A-V Reentry Tachycardia (AVRT) and Wolff Parkinson White Syndrome (WPW) Best Practices for Navigant®

EPOCH

Essential elements to increase efficient use of remote magnetic navigation

Use in conjunction with established best practices in EP ablation to evaluate outcomes

AVRT/ WPW Ablation Procedures

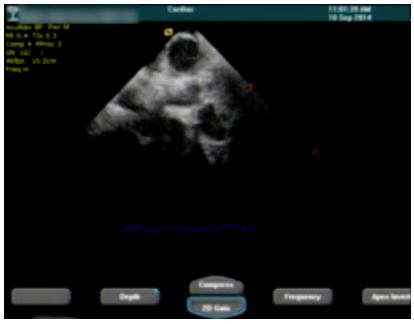
- A primary value proposition of magnetic navigation is the ability to navigate to all areas of the heart.
- Both AVRT and WPW are tachycardias that utilize an accessory pathway to conduct an atrial signal prematurely to the ventricle. These pathways typically occur around the tricuspid or mitral annulus-usually occurring either laterally or posterioseptally.
- Based on the timing of the electrical activity, pacing from the atrium or ventricle is performed and electroanatomical mapping is employed to discern earliest A/V insertion of the pathway. In both cases, these insertion areas can occur in either the left or right atrium and can manifest as a small focal area of early activity, or a more diffuse region of early-fragmented potentials.
- Given the potential for a right or a left atrial mapping focus, both transseptal LA and standard RA set up should be discussed.

Set Up

Right Atrium

- A short 8F sheath can be used as the magnetic catheter will exit the tip of a straight short sheath without concern that the distal 1.5cm stiff section of the catheter will be damaged.
- Place the tip of the catheter in the body of the right atrium with all three magnets above the RA/IVC junction.

Left Atrium



- An inferior and anterior approach to transseptal access maximizes the distance between sheath tip and RIPV for optimal magnetic catheter navigation. *When V-Sono™ is used to visualize the septum, a stable ICE image can be maintained while the operator's hands are free to direct the needle.*
- An 8.5F SL-0 sheath with the tip placed approximately 5mm into the left atrium and rotated approximately 30° posterior minimizes occurrences in which the magnetic catheter is biased to enter the left atrial appendage or mitral valve.

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Mapping

The extent of mapping will be determined by the ease of locating the area of target potentials (early/late/fractionated). Generally speaking, widely spaced electroanatomical points will be refined into more focal areas of electrical activity.

- Use CAS step size of 5 to 7mm to begin point collection. This allows maximum coverage in minimal time.
- Transition to CAS step size of 2 to 3mm to focus on specific areas.
- Use the Navigant® keypad with vector set to 1° and CAS step size set to 1mm.
- Turn the navigation window on *Navigant* until the tip of the catheter is in the center of the screen. Investigate the area around the earliest signal in order to confirm earliest activation.

Treatment

- Physicians experiencing results equivalent to their manual approaches report beginning to deliver RF energy at 30 watts and increasing power as needed to achieve success.
- Adjust the catheter tip using the *Navigant* keypad as necessary.

Confirm Treatment Effect

- Confirm acute endpoint according to standard EP practice. Ablation History data in *Navigant*, the magnetic catheter tip and/or loop catheter can assist in this process.
- If gaps in treatment exist, use Ablation History data in *Navigant* to assist in identifying these areas. Subsequently, if using the CARTO® 3 system, employ *Navigant* automated features such as Click-and-GO, Go To Electrode, Target NaviLine, and Anatomical Presets to quickly reach the gap area for further treatment.

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For technical information, including full cautions and warnings on using the products, please refer to the system user manual. Read all instructions carefully. Failure to properly follow instructions, labeling, notes, cautions, warnings and danger messages associated with Stereotaxis' products may lead to serious injury to users or patients, or patient complications including death, or damage to the products. While clinical studies support the use of Stereotaxis' products as an effective tool for procedures specified in the labeling, individual results may vary.

Mastering Micro-movements with Magnetic Catheters

If more than two vector moves are employed without associated tip response, remove the vector input(s) to eliminate high amounts of stored energy. Subsequently, retract the catheter until the attitude of the tip changes, and then re-apply the desired vector.

If more than two CAS moves are employed without associated tip response retract CAS inputs until the attitude of the tip changes, and then adjust vector to regain tip control.

CARTO 3 System FAM Mapping Resolution Settings with Magnetic Catheters

Physicians who are expert in the use of the *CARTO* 3 system with magnetic catheters and FAM mapping state that they prefer a FAM resolution of 16 or 17. Resolutions lower than 16 produce excessive interpolation between independent catheter positions resulting in a map that looks complete but lacks sufficient fidelity. Conversely, resolutions greater than 17 produce a high fidelity map but display many holes in the map surface unless additional time is taken to ensure all independent catheter positions are close enough to each other to fill holes. Thus, selecting a FAM resolution of 16 or 17 best supports efficiently creating a high fidelity map.

Variables Influencing Efficient Ablation with a NaviStar® RMT ThermoCool® Catheter (power, time, force)

- When using a magnetic catheter, the amount of force applied to the tissue remains relatively constant throughout the cardiac cycle at a median level of approximately 10 grams[1].
- With this relatively constant level of force, the remaining variables that can be adjusted are power and time. Increasing power (rather than time) is the most efficient way to heat tissue to desired temperature levels.
- During manual ablations, physicians have the ability to increase force if initial RF energy applications result in rising edema. Physicians who are expert in magnetic catheter ablation minimize risk of edema by increasing power during the ***initial*** delivery of RF energy.
- With more than 75,000 Stereotaxis magnetic procedures completed to date, increasing power is common best practice of physicians.

[1]Nakagawa et al., 2014 AF Symposium