



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Integrating Multi-Organ Ultrasound Assessment Into Preoperative Planning For Arteriovenous Fistula Creation

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Case Study : Preoperative vein mapping is essential for successful vascular access creation in patients undergoing hemodialysis. However, vessel diameter may be influenced by intravascular volume status, potentially affecting surgical planning. We present a case in which point-of-care ultrasound was used to minimize volume-related variability before arteriovenous fistula creation. A 50-year-old man receiving thrice-weekly hemodialysis via a right internal jugular permanent catheter for four months was referred for vascular access surgery. His prescribed dry weight had been set as 65.5kg, and his pre-dialysis weight on the day before surgery was 67 kg. Pre-dialysis vein mapping demonstrated a radial artery diameter of 2.7 mm and a forearm cephalic vein diameter of 2.9 mm, suggesting suitability for left radiocephalic arteriovenous fistula creation. To reduce the influence of intravascular volume on vessel measurements, a multi-organ ultrasound assessment was performed. Lung ultrasonography showed A-lines in all eight zones without B-lines. The inferior vena cava diameter was less than 2.1 cm with normal collapsibility. Hepatic and portal vein Doppler waveforms were normal, indicating the absence of systemic venous congestion. Based on these findings, ultrafiltration was withheld during preoperative dialysis to maintain stable intravascular volume. On the day of surgery, repeat vein mapping showed minimal changes in vessel diameters (radial artery 2.6 mm; cephalic vein 2.6 mm). A left radiocephalic arteriovenous fistula was successfully created. One month later, access flow measured 1,250 mL/min, and cannulation was initiated without complications. Point-of-care ultrasound may help optimize vascular access planning by ensuring stable volume status before surgery, thereby minimizing measurement variability and potentially improving fistula outcomes in patients undergoing hemodialysis.

Figure 1.png



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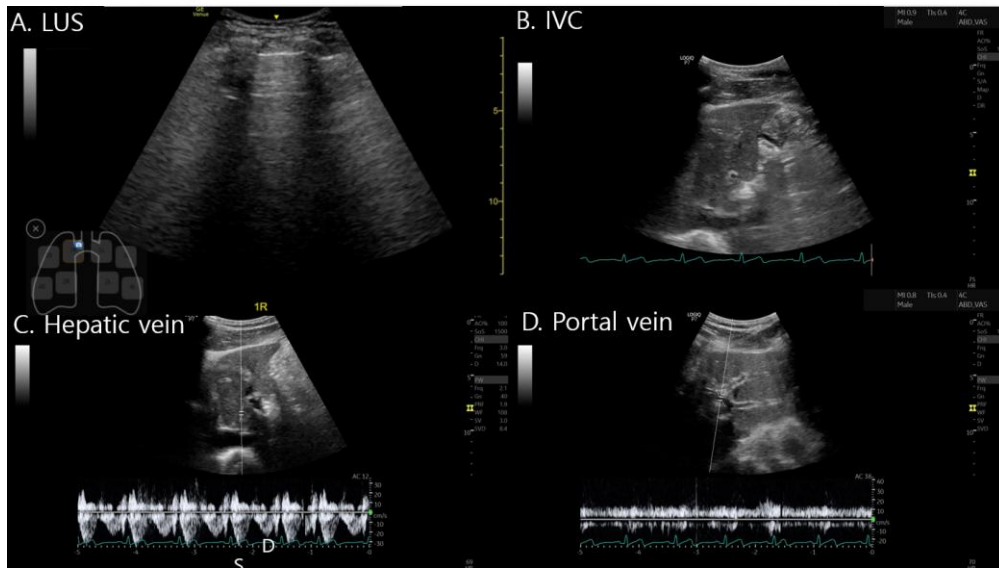


Figure 1.png

