Transseptal access and pulmonary vein isolation via internal jugular veins for persistent atrial fibrillation treatment in a patient with left atrial isomerism, sinus node dysfunction and interrupted inferior vena cava: The usefulness of robotic magnetic navigation.

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INTRODUCTION

This case report describes successful pulmonary vein isolation (PVI) for persistent atrial fibrillation (AF) in a patient with interrupted inferior vena cava (IVC) and sinus node dysfunction associated with left atrial (LA) isomerism.

METHODS

Case summary

- Initial attempt for LA access using the Agilis™ NxT steerable sheath (Abbott) through the femoral vein failed due to difficult catheter manipulation and cardiac visualization.
- Post-procedural MRI revealed IVC interruption.
- A second attempt was planned from the superior approach using the internal jugular (IJ) veins.

Transseptal access

- Left IJ vein access was used to introduce an intracardiac echocardiography (ICE) catheter into the mid-right atrium.
- The 8.5Fr SupraCross® RF System* (Baylis Medical) was introduced through the right IJ vein under fluoroscopic and ICE guidance.
- SupraCross® Steerable Sheath was advanced towards the tricuspid annulus posteriorly and deflected to position the tip leftward and anterior (i.e. 10 o’clock position from operator’s view).
- The sheath was then rotated counterclockwise, pulled back approx. 2 cm to position the tip leftward and posterior (i.e. 8 o’clock position) onto the fossa ovalis.
- Sufficient tenting of the septum was confirmed on ICE prior to transseptal puncture using the RF wire system.*
- SupraCross® sheath was advanced into the left atrium for subsequent ablation.

Radiofrequency ablation

- 3D electroanatomic mapping (CARTO®3, Biosense Webster) and Stereotaxis® robotic magnetic navigation were used for catheter guidance.
- High power (45W) bilateral wide-area circumferential ablation was performed using the Thermocool® RMT (Biosense Webster) catheter.

RESULTS

- Transseptal puncture using the RF wire system* was successful on the first attempt, without complications.
- PVI was achieved with no difficulties in catheter manipulation, procedural complications, or recurrence of symptoms after 6 months of follow-up.

DISCUSSION & CONCLUSIONS

- The SupraCross® Steerable Sheath enabled angle correction from the IJ approach to optimize position on the fossa ovalis and tenting of the interatrial septum.
- Dedicated RF transseptal devices improve crossing success and reduces procedure time compared to mechanical needles, especially from an unconventional approach.
- Other techniques using a fixed curve sheath and Brockenbrough needle require manual curving in order to achieve a similar trajectory through the septum as a femoral approach, as well as mechanical force to puncture.

* The article was published as using the TorFlex™ Steerable Guiding Sheath and NRG® Transseptal Needle. In actual fact, authors used the SupraCross® RF Solution (Baylis Medical) for left atrial catheterization, including the SupraCross® Steerable Sheath and pigtail SupraCross® RF Wire.

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