
Carotid stenting step by step and tips and tricks

Klaus Mathias
Hamburg / Germany
klausmathias@t-online.de

DISCLOSURE STATEMENT OF FINANCIAL INTEREST

Within the past 12 months, I have had a financial interest
with the organizations listed below.

AFFILIATION/FINANCIAL RELATIONSHIP	COMPANY
• Consulting Fees/Honoraria	• Gore • Terumo

Vascular Anatomy

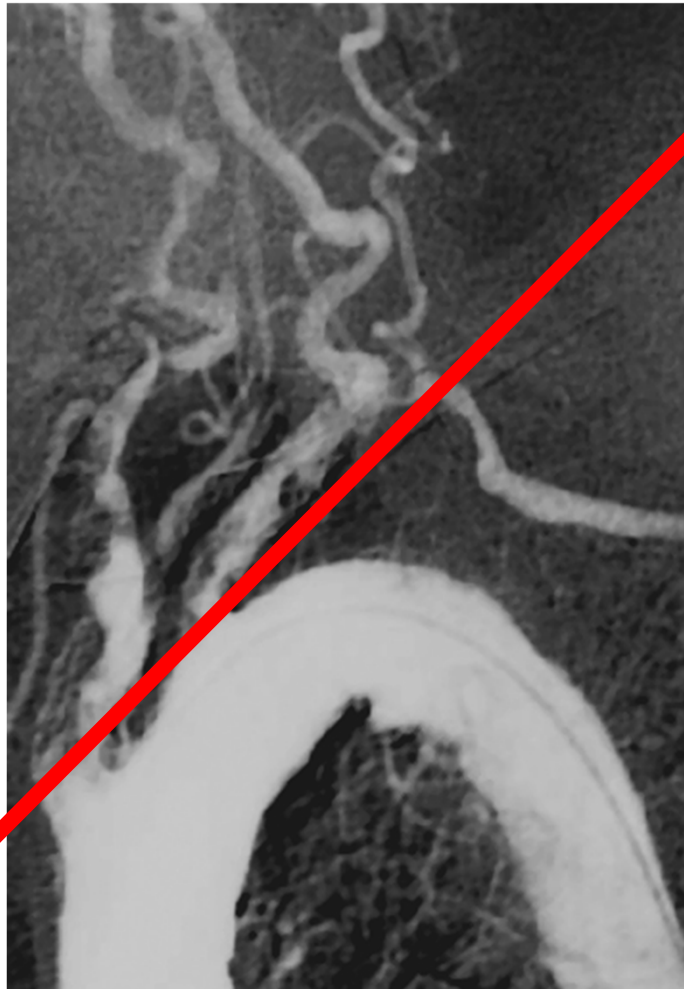
- nearly every patient can be treated by CAS, but ...
- know the arterial anomalies
- respect severe elongations

You can treat most difficult anatomies

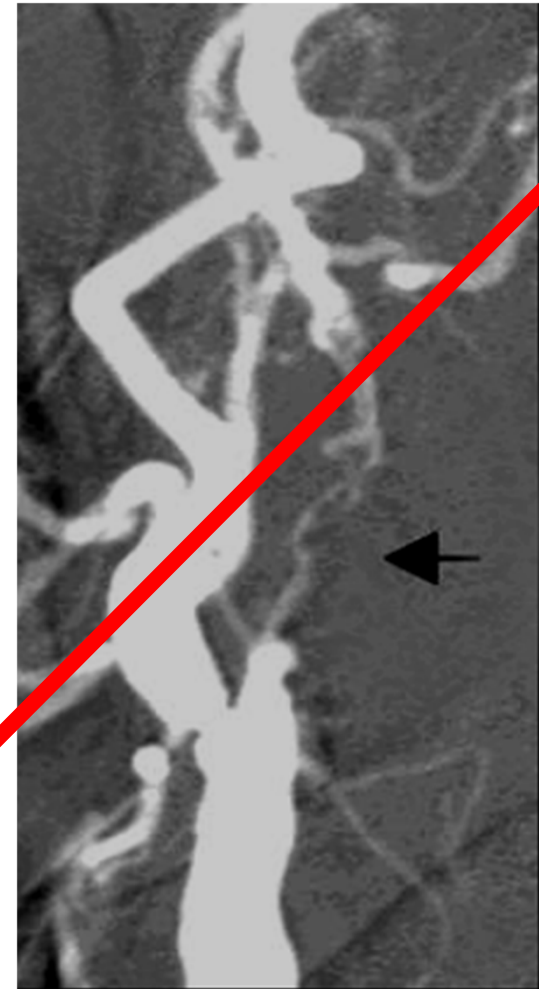


CAS - Forbidden

G.H. m-77
2x TIA



M.I. f-81
minor
stroke



Plaque Morphology

ideal lesions

- FMD, Takayasu's disease
- early recurrent stenosis after CEA
- short membrane-like lesion

critical lesions

- extended plaques
- floating thrombus
- circular heavily calcified plaques

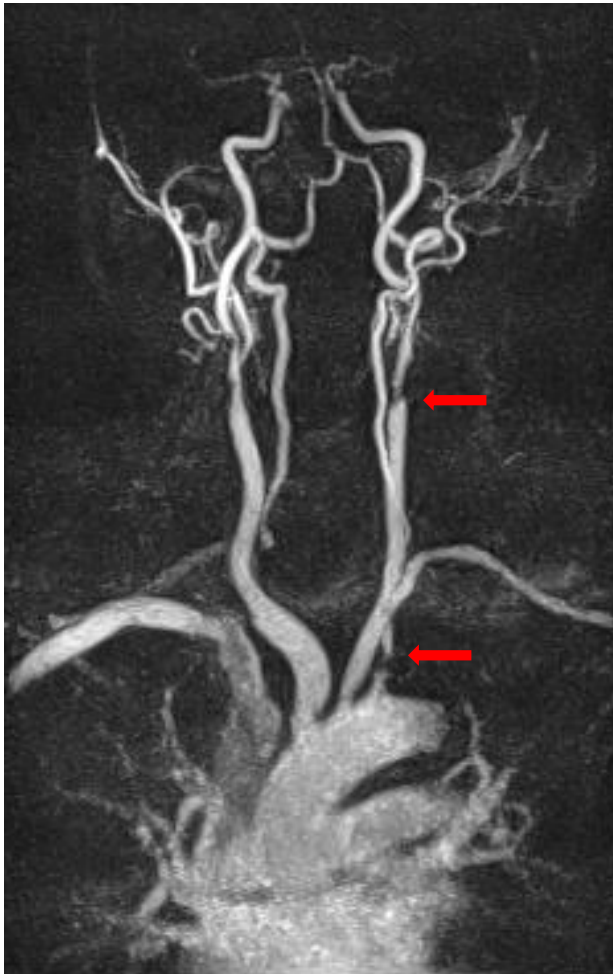
You can treat most calcified lesions

. . . but when US can
not penetrate the
arterial wall you will
need additional
information:

We use routinely
CTA !



MR-Imaging



Technique

be familiar with all necessary devices
select stent & EPD to the anatomy and
plaque characteristics
use the best suitable protection device
pre-dilatation when necessary
no over-dilatation

Training & Experience

Don't forget:

with your first 100 patients you are a beginner*

experts start with > 500 CAS

I have done more than 6,000 CAS - still learning

→ EVA3-S, SPACE, ICSS do not fulfil the criterion of good medical practice

Leave CAS alone when you have less than 50 cases/year, 1/week.

Technical Success

CAS is successfully performed
in 97 - 100% of intended treatments

Most frequent reason of failure?
ACCESS!

CAS Technique

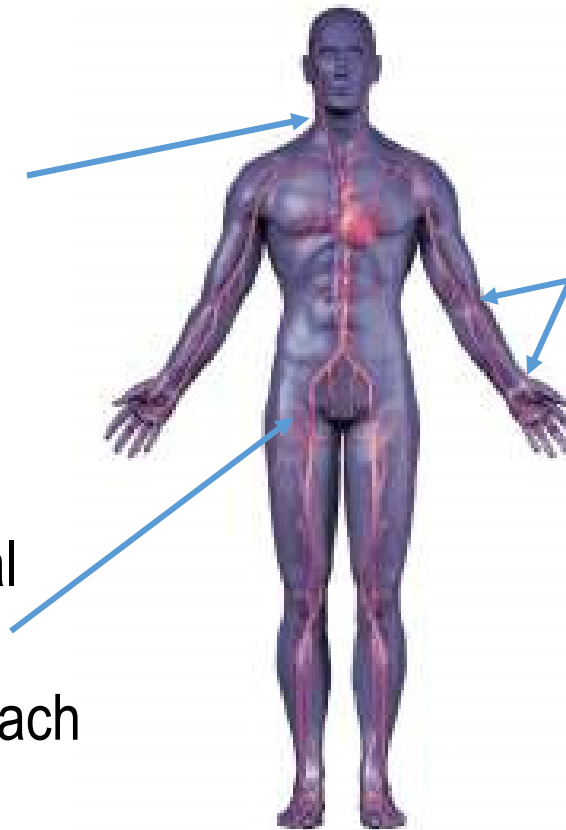
Steps:

- Vascular access
- Angiographic evaluation
- Common carotid engagement
- Pre-dilatation
- Stent deployment
- Post-dilatation
- EPD management

Vascular Access

Direct percutaneous
puncture of CCA:
Only in rare cases

Right or Left femoral
arteries:
Recommended approach



Brachial / Radial puncture:
Occlusions, elongations,
tortuosity of iliac arteries
Bovine aortic arch

Common Carotid Engagement

Three Techniques

anchoring
technique

Aortic Arch Type I
Diagnostic catheter
Terumo wire
Stiff Amplatz wire
Sheath

telescoping
technique

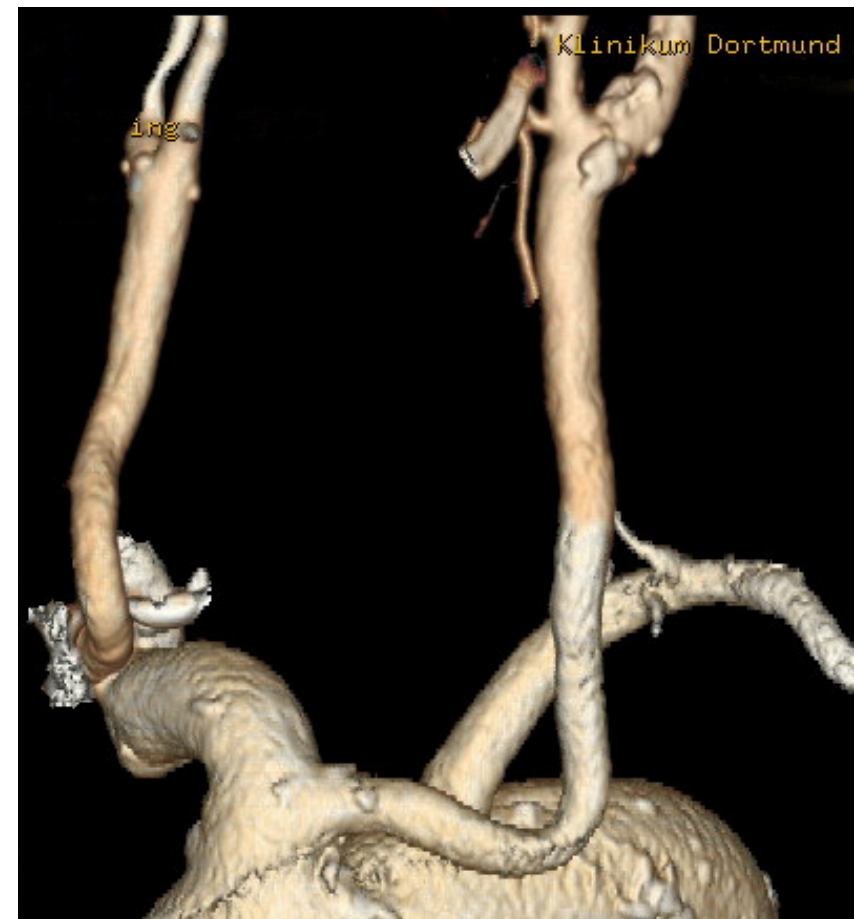
Aortic Arch Type II
Diagnostic catheter
Terumo wire
Sheath

guiding catheter
engagement

Aortic Arch Type III
Diagnostic catheter VTK
Terumo wire stiff
Sheath

Aortic Arch

Don't forget that you often
Look at the angio in only
one projection!



Type III Aortic Arch

Origin of left subclavian artery is located deeper by 1 cm than highest point of aortic arch.



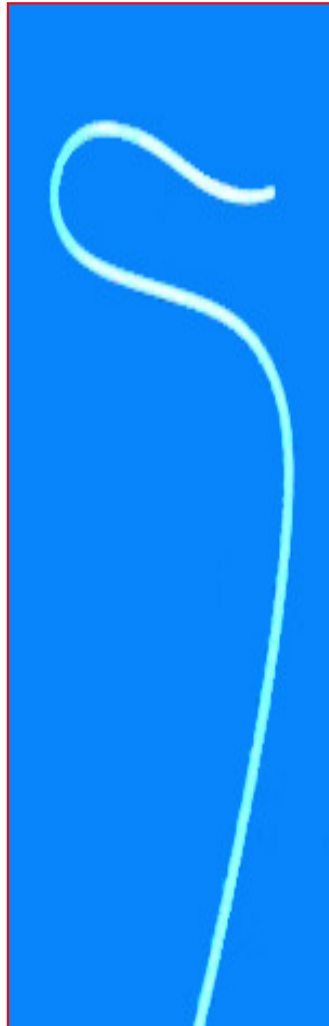
Type III Aortic Arch

- push and pull
- multiple wires
- guiding catheter

Diagnostic Catheters

- Vertebral
 - Vitek
 - Sidewinder
-
- torque control required
 - cave: aortic arch is
a possible source of emboli

My preferred catheter ...



VITEK catheter 125cm
... for type I - III aortic
arches

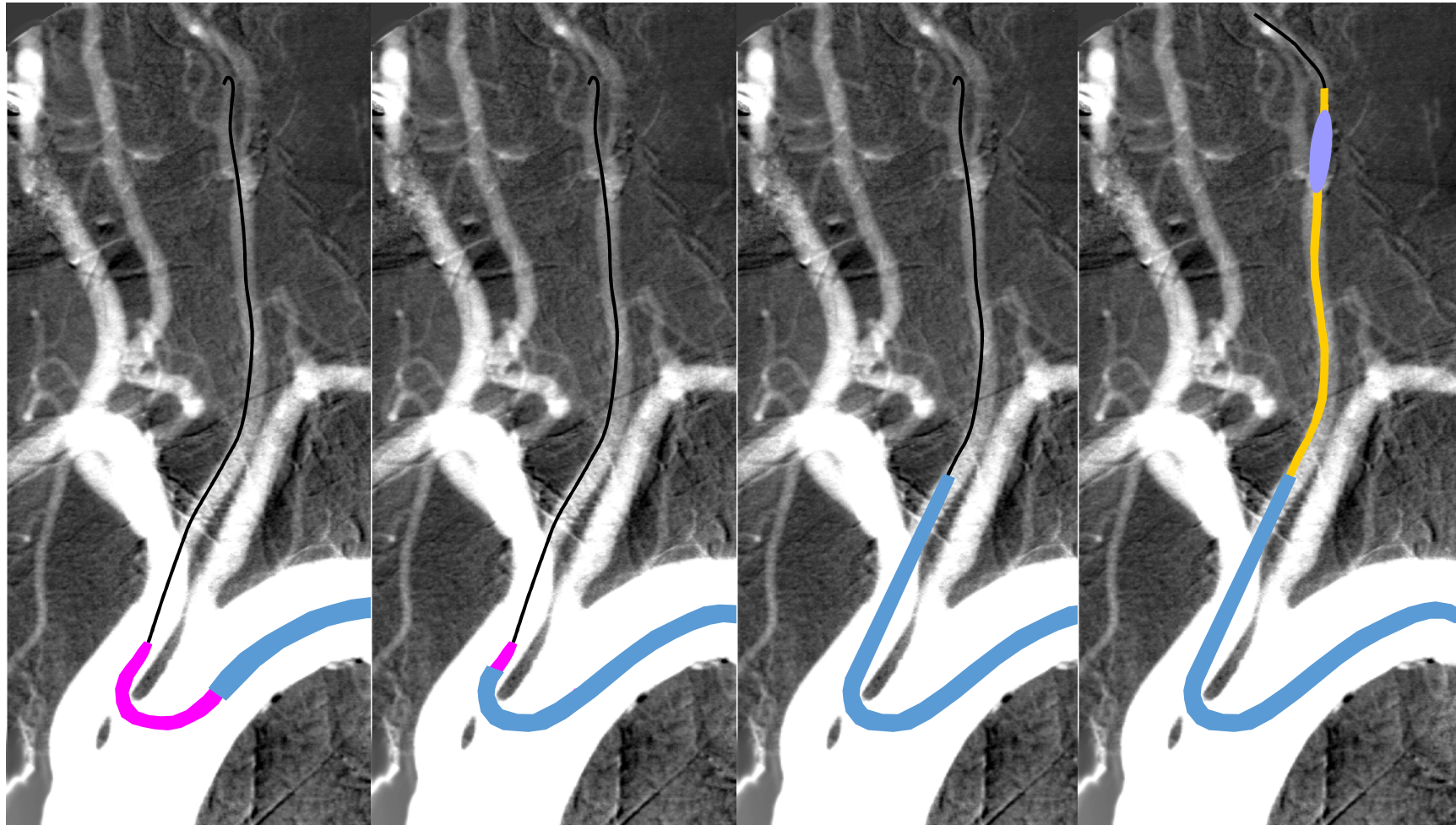
Aortic Arch

Telescoping technique

- Vitek catheter 125 cm
- Terumo stiff J 0.035"
- Cook shuttle sheath 90 cm
- catheter in sheath
- probing of cca
- advancing of sheath over Vitek & guide wire



Aortic Arch



Aortic Arch

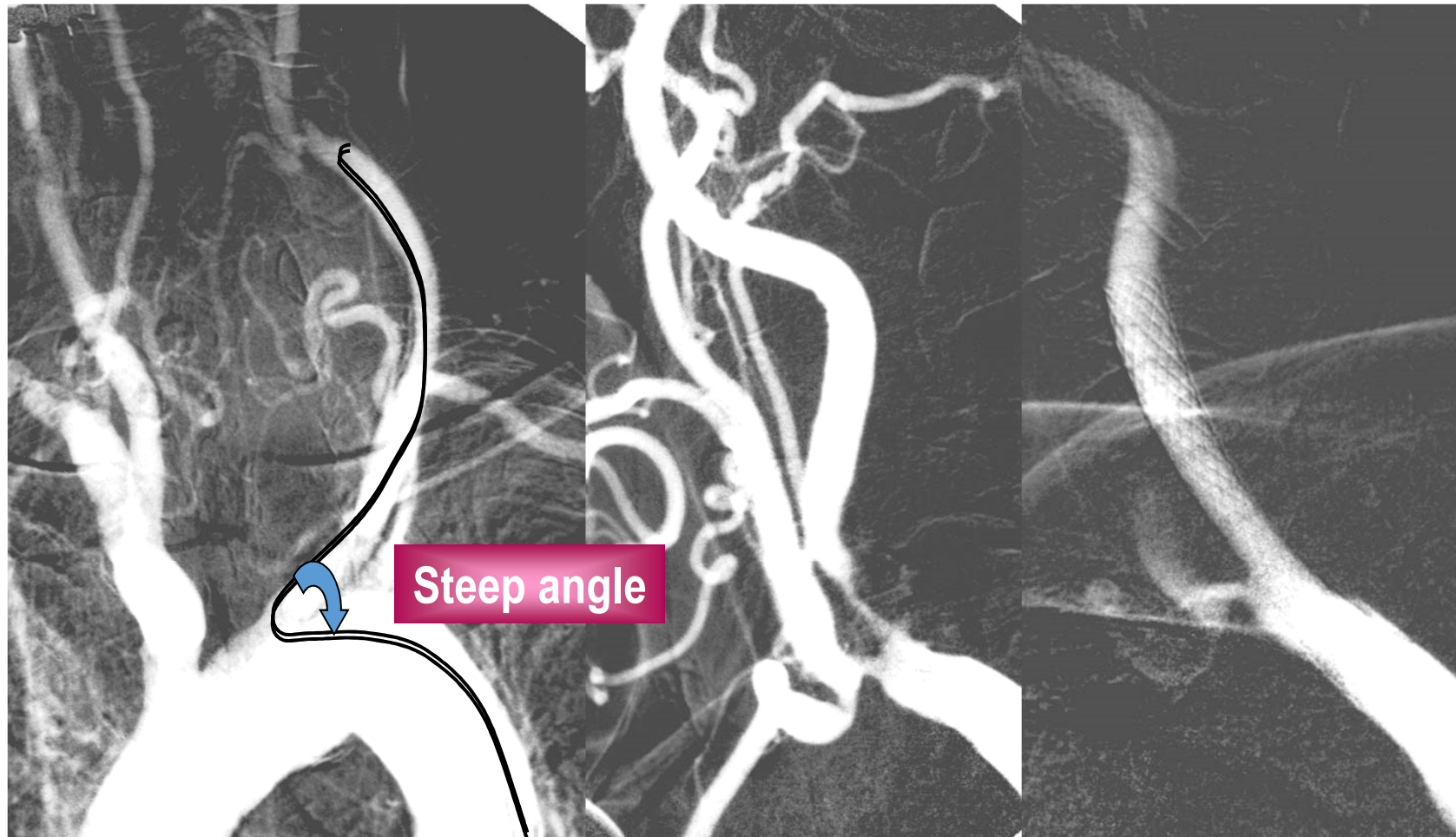


Guide Wires

Use of several wires:

- **Probe deep seated aortic arch**
Place several 0.014" wires in cca to advance sheath
- **Stabilize position of sheath**
Buddy wire 0.014 prevents slipping back of sheath
- **Straighten tortuous arteries**
Two 0.014" wires together with the filter wire will lessen the radius of curves

Aortic Arch II



ICA Tortuosity



Aortic Arch Type II & III

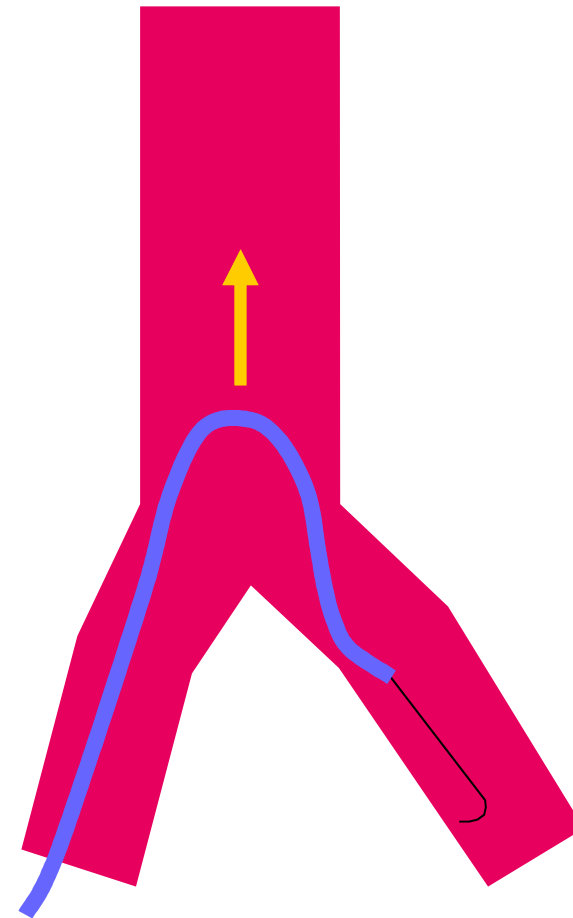
Guiding catheter instead of sheath



Type III Aortic Arch

Sidewinder guiding
catheter

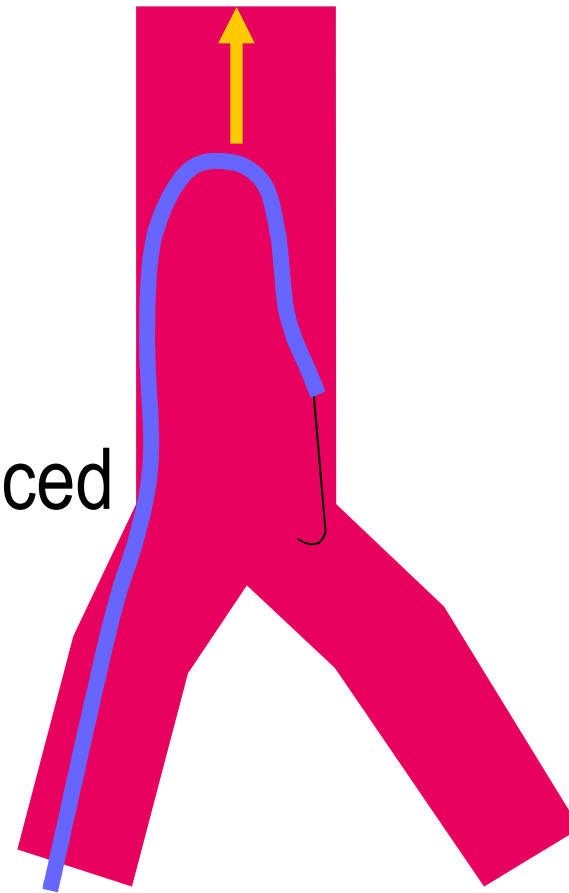
cross-over in iliac artery
push



Type III Aortic Arch

Sidewinder guiding
catheter

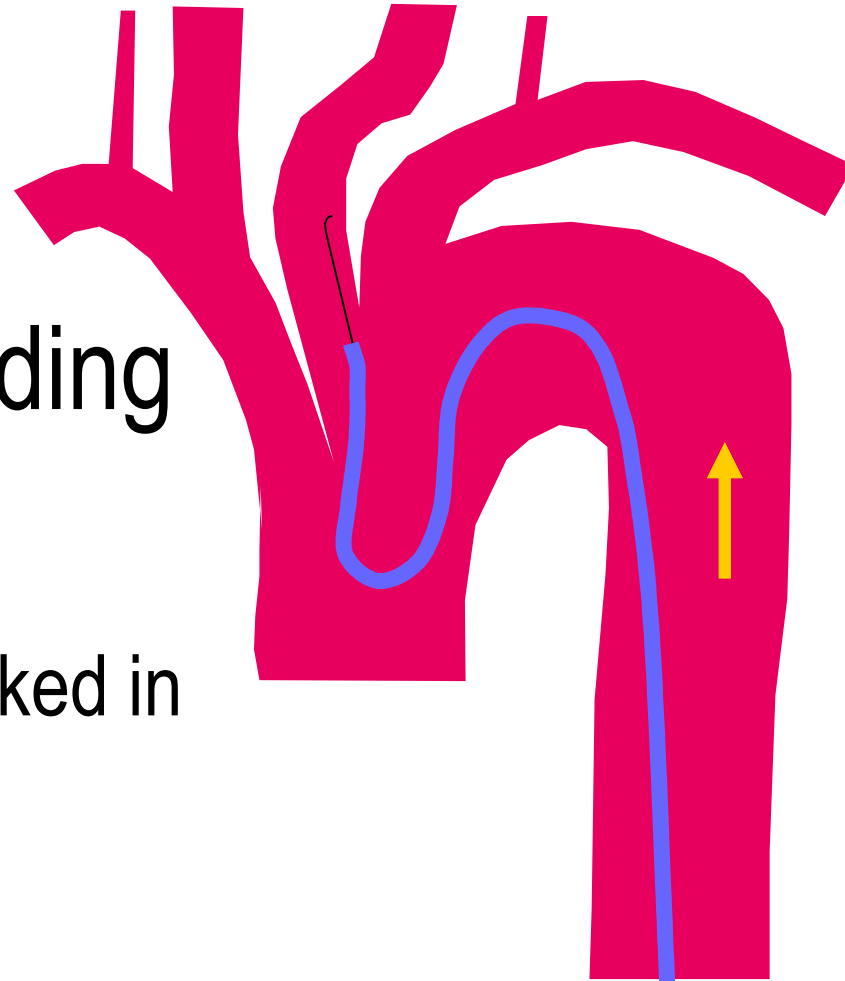
reversed catheter is advanced
to the aortic arch
push



Type III Aortic Arch

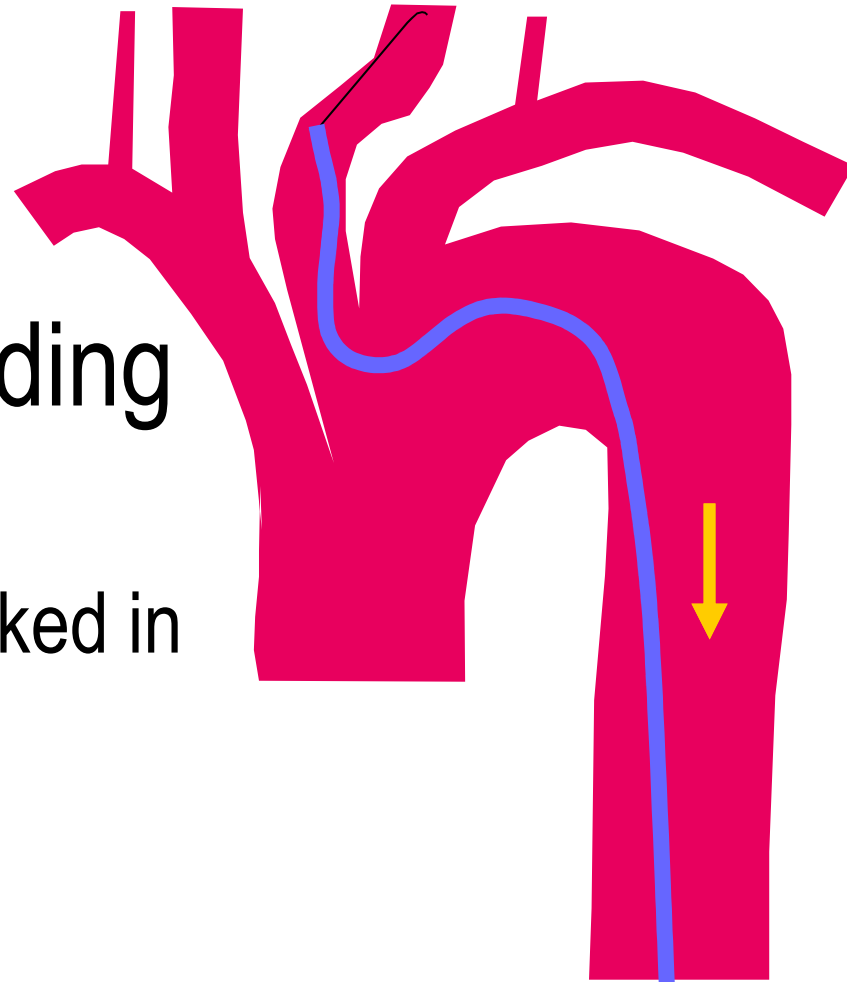
Sidewinder guiding
catheter

guiding catheter hooked in
left CCA
push



Type III Aortic Arch

Sidewinder guiding
catheter
guiding catheter hooked in
left CCA
pull



Type III Aortic Arch

B. H. (m) 68y
-symptomatic ICA stenosis 85%



Type III Aortic Arch

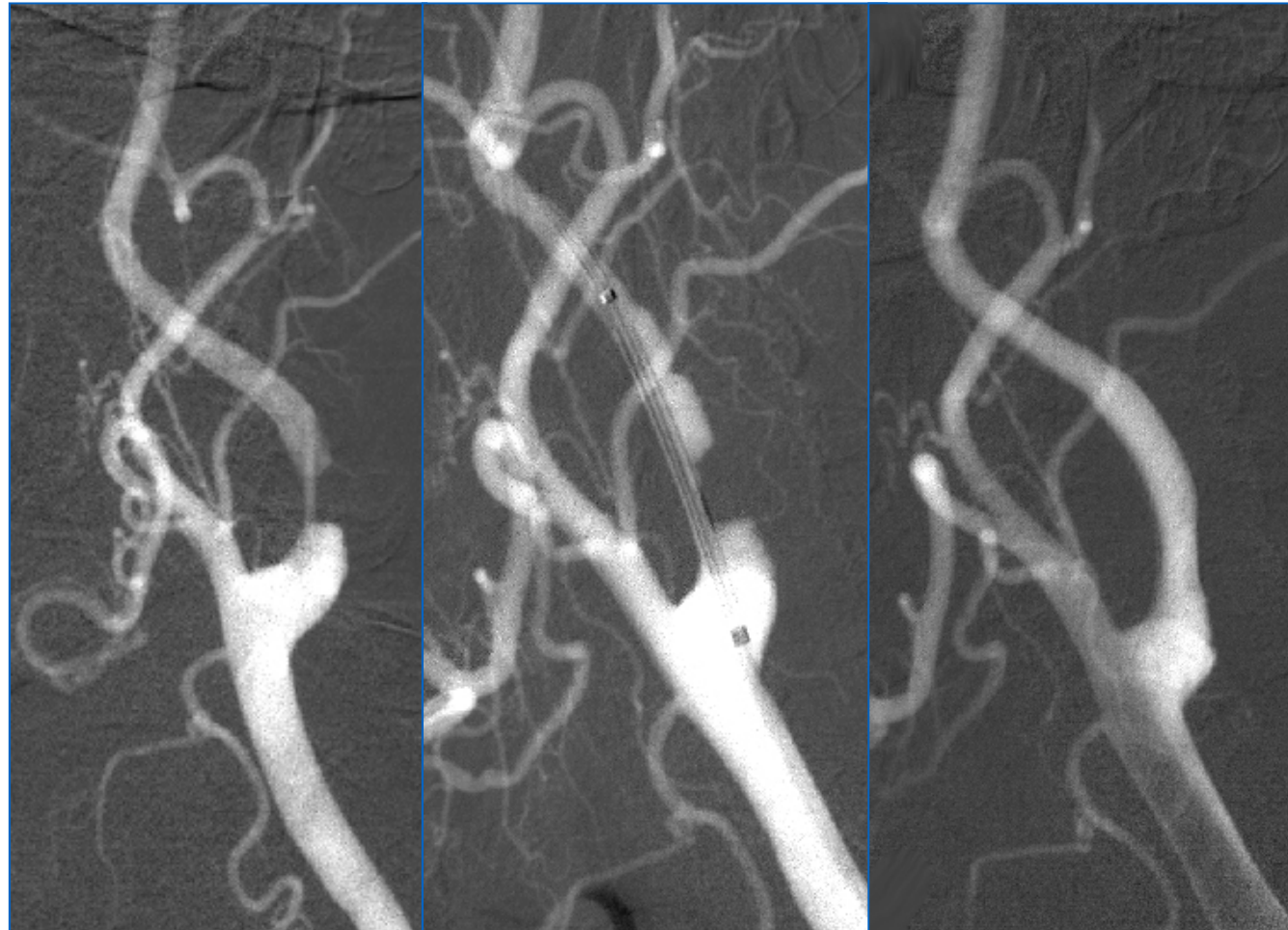
B. H. (m) 68y
-symptomatic ICA stenosis 85%

Cordis guiding catheter 8-F
sidewinder tip
contra-lateral iliac artery
serves to configure the tip



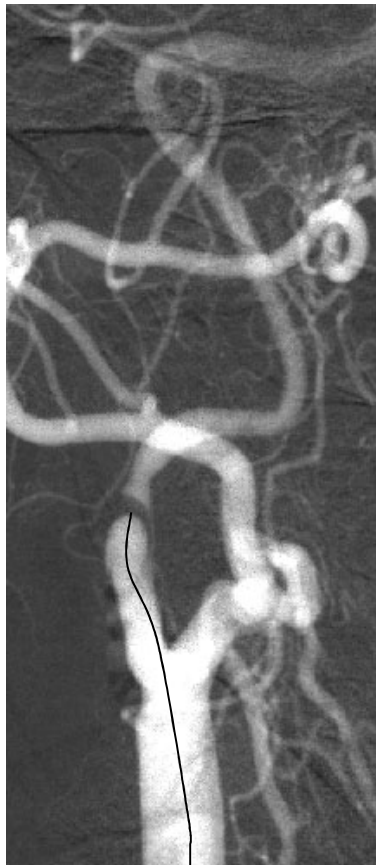
Type III Aortic Arch

B. H. m-68y



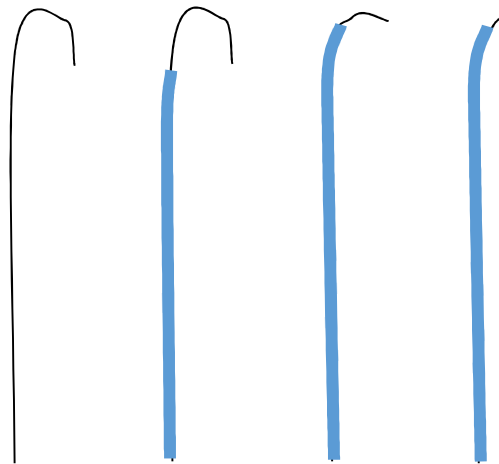
Crossing the lesion

Excentric and ulcerated lesions: beware of dissection



Shape the wire tip according to anatomy

Combine wire with micro-catheter



Stenting Strategies

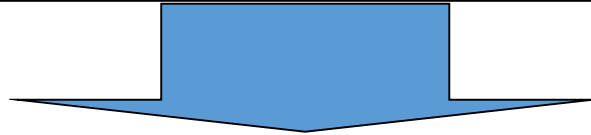
Key Points



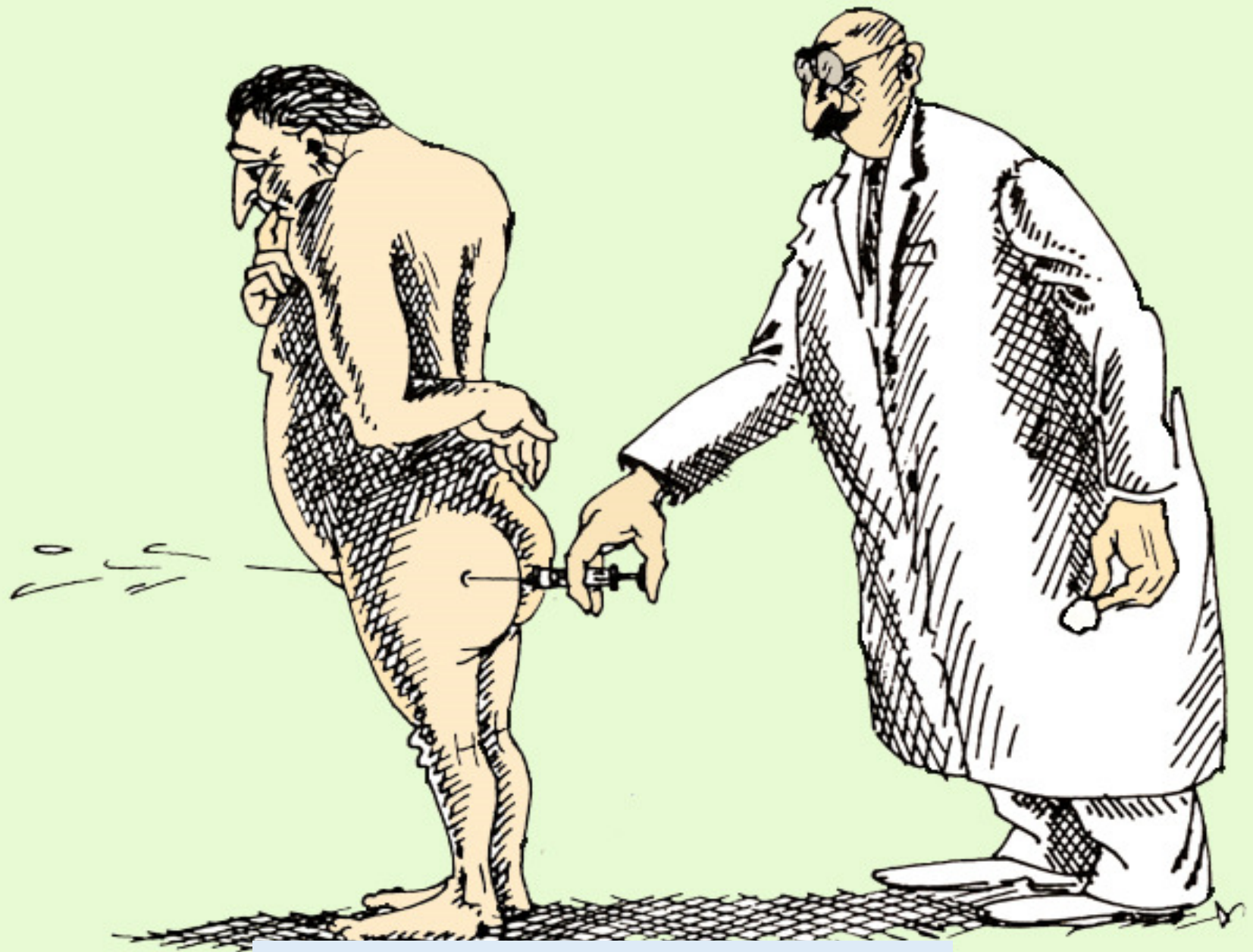
- Stent from “normal to normal” with the lesion in the middle
- Release at least 5mm of stent distally and wait for stent to expand fully and stabilize against vessel wall
- The distal edge of the stent can injure the artery wall if it lands in kinks and tortuosities
- Vessel kinks and tortuosities that are straightened out with the stent can become more exaggerated distally

Post-dilatation

Post-dilatation is always a critical step, because the greatest amount of emboli are released, and patient is at the greatest risk of stroke



- ❖ To minimize the embolic load we recommend:
 - Using balloons >5mm only in selected cases
 - Inflating to nominal, not high pressure
 - Accepting a 10-15% residual stenosis
- ❖ In presence of continued flow via the stent struts into an ulcer, do not attempt to obliterate communication by using larger balloons



Develop your skills

**Use intelligence,
not force!**