University Heart Center Hamburg

GERMAN AORTIC CENTER HAMBURG

Tipps and Tricks for Arch Branched Endografts

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20TH INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES

in aortic endografting 2016

May 20 & 21 - LILLE - FRANCE

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Top 10 Tipps and Tricks for Arch Branched Endografts

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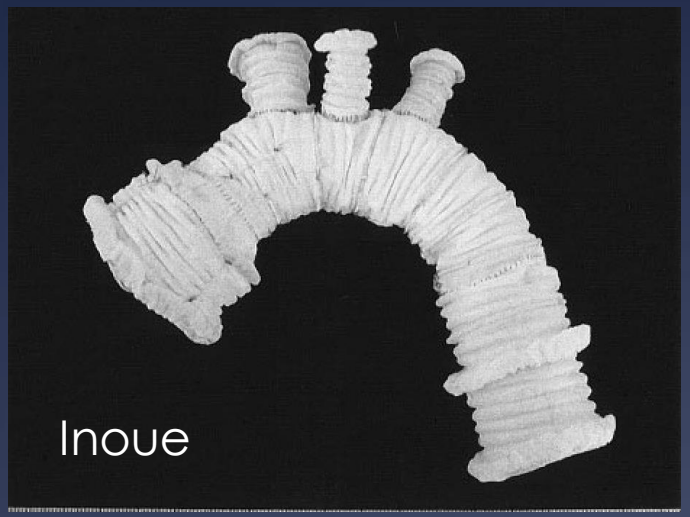
Disclosures

* Research-grants, travelling, proctoring speaking-fees, IP with Cook.

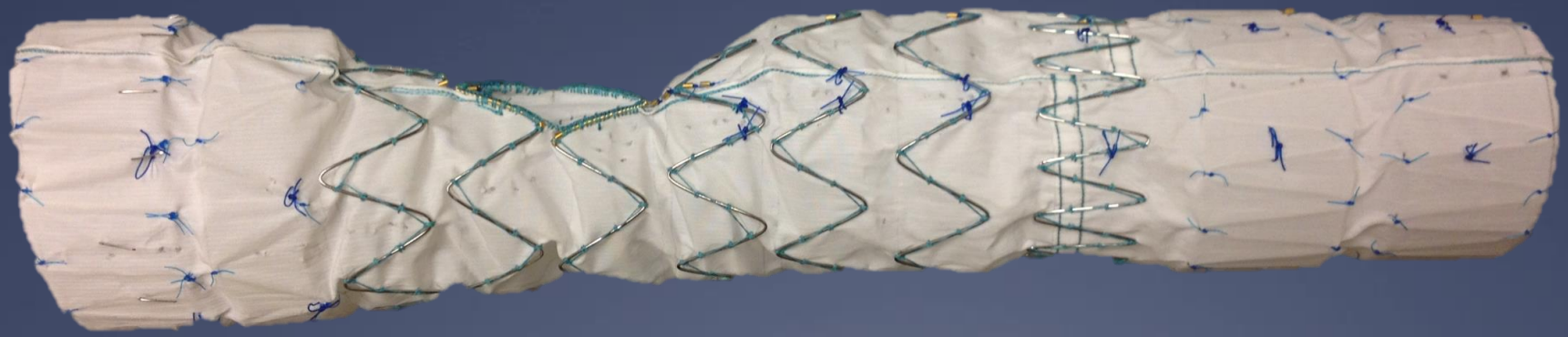
Branched Arch Repair



Outer Branches

Inner Branches

Branched Arch Endograft

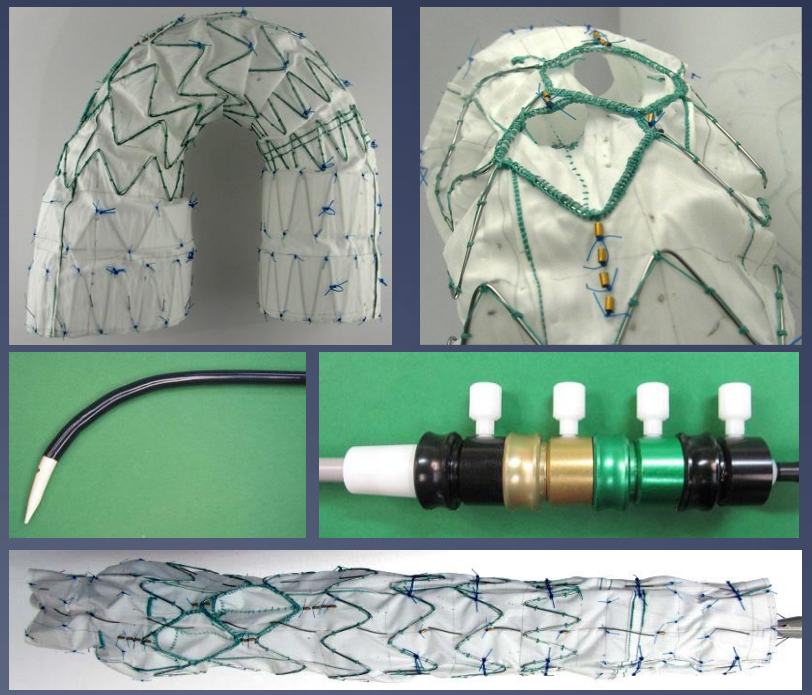


Branched Arch Endograft

Global experience with an inner branched arch endograft

Stéphan Haulon, MD, PhD,[a] Roy K. Greenberg, MD,[b] Rafaëlle Spear, MD,[a] Matt Eagleton, MD,[b] Cherrie Abraham, MD,[c] Christos Lioupis, MD,[c] Eric Verhoeven, MD, PhD,[d] Krassi Ivancev, MD,[e] Tilo Kölbel, MD, PhD,[f] Brendan Stanley, MD,[g] Timothy Resch, MD,[h] Pascal Desgranges, MD, PhD,[i] Blandine Maurel, MD,[a] Blayne Roeder, PhD,[j] Timothy Chuter, MD,[k] and Tara Mastracci, MD[b]

- 2009-2013
- Multicenter Study
- n = 38
- Technichal success 32/38
- Mortality 5/38 (13%)
- Stroke/TIA 6/38 (16%)

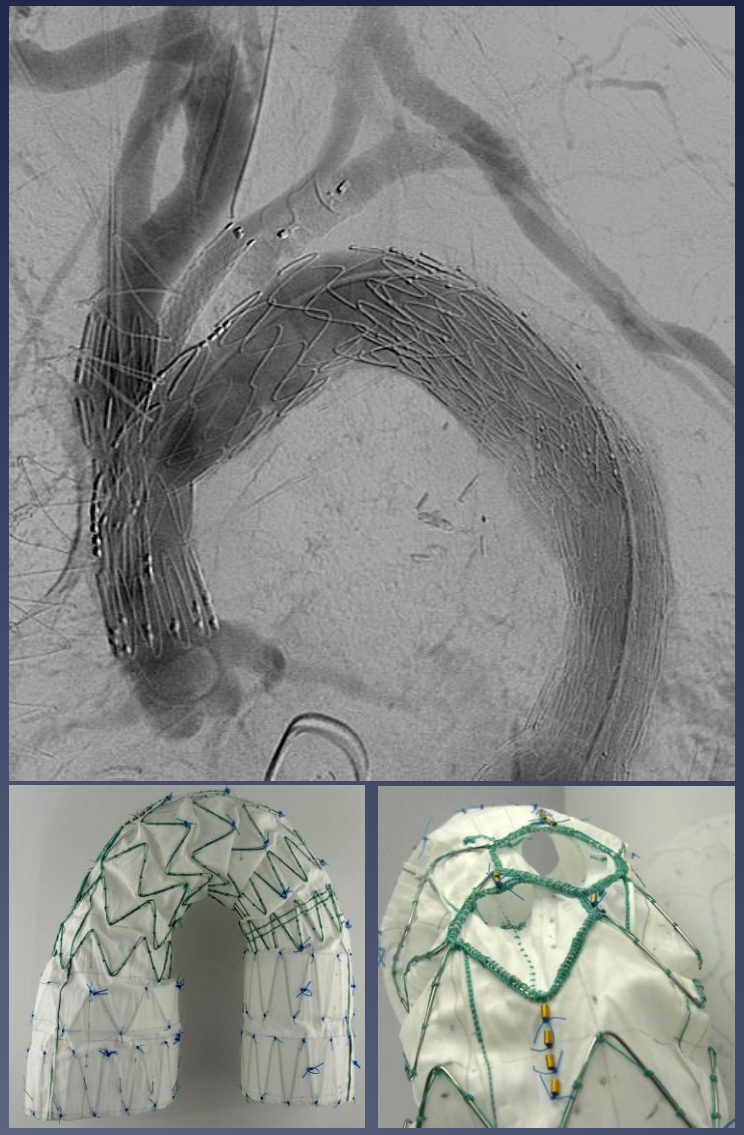


Haulon et al. 2014; J Thor Cardiovasc Surg 148:1709--16

Cook Branched Arch Endograft

Subsequent experience:

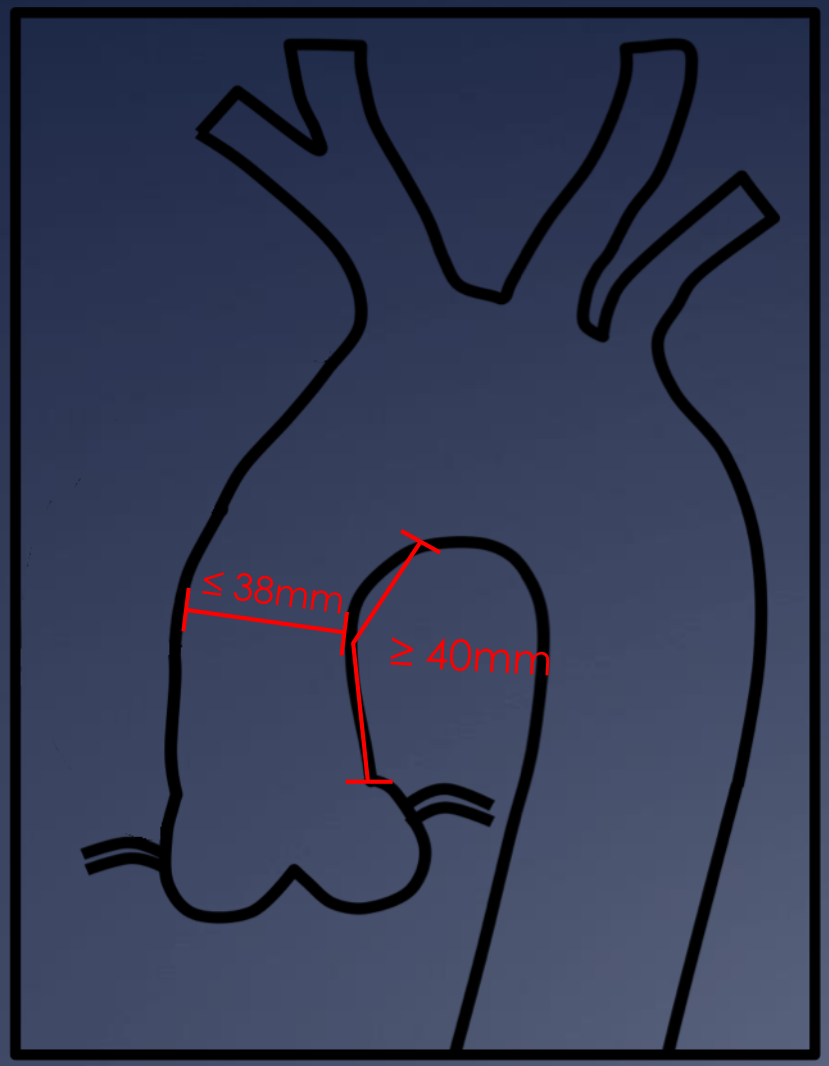
- n = 27; Hamburg, Tokio, Lille
- 4/2013- 11/2014
- Technical success 27/27
- 30d Mortality 0/27
- 1y mortality 1/27
- Stroke/TIA 3/27



Spear et al 2016; Eur J Vasc Endovasc Surg 51: 380-5

1 Case Selection

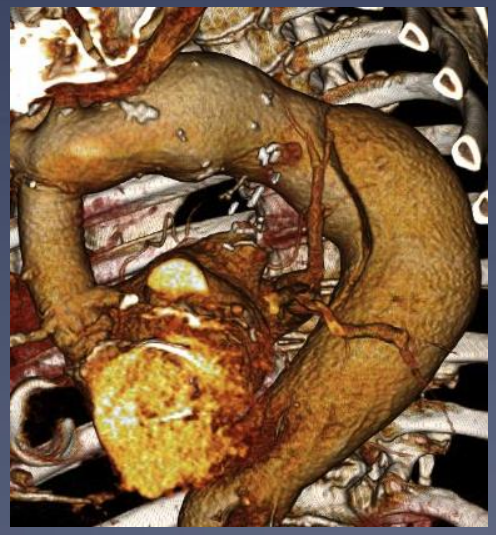
Case Selection



- Diameter ≤ 38mm
- Length ≥ 40mm
- Proximal landing zone ≥ 20mm
- Innominate diameter ≤ 20mm
- Appropriate access vessels
- No significant aortic regurge
- No mechanical aortic valve
- No dissection of branch-vessels

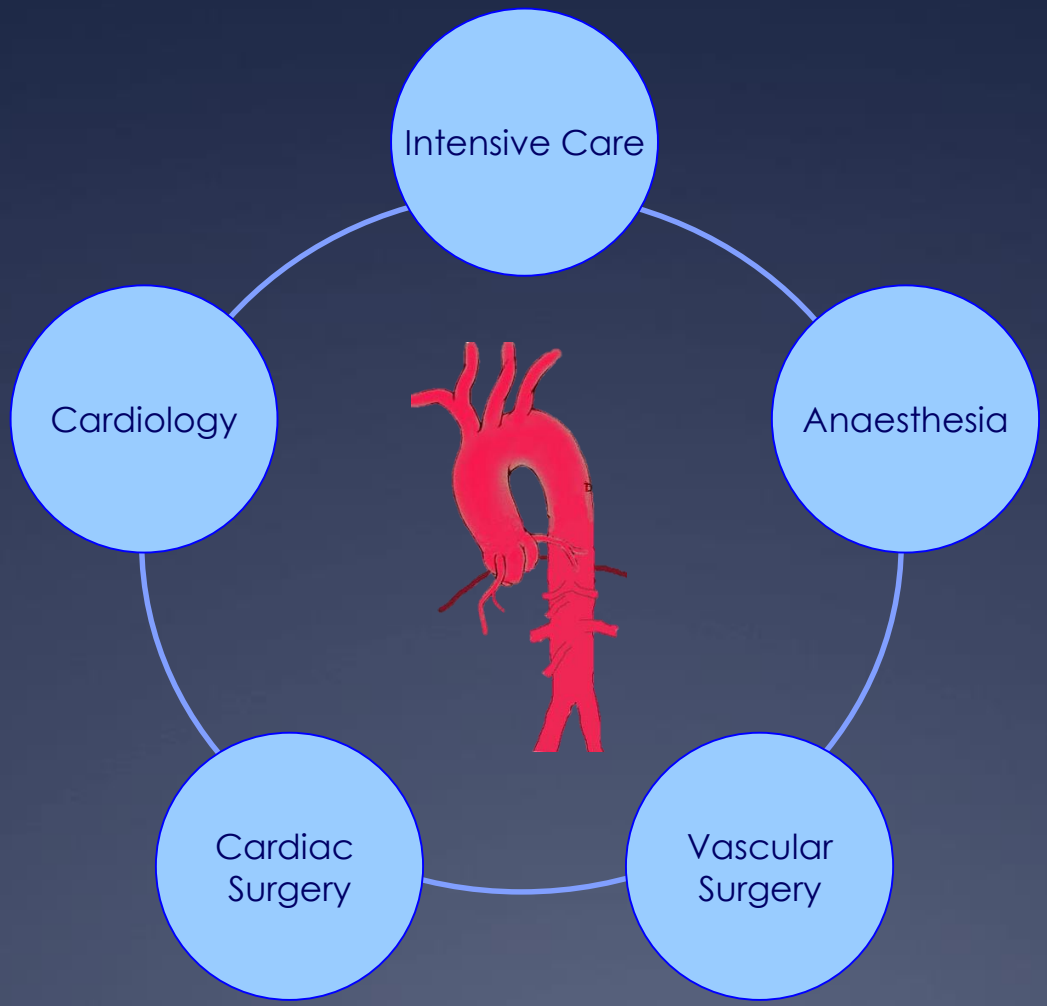
Case Selection

* Aneurysm and PAU of the arch
* Chronic aortic dissection
* Acute Type A dissection



2 Cooperate with CV and CT

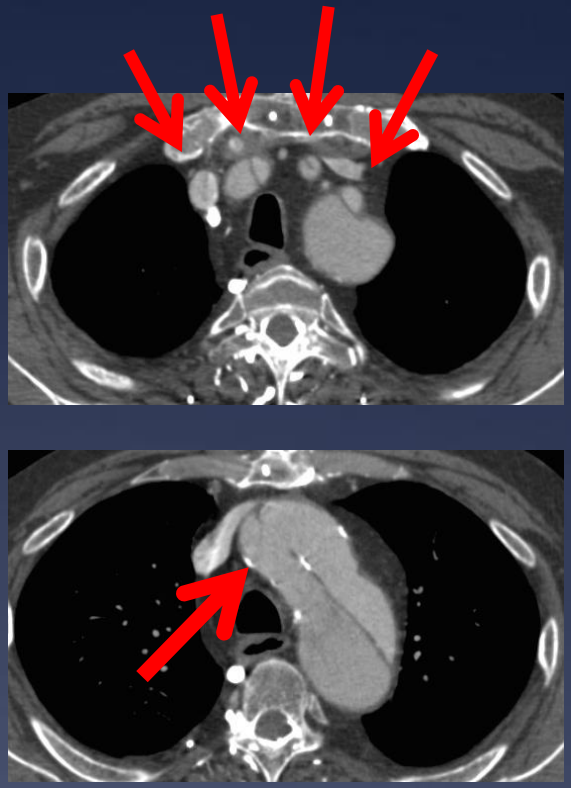
Cooperate with CV and CT



3

Debranching in Residual Dissection

Residual Dissection



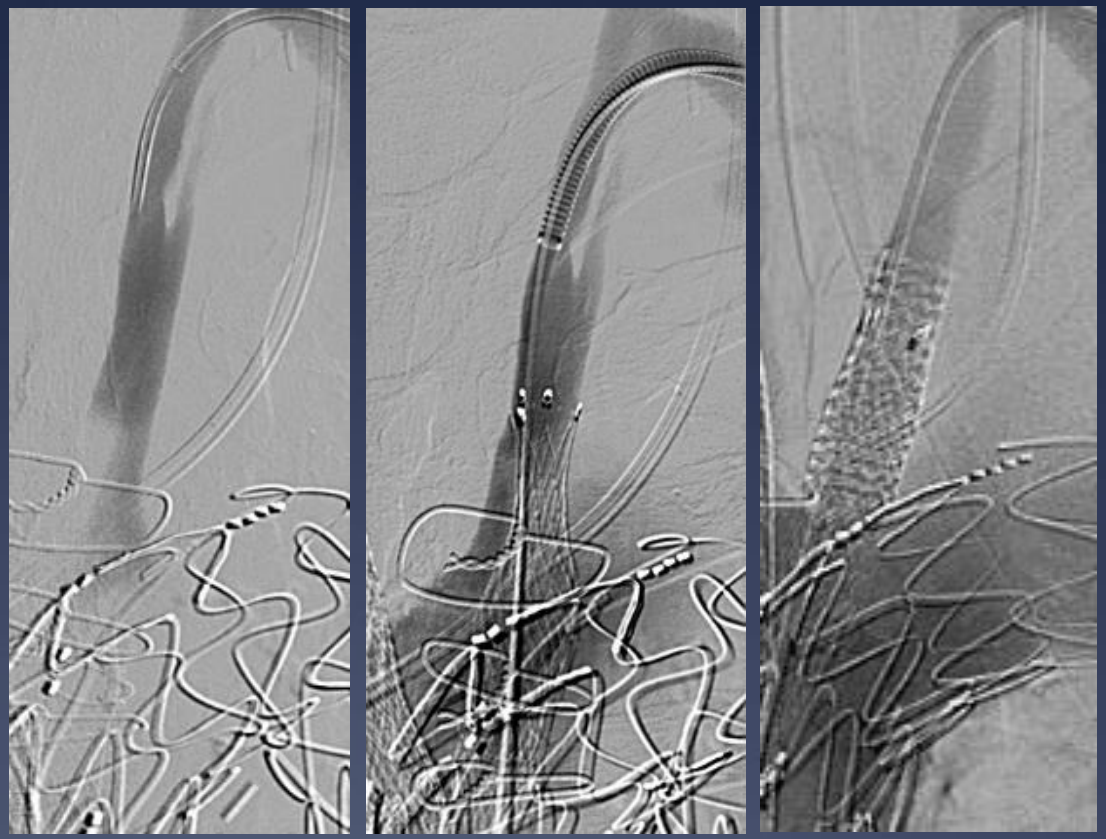
Residual Dissection

Bilateral carotid-subclavian bypass

Axillo-axillary bypass

Residual Dissection

Interposition Graft LCCA



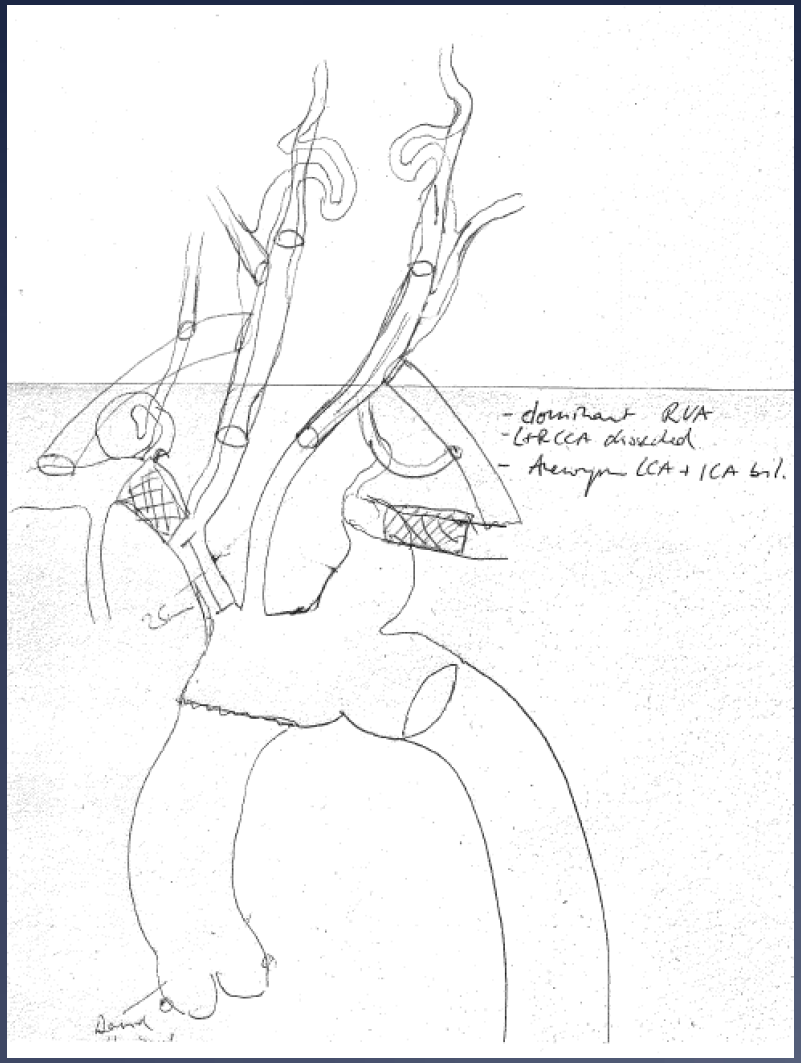
Landing in dissected LCCA

4 Stage the Procedures

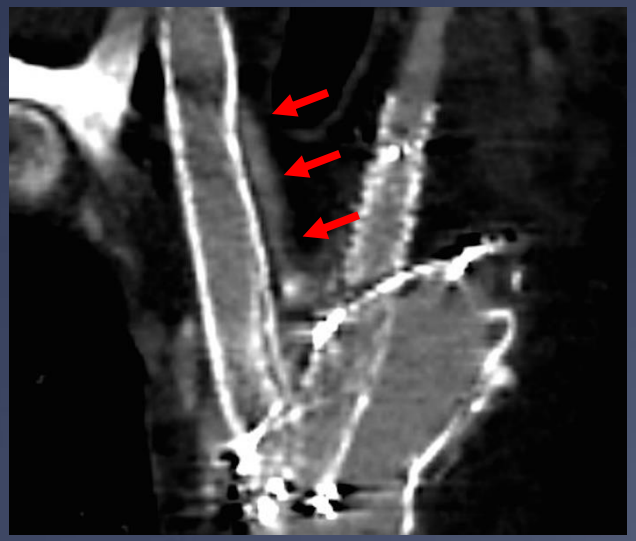
Stage Debranching

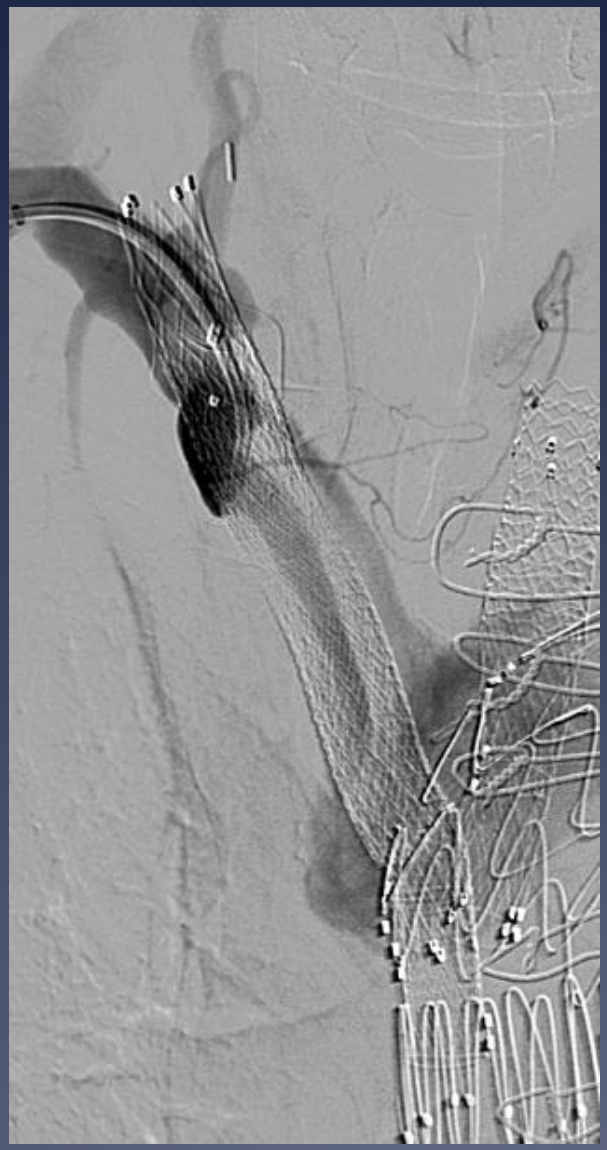
- Shorter anaesthesia and procedure time
- Bleeding complications
- Heparinization ACT 250-350 sec. recommended

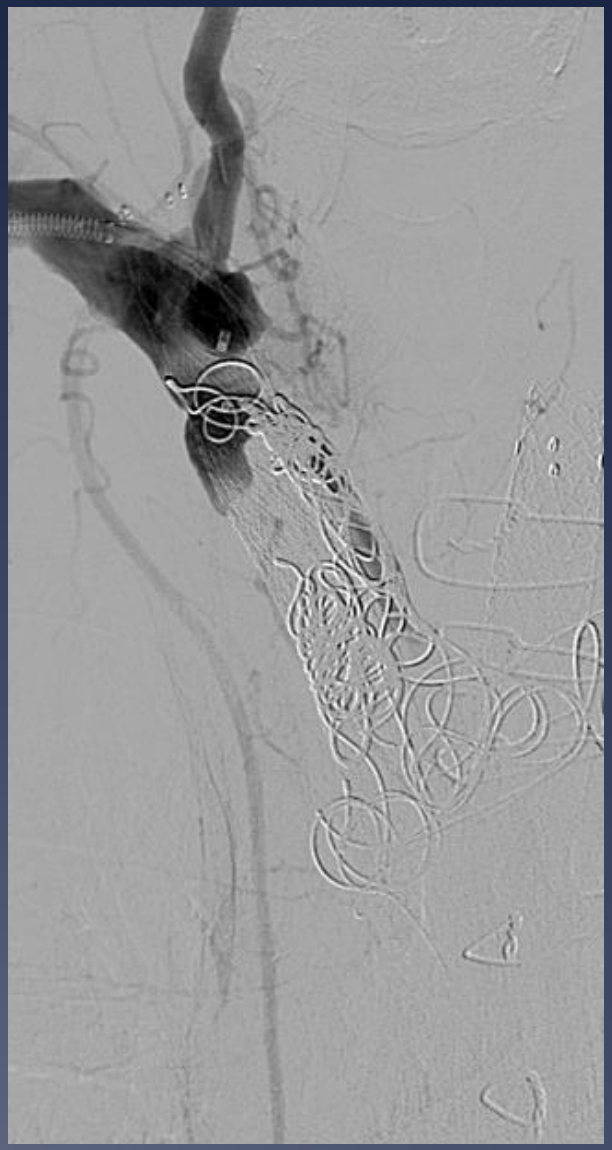
Stage Debranching



Stage FL-Embolisation



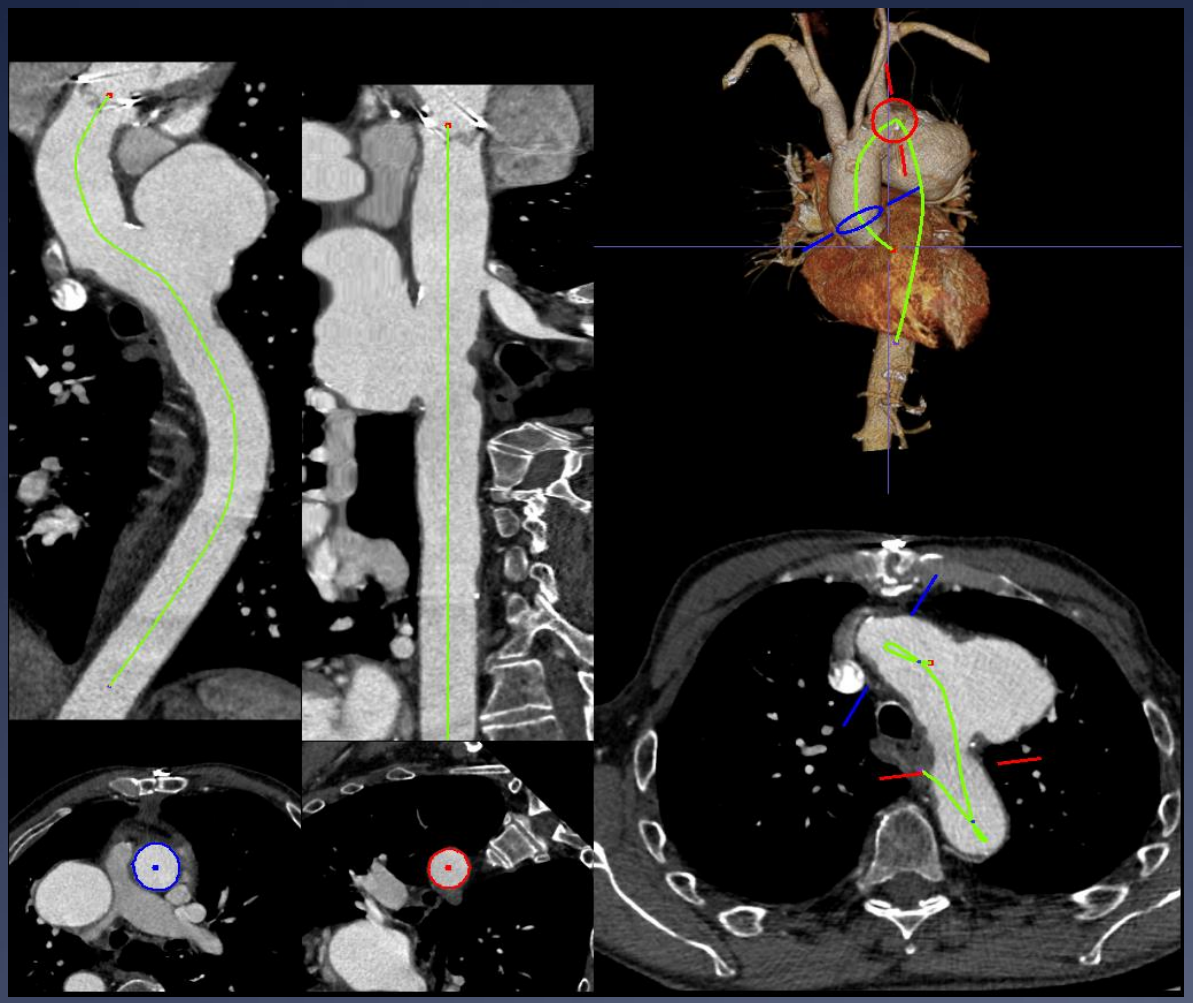


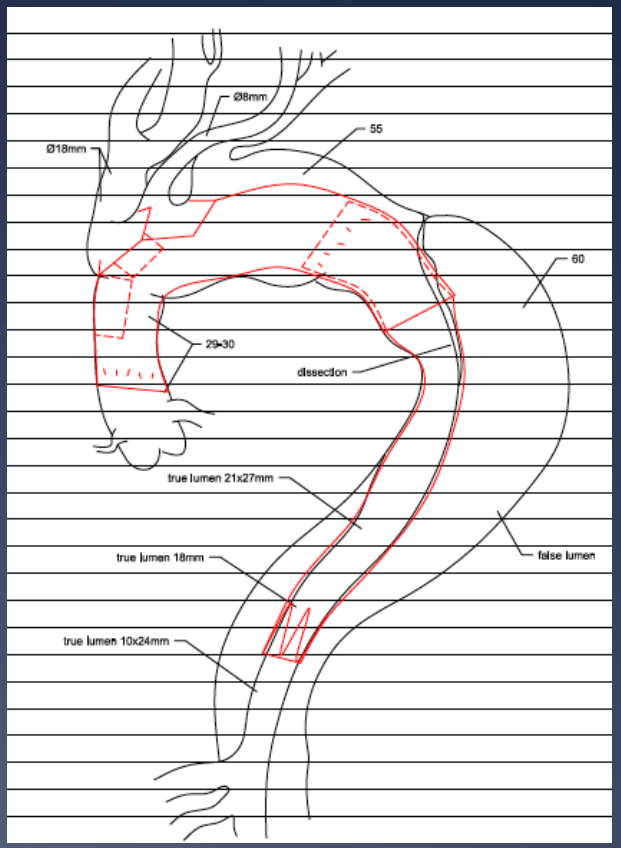


5

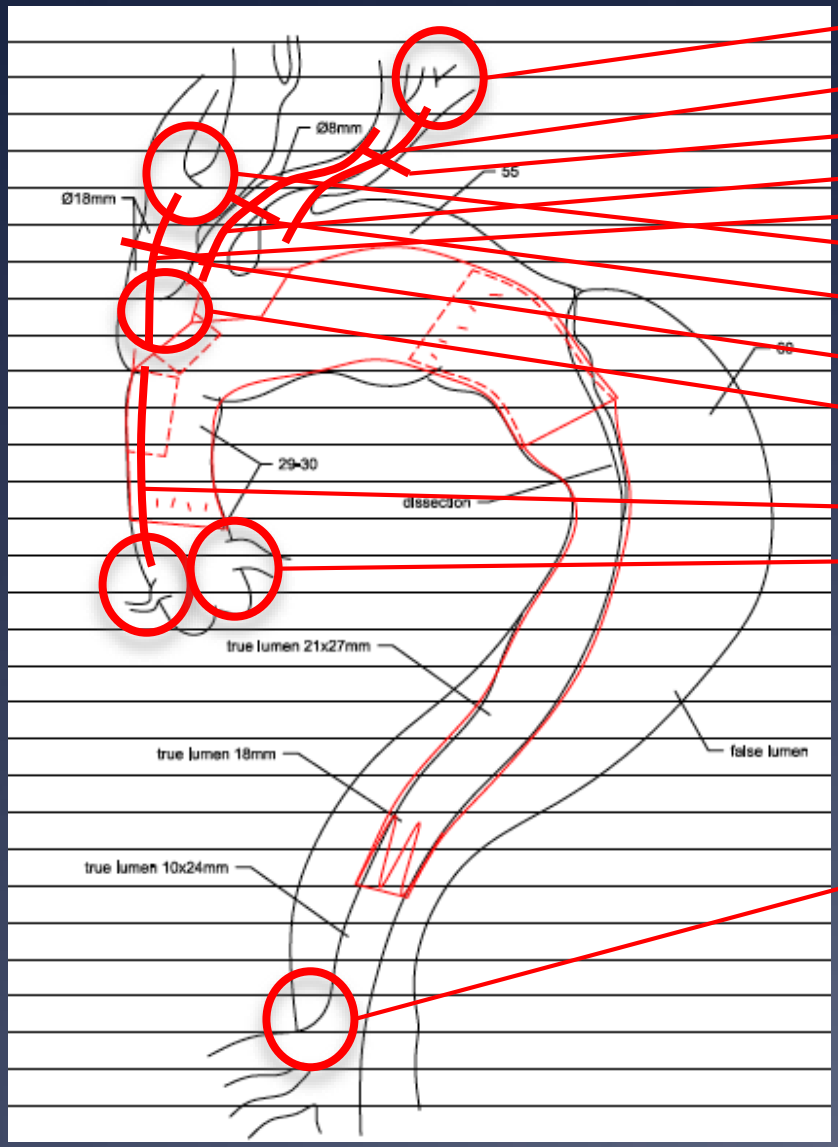
Preoperative Planning

Preoperative Planning





Preoperative Planning

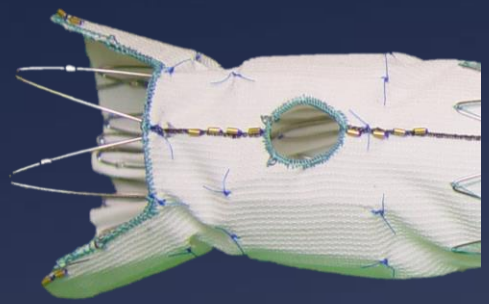


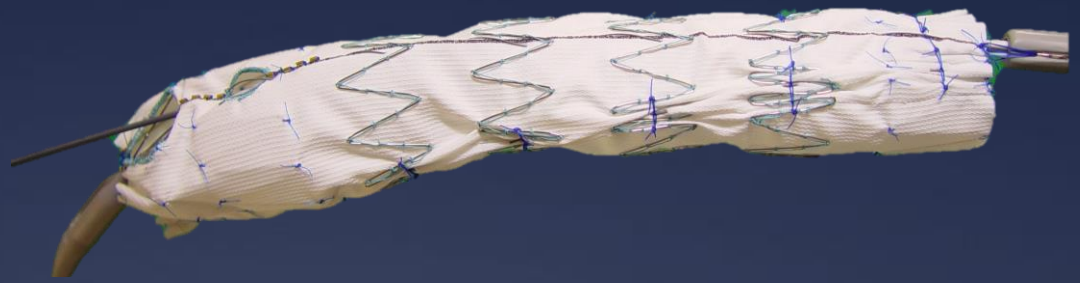
Projection LVA
Length LSA to LVA
Diameter LSA
Length IA
Length IA
Projection IA-bifurcatio
Diameter LCCA
Diameter IA
Projection IA and LCCA
Length IA
Projection RCA & LCA
Projection CA

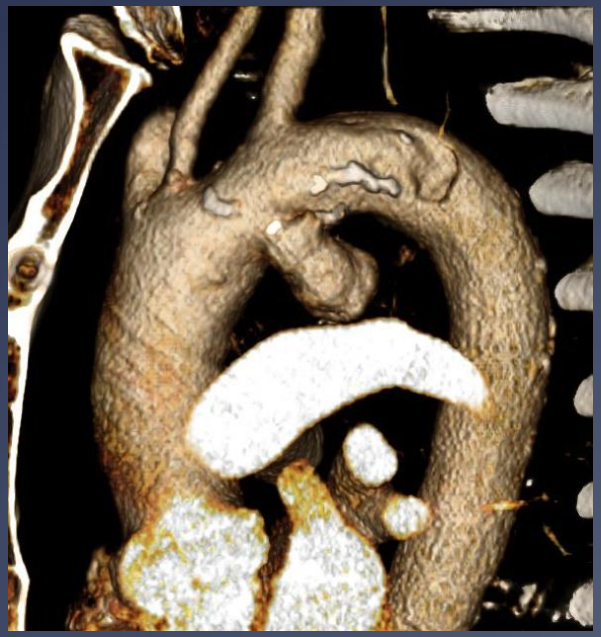
6

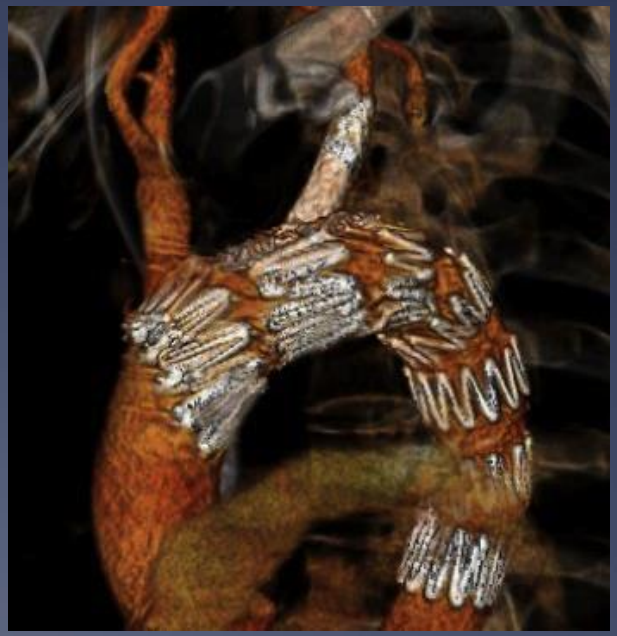
Consider Fenestrated Arch Graft

Fenestrated Arch Grafts



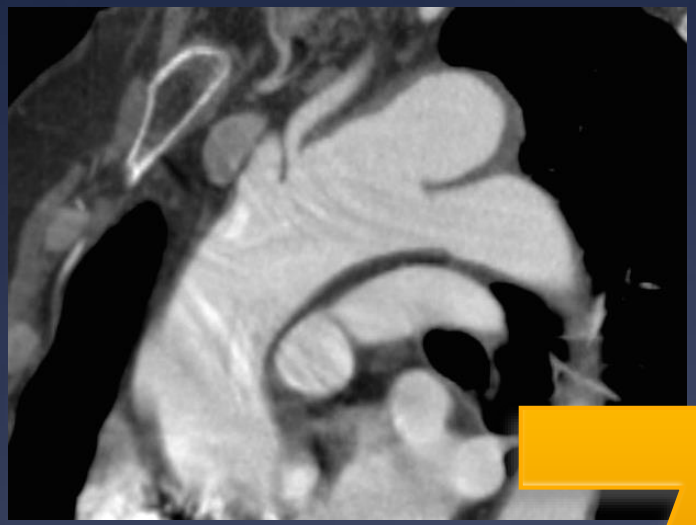


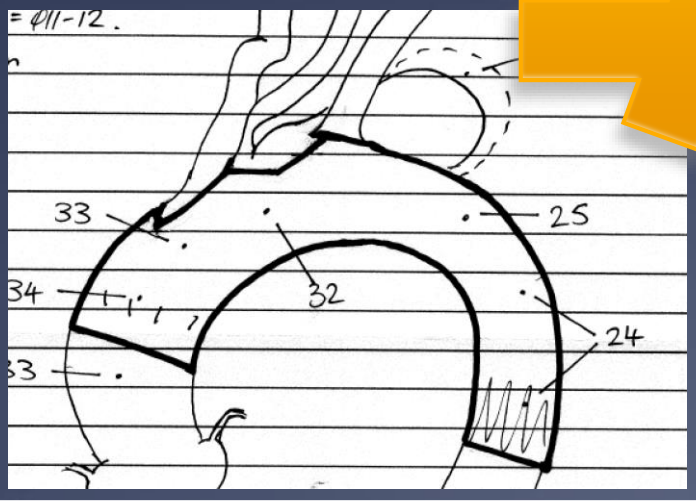




Fenestrated Arch Grafts

Branched Arch Graft





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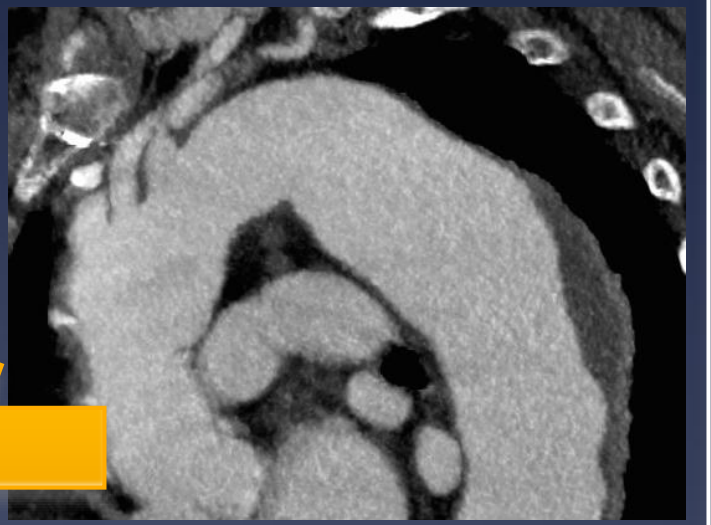
Fenestrated Arch Graft



Fenestrated Arch Grafts

- Treats different pathology
- Large ascending aorta
- Faster procedure times

7

CO^2 Flushing

CO^2 - Flushing

Carbon Dioxide Flushing Technique to Prevent Cerebral Arterial Air Embolism and Stroke During TEVAR

Journal of Endovascular Therapy
1–3

DOI: 10.1177/1526602816633705
www.jevt.org
SAGE

- CO^2 Container
- Connect to sideport
- Flush 2min 1.2 bar
- Flush 60-200ml saline

Kölbel et al 2016; J Endovasc Surg 23: 393-5

CO^2 - Flushing

Carbon Dioxide Flushing Technique to Prevent Cerebral Arterial Air Embolism and Stroke During TEVAR

Journal of Endovascular Therapy
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DOI: 10.1177/1526602816633705
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SAGE

- 2014-2015: n=36
- All complex arch and ascending TEVAR:
  - Branched arch
  - Fenestrated arch
  - Ascending TEVAR
- All zone 0 -1
- Stroke: 1/36 (3%)
  - minor non-disabling stroke

Kölbel et al 2016; J Endovasc Surg 23: 393-5

TEVAR FOR TAAs & TYPE B DISSECTIONS

Benchmark results

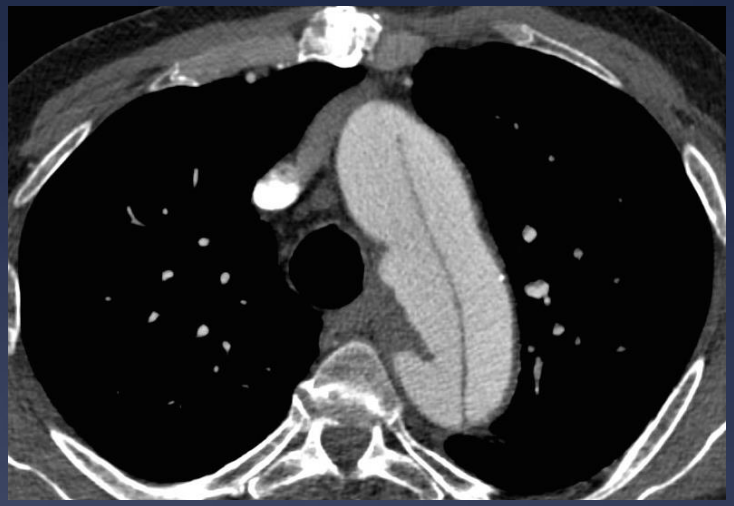
	n	Indication	Mean age	Zone 0 to 2	30-day Mortality	Stroke /TIA
C-TAG Aortic Catastrophes (2009)	59	Complicated TBD/ TT	62	-	12%	15%
SVS Meta-analysis (2011)	99	Acute TBD	59	35%	11%	10%
STABLE Trial (2012)	40	Acute TBD	58	63%	5%	10%
MOTHER Registry (2013)	114	Acute TBD	61	61%	11%	6%
	195	Chronic TBD	63	44%	13%	7%
	670	TAAs	71	37%	5%	5%

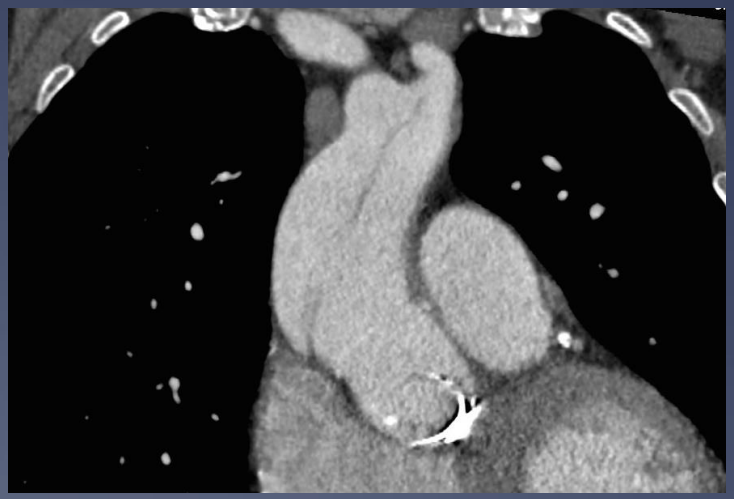
Courtesy of Gustavo Oderich

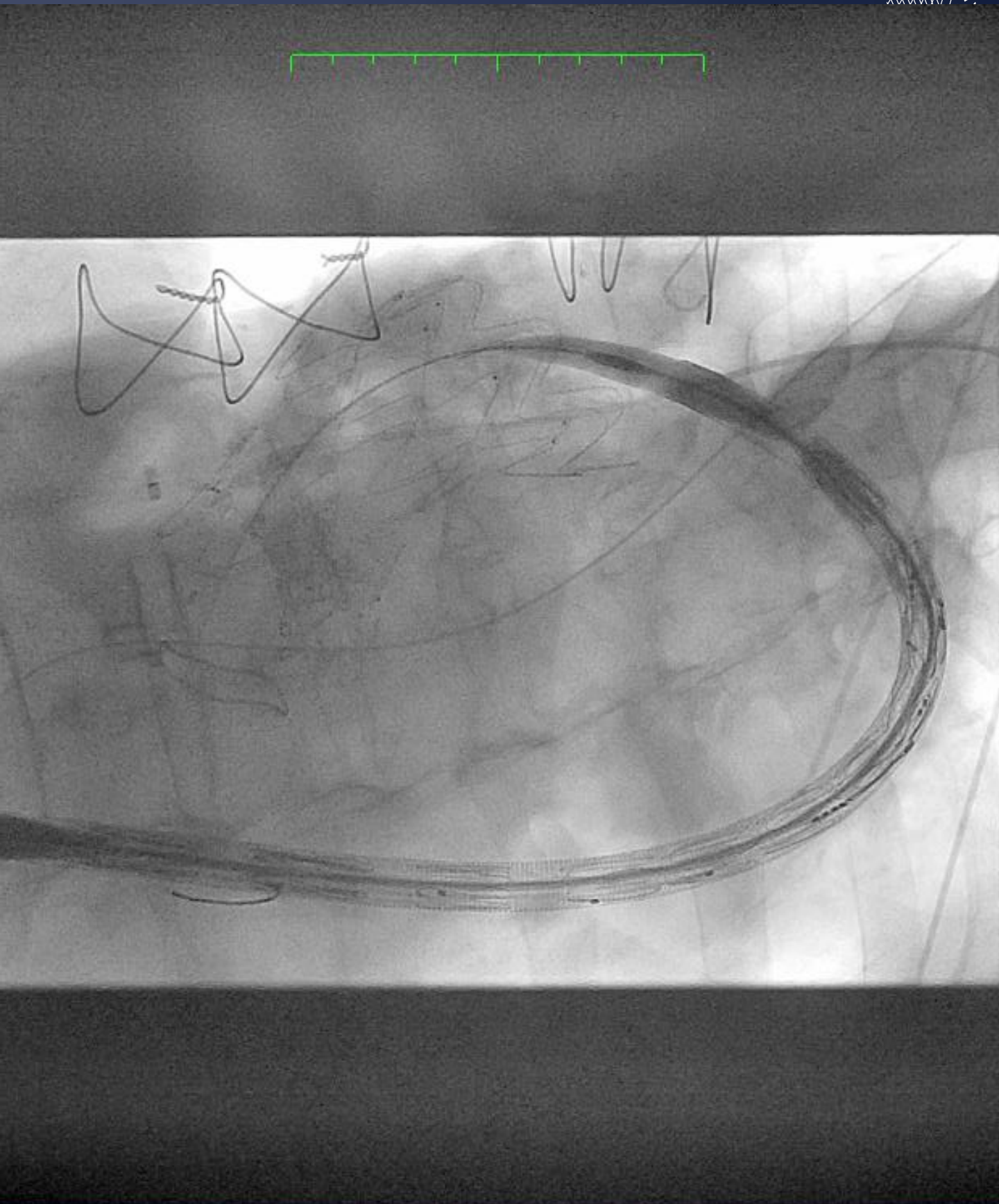
8

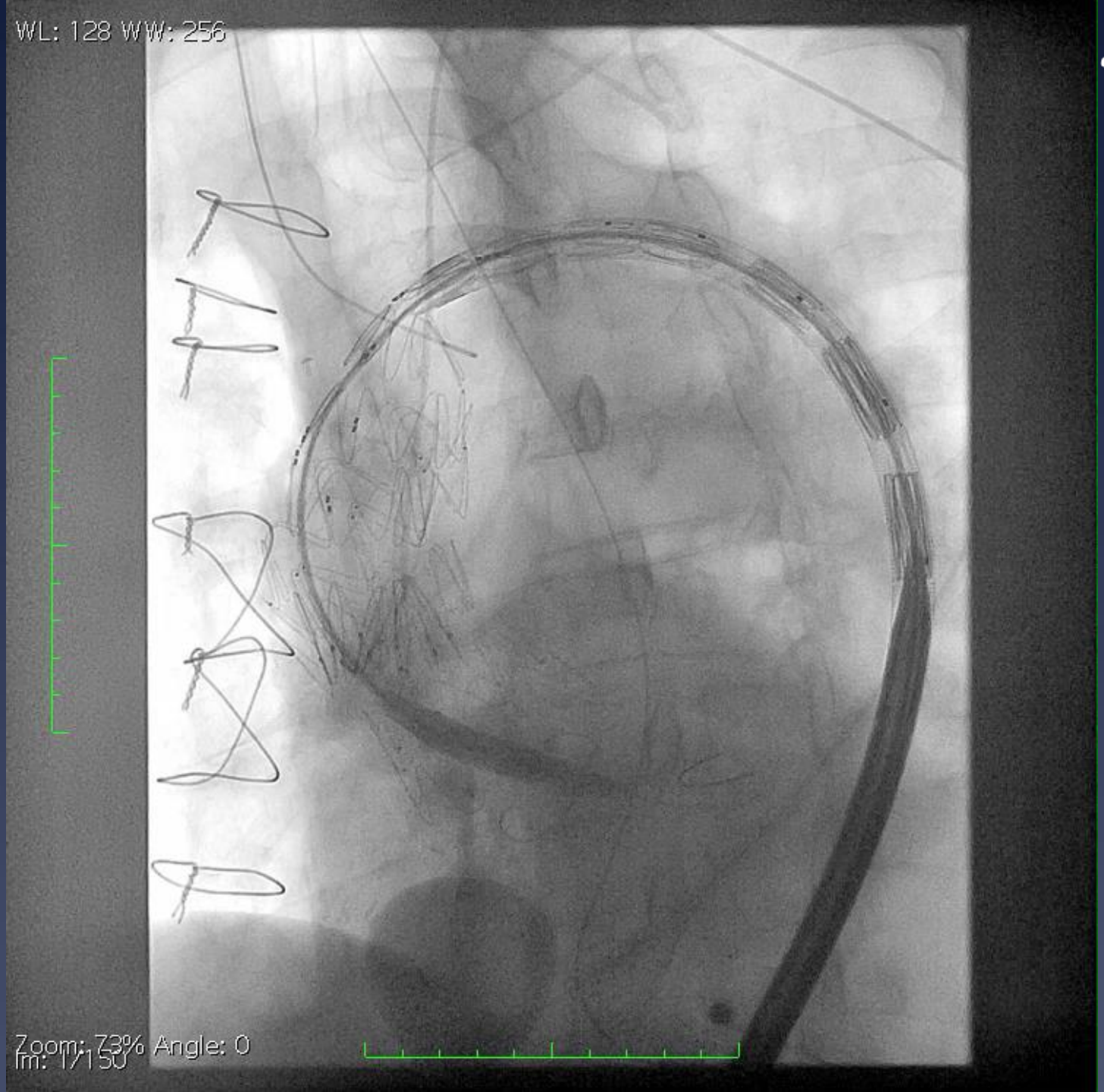
Be prepared to change plan

Acute Type A Dissection



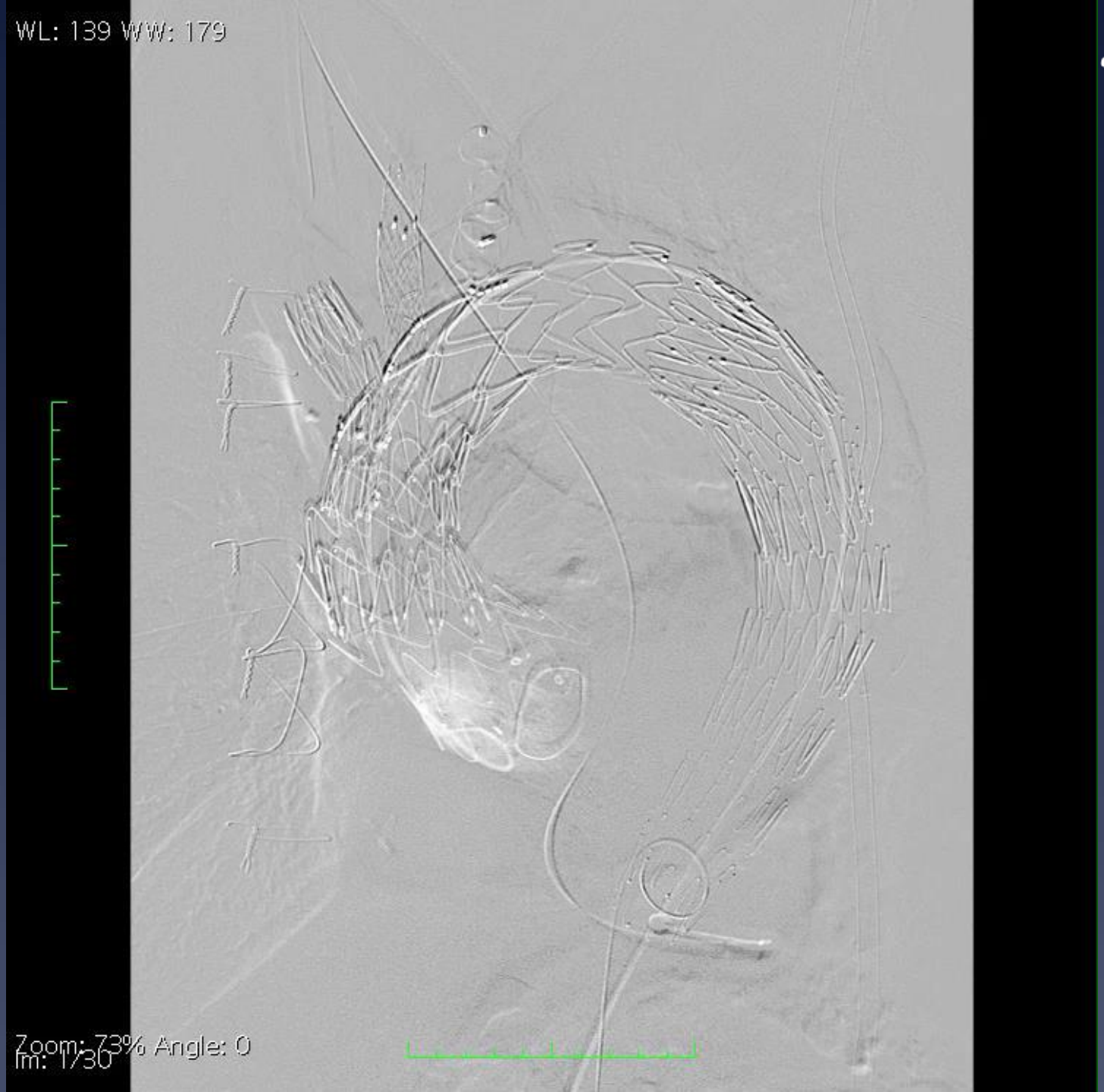




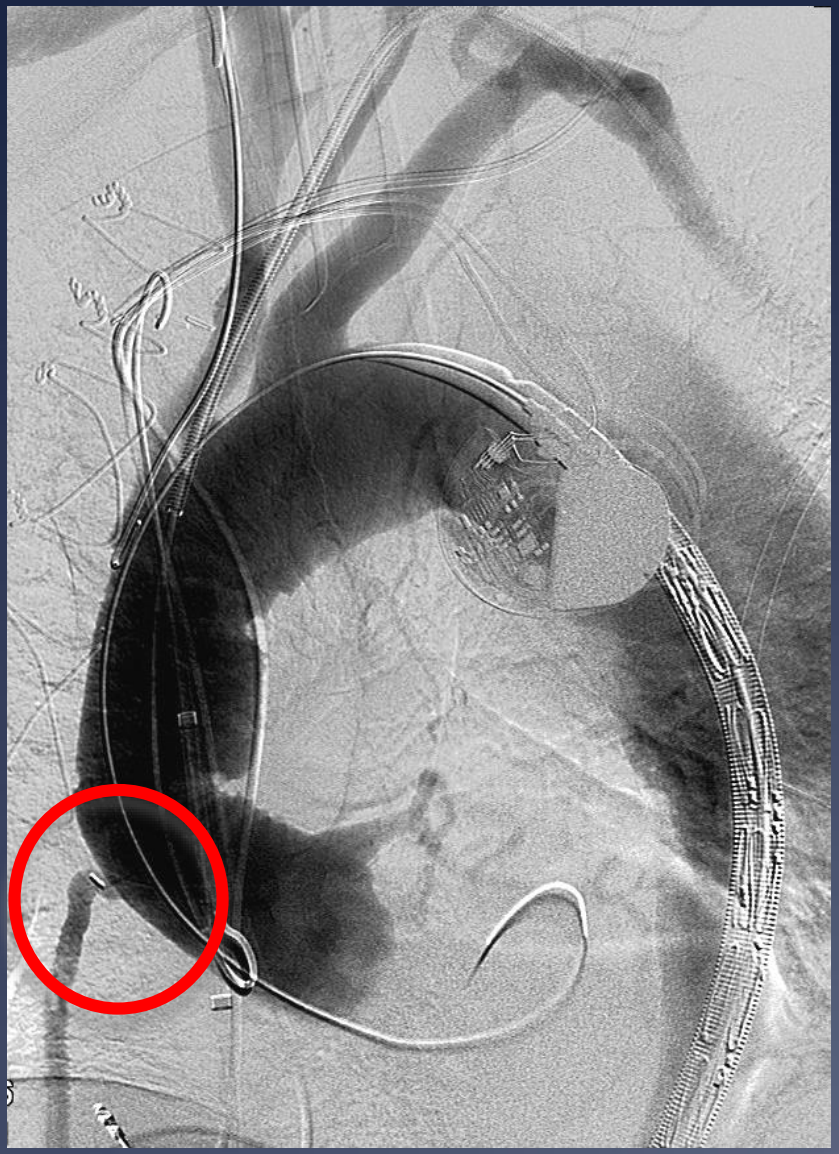

WL: 128 WW: 256
Zoom: 73% Angle: 0
Im: 1/150

LIMA Bypass

Start with the second branch to the LCCA!


WL: 139 WW: 179
Zoom: 73% Angle: 0
Im: 1/30

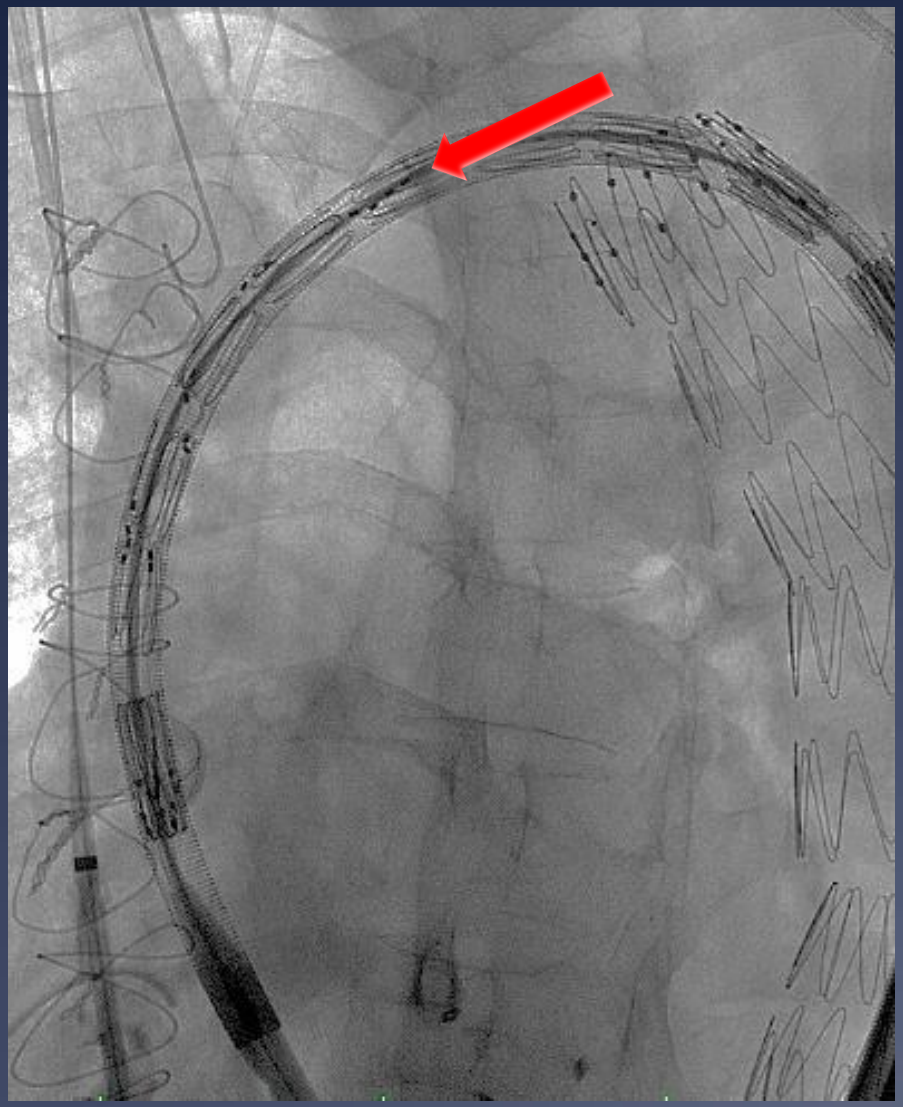
Be aware of CAB



9

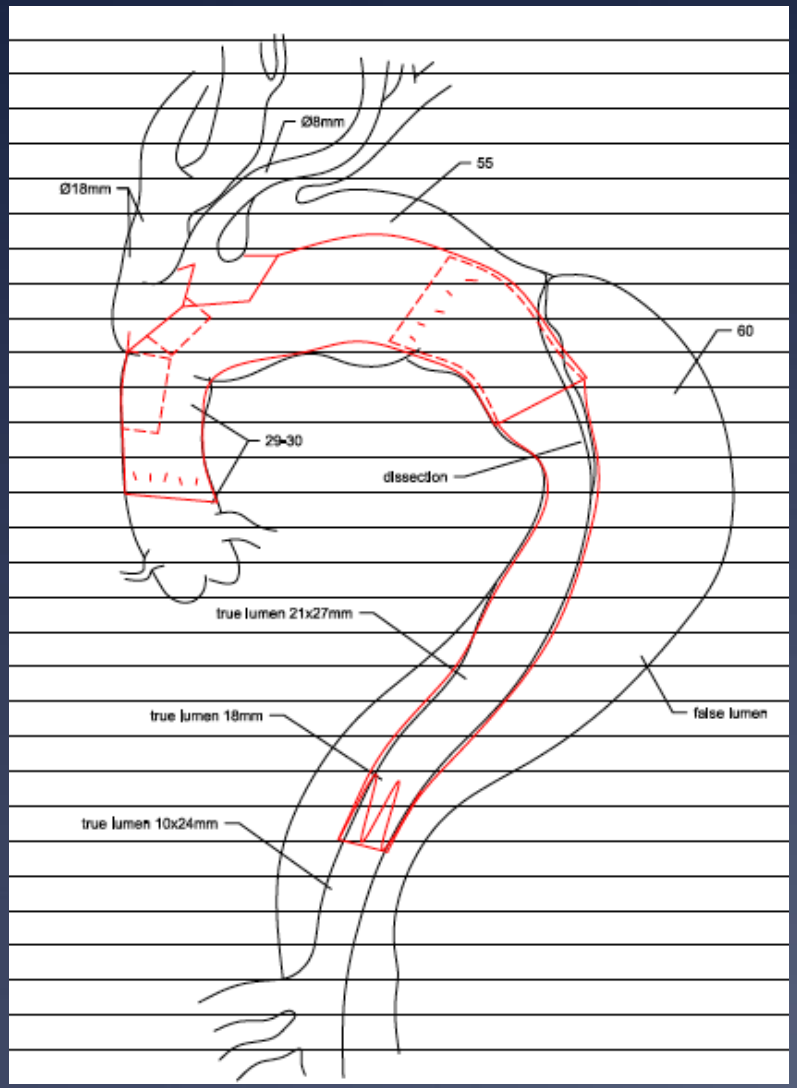
Disregard Malrotation

Disregard Markers for Rotation



Deploy further proximal

Deploy further proximal



Conclusion

My Top 3:

- Careful Case selection
- Multidisciplinary approach
- Stage the procedures