SAFE AND FAST ISOLATION OF PULMONARY VEINS USING A NOVEL CIRCULAR ABLATION CATHETER

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Background: Ablation of atrial fibrillation (AF) is one of the most time consuming procedures in interventional electrophysiology. Currently, the selection of catheters and ablation techniques is still a matter of debate. Due to the rapidly increasing demand of ablation procedures, technical advances would be helpful to reduce complexity and procedure time in AF ablation. Therefore we investigated the feasibility of a novel decapolar ablation catheter (PVAC) combined with a duty-cycled, low-power RF generator for pulmonary vein (PV) isolation. The system does not require 3D mapping or robotic steering and is the first to enable mapping, pacing and circular as well as segmental ablation with a single catheter.
Methods: AF mapping and ablation was performed in 9 consecutive patients with intermittent AF (mean age 64 3.8 years, 4 males) using the PVAC- catheter. To visualize the pulmonary vein anatomy, CT or MRI scan was performed in addition to PV angiography before ablation procedure. Additionally all patients underwent transesophageal echocardiography to rule out left atrial (LA) thrombi. Ablation procedure was performed by introducing the PVAC to the LA via single transseptal puncture. An optimal and stable catheter position for mapping and ablation was achieved by using a steerable sheath and an over the wire technique. RF energy was typically delivered for 60s for circular as well as segmental ablations. Ablation success was defined by disappearance of PV signals and complete exit block obtained by PVAC stimulation.
Results: Isolation of all four PVs could be achieved in 35/36 veins (97%). A very small and hypoplastic right inferior PV could not be reached. The median RF application time until all PV were isolated successfully was 22.4 2.9 min. First half of ablations were performed by circular RF application, second half with segmental applications until isolation. Procedure time for ablation was 84±5 min. Total fluoroscopy time was 32.1±3.2 min. There were no procedural complications.
Conclusion: Mapping and ablation of pulmonary veins can be performed safe and fast, with low procedure times using a single catheter without 3D navigation or assisted steering. Thus this system may be of high interest not only for high volume but all centers performing AF ablation.