common arrhythmia, affecting nearly 10 million Chinese people.¹
- Radiofrequency catheter ablation (RFCA) is widely used to treat patients who have failed with or cannot tolerate antiarrhythmic treatments.²
- Intracardiac echocardiography (ICE) technology has been proven to completely or partially replace the use of X-rays, reducing the radiation exposure for both patients and interventional cardiologists (IC). It allows for real-time monitoring of intraoperative thrombosis, reduces perioperative complications, and improves surgical safety of RFCA.³⁻⁴
- ICE has been adapted in RFCA in many Chinese tertiary hospitals. The feedback and experience regarding the use of ICE for RFCA in Chinese IC could provide insights to guide future use of ICE for RFCA in Chinese hospital settings.

OBJECTIVES

- To survey the confidence, values, and satisfaction regarding the use of ICE technology to guide RFCA procedures among Chinese IC with ICE operational experience

METHODS

Study design

- A cross-sectional survey

Study cohort

- The Chinese IC who conducted ICE-guided RFCA for AF were enrolled from August 2022 to October 2022.

Survey Content

- The survey collected the basic information of surveyed CI, their experience with the operation of ICE, their attitudes towards the use of ICE, their satisfaction with the use of ICE, and their recognition of the values of ICE

Statistical data analysis

- Descriptive statistic methods to summarize the collected information from the survey
- Multiple logistic and generalized linear regression analyses to explore the the factors affecting the satisfaction with ICE and the recognition of the values of ICE in the surveyed IC

RESULTS: Geographic locations of the surveyed 100 IC

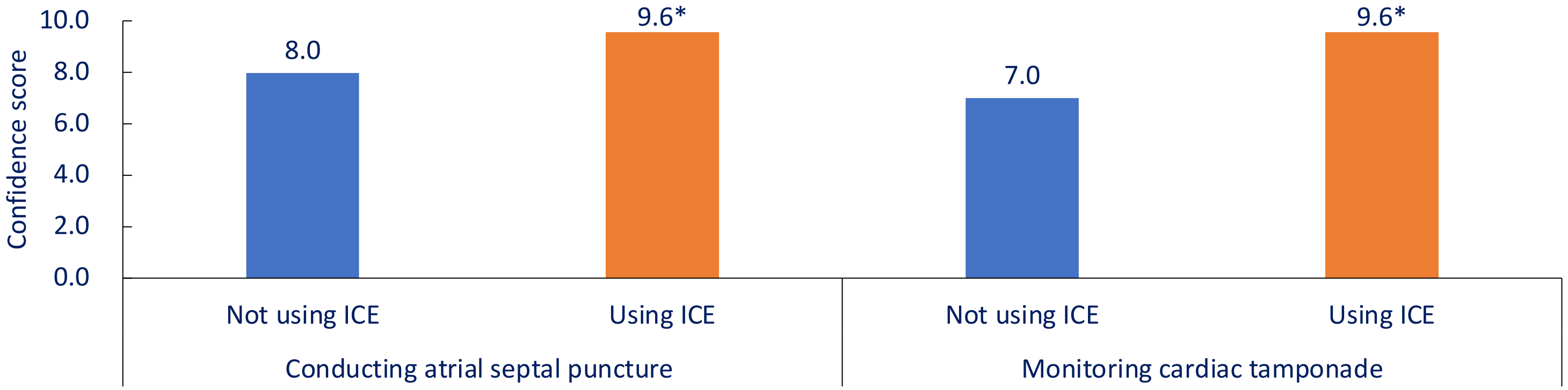


RESULTS: BASELINE CHARACTERISTICS OF THE SURVEYED IC

Characteristics	Mean/%	SD
<i>Demographics</i>		
Age (years)	40.9	6.4
Male (%)	85.0%	
<i>Professional title (%)</i>		
Attending physician	33.0%	
Associate chief physician	36.0%	
Chief physician	31.0%	
<i>Rank of the city where the surveyed IC work (%)</i>		
Tier-I	35.0%	
Tier-II	63.0%	
Tier-III	2.0%	
<i>Number of surgeries using ICE for RFCA</i>		
Below 10	3.0%	
10-30	10.0%	
30-50	8.0%	
50-100	18.0%	
100-200	20.0%	
More than 200	41.0%	

- The surveyed IC are characterized by a relatively young age, working in large cities, and highly experienced in conducting ICE-guided RFCA procedures.

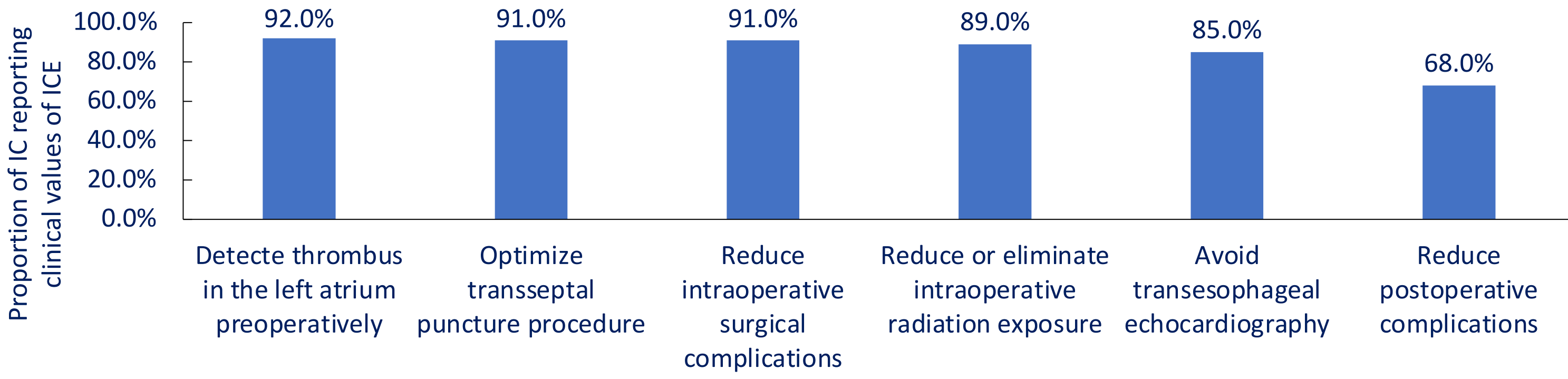
RESULTS: THE IMPACT OF USING ICE ON THE CONFIDENCE OF CONDUCTING RFCA PROCEDURE



Confidence score was rated from 0 to 10 (0 means no confidence at all, 10 means the strongest confidence).
* P-value is less than 0.001.

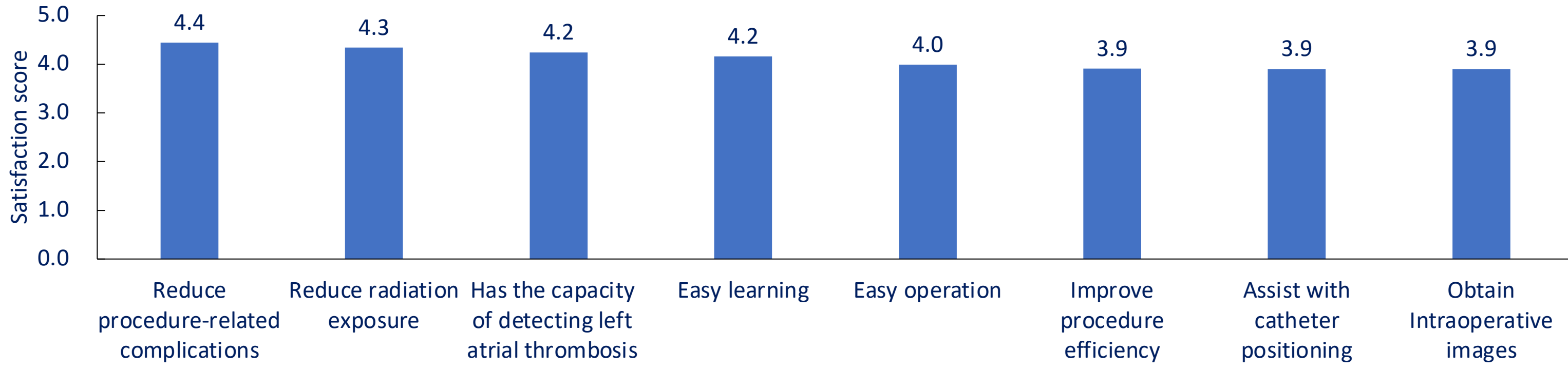
- Conducting ICE-guided RFCA significantly improve confidence in conducting transseptal puncture and monitoring cardiac tamponade during surgery.

RESULTS: RECOGNIZED CLINICAL VALUES OF ICE FOR RFCA



- The mostly reported clinical values of ICE-guided RFCA from the surveyed IC were detecting thrombus in the left atrium, improving transseptal puncture, reducing complications, and reducing radiation exposure

RESULTS: SATISFACTION WITH ICE-guided RFCA



Satisfaction score was rated from 0 to 5 (0 means not satisfied at all, 5 means extremely satisfied).

- The surveyed IC were generally satisfied with ICE-guided RFCA from varied perspectives. The reduction of procedure-related complications was the mostly satisfied clinical value of ICE technology.

RESULTS: FACTORS AFFECTING THE RECOGNITION OF ICE VALUE, SATISFACTION SCORE AND USAGE ATTITUDE

Reducing postoperative complications risk				Satisfaction score on the operation convenience				Using ICE is the current technological trend			
Independent variable	Control variable	OR (95% CI)	P value		Coefficient (95% CI)	P value		Coefficient (95% CI)	P value		
Demographics											
Age (years) ≤ 40	Age (years) > 40	1.601 (0.446 , 6.008)	0.474		0.078 (-0.024 , 0.179)	0.140		0.106 (0.024 , 0.188)	0.012		
FeMale	Male	0.581 (0.156 , 2.218)	0.416		0.105 (-0.003 , 0.216)	0.063		0.044 (-0.042 , 0.131)	0.323		
Professional title											
Attending physician	Chief physician	0.400 (0.068 , 2.137)	0.293		-0.077 (-0.211 , 0.057)	0.267		-0.041 (-0.148 , 0.067)	0.457		
Associate chief physician	Chief physician	0.592 (0.147 , 2.306)	0.450		-0.030 (-0.137 , 0.077)	0.589		-0.054 (-0.140 , 0.032)	0.218		
Number of ICE-guided RFCA procedure in the hospitals where the surveyed IC work during the year of 2021											
> 200	≤ 200	0.272 (0.086 , 0.760)	0.018		0.067 (-0.013 , 0.146)	0.103		-0.003 (-0.066 , 0.059)	0.921		
Number of years conducting Carto-guided RFCA											
< 7	7 or above	1.395 (0.498 , 4.084)	0.531		0.099 (0.014 , 0.183)	0.025		0.046 (-0.021 , 0.113)	0.180		
Weekly number of performed Carto-guided RFCA by surveyed IC in the last year											
< 9	9 or above	4.358 (1.262 , 17.499)	0.027		0.022 (-0.073 , 0.117)	0.655		-0.016 (-0.090 , 0.059)	0.681		
Cumulative number of ICE-guided RFCA conducted by the surveyed IC											
100 or above	< 100	5.236 (1.697 , 18.663)	0.006		0.115 (0.025 , 0.204)	0.013		0.108 (0.038 , 0.178)	0.003		

- The surveyed Chinese IC with more ICE operation experience are likely to more recognize the value of reducing postoperative complications through ICE technology, more satisfied with the operational convenience of ICE technology, and agree with the current trend of using ICE technology to guide RFCA.

CONCLUSIONS

- According to Chinese interventional cardiologists who have conducted ICE-guided RFCA in patients with AF, ICE technology significantly improves confidence in conducting transseptal puncture and monitoring cardiac tamponade during the RFCA procedure, and its clinical value is widely recognized and well-received.
- Chinese interventional cardiologists with more experience in ICE operations have a better understanding of the clinical benefits of ICE technology, express higher satisfaction with the improved operational convenience it offers, and are more inclined to embrace the trend of incorporating ICE technology into RFCA procedures.

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