RATES AND PREDICTORS OF HOSPITAL AND EMERGENCY DEPARTMENT CARE AFTER CATHETER ABLATION OF ATRIAL FIBRILLATION

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Background: Rehospitalization and emergency department (ED) evaluation after atrial fibrillation (AF) ablation is common. Better identification of reasons for hospitalization and ED evaluation after ablation are needed, particularly as same-day discharge programs expand.

Objective: To define rates and predictors of hospital and ED care after AF ablation in US clinical practice.

Methods: The Optum database was used to study patients undergoing AF ablation between 1/1/16 - 5/30/19. Primary outcomes were all-cause hospital and ED care within 30 days of discharge. Independent predictors of all-cause ER and hospital admissions care were determined via logistic regression.

Results: Within 30 days of AF ablation, 1,440 of 18,848 patients (7.6%) required hospital care and 15% had ≥1 admission; 7.9% required ED care and 28.6% had ≥1 ED visit. The most common reasons for hospital care were supraventricular tachycardia (SVT) including AF (33.2%), heart failure (12.7%), and infection (12.2%). Notably infrequent causes for hospital care included angina or myocardial infarction (2.2%), ischemic stroke (1.5%), transient ischemic attack (0.5%), intracranial bleed (0.7%), pericardial effusion (1.4%), pericardial tamponade (0.06%), and gastrointestinal bleed (1.5%). The most common reasons for ED care were SVT/AF (15.0%), non-cardiac chest pain (13.3%), and non-infectious respiratory illness (12.2%). The figure depicts predictors of all-cause (A) hospital readmission and (B) ED care.

Conclusion: More than 1 in 7 patients requires unplanned hospitalization or ED care after AF ablation, most commonly due to SVT/AF. Predictors of unscheduled care include sex and several patient comorbidities. This study can inform quality improvement initiatives by identifying common causes for unscheduled care.

Predictors of A) all-cause readmissions and B) all-cause emergency department visits 30 days of discharge from an atrial fibrillation ablation
Methods: Forty-five consecutive patients underwent de novo radiofrequency (RF) atrial fibrillation catheter ablation procedure. A new open-irrigated tip catheter with CF and LI measurement capabilities (Stablepoint catheter, Boston Scientific) was used. RF power was set at 45 W. During RF delivery, it was recommended to reach and maintain displayed CF values between 5 and 40 g. Ablation endpoint was PVI. Data are reported as mean±DS.

Results: A total of 2895 point-by-point RF applications were analyzed (RF delivery time (DT)=8.7±4s, CF=13±8g, LI drop=23±7%). All PVs were successfully isolated with an overall procedure time of 118±34min (fluoroscopy time=13±8min). The magnitude of LI drop was weakly correlated with CF (R=-0.13, 95% confidence interval (CI): 0.09 to 0.16, p<0.0001) whereas both CF and LI drop inversely correlated with DT (R=-0.26, 95%CI: -0.29 to -0.22, p<0.0001 for CF; R=-0.36, 95%CI: -0.39 to -0.33, p<0.0001 for LI, respectively). For each 5 grams of CF, LI drops markedly increased from 22.2 to 24.6 at 5 to 25g CF intervals, whereas it has a smooth transition over 25g (24.60 at 25-29g and 250 at >30g CF intervals). FigA. No major complications occurred during or 30-day after the procedures.

Conclusion: CF significantly impact effective lesion formation during RF PV isolation. The benefit of higher contact between the catheter and the tissue over 25g of CF appears to have less impact on the increase of LI drop.

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PULSED FIELD ABLATION FOR PAROXYSMAL ATRIAL FIBRILLATION IS SAFE FOR THE BRONCHIAL SYSTEM
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Background: Thermal LA ablation, like RF, cryo and laser can cause bronchial damage, like hemorrhagic lesions, atrio-bronchial fistula and severe bleedings. Pulsed field ablation (PFA) is a novel, non-thermal ablation modality. Pre-clinical evaluation of PFA showed absence of thermal injury to the esophagus due to the tissue specificity of PFA. Only limited data from very small clinical studies on absence of esophageal injury after PFA is available.

Objective: We report on possible bronchial injury after PVI using PFA for paroxysmal AF.

Methods: A LA bipolar voltage 3D map was created. All PVs were individually isolated using a 13F steerable sheath and a pentaspline over-the-wire PFA catheter. After ablation, mapping was repeated to assess lesion formation. One day after PVI, bronchoscopy without biopsies was performed. Serial hemoglobin levels were measured during 30-day follow-up.

Results: In 30 patients (mean 63 years; 47% male), uncomplicated PFA was performed, with all PVs acutely isolated. Post ablation, all voltage maps consistently showed extensive antral PV lesions. ACT was >325 seconds in all patients. Clinical course was uneventful, no patient had chest discomfort, coughing or hemoptysis. All patients underwent uncomplicated bronchoscopy, without thermal lesions or ulcers. In 12 patients (40%), small amounts of blood clots without active bleeding were seen in multiple segments. All hemoglobin levels remained stable. At 30-day follow-up, all patients were asymptomatic.

Conclusion: PVI using PFA for paroxysmal AF is safe for the bronchial system. PFA using a straight tip, extra-stiff wire can lead to asymptomatic blood oozing in the bronchial system without clinical relevance at 30-day follow-up.

Figure: Postero-anterior LA view before (left) and after (right) ablation with the trachea and main bronchi (dark grey) projected over the roof and posterior wall. The right bipolar voltage 3D map shows extensive, non-magenta antral ablation lesions.