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**THE ANATOMY INVESTIGATION OF
CAVOTRICUSPID ISTHMUS LINEAR ABLATION
NAVIGATED BY CARTO**

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Objective We sought to investigate the anatomy characteristics of cavotricuspid isthmus (CTI) and its influence on linear ablation navigated by CARTO in patients with typical atrial flutter (AFL) and atrial fibrillation (AF).

Methods A total of 55 patients (males 34, average age 60.9 ± 9.7 years, 5 typical AFL, 10 paroxysmal AF and 40 persistent AF), who underwent radiofrequency catheter ablation navigated by

CARTO were enrolled in this study. The anatomy characteristics of CTI (length, span and depth) were measured and analysed under the guide of CARTO. The ablation time needed for CTI linear ablation and other baseline characteristics such as gender were also collected for further statistics analysis.

Result (1) The length, span, depth and ablation time of different types of CTI were described as followed: pouch type (n=23, 45.5±7.5 mm, 38.0±7.4 mm, 9.5±2.8 mm, 1707±615 s, 1707±615 s, respectively), concave type (n=10, 42.7±9.0 mm, 37.2±6.7 mm, 4.2±0.8 mm, 1327±832 s, respectively), and flat type (n=22, 36.1±8.9 mm, 34.3±8.0 mm, 1.0±3.1 mm, 927±404 s, respectively). The length of CTI in pouch type was significantly longer than that in flat types (p=0.0015, p=0.001). The depth of CTI in pouch type was significantly longer than that in concave and flat types (p<0.0001). Correlative analysis showed that there was a correlation between the ablation time and the depth of CTI (r=-0.505, p<0.0001). (2) All patients were grouped by the length of CTI to group 1 (less than 35 mm, n=14) and group 2 (n=41). The ablation time of group 2 was much longer than that of group 1 (1485±681 s vs 804±305 s, p=0.0007). There were more pouch type in group 2 (p=0.038), while the flat type were mainly encountered in the group 1 (p=0.0002). (3) A number of 24 CTI dependent AFL were encountered in the 50 AF patients. Significant differences were seen in the depth of CTI and the ablation time between those AF patients with and without CTI dependent AFL (-6.2±4.7 mm vs -2.4±6.0 mm, p=0.016; 1553±582 s vs 1084±683 s, p=0.012, respectively).

Conclusion The ablation time of CTI linear ablation was positively correlated to the depth and the length of CTI. The ablation time were prolonged in those CTI with length ≥35 mm and most of them were pouch type. When CTI dependent AFL was encountered in AF ablation procedure, those CTI were deeper and often presented as pouch or concave type which needed a longer ablation time.