

# Is pure visually guided pulmonary vein isolation feasible using an endoscopic ablation system ?

## Background

- Pulmonary vein isolation (PVI) using an endoscopic ablation system (HeartLight™, EAS) is currently performed in conjunction with additional mapping catheters requiring a second transseptal puncture.

## Objective

- To develop a simplified, purely visually guided PVI strategy using a single ablation device and single transseptal access.

## Methods

- Prep Stage:**
  - Single transseptal puncture
  - Baseline PV recordings after selective PV angiographies.
- Ablation Stage:**
  - Visually guided circular ablation with EAS (5.5-12W; 20-30s) at each PV
- Gap Stage:**
  - Re-assessment of PVI with spiral catheter (SC) and ablation of conduction gaps with EAS according to SC recordings.

No. of Patients	35	
Gender	F: 17	M: 18
Age [years]	62 ± 9	
Type of AF	PAF: 31	Pers: 4
Median Duration of AF (q1;q3) [years]	4 (3-8)	
Median # of failed AAD (q1;q3)	2 (1-2)	
LV-EF [%]	64 ± 7	
LA-size [mm]	38 ± 5	

## Techniques

Figure 1: „Flex Down“ at inferior veins

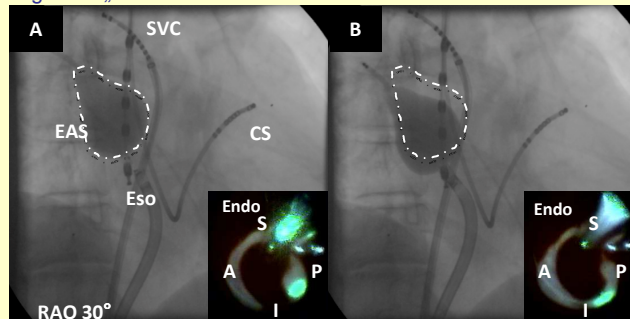
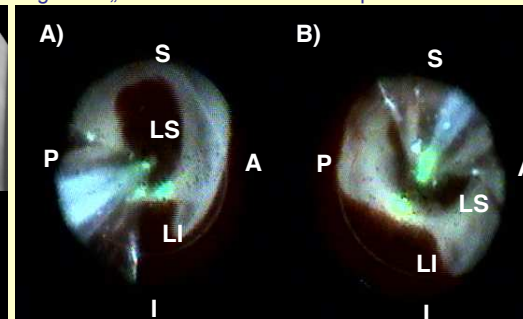


Figure 2: „Controlled Rotation“ at superior veins



- „Flex Down“ (Fig.1):
  - A) Imperfect occlusion of the inferior part of the ostium
  - B) Optimal exposure of the inferior PV ostium by flexion and downward movement of the sheath
- „Controlled Rotation“ (Fig.2):
  - A) Counterclockwise ablation from AI to PS. The view to the carina is obstructed by the catheter shaft
  - B) Exposure of the carina after a 180°-controlled rotation

## Results

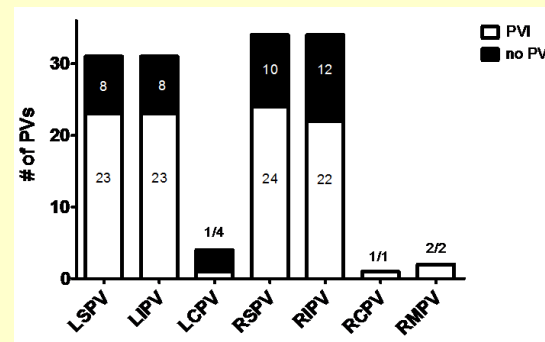


Fig. 3: Isolation after initial ablation round

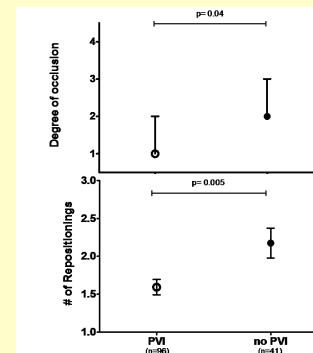


Fig.4: Significance of PV occlusion and EAS repositioning

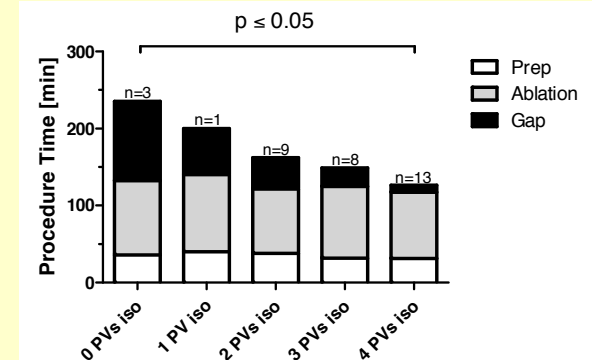


Fig. 5: Procedure Time by different stages and by # of visually guided PVs

- Standard ablation techniques developed (Figs. 1+2).
- PVI in 96/137 PVs (70%) by pure visually guided circular ablation (Fig. 3).
- After SC guided ablation of conduction gaps with EAS PVI in 134/137 PVs (98%).
- 3 PVs in 2 pts not isolated due to complications (tamponade and phrenic nerve palsy).
- Predictors of acute PVI: PV occlusion and # of catheter repositionings (Fig.4)
- Procedure and fluoroscopy time: 154±38 min and 15±6 min. The latter was determined by gap mapping (Fig.5)
- Of 18 patients completing 6M FU 14 (78%) were in stable SR off antiarrhythmic drugs
- None of the patients had a PV stenosis during MRI 3 months post ablation.

## Conclusion

- Simplified, purely visually guided PVI using EAS results in acute PVI rate of 70%.
- With the aid of a SC 98% of all PVs were isolated using EAS
- Optimal occlusion and few EAS repositionings predict acute PVI.