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Core to block: a new ablation strategy for treating persistent atrial fibrillation

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Topic(s):
Rhythm Control, Catheter Ablation

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Background:
Ablation strategy targeting the core of atrial fibrillation (AF) rotors alone can lead to both stabilisation and destabilisation of rotational activity. Non-contact dipole density mapping system is designed to rapidly identify dynamic regional atrial activation patterns of interest (API) during AF.

Purpose:
To assess the feasibility of an ablation strategy consisted of pulmonary vein isolation + targeting the core of APIs followed by linear ablation to the nearest non-conducting boundary to treat persistent AF.

Methods:
The ablation strategy includes: 1. Antral pulmonary vein electrical isolation (APVI); 2. APIs (focal, localised rotational and localised irregular activation; Figure1) detection by dipole density mapping; 3. API core ablation followed by linear ablation to the nearest non-conduction barrier (APVI/mitral valve); 4. repeat step 2 and 3 in LA (RA, if necessary) until sinus rhythm is achieved.

Results:
Consecutive 40 persistent AF patients (mean 62 ± 12 years, 29 males, AF duration 10 ± 4 months, LA diameter 42 ± 9 mm) were included from 2 centres. An average of 2.0 ± 0.7 APIs per patient were targeted post-APVI. Acute AF termination by ablation was achieved in 27/40 (68%) patients. The mean ablation time of APVI and ‘Core to block’ was 33 ± 12 mins and 31 ± 22 mins, respectively. No major complication occurred. During a mean follow-up of 12 ± 5 months, 32/40 patients (80%) maintained sinus rhythm.

Conclusion:
APVI + ‘Core to block’ guided by the dipole density mapping is feasible for treating persistent AF. A larger randomised study is needed to test the effectiveness of this ablation strategy.
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Figure 1. Atrial activation pattern of interest guided by dipole density mapping.

Driver

Maintainer

Maintainer

Localized Rotational Activation
(spirals around a confined zone)

Localized Irregular Activation
(enters and exits a confined zone)