

SUMMARY

Real-World Outcomes of Ventricular Tachycardia Catheter Ablation with versus without Intracardiac Echocardiography

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Journal of Cardiovascular Electrophysiology (2019). doi: 10.1111/jce.14324.

This study was funded by Biosense Webster, Inc. and authors L.G, S.L, I.K, P.C, C.W and R.K are employees of Biosense Webster, Inc./Johnson & Johnson.



STUDY QUESTION

How do clinical outcomes differ between ventricular tachycardia (VT) patients undergoing catheter ablation with and without the use of intracardiac echocardiography (ICE)?

METHODOLOGY

DATA SOURCE:

IBM® MARKETSCAN® COMMERCIAL AND MEDICARE SUPPLEMENTAL DATABASES



The IBM® MarketScan® Commercial and Medicare Supplemental databases include medical and prescription claims data for more than 138 million employees, dependents, and retirees in the US.

Design: Retrospective, observational cohort study.

Population: VT patients ablated with and without the use of ICE.

Analysis: Patients were matched using 1:1 propensity score matching. Study outcomes were then compared using logistic regression among the matched cohort.

OUTCOMES



ALL-CAUSE
READMISSIONS



CARDIOVASCULAR-
RELATED
READMISSIONS



VT-RELATED
READMISSIONS



REPEAT VT
ABLATION



COMPLICATION
RATE

RESULTS

TOTAL PATIENT POPULATION

1,890

Patients in the total cohort meeting study criteria

PROPENSITY MATCHED PATIENT SAMPLE

1,324

Patients were matched, with 662 in each cohort for ICE and non-ICE

VT-RELATED INPATIENT READMISSIONS

Use of ICE was associated with a lower likelihood of 12 month VT-related readmission

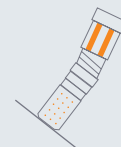


24%

fewer 12 month VT-related inpatient admissions

REPEAT ABLATIONS

Use of ICE was associated with a lower likelihood of repeat VT ablation



30%

fewer repeat VT ablations

CONCLUSION



This study demonstrates that use of intracardiac echocardiography (ultrasound) during VT catheter ablation was associated with **significant reductions in 12 month VT-related readmission and repeat VT ablation.**

OBJECTIVE

The objective of this study was to assess differences in outcomes between VT patients undergoing catheter ablation with versus without the use of ICE.

METHODS

Experimental Design

STUDY DESIGN	Retrospective, observational cohort study
DATA SOURCE	Data from the 2008-2017 IBM MarketScan Commercial and Medicare Supplemental databases were used to identify VT patients undergoing catheter ablation that were previously treated with implantable cardioverter defibrillator/cardiac resynchronization therapy (ICD/CRT-D)
ANALYSIS	<ul style="list-style-type: none">• Patients were classified into ICE and non-ICE cohorts and matched using 1:1 propensity score matching• Logistic regression analysis was used to compare outcomes between the matched cohorts and a falsification analysis was performed to assess if unmeasured confounders had an influence on study results• A subgroup analysis including only patients with ischemic heart disease (IHD) was performed
INCLUSION CRITERIA	<ul style="list-style-type: none">• Age ≥ 18 years• Inpatient or outpatient ablation procedure with a primary diagnosis of VT between January 1, 2008 and December 31, 2017• Patients enrolled for 6 months pre-index and 12 month post-index (index defined as very first ablation during the study period)• Patients with an ICD or CRT-D, including procedure codes for implantation

OUTCOMES



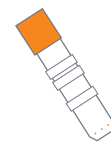
ALL-CAUSE
READMISSIONS



CARDIOVASCULAR-
RELATED
READMISSIONS



VT-RELATED
READMISSIONS



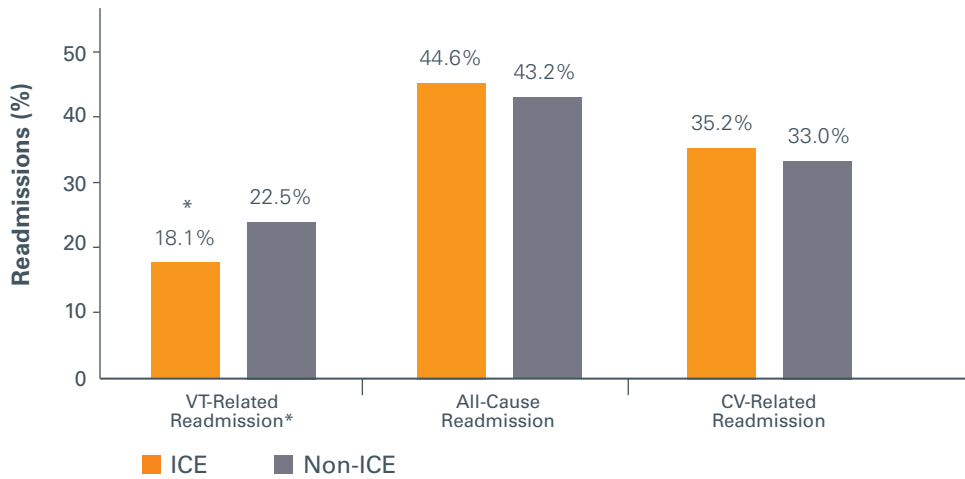
REPEAT VT
ABLATION

STUDY CHARACTERISTICS

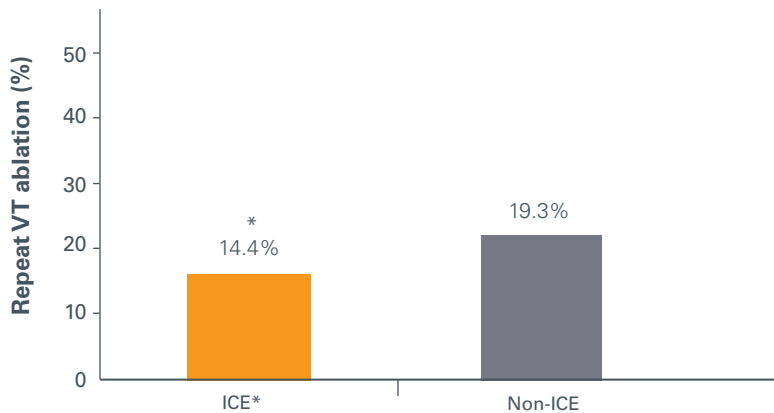
In total, 1,324 patients were included in the study; 662 patients were matched in each of the ICE and non-ICE cohorts. 934 were included in the IHD sub-group analysis.

STUDY OUTCOMES

Bivariate analysis showed that the ICE-cohort was associated with **significantly lower VT-related readmissions** (18.13% vs 22.51%, $p < 0.05$) and **repeat VT ablations** (14.35% vs 19.34%, $p = 0.02$). There were no significant differences in all-cause and CV-related readmissions.



*Indicates statistically significant difference; $p \leq 0.05$



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Multivariable analysis showed that patients in the **ICE group had 24% lower odds of 12 month VT readmission and 30% lower odds of repeat VT ablation.**



The IHD subgroup analysis, that patients in the ICE group **had a significantly lower rate of 12 month repeat VT ablation (13.06% vs 20.34%; $P < .01$)** compared with patients in the non-ICE group.

STUDY LIMITATIONS



Study limitations include:

- Potential unmeasured confounders
- Physician experience
- Clinical details on site of VT origin and catheter type were not available
- Potential coding errors.

Propensity score matching was used to reduce biases. Additionally, the results from falsification analysis reflect that differences in outcomes among patients observed in the study are likely attributable to ICE status, rather than due to unexplained confounders.

CONCLUSION



This study demonstrated that **VT patients undergoing catheter ablation with ICE had improved outcomes compared to non-ICE patients.** When compared to ablation without the use of ICE, ablation with ICE was associated with a lower likelihood of 12 month VT-related readmission and lower likelihood of repeat ablation.

Better visualization of cardiac structure and intraprocedural assessment of catheter-tissue interface may translate into improved outcomes among VT patients undergoing ablation with ICE.

Important information: Prior to use, refer to the instructions for use supplied with this device for indications, contraindications, side effects, warnings and precautions.

Caution: US law restricts this device to sale by or on the order of a physician.

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