

allows accurate in-vivo assessment of stent strut coverage and local thrombus deposition.

**Methods:** 90 consecutive STEMI patients undergoing primary PCI with paclitaxel-eluting stents (PES) were prospectively randomized to bivalirudin monotherapy (n=42) or H/GPI (N=48) as part of a formal HORIZONS-AMI sub-study. OCT was performed in all patients at 13 month follow-up to evaluate the rate of uncovered and malapposed stent struts and local abnormal tissue deposition (ATD). Subclinical thrombus related to uncovered or malapposed struts was defined as ADT protruding beyond the strut into the lumen, with a sharp gap with neointima, signal backscattering and a significant degree of attenuation. Quantitative strut level analysis was performed at every 0.3 mm interval by an independent core laboratory blind to the treatment assignment.

**Results:** Baseline and procedural characteristics were similar between the study groups. Mean age was 61.2 yrs, 71.1% were male, 14.4% had diabetes; the LAD was the infarct related artery in 50% of all pts and 75.6% had baseline TIMI 0-1 flow pre PCI. We quantitatively analyzed 16982 struts in bivalirudin group and 15992 in the H/GPI group. Similar degree of % NIH obstruction was observed in both groups (20.4% with bivalirudin, 19.8% with H/GPI, p=0.39). No difference in the combined rate of uncovered and malapposed struts was found between groups (5.4% with bivalirudin, 5.1% with H/GPI, p=0.41). Subclinical thrombus was identified in 2.94% pts treated with bivalirudin and in 2.88% pts treated with H/GPI (p=0.42).

**Conclusions:** In pts with STEMI undergoing primary PCI with PES, bivalirudin monotherapy compared to UFH plus routine use of GP IIb/IIIa inhibitors results in similar rates of long-term stent strut coverage, subclinical thrombus formation and volume of neointimal obstruction.

## ATRIAL FIBRILLATION ABLATION. NEW TECHNIQUES, NEW HOPES

### 5212 Three dimensional reconstruction of the left atrium and the pulmonary veins for navigation of atrial fibrillation ablation: a comparison study between rotational angiography and cardiac computed tomog



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**Background:** Pulmonary vein isolation (PVI) is a technically challenging intervention. For this reason integration of three-dimensional (3D) imaging by CT or MRI has been widely adopted in order to enhance effectiveness and safety. A novel imaging approach, intraprocedural rotational angiography (RTA) and reconstruction of the left atrium (LA) and pulmonary veins (PVs) (three-dimensional atrigraphy, 3D-ATG) has been developed as a promising imaging tool for PVI-procedures. The purpose of this study was to compare anatomical accuracy, radiation exposure and time needed to perform between 3D-ATG and CT.

**Methods:** Thirty patients (12 females) with an indication for atrial fibrillation ablation, were prospectively included. All patients underwent a pre-operative cardiac-CT. An intra-operative RTA (RAO 110° until LAO 110°) was also performed by directly injecting contrast medium in the left atrium either during an adenosine induced ventricular asystole (n=13, 43%) or during rapid ventricular pacing (n=17, 57%). Reconstruction of the left atrium and the pulmonary veins (PV) was made with the help of a special Software (EP-PreNavigator, Philips, Netherlands). Effective radiation dose, time to prepare and to perform, atrium volume, as well as anterior-posterior (AP) and superior-inferior (SI) ostial diameters of all PVs were measured and compared between CT and RTA.

**Results:** A Bland-Altman-Analysis between 3D-ATG and CT imaging, revealed a difference of 27,73±2,06 ml (mean±SD) for the LA volume. The comparison of horizontal and vertical diameters of PVs in shown in Table 1.

Table 1

	Right Superior PV	Right Inferior PV	Left Superior PV	Left Inferior PV
AP	0±1,7	0,2±2,4	0,1±2,7	0±2,2
SI	0,9±1,7	0,7±1,6	1,2±3,3	0,6±2,1

Time to prepare and to perform was 13,3±4,4 min for 3D-ATG and 48,96±15 min for CT (p<0,05). Effective radiation dose was 2,19±0,1 mSv for 3D-ATG and 28,3±5,6 mSv for CT (p<0,05).

**Conclusion:** Reconstruction of the left atrium and of the pulmonary veins by the means of a rotational angiography has comparable accuracy with a pre-operative Cardio-CT and can be performed with less radiation and less expenditure of time.

### 5213 On wire technology for pulmonary veins isolation: comparison between phased array radiofrequency ablation and balloon-cryotherapy



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**Introduction:** Pulmonary vein (PV) electric isolation is a cornerstone of any ablative technique for atrial fibrillation (AF) treatment. Different on- wire technologies have emerged for PV catheterization and hence ablation avoiding the risk of per-

foration especially for complex left atrial (LA) anatomy. Evaluation of 2 different on- wire technologies for PV isolation; namely the balloon-cryotherapy (BCT) and the circular multiphase array radiofrequency therapy (CMART) is the aim of this study.

**Methods:** Seventy-two consecutive symptomatic drug-resistant paroxysmal AF patients (mean age 54±9 years; 55 men) were randomly subjected to either BCT or CMART. All patients were subjected to a 64- multislice CT-scan prior to the ablation procedure (to observe LA anatomy) and 48 hours after (to detect early PV stenosis). For the BCT group, a maximum of 4 applications (4 min each application) per PV were delivered. For the CMART group, a maximum of 10 applications (1 min each application) were applied per PV.

By the end of the procedure using either of the 2 technologies, disconnection was assessed for all the PV using a circular LASSO® catheter. If disconnection wasn't achieved for any of the targeted PV, radiofrequency ablation using a 4mm irrigated-tip catheter was then performed to achieve complete PV electric isolation.

**Results:** A shorter procedure time (188±56 vs. 230±52 min) and fluoroscopic exposure time (34±12 vs. 43±13) was observed with the CMART compared to BCT. Ninety-six percent of the targeted PV (142/146) were isolated using CMART alone, compared to 67% (97/144) with BCT alone (p<0.01). Over a follow up period of 8±3 months, no significant difference regarding the number of patients free of arrhythmia was observed; 72% with CMART (26/36 patients, 3 on antiarrhythmic treatment) compared to 83% with BCT (30/36 patients, 6 on antiarrhythmic treatment). No complications occurred apart from a case of phrenic nerve injury with BCT and a case of transient ischemic attack with CMART.

**Conclusion:** Both the BCT and the CMART proved to be equally safe for PV isolation. CMART is effective as a single therapy without the need of hybrid ablation therapy in the majority of cases for PV isolation.

### 5214 Long-term results of remote-controlled magnetic navigation for pulmonary vein isolation and differences compared to hand-navigated ablation of atrial fibrillation



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**Purpose:** Radiofrequency ablation (RF) for atrial fibrillation (AF) demands prolonged procedure and fluoroscopy times. Remote-controlled magnetic navigation (RMN) claims to represent a novel approach towards improving pulmonary vein isolation (PVI).

**Methods:** PVI was performed in 80 consecutive patients with paroxysmal or persistent AF. Forty patients underwent RF with RMN (NIOBE II, Stereotaxis, Inc., St. Louis, Missouri) and 40 underwent RF using a conventional hand navigated catheter. In all patients a combined wide area circumferential RF and segmental PVI was performed. The procedural end point was PV entrance block.

**Results:** There was no difference in age, type of AF, left ventricular systolic function and atrial size between the groups. Mean mapping time in the RMN group was 59±30 minutes versus 26±13 minutes in the conventional group (p <0.001). Maps were more detailed in the RMN group (mapping points: 111±41 versus 81±25, p=0,033 and map volume cm<sup>3</sup>: 111±37 versus 98±46, p=0,048). The punctual RMN ablation approach differed from the more linear ablation approach in the conventional group resulting in unequal RF counts (148±52 versus 53±30, p <0.001). Mean procedure time was 248±55 minutes in the RMN group versus 225±65 minutes in the conventional group (p <0.057). Mean fluoroscopy time was 46.6±18.2 minutes in the RMN group versus 99.6±39.3 in the conventional group (p <0.001). A close follow-up in the RMN group with daily transmission of external ECG and 24-h Holter recordings was performed. At 1, 3, 6, and 9 months of follow-up there were 55, 60, 68 and 73% of patients in the RMN group free of AF.

**Conclusions:** Ablation of AF with RMN is feasible and leads to long-term success rates up to 73%. Compared to hand-navigated ablation, RMN ablation results in approximate similar procedure times but significantly decreased fluoroscopy times.

### 5215 Ganglionated plexi ablation for paroxysmal and persistent atrial fibrillation: a prospective rhythm analysis with continuous ECG monitoring



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**Purpose:** Ablation of left atrial ganglionated plexi (GP) is a promising method for the treatment of atrial fibrillation (AF). However, data regarding the clinical effectiveness of this approach are few and contradictory. To assess autonomic denervation offered by an anatomic approach for GP ablation, and evaluate its clinical effectiveness by means of an implantable arrhythmia monitoring device.

**Methods:** In 75 patients with symptomatic, drug-refractory, paroxysmal (n = 56) and persistent (n = 19) AF, radiofrequency ablation of the main clusters of GP in the left atrium was performed. In all patients, an ECG monitor (Reveal XT) was implanted before or immediately after AF ablation and data were analyzed monthly over a 6-month follow-up period.