

Summary

Atrial Fibrillation Ablation using Intracardiac Echocardiography versus Transesophageal Echocardiogram

Rhea C. Pimentel, MD; Sonia Maccioni, MPH; Rahul Khanna, PhD

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BACKGROUND

Catheter ablation (CA) is the recommended treatment strategy for atrial fibrillation (AF) patients who are drug refractory or resistant to anti-arrhythmic drugs. Intracardiac echocardiography (ICE) and transesophageal echocardiography (TEE) are common imaging modalities used for CA procedure. Comparisons of TEE and ICE from an ablation effectiveness and cost perspective are limited.

OBJECTIVE

The objective of this study is to assess and compare healthcare utilization and cost outcomes in patients with AF who underwent CA with ICE versus TEE.

METHODS



DESIGN AND DATA SOURCE: Retrospective observational cohort study using hospital billing records contained in the 2016-2021 Premier Healthcare Database.



COHORT: AF patients aged 19 and older undergoing CA for AF using ICE versus TEE were matched in 4:1 ratio, respectively.

- N=10,994 total patients post matching
- n=8,665 patients in the ICE cohort
- n=2,329 patients in the TEE cohort

ANALYSIS:

- Standardized Mean Difference was used to assess the pre- and post-matching balance of covariates.
- Generalized Estimating Equation model was used to assess healthcare utilization and cost outcomes.

RESULTS

In the post-ablation 12-month period, patients who underwent CA with ICE had:



32%

**LOWER RISK
OF ALL-CAUSE INPATIENT
READMISSIONS**

Odds Ratio: 0.68
95% CI: 0.52-0.88



29%

**LOWER RISK
OF CV-RELATED
INPATIENT READMISSIONS**

Odds Ratio: 0.71
95% CI: 0.55-0.90



25%

**LOWER RISK
OF AF-RELATED
INPATIENT READMISSIONS**

Odds Ratio: 0.75
95% CI: 0.57-0.99



37%

**LOWER RISK
OF REPEAT CA
PROCEDURES**

Odds Ratio: 0.63
95% CI: 0.44-0.89

Patients in the ICE cohort had:



**35% LOWER RISK
OF 30-DAY COMPLICATIONS**

Odds Ratio: 0.65
95% CI: 0.50-0.83

No significant difference in total cost of care:



**\$29,260 ICE COHORT VERSUS
\$31,105 TEE COHORT**

Exponentiated Ratio: 0.94
95% CI: 0.84-1.06

LIMITATIONS

- Observational studies are susceptible to selection bias; however, propensity-score matching was used to minimize this bias.
- Operator and hospital volume were not controlled for in the study.
- Potential confounders, such as AF severity, ablation strategy, duration of AF, anesthesia use (general anesthesia or conscious sedation), and concomitant rhythm or rate control drug use, were not assessed, which may have influenced study results.

KEY TAKEAWAYS



Patients who underwent CA with ICE had a 32% lower risk of all-cause patient readmissions, 29% lower risk of CV-related inpatient readmissions, 25% lower risk of AF-related inpatient admissions, and 37% lower risk of repeat CA procedure.

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A Division of Johnson & Johnson Medical NV/SA
Leonardo da Vincilaan 15 | 1831 Diegem, Belgium
Tel: +32-2-7463-401 | Fax: +32-2-7463-403



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