



Abstract Type : Poster exhibition

Abstract Submission No.: A-0109

Abstract Topic : Interventional Nephrology

The Surfacer Inside-Out Access System for Right-sided Catheter Placement in Porcine Models

In Soo Kim¹, Sangeon Gwoo², Eunjung Kim³, Hoon Suk Park⁴, Hyungseok Lee¹

¹Department of Internal Medicine-Nephrology, Hallym University Sacred Heart Hospital, Korea, Republic of

²Department of Vascular Access Center, Lifeline Clinic, Busan, Korea, Republic of

³Department of Internal Medicine-Nephrology, Dongtan Sacred Heart Hospital, Korea, Republic of

⁴Department of Internal Medicine-Nephrology, The Catholic University of Korea Seoul St. Mary's Hospital, Korea, Republic of


Objectives : Various endovascular techniques have been developed to address vascular access complications, but thoracic central venous obstruction (TCVO) has remained challenging. The Surfacer system (Merit Medical, UT, USA), a device for placing a tunneled dialysis catheter or HeRO graft through the right internal jugular vein in hemodialysis patients with TCVO, has been recently introduced in Korea. However, there has been no experience with the device in vivo in Korea, making it difficult to apply it directly to patients. Before adopting it in clinical practice, we first applied it to porcine models.

Methods : Porcine models were placed in an angio suite under general anesthesia. A radiopaque marker was attached to the skin over the clavicle to guide the procedure. A 12Fr introducer was inserted into the right femoral vein, followed by the advancement of a 10Fr workstation into the superior vena cava using the over-the-wire method. The delivery instrument was then advanced through the workstation toward the radiopaque marker. Under fluoroscopic guidance, the angle of the marker and the needle wire exit was adjusted and aligned. The needle wire was then advanced to penetrate the vessel wall of the internal jugular vein and exit through the skin. Finally, a central venous catheter was inserted through the wire, and its functionality was confirmed.

Results : The procedure was successfully performed, confirming the Surfacer system as a novel technique for TCVO. The training improved familiarity with the device and identified key technical considerations.

Conclusions : Surfacer system was found to be a novel technique that can provide an effective treatment option in hemodialysis patients with TCVO. Our experience with the Surfacer system for tunneled hemodialysis catheter placement in animal models enhanced our familiarity with the delivery system and highlighted several points requiring caution. It is expected to contribute to the TCVO treatment strategy by interventional nephrologists.

figure 1.png

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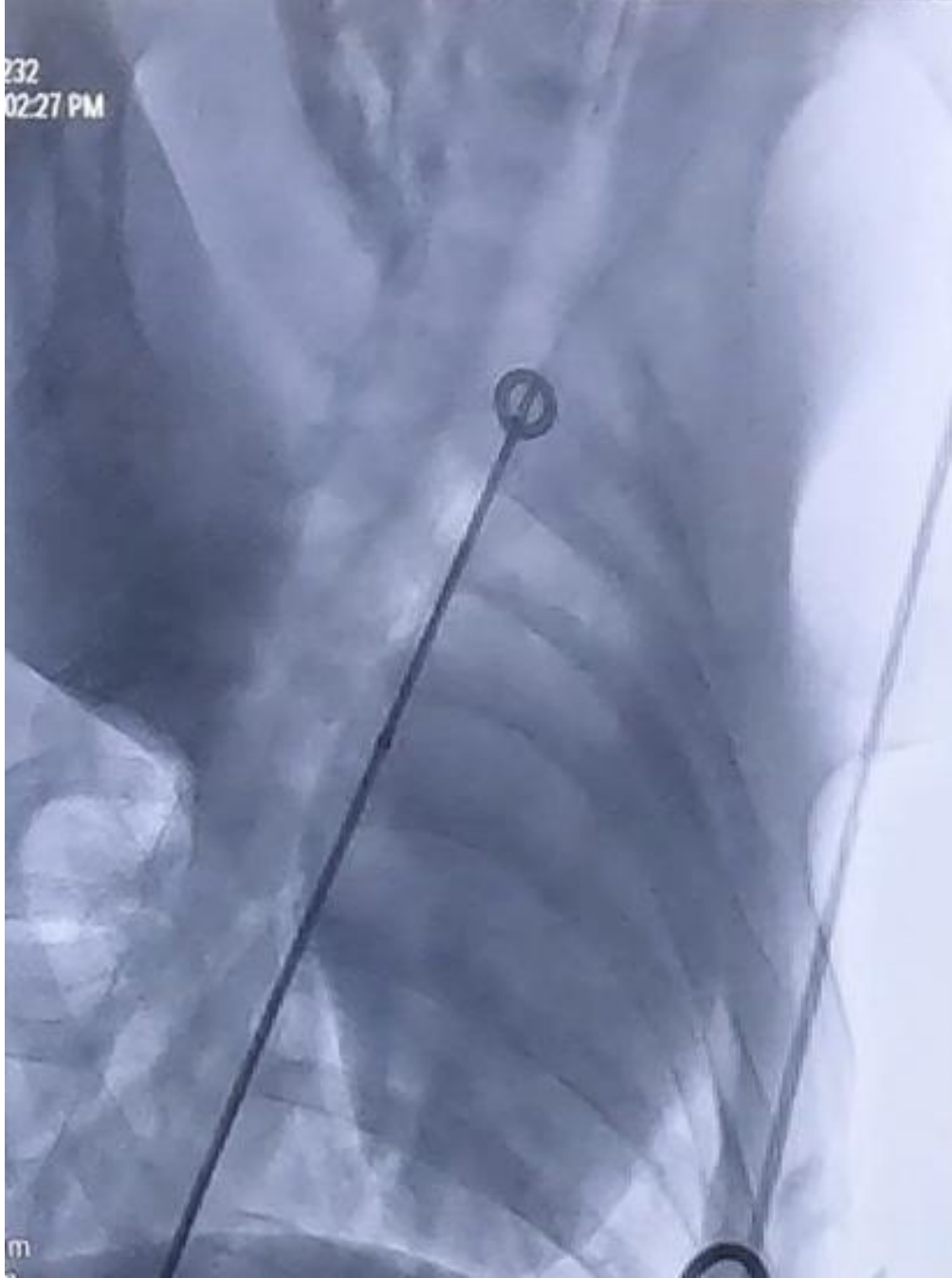



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