

Fibrosis ablation shows promise in atrial fibrillation with low grade fibrotic myopathy

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Image-guided fibrosis ablation in addition to pulmonary vein isolation (PVI) does not improve ablation success rates compared to PVI alone in patients with persistent atrial fibrillation (AF), according to an intention-

to-treat analysis presented in a Hot Line session today at ESC Congress 2021. Nevertheless, in as-treated analyses, covering low grade atrial fibrosis with ablation lesions led to a significant reduction in atrial arrhythmia recurrence.

The multicentre DECAAF study previously reported that among AF patients undergoing [catheter ablation](#), atrial tissue fibrosis estimated by delayed enhancement magnetic resonance imaging (MRI) was independently associated with the likelihood of recurrent arrhythmia. The DECAAF II trial tested the hypothesis that imaging-guided fibrosis [ablation](#) in addition to conventional PVI is superior to PVI alone in improving ablation success rates in patients with persistent AF.

DECAAF II enrolled 843 patients with persistent AF from 44 centers worldwide. Participants were randomized to receive either PVI plus imaging-guided fibrosis ablation (intervention group) or PVI alone (control group).

All patients underwent late gadolinium enhancement (LGE)-MRI at baseline (before ablation) and approximately three months after. This imaging technique generates a 3D fibrosis map of the left atrium in which diseased or fibrotic tissue is shown in green and healthy tissue is highlighted in blue. Baseline images were used during the procedure in the intervention group to guide ablation of fibrotic tissue—operators were instructed to either cover or encircle the green areas on the images, i.e. the fibrotic tissue, in addition to PVI. Operators in the control group were instructed to only encircle the pulmonary veins, without adding additional lesions.

The three-month MRI evaluated the formation of lesions secondary to ablation. "These unique data provide us with the opportunity to better understand the effect of ablation on the left atrium and what parameters influence the formation of an ablation lesion," said principal investigator

Professor Nassir Marrouche of Tulane University School of Medicine, New Orleans, US.

Participants were followed for the primary endpoint of atrial arrhythmia recurrence (including AF, [atrial flutter](#), or atrial tachycardia) for 12 to 18 months. Atrial arrhythmia recurrence was detected through multiple ECG methods including 12-lead ECG recordings, Holter recordings, and a smartphone ECG device given to all patients after ablation.

The average age of participants was 62.1 years and 78.8% were men. Regarding atrial fibrosis levels at baseline, 98 participants (11.6%) had stage I (less than 10% of the total volume of the left atrial wall), 395 (46.9%) had stage II (10–20%), 281 (33.3%) had stage III (20–30%), and 69 (8.2%) had stage IV (more than 30%). Baseline fibrosis was predictive of AF ablation outcomes, especially at higher fibrosis levels, confirming the results of the initial DECAAF study.

The median follow-up was 12 months. The intention-to-treat analysis showed no statistically significant difference in the primary endpoint between groups in the total study population. Atrial arrhythmia recurrence occurred in 175 (43%) patients in the intervention group and 188 (46.1%) patients in the [control group](#) (hazard ratio [HR] 0.95; 95% confidence interval [CI] 0.77–1.17; $p=0.63$). In subgroup analyses, a trend was observed towards a lower rate of atrial arrhythmia recurrence in the [intervention group](#) for patients with stage I or II fibrosis at baseline.

As-treated analyses examined atrial arrhythmia recurrence according to the proportion of targeted and covered fibrosis (as assessed by the three-month MRI). There was a significant benefit of substrate ablation in patients with stage I or II fibrosis at baseline, with HR 0.839 (95% CI 0.732–0.961; p

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