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## Abstract: 93

### Acute efficacy of a novel circular multielectrode radiofrequency ablation catheter for pulmonary vein isolation: an anatomic analysis using 3-D CT reconstruction of the left atrium

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**Purpose:** Novel ablation tools have recently been introduced for pulmonary vein isolation (PVI) to reduce procedure and fluoroscopy times. Aim of the study was to assess the acute efficacy of a new low energy phased radiofrequency circular multielectrode ablation catheter (Pulmonary Vein Ablation Catheter™ [PVAC]) in isolating the pulmonary veins (PVs) and its relation to PV anatomy.

**Methods and results:** A total of 50 patients (pts) (52% males, mean age 61.7±9.8 yrs, LVEF 58±6.9%, LA diameter 39.1±6 mm) with paroxysmal AF referred for catheter ablation were analyzed. Multi-slice CT scan was obtained prior to ablation in order to reconstruct a 3-D left atrial anatomy. Maximum and minimum diameters as well as area of all PVs ostia were measured using the dedicated software of a 3-D mapping system. Ratio between the maximum and the minimum PV ostium diameter defined PV shape (round ≤1.2, oval >1.2 and ≤1.4, flat >1.4). A total number of 197 PV ostia were characterized (Table 1). PVs were considered isolated by demonstration of entry and exit block at rest and after adenosine challenge. In case of failure, in isolating the vein with the PVAC, a 4 mm irrigated tip catheter was used to complete the isolation. PVI was achieved in 40 pts (80%) and in 185 PVs (94%) with PVAC alone. All left common PVs (LCPV), left common PV antra (LCPVa) and right middle PVs (RMPV) were successfully isolated with PVAC alone. Distribution of PVs not isolated by PVAC was: left superior n=4 (11%), left inferior n=2 (5%), right superior n=2 (4%), and right inferior n=4 (8%). Comparison of the anatomic characteristics of isolated vs. not-isolated PVs showed no significant differences.

**Conclusions:** PVAC achieved PVI in the majority of PVs with different anatomic characteristics. PV ostium diameters, area, and shape do not seem to influence the efficacy of this novel ablation catheter.

Table 1

|                             | LSPVo<br>(n=38) | LIPVo<br>(n=38) | LCPVo<br>(n=7) | LCPVa<br>(n=5) | RSPVo<br>(n=50) | RIPVo<br>(n=50) | RMPVo<br>(n=9) |
|-----------------------------|-----------------|-----------------|----------------|----------------|-----------------|-----------------|----------------|
| Major diameter (mm)         | 19.1±3.1        | 16.4±2.2        | 30.9±4.4       | 33±3.9         | 20±3.4          | 18±3.2          | 9.6±2.2        |
| Minor diameter (mm)         | 13.9±3          | 11.4±2.9        | 16±2.5         | 15.8±2.2       | 16.1±3.1        | 15.9±2.6        | 8.3±1.7        |
| Area (cm <sup>2</sup> )     | 2.1±0.7         | 1.5±0.5         | 3.8±0.8        | 3.9±1.3        | 2.5±0.8         | 2.3±0.7         | 0.7±0.3        |
| Diameter Ratio              | 1.4±0.3         | 1.5±0.4         | 2±0.4          | 2.1±0.2        | 1.3±0.2         | 1.1±0.2         | 1.2±0.2        |
| Shape (round/oval/flat) (%) | 26/29/45        | 24/29/47        | 0/0/100        | 0/0/100        | 53/30/17        | 72/26/2         | 71/15/14       |

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