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Procedural differences during de novo paroxysmal atrial fibrillation ablation with a contact force-sensing ablation catheter between Europe and U.S.

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Background: Although pulmonary vein isolation (PVI) is considered the standard approach of atrial fibrillation ablation worldwide, procedural practice during the ablation varies by geographical region. Using the same magnetic sensor enabled contact force-sensing ablation catheter for the treatment of de novo paroxysmal atrial fibrillation, a comparison of procedural detail between Europe and U.S operators can provide insights into geographic specific clinical practices.

Purpose: To characterize and compare procedural differences during paroxysmal atrial fibrillation ablation performed with a magnetic sensor enabled contact force-sensing catheter across European and U.S. centers.

Methods: Procedural data were prospectively collected in clinical cases performed with a new magnetic sensor enabled, contact force ablation catheter within the first 6 months of use at participating centers in Europe and the U.S. Procedure time, PVI time, PVI confirmation method, fluoroscopy usage and lesion delivery parameters were analyzed based on geographies.

Results: A total of 131 cases across 35 centers in 11 European countries, and 95 cases across 26 U.S. centers were analyzed. Target geometry was created with the ablation catheter in 94 out of 131 (71.8%) European cases, while only 5 out of 95 U.S. cases (5.3%) reported the use of the ablation catheter for model creation. Although a steerable sheath (64.1% and 67.3%) was commonly used with the ablation catheter in both geographies, difference in the utilization of bidirectional contact force catheter (52.7% and 90.5%) and the automated lesion marking module (76.3% and 81.1%) were observed in European and U.S. cases, respectively. The use of adenosine or isoproterenol to confirm PVI was reported in 25% and 64% of the European and U.S. cases. Average waiting periods were 18.2 minutes and 26.5 minutes from reported European and U.S. cases. Total procedural time, mapping time, and fluoroscopy time were similar between European and U.S. cases. (Table). First pass PVI were 66.4% and 72.6% for European and U.S. cases, respectively.

Conclusion: Total procedural time and RF time were similar between European and U.S. cases during de novo paroxysmal atrial fibrillation ablation using the same ablation catheter. Differences in workflow including the use of a mapping catheter for geometry creation and waiting period were observed between the two geographies.

Summary of procedural details

| De novo PAF N | Procedural time(min) | Mapping time (min) | PVI time (min) | Total RF time (min) | Fluoro time(min) |
|---------------|----------------------|--------------------|----------------|---------------------|-------------------|
| Europe | 131 144.0 ± 56.9 | 16.6 ± 17.1 | 69.8 ± 35.0 | 33.2 ± 15.6 | 11.6 ± 10.1 |
| U.S. | 95 137.6 ± 64.8 | 18.1 ± 23.5 | 58.8 ± 31.5 | 32.3 ± 22.2 | 12.0 ± 15.8 |