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Summary

Atrial Fibrillation Ablation with Advanced Radiofrequency Catheter versus Second-Generation Cryoballoon Catheter

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RATIONALE

Comparison of costs and 12-month (12M) readmission of AF patients undergoing catheter ablation (CA) treated by THERMOCOOL SMARTTOUCH® SF (STSF) Catheter vs Arctic Front Advance™ (AFA) cryoballoon catheter.

STUDY QUESTION

Is there a difference in cost and readmission among patients with AF who underwent CA procedure using STSF catheter versus AFA cryoballoon catheter?

METHODOLOGY

DATA SOURCE:
PREMIER HEALTHCARE DATABASE (PHD)

A nationwide hospital billing database, containing complete clinical coding, hospital costs, and patient billing data from >700 representative hospitals in the US.

Design: Retrospective, observational cohort study

Population: Patients at least 18 years old, with a primary diagnosis of AF who underwent elective CA procedure between September 1, 2016, and March 31, 2020

Analysis: Patients were matched using 1:1 propensity score matching (greedy match algorithm with 0.10 caliper). Outcomes were assessed using a regression model

RESULTS

TOTAL OF 11,519 PATIENTS

7,758 patients with STSF and 3,761 patients treated with AFA. After propensity matching: 2,767 patients were identified in each of the cohorts.

Compared to AFA patients, the following improvements were reported for patients ablated using STSF Exponentiated Ratios (ERs):

↓21%
SUPPLY COSTS
($10,539 for STSF vs $13,416 for AFA, *P* < 0.0001, ER:0.7855)

↓10%
PROCEDURE COST +12M AF-RELATED INPATIENT READMISSION COST
($25,099 for STSF vs $27,893 for AFA, *P* =0.0492, ER:0.8998)

↓34%
LOWER ODDS OF 12M AF-RELATED INPATIENT READMISSIONS
(2.58% for STSF vs 3.99% for AFA, *P* =0.0402, ER:0.6616)

↓52%
LOWER ODDS OF 12M AF-RELATED INPATIENT ADMISSIONS
when ablation was performed in high-volume centers (1.87% for STSF vs 4.14% for AFA, *P* =0.0456, ER:0.4751)

No differences were observed in cardiovascular-related inpatient readmissions among the study cohorts

CONCLUSIONS

- Patients who undergo **AF ablation using the STSF Catheter have significantly lower supply costs, total cost of AF management, and 12M post-operative AF-related admissions**, compared to patients who underwent CA using AFA catheter.
- Compared to patients undergoing CA using AFA, STSF may offer improved financial savings and better patient outcomes.

ARTICLES COMPARING COSTS AND HEALTHCARE UTILIZATION OF STSF VS CRYO ABLATION

- Costea A, Goldstein L, Maccioni S. et al. **Real-world outcomes comparison among adults with atrial fibrillation undergoing catheter ablation with a contact force porous tip catheter versus a second-generation cryoballoon catheter: a retrospective analysis of multihospital US database.** *BMJ Open*. 2020; 10(8):e035499.
- Hunter TD, Palli SR, Rizzo JA. **Cost comparison of radiofrequency catheter ablation versus cryoablation for atrial fibrillation in hospitals using both technologies.** *J Med Econ*. 2016; 19(10):959-64.
- Hussein A, Gupta D, De Potter T, et al. **Treatment of Atrial Fibrillation Using Ablation Index-Guided Contact Force Ablation: A Matching-Adjusted Indirect Comparison to Cryoballoon Ablation.** *Adv Ther.* 2020; 37(2):785-799.
- Gupta D, De Potter T, Disher T, et al. **Comparative effectiveness of catheter ablation devices in the treatment of atrial fibrillation: a network meta-analysis.** *J Comp Eff Res*. 2020; 9(2):115-126.

AF, atrial fibrillation; AFA, Arctic Front Advance™; CA, catheter ablation; ER, exponentiated ratio; STSF, THERMOCOOL SMARTTOUCH® SF Catheter

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

The THERMOCOOL SMARTTOUCH® SF Catheter is indicated for the treatment of drug refractory recurrent symptomatic paroxysmal atrial fibrillation (AF) and for drug refractory recurrent symptomatic persistent AF (continuous AF > 7 days but < 1 year), refractory or intolerant to at least 1 Class I or III AAD, when used with the CARTO® 3 System.

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

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