# The role of CAS in my personal carotid revascularisation strategy

**Arne Schwindt**

**Klinik für Gefäßchirurgie**

**St. Franziskushospital Münster**

# Conflicts of interest:

Honoraria/Consulting/Advisory board/ Proctorship agreement/unrestricted educational grant

- Avinger
- Biotronik
- Cordis
- Medtronic
- Phillips
- Terumo
- Symedrix
- Shockwave
- Vivasure

# What makes CAS attractive for physicians and patients?

- minimal invasive, can be done in local anesthesia, ambulatory settings might be possible
- short convalescence
- offers therapy options in high risk patients
  - post cervical radiation
  - post coronary DES
  - in patients with orthopedic anomalies (e.g. M. Bechterev)
  - Morbid Obesity

- no surgically related complications
  - no cranial nerve damage
  - short or no clamping time

# Patients condition ldirecting towards CAS

anatomical

- Re-stenosis after surgery
- Hostile neck
- Tandemstenosis
- Distal stenosis

clinical

unstable angina

MI within the last 3 month

cardiac ejection < 30%

ASA IV

Antiaggregation with brelique, prasugrel, clopidogrel

**patients wish**

**expectations of**

**refering physician**

# CAS contra-indications in SFH Münster 2010 vs 2022

| anatomical | clinical |
| --- | --- |
| -Type III Arch | -Crescendo TIA |
| -no access vessels | -Soft plaques with low echogenity on Duplex |
| -Arch Aneurysms, Arch disease | -Ostial CCA lesions |
| -circular calcification | - Patient unable to adhere to DAP or SAP+NOAK therapy |
| -Coiling/ Kinking | |
| -FMD | |

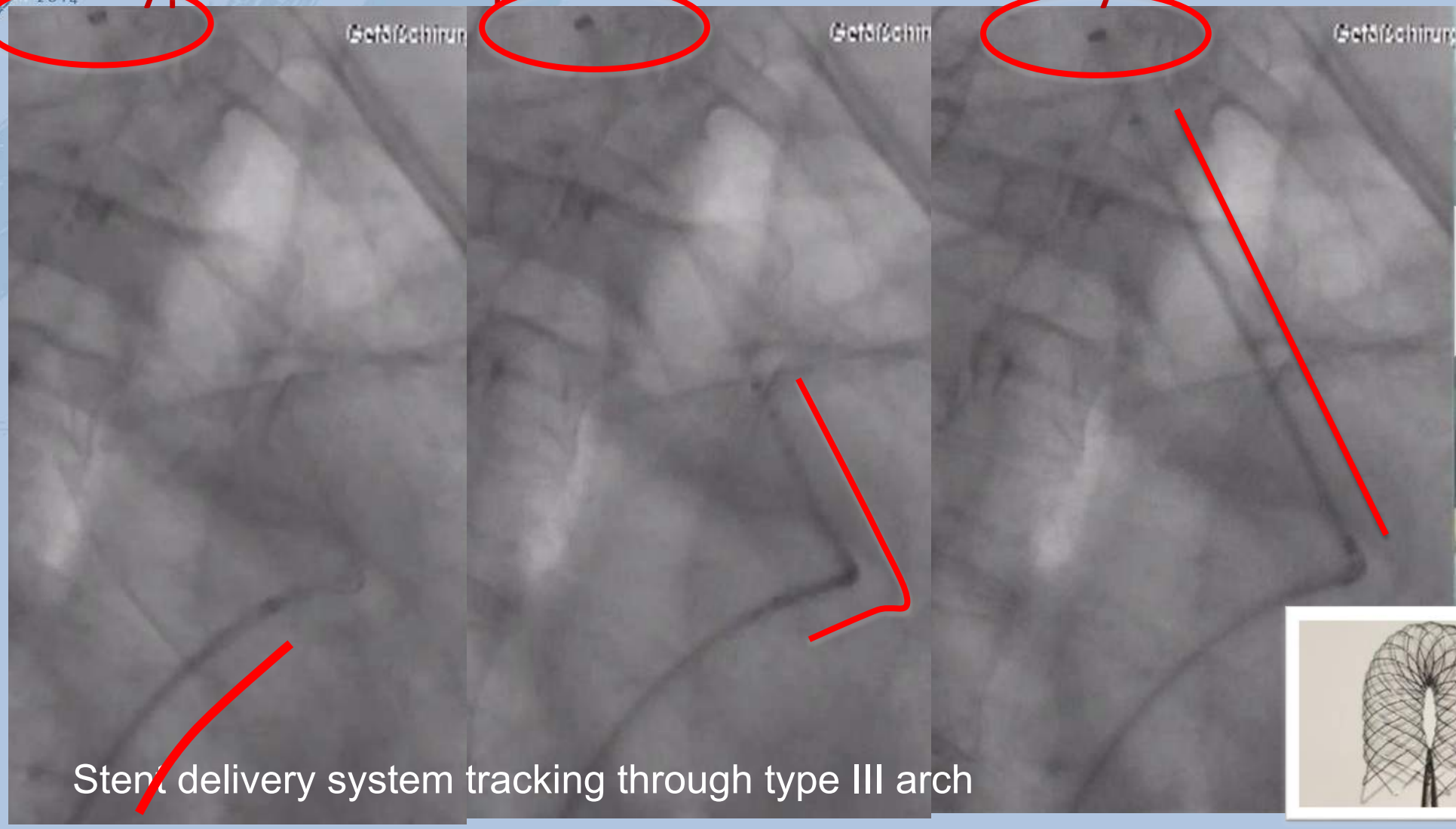
# CAS contra-indications in SFH Münster 2010 vs 2022

## Type III Arch

73yo female, high grade lesion right ICA

TYPE III ARCH

# CAS contra-indications in SFH Münster 2010 vs 2022
## Type III Arch – performance of multilayer stent



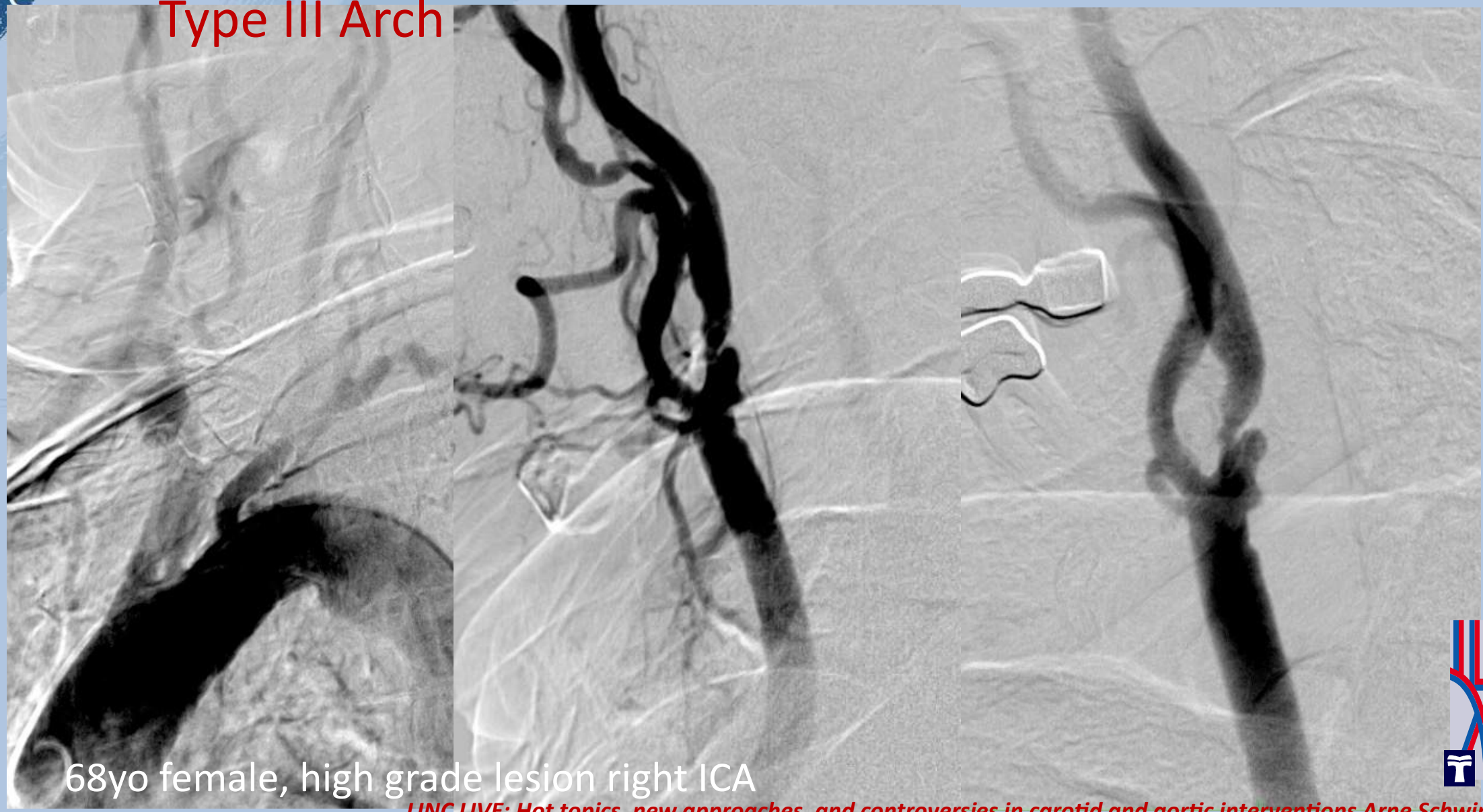
Stent delivery system tracking through type III arch

# CAS contra-indications in SFH Münster 2010 vs 2022

## Type III Arch

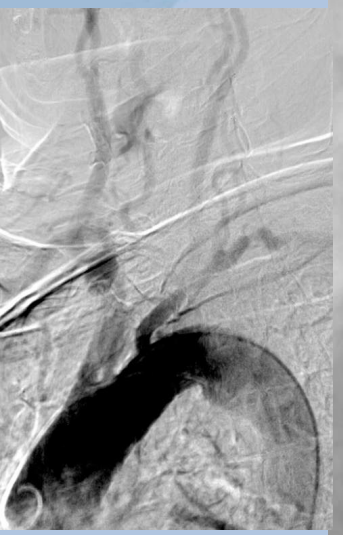
73yo female, high grade lesion right ICA

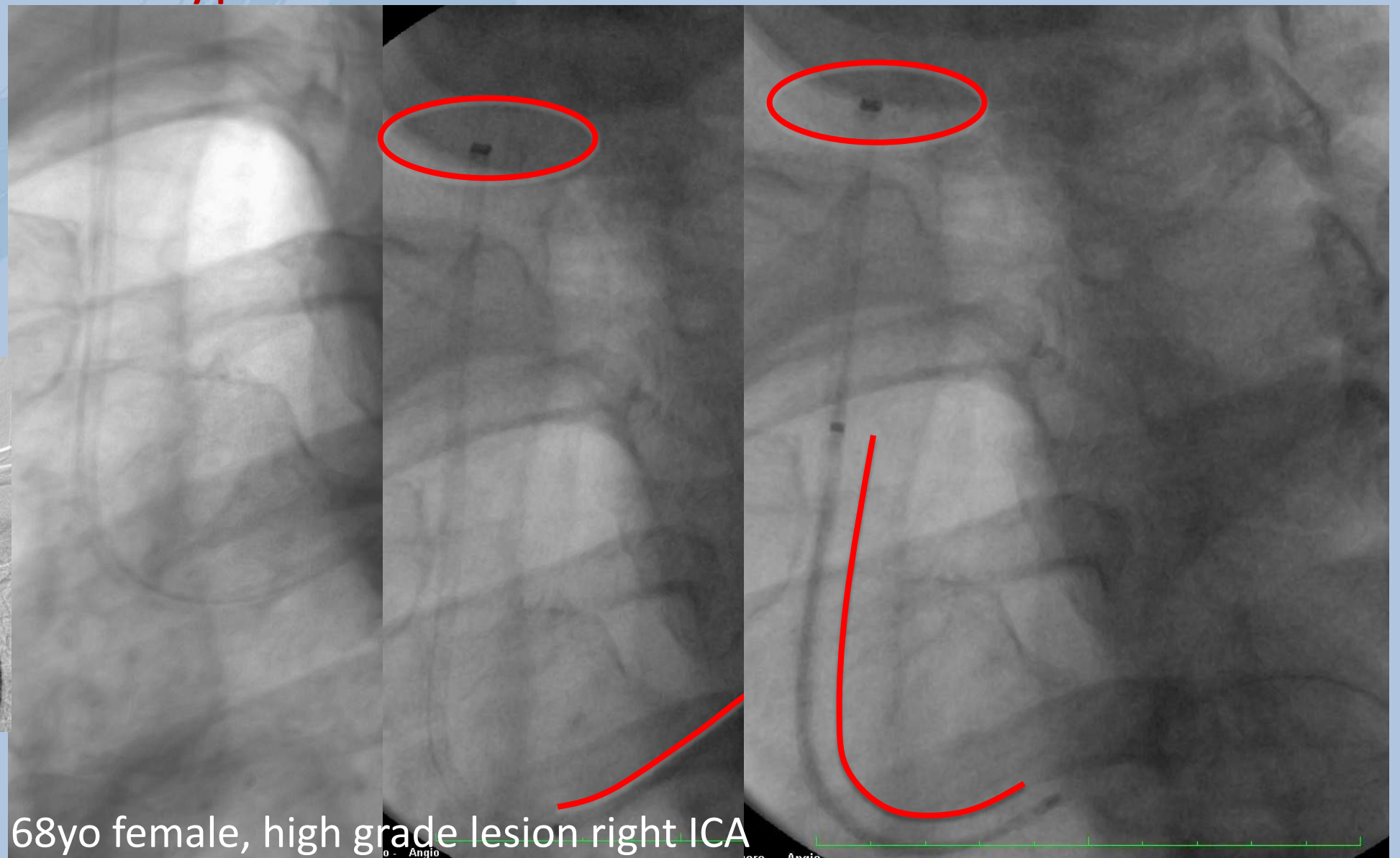
# CAS contra-indications in SFH Münster 2010 vs 2022 - Type III Arch



68yo female, high grade lesion right ICA

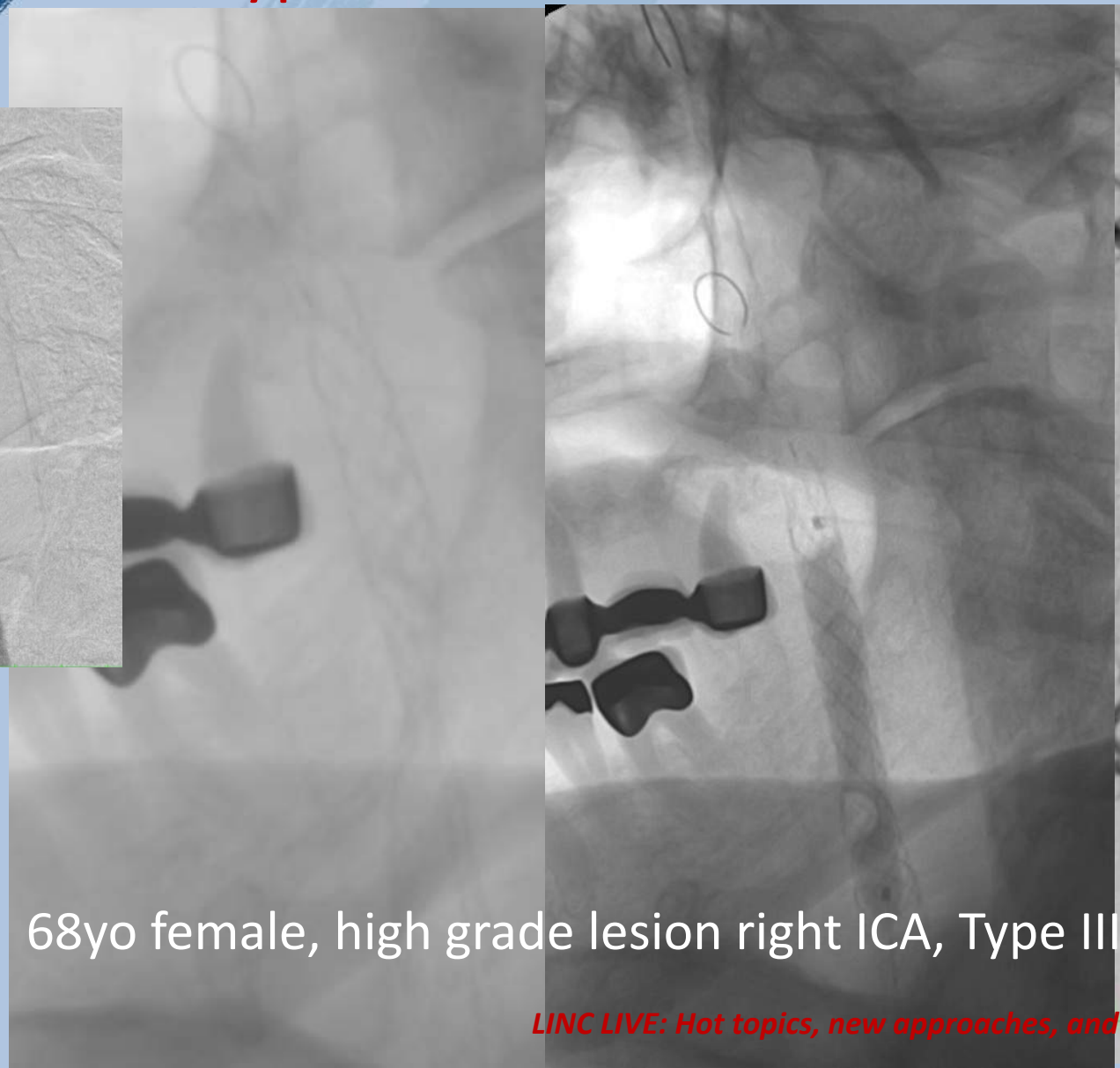
# CAS contra-indications in SFH Münster 2010 vs 2022 - Type III Arch





68yo female, high grade lesion right ICA

# CAS contra-indications in SFH Münster 2010 vs 2022 - Type III Arch

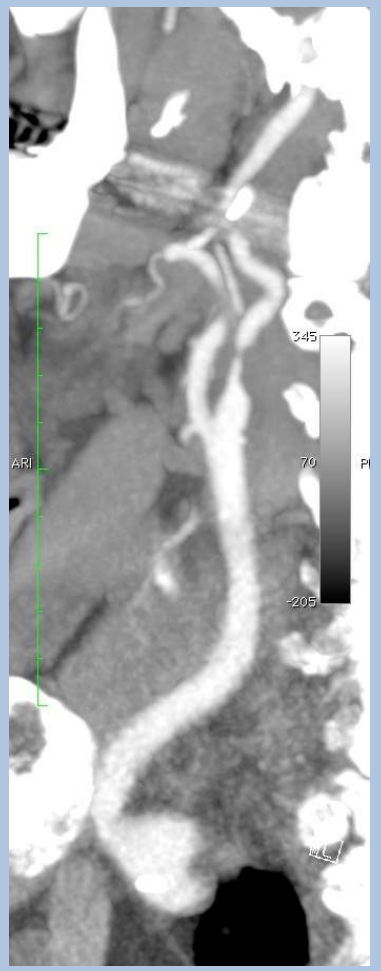




68yo female, high grade lesion right ICA, Type III Arch

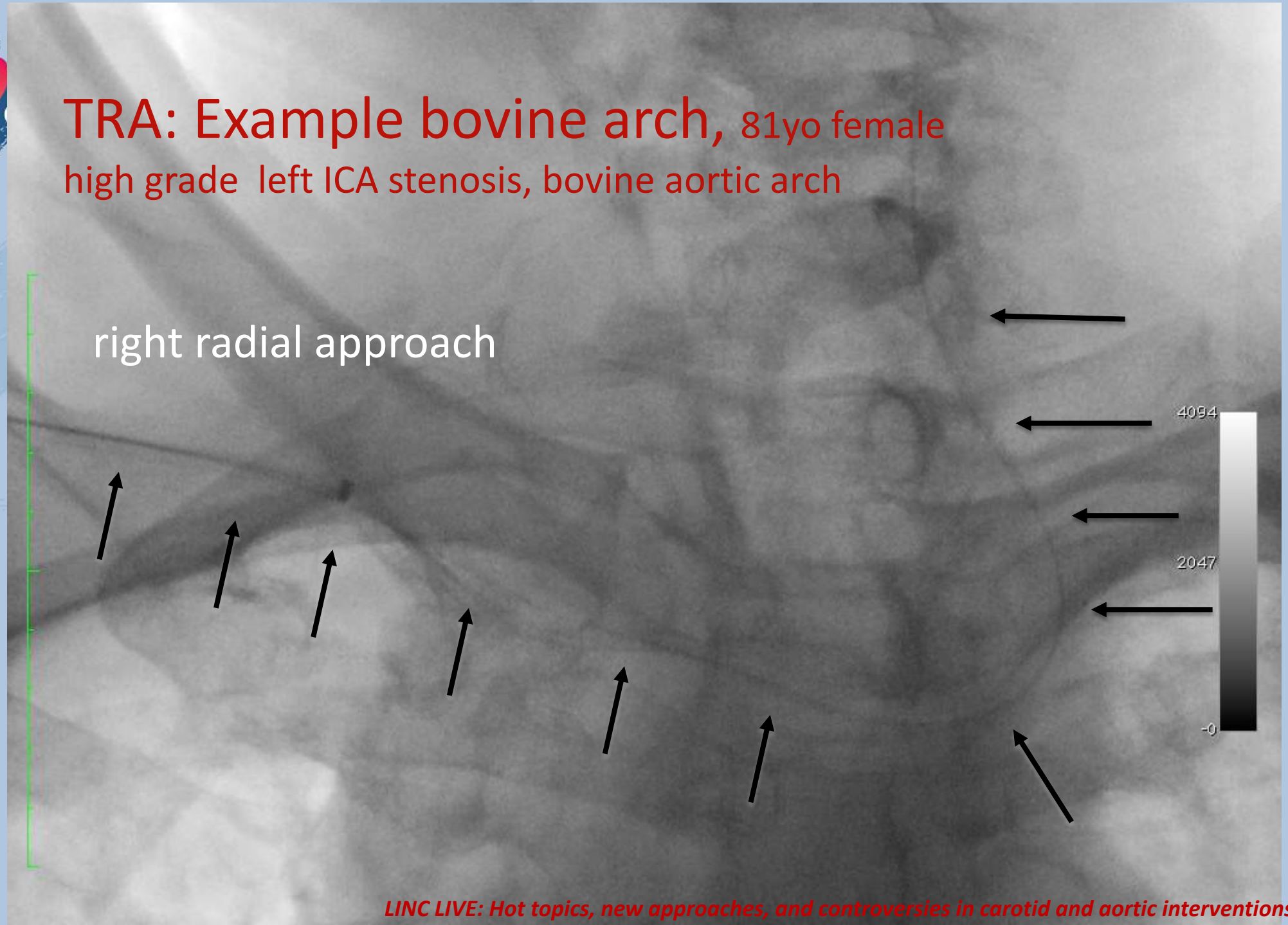
# TRA: Example bovine arch, 81yo female

## high grade  left ICA stenosis, bovine aortic arch



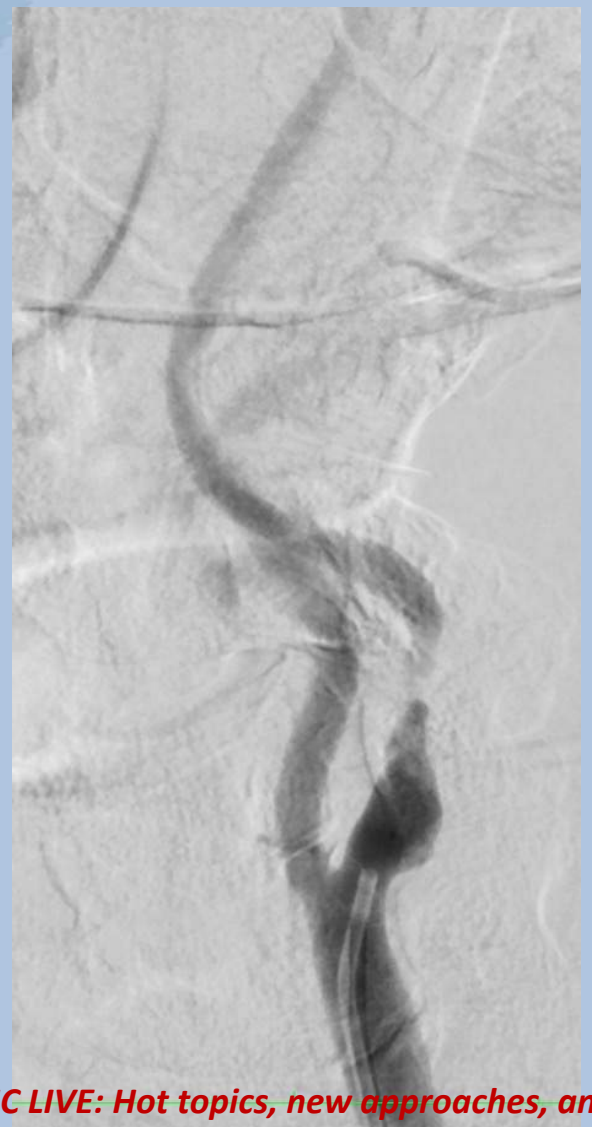
# TRA: Example bovine arch, 81yo female

## high grade left ICA stenosis, bovine aortic arch



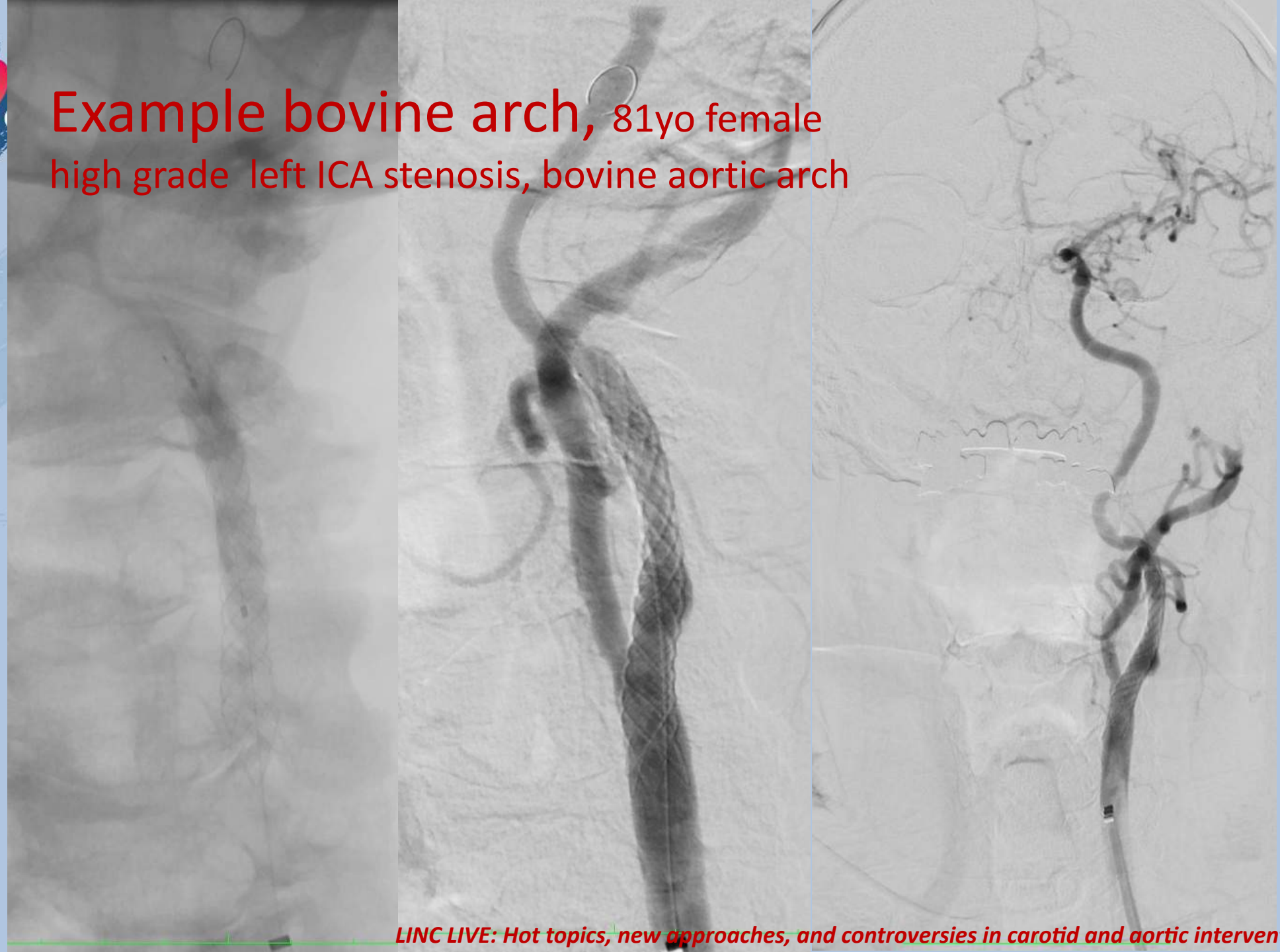
# Example bovine arch, 81yo female

## high grade left ICA stenosis, bovine aortic arch



# Example bovine arch, 81yo female

high grade  left ICA stenosis, bovine aortic arch



# Type III Arch/Bovine Arch

New Materials track easily through Type III arches
Technics with (multiple) buddy-wires for difficult arches are rarely neccessary anymore

## 30-day safety outcomes of Roadsaver dual-layer micromesh carotid artery stent:

evidence from the large multicentre European study

A.SCHWINDT@ESVS2021

| | Asymptomatic (n=614) | Symptomatic (n=561) | p-value |
|---|---|---|---|
| | 71.4 ± 8.2 | 70.0 ± 9.3 | ***0.006*** |
| | 21.5 | 28.9 | ***0.004*** |
| <80 years | 82.4 | 84.9 | *0.26* |
| Gender (male) | 72.0 | 68.3 | *0.16* |
| Aortic arch | | | |
| Type I | 47.2 | 56.3 | ***0.002*** |
| Type II | 37.8 | 33.3 | *0.11* |
| Type III | 9.1 | 6.6 | *0.11* |
| Bovine | 5.9 | 3.7 | *0.09* |

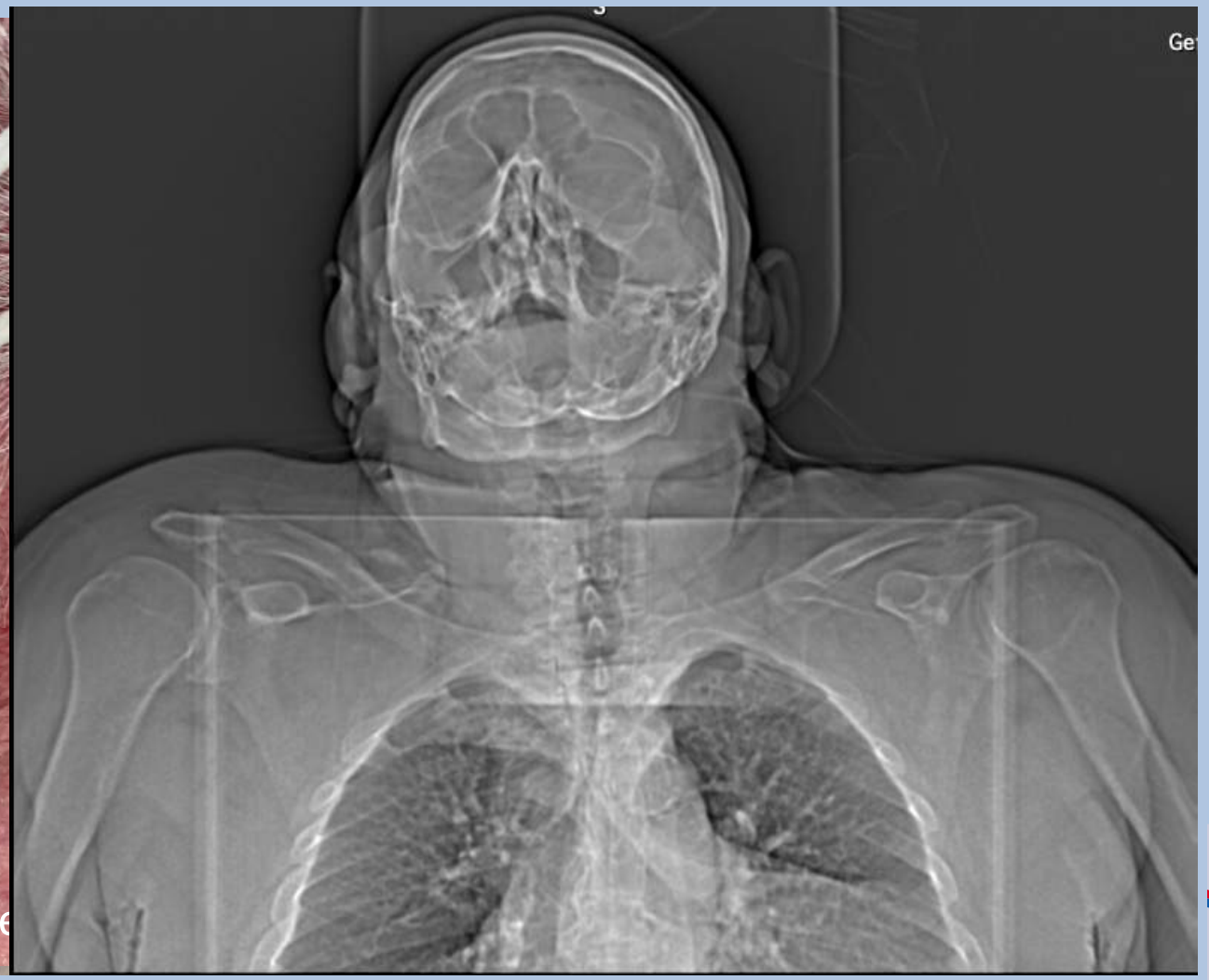
SD, Standard Deviation

In ROADSAVER Study up to 15% of arches bovine or TYPE III

# CAS contra-indications in SFH Münster 2010 vs 2022 – No access vessels

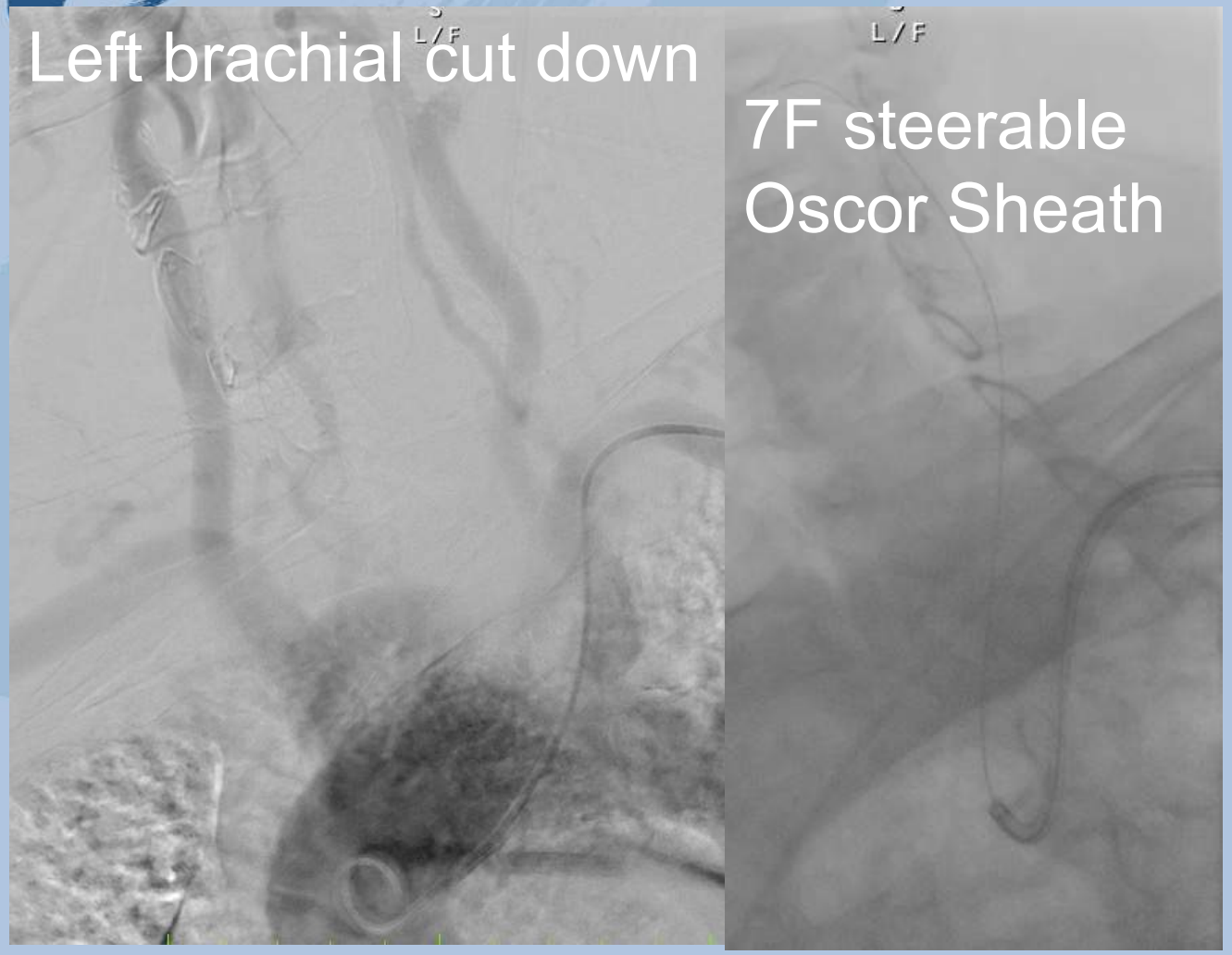
Scarred groins after Y-

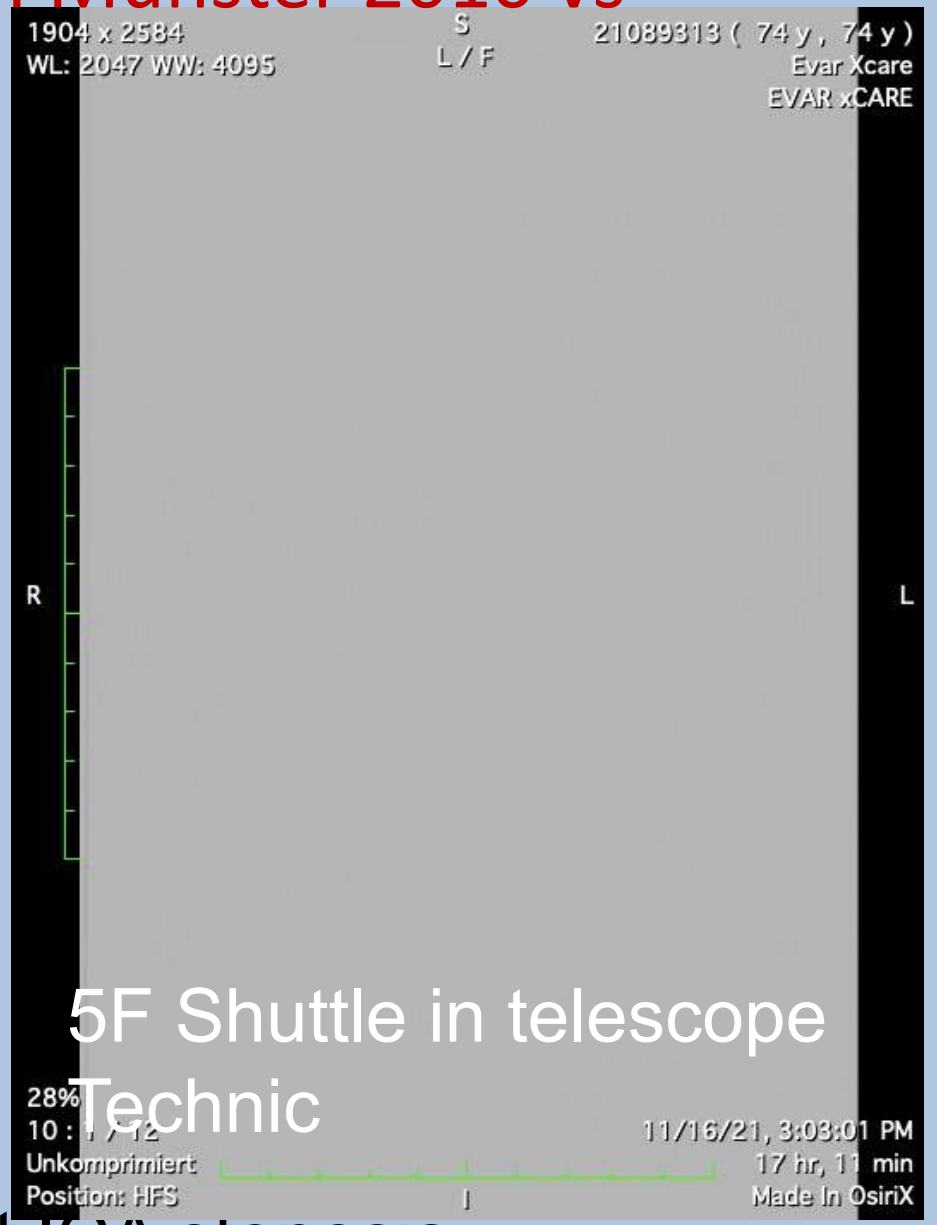
Obese neck with fungal infe



74 yo male 160kg,178cm high grade left ICA stenosis

# CAS contra-indications in SFH Münster 2010 vs 2022 – No access vessels



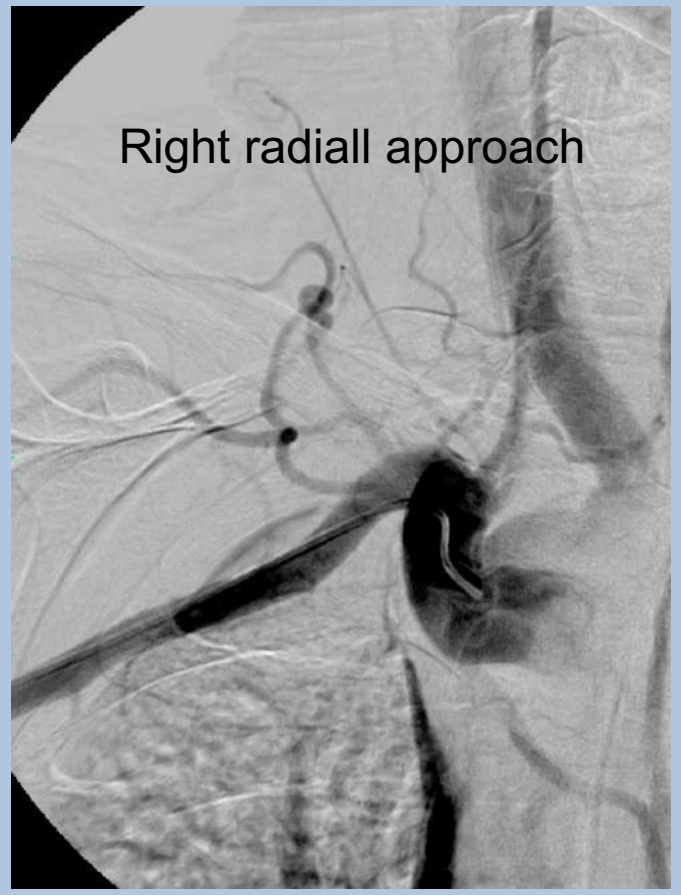

74 yo male 160kg,178cm high grade left ICA stenosis

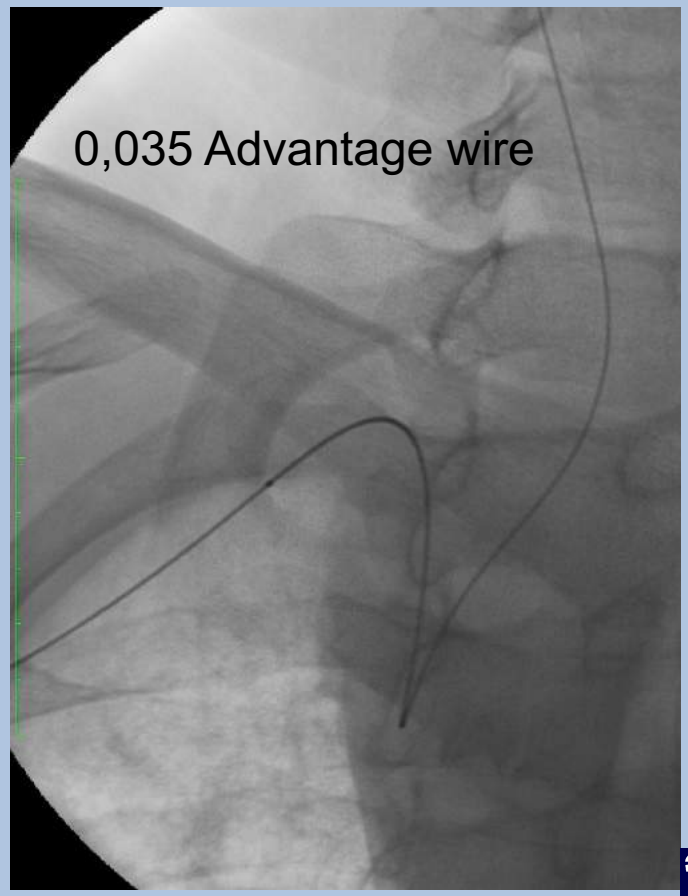
# CAS contra-indications in SFH Münster 2010 vs 2022 – No access vessels


74 yo male 160kg,178cm high grade left ICA stenosis

# CAS contra-indications in SFH Münster 2010 vs 2022 transradial

60yo male high risk,for surgery due to CAD and severe obesity
high grade  right ICA stenosis, tortuosity brachiocephalic trunc



# CAS contra-indications in SFH Münster 2010 vs 2022 – No access vessels

60yo male high risk,for surgery due to CAD and severe obesity
high grade  right ICA stenosis, tortuosity brachiocephalic trunc

# CAS contra-indications in SFH Münster 2010 vs 2022 – No access vessels

60yo

high grade  right ICA stenosis

Radial acces

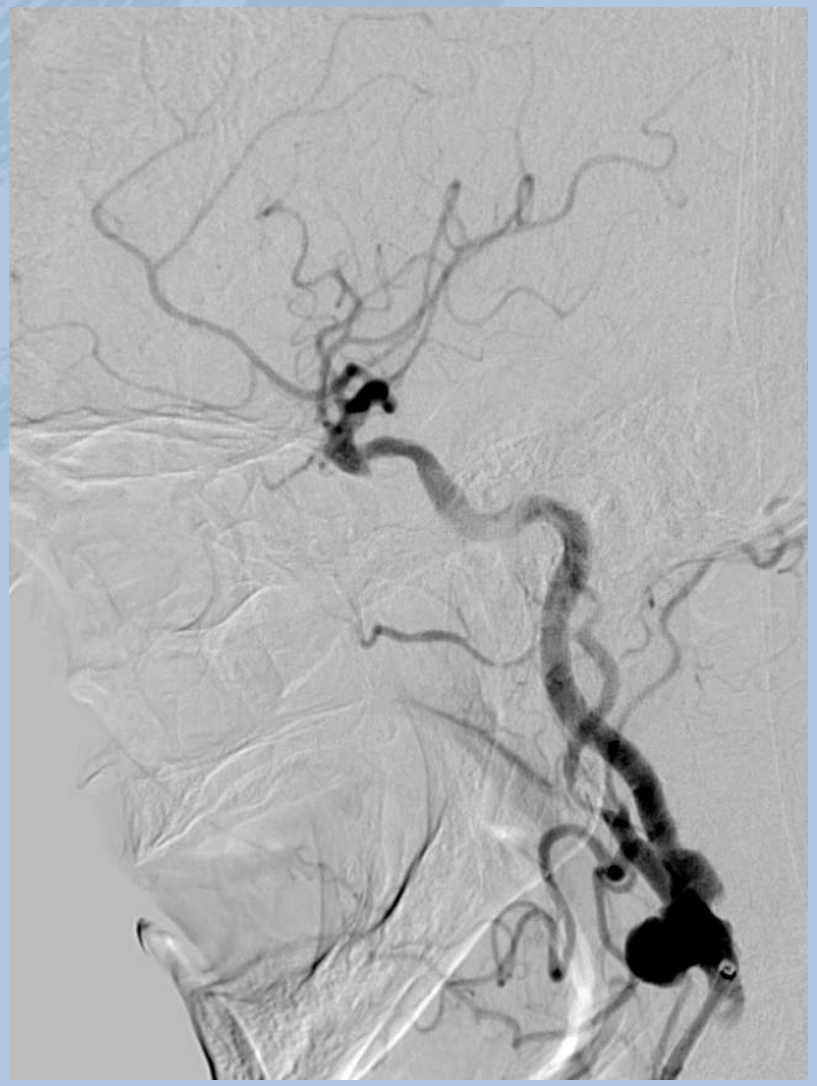
# CAS contra-indications in SFH Münster 2010 vs 2022 – transradial

In ROADSAVER Study up to 28% of cases were done transradial

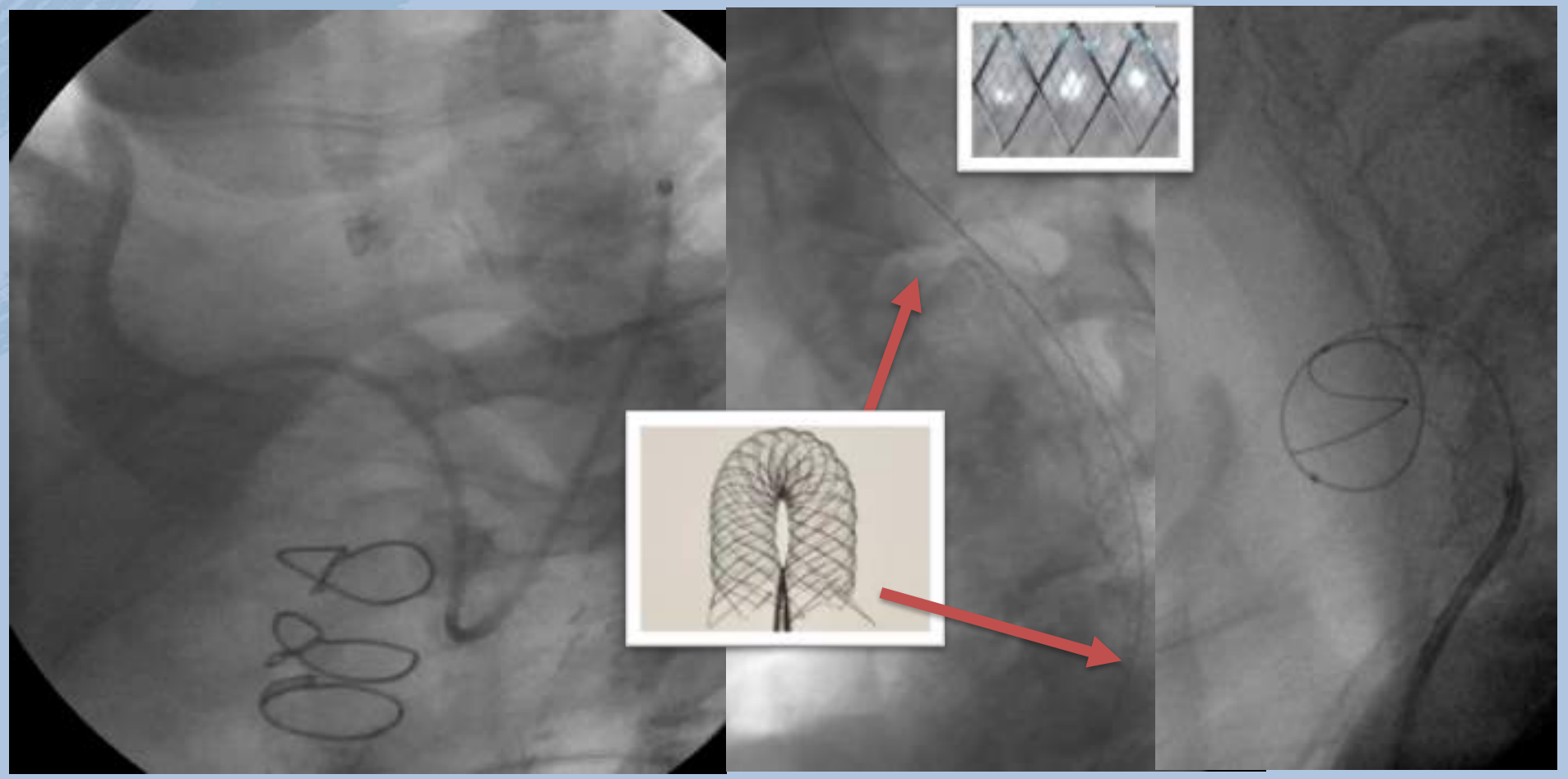
## Procedure characteristics

| % | Asymptomatic (n=614) | Symptomatic (n=561) | p-value |
|---|---|---|---|
| Femoral access | 70.0 | 68.1 | *0.47* |
| Radial access | 25.9 | 27.8 | *0.46* |
| Transcervical access | 1.0 | 2.7 | ***0.03*** |
| Other access (e.g. brachial, ulnar) | 3.1 | 1.4 | *0.06* |
| Embolic protection device | 60.1 | 62.8 | *0.35* |
| ○ Distal filter (only) | 84.6 | 84.9 | *0.88* |
| Pre-dilatation | 24.1 | 28.0 | *0.13* |
| Post-dilatation | 98.1 | 93.4 | ***<0.0001*** |

# CAS as option for late surgical complications – symptomatic patch-aneurysm 15yrs after TEA

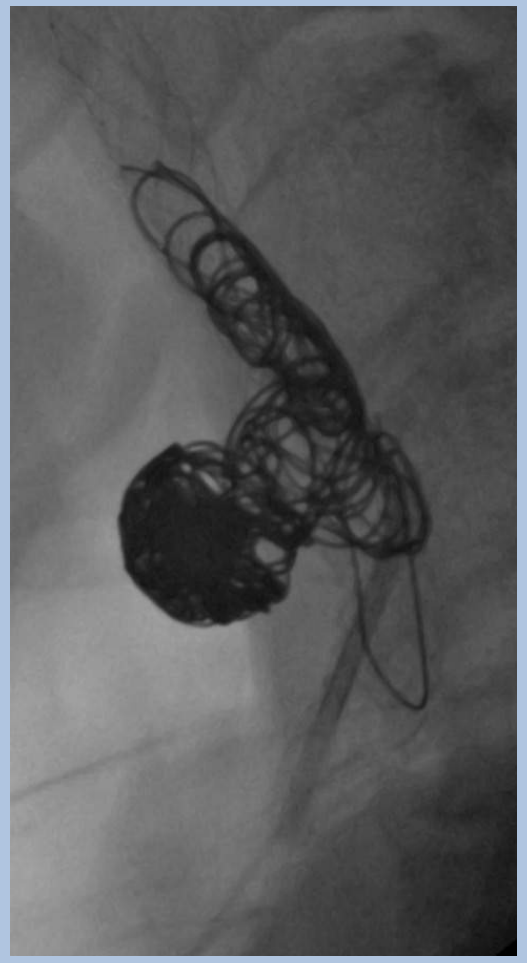


# CAS as option for late surgical complications – symptomatic patch-aneurysm 15yrs after TEA



MICROMESH STENT AND MICROCOILS USED FOR ANEURYSM EXCLUDION IN JAILTECHNIC

# CAS as option for late surgical complications – symptomatic patch-aneurysm 15yrs after TEA



MICROMESH STENT AND MICROCOILS USED FOR ANEURYSM EXCLUDION IN JAILTECHNIC

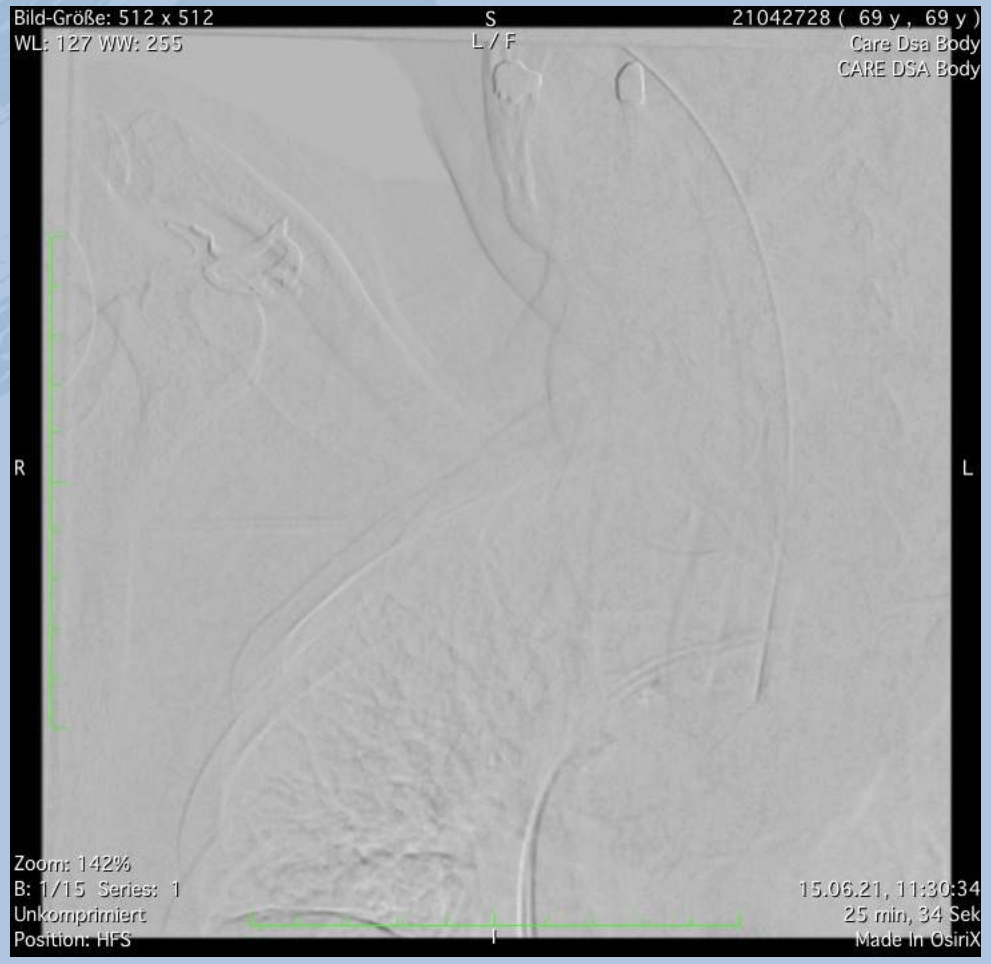
# CAS as option for late surgical complications –

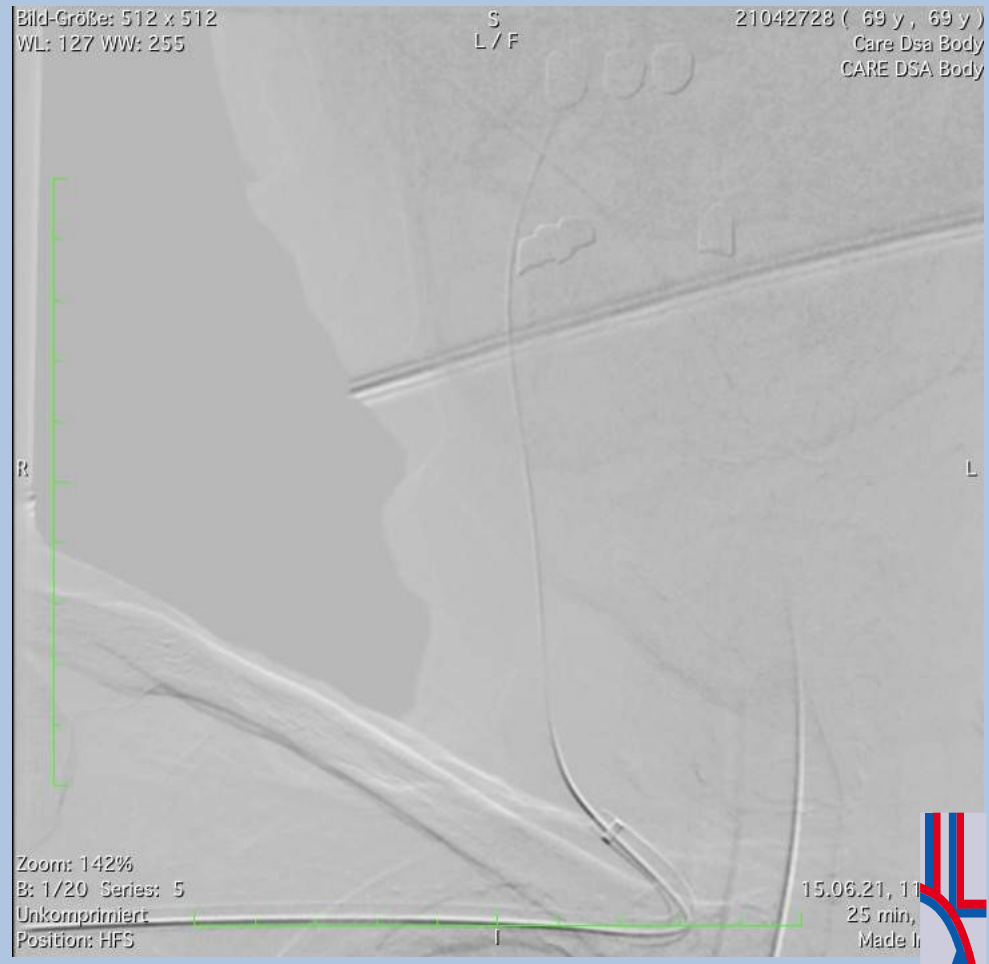
69yo patient, aneurysm of GSV-Bypass of right carotid 49years after partis cancer, hostile neck post radiation and neck dissection


# CAS as option for late surgical complications –

69yo patient, aneurysm of GSV-Bypass of right carotid 49years after partis cancer, hostile neck post radiation and neck dissection

Right axillary cutdown, 10F Fustar-sheath

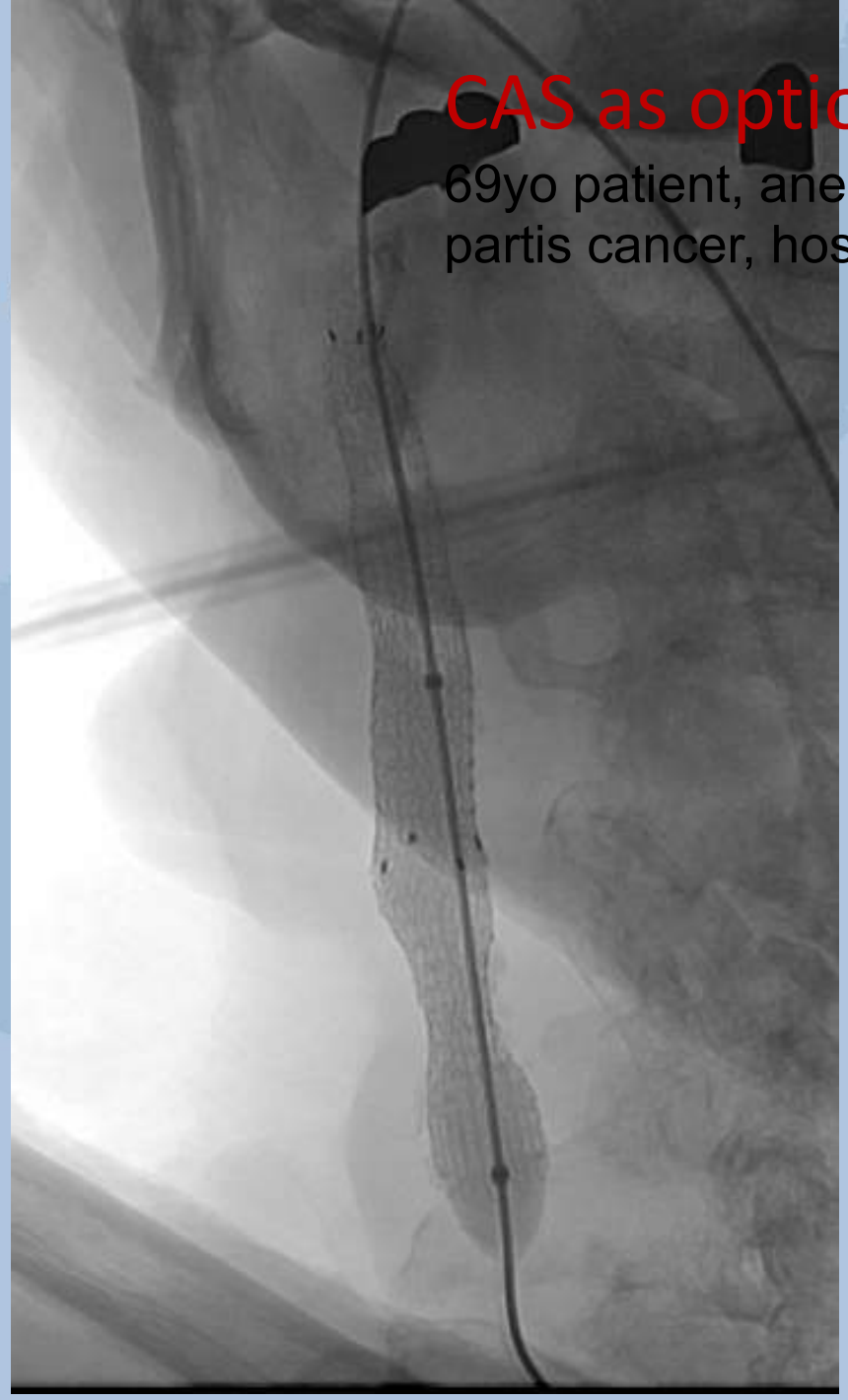


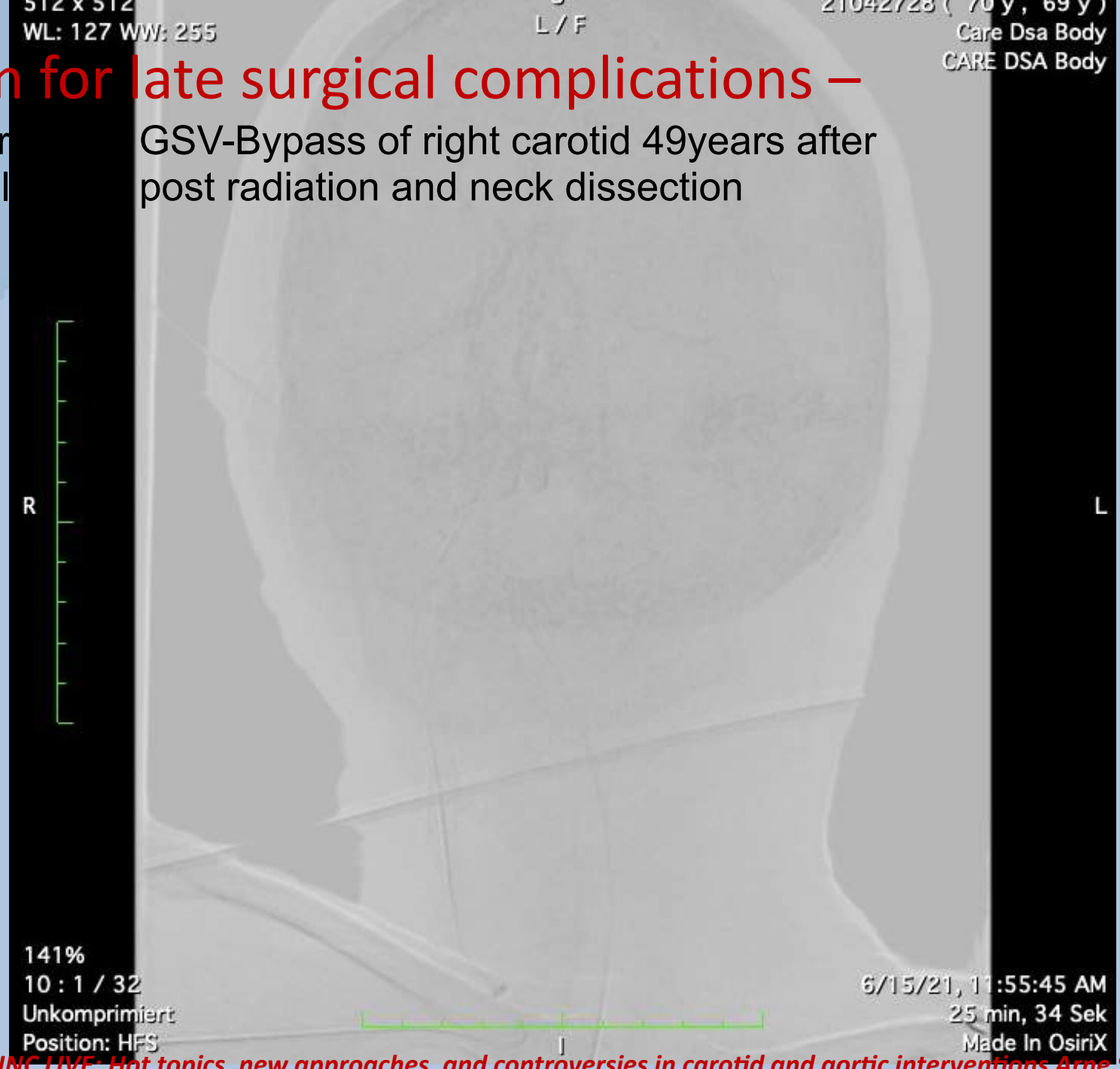



# CAS as option for late surgical complications –

69yo patient, aneur
partis cancer, hostil

GSV-Bypass of right carotid 49years after post radiation and neck dissection





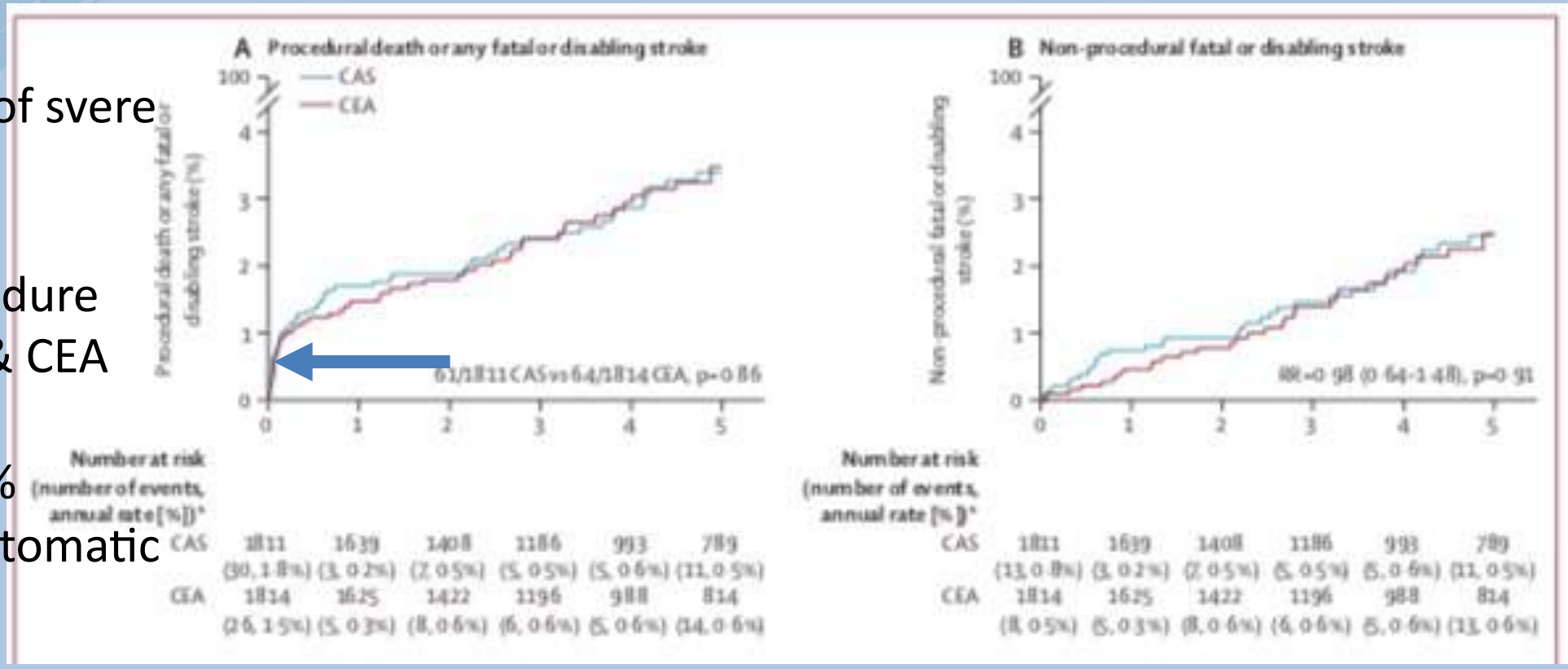
# Second asymptomatic carotid surgery trial (ACST-2): a randomised comparison of carotid artery stenting versus carotid endarterectomy

Alison Halliday*, Richard Bulbulia*, Leo H Bonati, Johanna Chester, Andrea Cradduck-Bamford, Richard Peto†, Hongchao Pan†, for the ACST-2 Collaborative Group‡

CAS uand CEA
equally reduce the risk of svere stroke

ACST-2 1% severe procedure related strokes in CAS & CEA

Roadsaver Register:0,5% severe strokes in asymptomatic carotid stenoses



# CAS

anatomic

~~- Type III Arch~~

~~- no access vessels~~

- Ostial CCA lesions
- Arch Aneurysms, Arch disease
- circular calcification

~~- Coiling/ Kinking~~

- FMD

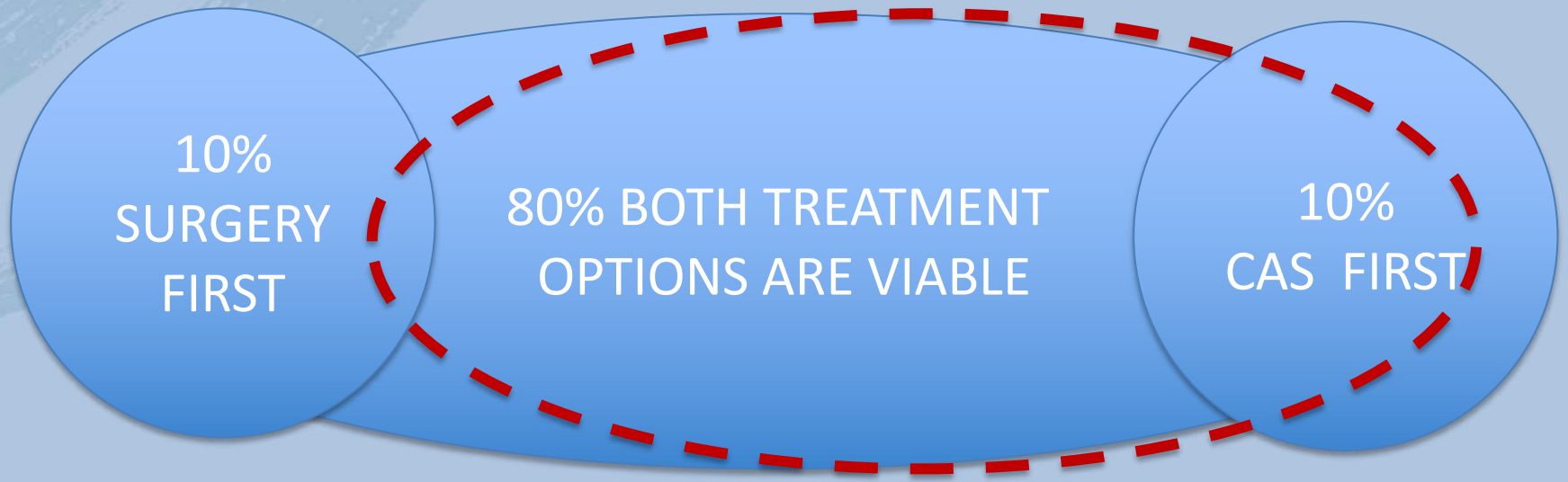
clinical

-Crescendo TIA

-soft plaques with low -echogenity on Duplex

(patients age)

# The role of CAS in my personal carotid revascularisation strategy




I offer CAS to 90% of my carotid patients

# CAS

anatomic

~~- Type III Arch~~

~~- no access vessels~~

- Ostial CCA lesions
- Arch Aneurysms, Arch disease
- circular calcification?
- Coiling/ Kinking
- FMD

clinical

-Crescendo TIA

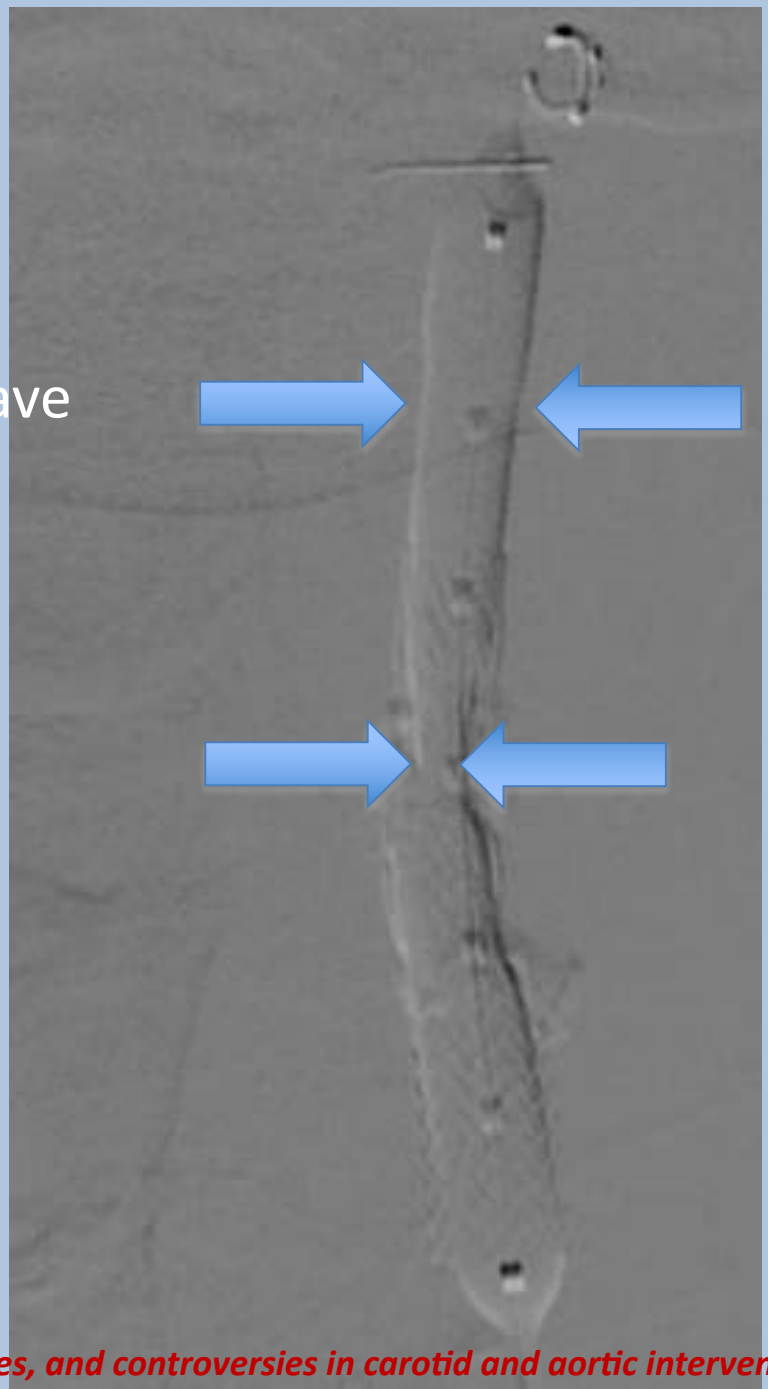
-soft plaques with low -echogenity on Duplex

(patients age)

# Last frontier in CAS – circular calcification?

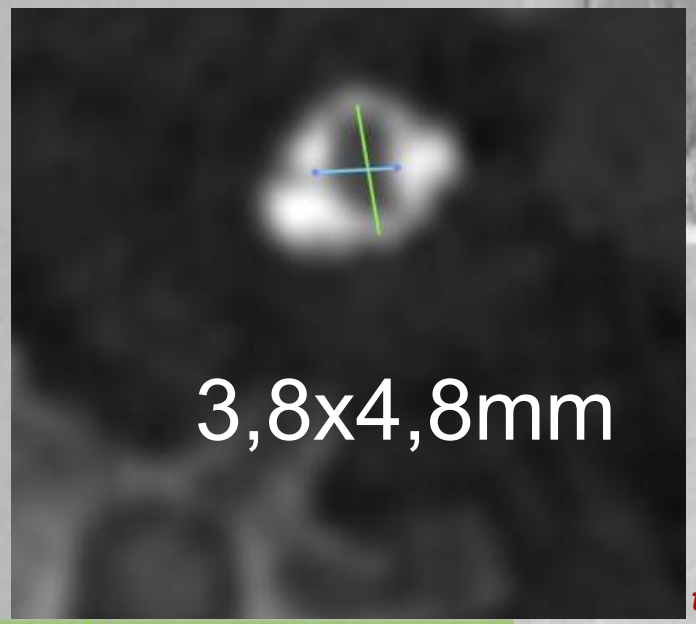
symptomatic stentrecoil after CAS

IVL with 6x60 Shockwave



# Last frontier in CAS – circular calcification?

post 6mm IVL



# Conclusions

For surgeons performing both CEA and CAS the techniques are complementary and not competing

Wise patient and lesion based selection will lead to best results in both treatment modalities

knowledge of EV Materials, and use of last generation implants broaden the spectrum of patients eligible for CAS

ACST II, OXVASC-register and ROADSAVER study deliver new impact for treatment decisions and guideline revisions

# Danke für Ihre Aufmerksamkeit

**Klinik für Gefäßchirurgie St. Franziskus Hospital Münster**
http://www.gefaesschirurgie-muenster.de/