The optimal ablation index values for the superior vena cava isolation

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Introduction: The ablation index (AI) is reported to be useful for prediction of region size and a durable pulmonary vein isolation. However, there have been no studies about the optimal values of AI for the superior vena cava isolation (SVCI).

Methods: Thirty-seven patients (age 52.5±12.6, gender, male 37(97.3%)) underwent Visitag guided circumferential SVCI between January 2016 and June 2018 at our hospital. A total of 569 ablation lesions were performed during the initial SVCI. We retrospectively calculated the AI in each site. First pass isolation was succeeded in 28 patients (75.7%). Touch up ablation, which included dormant conduction sites, was performed at 36 sites. We compared the energy deliver time, power, impedance drops, contact force (CF), Force-Time Integral (FTI), and AI at the first pass isolation between the touch up site(n=36) and the control site(n=533).

Result: Touch up ablation was needed at the close area of diaphragm or sinus node. Time, power, CF, FTI, Time, power, CF, FTI, and AI was significantly higher in control site(Touch up site vs control site; Energy Delivery Time, sec, 20.3(12.3-21.7) vs 21.7(19.8-25.3), p=0.0002; Power, W, 23 (15-24) vs 24 (20-25), p<0.0001; CF, g, 7(6-10.8) vs11(9-15),p<0.0001; FTI, 126.5(99.3-208.8) vs 245(185.5-339.5),p<0.0001; AI, 277.2±21.8 vs 350.2±42.8 , p<0.0001). No reconnection was seen where the minimum AI value was ≥308. No one showed prolonged phrenic nerve paralysis.

Conclusion: AI value of touch up site was significantly lower than control site. The optimal AI values for SVCI would be 350 and 308 would be needed at least.