**Title: COMPARE-CRYO: PolarX vs Arctic Front Cryoballoons for PVI in Pts with Paroxysmal AF**

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**Dr Tobias Reichlin**

"So, my name is Tobias Reichlin. I'm the Head of Electrophysiology at the Inselspital, Bern, in Switzerland. Today, we're going to discuss the results of the COMPARE-CRYO study, which was a randomized comparison between two cryoballoons. The results were presented yesterday at this ESC meeting.

The Current Landscape of Cryoablation in 2023

Cryoablation was introduced into cardiology around the year 2010, and there was basically one CryoBalloon from Medtronic called Arctic Front, which was the prototype of single-shot ablation for the treatment of atrial fibrillation. It has been used for a long time in more than a million patients. It's an excellent tool. Then, in the year 2020, another cryoballoon was introduced called Polar X from a different company, Boston Scientific. That's basically the background where we conducted our trial.

The Differences Between the PolarX and Arctic Front Cryoballoons

The novel cryoballoon was designed with the aim to improve the efficacy and safety of cryoballoon ablation. Some modifications were made: It was a compliant balloon rather than a non-compliant one, with the idea that this would allow for better vein occlusion.

The novel balloon maintains a stable balloon pressure and a stable size during the ablation, while the other balloon enlarges a little bit. This prevents the balloon from popping out. Several enhancements were made to the user interface, including foot switches and a more interactive user face to improve the cryoblation.

Patient Population and Study Design

The patient population consisted of patients with paroxysmal atrial fibrillation planning to undergo catheter ablation for atrial fibrillation. All patients had paroxysmal atrial fibrillation and were randomized one-to-one to be ablated with the Polar X CryoBalloon from Boston Scientific or with the Arctic Front CryoBalloon from Medtronic. At the end of the procedure, all patients were fitted with an implantable cardiac monitor, a reveal link, to allow for continuous rhythm monitoring. This ensured that no episode of atrial fibrillation would be missed and provided information not only on AFib recurrence but also on AF burden.The primary endpoint of the study was the recurrence of any type of atrial arrhythmias lasting longer than 30 seconds between days 91 and 365, excluding a blanking period of three months.

Key Findings

The key finding was that the recurrence of atrial arrhythmias occurred in 47% of the patients with the established cryoballoon from Medtronic and in 41% with the novel cryoballoon from Boston Scientific, the Polar X cryoballoon. These numbers met the criteria for non-inferiority, as it was a comparison between a novel and established balloon. Subsequently, no difference was found between the two balloons, even when tested for superiority. Regarding safety, both balloons were remarkably safe. There were no cardiac tamponades, strokes, fistulas, or access complications. However, there was a 5% rate of phrenic nerve pulses that would not recover within 24 hours with the novel Polar X balloon, while there were none of those phrenic nerve pulses with the established Medtronic cryoballoon.

How these Findings Should Influence Clinical Practice

Physicians now have the choice between a cryoballoon that has been available for ten years with data from randomized trials showing it's non-inferior compared to point-by-point radiofrequency ablation and superior to antiarrhythmic drug treatment. The trial has shown that both cryoballoons have the same performance.

Further Research Required

Our field is now seeing a significant change with the introduction of pulsed-field ablation technology. The big question is how cryoblation compares to pulsed-field ablation. Some data has been presented at this meeting, but we are in the process of completing a trial that randomizes patients between CryoBalloon and pulsed-field ablation. This will be very interesting to see whether one technology has advantages over the other going forward.”