

# Ponovljene procedure nakon prve izolacije plućnih vena – usporedba ablacije drugom generacijom kriobalona i naprednih katetera s radiofrekventnom energijom

## Repeated procedures following first pulmonary vein isolation – comparison of second generation cryoballoon and advanced radiofrequency catheters

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**Uvod:** Najčešći uzrok recidiva fibrilacije atrijske (FA) nakon ablacije su rekonekcije plućnih vena (PV). Barem petina bolesnika biva podvrgnuta ponovljenim procedurama nakon prve intervencije. Pretpostavlja se da su linije izolacije učinjene kriobalonom druge generacije („single shot tehnika“) uniformnije i durabilnije (s manje „gapova“) od onih kreiranih radiofrekventnim (RF) kateterima („point by point“ tehnika).<sup>1</sup>

**Bolesnici i metode:** Učinili smo retrospektivnu analizu ponovljenih procedura izolacije PV u Kliničkom bolničkom centru Zagreb. „Redo“ procedure su provedene kod bolesnika koji su nakon prve ablacije imali simptomatske recidive FA unatoč antiaritmici. Zahvati su provedeni u lokalnoj anesteziji uz pomoć intrakardijalnog ultrazvuka, CARTO 3 sustava i RF katetera s kontaktnim senzorom. Intencija druge procedure bila je reizolacija rekonektiranih vena. Cilj ove studije bio je usporediti karakteristike ponovljenih procedura te broj rekonektiranih vena nakon inicijalne ablacije kriobalonom naspram inicijalne ablacije RF kateterima.

**Rezultati:** Ukupno smo analizirali 16 ponovljenih procedura, od čega je 7 bilo nakon prve procedure kriobalonom (CB grupa) te 9 nakon ablacije RF energijom (RF grupa). Većina bolesnika bili su muškarci (75%) prosječne dobi 62 ± 7,8 godina. Uglavnom su bolovali od paroksizmalne (75%), a ostatak je imao perzistentnu FA. Srednja veličina lijeve atrijske bila je 44,6 ± 4,8 mm, a srednja ejijska frakcija lijeve klijetke iznosila je 61,3 ± 7,4%. Nije bilo značajnih razlika između osnovnih karakteristika promatranih grupa. U CB grupi bilo je 12/26 (46%) PV s rekonekcijama, naspram 26/36 (72%) u RF grupi (p = 0.396). Dužina procedure u CB grupi bila je 122,8 ± 40,8 min, a u RF grupi 190,5 ± 69,8 min (p = 0.039). Korištenje dijaskopije u CB grupi iznosilo je 19,7 ± 9,1 min, a u RF grupi 22,5 ± 12,0 min (p = 0.616). Trajanje RF ablacije u CB grupi bilo je 558,6 ± 320,2, a u RF grupi 1904,5 ± 608,1 (p < 0.0001). Nisu zabilježene komplikacije, a 25% bolesnika imalo je recidiv FA.

**Zaključak:** Nakon inicijalne ablacije kriobalonom druge generacije (vs RF energije), možemo u drugoj intervenciji očekivati manje rekonektiranih PV što rezultira kraćim „redo“ procedurama s manjom potrebom za korištenjem RF energije. Zbog malog broja bolesnika nisu sve razlike statistički značajne.

**Introduction:** The most common cause of atrial fibrillation (AF) recurrence after ablation is pulmonary vein (PV) reconnections. At least 20% of the patients are subjected to repeated procedures after the first intervention. It is assumed that isolation lines made by cryoballoon (single-shot technique) are more uniform and durable than those created by the radiofrequency (RF) “point by point” technique.<sup>1</sup>

**Methods:** We did a retrospective analysis of repeated PV isolation procedures at University Hospital Centre Zagreb. Redo procedures were performed in patients who had symptomatic recurrence of AF after the first ablation despite antiarrhythmics. The interventions were performed in local anesthesia with intracardial ultrasound, CARTO 3 system and contact sensing RF catheters. The intent of the second procedure was the re-isolation of reconnected veins. The aim of this study was to compare the characteristics of repeat procedures and the number of reconnected veins after the initial ablation with the cryoballoon compared to the initial ablation with the RF catheters.

**Results:** We have analyzed 16 repeat procedures, 7 of which were after the first cryoballoon procedure (CB group) and 9 after ablation with RF energy (RF group). Most patients were men (75%) of average age 62±7.8 years. The most had paroxysmal (75%), and the rest had a persistent FA. The mean left atrial size was 44.6±4.8 mm and mean left ventricle ejection fraction was 61.3±7.4%. There were no significant differences between the basic characteristics of the groups. In the CB group there were 12/26 (46%) PV with reconnections, compared to 26/36 (72%) in the RF group (p=0.396). The procedure duration was 122.8±40.8 min in the CB group, and 190.5±69.8 min in the RF group (p=0.039). The fluoroscopy time in the CB group was 19.7±9.1 min, and in the RF group 22.5±12.0 min (p=0.616). The duration of RF ablation was shorter in the CB group, 558.6±320.2 and in the RF group 1904.5±608.1 (p<0.0001). No complications were observed, and 25% of the patients had recurrent FA.

**Conclusion:** After the initial ablation with the second generation cryoballoon (vs. RF energy), we can expect less reconnected PVs in the second intervention, resulting in shorter redo procedures with less need for RF ablation. Due to the small number of patients, not all differences are statistically significant.

### LITERATURE

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