

V651 - Incidence and Determinants of Pulmonary Vein Stenosis Following Cryoballoon Pulmonary Vein Isolation

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Introduction: Cryoballoon pulmonary vein isolation (PVI) represents an effective and safe interventional treatment option for patients with symptomatic paroxysmal atrial fibrillation. However, pulmonary vein stenosis (PVS) is a concern in all ablation techniques targeting the pulmonary veins regardless of energy source. The objective of this study was to evaluate incidence and determinants of PVS in a large cohort of patients undergoing pulmonary vein (PV) cryoballoon ablation.

Methods: 403 consecutive patients with highly symptomatic, drug refractory atrial fibrillation were enrolled in this study and underwent a total of 443 procedures. All patients obtained a CT or MRI scan of the left atrium and the PVs prior to cryoballoon ablation to assess PV diameters and to detect anatomical variabilities. At least one more CT or MRI scan was performed 3 to 6 months after procedure to screen for PVS.

Results: The overall incidence of PVS was 1,4% (6 patients out of 443 ablation procedures). The degree of stenosis was mild (<50%) in 2, moderate (50-70%) in 4 and severe (>70%) in none of the cases. We did not observe any symptoms of PVS or signs of pulmonary hypertension in all of these patients. A PV narrowing could only be detected in the inferior veins (2 RIPV, 4 LIPV) after ablation in a more pulmonary venous rather than antral position of the cryoballoon. In accordance with the latter finding occurrence of PVS was strongly associated with inner balloon temperature during ablation. We found significant lower temperatures during ablation of PVs with development of PVS than in PVs without stenosis (RIPV p=0,02; LIPV p=0,0044). Another determinant of PVS was balloon compression during ablation resulting in a mechanical wand stress for the PV.

Conclusions: Cryoballoon ablation is a safe technology for PVI without risk of severe PVS. Only a very low incidence of asymptomatic mild and moderate PVS was observed in this study. Occurrence of PVS can completely be avoided by ablating only in antral positions without mechanical compression of the balloon. Postprocedural imaging of the PVs is not required anymore on a routine basis for asymptomatic patients.

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