Abstract: **P1441**

**1-year outcome after pulmonary vein isolation with laser balloon vs. radiofrequency-energy: negative adenosine provocation test predicts freedom from arrhythmia after ablation with laser balloon**

**Authors:**
E Ucer¹, S Fredersdorf¹, J Seeegers¹, L Maier¹, C Junghauer¹, ¹University Hospital Regensburg, Internal Medicine II Cardiology - Regensburg - Germany,

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**Background:** Dormant conduction in pulmonary veins (PV) after PV isolation can be detected by performing an adenosine provocation test (APT). Recently, we demonstrated in a randomized trial that the acute reconnection rate after PVI with visually guided laser balloon ablation (VGLBA) was significantly lower than with RF ablation.

**Purpose:** We evaluated recurrence rate of atrial arrhythmias at 1-year after PVI with laser balloon vs. RF energy and the influence of APT results on the outcome.

**Methods:** Patients with paroxysmal AF were randomized to PVI with the VGLB or RF ablation. Each PV underwent an APT (injection of 18 mg adenosine i.v. bolus) at least twenty minutes after successful isolation. Primary end-point was the recurrence rate of atrial arrhythmias at one year. All patients underwent a three-day-ambulatory-ECG at 3-, 6- and 12 months after PVI as well as clinical follow-up.

**Results:** A total of 50 patients were randomized 1:1 into the study (25 VGLBA). The baseline characteristics and mean procedure time were not different between the two groups. 96% of the 97 targeted PVs in the VGLBA group and 98% of the 96 targeted PVs in the RF group could be isolated (p = 0.41). APT was performed at similar times (after 28 min in VGLBA-group vs. after 31.5 min in RF-group; p = 0.12). Significantly less PVs were reconnected during APT in the VGLBA group than in the RF group (10 PV (10.8%) vs. 29 PV (30.9%); p = 0.001). Accordingly, more patients had at least one PV with reconnection in the RF arm than in the VGLBA group (n=16 (64%) vs. n=8 (32%), p = 0.02). Mean follow-up duration was 12.5 months at median. At 1-year significantly less patients had a recurrence of atrial arrhythmia in the VGLBA-group (3 vs. 9, p = 0.047).

In the VGLBA-group no recurrence was seen in all those patients with a negative APT (negative predictive value (npv) = 100%). Only 3 out of the 8 patients with a positive APT in the VGLBA-group had a recurrence (ppv = 37%). Recurrences in the RF group were seen in 3 patients with positive APT as well as in 6 patients with negative APT. This results in a lower positive as well as negative predictive value for APT in the RF-group (ppv = 18% and npv = 33%, respectively). Sensitivity of a APT in predicting the atrial arrhythmias in the VGLBA group was 100% with a specificity of 85%, whereas in the RF group sensitivity was 33% and specificity 18%.

**Conclusion:** There was a significantly less recurrence rate of atrial arrhythmias at one year after PVI with VGLBA. A completely negative adenosine test after PVI with VGBLA predicted freedom from AF recurrence with a very high negative predictive value meaning that the high acute efficiency of the VGLB persisted clinically in the long term. In contrast the predictive value of APT in the RF group is low and cannot be used reliably to foresee the AF recurrence at follow up.