

# Our Experience with Vascular Accesses of Extremely Long-term (> 40 Years) Hemodialysis Survivors: A Series of Three Cases



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## BACKGROUND

Reliable vascular access plays a central role in long-term survival of patients on chronic hemodialysis. We present our experience with vascular accesses of extremely long-term hemodialysis survivors.

## METHODS

Dialysis and vascular access-related information was retrospectively collected from hospital charts of all patients on maintenance hemodialysis in University Medical Center Ljubljana being on hemodialysis for forty-two years or more.

## RESULTS

**Patient 1** has been on hemodialysis for forty-eight years. In the past she had four arteriovenous fistulas (AVF) on both forearms and upper arms. The native radiocephalic AVF on the left forearm lasted for admiring thirty-five years and for many years she cannulated it herself. Her last AVF thrombosed in 2015 and since then she has been dialyzed through two single-lumen non-tunneled central venous catheters (CVCs) in her right jugular vein. She has not suffered from any catheter-related bloodstream infections.

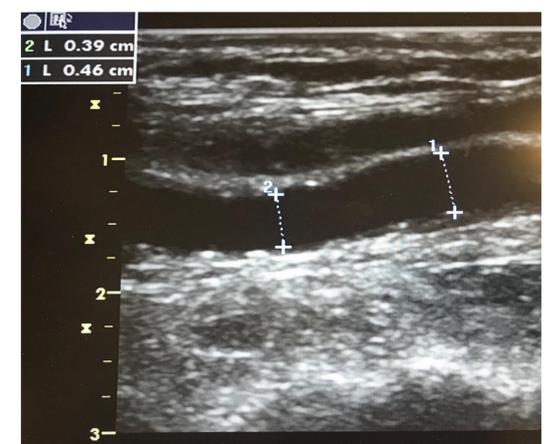
**Patient 2** has been on hemodialysis for forty-three years. He had two AVFs on the left upper arm and a radiocephalic AVF on the right forearm, which thrombosed and was abandoned in 2014. Polytetrafluoroethylene (PTFE) stretch graft on the right upper arm was then created and to date he underwent seven successful thrombectomies.

**Patient 3**, who was on hemodialysis for forty-two years, died in April 2020 due to coronavirus disease 2019. He had nine AVFs on the forearm and upper arm regions on both sides and a PTFE stretch graft in the right femoral region, which was his last graft. Since an unsuccessful thrombectomy in 2009, one single-lumen non-tunneled precurved CVC in his left jugular vein (arterial line) and a peripheral vein (venous line) were used as a vascular access.

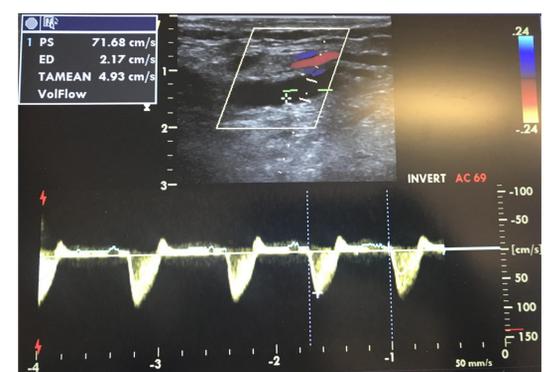
*Patient 1: Absence of severe atherosclerosis and/or calcifications of her left brachial artery after 46 years of chronic hemodialysis (images taken on 25 January 2019).*



a) Two-dimensional ultrasonography longitudinal image



b) Caliber of the left brachial artery



c) Pulse wave Doppler image

## CONCLUSIONS

All presented patients had well-functioning AVFs for the vast majority of their time on hemodialysis. On the other hand, we have demonstrated that temporary CVCs could also be an optimal long-term vascular access, when the placement of an AVF is not feasible any more. Most importantly, all vascular access-related surgeries were performed by dedicated nephrologists in the local operating room in dialysis center, which enabled timely creation and state-of-the-art vascular access care.