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Examination of Vascular Access: Best Practices and Tools

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Ultrasound assessment of dialysis access is becoming an increasingly defined modality of ultrasound examination. It is crucial for the examiner to have very good data on the reasons for referral for the examination. A physical examination of the dialysis access is necessary before the examination, as it can tell us a lot about the expected ultrasound findings, and sometimes it can also decisively influence the opinion regarding the hemodynamic significance of certain predominantly stenotic lesions that may resemble each other in ultrasound characteristics. In ultrasound examination of the access, I propose three basic paradigms: the examiner always accurately measures the flow through the fistula circuit and reports it; the examination is performed throughout the circuit in the upper extremity, and upon discovery of an anatomical problem that is the clinical reason for referral, the examiner also provides an opinion regarding the optimal solution to this problem. It is crucial that the report also includes a graphical presentation, which can decisively assist the interventional nephrologist or surgeon and radiologist in planning the approach to the fistula and the correction technique. Furthermore, ultrasound can also be used for the assessment of catheter access, especially when there is suspicion of tunnel infection of the central venous dialysis catheter or infections of the peritoneal catheter. Ultrasound can also assist us in the placement of tunneled catheters for optimal positioning of the catheter tip and prior to that, optimal positioning of the guide wire. It is clear that ultrasound has become a fundamental tool for the interventional nephrologist and can provide excellent value for the patient at a low cost. It requires commitment from the examiner, who must be experienced enough and also involved in solving problems related to dialysis access.

Keywords: Ultrasonography, Dialysis, Vascular access, Physical examination, Flow