ACC.11
60th Annual Scientific Session & Expo

E126
JACC April 5, 2011
Volume 57, Issue 14

CARDIAC ARRHYTHMIAS

USING REAL TIME MRI TO VISUALIZE AND ABLATE GAPS IN RADIOFREQUENCY ABLATION LESION SETS IN THE ATRIUM

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Monday, April 04, 2011, 3:30 p.m.-4:45 p.m.

Session Title: Electrophyiology -- Basic. Clinical Experimentation and Observations
Abstract Category: 25. Electrophysiology–Basic
Session-Poster Board Number: 1122-415

Authors: *Ravi Ranjan, Gaston R. Vergara, Josh Blauer, Eugene G. Kholmovski, Sathya Vijayakumar, Gene Payne, Chris J. McGann, Dennis Parker, Rob MacLeod, Nassir F. Marrouche, University of Utah, Salt Lake City, UT*

Background: Catheter ablation is routinely used in treating arrhythmias. Current mapping systems lack the ability to give any real time feedback of tissue changes as it is being ablated. This leads to gaps in lesion sets and recurrence of arrhythmias.

Methods: A pig model was used for this study (n=3). Two ablation lesions were made in the right atrium in the electrophysiology (EP) lab using fluoroscopy. Animal was transferred to the Magnetic Resonance Imaging (MRI) scanner. Gadolinium delayed enhancement image was acquired to identify the ablation lesions and visualize the gap between them. While in the MRI scanner the gap area was ablated using MRI compatible catheters and real time catheter guidance. Delayed enhancement image was repeated to confirm the ablation of the gap area.

Results: Panel A is a delayed enhancement coronal image showing the two lesions and the gap in between. Lesions indicated by green and white arrowheads were made in the EP lab using fluoroscopy. Panel B shows the real time MRI catheter guidance screen shot showing the lesions made in the EP lab and the MRI compatible catheter. Panel C is a delayed enhancement coronal image after ablation confirming the ablation of the gap area. Yellow arrowhead indicates the lesion made in the MRI scanner. Panel D is gross pathology showing the two lesions made in the EP lab with the gap ablated in the MRI.

Conclusion: Real time MRI can be used to identify gaps in ablation lesion sets in the atrium and target them acutely, potentially leading to improvement in outcome.