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Atrial fibrillation ablation using ablation index guided high power (50W) smart touch technology for quantifiable and efficient circumferential pulmonary vein lesions (the FAFA power-touch study)

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Background: High-power short-duration ablation appears a promising concept. The so-called ablation index (AI) integrating power, contact force and time have demonstrated increased pulmonary vein isolation (PVI) durability. However, feasibility and safety of AI guided high-power ablation is unknown.

Methods and results: Symptomatic AF patients (n=50) underwent circumferential PVI using AI guided high-power point-by-point ablation (CARTO Smart-Touch). Ablation was set to 50W targeting AI values (550: anterior wall/roof, 400: posterior wall) with an inter-lesion distance of 6mm using a non-steerable sheath. An esophageal probe monitored luminal temperature rises (limit: 39°C).

Acute PVI was obtained in all patients; first-pass efficacy was 92%. Mean ablation time per procedure was 11.2±2.2 min, mean procedure time was 55.6±6.6 min.

A total of 2105 lesions were analyzed, comparing left anterior wall vs. left posterior wall and right anterior wall vs. right posterior wall, the mean ablation time (sec.) was 20.5±8.2 vs. 8.6±3.2, and 12.2±4 vs 9.3±3.4; the mean contact force (g): 17.1±12 vs 25.4±14.2 and 33.7±13.1 vs 21.0±10.5, the mean AI: 546.8±48.2 vs 444.6±55 and 554.8±56 vs. 439.8±47.1 (all $P < 0.0001$). Audible steam pops were noted in 4 (8%) patients. Esophageal temperature rise >39°C were noted in 25 (50%) patients. In 1/50 (2%) patient a minor esophageal lesion after ablation was observed without requiring specific therapy. No major complications such as death, stroke, tamponade or atria-esophageal -fistula occurred.

Conclusion: The novel AI guided high power ablation appears to be a feasible, safe, quantifiable and efficient strategy for PVI.