Tillämpad accessdiagnostik

Tobias Lundström, kärlkirurgen, Mälarsjukhuset

Njursvikt

Peritonealdialys

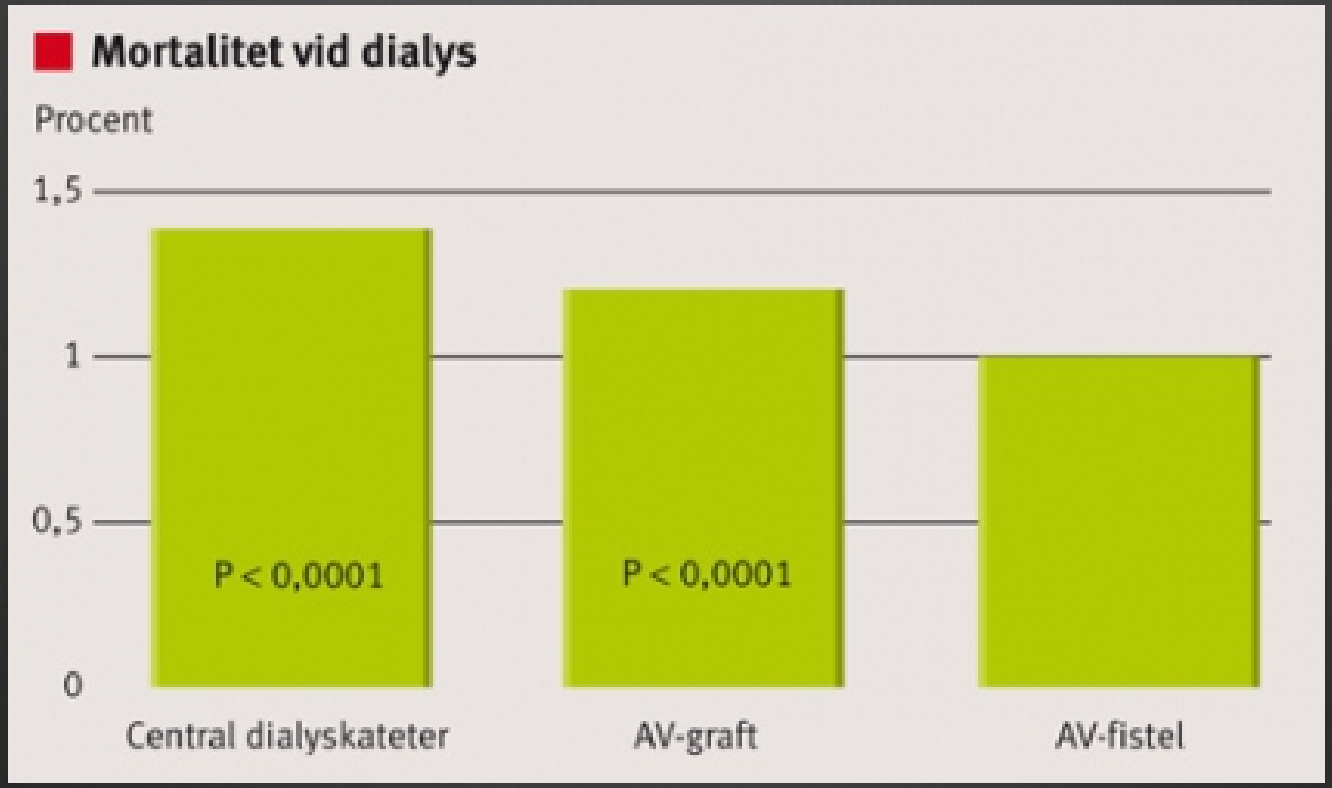
Hemodialys

Hemodialys

Nativ AV-fistel

Graft

CDK

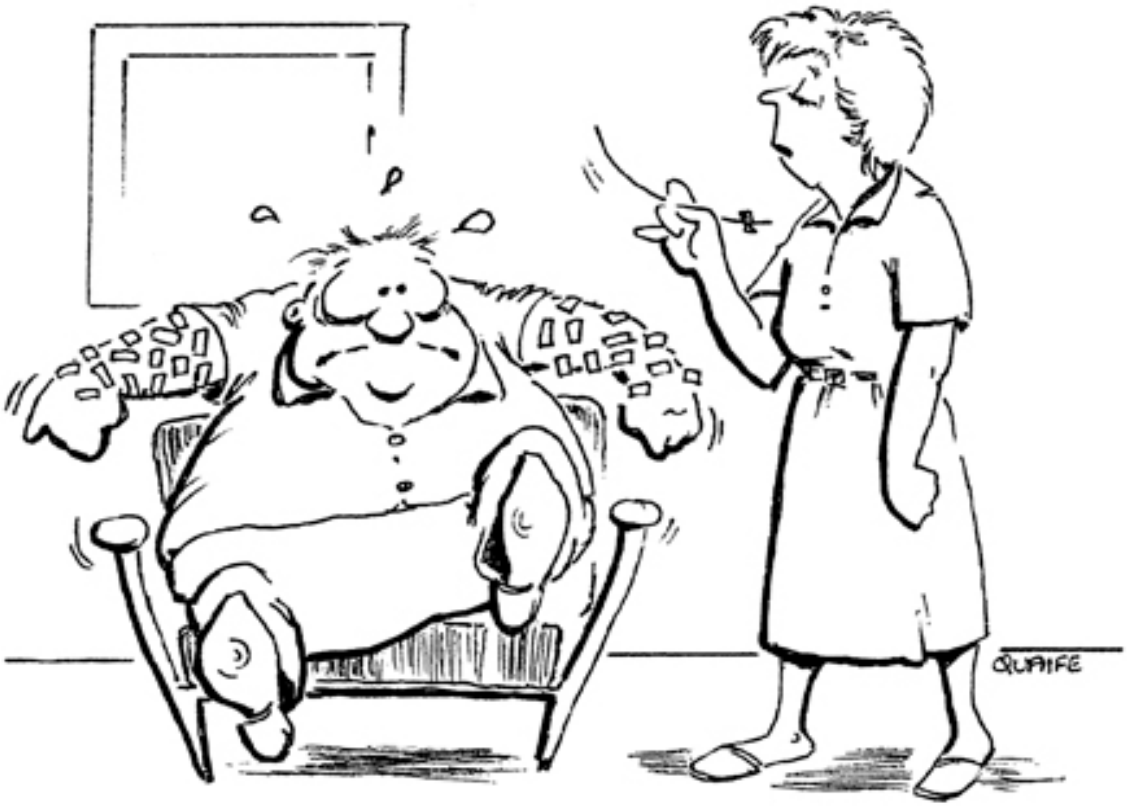

Mortalitet vid dialys
Procent
1,5
1
0,5
0
P < 0,0001
P < 0,0001
Central dialyskateter
AV-graft
AV-fistel

Principer

Bekvämt för:

- Patient
- Dialyssköterska (idealt pat själv)
- Kärlkirurg

I don't care what day it is.
Four hours is four hours.



Don't worry, I'll find a good site soon.

Rule of 6

Mognadstid 6 veckor

Vendiameter > 6 mm

Flöde > 600 ml/min

Venen < 6 mm under huden

> 6 cm sticksträcka

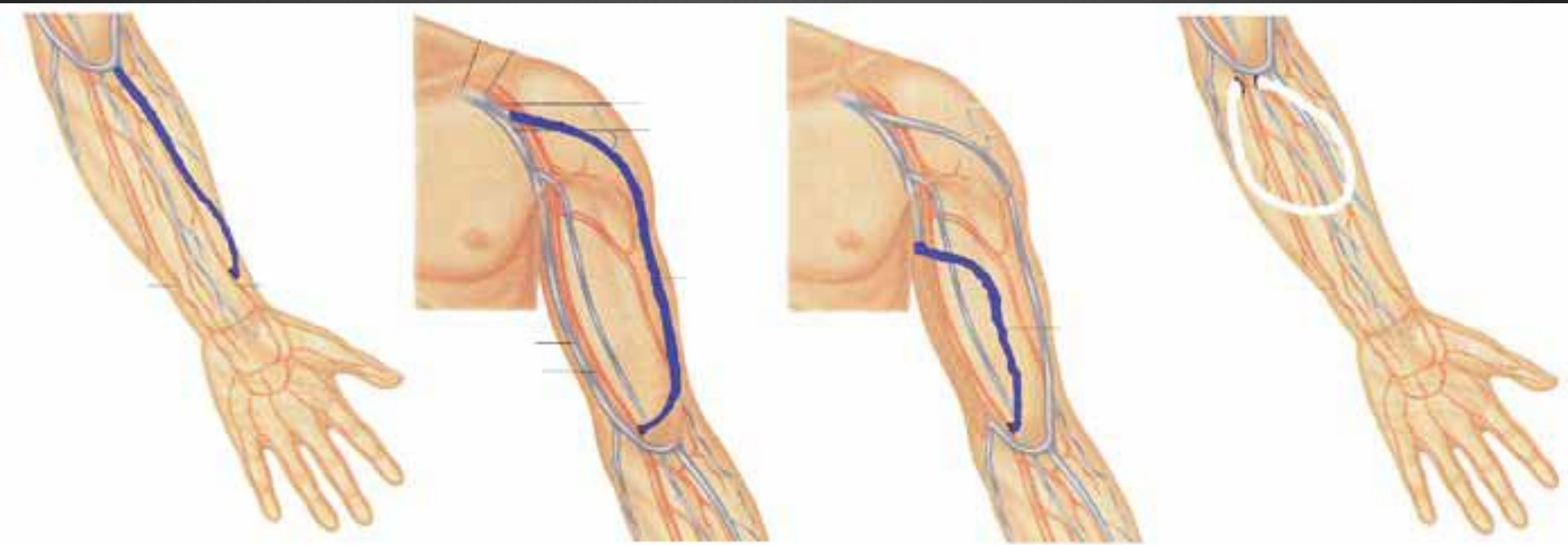
Kärlkirurg

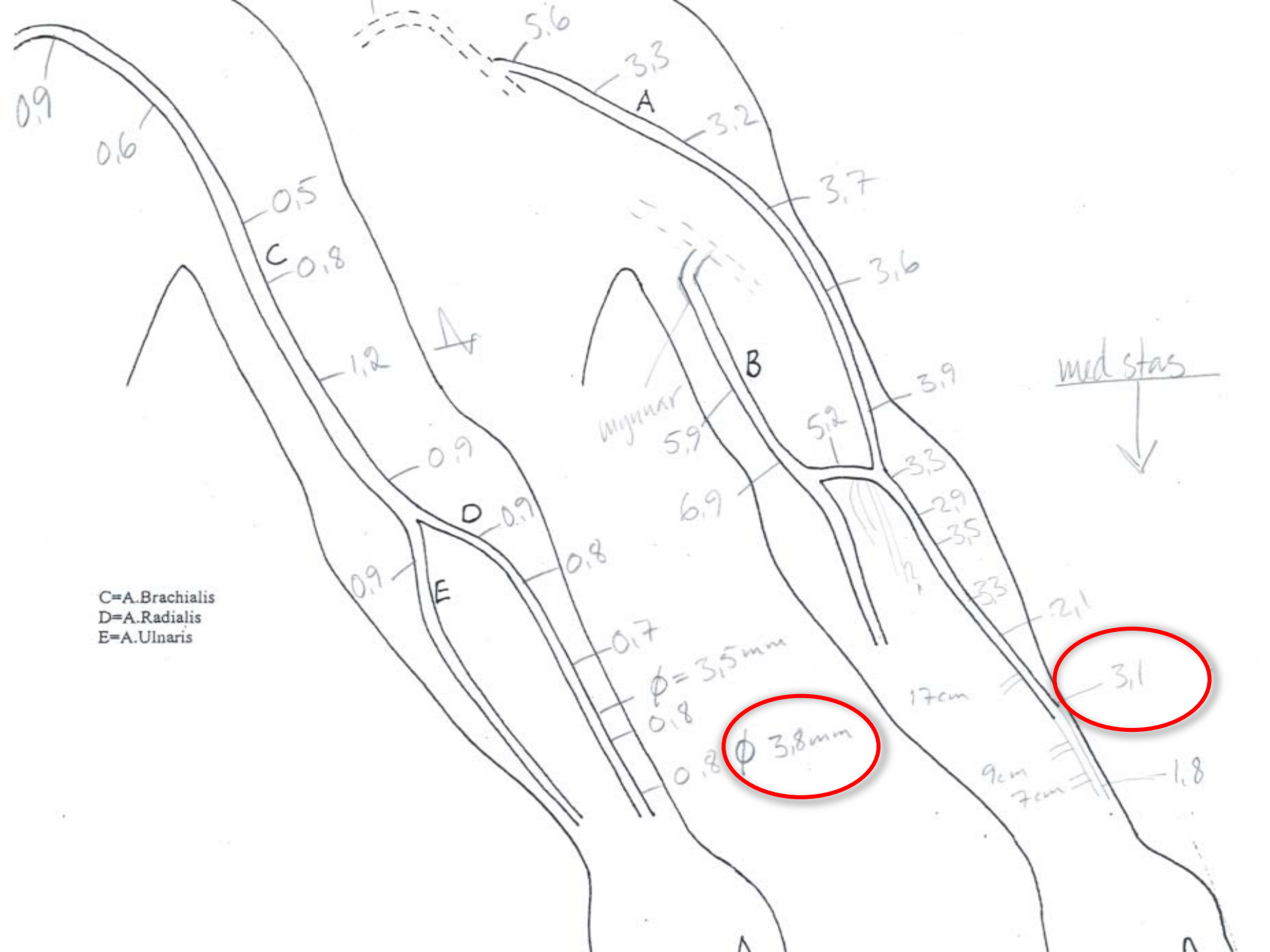
Adekvata kärldiametrar

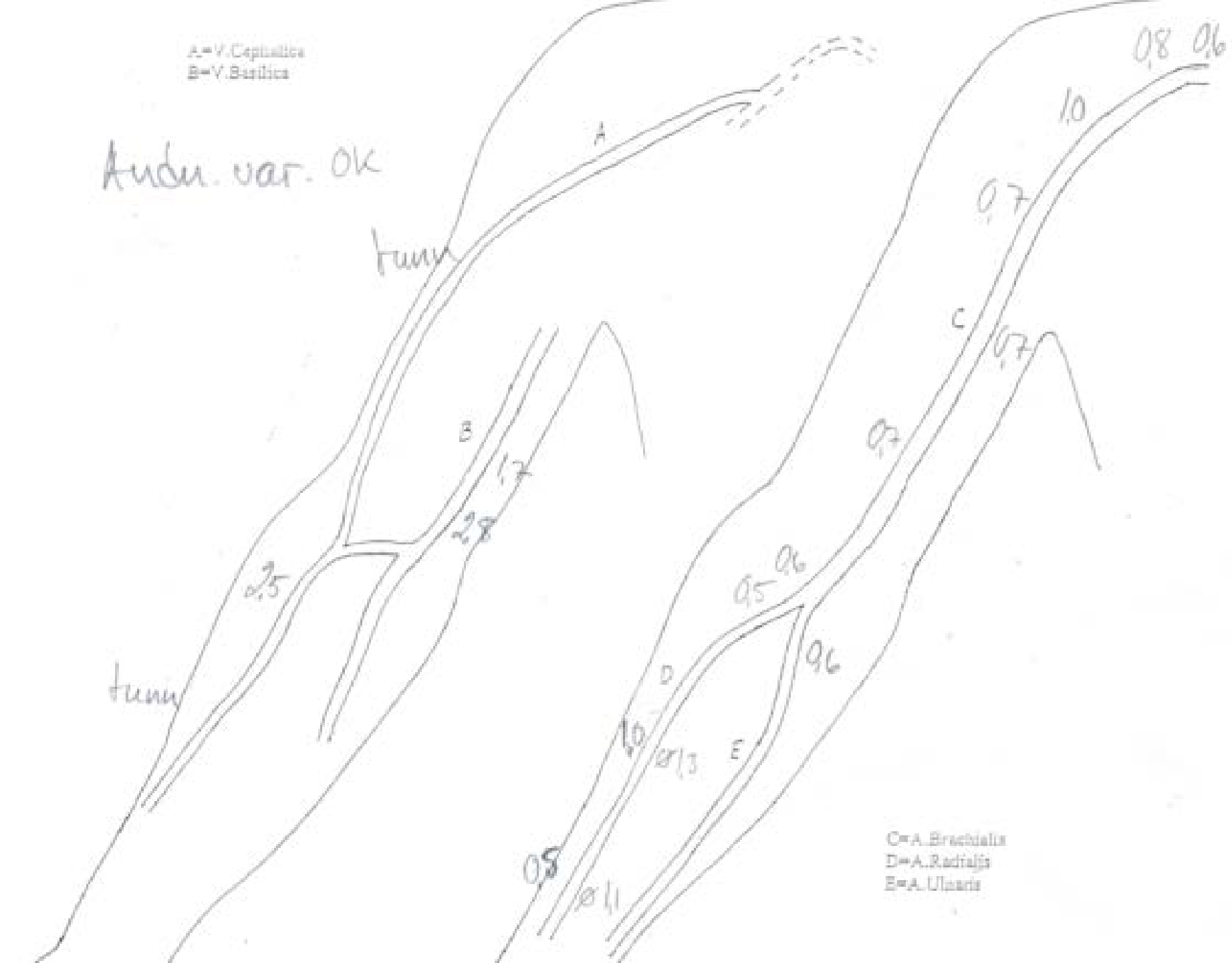
- artär 2 mm (1,8)
- ven > 2,5 mm

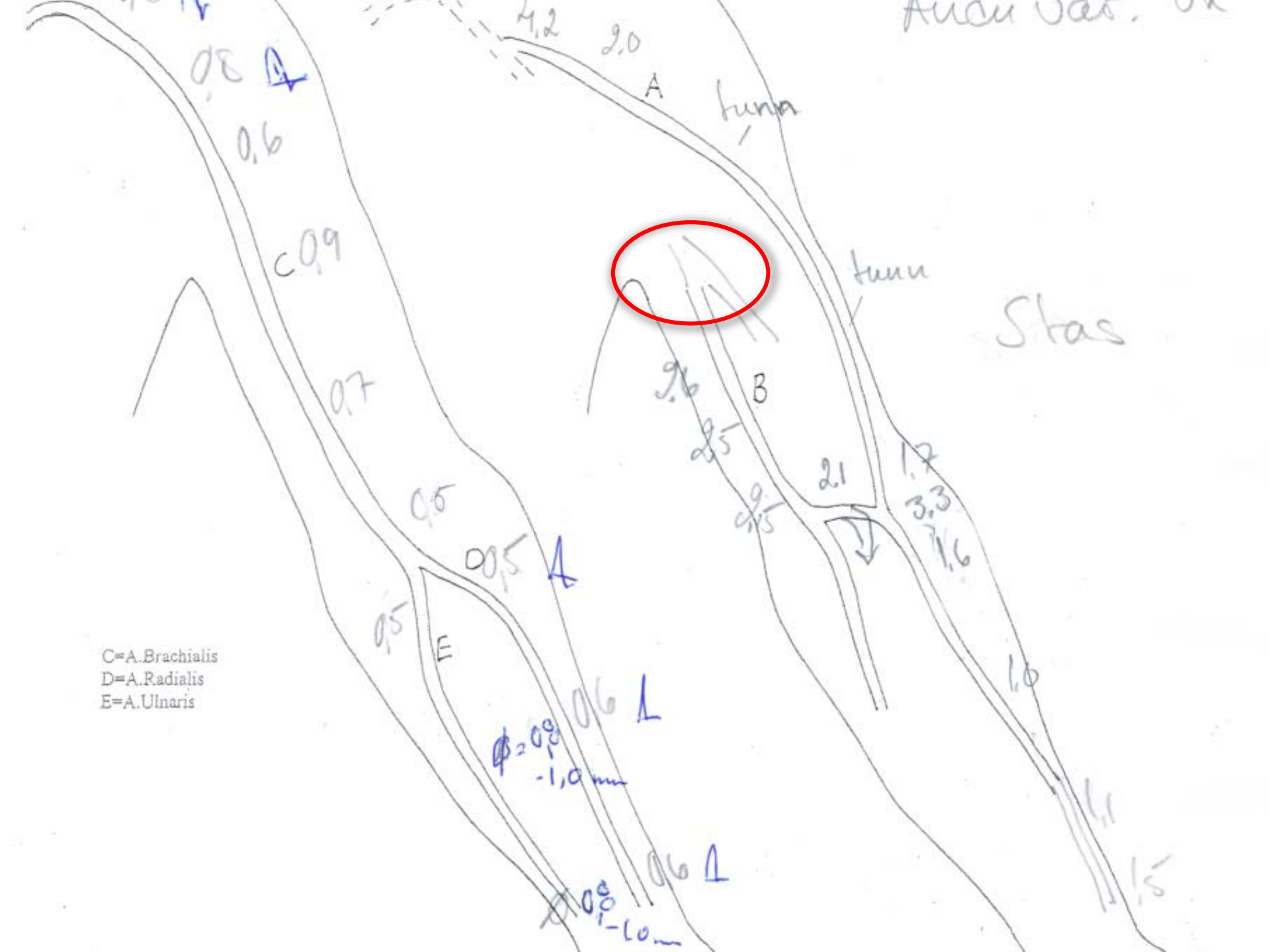
Inga avflödeshinder

V Basilika




0,9
0,6
0,5
C
0,8
1,2
0,9
D
0,7
0,8
0,9
E
0,7
ϕ= 3,5mm
0,8
0,8
5,6
3,3
A
3,2
3,7
3,6
B
3,9
5,9
5,2
6,9
3,3
2,9
3,5
3,3
2,1
3,1
17cm
9cm
7cm
1,8
ϕ 3,8mm
med stas
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris


A=V.Capitalica
B=V.Basilica
Anat. var. OK
A
tunn
B
1,7
2,8
2,5
tunn
0,8 0,6
1,0
0,7
C
0,7
0,7
0,5
0,6
0,6
D
1,0
1,3
E
0,8
1,1
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris


C=A.Brachialis
D=A.Radialis
E=A.Ulnaris

Problem

Låga flöden

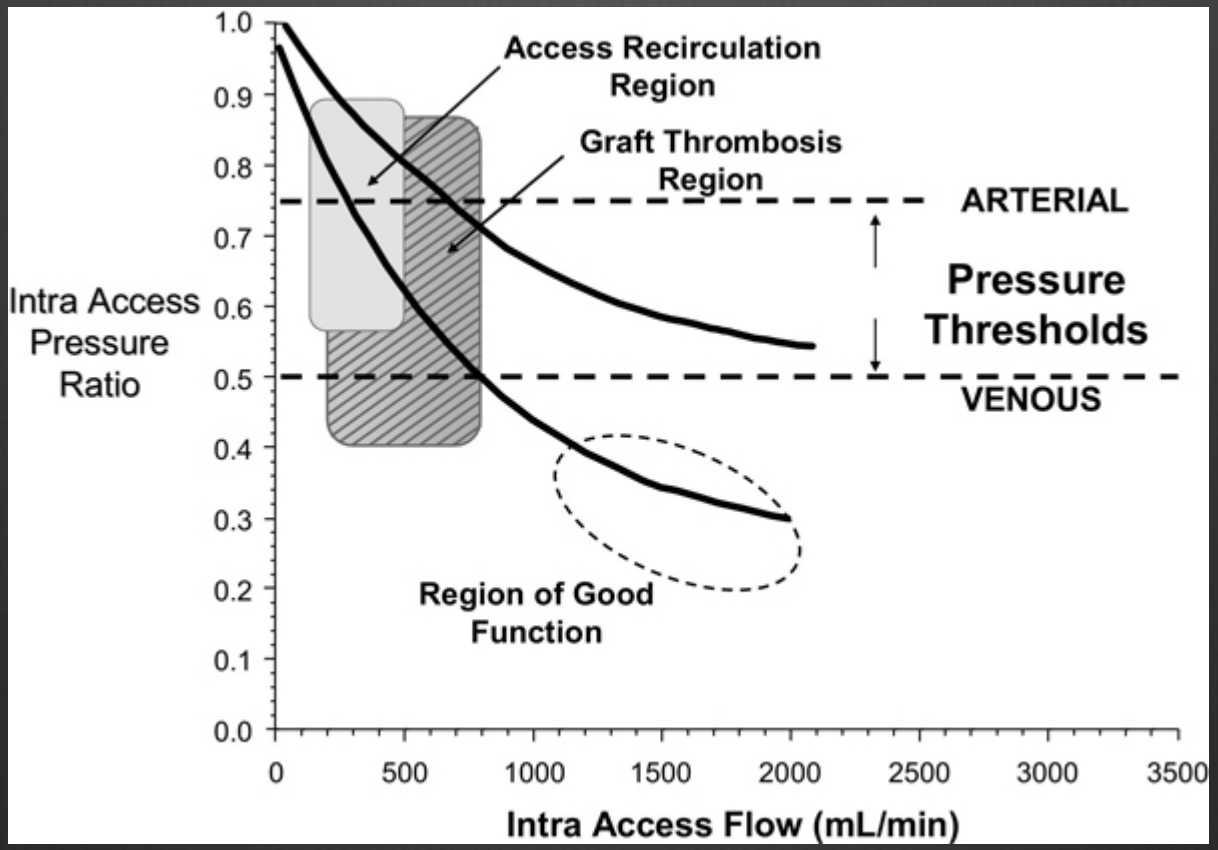
Höga flöden

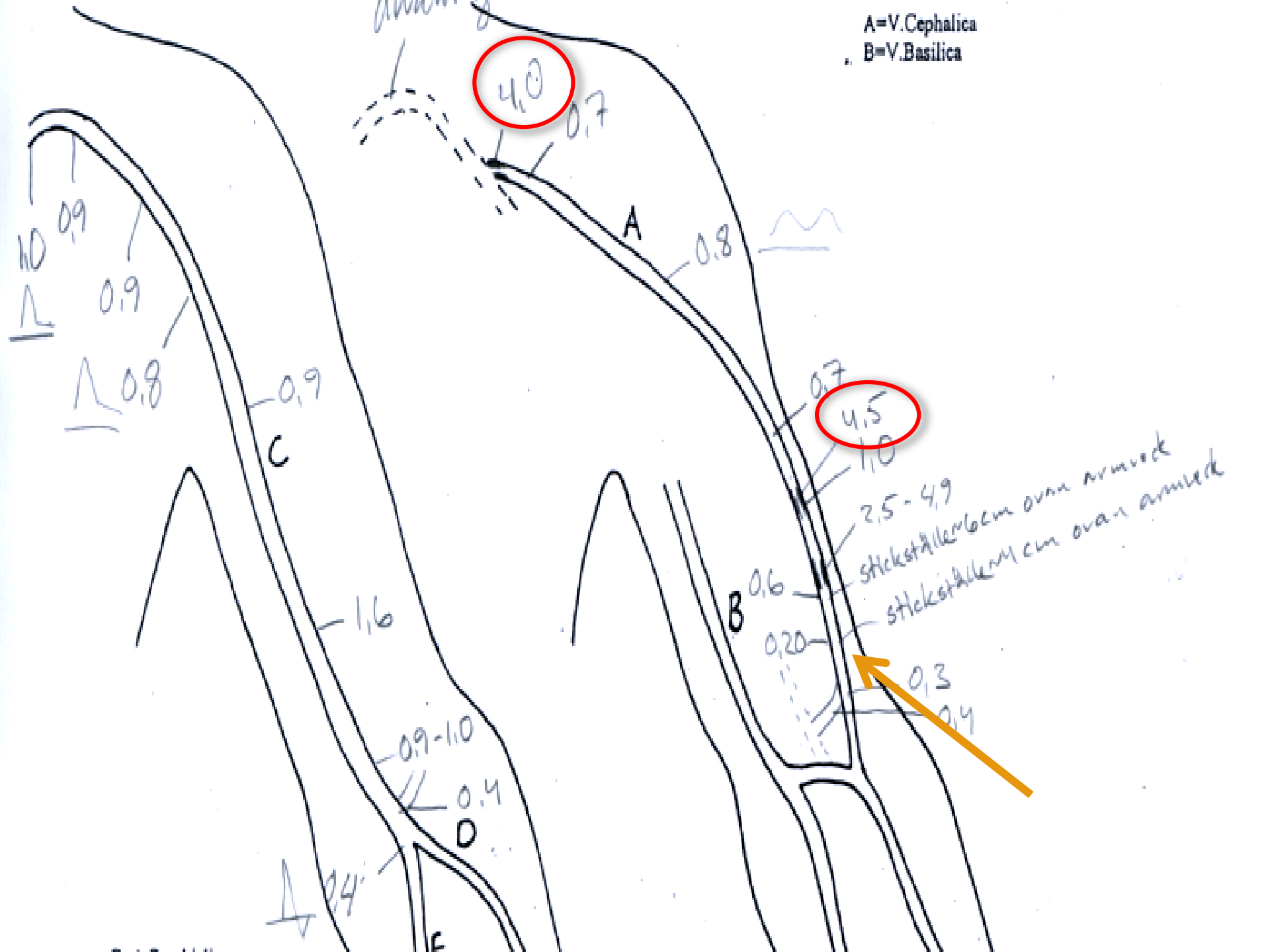
”långa stopptider”

Sticksvårigheter

Steal/ischemi

Graft – effekt av stenos venanastomosen




A=V.Cephalica
B=V.Basilica
4,0
0,7
A
0,8
1,0
0,9
0,9
0,8
0,9
C
1,6
0,9-1,0
0,4
D
0,7
4,5
1,0
2,5 - 4,9
Stickställen 6cm ovan armvrick
Stickställen 4 cm ovan armvrick
B
0,6
0,20
0,3
0,4

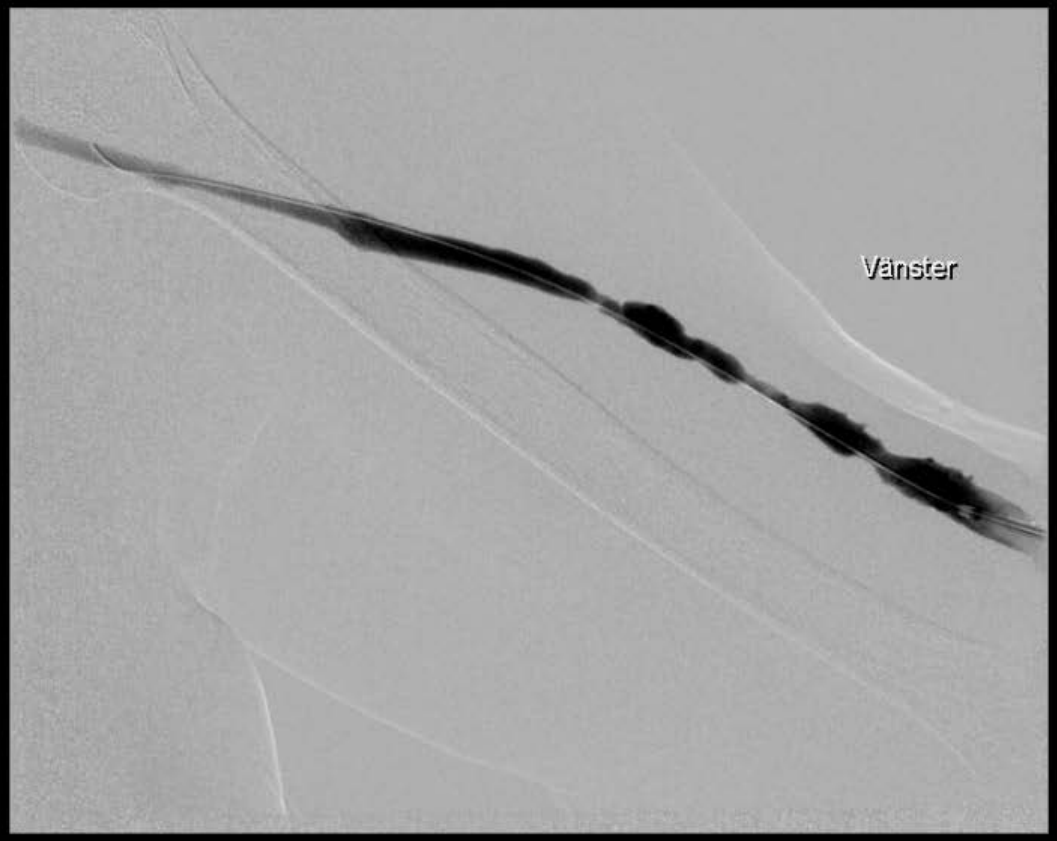

SIEMENS
Artis

Vinklar: 0,3, -0,4

C: 2047,0, W: 4095,0

Arm

Perifer



L

Image 7 of 11

2019-09-20, 10:46:25

F

13010731 Mälarsjukhuset Rad Klin

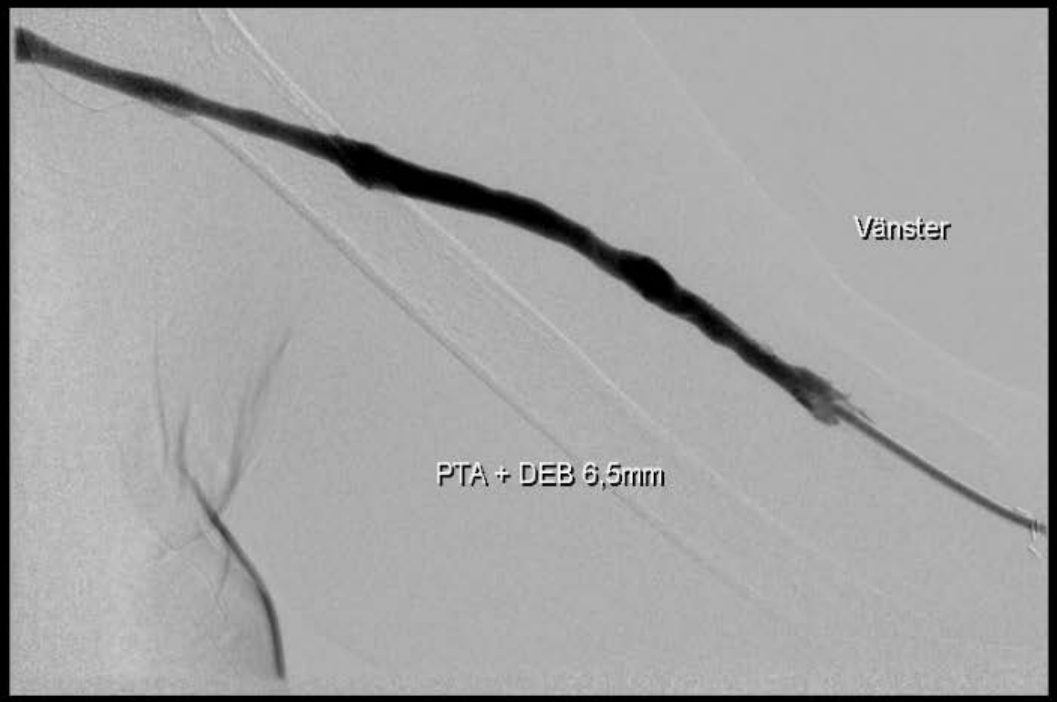
1

Vinklar: 0,3, -0,4

C: 2047,0, W: 4095,0

Arm

Perifer



L

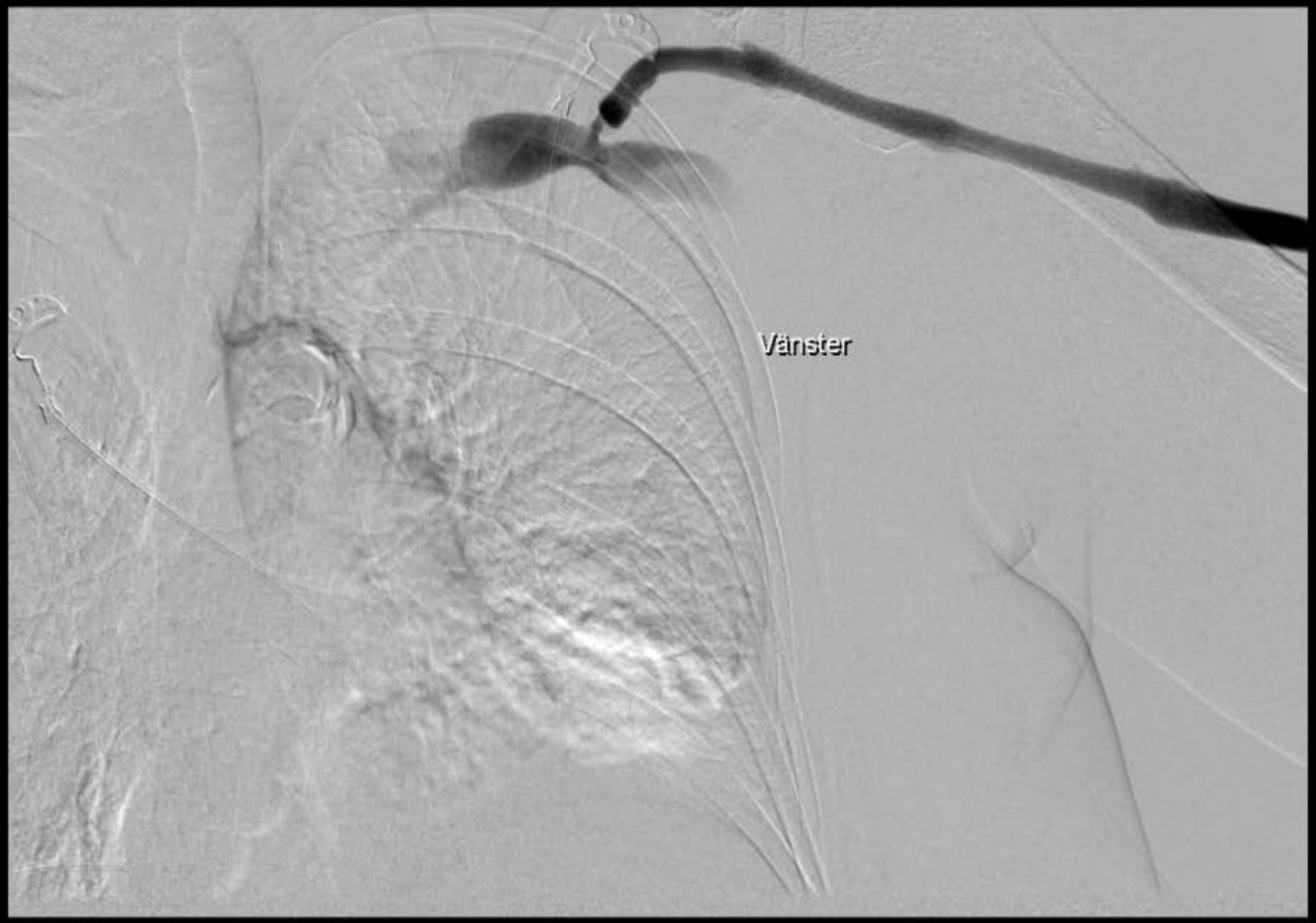
Image 6 of 10

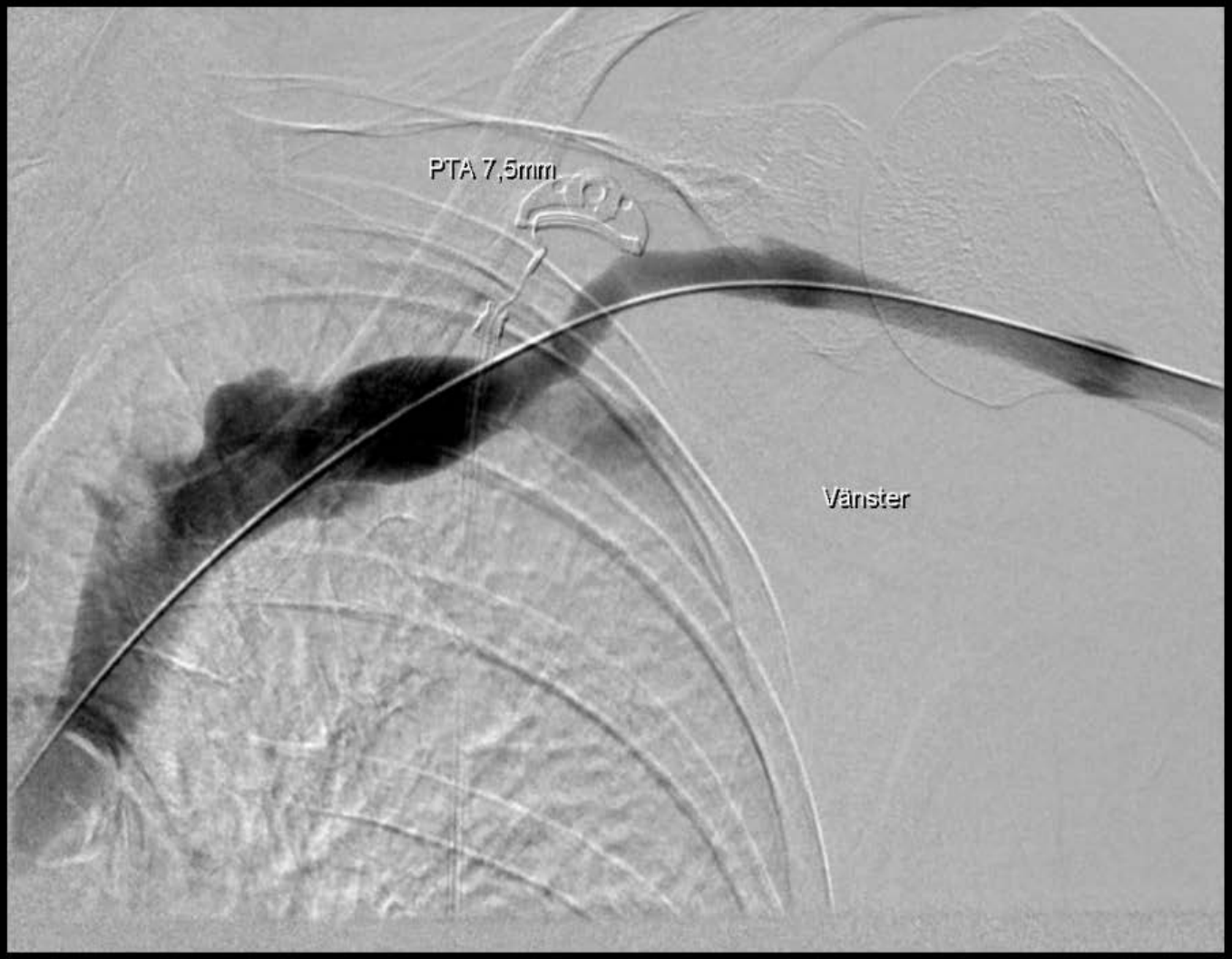
2019-09-20, 11:05:54

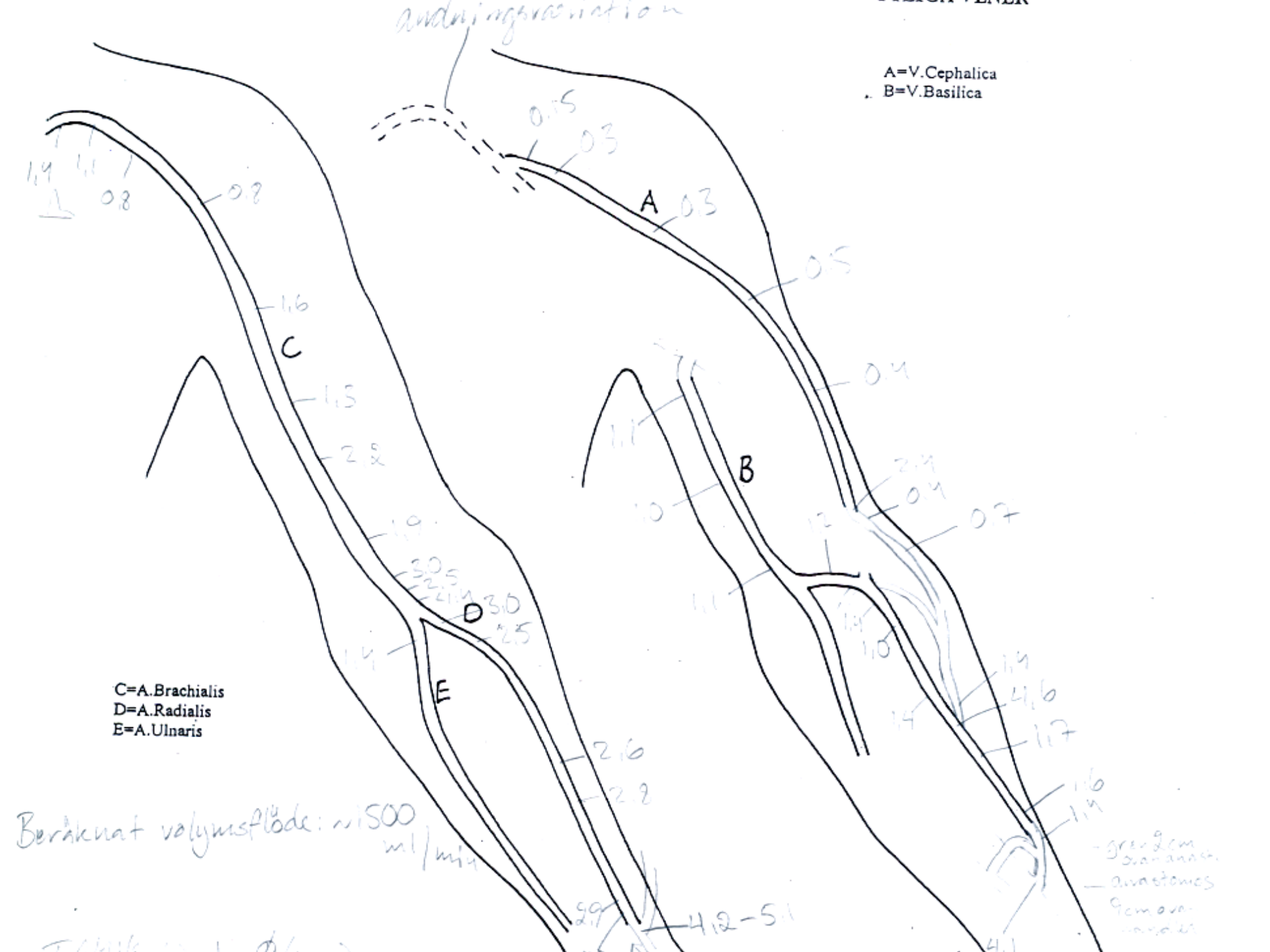
F

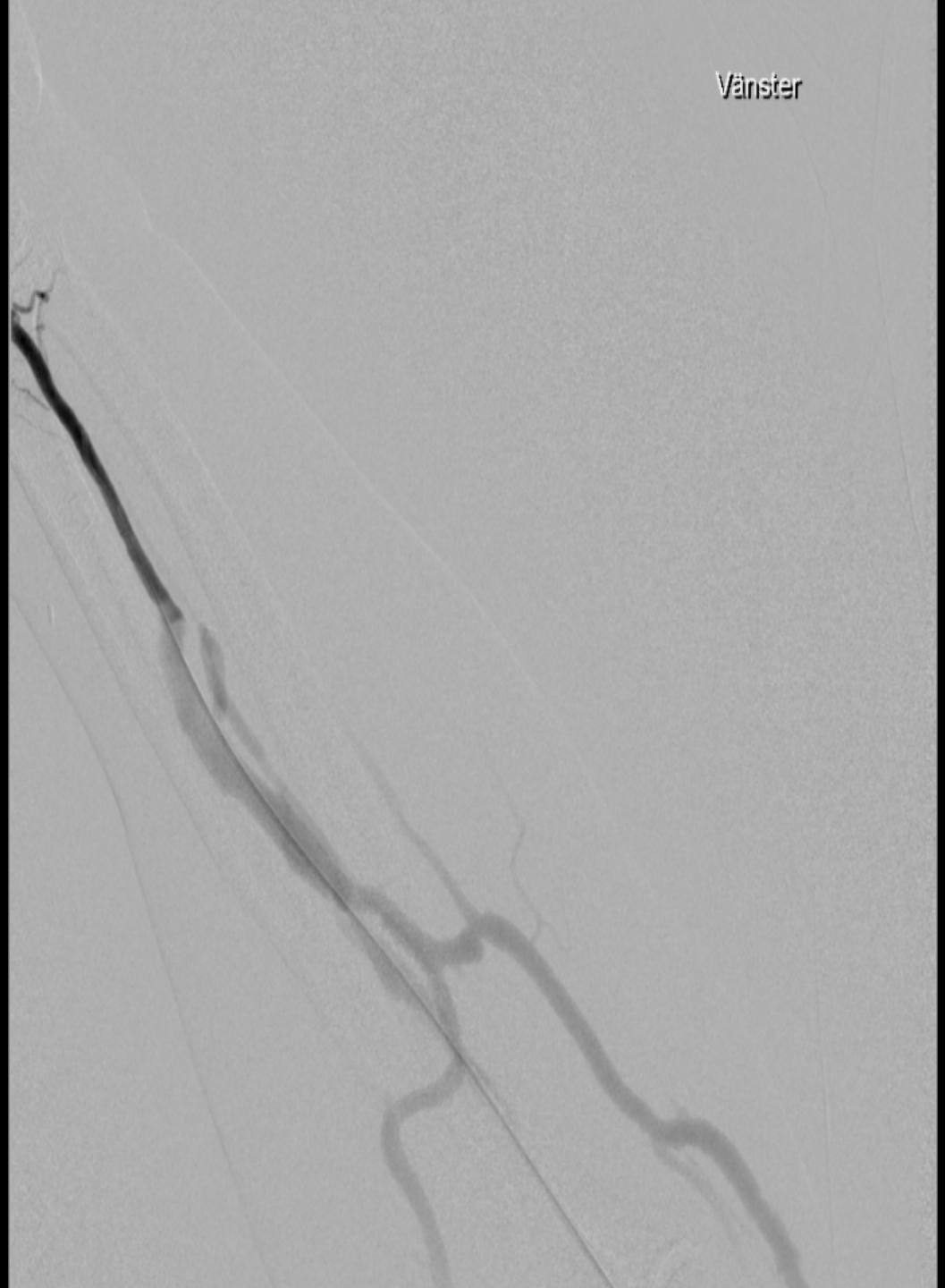
13010731 Mälarsjukhuset Rad Klin

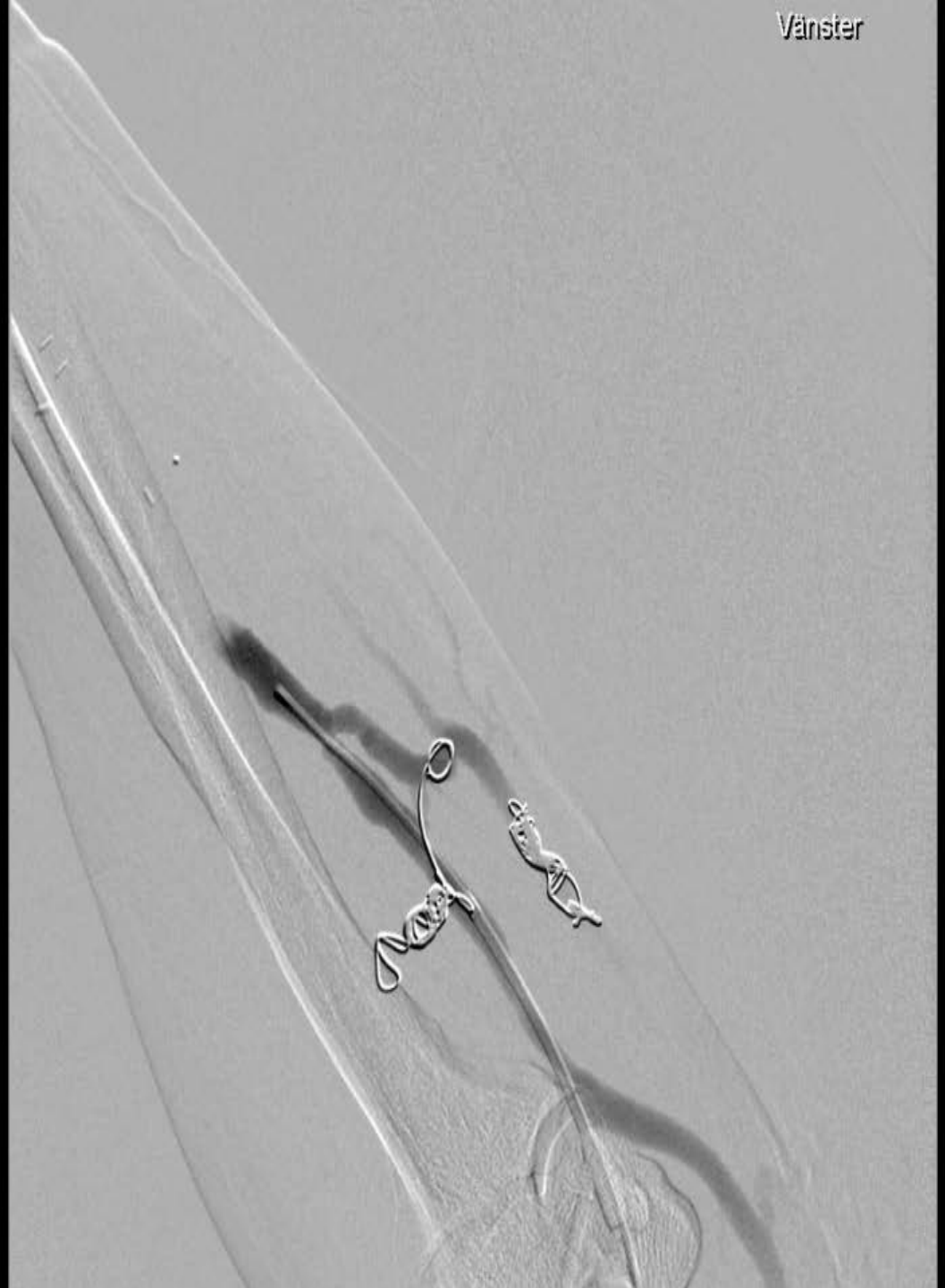
2


Vänster


PTA 7,5mm
Vänster

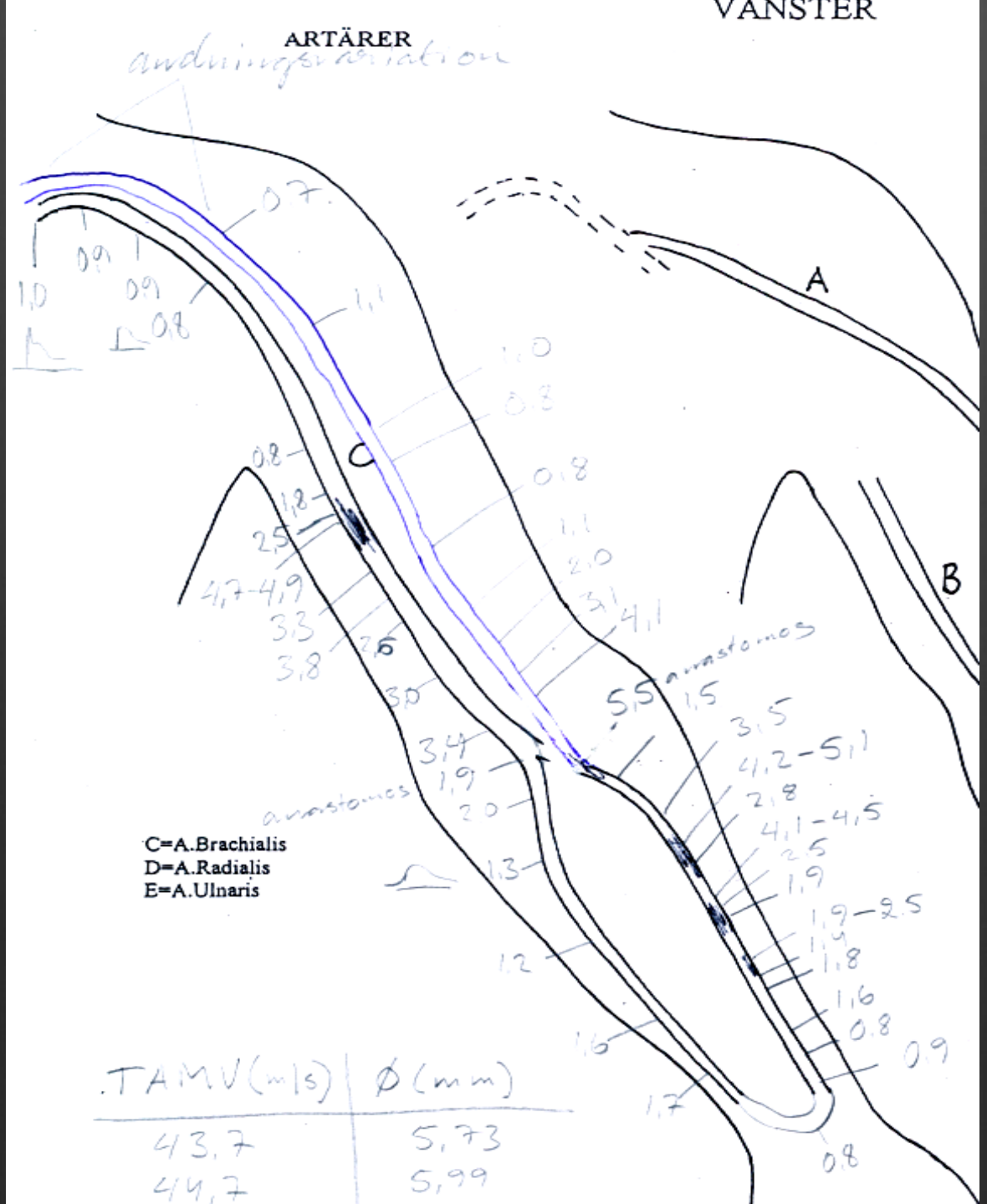

A=V.Cephalica
B=V.Basilica
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris
A
B
C
D
E


Vänster

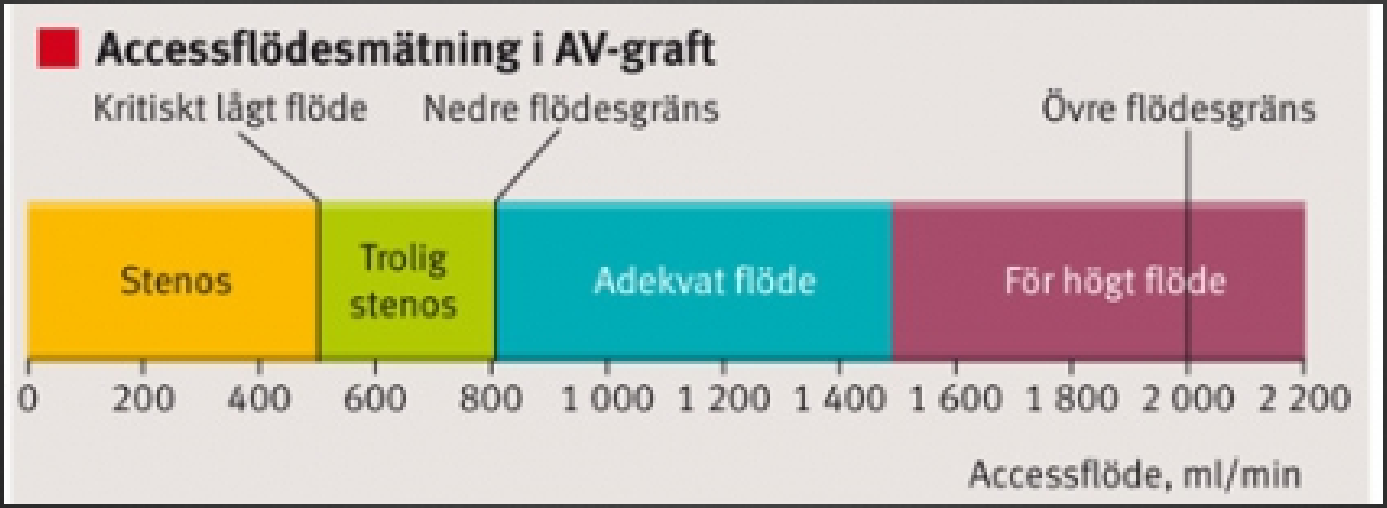

Vänster

VÄNSTER

ARTÄRER



TAMV (m/s)	Ø (mm)
43,7	5,73
44,7	5,99

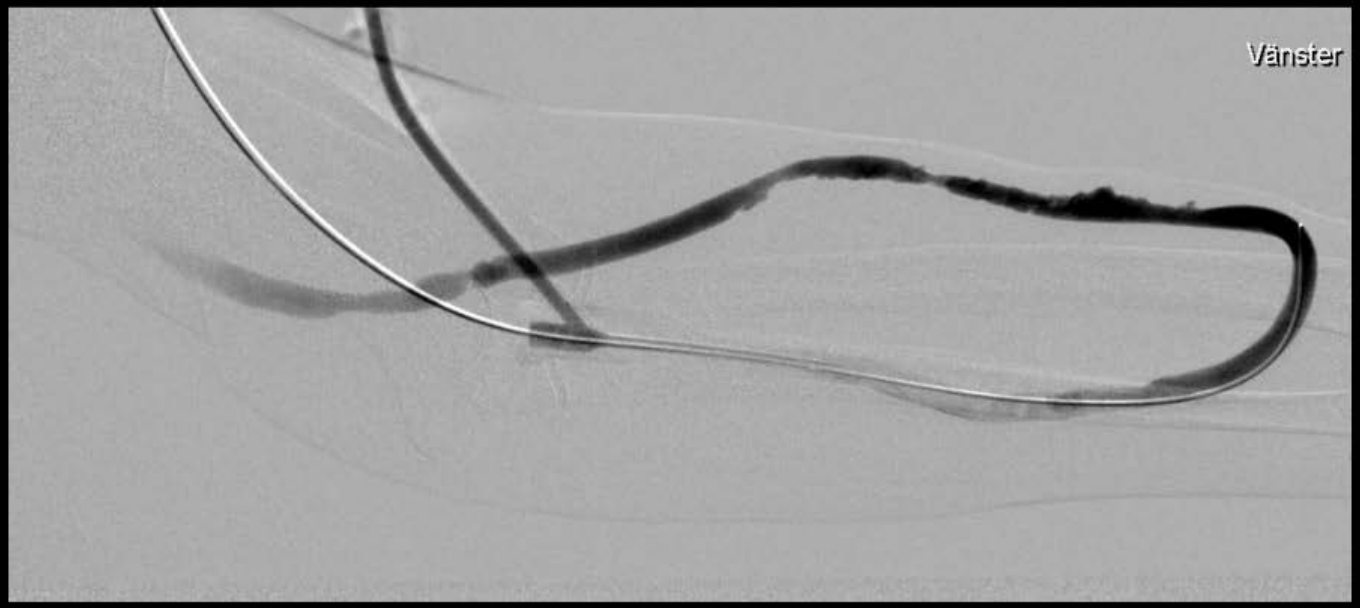

Accessflödesmätning i AV-graft
Kritiskt lågt flöde
Nedre flödesgräns
Övre flödesgräns
Stenos
Trolig stenos
Adekvat flöde
För högt flöde
0
200
400
600
800
1 000
1 200
1 400
1 600
1 800
2 000
2 200
Accessflöde, ml/min

Vinklar: 1,7, 1,1

C: 2047,0, W: 4095,0

Arm

Thorax



L

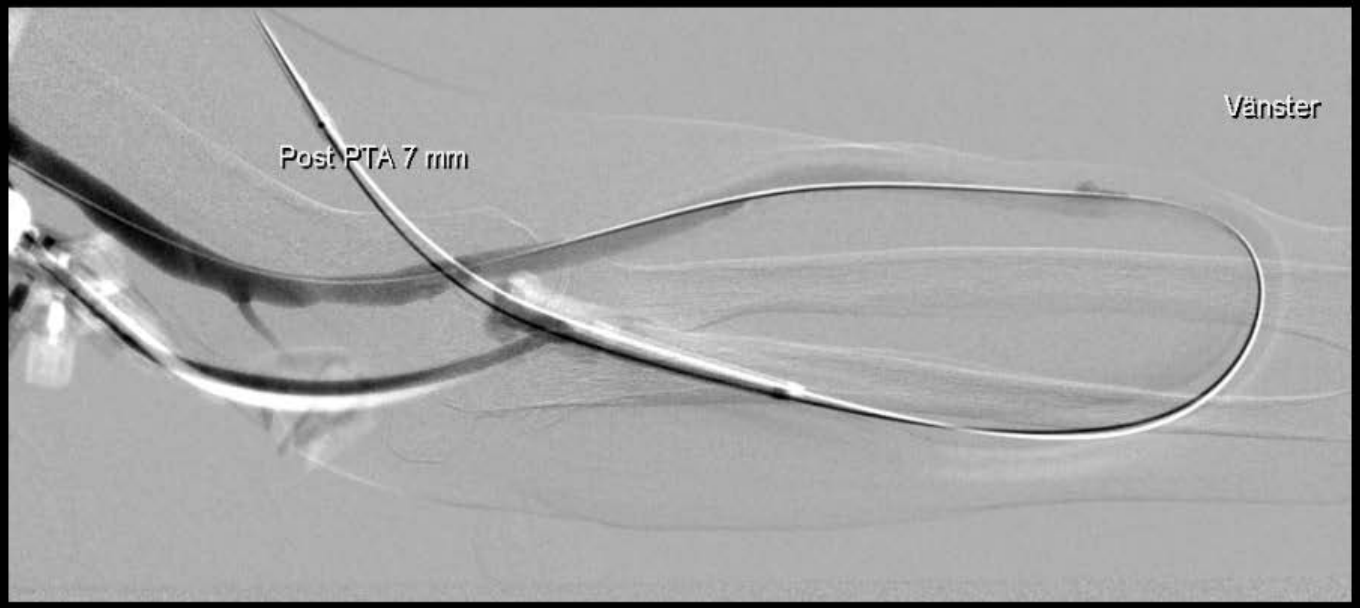
Image 6 of 9

2019-09-10, 11:45:07

F

13010731 Mälarsjukhuset Rad Klin

1

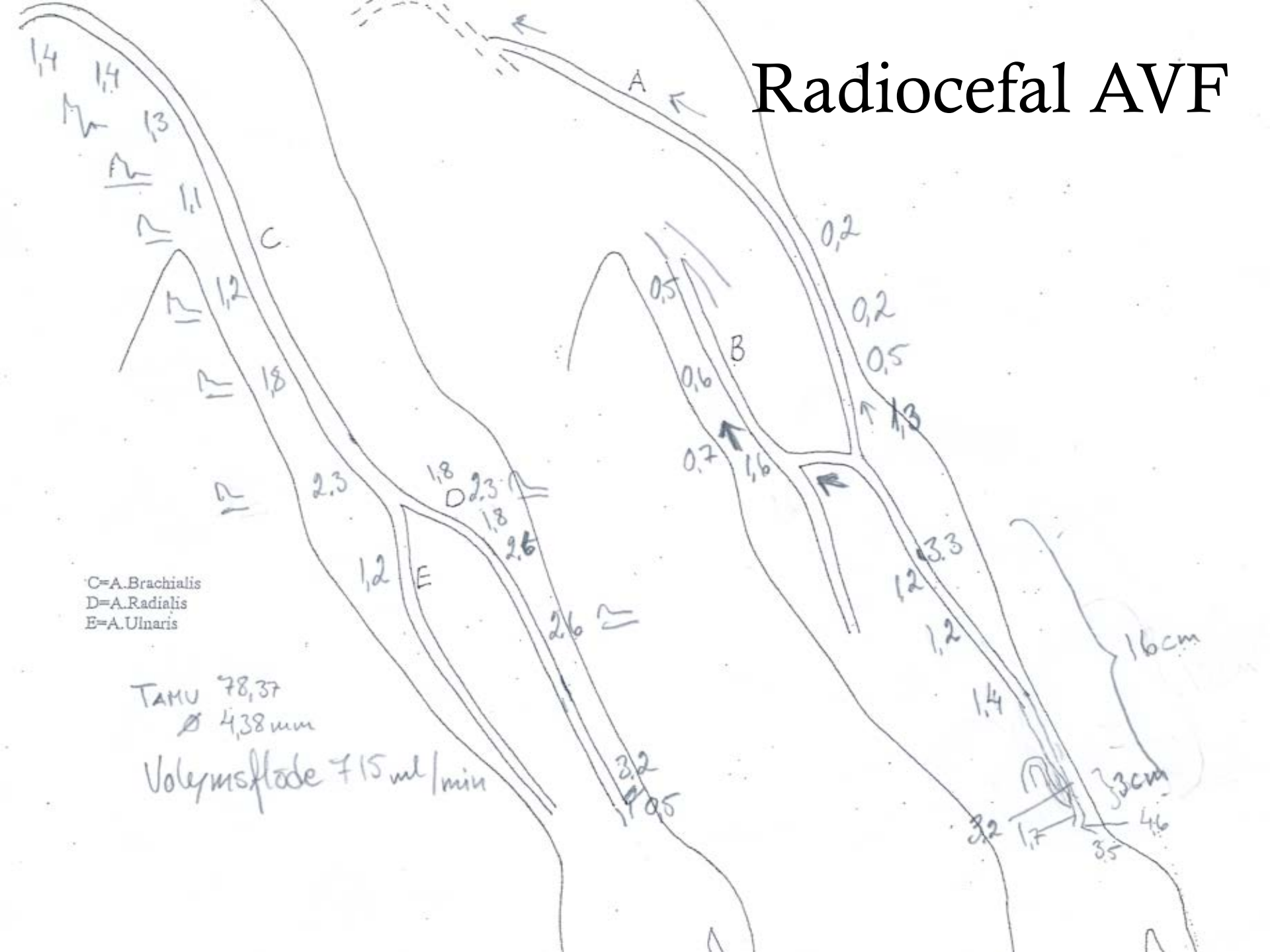

Vänster
Post PTA 7 mm

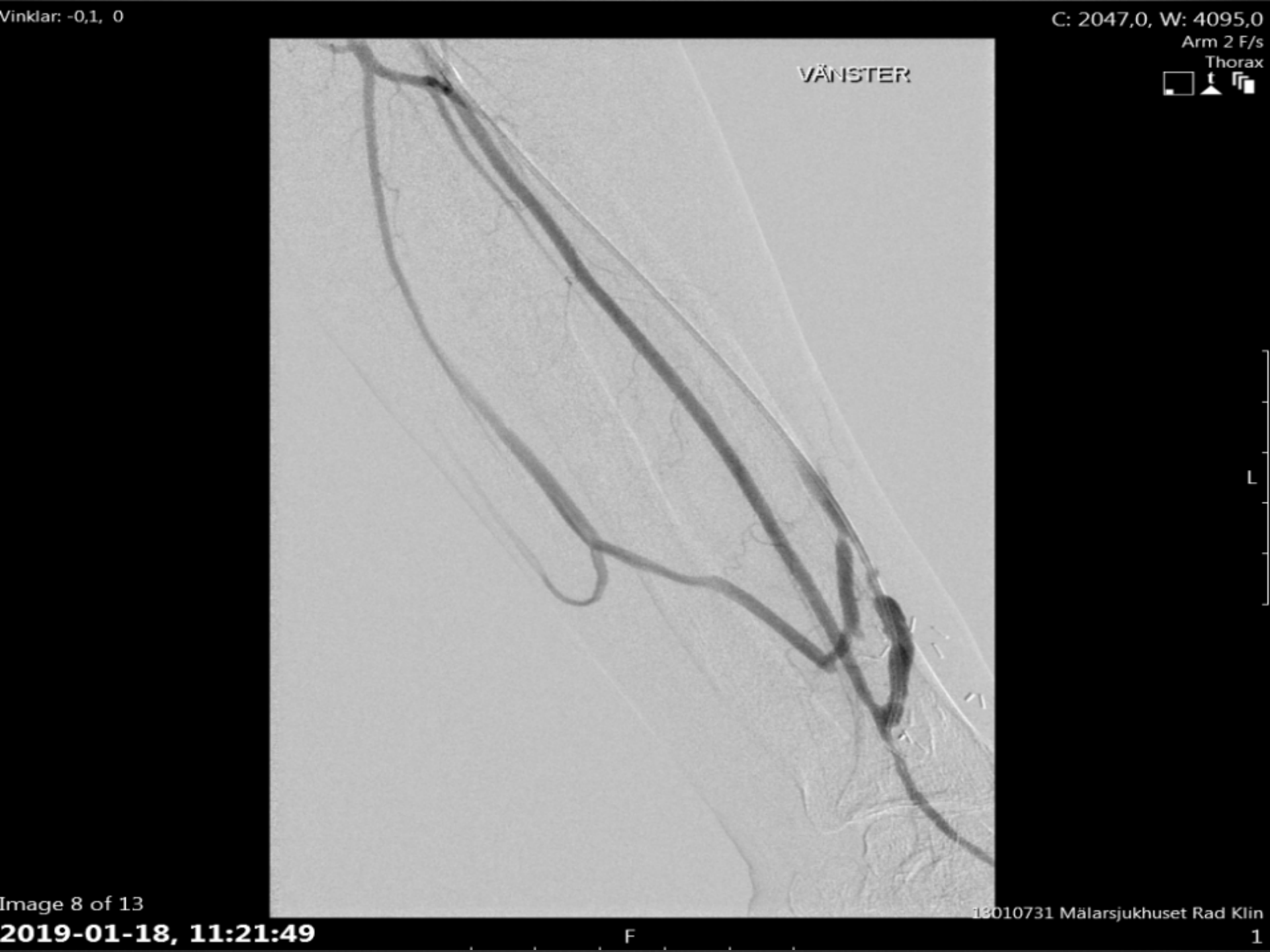
Steal/ischemi

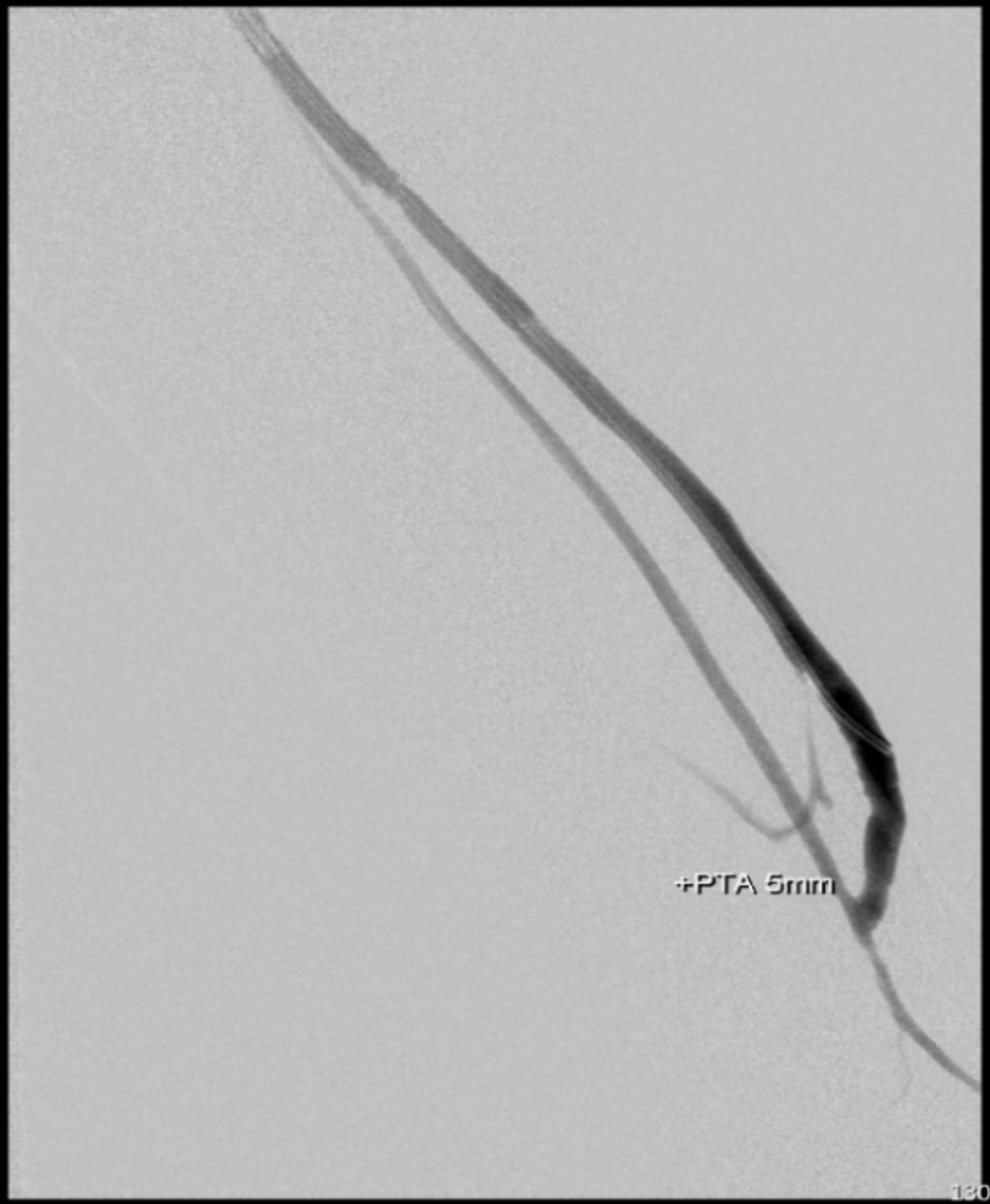
Mapping

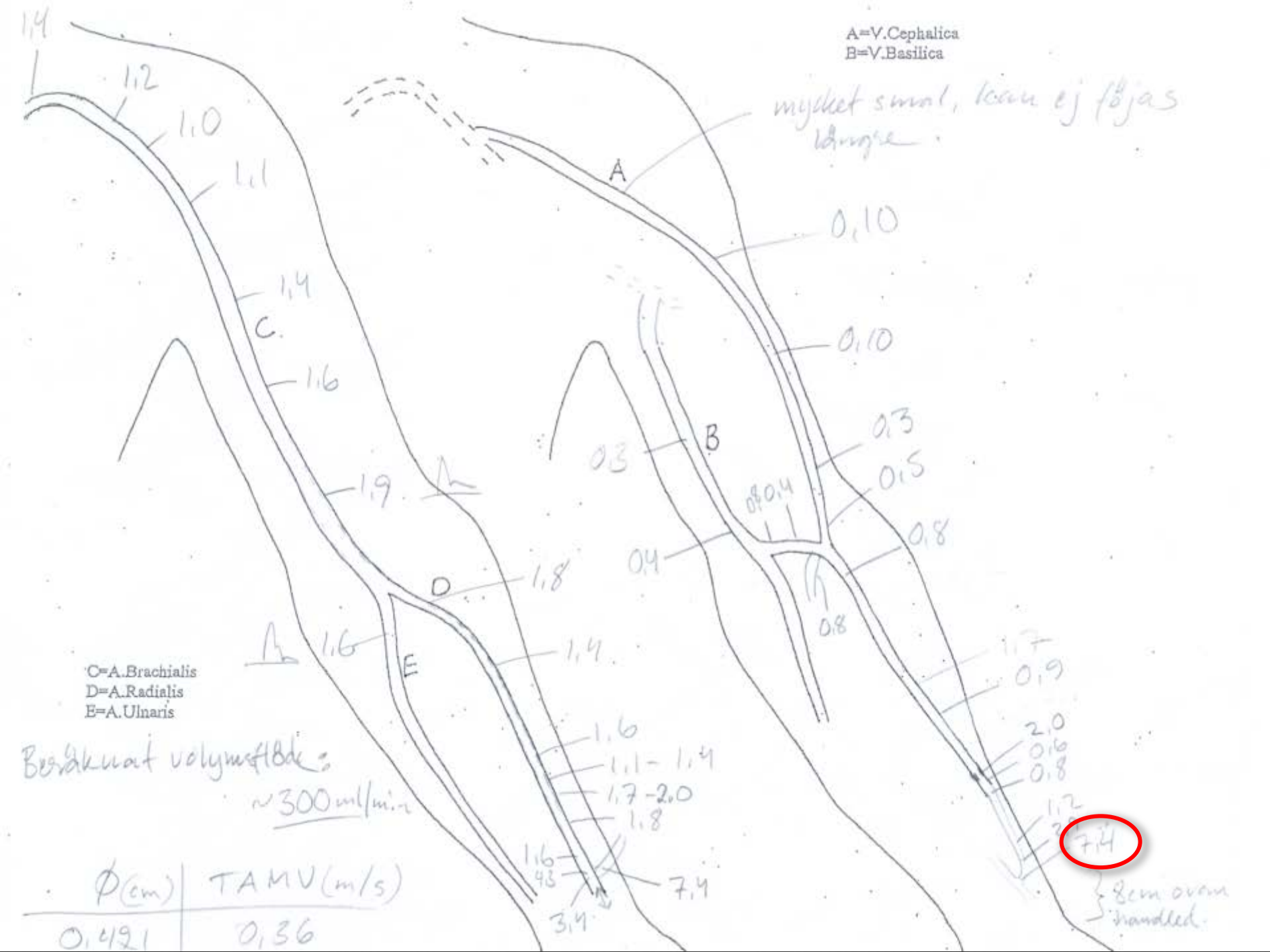

Stas
A
B
C
D
E
4,8
1,2
1,3
1,1
1,1
1,1
1,1
1,3
1,3
3,4
1,0
6,0
6,2
4,6
3,9
3,6
2,6
3,4
2,3
2,4
9,9
3,0
1,2
2,0
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris

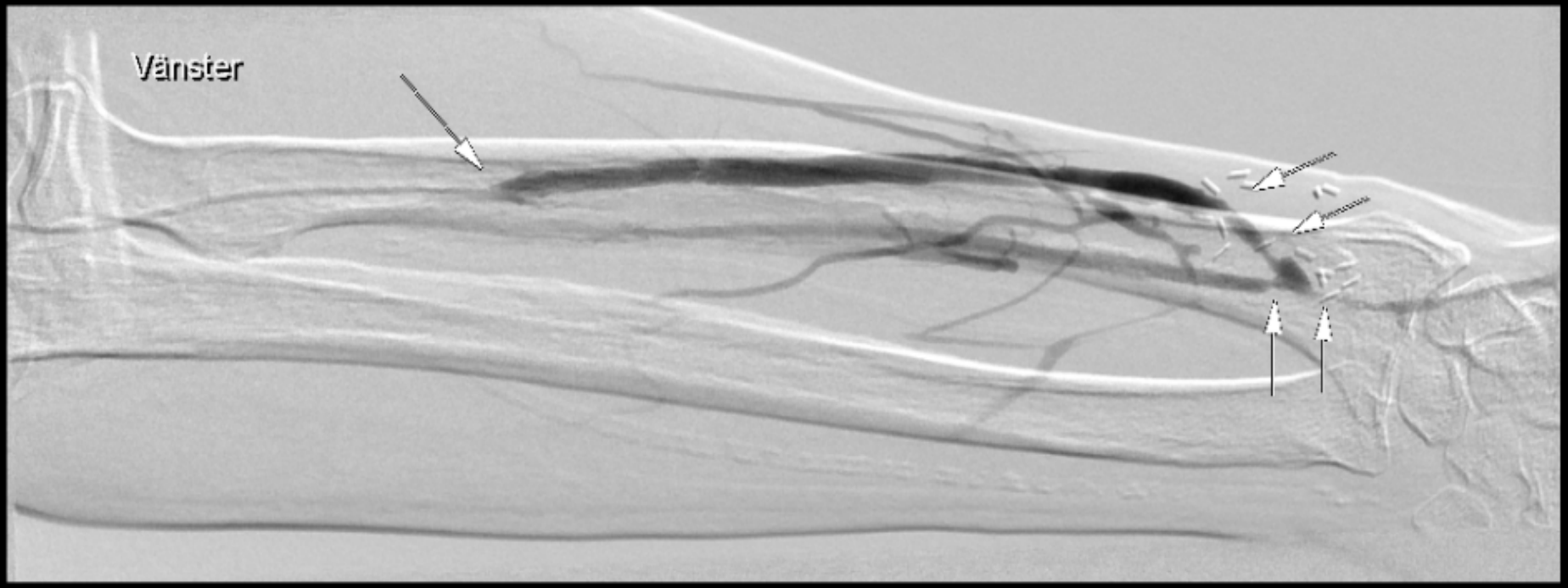
Radiocefal AVF

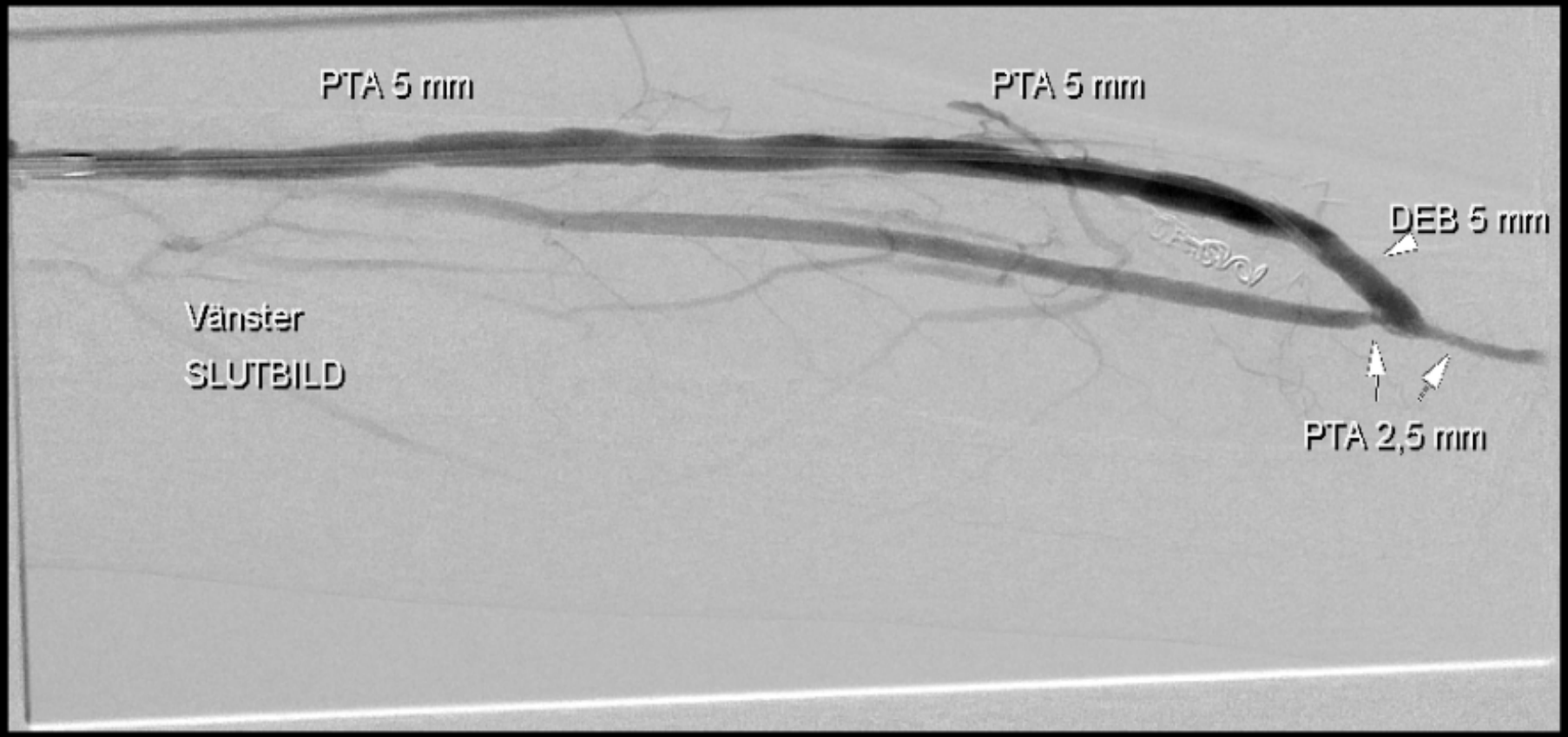


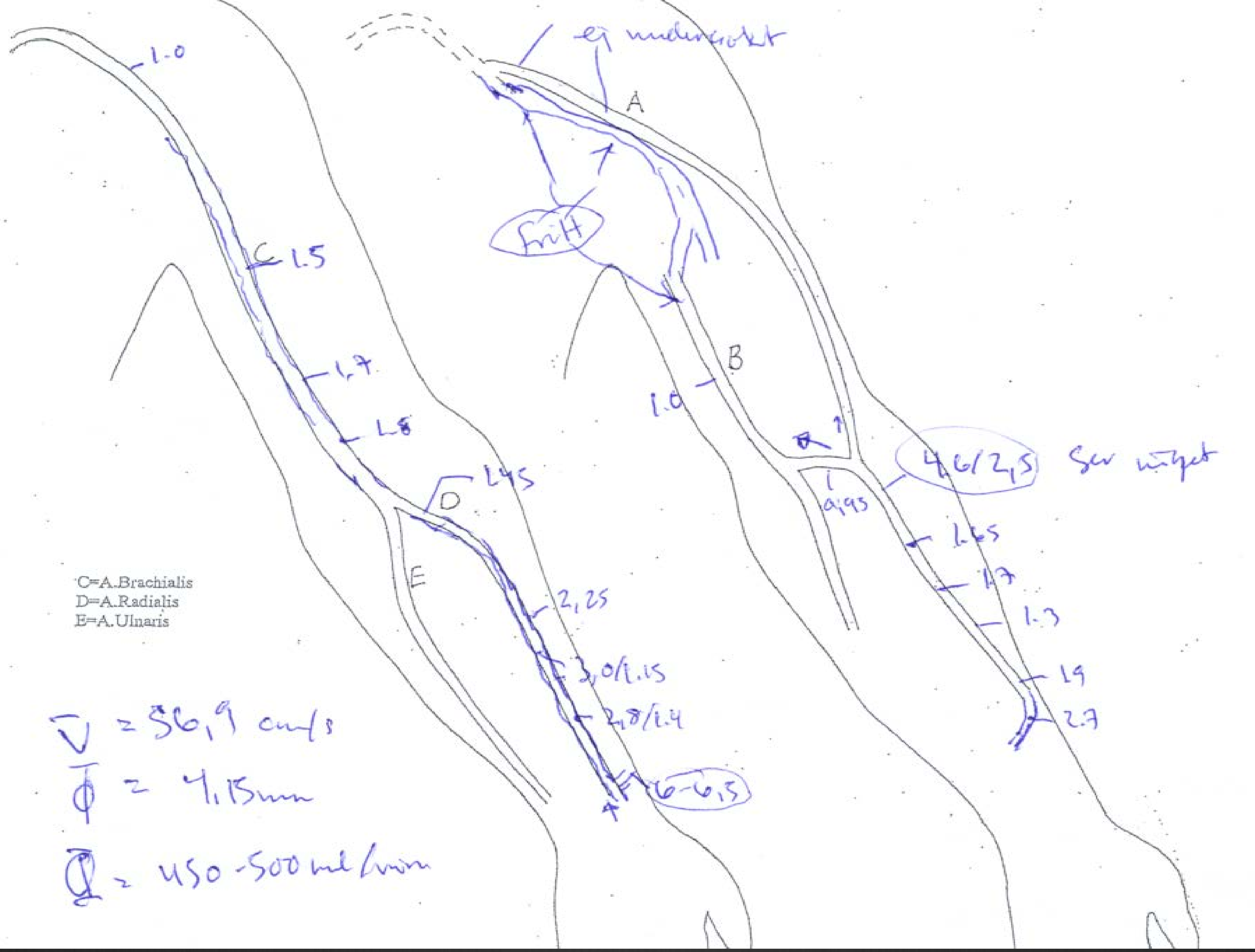

Vinklar: -0,1, 0
C: 2047,0, W: 4095,0
Arm 2 F/s
Thorax
VÄNSTER
L
Image 8 of 13
2019-01-18, 11:21:49
F
18010731 Mälarsjukhuset Rad Klin
1


+PTA 5mm

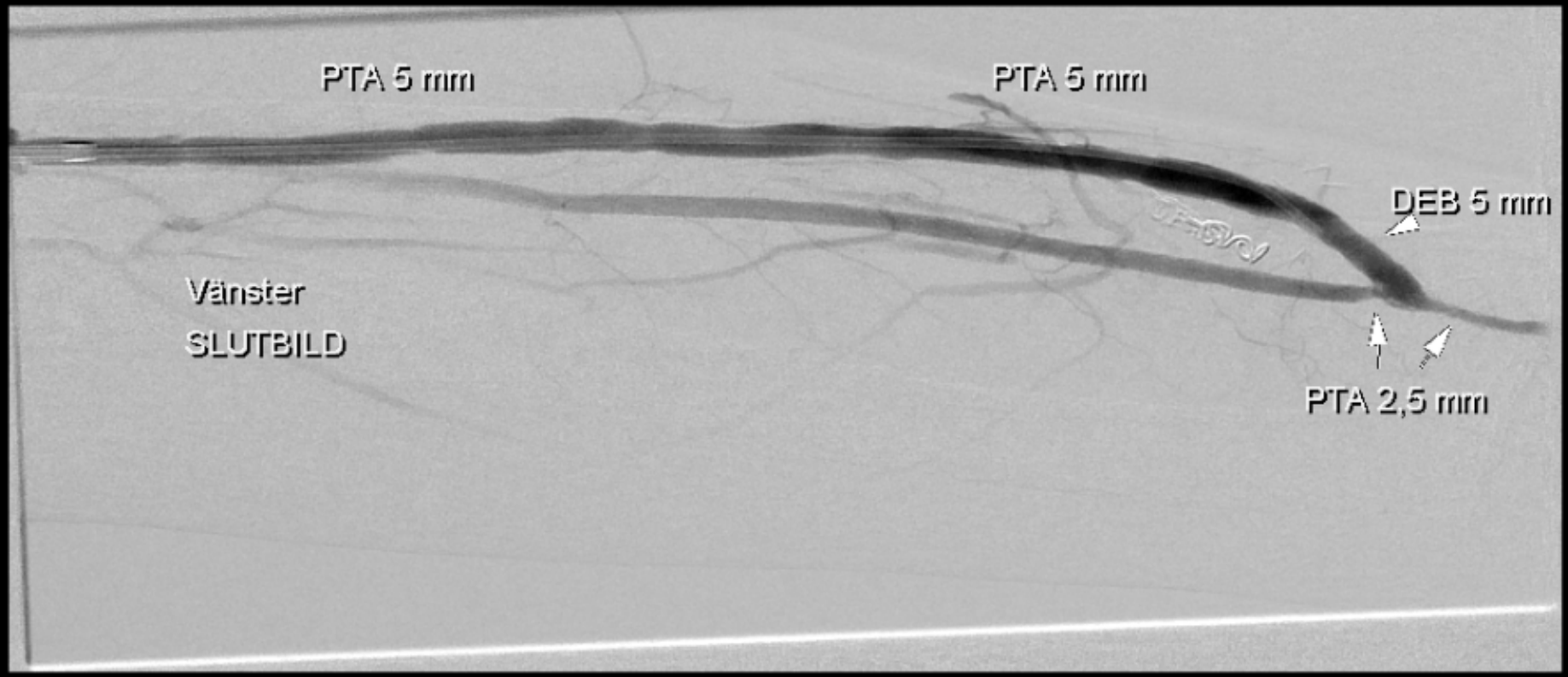

A=V.Cephalica
B=mycket smal, kan ej följas längre.
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris
Beräknat volymflöde:
~300 ml/min
Ø(cm) | TAMV(m/s)
0,4/2,1 | 0,36
8cm ovan handled.

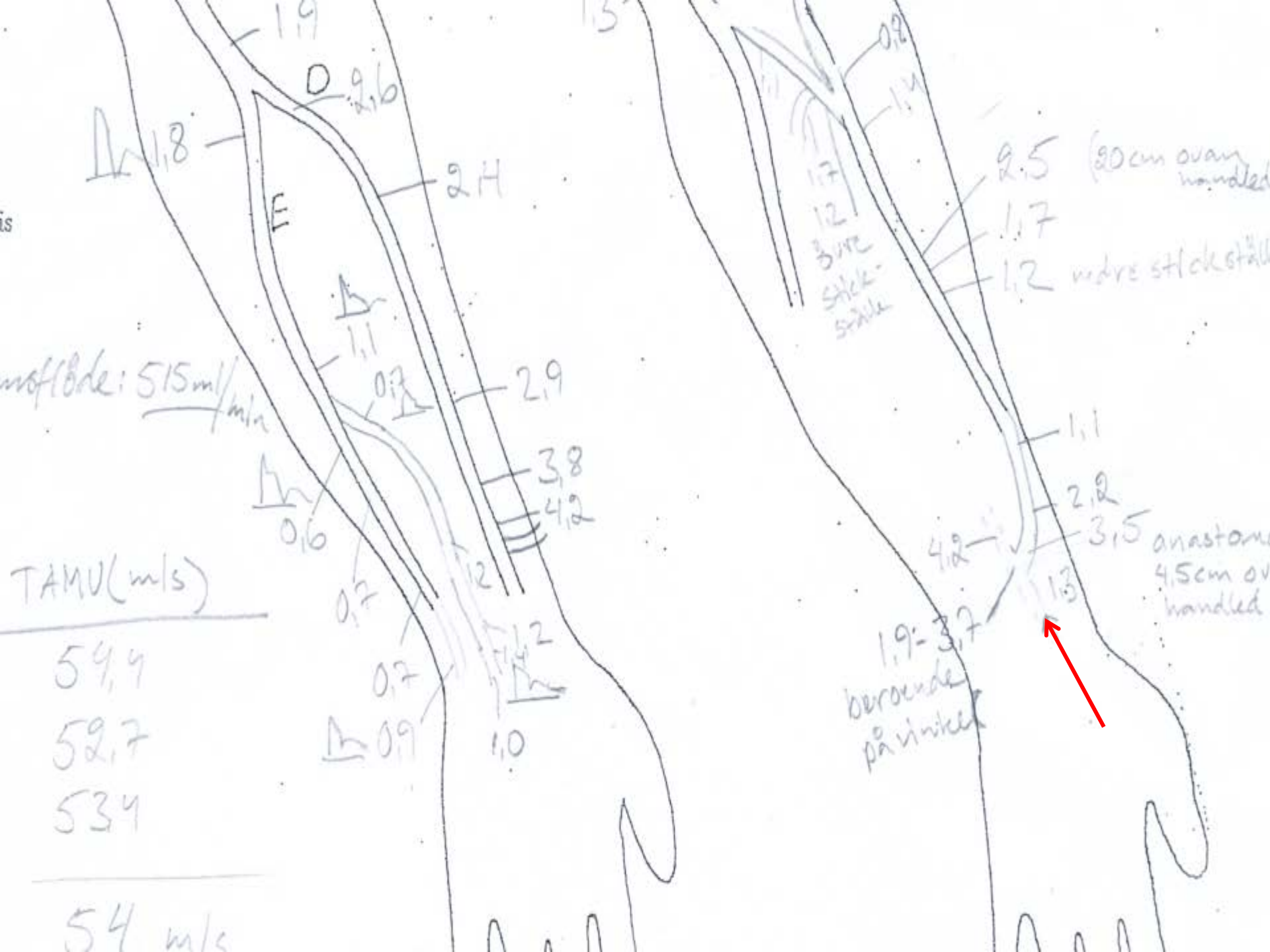

Vänster


PTA 5 mm
PTA 5 mm
DEB 5 mm
Vänster
SLUTBILD
PTA 2,5 mm



A
B
C
D
E
1.0
1.5
1,7
1.8
2,25
3,0/1.15
2,8/1.4
6-6,5
fritt
1.0
0,95
4,6/2,5
1.65
1.7
1.3
1.9
2.7
C=A.Brachialis
D=A.Radialis
E=A.Ulnaris
V = 56,9 cm/s
Φ = 4,15mm
Q = 450-500 ml/min


PTA 5 mm
PTA 5 mm
DEB 5 mm
Vänster
SLUTBILD
PTA 2,5 mm


1,9
D
2,6
1,8
2,4
E
1,1
0,7
2,9
3,8
4,2
0,6
0,7
1,2
0,7
1,4
1,2
0,9
1,0
1,7
1,2
Bäre stick-ställe
2,5
(20cm ovan handled
1,7
1,2
nedre stickställe
1,1
2,2
4,2
3,5
anastomos
4,5cm ov
handled
1,9-3,7
beroende på vinkel
TAMV(m/s)
54,4
52,7
53,4
54 m/s

Symptoms
Clinical examination baseline and after compression of fistula
Risk factors

STAGE	SYMPTOMS	MANAGAMENT
STAGE 1	Retrograde diastolic flow without any symptoms	Observation
STAGE 2	Pain during exercise and/or during dialysis	Surgical intervention if symptoms are severe
STAGE 3	Pain at rest	Surgical intervention
STAGE 4	Tissue loss: Ulceration/necrosis/ gangrene	Surgical intervention

Stage 1

Conservative

Radial

Confirm ulna
and palmar

DRAL

Angioembolisation

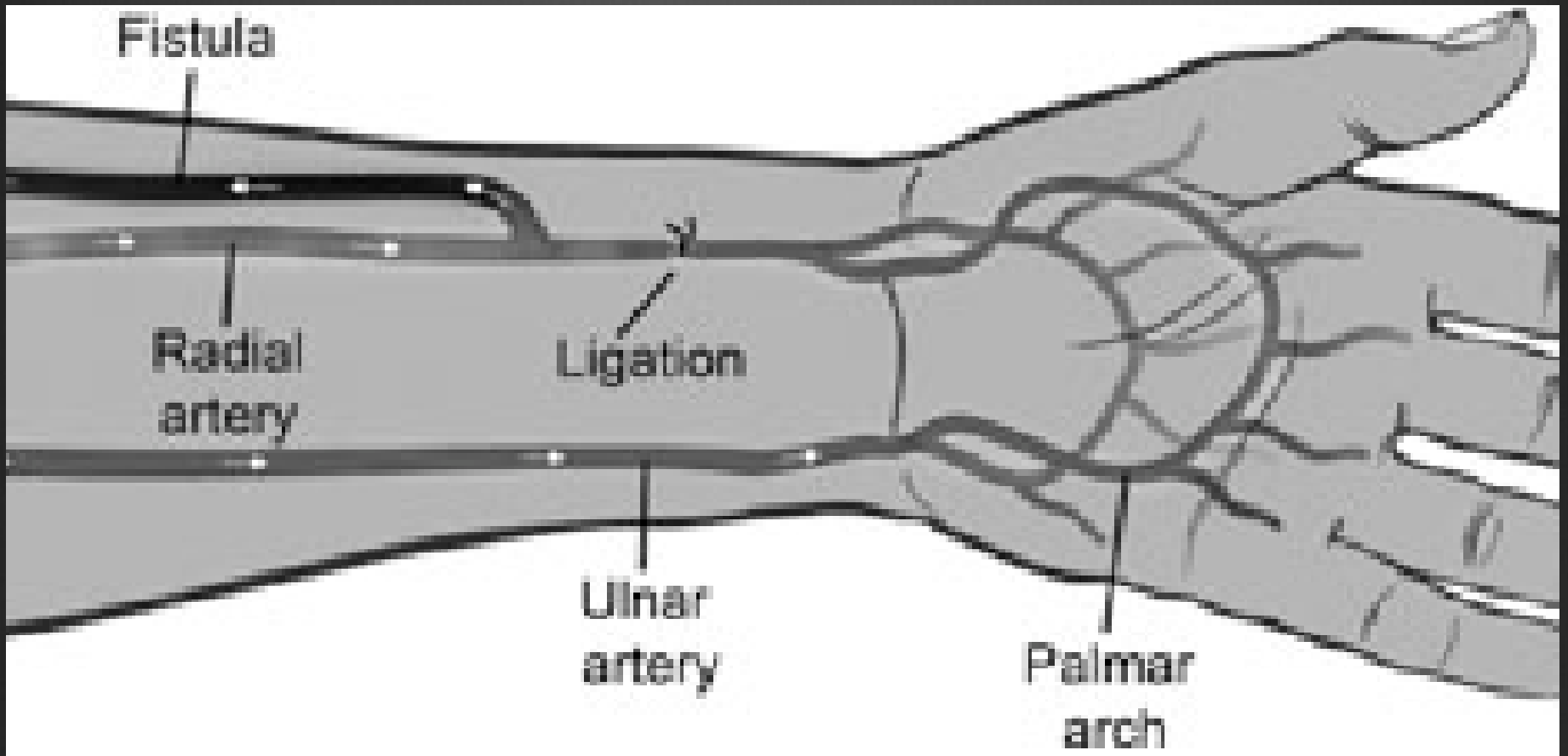
DRIL

RUDI

Modified DRIL

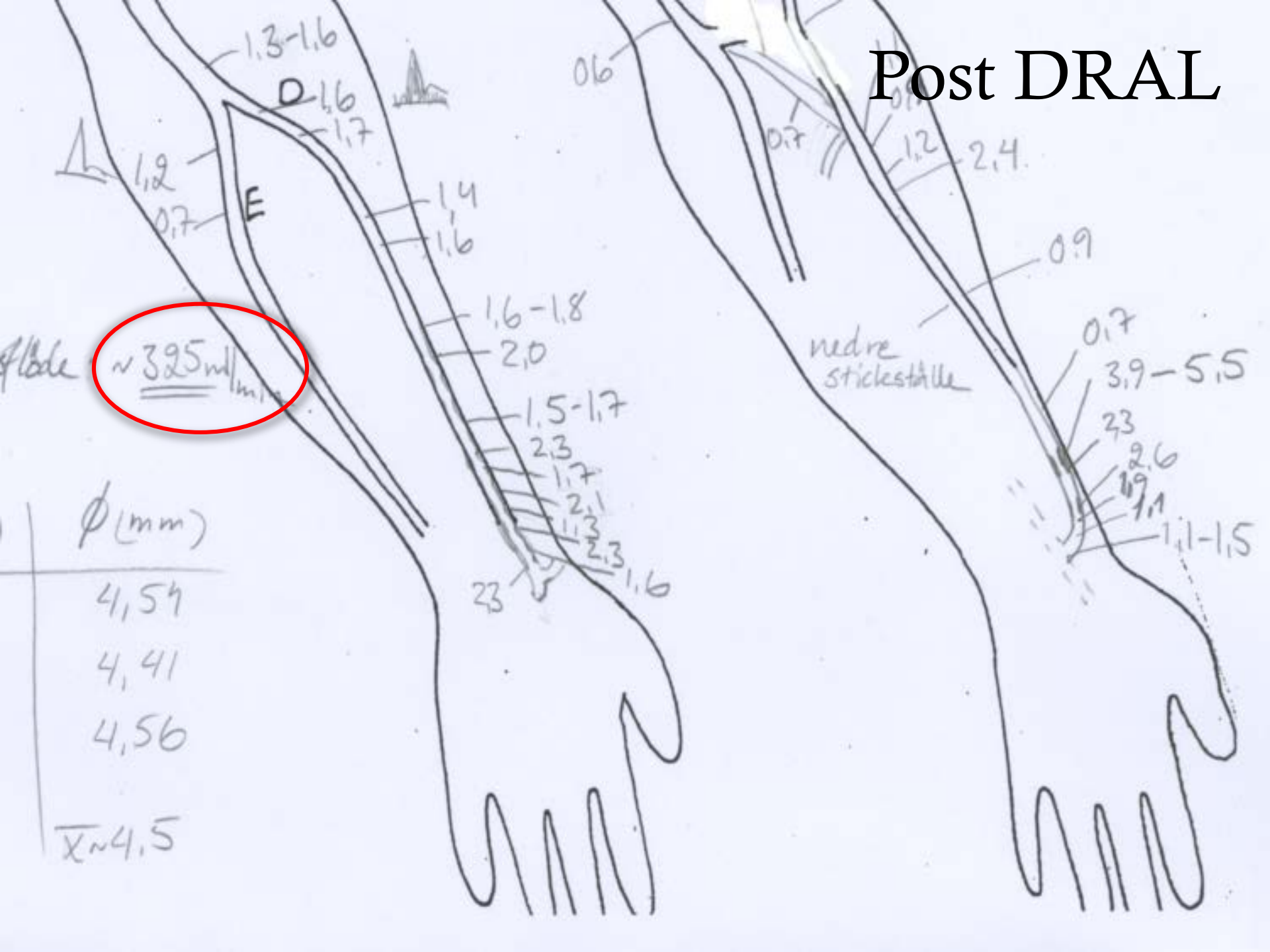
Banding

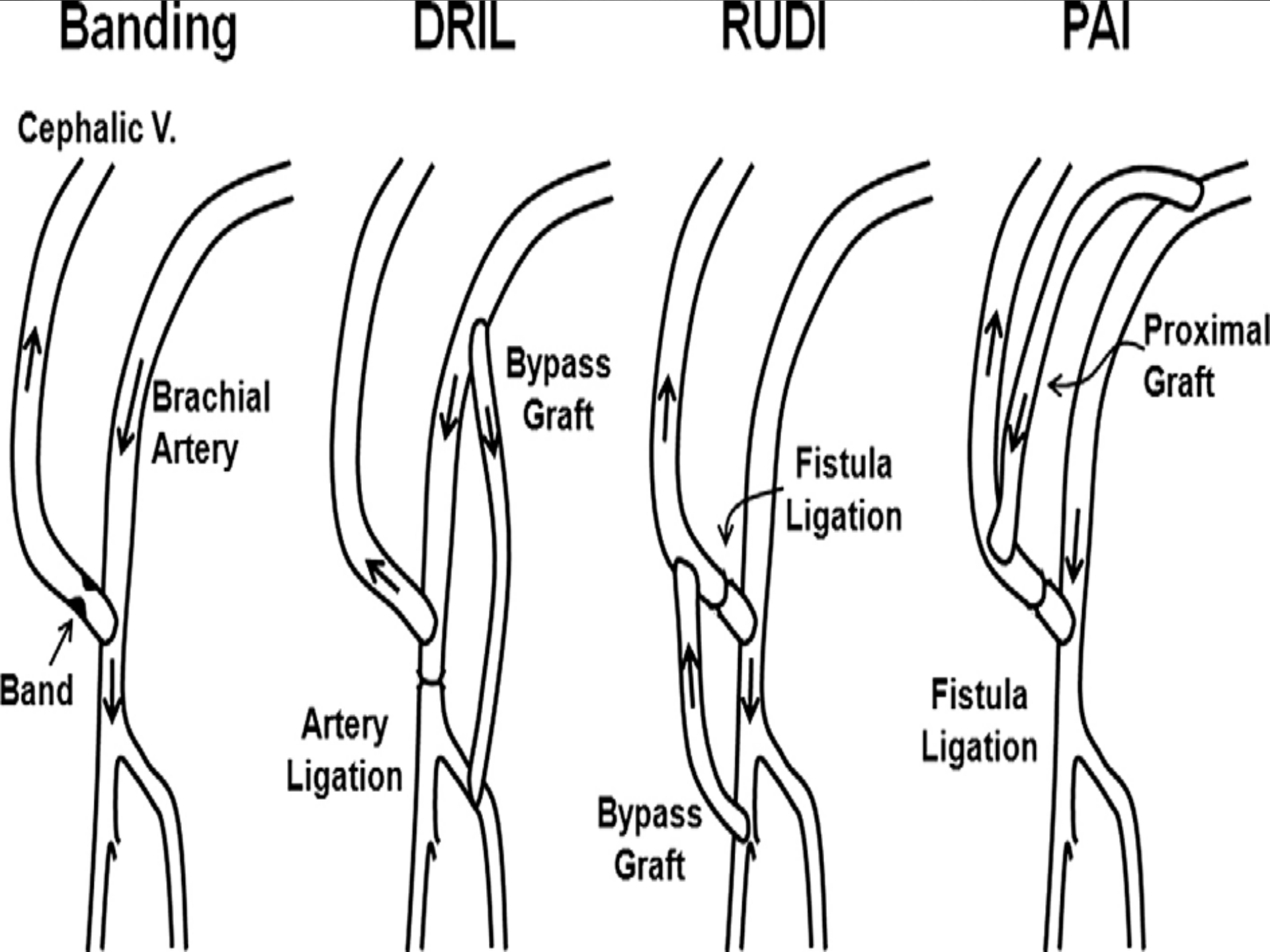
DRAL



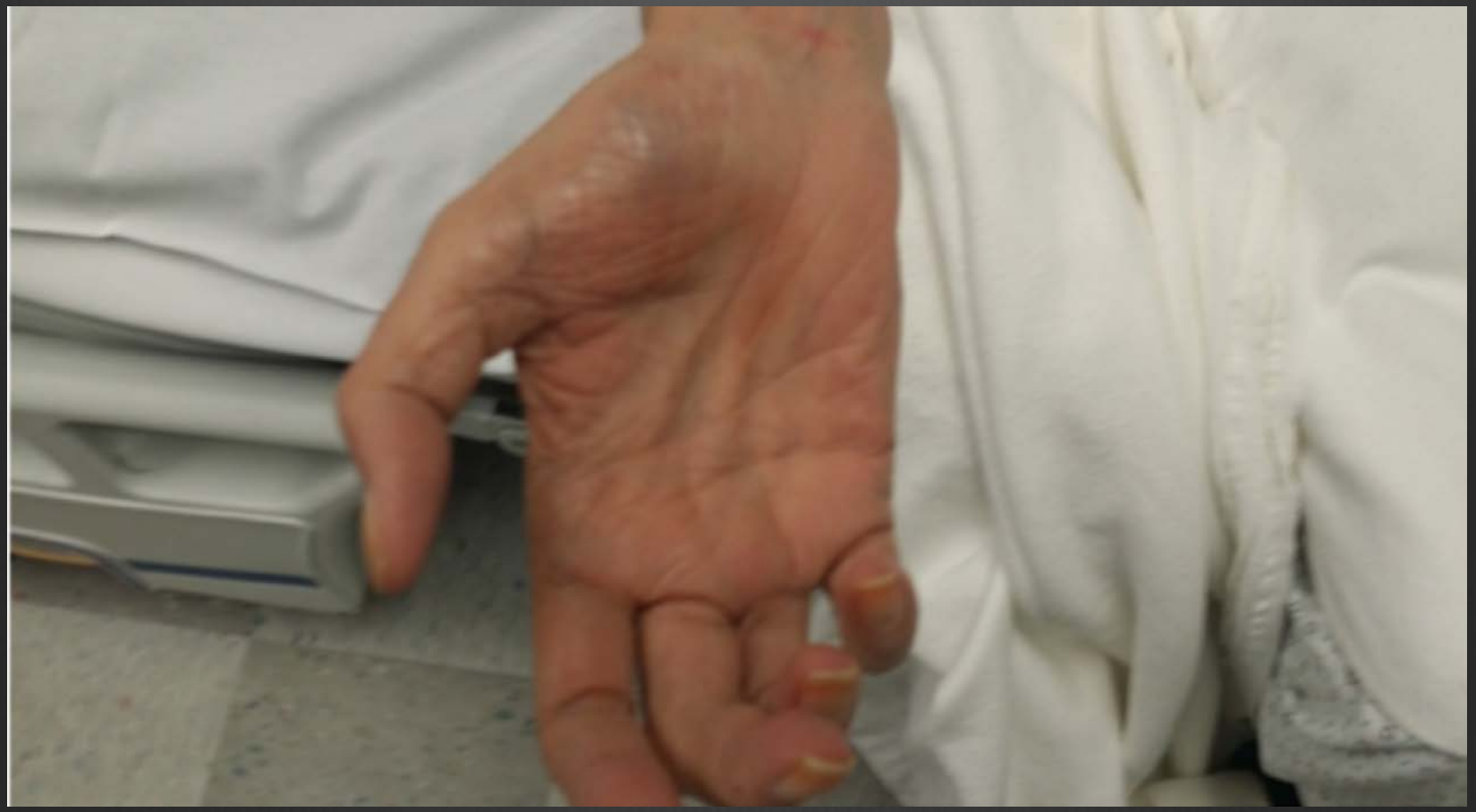
Distal radial artery ligation procedure. inset re

Post DRAL


1,3-1,6
1,6
1,7
1,2
0,7
E
1,4
1,6
1,6-1,8
2,0
1,5-1,7
2,3
1,7
2,1
1,3
2,3
1,6
23
06
0,7
1,2
2,4
0,9
nedre
stickeställe
0,7
3,9-5,5
23
2,6
1,1
1,1-1,5
~325 ml/min
ϕ (mm)
4,54
4,41
4,56
X̄ ~4,5


Banding
DRIL
RUDI
PAI
Cephalic V.
Brachial Artery
Band
Bypass Graft
Artery Ligation
Fistula Ligation
Bypass Graft
Proximal Graft
Fistula Ligation

Ischemisk Monomelisk Neuropati



Frågor???