

The evolving landscape in the hybrid treatment of atrial fibrillation

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Social relevance

Atrial fibrillation (AF) is the most common arrhythmia worldwide. Approximately 3% of the population aged over 20 years is affected.^{1,2} The prevalence is strongly age dependent, and due to the demographics, this is estimated to at least double in the next 50 years.³ In people with risk factors for AF, such as obesity, diabetes mellitus, hypertension, and valvular disease, the prevalence is even higher.⁴

AF is associated with a considerable cardiovascular morbidity. With a 3- to 5-fold increased risk, stroke is the most feared complication.⁵⁻⁷ Further, patients with AF may also suffer from cognitive impairment and dementia.^{8,9} This leads to an increased risk in all-cause mortality by 1.5- to 2-fold.^{10,11} As a consequence, AF significantly contributes to an extensive worldwide socio-economic and public health burden.^{12,13}

This thesis focusses on different aspects of the invasive treatment of AF. The objective to improve outcome of ablation by implementing new ablation techniques, to reduce the invasiveness of AF ablation, and to critically evaluate existing methods and endpoints, contributes to the optimization of current treatment strategies. This eventually should lead to an improved quality of life of AF patients, and to a decrease in socio-economic burden.

Target groups

Pulmonary vein isolation is the established ablation strategy in patients with paroxysmal AF. However, it has been proven that pulmonary vein isolation is not sufficient in achieving reasonable outcome in patients with non-paroxysmal AF. This thesis focusses mainly on this challenging subgroup and attempts to identify the most successful treatment strategy in those patients. However, we also discuss relevant aspects affecting all types of AF such as improvement of ablation endpoints, improving patient selection and reducing invasiveness of the procedure. Findings in this thesis are therefore pertinent not only for all patients with AF, but also for cardiologists and cardiothoracic surgeons performing AF ablations, and even for non-ablating specialists who have to decide between referring a patient for ablation or continuing medication.

Output

For patient with difficult to treat AF, like non-paroxysmal AF or paroxysmal AF with previous failed catheter ablation, hybrid ablation could offer opportunities to restore sinus rhythm where other treatments still fail. Due to the lack of research on hybrid ablation, the most recent European and American cardiology and surgical guidelines have not yet issued recommendations for this approach. This thesis should help to further appreciate hybrid ablation in the treatment of AF, and to better define its role in upcoming guidelines. This will eventually make it more accessible for patients and medical specialists. Results may also contribute to a better patient selection, which will lead to improved outcomes by selecting the most adequate therapy strategy for specific patients.

Innovation

The recent guidelines on the management of AF appreciate the heart team as key factor in AF treatment. Hybrid ablation already adheres to this latest recommendation, since electrophysiologists and surgeons together decide on the most efficacious treatment, and even more important, work together to accomplish that goal. The know-how and available approaches of two specialties are synergized to allow to reduce the invasiveness and to select the right patients for the right treatment after considering all available treatment options. They also reflect as a team on the performed treatment, and change strategies if necessary. Further, modern devices can be implemented in this ablation strategy, either by the cardiologist or the surgeon. This all makes hybrid ablation a patient tailored approach.

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