

Fluorless Catheter Ablation of Cardiac Arrhythmias: a 5 Year Experience

Mansour Razminia, M.D., Michael Cameron Willoughby, D.O., Hany Demo, M.D., Hesam Keshmiri, D.O., Theodore Wang, M.D., Oliver J. D'silva, M.D., Terry A. Zheutlin, M.D., Hakeem Jibawi, D.O., Paul Okhumale, M.D., and Richard F. Kehoe, M.D.

Razminia, et al. Pacing and Electrophysiology. 2017; 40:425-33.

INTRODUCTION

- ▶ This 5-year retrospective analysis examined 500 consecutive patients who underwent fluorless cardiac catheter ablation from December 2010-March 2016, as described below.

METHODS

- ▶ All transseptal punctures were done under ICE and three-dimensional (3D) mapping system guidance without the use of fluoroscopy.
- ▶ A combination of intracardiac electrograms (IE), electronic mapping (EAM) and intracardiac echocardiography (ICE) were used to position therapeutic and diagnostic catheters.
- ▶ 639 arrhythmias were ablated including atrioventricular reciprocating tachycardia (AVRT), atrioventricular nodal reentrant tachycardia (AVNRT), atrial fibrillation (AF), premature ventricular contractions (PVCs) and ventricular tachycardia (VT).

RESULTS

- ▶ The average ablation length was 151.1 min (range of 22-501 min), with the mean procedural time decreasing with user experience (Figure 1). Using a conservative estimate of 10min of fluoroscopy time in a standard case, 83 hours of continuous fluoroscopy time was eliminated. Removal of fluoroscopy also allowed pregnant staff members to continue to work.
- ▶ Arrhythmia recurrence rates were in line with previously reported recurrence rates for fluoroscopy-guided ablations of various types of arrhythmias.
- ▶ The overall rate of major complications involving ablations for all types of arrhythmias was observed to be lower without fluoroscopy than using fluoroscopy

(1% vs. 2.9-3.8%, respectively), even though there was a slightly higher rate of major complications observed with nonfluoroscopic ablations for focal atrial tachycardia (1.7%) compared to the traditional fluoroscopy-guided approach (0.8%).

CONCLUSIONS

- ▶ This study confirms that the use of new imaging and mapping technologies have enabled nonfluoroscopic ablations for a variety of arrhythmias without increasing procedural time, and without compromising safety and efficacy, safely and successfully performed using the described procedural modifications.

PROCEDURE TIME

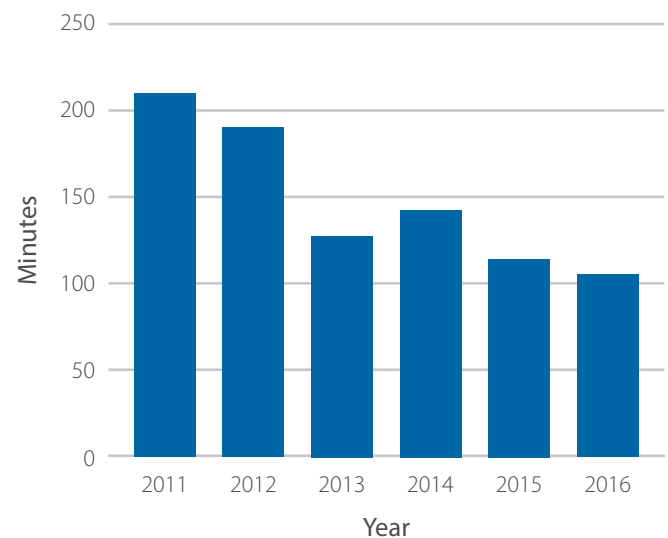


Figure 1. Mean Procedure duration in minutes by year: 2011 (209.6min), 2012 (189.8min), 2013 (127.4min), 2014 (142.4min), 2015 (114.2min), 2016 (105.3min).