Abstract: **P1061**

Incidence and location of PVI gaps identified post-cryoballoon ablation for atrial fibrillation

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Topic(s):
Rhythm Control, Catheter Ablation

Citation:

Background: Successful delivery of continuous and durable pulmonary vein isolation (PVI) lesion sets is recognized as being critical to long-term clinical outcomes following ablation for atrial fibrillation (AF). Confirmation of PVI following cryoballoon ablation is commonly achieved using a 3.3F circular mapping catheter (CMC) which can be delivered through the central lumen of the cryoballoon, but other diagnostic tools may be used alone or in conjunction with the 3.3F CMC. A high-density, grid-style mapping catheter is now available in multiple geographies; use in cryoballoon ablation procedures and associated outcomes has not been previously reported.

Purpose: To evaluate diagnostic catheter usage patterns in cryoablation procedures and identify associated trends in procedural characteristics and acute outcomes.

Methods: Self-reported procedural data was prospectively collected in AF cryoablation cases utilizing various diagnostic catheter tools, including the 3.3F CMC and high-density, grid-style mapping catheter (HD Grid). Procedural characteristics and acute outcomes, including the incidence and location of gaps post-ablation, were recorded and analyzed.

Results: Data was collected in 23 cryoablation procedures performed in 7 centers across the United States and Europe. De novo and repeat ablations represented 65.2% and 21.7% of cases, respectively (13.0% not reported). 3D mapping was employed in 95.7% of cases. A left common pulmonary vein was present and ablated in 8.7% (2/23). The 28mm cryoballoon was utilized in all cases, with a single case using both a 23mm and 28mm cryoballoon. The 3.3F CMC was used to confirm isolation in all cases using a variety of techniques: voltage mapping (60.9%), exit block (56.5%), entrance block (30.4%), propagation mapping (4.3%), and activation mapping (4.3%); note: total exceeds 100% as more than one technique may be employed in a single case. In 18 cases, PVI was confirmed using a 3.3F CMC followed by secondary confirmation with HD Grid, enabling a direct comparison of the two technologies. The HD Grid identified a total of 12 gaps in 4 (22.2%) patients, which were missed by the 3.3F CMC (Figure 1). No adenosine or isoproterenol use was documented in any case.

Conclusion(s): The 3.3F CMC is routinely used to confirm PVI following cryoballoon ablation for atrial fibrillation, but it may fail to identify gaps in some patients. Subsequent assessment of PVI using the HD Grid identified residual gaps in nearly a quarter of patients, suggesting that sensitivity for gap detection may be improved with this tool. Limitations of this analysis include the small sample size and workflows which consistently assessed PVI with the high-density mapping catheter after confirming isolation with the 3.3F CMC. Despite these limitations, the incidence of residual gaps observed is noteworthy and may warrant additional study.

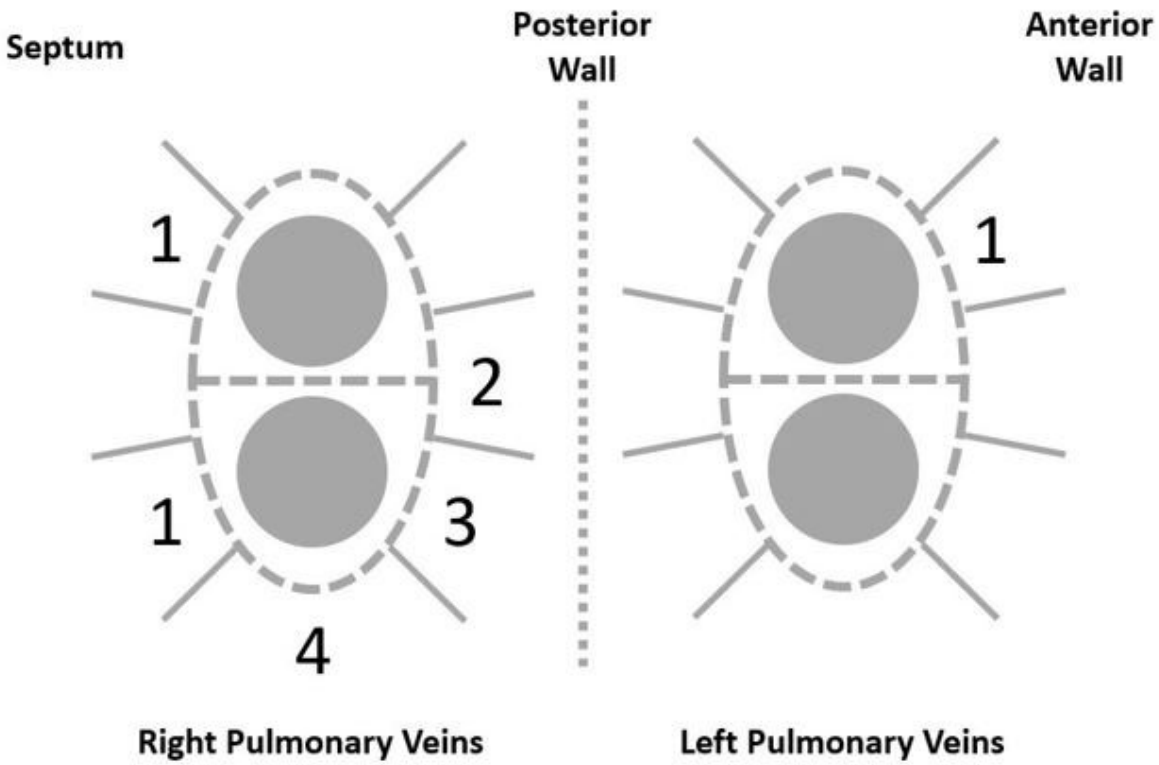

Figure 1. Incidence and location of residual gaps (across all patients in which gaps were recorded) identified by Advisor HD Grid, which were not identified by the 3.3F CMC.