Abstract

Introduction: The purpose of this study was to evaluate the reliability of luminal esophageal temperature (LET) monitoring probe (SensiTherm, St. Jude Medical, Inc.) to avoid esophageal injury.

Methods: Thirty consecutive patients (21 men, age 66 ± 10 years) with underwent extensive encircling pulmonary vein isolation (EEPVI) were enrolled. A LET monitoring probe was positioned proper site during ablation and energy delivery was stopped when the LET exceeded 42°C. Endoscopic study was performed next few days.

Results: Esophageal injuries were found in 5 patients (16.7 %). In these cases, LET rise occurred at 3.2 ± 1.9 sites of RF delivery, time periods above 42°C were 14.9 ± 5.9 seconds, and maximum LETs were 43.5 ± 0.4°C. These parameters were not statistically different from those without esophageal injuries. 3D-maps revealed continuous RF delivery on posterior LA might result in esophageal injuries.

Conclusions: Any LET parameters did not predict occurrence of esophageal injuries. Discontinuous RF delivery may be required during posterior LA ablation when LET exceed 42°C. Monitoring LET during EEPVI is appropriate to preventing critical esophageal injury.
Abstract

Introduction: This study aimed to evaluate an approach of circumferential pulmonary vein isolation (PVI) followed by a dominant frequency (DF) and complex fractionated electrogram (CFE) site ablation.

Methods: Fifty consecutive AF patients (23 paroxysmal and 27 non-paroxysmal) underwent ablation using NavX. When AF continued after the circumferential PVI, high DF sites of ≥8 Hz and then continuous left atrial (LA) CFE sites defined by fractionated intervals (FI) of ≤50ms including the coronary sinus and right atrium were targeted.

Results: AF terminated at high DF sites in 11 (22%) patients and continuous CFE sites in 1 (2%). However, AF could be induced in only 8% of patients after the procedure. The mean LA DF value before ablation was significantly lower in those without recurrence. The freedom from AF recurrence was 96%, 89% and 44% in paroxysmal, persistent and long-standing persistent AF patients, respectively, after 1 procedure over a mean follow-up of 12.0±0.2 months.

Conclusions: A combined high DF and continuous CFE site ablation in all chambers after circumferential PVI may be effective in the paroxysmal and persistent AF patients.
Abstract

Introduction: In some cases permanent acute pulmonary vein (PV) reconnection (AR) appears immediately after adenosine infusion. Study evaluated if adenosine-test facilitates AR in observation period.

Methods: Study included 134 patients with paroxysmal and persistent atrial fibrillation, who had undergone Lasso-guided PVI. All patients were randomized to 2 groups. In ATP-group (65 patients) adenosine-test (without dormant conduction ablation) was performed followed by 30’ observation period. In control-group (69 patients) 30’ observation period was applied only.

Results: In 134 patients 268 pairs of ipsilateral PVs were isolated. AR occurred in 49 (38%) of ipsilateral PV pairs (41 patients – 63%) in ATP-group and in 45 (33%) of ipsilateral PV pairs (43 patients – 62%). Difference between groups didn’t show statistical significance ($\chi^2 = 0.76; p=0.38$). In ATP-group dormant conduction was revealed in 31 (23%) of ipsilateral PV pairs (27 patients – 42%). Only in 16 of 31 (52%) PVs dormant conduction site corresponded to the site of AR. The agreement between methods is fair (Kappa = 0.24; p = 0.004).

Conclusions: Adenosine infusion does not facilitate acute pulmonary vein reconnection in observation period after initial isolation.
Abstract

Introduction: Contact with tissue is a critical determinant of lesion efficacy during atrial fibrillation (AF) ablation. The electrical coupling index (ECI) from the EnSite Contact™ system has been validated as an indicator of tissue lesion depth. In our study we aimed at analyzing ECI behavior during ablation maintaining a stable contact through the robotic Sensei X system.

Methods: 15 patients undergoing AF ablation were enrolled. Pulmonary vein (PV) isolation was guided by the Sensei X™ system, employing the Contact™ catheter.

Results: A total of 58 PVs were targeted and successfully isolated, while keeping contact force of 20-40 grams. In all PVs the ECI was significantly reduced during and after ablation (baseline ECI 99±18; ECI during RF 56±15; ECI immediately after RF 72±16; p <0.001). A mean reduction of 32% during RF delivery and 25% after RF stoppage compared to baseline ECI was observed.

Conclusions: Successful PV isolation with good contact, as monitored by the Sensei X system, is associated with a significant decrease in ECI of 25%. This may be used as a surrogate marker of effective lesion.
**Abstract**

**Introduction:** Catheter Ablation (CA) has rapidly evolved as an established treatment of Atrial Fibrillation (AF). Nonetheless, upstream treatment of atrial fibrillation is highly recommended, and in this respect hypertension (HTN) control is very important in order to avoid AF relapses. Catheter-based renal sympathetic denervation (RSD) using a special designed catheter (not irrigated) has been recently demonstrated efficacy in lowering blood pressure (BP) in drug-refractory hypertensive patients.

**Purpose:** Given the potential advantages of irrigated radiofrequency (RF) applications and 3-D mapping we sought to assess whether the same saline-irrigated RF ablation catheter used for AF ablation could be utilized for efficacious and safe renal artery denervation, when the applications are guided by the virtual image created by the fusion of the renal arteries (RA) angio CT-scan and the electroanatomical 3-D system Navex (in the same procedure).

**Methods:** A 59 year male patient with paroxysmal AF referred for CA, that had also a history of drug-resistant HTN (on 4 anti-hypertensive drugs) was elected for both AF ablation and RSD. A cardiac angio CT-scan together with aorta and RA angio CT were undertaken in the day of the procedure. We used Navex System for guiding circumferential isolation of the pulmonary veins (PV). After AF ablation was accomplished we moved for RAD. Via femoral artery access the geometry of the descending aorta and renal arteries were reconstructed with Ensite Velocity and the resulting geometry was combined with the CT scan segmentation model using Ensite fusion, first with “add at surface” points in the renal arteries ostia and after a selective angiography of both renal arteries. RF applications of 10 watts, during 30 seconds were delivered through the irrigated catheter separated by >5mm.

**Results:** After successful PV isolation (common PV ostia in the left, silent right superior PV), 4 RF applications in the left and 5 in the right renal arteries were performed both longitudinally and rotationally. There were no acute complications and the renal arteries angiogram performed after RSD showed no damage. The patient was discharged in the following day. Five days after the procedure the patient BP was 120/80 and amlodipine was suspended.

**Conclusions:** We report an initial case where simultaneous AF ablation and RSD were safely performed, using the same ablation catheter and navigation system, and to our knowledge this is the first time that RSD was reported, combined with AF ablation, guided by the virtual image created by the fusion of the RA angio CT-scan and the electroanatomical 3-D system Navex.