Abstract: **P580**

**Termination during atrial fibrillation may reflect ablation of larger driver areas**

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Introduction:
Focal and rotational drivers may play a role initiating and sustaining atrial fibrillation (AF). However, driver ablation does not consistently terminate AF. Characteristics of drivers have not been uniformly defined, and it is unknown which are responsible for terminating AF. We tested the hypothesis that ablation of AF drivers that control larger atrial areas, defined by developing a novel approach to map organized areas, is more likely to terminate AF than other drivers.

Methods:
We identified 25 patients from a registry of patients in whom AF terminated during ablation. Unipolar electrograms from a basket were extracted for novel analyses to map wavefront activation, AF vectors and wave flow fields. Organized areas of AF (% of map) were compared between sites where ablation did/did not terminate AF.

Results:
Patients (age 59.9 ± 8.3 years, LA 55 ± 8 mm) showed 2.5±0.6 possible AF drivers; ablation at one terminated AF to sinus rhythm (n=13, 52%) or atrial tachycardia. In a 54 year old man, Fig (a) shows AF termination, (b) left atrial wave flow field just prior AF termination, showing a larger area controlled by the targeted source (arrowed) than a secondary source, and (c) left atrial shell. Atrial areas of control were larger for AF-terminating vs non-terminating sites (45.8 ± 16.1% vs 20.8 ± 10.2%, p < 0.0001). Area of control was unrelated to AF driver location (p=NS) or number of concurrent drivers (p=NS).

Conclusion
Our approach using novel wave flow analysis demonstrates that eliminating drivers that control larger atrial areas of control may enable AF termination. Areas of control were unrelated to number of drivers or their location. Future studies should determine if mapping areas of control during AF may identify critical sites and improve ablation outcome.
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