Electrical isolation of pulmonary veins in patients with atrial fibrillation: reduction of fluoroscopy exposure and procedure duration by the use of a non-fluoroscopic navigation system (NavX).

AIMS: The aim of the study was to investigate the feasibility of performing segmental pulmonary vein (PV) isolation guided by the NavX (Endocardial Solutions, St Jude Medical, Inc., St Paul, MN, USA) system without the three-dimensional (3D) geometric reconstruction option and whether the use of NavX system will reduce the radiation exposure and procedure duration. METHODS AND RESULTS: The study included 64 patients with symptomatic paroxysmal or permanent atrial fibrillation, in whom PV isolation was performed using fluoroscopic guidance (n=32) or the NavX system (n=32). Pulmonary vein mapping with a circular mapping catheter allowed the identification and localization of myocardial connections between the PV and the left atrium. PV isolation was performed by radiofrequency ablation of these connections at the atrial aspect of the PV ostium. Primary success rate for isolated PVs did not differ significantly in patients ablated under fluoroscopic guidance vs. those ablated under guidance of NavX system [100/107 PVs (93.5%) vs. 120/124 PV (96.8%; P=n.s.)]. Compared with fluoroscopy guided procedures, NavX-guided procedures showed a significant reduction in the fluoroscopy time (75.8+/−24.5 vs. 38.9+/−19.3 min, P<0.05), total X-ray exposure (93.2+/−51.6 vs. 56.6+/−37.9 Gy cm²),
P=0.03), and total procedural time (237.7+/−65.4 vs. 188.6+/−62.7 min, P=0.01). The mean follow-up was 9.5+/−3.0 months. One patient in each group was lost to follow-up. Seven-day Holter monitoring showed that 23 of 31 patients (74.2%) in the NavX-guided group and 21 of 31 patients (67.7%) in the fluoroscopy-guided group were in sinus rhythm (P=0.57). CONCLUSION: The 3D visualization of the catheters by NavX system allows a rapid and precise visualization of the mapping and ablation catheters at the PV ostia and markedly reduces fluoroscopy time, total X-ray exposure, and procedural duration during PV isolation compared with ablation performed under fluoroscopy guidance.