Direct Hepatic Vein Puncture and Transseptal Access for Atrial Flutter and Fibrillation Ablation in a Patient with Prior Ligation of the Inferior Vena Cava

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INTRODUCTION

This case report describes a novel technique for left atrial (LA) access and radiofrequency ablation using hepatic vein access in a patient with surgically ligated IVC.

METHODS

Hepatic vein access

The middle hepatic vein was punctured along the right costal margin between the midclavicular and right anterior axillary line under ultrasound guidance and support from interventional radiology.

Transseptal puncture

First attempt to access the septum using the Agilis™ EPI Steerable Introducer (Abbott) failed to position the sheath tip on the septum from the challenging hepatic vein trajectory.

Second attempt using the SupraCross® Steerable Sheath (Baylis Medical) with flexible dilator supported access of the dedicated Baylis RF pigtail wire* on the septum.

Transseptal puncture was performed using the Baylis RF wire* under intracardiac echocardiography guidance.

The SupraCross® sheath was advanced into the LA over the RF pigtail wire for mapping and ablation.

Catheter ablation

Three-dimensional electroanatomic maps (EAM) of the left and right atria were created using the CARTO® 3 system (Biosense Webster).

Pulmonary vein isolation and cavo-tricuspid isthmus ablation for right atrial flutter were performed using the Thermacool Smarttouch® SF (Biosense Webster) catheter.

Access site closure

Approx. 4cm Gelfoam® (Pfizer) plug was pushed through 12F sheath to seal the hepatic vein entry site.

DISCUSSION & CONCLUSIONS

Hepatic vein access can be used for left atrial catheterization in patients with surgically ligated IVC.

This is facilitated by an inferior approach that is familiar to operators experienced using femoral access but requires catheter manipulation to reach the septum.

SupraCross® sheath with flexible dilator provided a tight angle of curvature to enable positioning on the septum.

While force translation may be impacted by altered catheter trajectory, the use of a RF transseptal system minimized force and tissue tenting.

RF puncture reduces the risk of complications in comparison to conventional mechanical needles.

RF wires improve workflow efficiency by allowing repositioning on the septum without rewiring.

Use of a steerable sheath with flexible dilator and RF wire for TSP can improve the feasibility and safety of transhepatic approach for LA access to allow more patients to receive treatment.

* RF transseptal puncture was performed in the case described in this article using the SupraCross® RF Wire (Baylis Medical).