



SANS FLUORO Supersized: A case report of Fluoroless Ablation in a Super Morbidly Obese Patient

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Abstract

We present the first ever reported case of a super morbidly obese patient (BMI > 70) with drug refractory, symptomatic atrial flutter who underwent a successful, uncomplicated ablation procedure using a zero fluoroscopy technique. This case demonstrates the following two critical points: (1) difficulties in the treatment of massively obese patients with arrhythmias; (2) increased use of fluoroless ablation techniques.

Introduction

Obesity has become a first world pandemic. 48% of all Americans are morbidly obese (body mass index of > 30 kg/m²) and 12% are super obese^[1]. Super obese or Class III patients are described as having a BMI of Greater than 60 kg/m²^[2]. We describe a successful fluoroless ablation of a super obese patient with typical atrial flutter.

Case Report

Prior to her first episode of the arrhythmia, she had been treated for pneumonia. She had been counseled extensively about weight loss and had lost 40 lbs in the past 6 months. Other medical problems included: hypertension, asthma, fibromyalgia, hyperparathyroidism, chronic pain and restless leg syndrome.

The tachycardia cycle length appeared to be approximately 200 msec with 2:1 conduction [Figure 1]. The tachycardia persisted despite rate controlling medications including beta blockers, calcium channel blockers and digoxin. The patient was anticoagulated with warfarin due to her size instead of a novel agent.

Echocardiogram revealed normal LV function with an EF of 55%, left ventricular hypertrophy (IVSd:1.31 cm²), with left atrial (LA) size of 3.8 cm² and LA volume index of 30.1 ml/ min.

Key Words

Atrial Flutter Ablation, Obesity, Fluoroless Ablation

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The electrophysiology procedure (EP) study and ablation was performed using a fluoroless (SANS FLUORO) method as the patient was over the fluoroscopy table weight limit for any institution in the state. She was placed under general anesthesia in a bariatric bed [Figure 2].

The bed was placed in the EP lab, and the Abbott Precision system was used. The patient was intubated for airway protection, three sheaths were placed in the right groin without complication. A 3-D electro-anatomic impedance based map was generated. Then a coronary sinus catheter, a Halo catheter and an irrigated ablation catheter were placed. The caval tricuspid isthmus was ablated with multiple lines from the annulus to the IVC [Figure 3A and Figure 3B]). She was in sinus rhythm and was non-inducible throughout the procedure. Bidirectional block was demonstrated. There were no complications and she was discharged the following day.

Discussion

We believe that this case is important because it outlines 2 distinct issues: super morbid obesity and fluoroless ablation. It is well known that obese patients with or without sleep apnea suffer from an increased rate of atrial arrhythmias^[3]. Thoughts were given to using a portable C arm, but this would have delivered uninterpretable images and tremendous amounts of X-ray radiation exposure to the patient and the staff (at least 2-4 times normal amounts) due to her large size^[4]. 3-D electro anatomical mapping systems are more than capable of providing the visual information needed to perform almost all ablations, especially atrial flutter and atrial fibrillation^[5]. As the rates of obesity are continuing to rise, these patients will become

more commonplace in everyday practice. Additionally recent studies have shown that obesity may have a deleterious effect on long term ablation success rates^[6]. Special thanks to Dr. W. Michael Kutayli for his help in this endeavor.

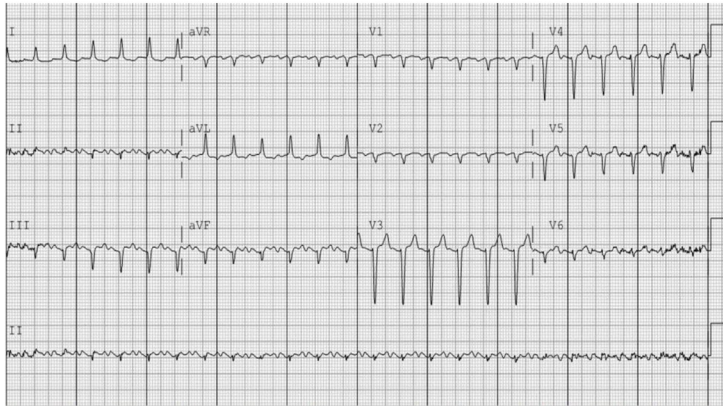


Figure 1: Initial electrocardiogram revealing tachycardia with rate of 150 bpm and probable 2:1 conduction.

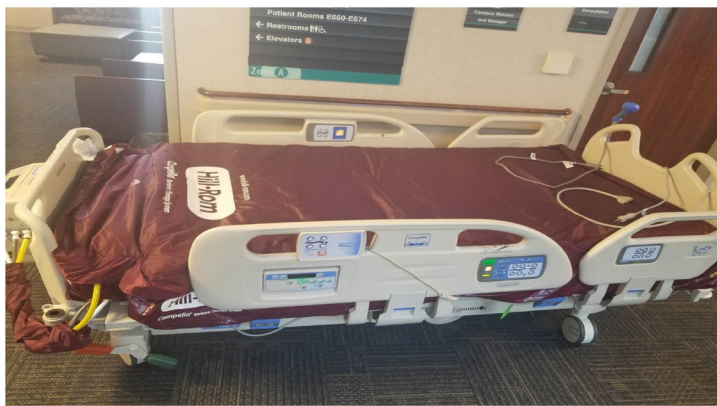


Figure 2: Bariatric bed upon which the patient had the ablation.

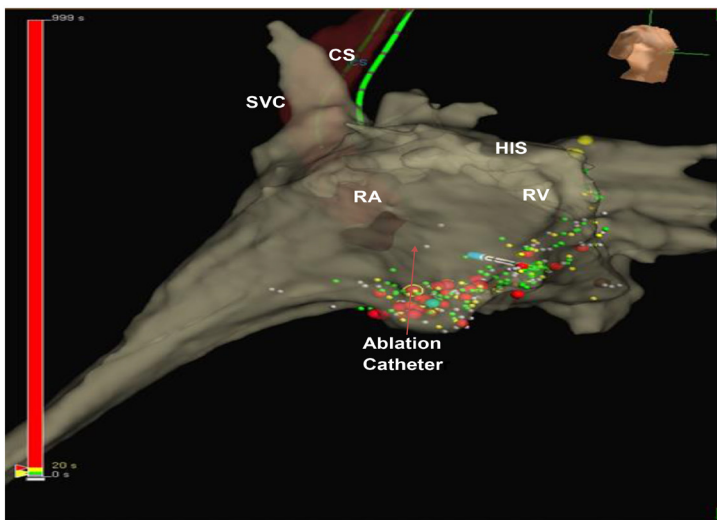


Figure 3A: RAO view of 3 Dimensional Electro-anatomic map of the right atrium (RA), right ventricle (RV), His Bundle (His), coronary sinus (CS), superior vena cava (SVC), inferior vena cava (IVC). Green, blue, yellow and white small points represent impedance drops of > 20%, 15%, 10%, and 5% respectively. Red larger points denote time > 20 seconds.

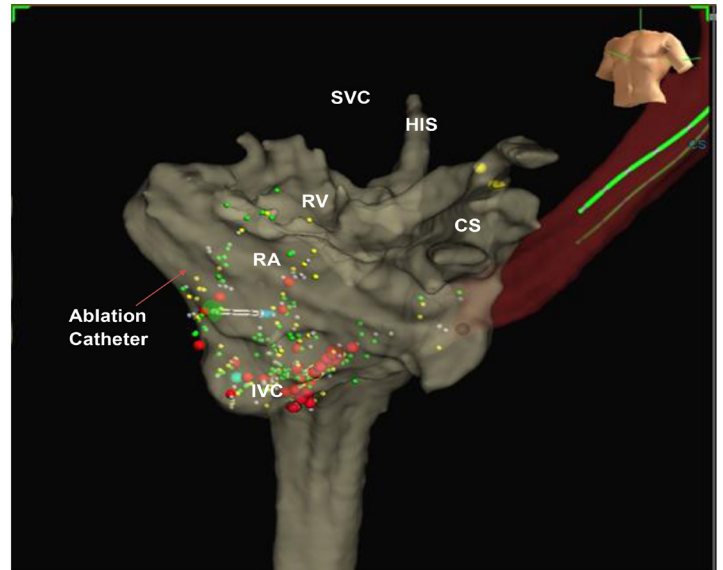


Figure 3B: LAO rock up view of 3 Dimensional Electro-anatomic map of the right atrium (RA), right ventricle (RV), His, coronary sinus (CS), superior vena cava (SVC), inferior vena cava (IVC). Green, blue, yellow and white small points represent impedance drops of >20%, 15%, 10% and 5%, respectively. Red larger points represent time > 20 seconds.

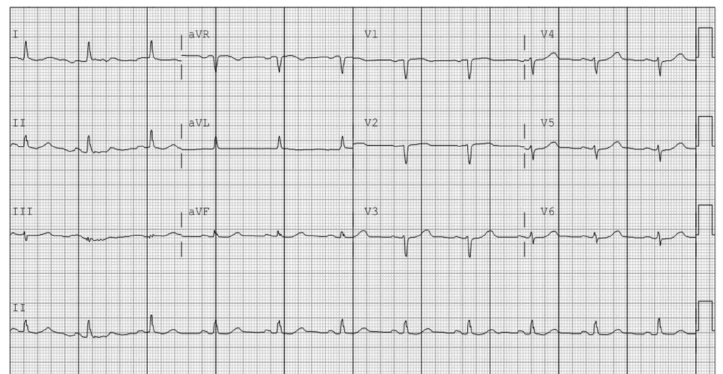


Figure 4: ECG from the patient 2 weeks ago revealing sinus rhythm.

References

1. Imes CC, Burke LE. The Obesity Epidemic: The United States as a Cautionary Tale for the Rest of the World. *Curr Epidemiol Rep.* 2014;1 (2):82–88.
2. Friedrich MJ. Global Obesity Epidemic Worsening. *JAMA.* 2017;318 (7).
3. Gami AS, Hodge DO, Herges RM, Olson EJ, NykodymJiri, KaraTomas, SomersVirend K. Obstructive sleep apnea, obesity, and the risk of incident atrial fibrillation. *J. Am. Coll. Cardiol.* 2007;49 (5):565–71.
4. Ector J, Dragusin O, Adriaenssens B, Huybrechts W, Willems R, Ector H, Heidbüchel H. Obesity is a major determinant of radiation dose in patients undergoing pulmonary vein isolation for atrial fibrillation. *J. Am. Coll. Cardiol.* 2007;50 (3):234–42.
5. Percell J, Sharpe E, Percell R. SANS FLUORO (SAy No Series to FLUOROscopy): A First-Year Experience. *J Innovations in Cardiac Rhythm Management* 7:2529–2534.
6. Maat GE, Mulder B, Berretty WL, et al. Obesity is associated with impaired long-term success of pulmonary vein isolation: a plea for risk factor management before ablation. *Open Heart* 2018;5:e000771. doi: 10.1136/openhrt-2017-000771.