A NOVEL CATHETER ABLATION SYSTEM FOR ATRIAL FIBRILLATION USING UNIPOLAR AND BIPOLAR RADIOFREQUENCY ENERGY - SINGLE-CENTER REPORT ON 100 CONSECUTIVE PATIENTS

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Background: Catheter ablation of atrial fibrillation (AF) is increasingly used in experienced interventional electrophysiology centers. A novel ablation system using a decapolar circular ablation catheter (PVAC™, Ablation Frontiers) with the ability to create continuous lesions applied by unipolar and bipolar radiofrequency (RF) energy has been developed. The acute and mid-term efficacy in treating AF is tested.

Methods: Consecutive patients with indication for AF catheter ablation were included and ablated using PVAC. Using the PVAC continuous nearly circular lesions can be produced. Procedural data was documented. Isolation of pulmonary veins (PVs) was tested under orciprenaline challenge and isolation of PVs was defined as absence of any PV potential inside the veins. Follow-up included EKG and holter-EKG (7 day monitoring).

Results: 100 patients (24 female, mean age 55±12 years) were included (34 persistent, 66 paroxysmal). During ablation 390 out of 391 PVs (9pts with left common ostium) were successfully isolated with the PVAC (99.7%). Mean procedural duration was 104±25 minutes, total RF application duration was 28±8 minutes and radiation duration was 20.7±8.1 minutes. Successful isolation was achieved with a median of 8±3 RF impulses for the left superior, 5±3 for the left inferior, 7±3 for the right superior and 5±2 RF impulses for the right inferior PVs. For left common ostia a median of 15±4 impulses led to electrical isolation. As procedural complications 2 aterio-venous fistulas and 1 reversible phrenic nerve palsy after isolation of the left superior caval vein was documented. In 4 (4%) patients esophageal erythema was identified after PV isolation procedures. During 6-months follow-up 80% of patients with paroxysmal AF and 50% of persistent AF patients were free from AF after undergoing PV-isolation alone.

Conclusions: PVAC-ablation is safe and effective in isolating the PVs. Short-term follow-up indicates rhythms success of over 75% of patients with paroxysmal AF. In persistent AF patients PV-isolation alone appears to be insufficient in producing stable sinus rhythm. Further studies need to evaluate mid- and long-term effect of PVAC ablation of AF on rhythm-outcome.