Use of zero fluoroscopy for electrophysiological intervention: the zerox pilot study

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**Aims**
Fluoroscopy has routinely been used to guide catheters during electrophysiological procedures. However, 3-dimensional electroanatomical mapping allows us to avoid radiation from fluoroscopy. We explore the feasibility of zero fluoroscopy in 2 low-volume centres.

**Methods**
Aiming to achieve zero fluoroscopy, 45 consecutive patients were recruited. 4 operators used EnSite NavXTM, CARTO 3\textsuperscript{®} or CARTO 3\textsuperscript{®} with stereotaxis. Data including procedural times were collected. Subgroup analysis comparing the supraventricular tachycardia/cavo-tricuspid isthmus (CTI) ablation group with matched controls (without using electroanatomical systems) was performed.

**Results**
18 patients (40\%) received ablation of AVNRT, 11 (24\%) accessory pathway, 7 (16\%) CTI, 5 VT (11\%), 1 (2\%) atrial tachycardia and 3 (7\%) diagnostic studies. In 93\%, zero fluoroscopy was achieved. Of 3 unsuccessful cases, 1 VT ablation required fluoroscopy to register stereotaxis; 1 required fluoroscopy to navigate a CS stenosis; 1 was an unsuccessful ablation of a right free-wall accessory pathway in spite of both electroanatomical and fluoroscopic guidance.

In the SVT/CTI subgroup (\(n = 36\)), zero fluoroscopy was achieved for 35. Average fluoroscopy time (0.2 ± 1.2 vs 25.3 ± 17.4 min) and dose area product (180 vs 21855 mGy/cm\(^2\)) were significantly different compared to 30 matched controls. Procedural times (91.9 ± 40.0 vs 101.6 ± 42.3 min, \(p = 0.34\)), catheter positioning times (19.8 ± 12.2 vs 15.8 ± 7.8 min, \(p = 0.16\)) and RF times (5.5 ± 6.8 vs 9.4 ± 9.8 min, \(p = 0.07\)) were not significantly different. Total ablation times (25.5 ± 25.7 vs 60.5 ± 43.1 min, \(p < 0.01\)) and number of RF lesions (8.6 ± 7.4 vs 18.0 ± 16.3, \(p < 0.01\)) were significantly less in the zero fluoroscopy group.

**Conclusion**
Zero fluoroscopy is feasible, even with complex ablations. The use of zero fluoroscopy and electroanatomical mapping did not increase procedure time, and in fact reduced total ablation time.