If pulmonary vein isolation requires multi-regional ablation-index targets guided ablation?

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Introduction: The ablation index (AI) is a recently developed marker for ablation lesion quality that incorporates contact force (CF), time, and power in a weighted formula and its effectiveness has been confirmed. However, different AI target in most current studies were set at different values for anterior wall and posterior wall of pulmonary veins (PV) only and most of findings were derived from Western populations. If this AI target is suitable for Asian and if more detailed regional AI targets were needed to realize higher first-pass isolation rate are still unclear.

Methods: This is an observational and exploratory research. Seventy three consecutive patients (41 men, 58.28±13.37 years) with paroxysmal atrial fibrillation underwent AI-guided ablation for PV isolation were enrolled. AI target values were 450 for anterior and 400 for posterior of PV antrum regions and interlesion distance was less than 6 mm. First-pass isolation rate was calculated. Each PV antrum was divided into 16 segments and the regions of gap after first circular isolation were evaluated by activation mapping of PV antrum and left atrium and PV potentials.

Result: First-pass isolation rate were observed in 41 patients (56.16%). Gap was founded at 43 (3.68%) of 1168 PV segments. Most of gap were located at right PV. Gap at the anterior triangle of right PV accounted for the most proportion (30.23%), next was posterior triangle of right PV (20.93%).

Conclusion: AI setting values that vary from anterior wall to posterior wall currently may be not sufficient, which will result in lower first-pass isolation rate, and more detailed regional AI target values setting are needed, especially higher AI value setting for anterior and posterior triangle of right PV.