

EP CASE REPORT

Untying of diagnostic decapolar catheter knot using a steerable sheath and ablation catheter

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A 67-year-old man underwent electrophysiology study for typical right atrial flutter. A decapolar diagnostic catheter (Inquiry™, Irvine Biomedical/St. Jude Medical Company, Irvine, CA, USA) was planned to be advanced into the coronary sinus via a 7 Fr sheath in the femoral vein. Initially, manipulation and rotation with the catheter was performed without fluoroscopic guidance. When fluoroscopy was used, it revealed a helical-shaped, knot-like structure with a tip of the catheter pointing cranially (see Figure 1, left panel, decapolar catheter stacked in the pelvic veins). Gentle traction or rotation did not allow catheter withdrawal. Quite the opposite—by pulling the catheter the ‘false-knot’ tightened and made catheter retraction from femoral vein impossible. To solve the problem, a steerable Agilis™ NxT sheath (8.5 Fr/91 cm, St. Jude Medical, Minnetonka, Minneapolis, MN, USA) with an 8-mm ablation catheter Alcatch Flutter Black LT G (Biotronik, Berlin, Germany) was advanced into the right atrium from the right internal jugular vein. This assembly was selected to improve traction capability of the ablation catheter. Pushing the decapolar catheter upwards, the

tip of the decapolar catheter remained stacked in the pelvic veins, while the body of the catheter formed a long loop reaching to the right atrium. The knot was hooked by the ablation catheter and by gentle traction of the assembly upwards, the eye of the knot was slowly loosened and the tip of the entrapped decapolar catheter released and moved upwards. By pulling both the assembly and the decapolar catheter against each other, the false-knot in the pelvic vein was completely loosened, and the tip of the decapolar catheter was retracted into the right atrium. Afterwards, the decapolar catheter was unhooked and pulled back through the original insertion site in the right femoral vein. After removal of the decapolar catheter, a significant ‘camel-like’ double hump deformation was observed on its shaft (see Figure 1, right panel, retracted deformed decapolar catheter). The steerable sheath was exchanged for an 8-Fr introducer which was used for advancing another decapolar catheter into the coronary sinus. Both the duodecapolar and ablation catheter were introduced via the right femoral vein (8 Fr sheath and Swartz™SR0 81 cm sheath) into the right atrium. Subsequent intracardiac echocardiography showed no pericardial effusion or another injury to the heart. The cavotricuspid isthmus was successfully ablated, and bidirectional block was confirmed. The entire procedure lasted 115 min with 20 min fluoroscopy time and radiation dose of 2970 $\mu\text{G}/\text{m}^2$, the time spend for untying the catheter was 45 min. No apparent complications in the groin/pelvic region was clinically observed.

This case demonstrates a novel technique of untying knotted diagnostic catheter in the pelvic veins using a steerable sheath and ablation catheter introduced from the internal jugular vein. This assembly provides adequate stability for traction manoeuvres.

Supplementary material is available at *Europace* online.

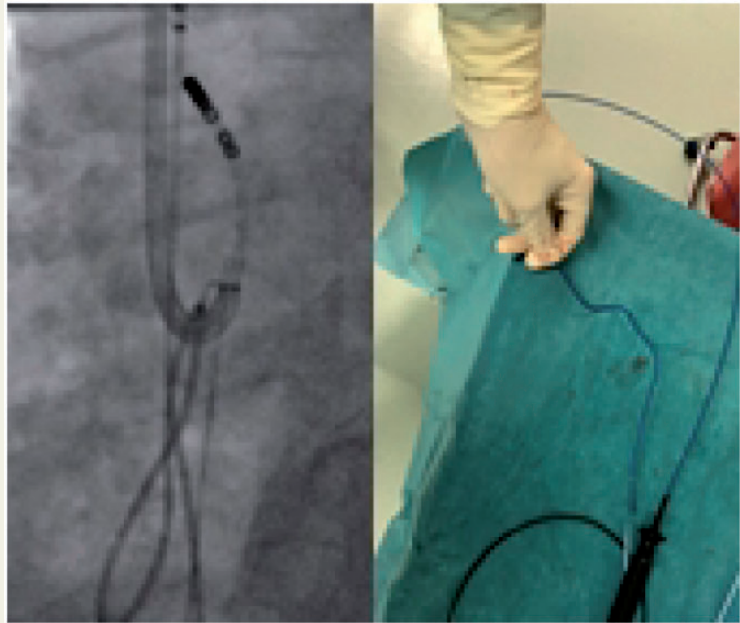


Figure 1 Left panel: decapolar catheter stacked in the pelvic veins; right panel: retracted deformed decapolar catheter.