



## Newsletter No. 45

The world of cardiac electrophysiology will be dramatically changed by electroporation

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Last week at The 25<sup>th</sup> Atrial Fibrillation Symposium at Washington DC, USA ([afsymposium.com](http://afsymposium.com)) electroporation played a dominant role. And these are not my words. A panel of leading experts in the field was asked a question: “What will be the dominant source of energy for cardiac ablation in five years from now?”, and they all agreed that this will be pulsed electric field ablation, which is a wording for ablation-based irreversible electroporation and that has excited so many in this field. As featured already in our September 2018 issue of the ISEBTT Newsletter (prepared by Alan Sugrue and Samuel Asirvatham from Mayo Clinic), this technology brings benefits in safety and efficacy.

Altogether, 1100 participants were registered and participated in AF Symposium last week in Washington DC, and all were talking about electroporation. The lecture room was packed (all 800 seats were taken) when the session II on Advances in pulmonary vein isolation – Cardiac pulsed field ablation/electroporation was on (see [afsymposium.com/program-nav](http://afsymposium.com/program-nav)). In addition, 6 posters were presented (of 56), the award for the best poster was given to Jacob Koruth, M.D. and co-authors from Mount Sinai Medical Center, New York, presenting Pulsed Field Ablation vs Radiofrequency Ablation: Esophageal Effects in a Novel Preclinical Model.

In addition, Farapulse (one of the two platinum sponsors at our 3<sup>rd</sup> World Congress in Toulouse, France) organized a special session during lunch time on Thursday – a Farapulse Product Theater – where they presented their clinical experience on more than 140 patients treated with their system so far, and Vivek Reddy, M.D. from Mount Sinai Medical Centre New York, presented a prerecorded case Pulsed Field Ablation for Atrial Fibrillation on Friday morning.

The excitement and interest was further augmented by the press release made by Medtronic – another platinum sponsors at our 3<sup>rd</sup> World Congress in Toulouse, France – on Thursday, January 23 ([newsroom.medtronic.com/news-releases/news-release-details/medtronic-receives-fda-approval-trial-evaluating-new-energy](http://newsroom.medtronic.com/news-releases/news-release-details/medtronic-receives-fda-approval-trial-evaluating-new-energy)).

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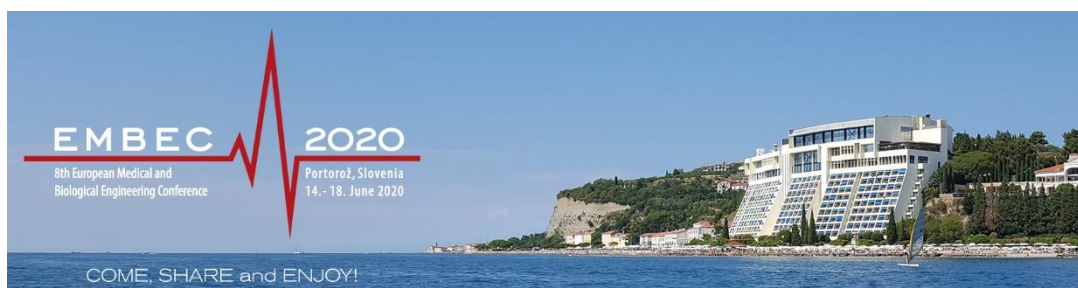
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Medtronic announced that their first-in-human PVI procedures using Pulsed Field Ablation were performed in December 2019 by Bradley Wilshire, M.D., at the John Hunter Hospital, New Lambton Heights, NSW, Australia, and in January by Atul Verma, M.D., at the Southlake Regional Health Centre in Newmarket, Canada. Medtronic received approval from the U.S. Food and Drug Administration (FDA) to proceed with an investigational device exemption (IDE) trial to evaluate the safety and effectiveness of the PulseSelect™ Pulsed Field Ablation (PFA) System, a new technology that uses pulsed electric fields to treat atrial fibrillation. The principal investigator (PI) for the study is Atul Verma, who was one of the plenary speakers at the 3<sup>rd</sup> World Congress of Electroporation.

Other companies have already announced they are developing or have developed systems for cardiac ablation based on electroporation in addition to Farapulse and Medtronic: Affera, Atrian, CardioNXT, Kardium, LuxMed, and we should not be surprised if there will be some more.

There are, however, still open questions that need to be addressed, and I am looking forward to further and intense collaboration between the two communities.

**Cardiac Pulsed Field Ablation for PVI**

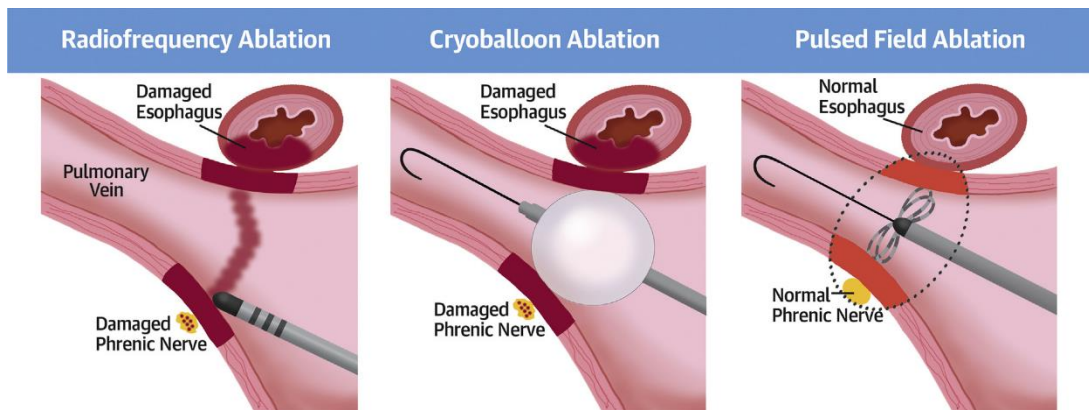


Figure adapted from: Reddy et al. J Am Coll Cardiol 74: 315-26, 2019  
[dx.doi.org/10.1016/j.jacc.2019.04.021](https://doi.org/10.1016/j.jacc.2019.04.021)

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Intracardiac catheters by Farapulse for cardiac tissue ablation using pulsed electric fields.

**Forthcoming events**

**7<sup>th</sup> School on Pulsed Electric Field Applications in Food and Biotechnology**

Zaragoza, May 25 – 30, 2020

<http://pefschool2020.electroporation.net/>

**8<sup>th</sup> European Medical and Biological Engineering Conference – EMBEC 2020**

Portorož, June 14 – 18, 2020

<http://embec2020.org/>

Newsletter is issued in electronic form only by The International Society for Electroporation-Based Technologies and Treatments (ISEBTT).

ISSN: 2463-9850

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