Fluoroscopy Minimization and Fluid Reduction with Two Generations of Irrigated Contact Force Ablation Catheter

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Introduction: A 56-hole porous tip catheter was designed to improve cooling with less fluid delivery than a prior 6-hole design. There are limited publications on real-world procedural and clinical outcomes comparing these cooling tip designs. Therefore, the objective of this study was to report on procedural efficiency and clinical outcomes after paroxysmal atrial fibrillation (PAF) ablation with 6-hole and 56-hole irrigated tip contact force (CF) catheters at a high-volume center in the US.

Methods: Consecutive de novo RF ablations for PAF were performed with the 6-hole design throughout 2016 and subsequently with the 56-hole porous tip in 2017. Similar parameters were used for ablations with the two catheters, including CF between 10-20 g, catheter moved every 10-20 s and RF energy of 40-45 W. In all cases, pulmonary veins were isolated by wide area circumferential ablation using catheter stability software (maximum range: 2.5 mm; minimum time: 4 s). Patients were followed for a year post ablation, with monitoring at 6 months, 12 months, and additionally as needed.

Result: A total of 168 de novo PAF ablations with the 6-hole catheter and 157 with the 56-hole catheter had similar patient characteristics, procedure times, safety, and 1-year clinical outcomes, while more ablations were performed without fluoroscopy and a 30% reduction (407 ml) in total fluids was delivered with the 56-hole porous tip.

Conclusion: In a real-world setting, PAF ablation performed with the porous tip design led to significantly reduced fluid delivery, with otherwise similar outcomes. The associated clinical benefit of the fluid reduction to patients with heart failure requires further evaluation.