

## Highlights from:

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Shah et al. Heart Rhythm Case Reports, Nov 2018 DOI: 10.1016/j.hrccr.2018.10.011

# Long standing persistent atrial fibrillation ablation without use of fluoroscopy in a patient with cor triatriatum

## INTRODUCTION

- ▶ This report describes a fluoroless technique for transeptal puncture and radiofrequency (RF) catheter ablation in a patient with persistent atrial fibrillation and cor triatriatum sinister, a fenestrated membrane dividing the left atrium into two chambers.

## METHODS

### Fluoroless image guidance setup

- ▶ EnSite™ Velocity™ Cardiac Mapping System (St. Jude Medical) was used to recreate cardiac geometries and visualize the RF **NRG™** Transseptal Needle (Baylis Medical®).
- ▶ The RF needle was visualized on the EnSite™ Velocity™ Mapping System via connection to the **DuoMode™** Extension Cable (Baylis Medical®), and assigned as a 15F single-electrode catheter with no electrode spacing on the mapping system pin box (Figure 1).

### Transseptal puncture

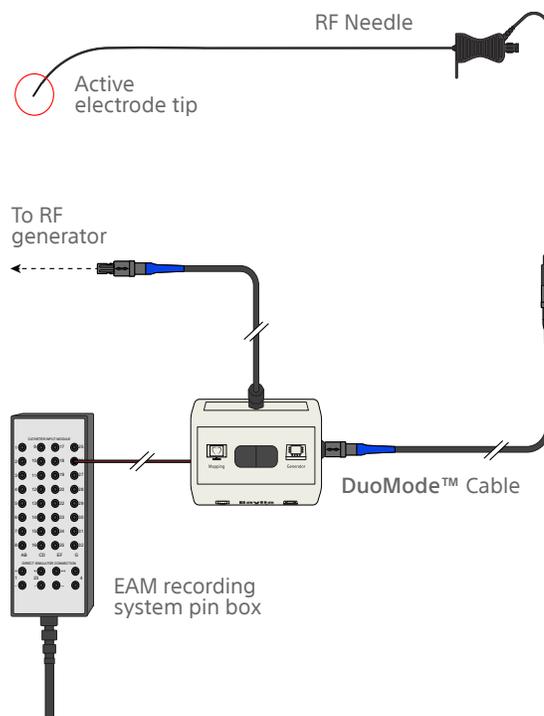
- ▶ After positioning the transeptal assembly in the superior vena cava (SVC), the active tip of the RF needle was exposed past the tip of the dilator to visualize on the EnSite™ Velocity™ 3D Map.
- ▶ The atraumatic RF needle tip allowed the needle to remain exposed for tracking on the 3D map during dropdown from the SVC to the fossa ovalis.
- ▶ Intracardiac echocardiography (ICE) was used to confirm needle position before applying RF energy for puncture.
- ▶ A second transeptal puncture was performed using the same technique.

### RF catheter ablation

- ▶ Circumferential wide area and left atrial roof line ablations were performed to isolate all four pulmonary veins.
- ▶ Right atrial flutter ablation was also performed.

## DISCUSSION AND CONCLUSIONS

- ▶ Despite increasing efforts to reduce radiation exposure in catheter ablation procedures, transeptal access is still regarded as a challenge to performing completely fluoroless procedures.
- ▶ In this case with complex cardiac anatomy, nonfluoroscopic transeptal puncture and catheter ablation were achieved with little difficulty and no intraoperative complications.
- ▶ Direct 3D visualization of an RF needle under electroanatomic mapping and ICE guidance enabled a completely fluoroless technique and minimized uncertainty associated with 2D fluoroscopy.
- ▶ Sinus rhythm was maintained and symptoms improved up to 12 months post-ablation.



**Figure 1.** Graphical adaptation of the nonfluoroscopic RF needle visualization setup described by Shah et al.

## Brief Summary | **NRG™** Transseptal Needle

**CAUTION:** Federal law (USA) restricts this device to sale by or on the order of a physician. Rx only. Prior to use, please see the complete "Instructions for Use" for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator's Instructions.

**INDICATIONS FOR USE:** The NRG™ Transseptal Needle is used to create an atrial septal defect in the heart. Secondary indications include monitoring intracardiac pressures, sampling blood, and infusing solutions.

**CONTRAINDICATIONS:** The NRG™ Transseptal Needle is not recommended for use with any conditions that do not require cutting or coagulation of soft tissue.

**WARNINGS:** • Laboratory staff and patients can undergo significant x-ray exposure during radiofrequency puncture procedures due to the continuous usage of fluoroscopic imaging. This exposure can result in acute radiation injury as well as increased risk for somatic and genetic effects. Therefore, adequate measures must be taken to minimize this exposure. • The NRG™ Transseptal Needle is intended for single patient use only. Do not attempt to sterilize and reuse the needle. Reuse can cause the patient injury and/or the communication of infectious disease(s) from one patient to another. Failure to do so may result in patient complications. • The NRG™ Transseptal Needle must be used with the BMC Connector Cable. Attempts to use it with other connector cables can result in electrocution of the patient and/or operator.

**PRECAUTIONS:** • Placement of the dispersive electrode on the thigh or hip could be associated with higher impedance. • In order to prevent the risk of ignition make sure that flammable material is not present in the room during RF power application. • Careful needle manipulation must be performed to avoid cardiac damage, or tamponade. Needle advancement should be done under image guidance. If resistance is encountered, DO NOT use excessive force to advance or withdraw the needle. • During power delivery, the patient should not be allowed to come in contact with ground metal surfaces. • Thoroughly flush the NRG™ Transseptal Needle with heparinized saline solution prior to use. • If using electroanatomical mapping guidance it is recommended to confirm tip placement on the fossa ovalis and septal tenting before RF puncture with graphic imaging or another imaging modality.

**ADVERSE EVENTS:** Adverse events that may occur while using the Baylis Medical Radiofrequency Puncture System include: • Tamponade • Sepsis/Infection • Thromboembolic episodes • Vessel perforation • Atrial Fibrillation • Myocardial Infarction • Vessel spasm • Sustained arrhythmias • Atrial Flutter • Hemorrhage • Vascular thrombosis • Perforation of the myocardium • Hematoma • Allergic reaction to contrast medium • Ventricular Tachycardia • Pain and Tenderness • Thermal damage to tissue • Arteriovenous fistula • Pericardial Effusion

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## Brief Summary | **DuoMode™** Cable

**CAUTION:** Federal law (USA) restricts this device to sale by or on the order of a physician. Rx only. Prior to use, please see the complete "Instructions for Use" for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator's Instructions.

**INDICATIONS FOR USE:** The DuoMode Cable is intended to serve as an extension cable that is used with the Baylis Medical radiofrequency puncture devices, the Baylis Medical Company Radiofrequency Puncture Generator and diagnostic equipment.

**CONTRAINDICATIONS:** The DuoMode Cable is not recommended for use with any other RF generator.

**WARNINGS:** • The DuoMode Cable is a reusable device. Failure to properly clean the device can cause patient injury and/or the communication of infectious disease(s) from one patient to another. • The DuoMode Cable must only be used with Baylis RF Puncture Generators and RF puncture devices. Attempts to use it with other RF Generators and devices can result in electrocution of the patient and/or operator. • Laboratory staff and patients can undergo significant x-ray exposure during radiofrequency puncture procedures due to the continuous usage of fluoroscopic imaging. This exposure can result in acute radiation injury as well as increased risk for somatic and genetic effects. Therefore, adequate measures must be taken to minimize this exposure.

**PRECAUTIONS:** • Do not bend the cable. Excessive bending or kinking of the cable may damage the integrity of the cable and may cause patient injury. Care must be taken when handling the cable. • During power delivery, the patient should not be allowed to come in contact with ground metal surfaces. • In order to prevent the risk of ignition make sure that flammable material is not present in the room during RF power application.

**ADVERSE EVENTS:** Adverse events associated with the use of this device are similar to those indicated for the Baylis Medical Radiofrequency Puncture System.

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