How to achieve real time recordings during cryoballoon ablation – a comparison between novel Artic Front Advanced Pro and second generation cryoballoon device

Vedran Velagic
Domagoj Kardum
Borka Pezo-Nikolic
Mislav Puljevic
Richard Matasic
Miroslav Krpan
Martina Lovric-Bencic
Davor Puljevic
Davor Milicic

Introduction: The dosing strategies for cryoballoons (CB) ablation rely on adequate real time (RT) visualization of pulmonary vein potentials. In order to improve incidence of RT recordings, Cryoballoon Advance Short-tip was designed, but soon withdrawn from the market due to technical problems with the catheter. Recently, Artic Front Advanced Pro (AFA-Pro) was introduced, with the tip that is 5.5 mm shorter than its predecessor. Ideally, a shorter tip should permit an improved visualization of real-time recordings in the pulmonary vein (PV) due to a more proximal positioning of the inner lumen mapping catheter. We sought to compare the incidence of visualization of real-time recordings in patients having undergone ablation with the AFA-Pro with patients having received older second generation device (AFA).

Methods: All patients having undergone CB ablation using AFA-Pro technology and the last 100 consecutive patients having undergone AFA ablation were analyzed. Procedures were performed under conscious sedation, with a 28 mm cryoballoon. Single transeptal puncture was used guided by intracardiac ultrasound. A single 180 seconds freeze strategy was employed.

Result: A total of 160 consecutive patients (72.5% male, 58.5±12.3 years) were evaluated (60 AFA-Pro and last 100 AFA ablations). Real-time recordings were significantly more prevalent in the AFA-Pro population compared with AFA group (86.6 vs 74%, p = 0.0001). Real-time recordings could be more frequently visualized in the AF-A group in all types of veins, but only LIPV reached statistical significance: LSPV 88.3 vs 76%, p = 0.064; LIPV 85 vs 70%, p=0.037; RSPV 90 vs 79%, p 0.083; RIPV 83 vs 71%, p= 0.089.

Conclusion: The rate of visualization of real-time recordings is significantly higher during AFA-Pro ablation if compared to the second-generation AFA device. Real-time recordings can be visualized in approximately 86.6% of veins with this novel cryoballoon.