A novel designed atrial septum linear ablation method (Icho line) for non-pulmonary vein triggers originating from atrial postero-septum and crista terminalis


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Background: Therapeutic strategy for non-pulmonary vein (PV) trigger of atrial fibrillation (AF) has not been well established although they are the major cause of AF recurrence after PV isolation. The atrial postero-septum or right atrial crista terminalis (CT) are the common non-PV trigger sites of AF. For them, a focal ablation is often insufficient due to a regional arrhythmogenicity. We devised an original linear ablation method, named "Icho Line". Icho means ginkgo in Japanese.

Methods: Eight hundred and thirty-two AF ablation patients were retrospectively studied. An AF induction test was conducted after each PV isolation procedure. Non-PV triggers from the postero-septum or CT that initiate AF were analyzed. Premature atrial contractions that did not initiate AF were excluded. A linear ablation was designed horizontally from the anterior right PV isolation line to fossa ovalis in the left atrium. In the right atrium, the opposite side of the left atrial ablation and CT were continuously ablated like the shape of a ginkgo leaf (Figure 1).

Results: A hundred and fifteen non-PV triggers were detected in 104 patients (12.5%), among which Icho line ablation was performed in 39 patients (37.5%) with documented triggers from the postero-septum or CT (Figure 1). Atrial tachyarrhythmia recurrence free rate in the Icho line group and other non-PV ablation patients were 61.8% and 45.4%, respectively ($P=0.54$, Figure 2).

Conclusions: A novel designed Icho line is a feasible and effective ablation strategy covering non-PV triggers from the atrial septum and CT.

Fig. 1

Icho Line Figure 1
Fig. 2

- Icho Line ABL: 61.8%
- Other Non PV ABL: 45.4%

P = 0.54

Number at risk:
- Icho Line: 39, 30, 22, 13, 8, 7, 6, 4
- Other Non PV: 63, 51, 33, 21, 15, 8, 6, 3