70TH ESCVS CONGRESS & 7TH IMAD MEETING

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WHY I AM NOT HAPPY WITH ENDOVASCULAR CREATION OF ARTERIOVENOUS FISTULAS

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Faculty disclosure

I disclose the following financial relationships:

Stockholder of our private Clinic

WHAT NEED THE NEPHROLOGY TEAM?

A GOOD FISTULA THAT MEETS THE RULE OF 6's

When the fistula is mature,

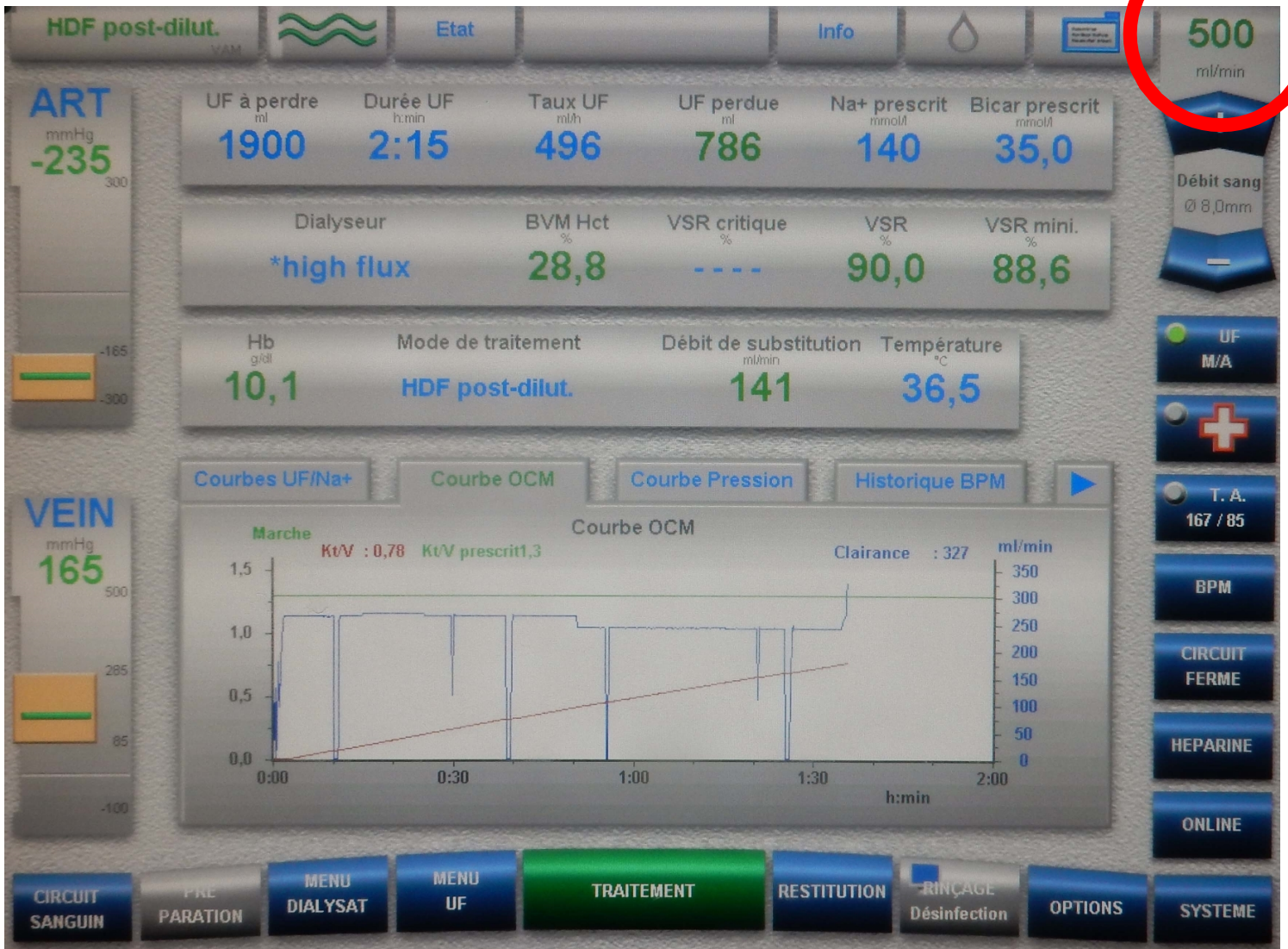
- the vein diameter ought to be at least 6 mm
- the depth ought to be less than 6 mm
- the flow is more than 6 x 100 ml/min

Some people have implemented the rule with:

- maturation time of 6 weeks
- segment of vein usable on at least 6 cm

The fistula can deliver at least

500 ml/min in the circuit



FIRST ARTERIOVENOUS FISTULA

BRESCIA, CIMINO and APPELL

1966

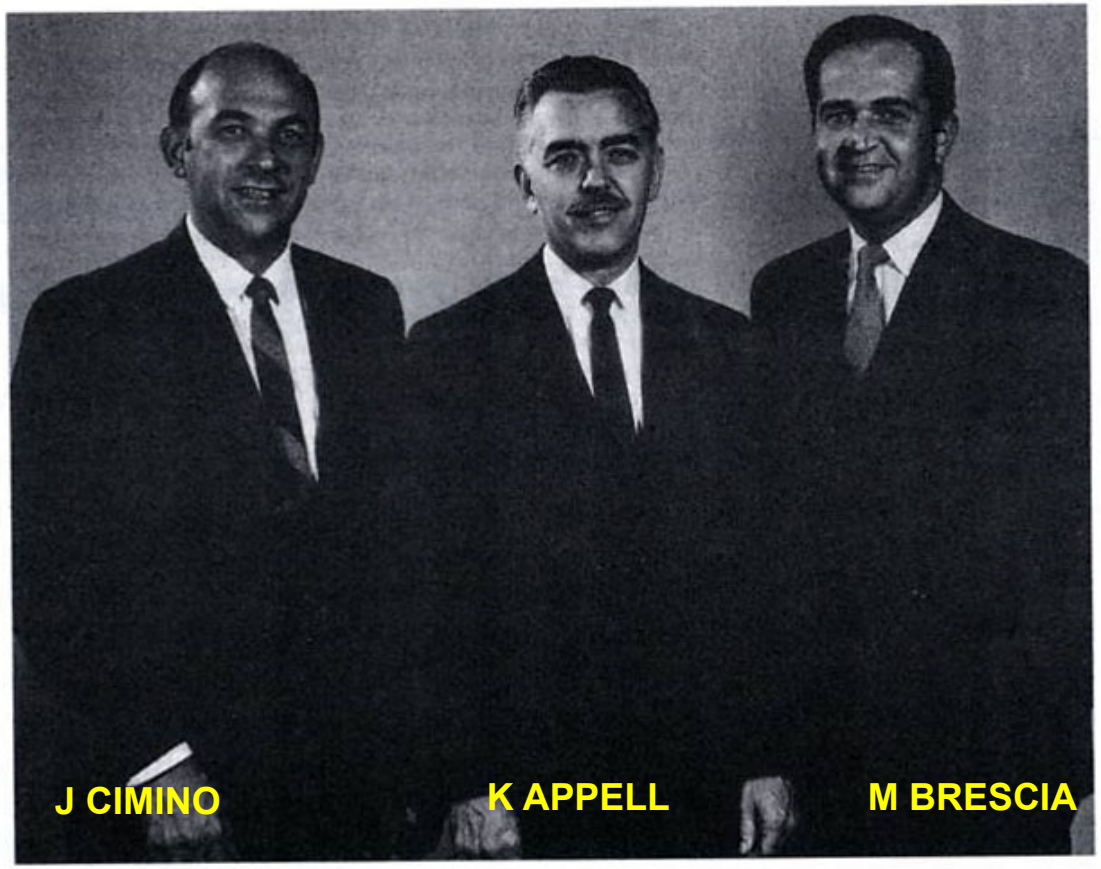


Figure 4 Drs. James E. Cimino, Kenneth Appell, and Michael Brescia, 1968. Reprinted from Brescia MJ, Cimino JE, Appell K, Hurwich BJ, Scribner BH: Chronic hemodialysis using venipuncture and a surgically created arteriovenous fistula. J Am Soc Nephrol 10(1):193-199, 1999, with permission.

The first version was a side to side, but rapidly, the side to end fashion was widely used

Nephron 1989;53:297–302

0028–2766/89/0534–0297$2.75/0

Use of Permcath (Quinton) Catheter in Uraemic Patients in Whom the Creation of Conventional Vascular Access for Haemodialysis Is Difficult

Thierry Pourchez[a], *Philippe Morinière*[b], *Albert Fournier*[b], *Jacques Pietri*[a]

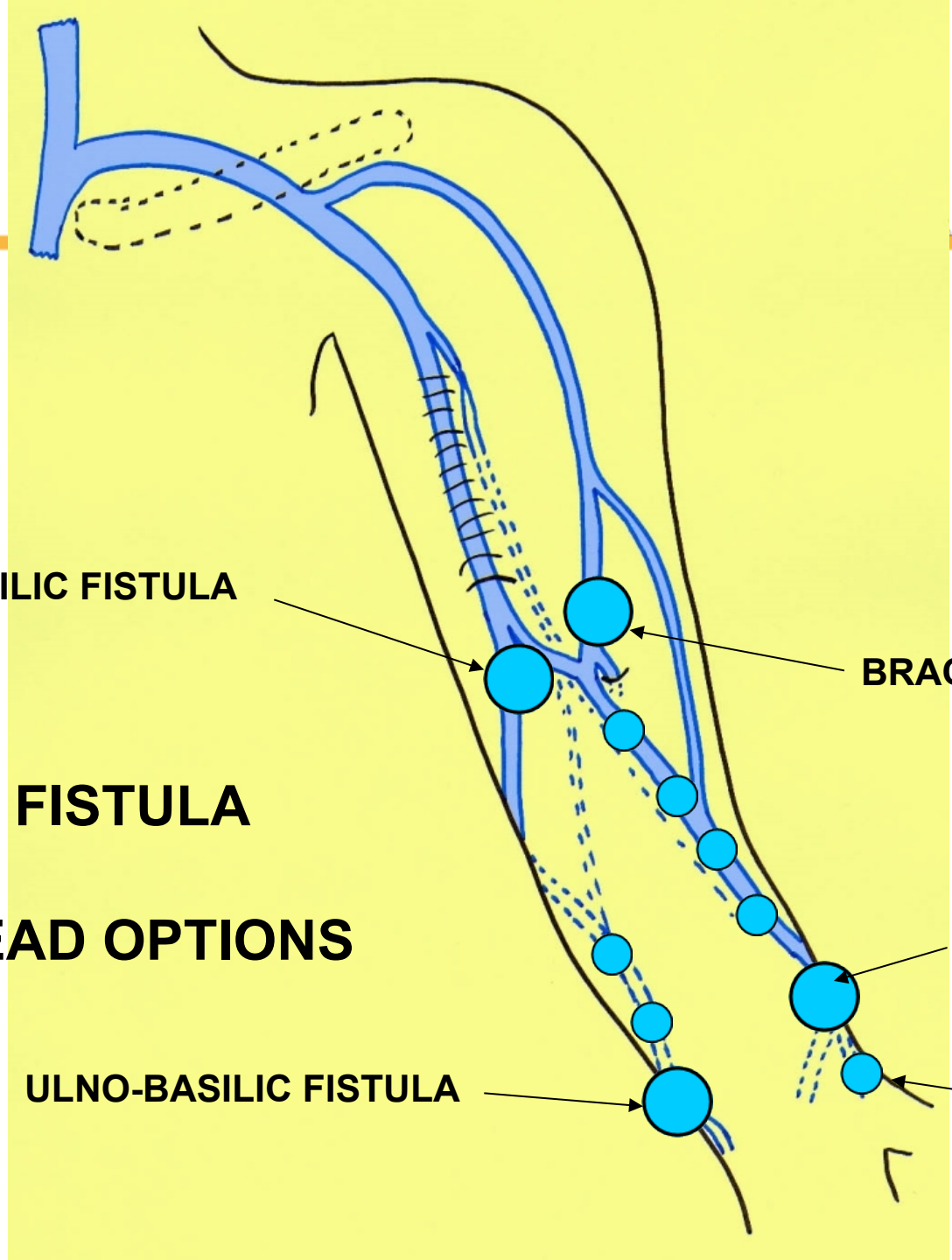
[a]Service de Chirurgie Cardiovasculaire, CHR, Amiens; [b]Service de Néphrologie, CHR, Amiens, France

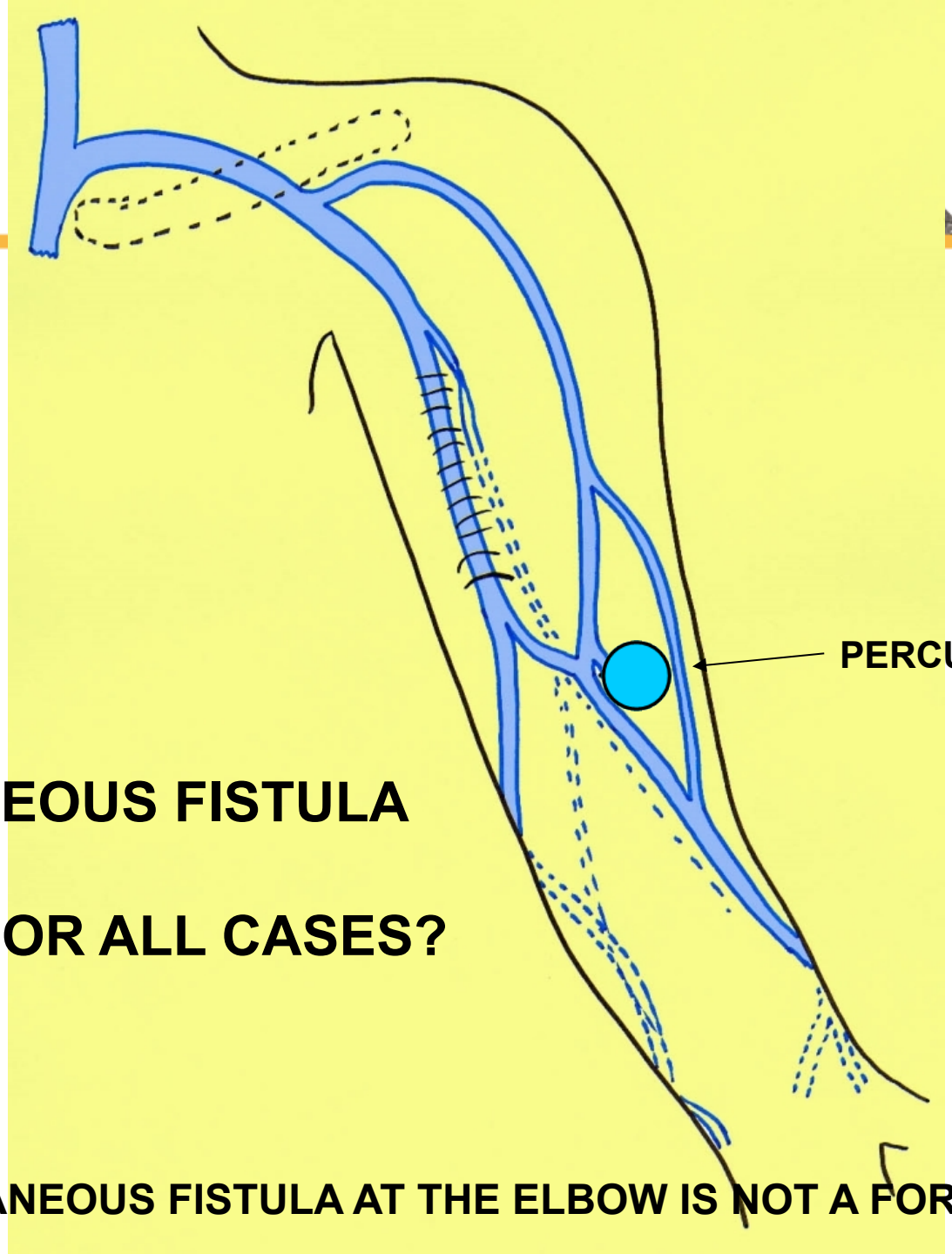
My first brachio-brachial fistulas in the mid 80s' were side to side!

It was really difficult to do the second stage of brachial transposition

SURGICAL FISTULA

WIDESPREAD OPTIONS





PERCUTANEOUS FISTULA

ONE FITS FOR ALL CASES?

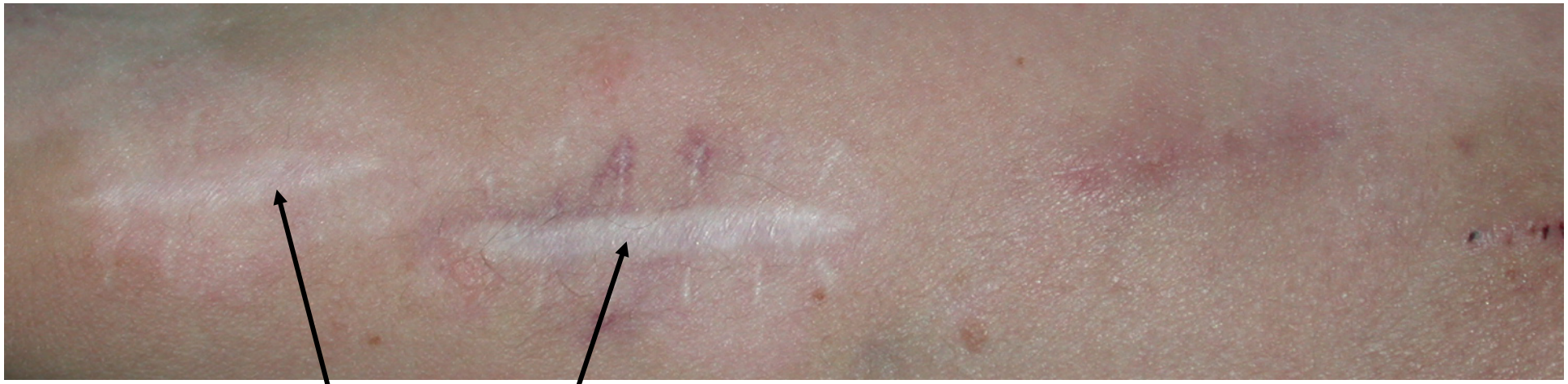
A PERCUTANEOUS FISTULA AT THE ELBOW IS NOT A FOREARM FISTULA!

KDOQI 2019: Right access, for the right patient, at the right time

PERCUTANEOUS FISTULA?

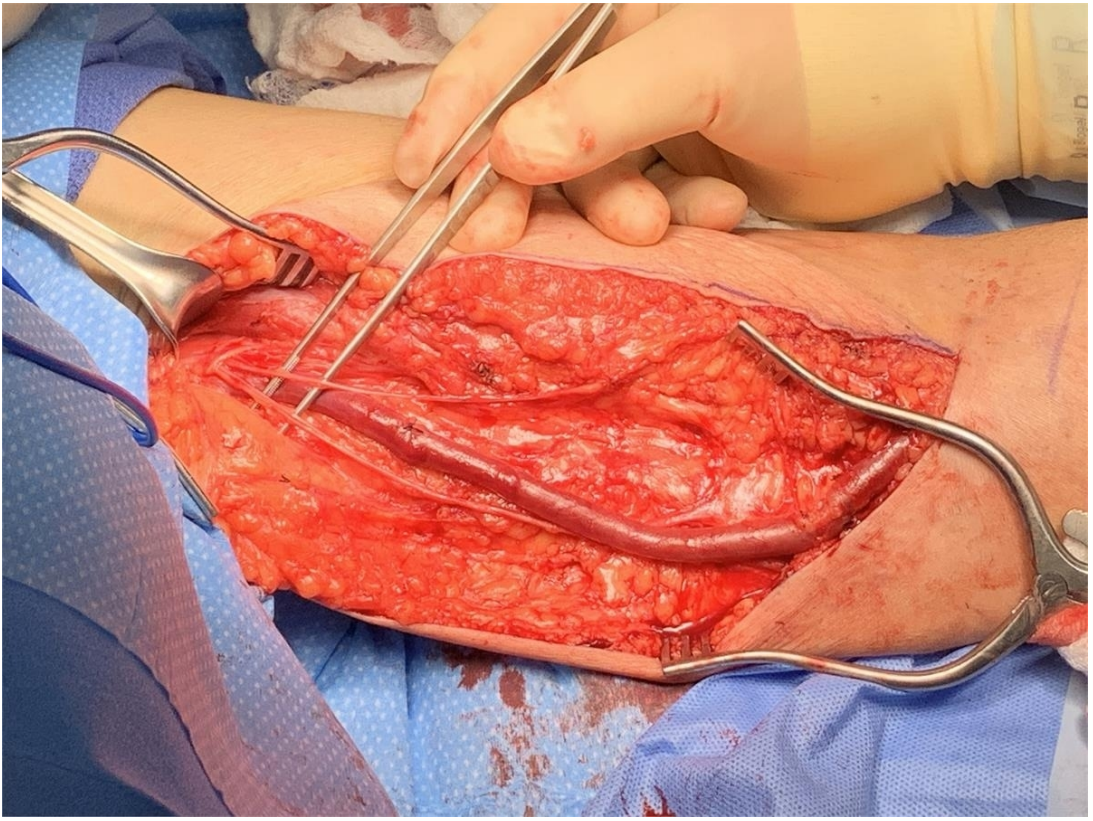
ONE FITS FOR ALL CASES?

What is the real problem with scars?

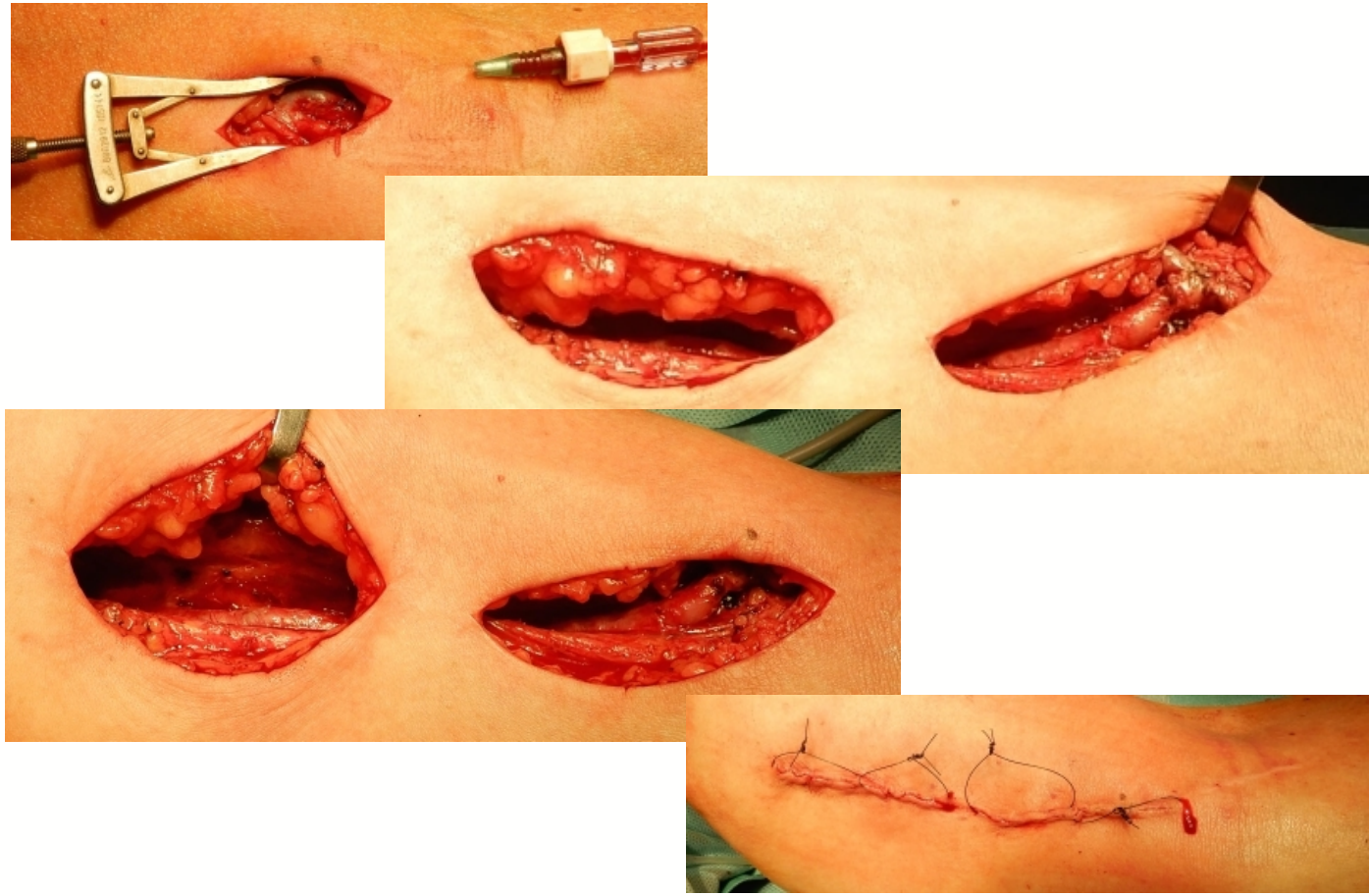


Which one do you prefer?

Are some surgeons working after percutaneous creation of fistula concerned with scars?

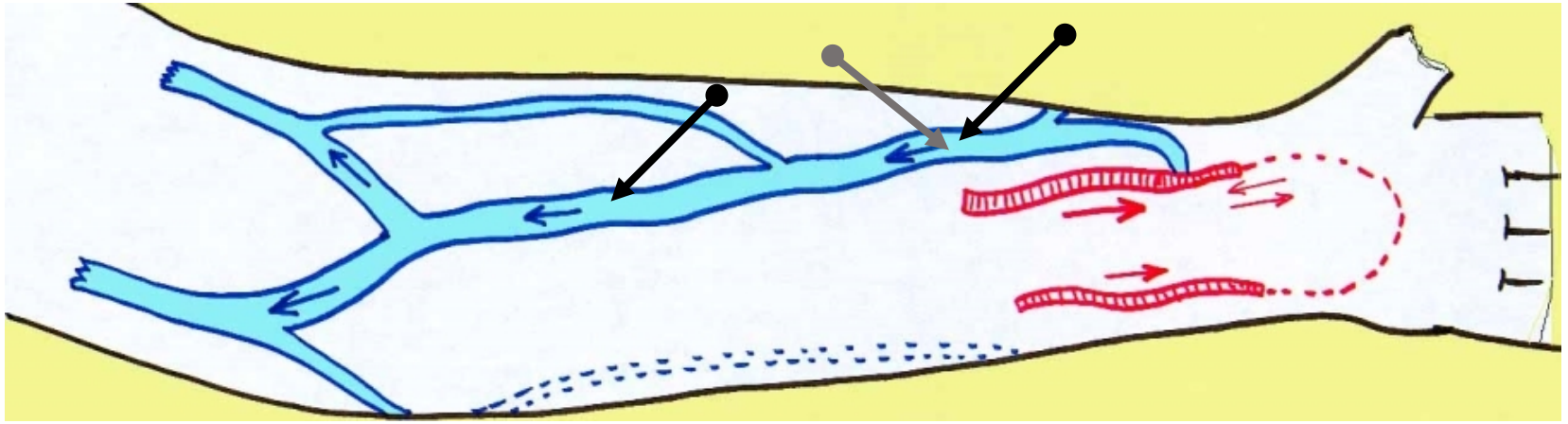


Basilic vein transposition after Ellipsys
Picture taken from Kidney Academy



Brachial vein transposition (third stage)

THE NORMAL RADIO-CEPHALIC FISTULA

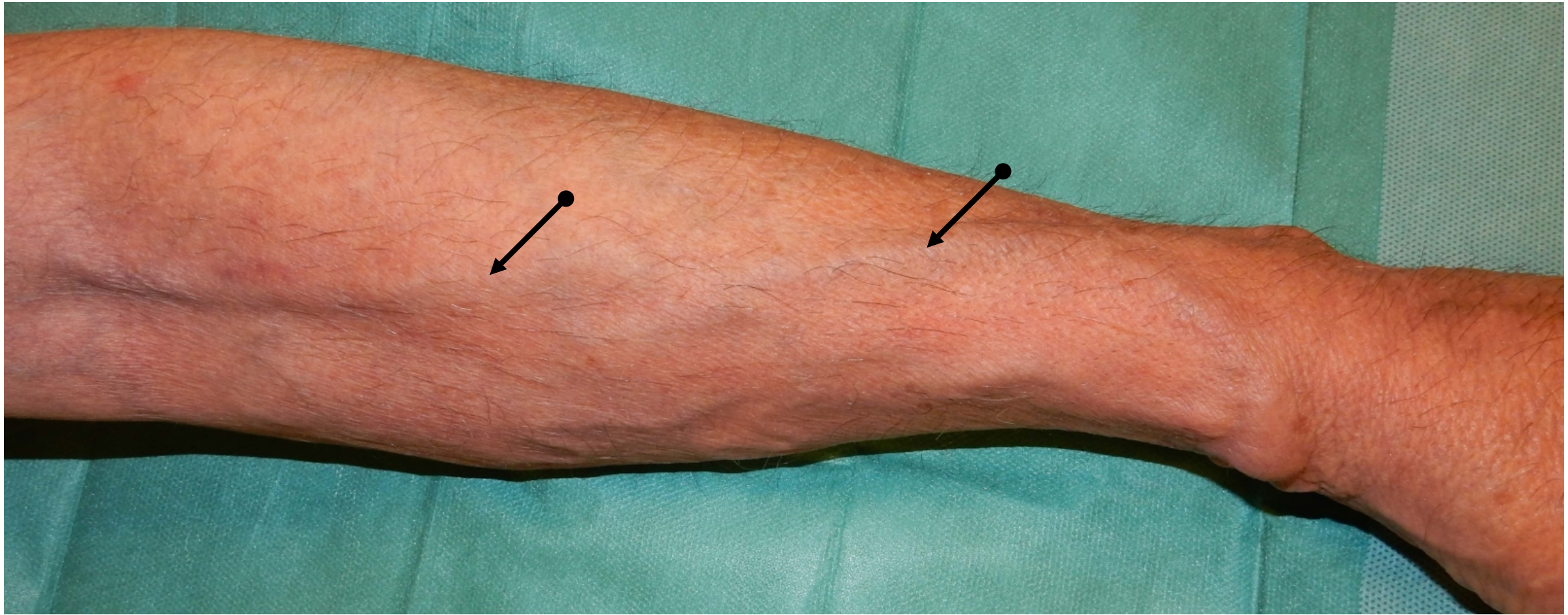


Punctures in a UNIQUE high flow VEIN, with low pressure because the pressure drop is mainly on the anastomosis

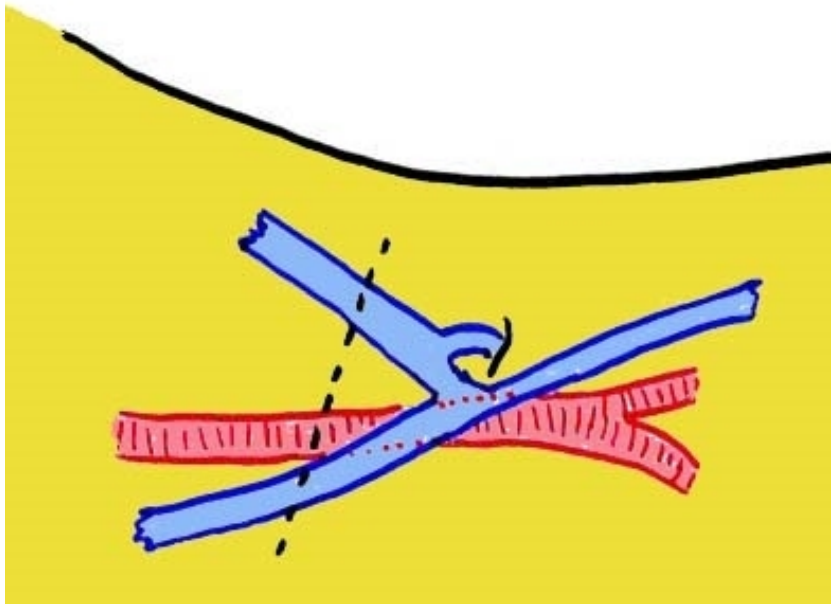
The « ideal » flow is 750 ml/min

THE NORMAL RADIO-CEPHALIC FISTULA

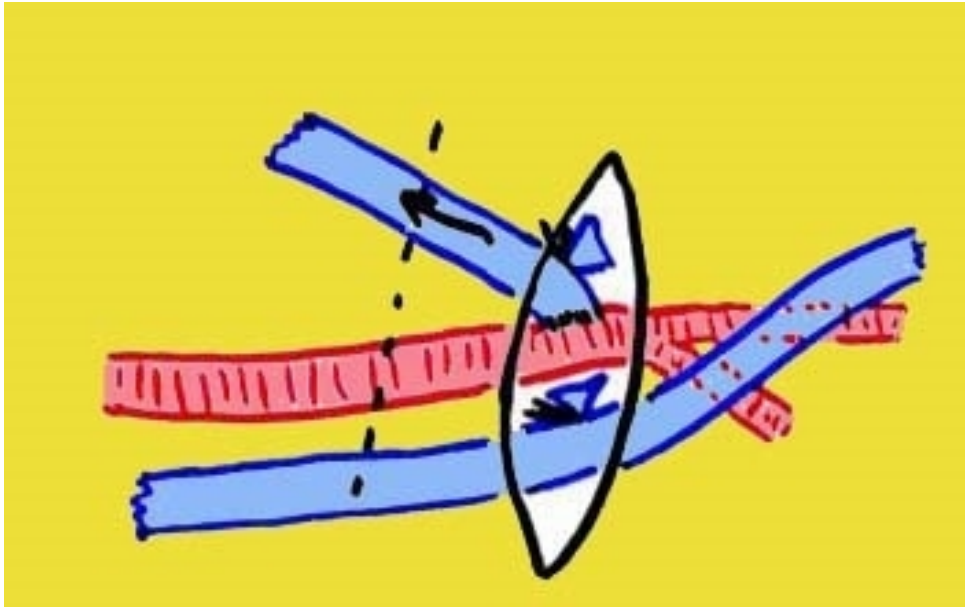
One vein with the placement of two needles



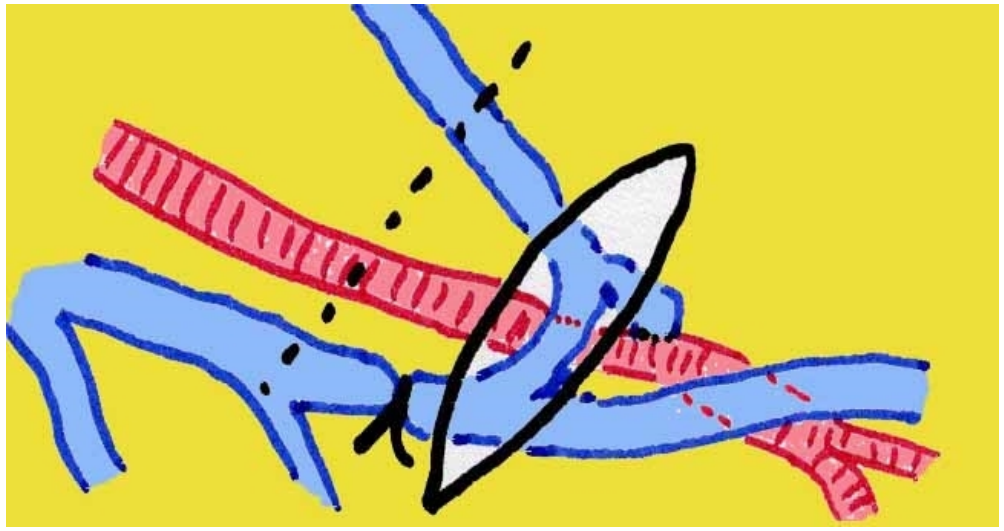
ELBOW FISTULAE



Basic anatomy



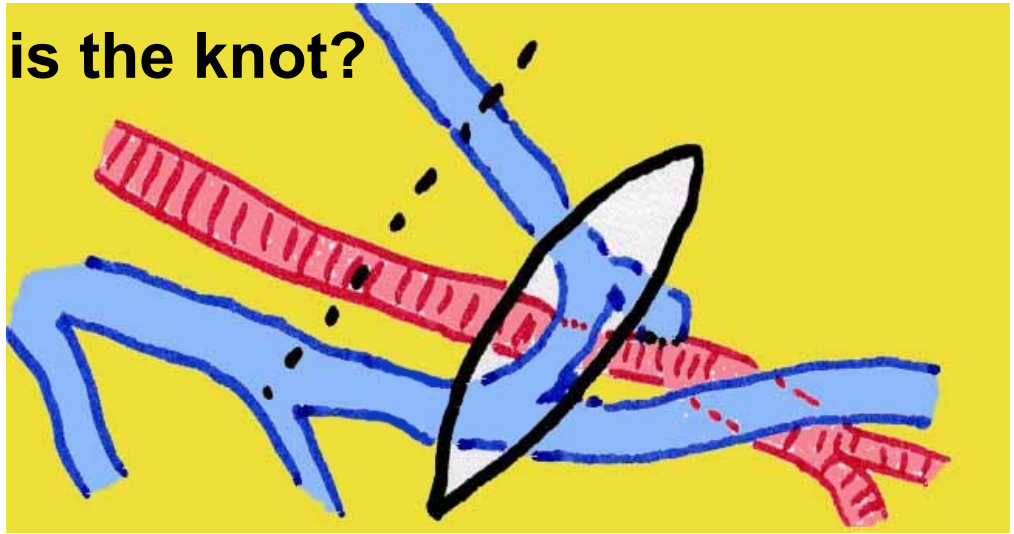
Brachio-cephalic fistula



Gracz fistula, modified by Konner

Anastomosis of the perforating vein with the distal brachial artery, or the origin of the radial artery

Where is the knot?



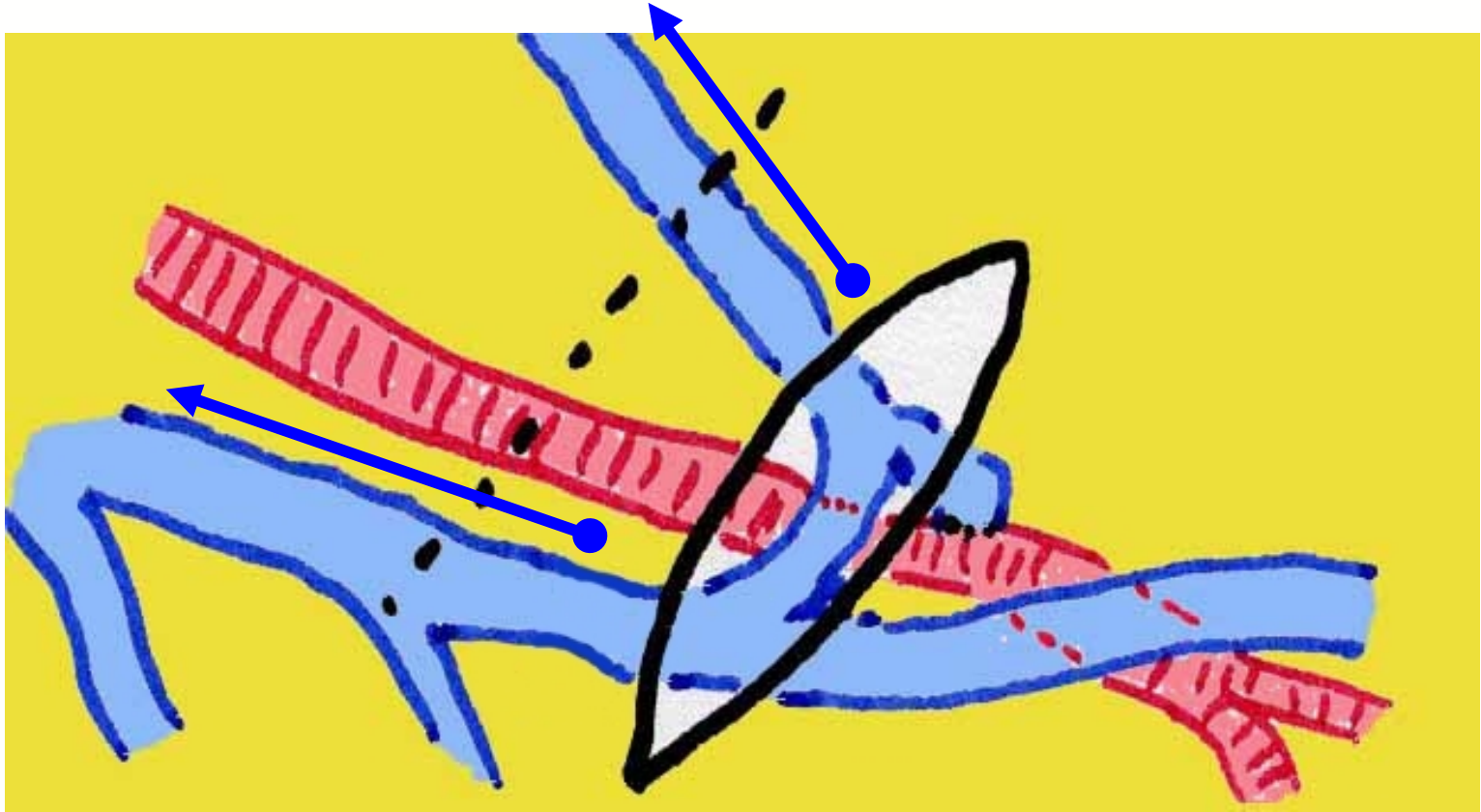
There is no flow to the brachial veins

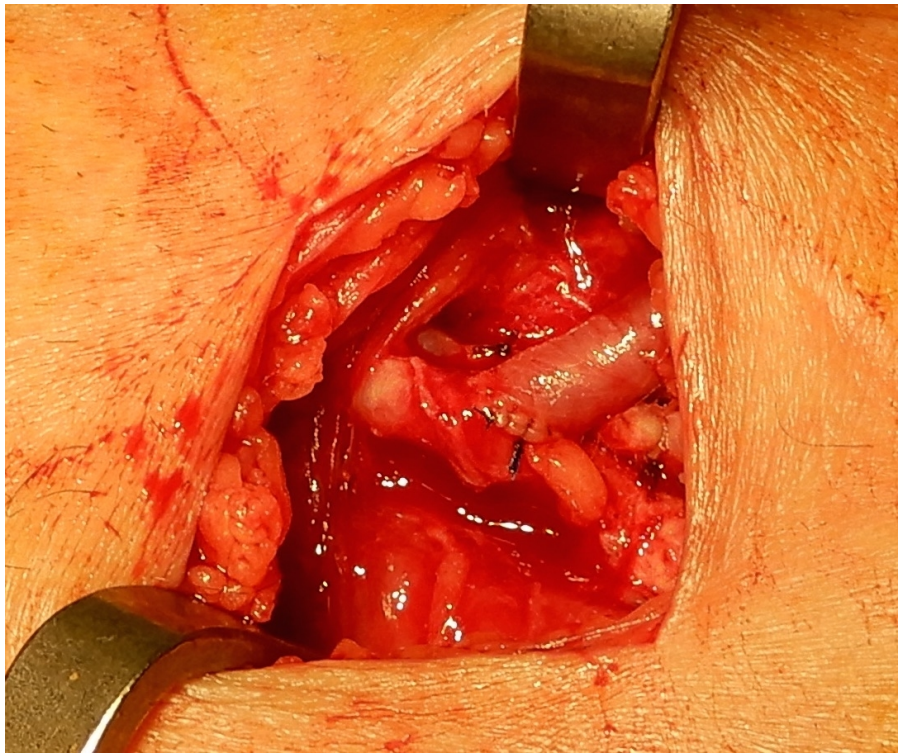
Always close the basilic vein to avoid the main flow to the easiest way

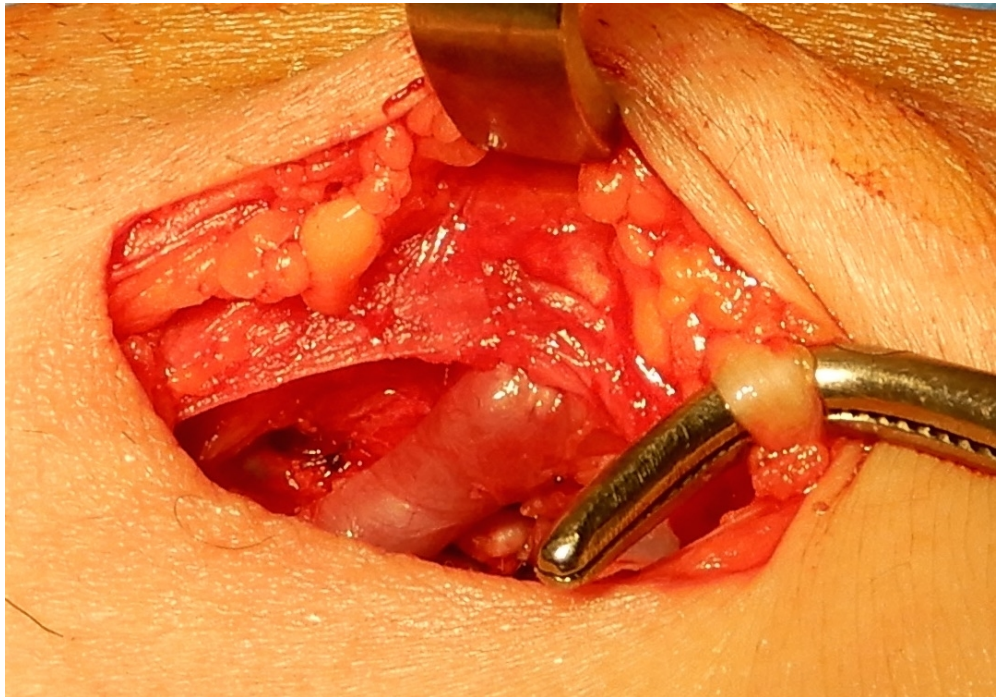
Gracz fistula

If there is no closing of veins, what is the percentage of flow for the two main ways?

Is the vein easy to stick, with a low flow that means small diameter?



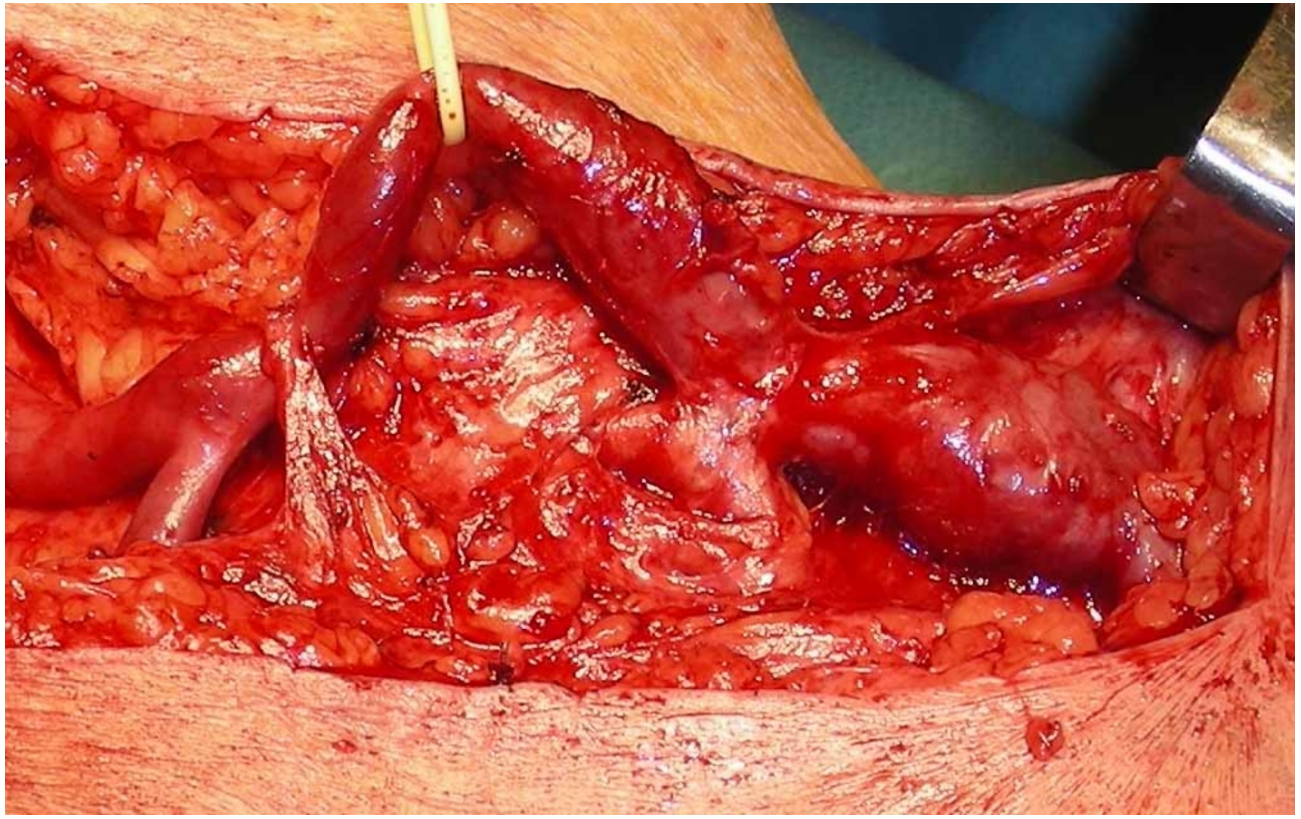




Closure of the basilic vein

If there is a serious doubt on the quality of the cephalic vein, place a tight banding

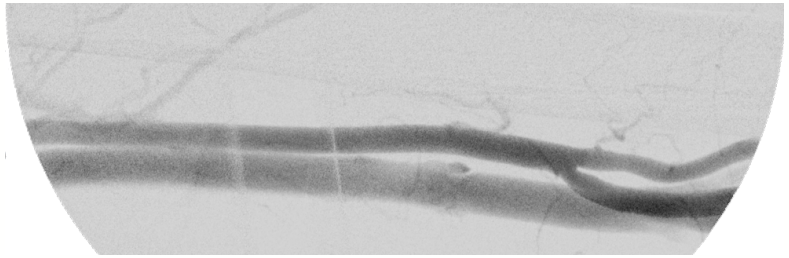
The surgeon choose the vein that will remain open

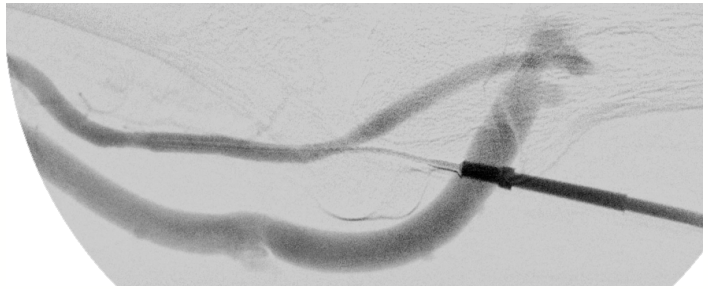


Case of large side to side anastomosis at the elbow, with high flow and ischemia
Treated by basilic transposition

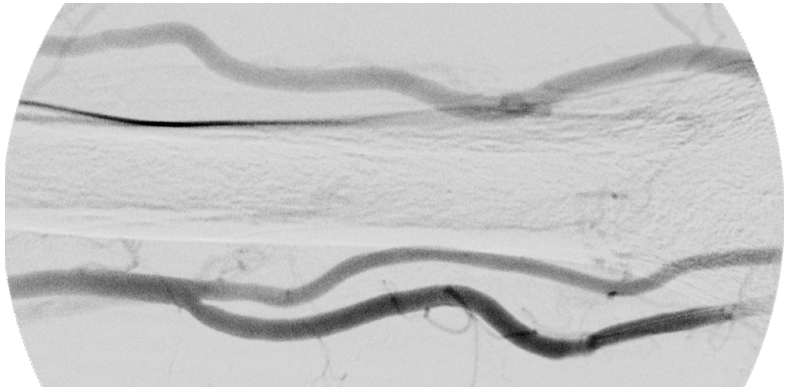
And when I forgot the closure of the basilic vein, I must do it later!

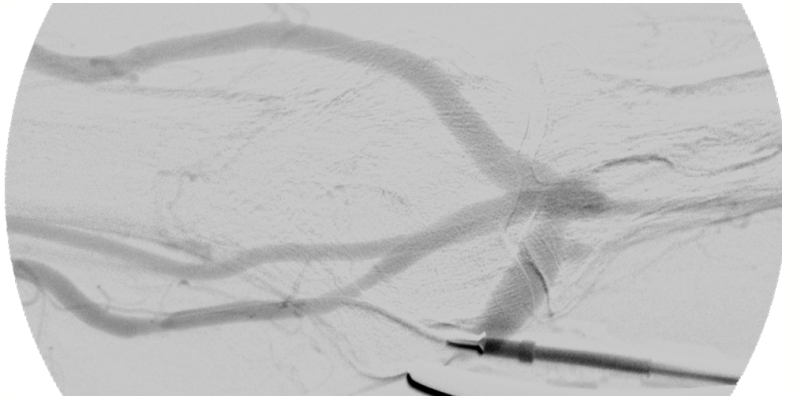
There is also a high division of the brachial artery





No flow in the cephalic vein





With compression of the median basilic vein

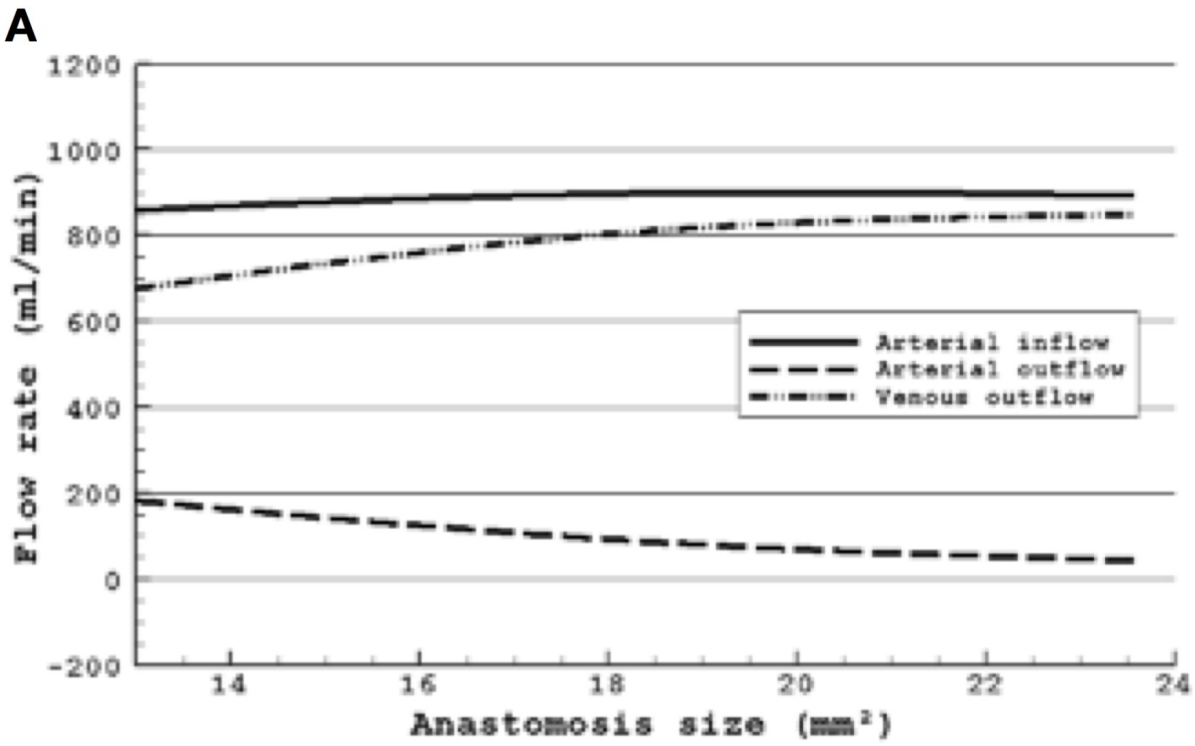
We prove more than ten years ago, something that is clinically obvious:

THE FLOW DEPENDS FROM THE SIZE OF THE ANASTOMOSIS

The Journal of Vascular Access 2010; 11: 52-58

Hemodynamic impact of anastomosis size and angle in side-to-end arteriovenous fistulae: a computer analysis

Koen Van Canneyt[1], Thierry Pourchez[2], Sunny Eloot[3], Caroline Guillame[1], Alexandre Bonnet[1], Patrick Segers[1], Pascal Verdonck[1]



HIGH FLOW FISTULAE ARE DELETERIOUS

The dialysis machine needs 300 to 450 ml/min. Thus for us, the ideal flow is 750 ml/min

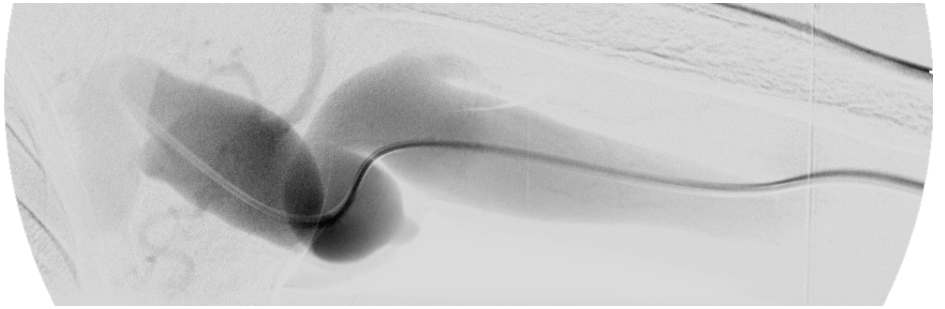
Cardiac insufficiency

Big vessels with no usefullness. They are called « megafistulae ».

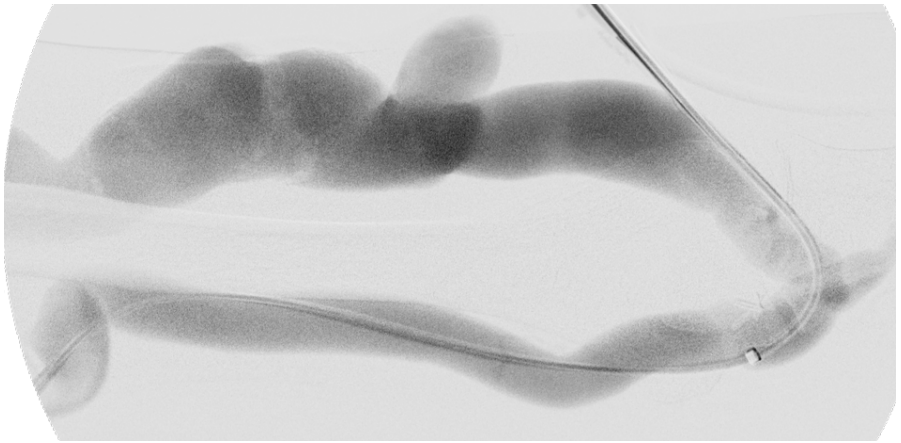
Higher risk of puncture complications

Risk of arterial aneurysms, difficult to treat.

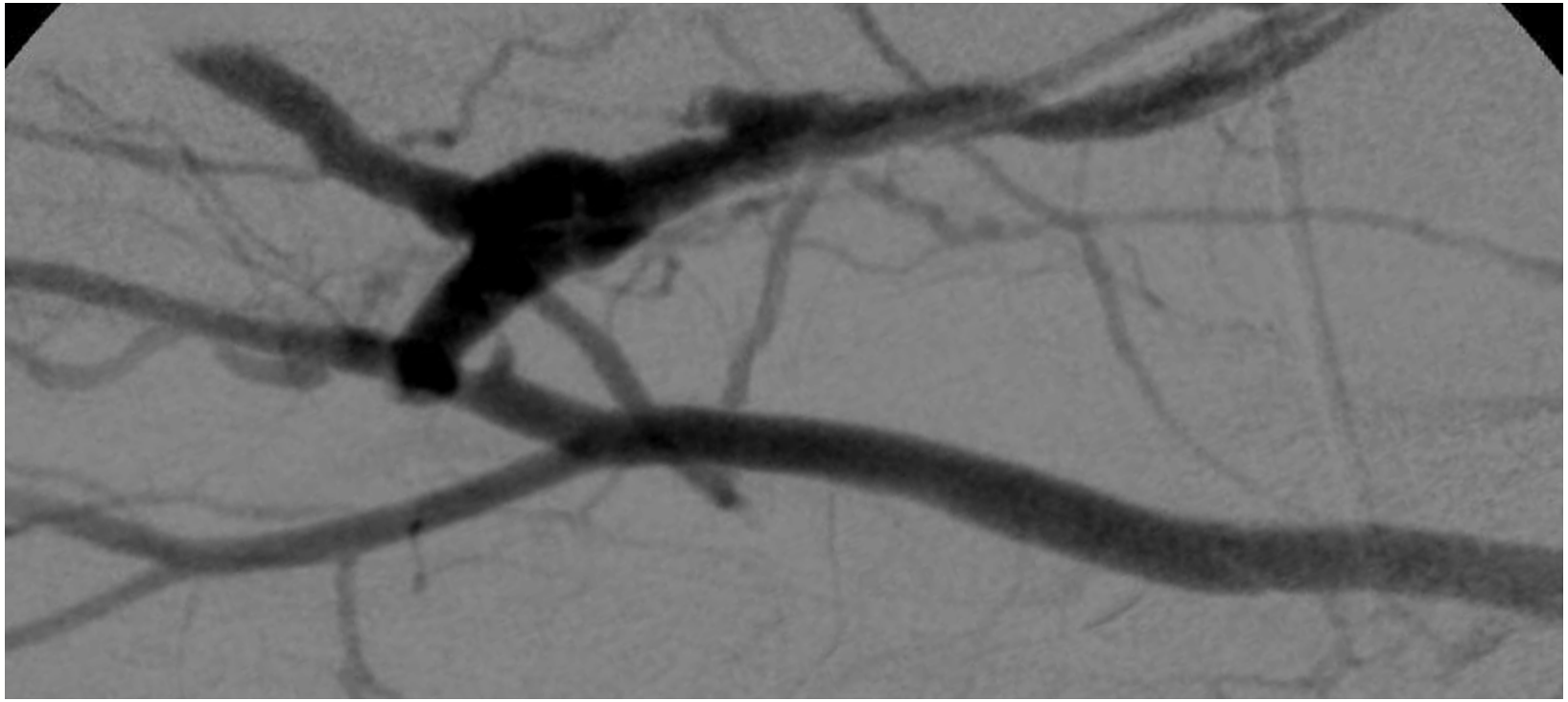
Floodings, Belgium july 2021



Brachial artery of 23 mm, flow of 3,5 l/min



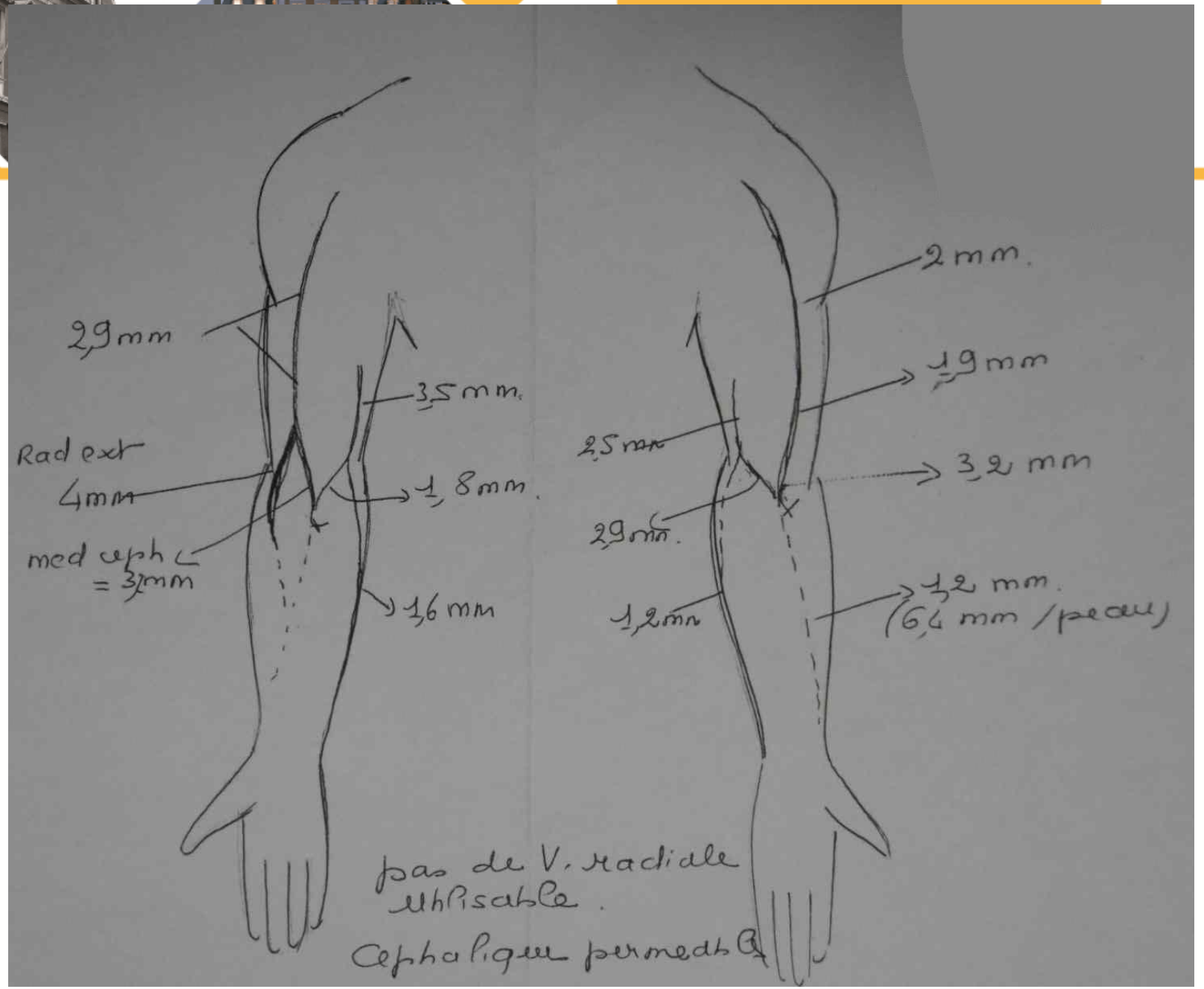
Anastomosis preferably on the beginning of the radial artery

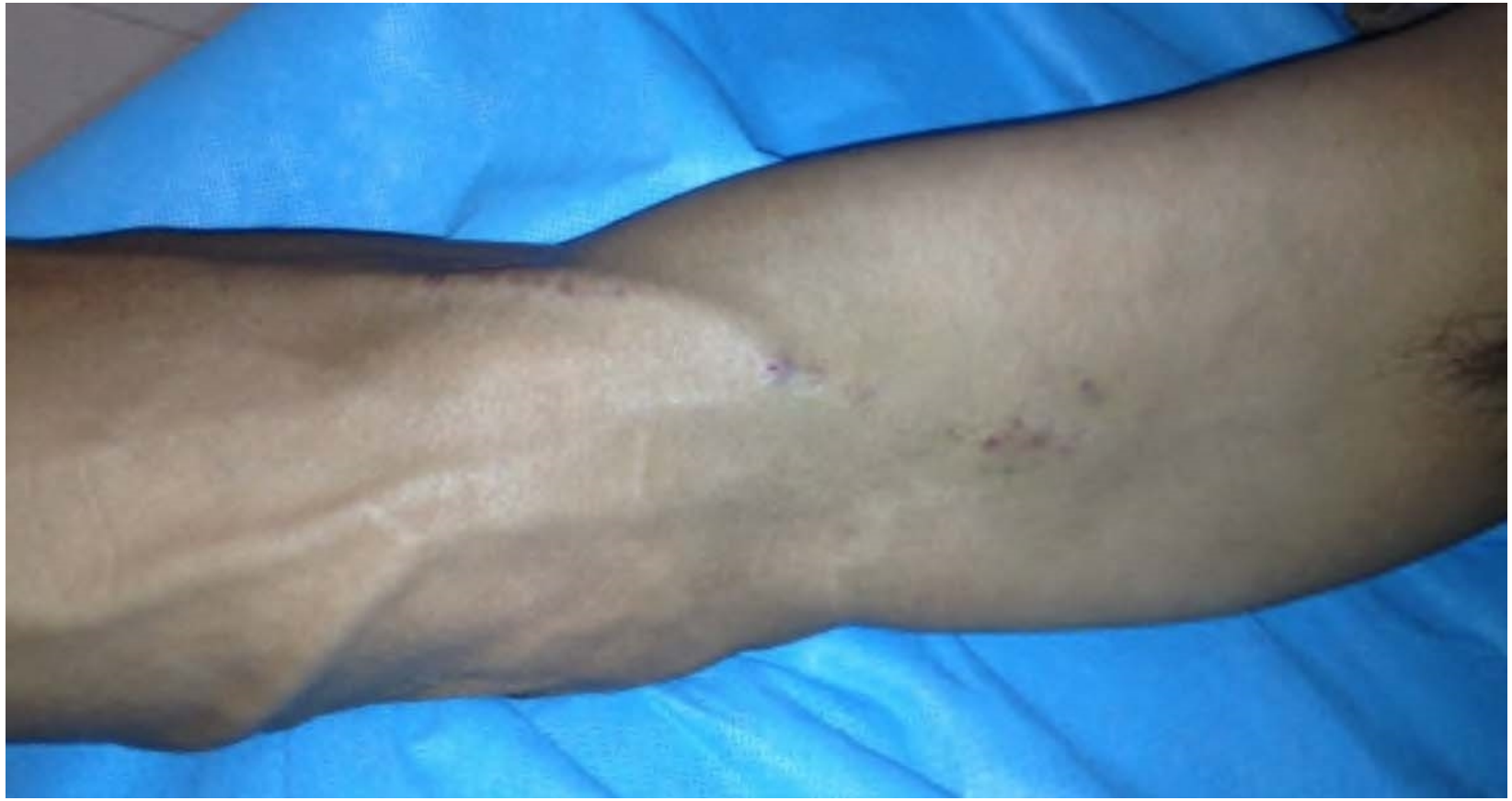


That could explain the low rate of high flow fistulas with Ellipsys

Are we creating too much elbow fistulae?

Mapping of bad quality?

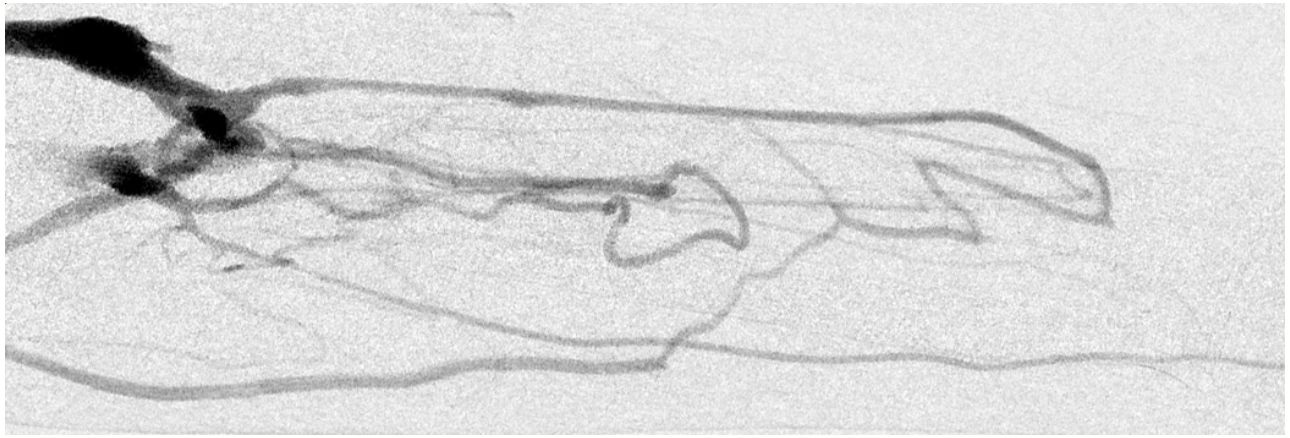


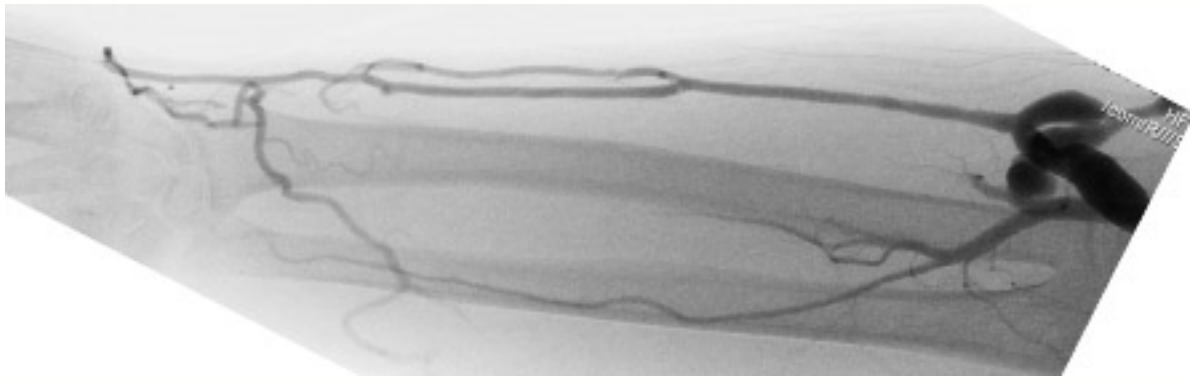


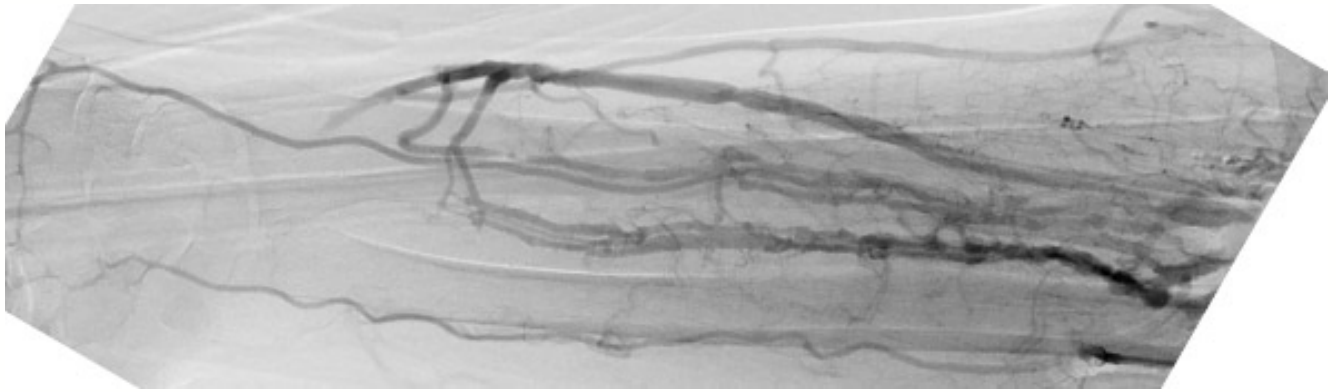
Was the selection good?

Picture after TVA technic, on the TVA website some years ago

Why to create an elbow fistula when there is a cephalic vein at the forearm?







Cases from PARIS

SOME REASONS TO USE THIS DEVICE

- No vein in the forearm, and thrombosis of the median basilic vein -> brachio-cephalic fistula
- First stage before basilic vein transposation
- Skin pathology near the intended scar?

SOME OTHER (BAD) REASONS TO USE THIS DEVICE

- The lack of dedicated surgeons for vascular accesses
- The lack of cooperation between specialist
- The bad results with some surgeons
- The surgeon making too large anastomosis, giving megafistula and/or hand ischemia
- The choice of the « informed » patient
- The fear of pain or scars?

SOME VERY GOOD REASONS TO AVOID THIS DEVICE

- The price!
- The risk of too much elbow fistulas
- The difficulty to puncture, especially with the great turnover of nurses in dialysis centers. It is not the surgeon who is sticking the veins!
- The surgeon ought to create fistulas easy to puncture for everybody
- The difficulty to treat the complications +++++

CONCLUSION

THE DIALYSIS TEAM NEEDS FISTULAS EASY TO PUNCTURE BY EVERYBODY

ONE STRAIGHT DILATED VEIN AT THE FOREARM IS BETTER THAN TWO SMALLER VEINS AT THE ELBOW

EACH PATIENT NEEDS A SPECIFIC FISTULA, AND NOT A UNIFORM FASHION