Abstract: **P1023**

Comparison of gap identification using three technologies for confirmation of pulmonary vein isolation

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Background: Pulmonary vein isolation (PVI) is the cornerstone of atrial fibrillation (AF) ablation. Tools and techniques used for confirmation of PVI vary greatly, and it is unclear whether the use of any particular combination of tools and techniques provides greater sensitivity for identifying gaps periprocedurally. A high-density mapping catheter enabling simultaneous recording of adjacent bipolar EGMs in two directions is now available in multiple geographies, and it has been suggested that this technology may provide improved sensitivity for gap identification.

Purpose: To identify trends in the incidence of gaps identified in de novo PVI lines using three diagnostic catheter technologies, which may be suggestive of improved sensitivity for gap identification.

Methods: Self-reported procedural data was prospectively collected in de novo atrial fibrillation ablation cases utilizing one of three technologies to confirm PVI: 10-pole circular mapping catheter (CMC10), 20-pole circular mapping catheter (CMC20), and Advisor HD Grid catheter (HD Grid). Techniques for PVI confirmation were analyzed for each group, and the incidence and location of gaps identified by each technology was quantified.

Results: Data was collected in 99 cases across 11 centers in Europe and the United States. PVI was confirmed via entrance and/or exit block in all cases. CMC10 was utilized in 30 cases, CMC20 in 36, and HD Grid in 33. Use of adenosine varied across groups (CMC10: 6.7%; CMC20: 86.1%; HD Grid: 41.7%), as did application of a waiting period (CMC10: 96.7%; CMC20: 2.8%; HD Grid: 11.1%). Gaps were identified in in 36.7%, 38.9%, and 81.8% of cases using CMC10, CMC20, and HD Grid, respectively. HD Grid identified significantly more gaps than the other two technologies ($p = 0.015$), identifying an average of 49.0% and 139.1% more gaps per patient than CMC20 and CMC10, respectively (HD Grid: 2.15/patient; CMC20: 1.44/patient; CMC10: 0.9/patient). The location and incidence of gaps identified by each technology is shown in Figure 1.

Conclusions: Significantly more gaps were identified by the Advisor HD Grid catheter, as compared to a 10-pole or 20-pole circular mapping catheter. While this does not represent a direct comparison of the sensitivity for identification of gaps across these three technologies, and results could be impacted by other factors (e.g., operator, ablation technique, PVI confirmation technique, etc.), the strong trend toward an increased number of gaps identified with the HD Grid is striking. This may warrant further study including direct comparison of gap identification across technologies, and the resulting impact on long-term clinical outcomes when these additional gaps are ablated during the index procedure.

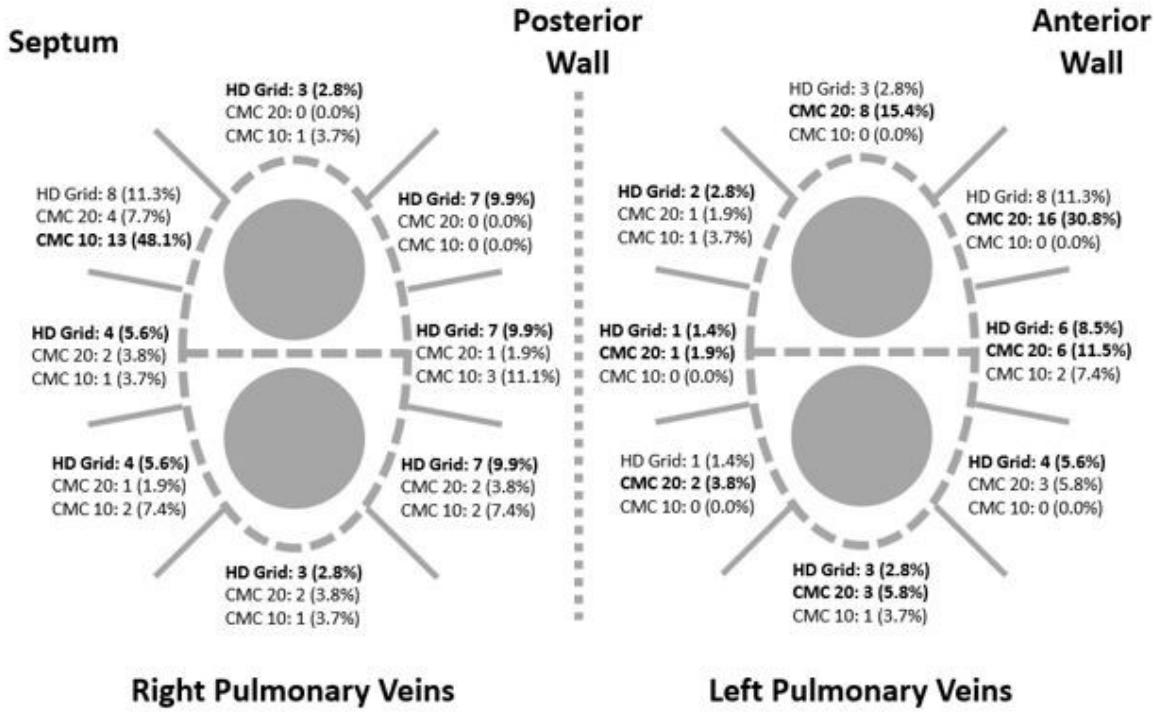

Figure 1. Incidence and location of gaps identified by each diagnostic catheter technology.