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PhD in Medical Sciences
2020-2021

INVITATION to the Public defence of

Erwin STRÖKER

To obtain the academic degree of '**DOCTOR OF MEDICAL SCIENCES**'

Efficacy and Safety of Cryoballoon Ablation for Atrial Fibrillation: Emphasis on Anatomic Insights and Role of Imaging.

The defence will take place on **Tuesday, 13 July 2021 at 5 p.m.**

and will be organised online

via Zoom meeting, accessible through the following link:

https://gf.vub.ac.be/redirects/PhD_defense_Erwin_Ströker.php

and in Auditorium Piet Brouwer
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

ADMITTANCE to the auditorium will only be granted upon presentation of the personal invitation from the PhD candidate.

Summary of the dissertation

Current evidence shows that pulmonary vein (PV) isolation by means of cryoballoon (CB) ablation has a similar efficacy profile compared to radiofrequency ablation in treating symptomatic patients with atrial fibrillation (AF). The use of shorter cryoablation protocols provides workflow improvement with reduced procedure times, without compromising efficacy and outcome. Specific prognostic value for AF recurrence after the CB procedure could be attributed to an isoproterenol challenge directly post PV isolation. I for paroxysmal AF patients, and to cardiac-CT based left atrial volume index for persistent AF patients. Between patients with common PV variants (left common PV and right middle PV) and normal PV anatomy, similar efficacy and outcome was observed. However, analysis of individual PV characteristics revealed that anatomical factors are the most important predictors of late PV reconnections during repeat procedures, pleading for a more tailored approach during the index CB ablation based on preprocedural imaging. Imaging techniques play also a role in enhancing the safety profile during crucial steps in the CB ablation procedure. The use of ultrasound presents a clear value in reducing vascular complication to a near-to-zero level. A simplified over-the-needle trans-septal access using the CB delivery sheath under direct echocardiographic guidance, has a potential risk reduction for air embolism. The risk for phrenic nerve injury, notably at the right superior PV, could be predicted before the procedure based on cardiac CT-imaging, and during the procedure based on the fluoroscopic position of the CB. Future directions in CB technology should consider a design-upgrade to improve PV isolation durability, together with incorporation of real-time imaging during all steps, including direct visualization of the cryolesion formation.

Curriculum Vitae

Erwin Ströker was born on the 13th of May 1983 in Brussels, Belgium. He obtained his medical degree in 2008 at the Catholic University of Leuven. His residency Internal Medicine–Cardiology started in 2008 until 2014, when he graduated as specialist in Cardiology. In 2015, he attended the Heart Rhythm Management Centre (HRMC) of the Free University Brussels for a 2-year postgraduate Fellowship in Electrophysiology-Cardiac Pacing. At the present time, he is working as head of clinic at the University Hospital Brussels in the HRMC department. He is an author of several scientific articles published in international journals.

He is married and father of 2 children.