



i-MEET

NEXT GENERATION

Multidisciplinary European Endovascular Therapy

Ideal toolkit for carotid stenting *How to customize your approach for different types of cases*

Max Amor & Julien Lemoine

Louis Pasteur Clinic

Essey les Nancy, France

Disclosure of Interest

Speaker name: MAX AMOR

- I do not have any potential conflict of interest

Toolkit and Strategy

- According to
 - Access and access site management
 - Carotid Protection
 - Carotid Stenting
 - Other Parameters

Selection and access management for CAS

Common FEMORAL Artery

NORMAL

ECHO
Micropuncture

PATHOLOGIC

Diagnostic Catheter
in EXTERNAL CAROTID

Guiding Catheter

MOMA DEVICE

90cm Braided Introducer in CC

FILTER

FILTER

Pre Dilatation

STENTING

Post Stenting Dilatation

CLOSING or Compression

7 or 8F Guiding Catheters :
RICA: MP, SAAD RIGHT
LICA: H Stick , SAAD LEFT
8 or 9 F MOMA Protection

Diagnostic Catheters:
SIM2,SIM3,SIM4
VITEK
HH1,HH2,HH3

5 or 6 F 90 cm Braided introducer
Carotid Shuttle
Destination

Type 2 arch : 2 directions

GROSZ GILBERT
Rot.: +41°
Inc.: -7°



GROSZ GILBERT
Rot.: -42°
Inc.: +7°



Bovine Arch : 2 directions



Saad Left Guiding Catheter

**In 3 shapes (2 for the left
& 1 for the right carotid)**

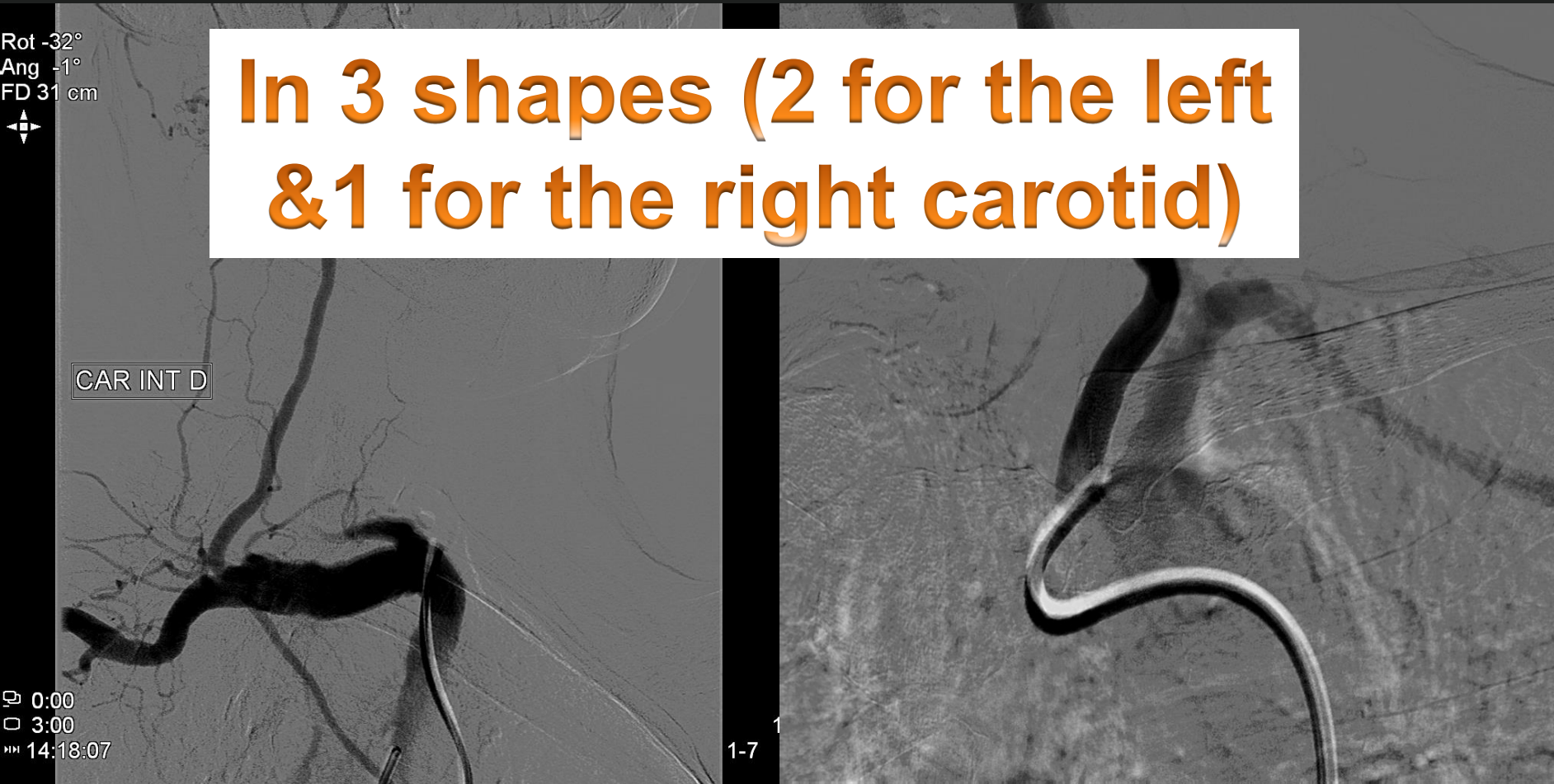
Rot -32°
Ang -1°
FD 31 cm



CAR INT D

0:00
3:00
14:18:07

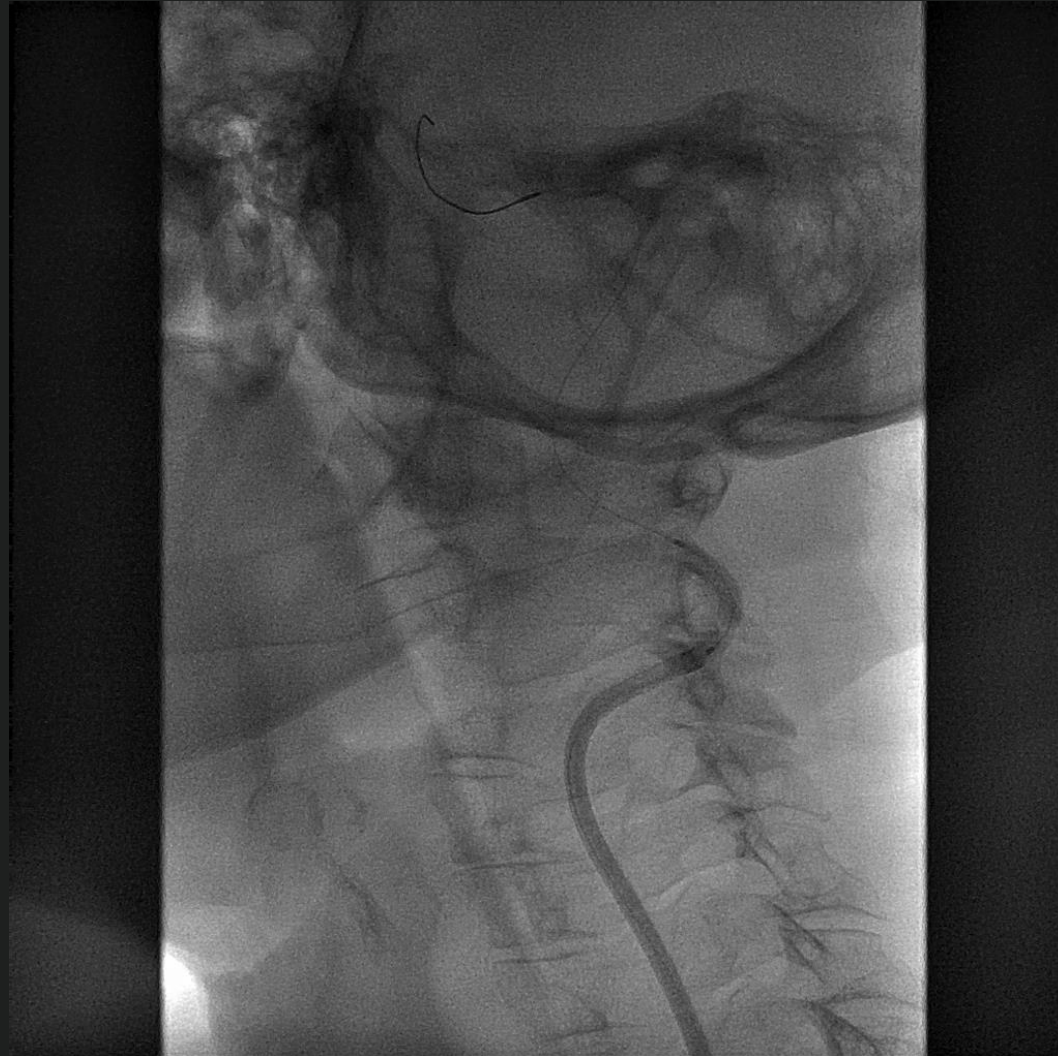
1-7



Angulations+ severe eccentric stenosis



Saad catheter for pre-dilatation without protection

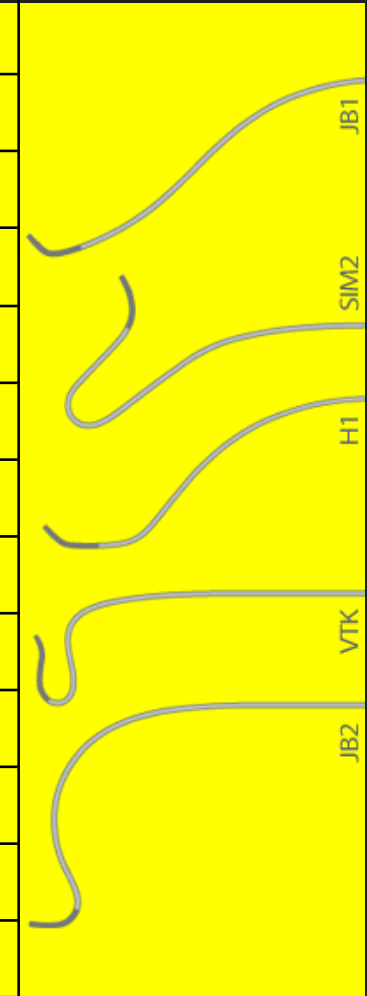


Saad Guiding in a 90° angulation after predilatation



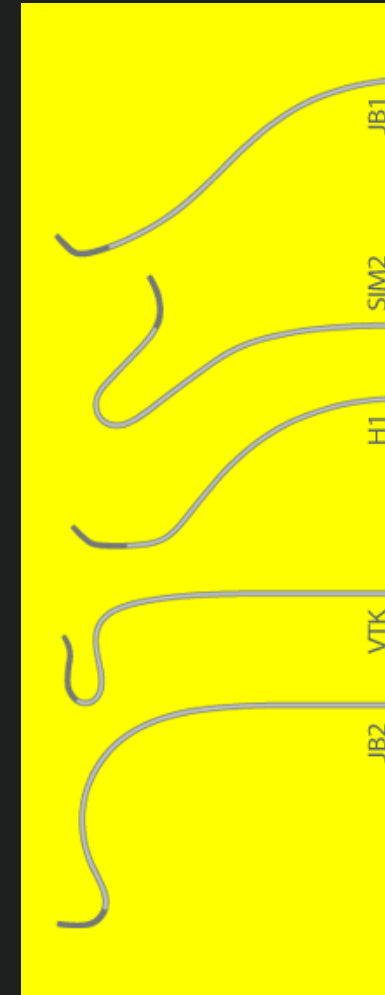
Catheter selection

Catheters	Left	Right
Simmons (Sidewinder)		
I	+	+++
II	++	+++
III	+++	++
IV	+++	++
Hinck/Berenstein	++	+++
Headhunter		
I	+	+++
II	+++	+
Bentson		
JB1	+	+++
JB2	+++	++
JB3	+++	+
Mani	+++	++
Vitek	++	+++



Selection of catheters according to the aorta

CATHETERS SHAPE	AORTA TYPE		
	SMALL	STANDARD	LARGE
SIMMONS			
I	+++		
II	+	+++	+
III		++	+++
IV		++	+++
HINCK	+	+	+
HEADHUNTER			
I		++	
II			++
BENTSON			
JB1	+	++	
JB2		+++	
JB3			++
VITEK	+	+++	+



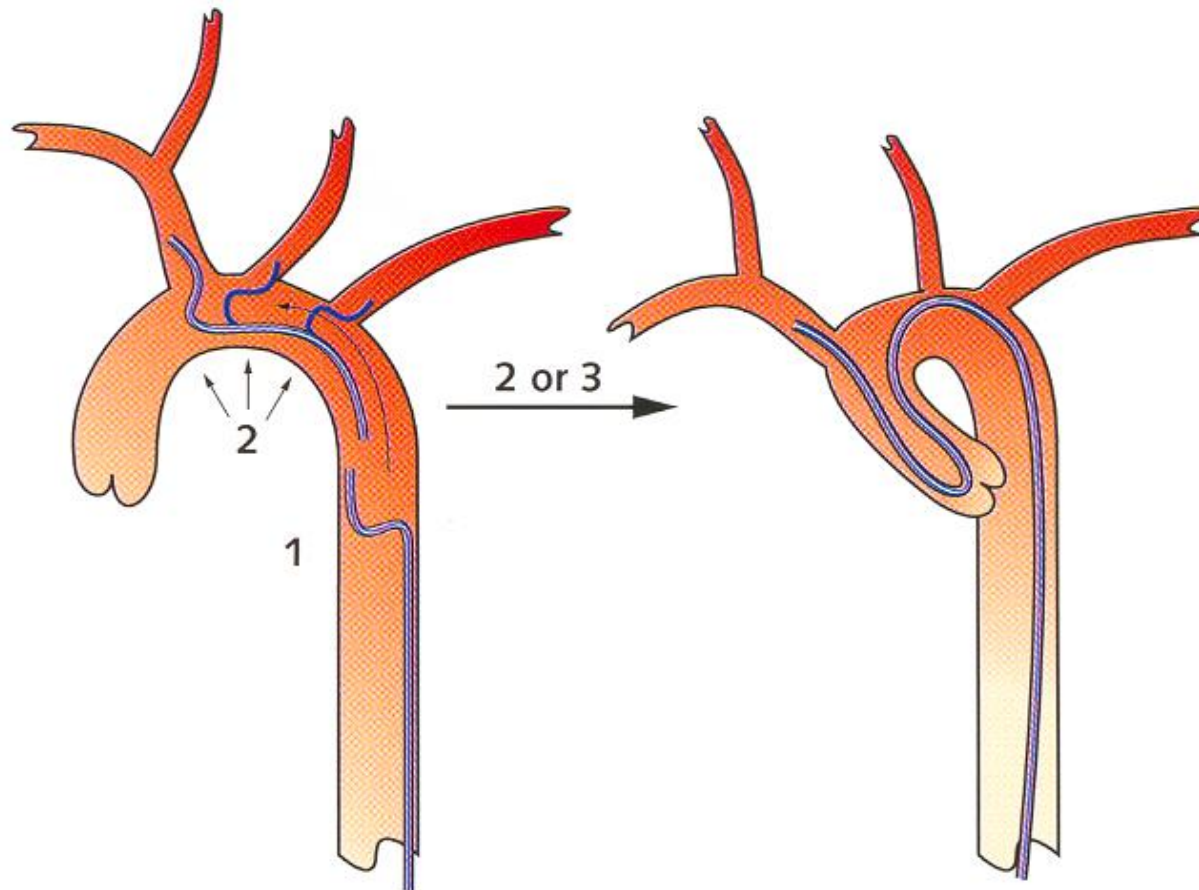


Figure 10. Use of Simmons type IV.

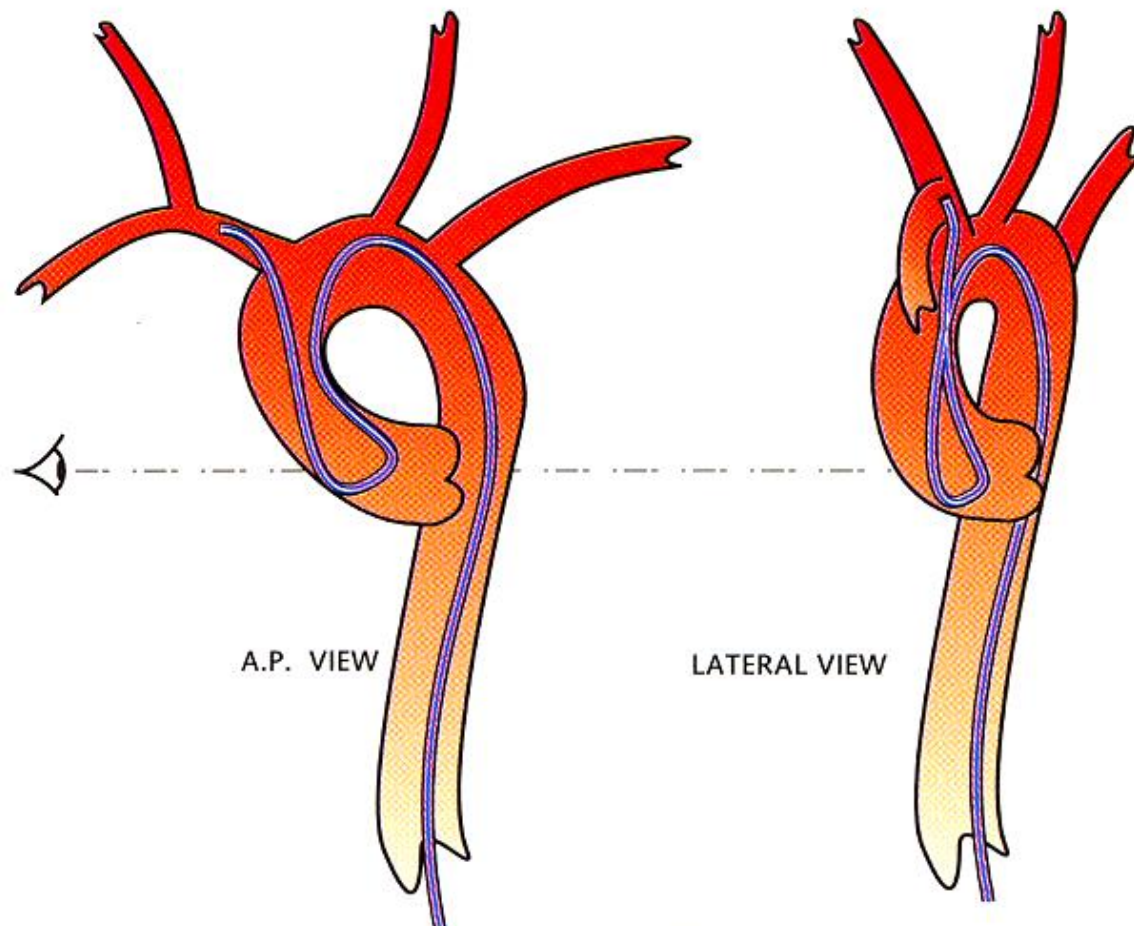


Figure 11. Use of Simmons type III or IV.

Indications for Trans-Radial CAS

- **Bilateral Aorto-iliac Disease**
- **Failure of femoral route**
- **Hostile Neck + Cervical approach impossible**

It is more generalized in some countries

Selection and access management for CAS

Right or Left Radial Artery (Ulnar?)



Pre Dilatation

STENTING

Post Stenting Dilatation

6F or 7F Guiding Catheters :
XF 40°
H-Stick
Sheathless Guiding

Diagnostic Catheters:
SIM2,
VITEK
HH1,HH2,

5 or 6 F 90 cm Braided introducer
Carotid Shuttle
Destination

Selection of Carotid Access for CAS

Common FEMORAL Artery

NORMAL

ECHO
Micropuncture

PATHOLOGIC

Diagnostic Catheter
in EXTERNAL CAROTID

Guiding Catheter

MOMA DEVICE

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FILTER

STENTING

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Diagnostic Catheters:
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VITEK
HH1,HH2,HH3

5 or 6 F 90 cm Braided introducer
Carotid Shuttle
Destination

SELECTION OF THE CATHETERS ACCORDING TO THE APPROACH WAY

	RADIAL/BRA	FEMORAL
SIMMONS		
1		
2		
3		
4		
HINCK		
HEADHUNTER		
1		
3		
BENTSON		
JB1		
JB2		
JB3		

Selection and access management for CAS

Common FEMORAL

POSSIBLE

IMPOSSIBLE

RADIAL APPROACH

SILK ROAD APPROACH

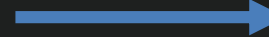
Selection of Carotid Protection for CAS

ASYMPTOMATIC

SYMPTOMATIC

EASY TO CROSS

DIFFICULT TO CROSS



8 or 9F MOMA DEVICE

FILTER

Bare WIRE Filter

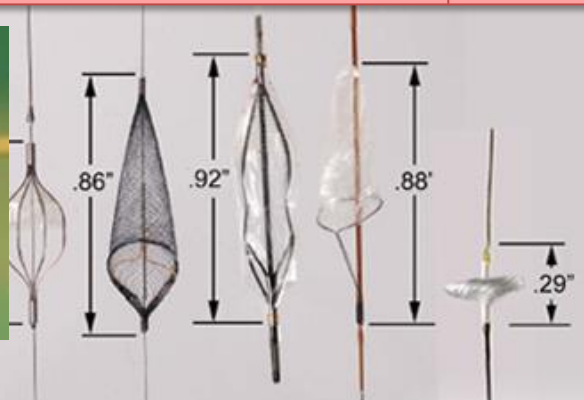
IMPOSSIBLE

SILK ROAD APPROACH

CONSIDER IN HIGH RISK LESION : PALADIN (Contego)

Filters Characteristics

DEVICE	Vessel Size (mm)	Crossing Profile (Inches/French)
FiberNet	3.5 mm – 7.0 mm	2.4 – 2.9 F
Angioguard XP	4.5 – 7.5 mm	3.2 - 3.9 F
FilterWire EZ	3.5 – 5.5 mm	3.2 F
Emboshield Pro	2.5 – 7.0 mm	2.8 – 3.2 F
RX AccuNet	3.25 – 5.0 mm	3.5 – 3.7 F
SpiderFX	3.0 – 7.0 mm	3.2 F
GuardWire	3.0 – 5.5 mm	2.8 F
Emboshield Nav 6	2.5 – 7.0 mm	3.2F



Determine the
Landing zone

Acc Ang Spi Emb EZ Fiber

Geometric Factors for selecting filters

	EZ	Accunet	Nav 6	SPIDER	Fibernet
$\varnothing \geq 6\text{mm}$	no	yes	yes	yes	yes
Tight stenosis	++	++	+++	+++±	+
Small landing zone	+	+	++	+	+++
Angulations	++	++	+++±	+++	+
Curved landing	+	++	++	+	+++
Complex crossing	+	+	++	+++	+

Advantages & Disadvantages of Flow reversal

- **Advantages**

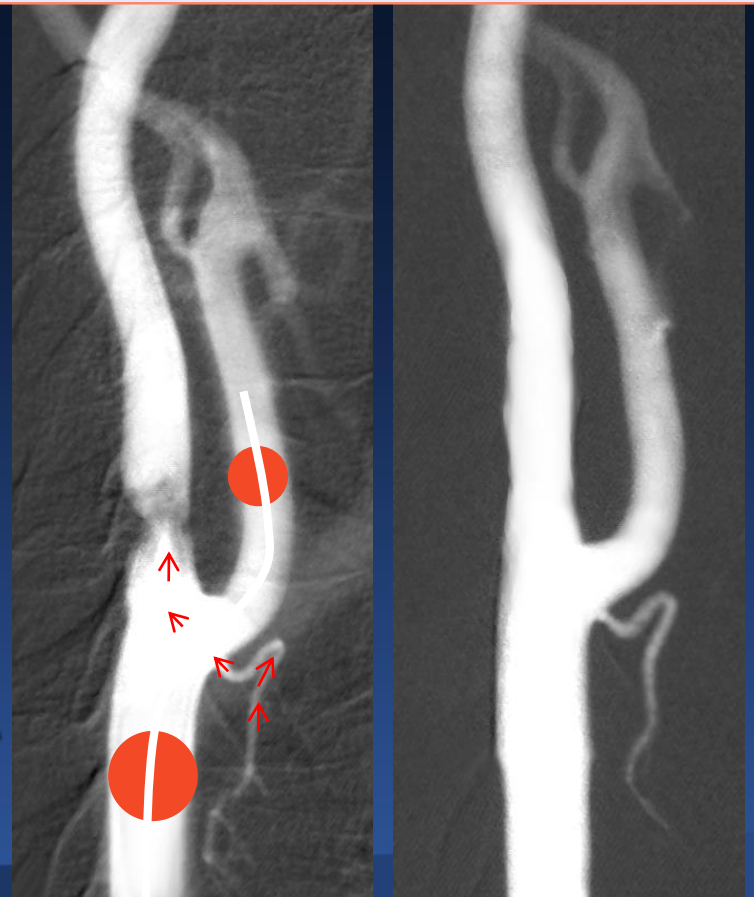
- Protection before crossing
- Any Coronary Wire to cross the lesion
- No parking space required
- No local complication: spasm, dissection
- Angiography possible during occlusion
- All particles are stopped

- **Disadvantages**

- Unusable if ipsilateral external carotid or contralateral internal carotid occluded
- Unusable if diseased or difficult aortic arch

When do we **NOT** use proximal balloon protection?

- arteries arising at the bifurcation
- reversed flow in the superior thyroid artery
 - orthograde flow in the ICA



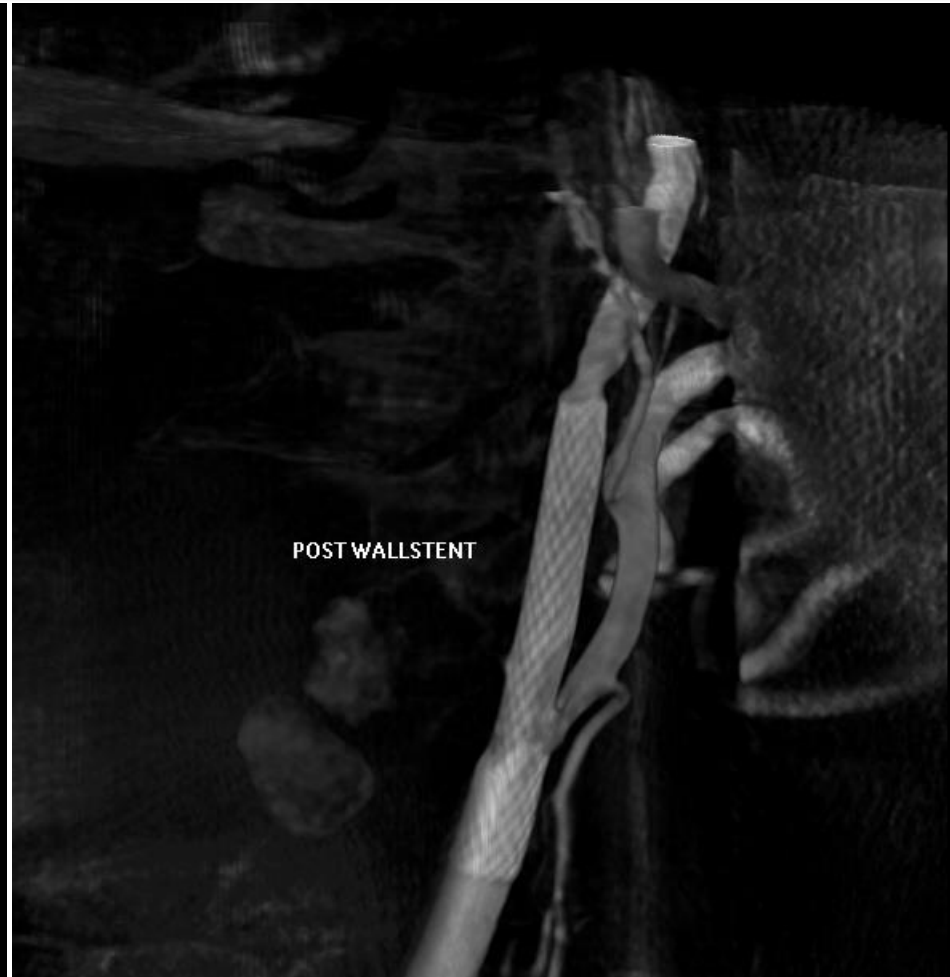
From Klaus Mathias
(Meet 2010)

Toolkit and Strategy

- According to
 - Access and access site management
 - Carotid Protection
 - **Carotid Stenting**
 - Other Parameters

Stent Selection including Micromesh

Type	Open Cells Stent		Closed Cells Stent			Micromesh	
Name Comp	Precise Cordis	Proteg EV 3	Wallstent BSC	Adapt BSC	Xact Abbott	Roadsaver Terumo	Cguard Inspire
Sympto	+	±	+++	+++?	++	+++	+++
Asymp.	+++	++	+	++	++	+++	+++
Bifurc.	++	+++	+++	+	±	+++	+
Ulcerate	++	++	+++	++?	+++	+++	+++
Calcifie	++	++	+	++	+++	+	++
Short	+++	+++	-	++	+++	+	+++
Long	++	++	+++	++	+	+++	+
Accurac	+++	++	+	++	+++	+	+++
Irr/Coni	+	+++	+++	++	+++	++	+
Restenosis	+++	+++	+++	+++	+++	+++	+++
Radioth	++	++	+++	-	+++	+++	+



Immediate
disappearance of
the niche



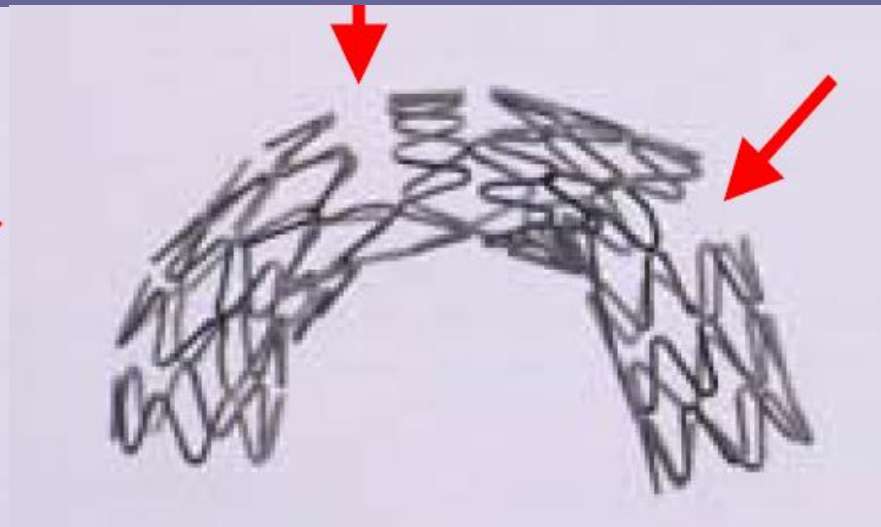
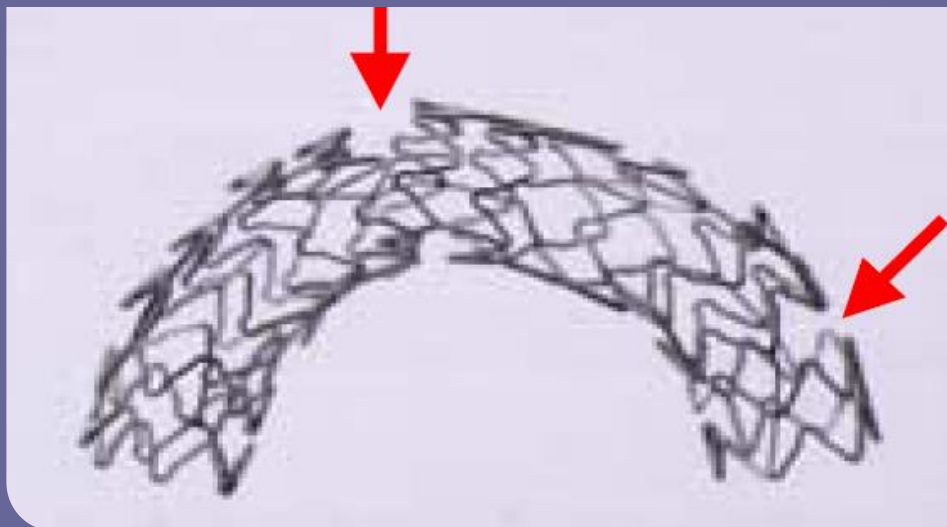
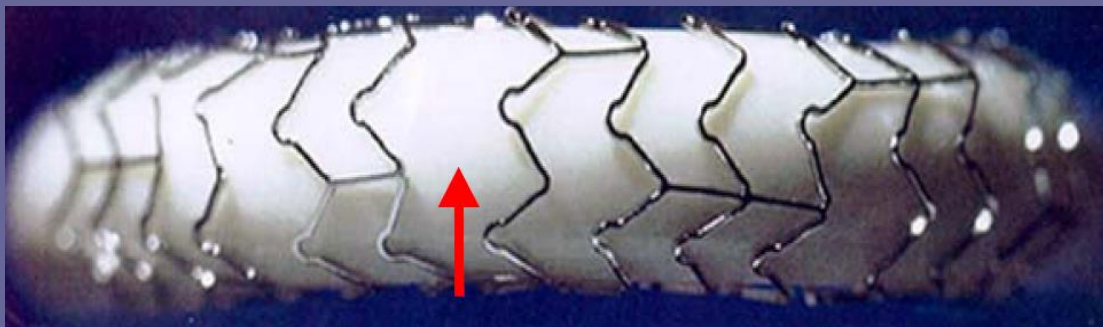
Open cells protruding in the the ulcerated niche



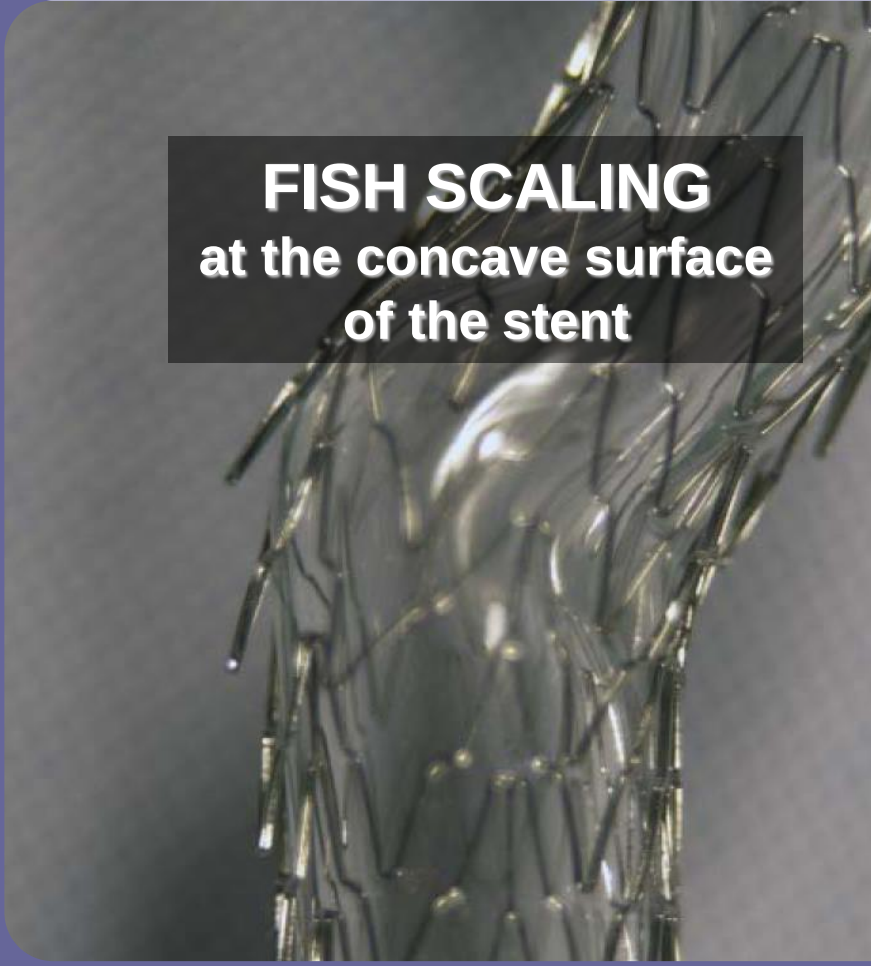
“Stent design”: why closed cell?

- Open cell designs in tortuous curvature

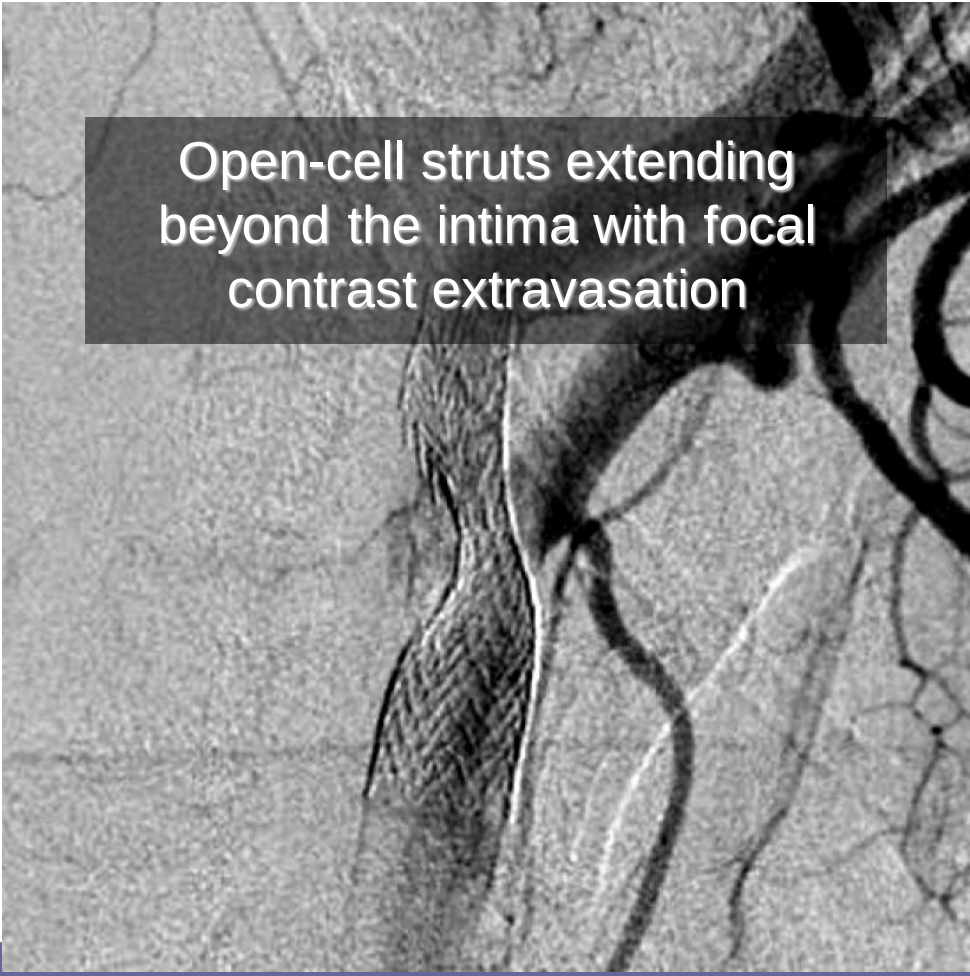
PROLAPSE



“Stent design”: why closed cell?

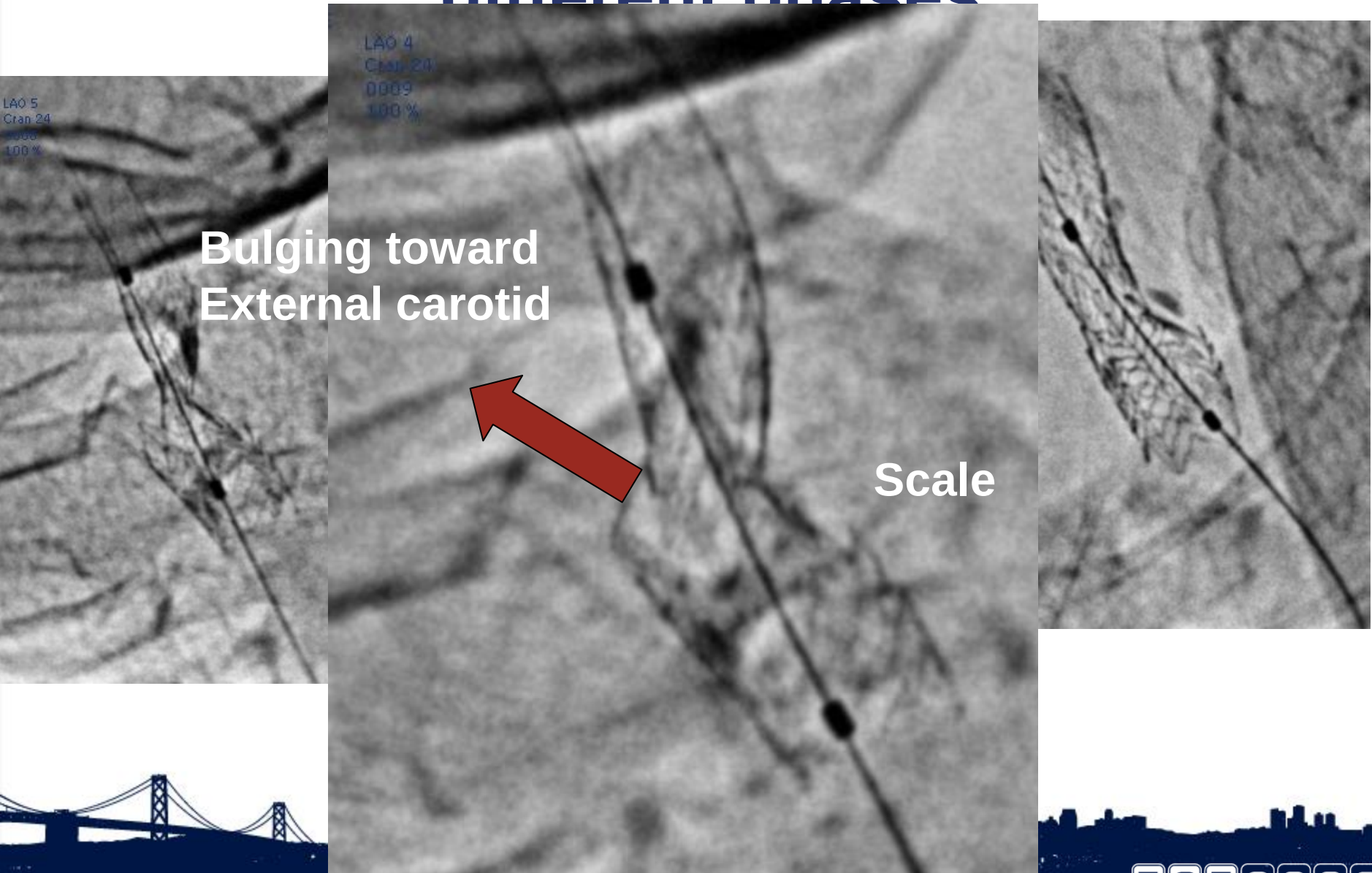


FISH SCALING
at the concave surface
of the stent

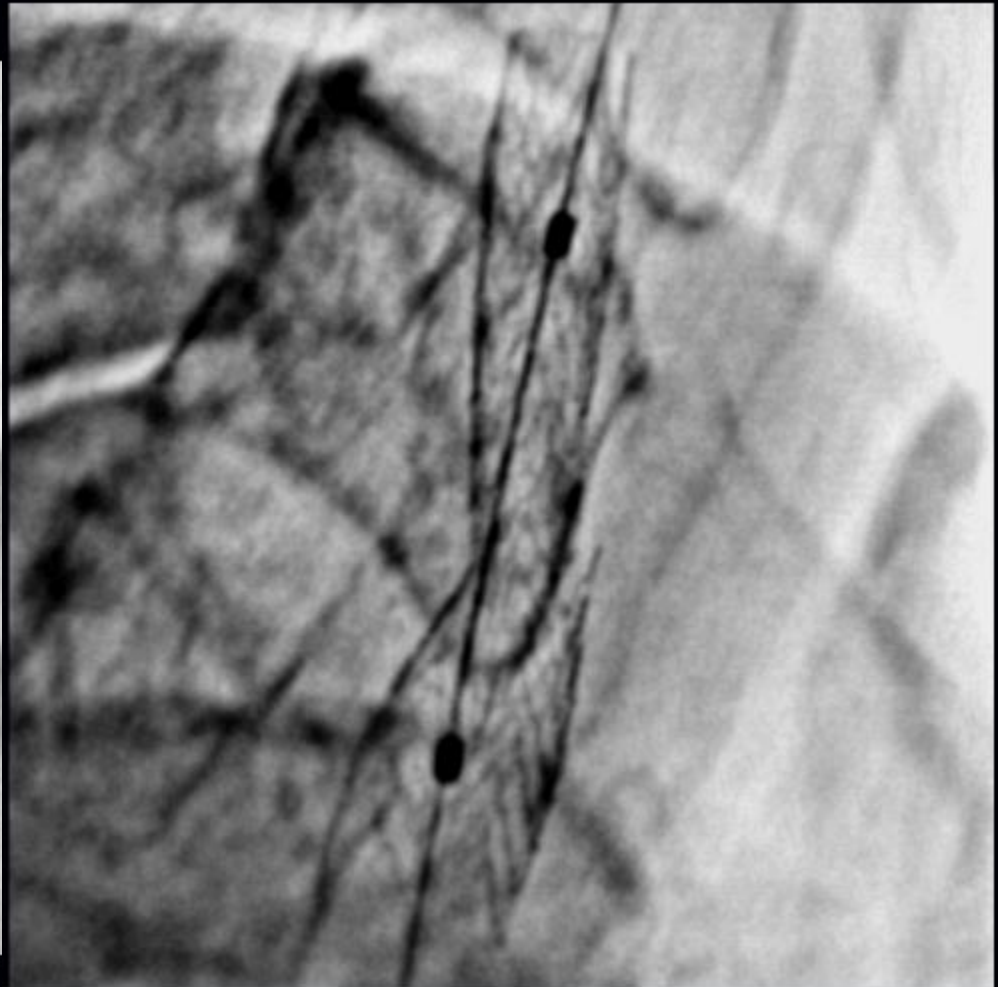
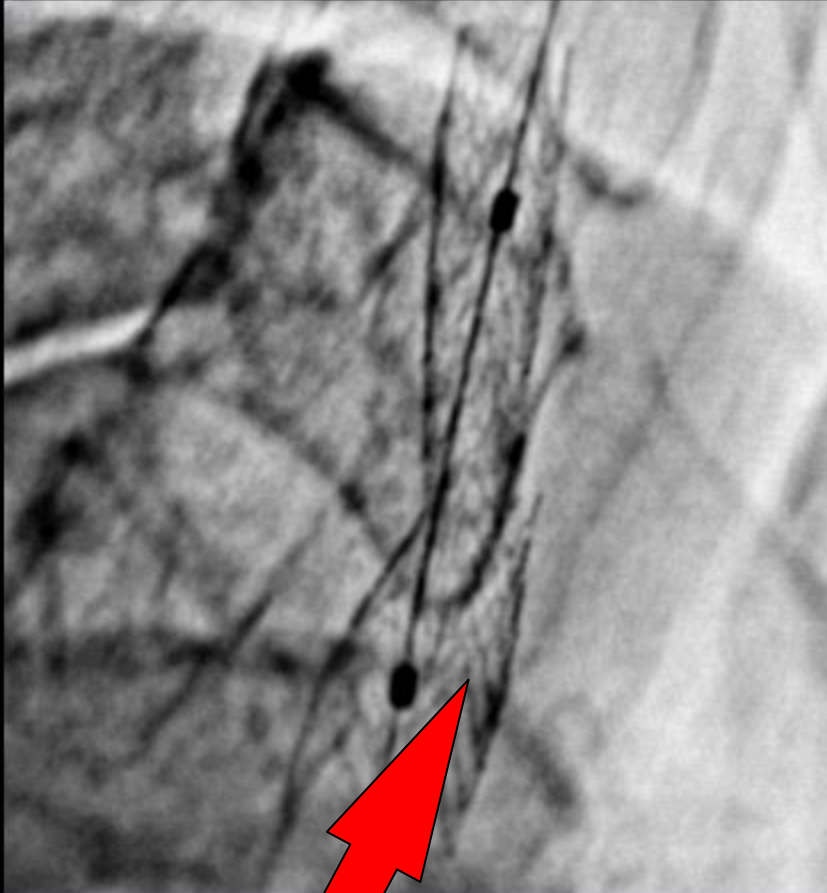


Open-cell struts extending
beyond the intima with focal
contrast extravasation

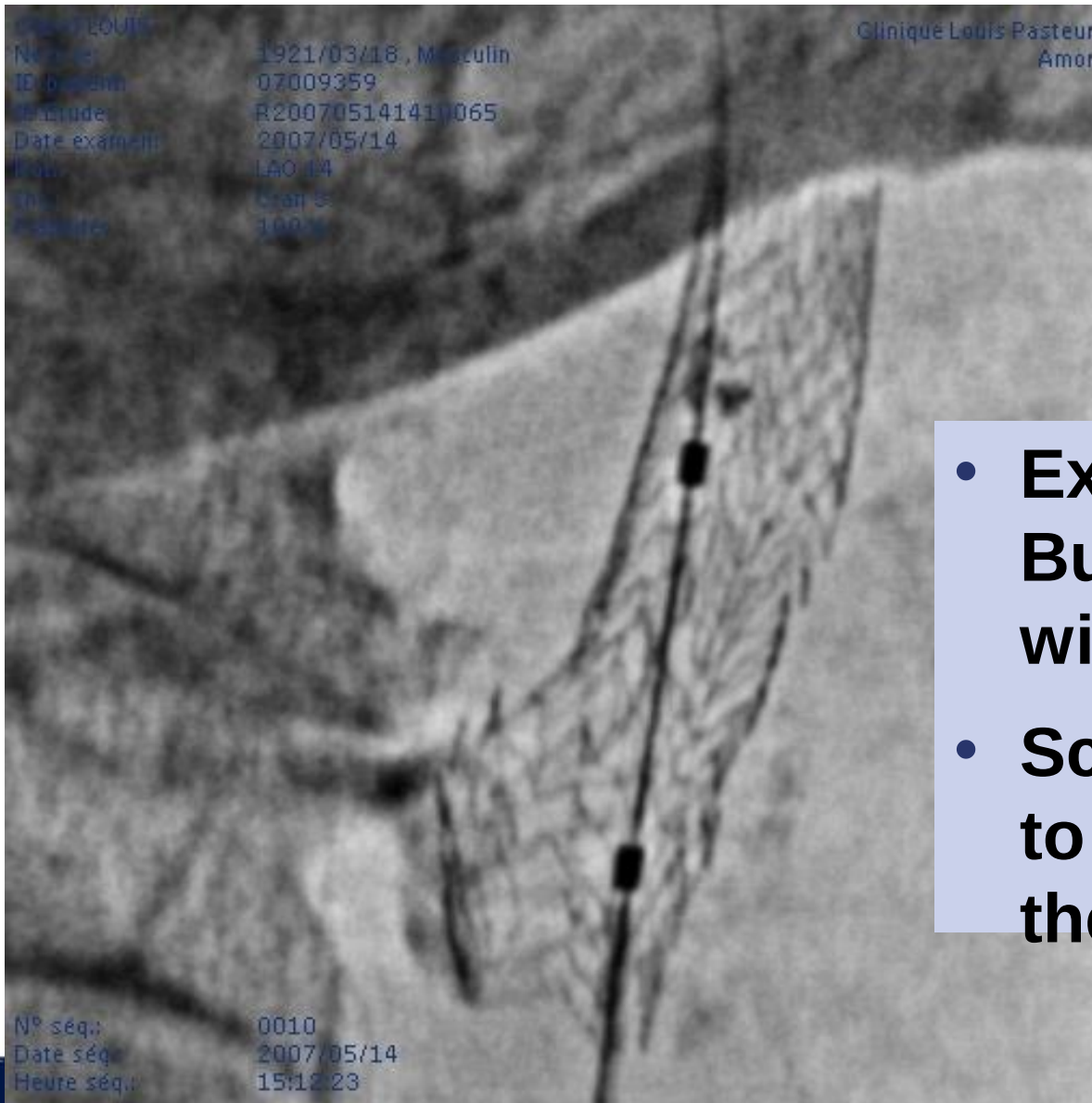
Stentboost of an open cell stent at different phases



Chimney !



The open cell stent signature



- **External Carotid Bulging with or without teeth**
- **Scale protruding to the lumen or the wall**

