Complex Left Atrial (CLA) Best Practices for Navigant®

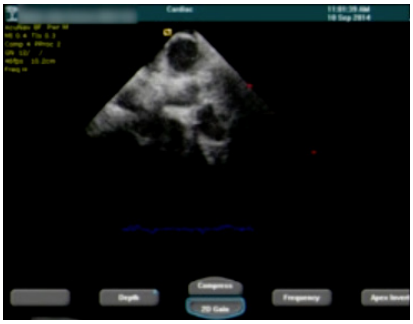
EPOCH

Essential elements to increase efficient use of remote magnetic navigation

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

CLA Ablation Procedures

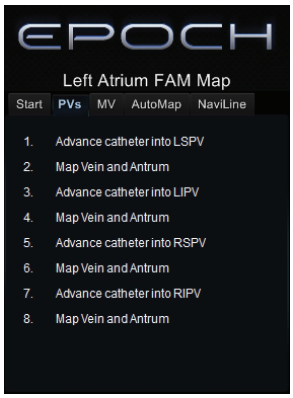
Set Up

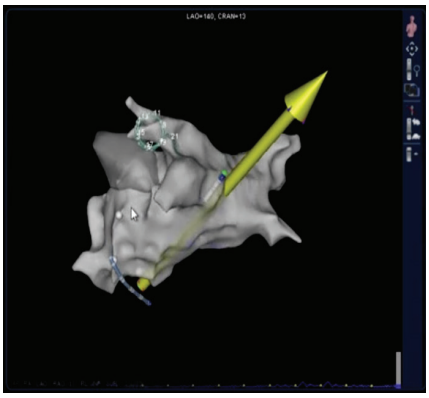


- An inferior and anterior approach to transseptal access maximizes the distance between sheath tip and RIPV for optimal magnetic catheter navigation. *When V-Sono™ is used to visualize the septum, a stable ICE image can be maintained while the operator's hands are free to direct the needle.*
- An 8.5F 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.

Mapping

- A CARTO® 3 system FAM resolution of 16 or 17 will provide fast and accurate geometry.
- Navigant® Presets as well as Map Vein and Antrum features streamline access to and mapping of veins, and adjacent ostiums.





- Creating the minimum FAM geometry required to cover desired ablation areas supports efficient procedures. Mapping anatomical areas that will not receive treatment adds time to procedures.
    - If electing to map the body of the atrium or other areas that may not receive treatment, employ 5 to 7mm CAS step size. Use Vector Lock to make large and continuous movements that quickly obtain FAM geometry.

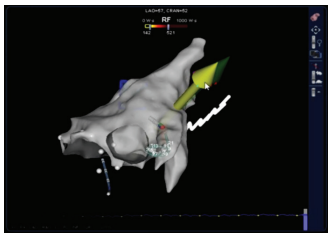
Treatment

- Physicians experiencing magnetic procedure time equivalent to their manual approach report using power settings in a range between 45 and 50 Watts, advancing the catheter when desired EGM attenuation is achieved. When ablating adjacent the esophagus, monitor for rising temperatures and reduce power settings as necessary.

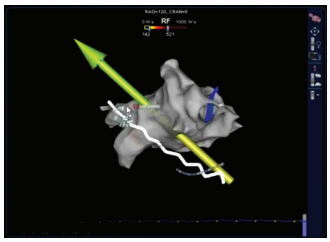
- A 2mm CAS step size and 5° vector movement supports maintaining the desired position on the contiguous lesion line. If available, employ the Ablation History feature in *Navigant* to visualize and immediately address gaps.

- Alternating frequently between the two *Navigant* 3D Mapping Windows described below informs the physician whether a CAS or vector movement is required.

    - Map View 1: Orient the map so that the catheter tip is in the center of the screen (distal tip pointing directly at the physician) to best interpret small vector adjustments. This facilitates unobstructed viewing and control of tip movement in all directions.



    - Map View 2: Orient the map so the catheter tip is parallel to the surface of the computer screen (a side view of the catheter icon). This assists with determining appropriate CAS adjustments and maintaining continuous position on the desired lesion line.



- For physicians new to magnetic catheter navigation, beginning treatment at the anterior/superior aspect of the LSPV and progressing toward the LIPV along the posterior wall, provides fewer navigation challenges than beginning treatment at the ridge.

- At the ridge, reducing the CAS step size to 1mm and biasing the vector toward the anterior aspect of the ridge supports stable catheter movement. Conversely, applying excess vector or large CAS step size movements can result in undesired catheter jumps due to high amounts of stored energy.

- When using V-Loop™, physicians can position the loop catheter in each vein at the time of first pass ablation without adding significant procedural time. Without *V-Loop*, physicians experiencing times equivalent to their manual approaches leave the loop catheter in the LSPV until after first pass ablation is complete.

- Following first pass left vein ablations, proceed to the anterior/superior aspect of the RSPV. Momentarily increasing CAS step size to 7 or above supports quick moves of the catheter from the left to right side of the atrium.

Treatment Cont.

- At the anterior/superior aspect of the RSPV, begin ablation toward the posterior wall (following the same process as the left side).
- When treating the RIPV, use small vector and 1mm CAS step size movements to achieve efficient first pass ablation. Alternating vector movements between the anterior and posterior aspects allows physicians to navigate around the vein in a manner that accounts for changes in the atrial surface.

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, employ 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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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