

## Utilizing 3-D NavX for Transseptal Puncture as an Additional Safeguard - A Case Series

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**Introduction:** Transseptal procedures, utilized to access and ablate left-sided arrhythmias, can be associated with procedural related risk. We postulated that transseptal procedural risk and radiation exposure can be reduced utilizing 3-D NavX (St. Jude, Minneapolis, MN) to guide the transseptal needle during the transseptal puncture.

**Methods:** All patients less than 30 years old who underwent transseptal procedures with the assistance of 3-D NavX between 1/12/11 and 12/31/14 were retrospectively evaluated. Data included patient demographics, type of arrhythmia, 3-D guidance use, procedure time, fluoroscopy time, complications, and post procedure outcome. TEE or ICE was not used to assist with transseptal punctures in this study.

**Procedure:** Prior to the transseptal puncture attempt a steerable catheter was used to probe for a PFO using the previously generated 3-D model as a reference. If a PFO was present, it was marked on the 3-D NavX model and was used as the transseptal access site. If a transseptal puncture was required an alligator clip connected to the transseptal needle hub to connect to 3-D NavX to allow needle tip localization once the needle tip touched the blood pool during the transseptal puncture. (Figure 1). This was utilized in addition to standard techniques to further evaluate needle location during the puncture.

**Results:** Fifty-one patients less than 30 years of age underwent a transseptal procedure and used 3-D NavX. A PFO was probed for and found in 14 patients. The remaining 37 patients underwent a transseptal puncture guided by 3-D NavX in addition to standard techniques. Arrhythmia substrate included both atrial and ventricular arrhythmias. The median procedure time was 107 minutes (range: 52-346) from lidocaine injection to time of catheter removal. The median fluoroscopic time for the full procedure was 1.3 minutes (range: 0.00-19.2, mean: 2.33 minutes – Figure 2). There were no transseptal related complications.

**Discussion:** This technique assists with localization of the transseptal needle tip during the transseptal puncture and may assist with risk reduction.

Figure 1:



Figure 1: 3-D NavX LAO view of the transseptal needle tip (grey sphere) near the ablation catheter shadow (red/grey catheter). The ablation catheter was marked as it was removed from the LA after the ablation, further confirming the ability to localize the transseptal needle tip during the transseptal puncture.

Figure 2:

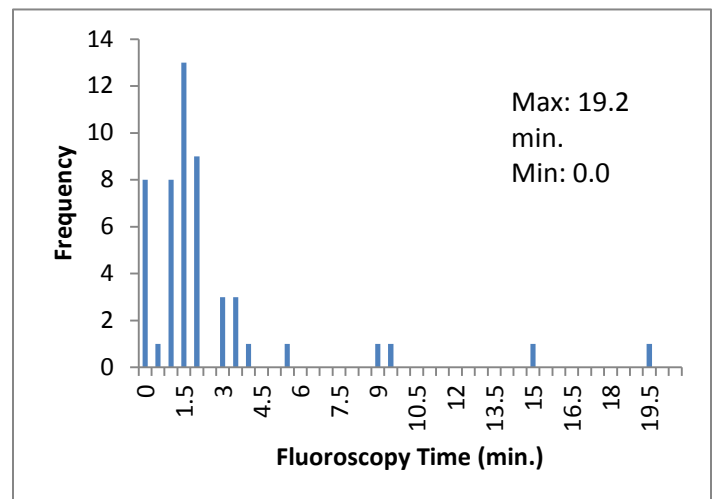


Figure 2. Radiation time for the ablation procedures.