ASKLEPIOS

Cannulating endoAVF

7th Swedish Access Meeting, Stockholm

Kathleen Rickert, Asklepios Klinik Barmbek

Agenda

01 Physical Examination

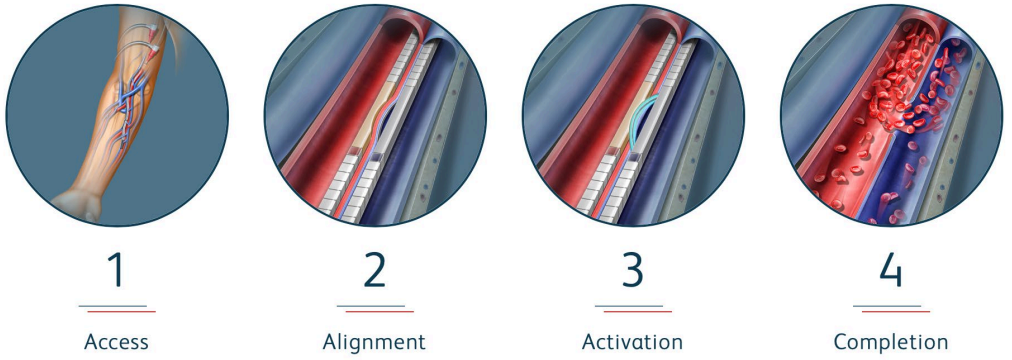
02 Cannulation zones

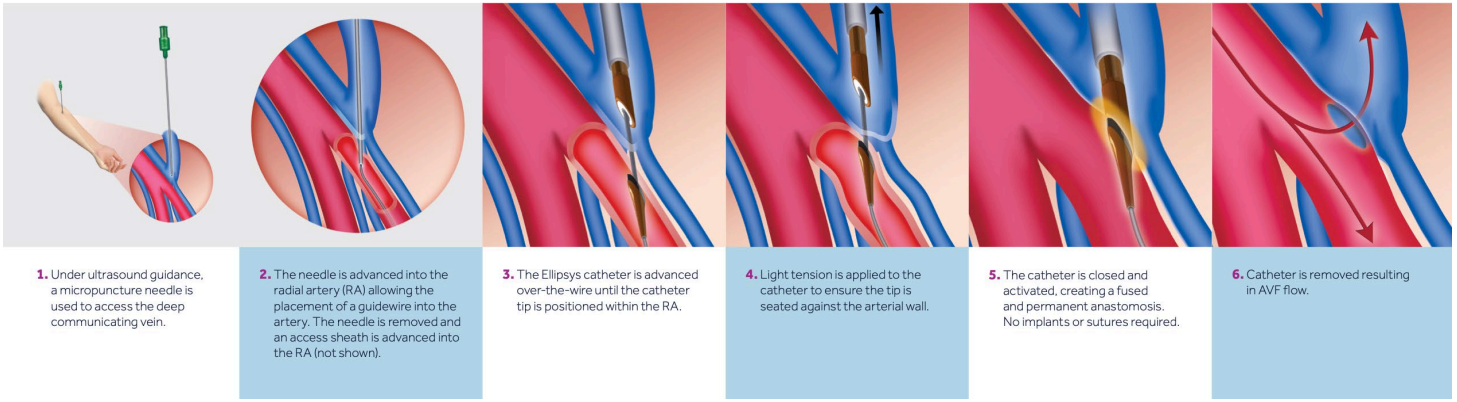
03 Recommendation in handling spiced with my personal experiences

04 Cases

Introduction

- 2 devices to create an endoAVF are available
  - WavelinQ™ by BD Bard
  - Ellipsys® by Medtronic
- Benefits for our multimorbid patients
  - No general anesthesia
  - Short operation procedure
  - Quick start if needed
    - Creation time?





- **<u>BUT</u>**
  - **Before starting cannulation everybody of multidisciplinary team should know how to handle that new kind of fistula!!!**

https://wavelinq.bd.com/ Mallios et.al, JVA, Early cannulation of percutaneously created arteriovenous hemodialysis fistulae
https://secureservercdn.net/198.71.233.168/f5c.0bd.myftpupload.com/wp-content/uploads/2021/05/202116675en-ellipsys-brochure_p6.pdf

01
Physical Examination

Physical Examination of EndoAVF

Physical Examination **applying for all outflow veins!**

Inspection

- No scar and no incision visible
- Fistula is not obviously

- Education of the patient and the care providers are obligatory to avoid measuring of blood pressure or injection or placing a Viggo
- Wearing a wristband is indicated for safety

Pictures by Dr. Shahverdyan, Asklepios Clinic Barmbek

Daniel Mullins R.N., Best Practice for Successful Cannulation of Percutaneous AVF, San Antonio Kidney Disease Access Center
Hebibi et al., Hemodialysis International 2019, Clinical hemodialysis experience with percutaneous arteriovenous fistulas created using the Ellipsys®
Wasse et al., JVA 1-8, 2019, Patient selection, education, and cannulation of percutaneous arteriovenous fistulae: An ASDIN White Paper

Physical Examination of EndoAVF

Physical Examination **applying for all outflow veins!**

Palpation

- Thrill at the anastomos is good palpable, pressure is lower then sAVF (feel systolic and diastolic thrill difficult)
- Decreasing proximately

Auscultation

- Bruit should be audible with using a stethoscope
- Flow is modest and less pulsatile

Arm elevation test

- In the beginning not possible in the most of the times
- After maturation as usual

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02

Cannulation Zones / Outflow veins

Cannulation Zones

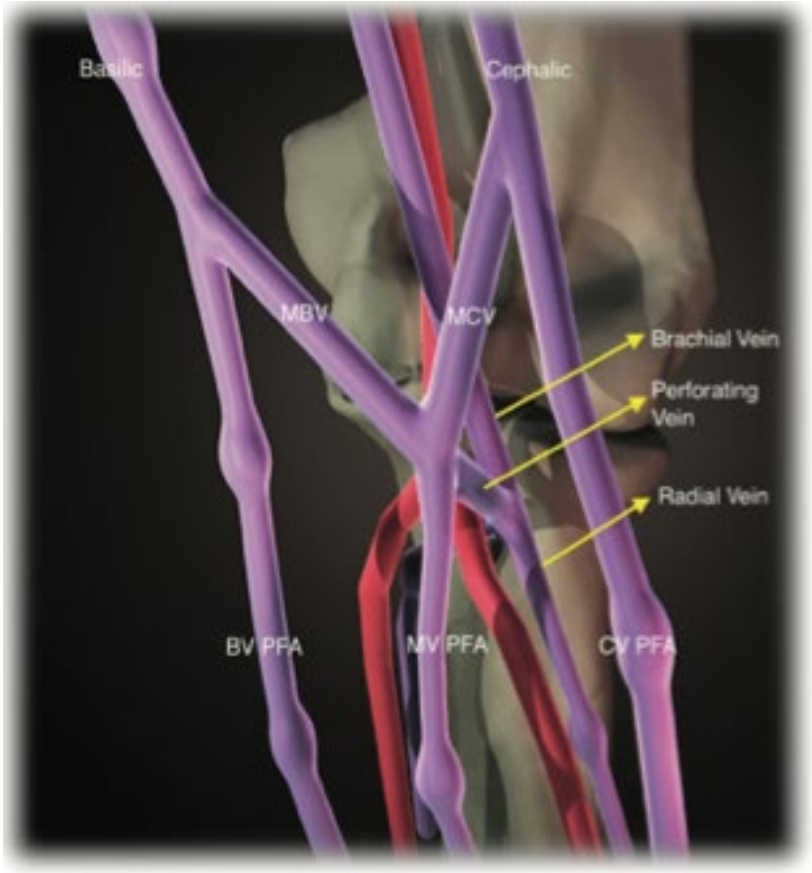


Figure 2. Venous and arterial structures in the antecubital fossa

EndoAVF Cannulation Zone
Right Arm

A Seismic Shift in AV Fistula Creation

ELLIPSYS®

Patient		Date	

Mark the diagram below to provide the Dialysis clinic cannulation staff a representation of which portions of the upper arm superficial veins are suitable for cannulation. The qualifications used to determine suitability are:

- Target Cannulation Vein(s) ≥6mm in diameter and ≤6mm deep
- Flow Volume in Target Cannulation Vein(s) sufficient to support dialysis (≥500 mL/min)

Target Cannulation Vein Flow Measurements

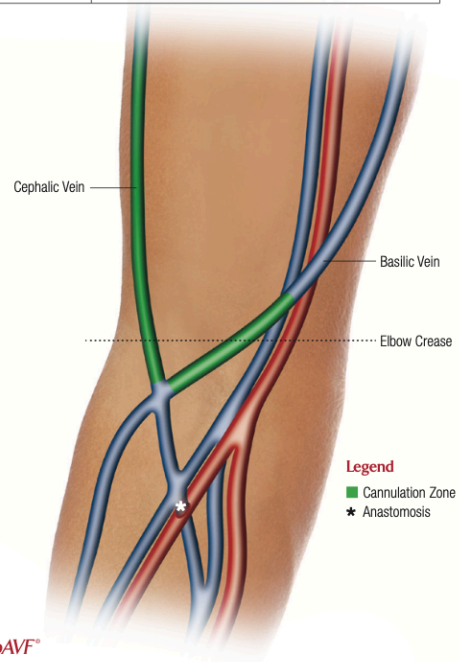
	Cephalic			Basilic		
Mid Upper Arm	Diameter:	Flow (mL/min):	Depth:	Diameter:	Flow (mL/min):	Depth:
Distal Upper Arm/ Antecubital	Diameter:	Flow (mL/min):	Depth:	Diameter:	Flow (mL/min):	Depth:

Comments/Notes

If you have any questions related to cannulating this patient, please contact:

Name:

Phone:

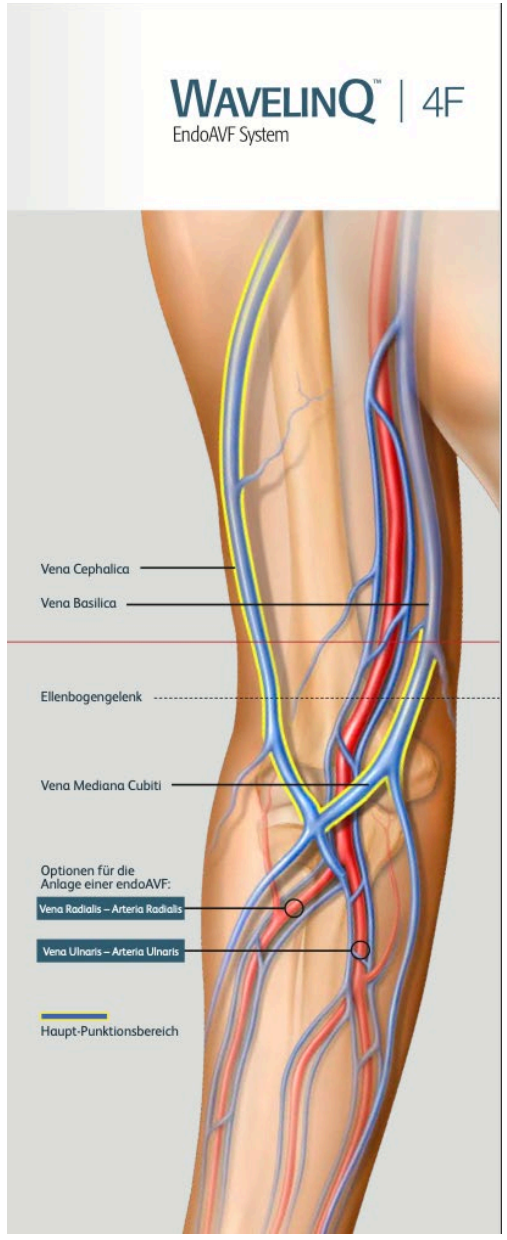


AVENU MEDICAL

Avenu Medical, Inc.
27123 Calle Arroyo, Suite 2101
San Juan Capistrano, CA 92675

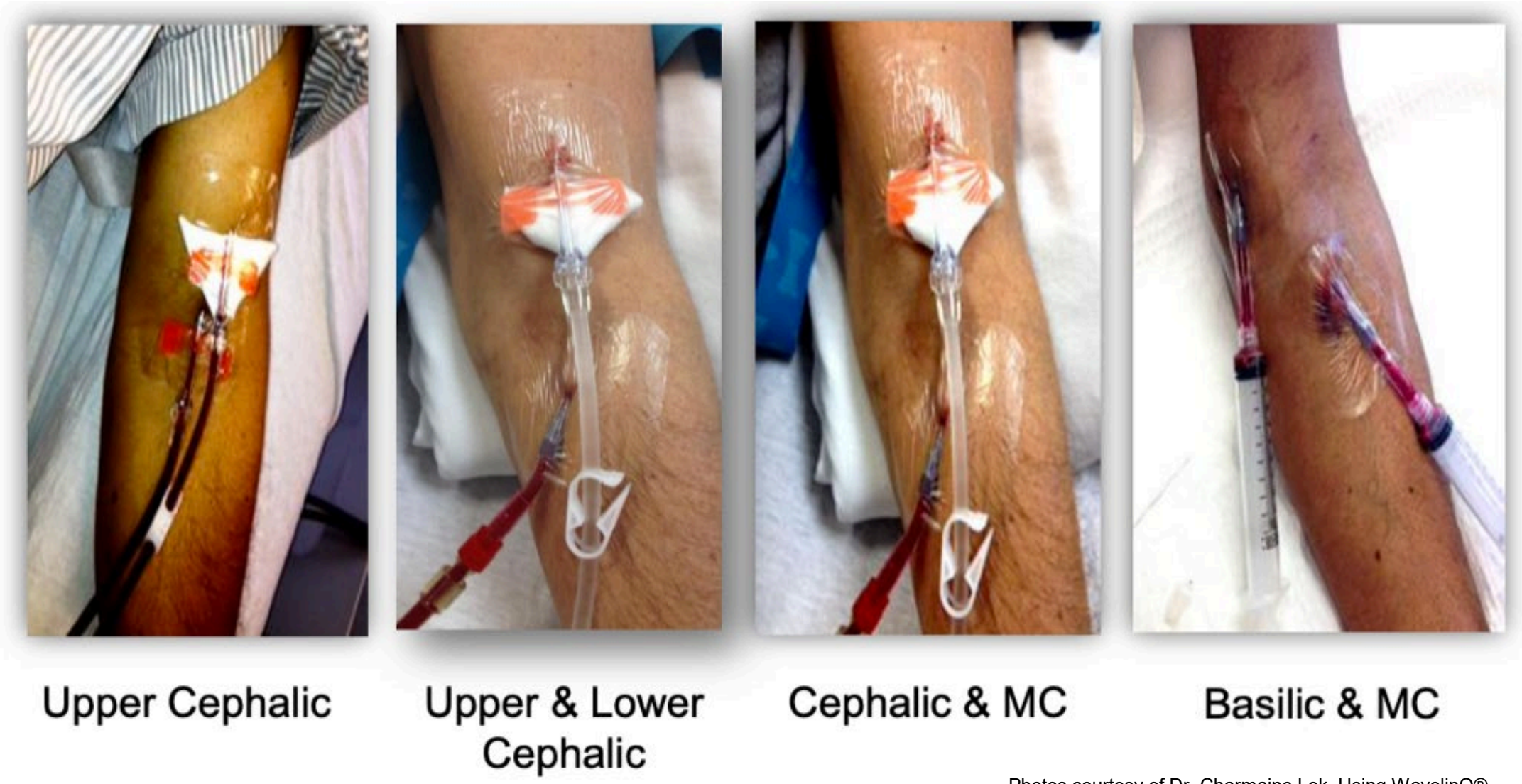
Toll Free 888-EndoAVF (363-6283)
info@avenumedical.com
www.avenumedical.com

Ellipsys for EndoAVF®



Daniel Mullins R.N., Best Practice for Successful Cannulation of Percutaneous AVF, San Antonio Kidney Disease Access Center

Cannulation Zones



Photos courtesy of Dr. Charmaine Lok. Using WavelinQ®

03
Recommendation of cannulation

Start of cannulation

- Get in touch with the surgeon or interventionist (multidisciplinary team)
- Fistula protocol with photo documentation and marked cannulation zones

- Early cannulation dependent by Blood flow and need

- Use a tourniquet to compress all outflow veins

- **Ultrasound guided cannulation is reliable to cannulate successful**
  - Rules of six are not mandatory
  - Variable cannulation sites
  - Avoid area cannulation technique
  - Cannulate in transverse and control the needle position in longitudinal projection

Pictures by Dr. Shahverdyan, Asklepios Clinic Barmbek

Mallios et.al, JVA, Early cannulation of percutaneously created arteriovenous hemodialysis fistulae
Wasse et al., JVA 1-8, 2019, Patient selection, education, and cannulation of percutaneous arteriovenous fistulae: An ASDIN White Paper

Start of cannulation

- Puncture with shunt catheters (Plastic needles)
  - Until maturation (minimum)
  - Small motion of the arm won't damage the soft wall
  - Guide the needle by ultrasound for the full length into the vessel
  - 17 Gauge and lower blood flow (150mL/min)

- Wall of the vein thin - do not puncture the back or sidewall
  - Measuring the needed length of the cannula by ultrasound
  - Flash with a 5mL syringe
  - Do not use SN

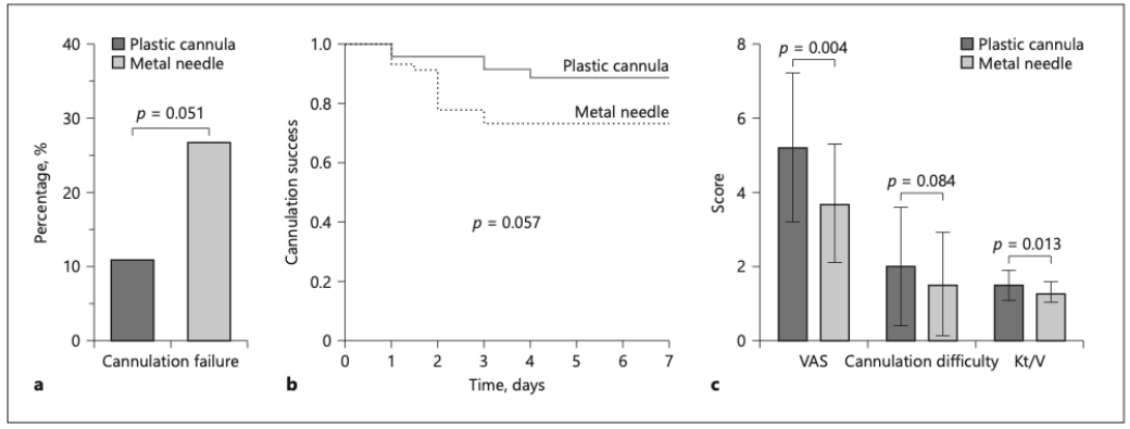


Fig. 3. Outcomes. **a–c** Metal needles had a higher initial cannulation failure rate regardless of AVF location than plastic cannulae (**a**, **b**). The patients' pain score, nursing staff cannulation difficulty score, and HD adequacy (Kt/V) were also compared (**c**). AVF, arteriovenous fistula; HD, hemodialysis.

Choi et.al, AJM, Efficacy and safety of plastic cannulae compared with metal needle, 2021

04
2 Cases

Case 1: Ellipsys®

- 50 years old man
- IgA-Nephropathie with end-stage kidney disease
- 10.5.19 Implantation CVC and start hemodialysis

- 13.6.19 pAVF
  - Blood flow 440mL/min

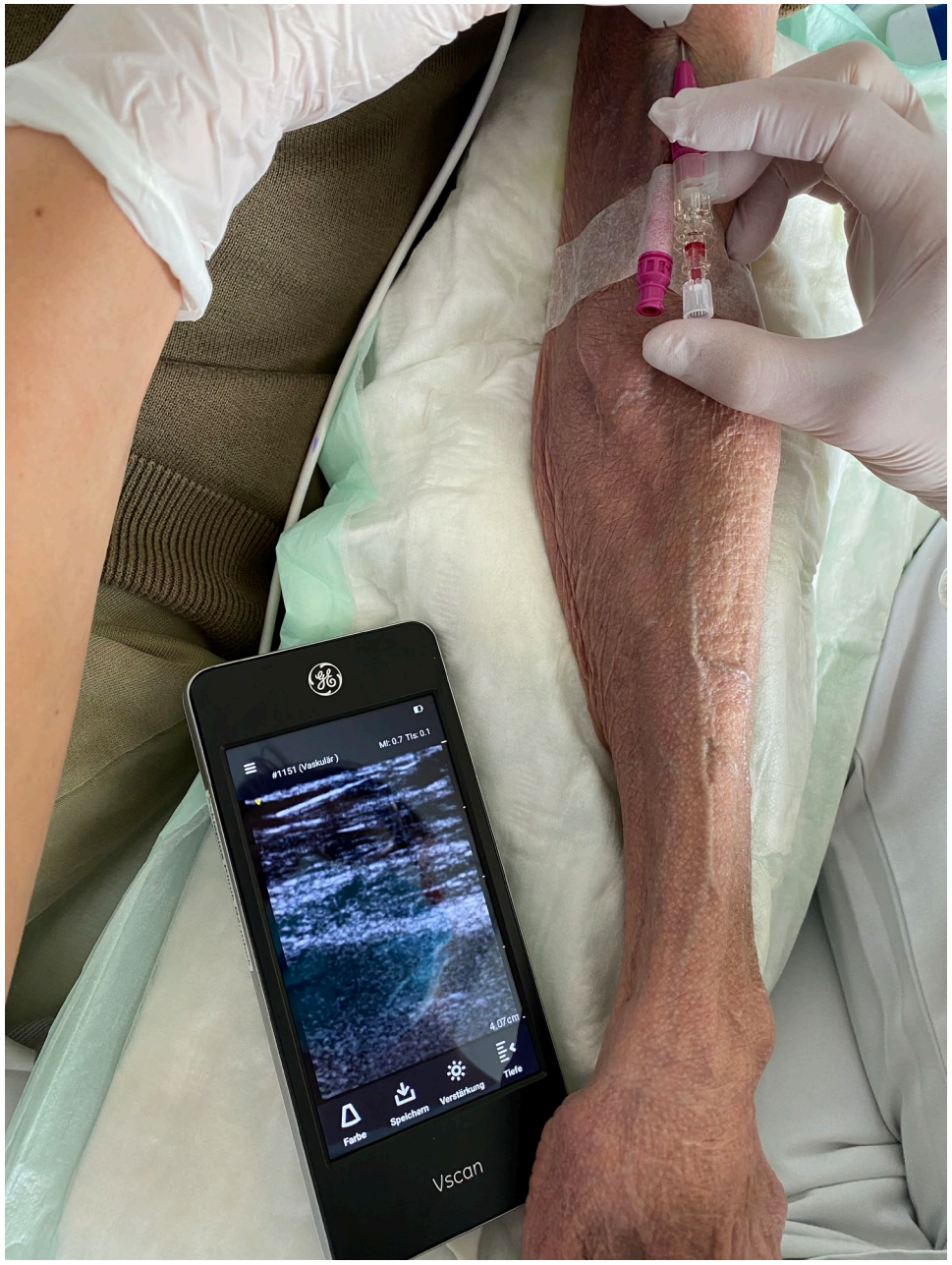
- 19.6.19 CVC Dislocation
  - Blood flow 800mL/min
  - Diameter 4,9-6,2mm
    - Start Cannulation POCUS-guided and with Plastic cannula

Case 2: WavelinQ™

- 80 years old lady (36kg)
- PD-Failure after 17 years

- 17.01.20 Creation endoAVF Ulnar/Ulnar with superficialisation and transposition of the basilica vein

- Patient was very frightened and didn't trust her nephrologist
- 04.05.20 First cannulation in our dialysis unit, POCUS-guided and with Plastic cannula
  - Diameter ca. 5mm
  - Bloodflow 760mL/min



Thanks for your attention!!!