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GERMAN
AORTIC CENTER
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What is the best treatment for False Lumen growth after type B Dissection

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Disclosures

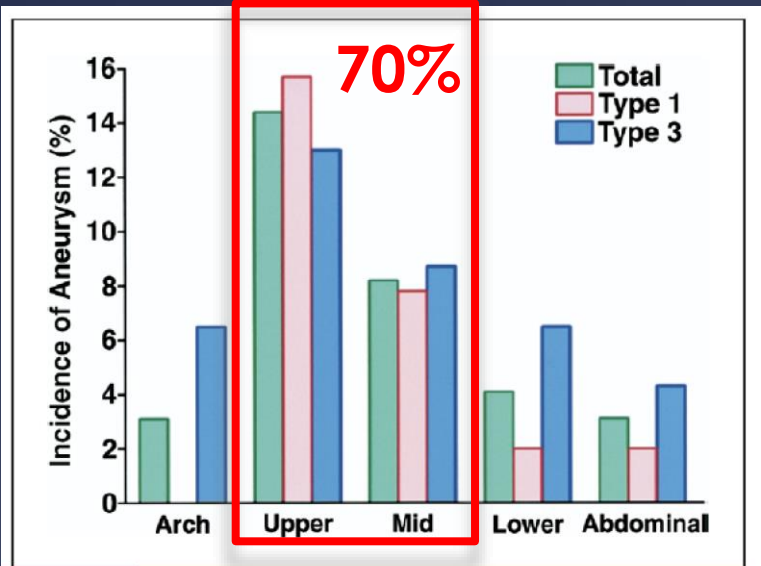


- * Travelling, proctoring speaking-fees, PI with Cook Medical.



Long-Term Predictors of Descending Aorta Aneurysm Change in Patients With Aortic Dissection

Jong-Min Song, MD, PHD,* Sung-Doo Kim, MD

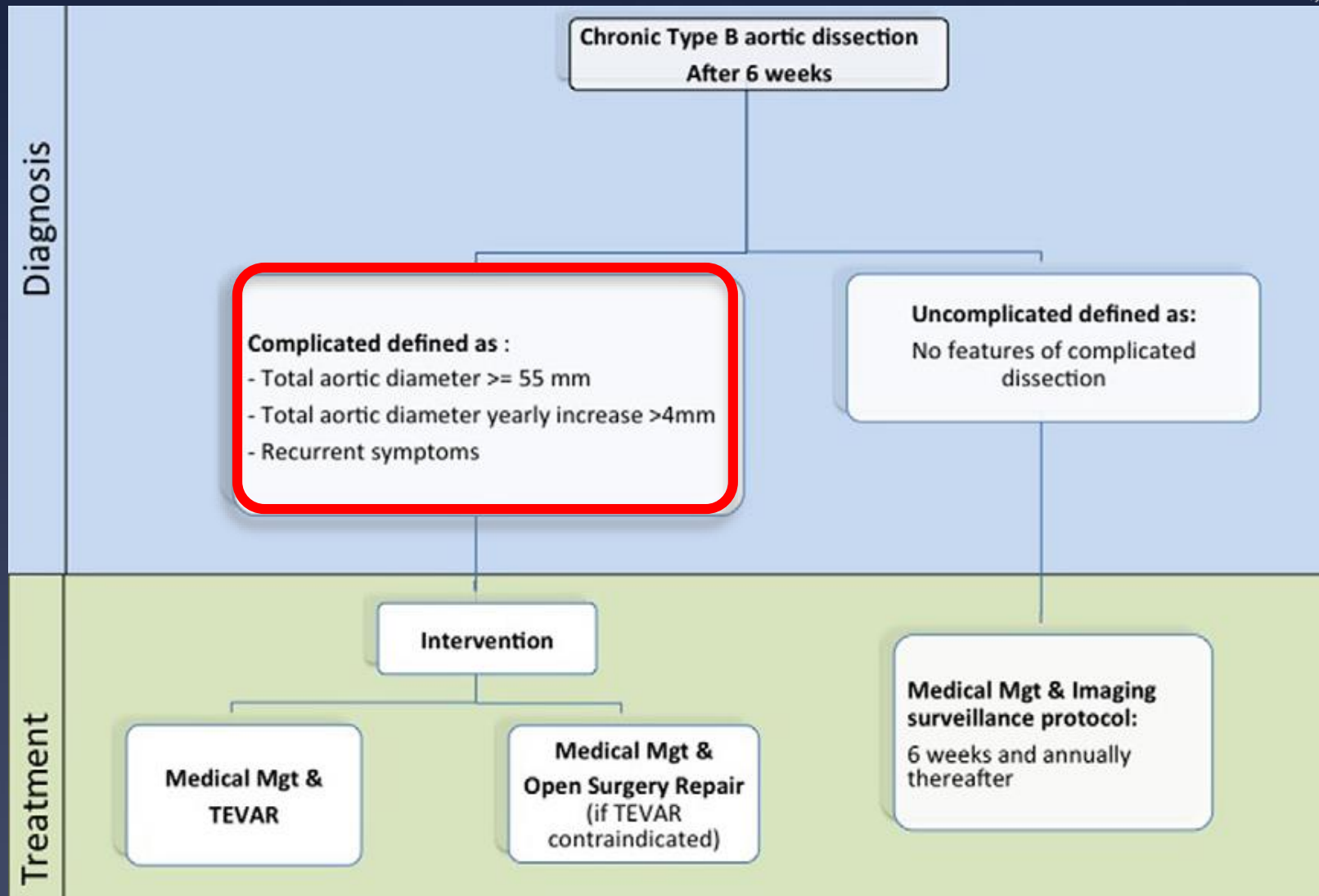


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Figure 1 Incidence of Distal Aorta Aneurysm

Incidences of aneurysm at the aortic arch; upper, mid, and lower descending thoracic aorta; and abdominal aorta in patients with type 1 and type 3 aortic dissection.

Expert Consensus on CTBAD





Systematic Review

Open surgical repair for chronic type B aortic dissection: a systematic review

David H. Tian¹, Ramesh P. De Silva¹, Tom Wang¹, Tristan D. Yan^{1,2}

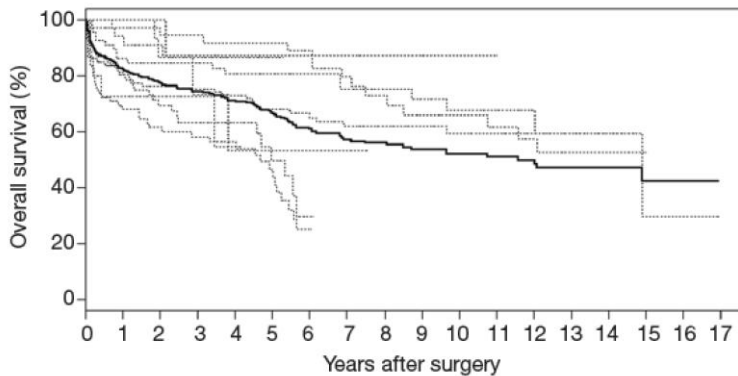
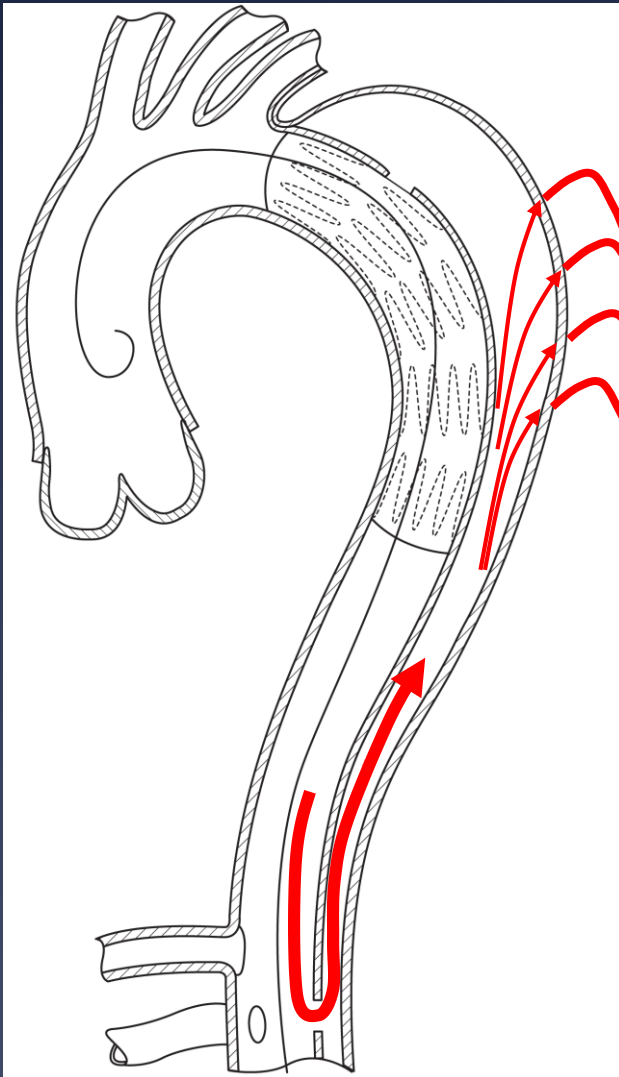


Figure 1 Overall survival based on reconstructed individual patient data. Data of 458 patients from seven studies were reconstructed and presented. Dotted lines represents Kaplan-Meier curves of individual studies, while the solid line represents aggregate reconstructed survival data of the entire cohort.

19 studies, n=970, 58y mean age

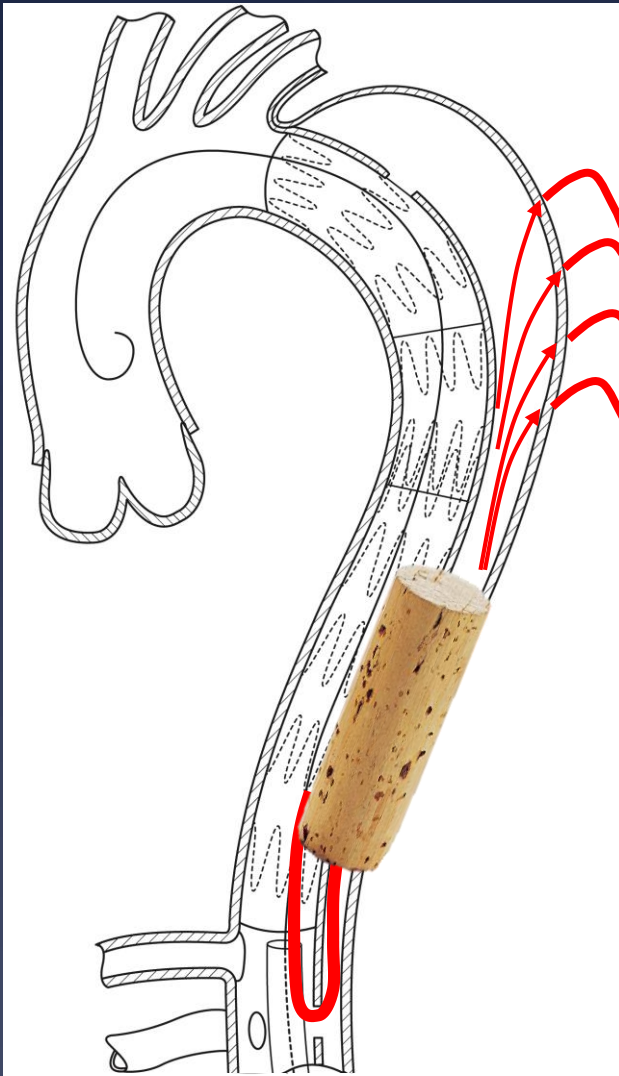
- * 30d mortality: 11%
- * Stroke: 6%, SCI: 5%, CNI: 8%
- * 3/10y survival: 74/50%
- * Conclusion:
„poorer compared to TEVAR“

Failure to Remodel in Chronic Dissection



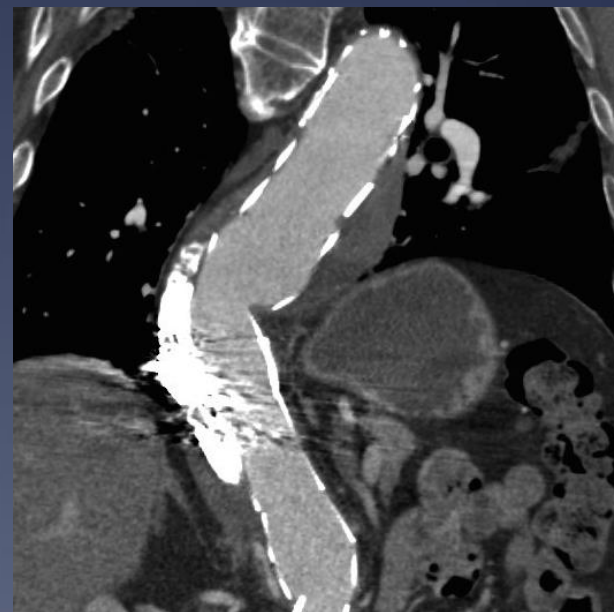
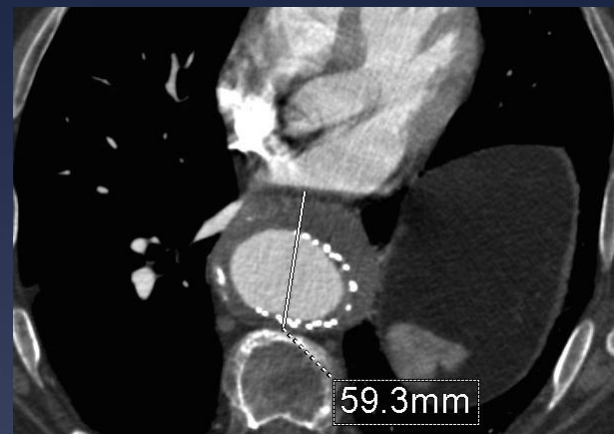
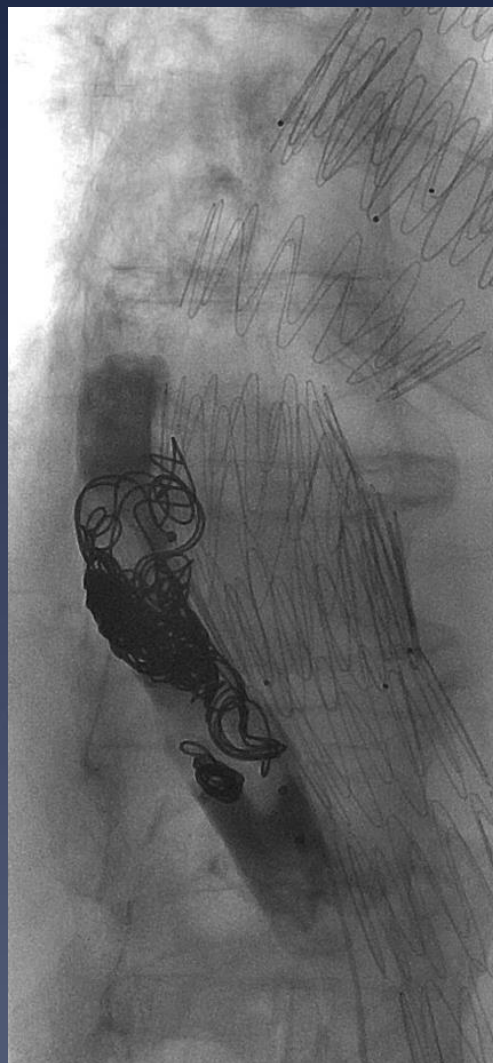
- * Perfusion and pressure unchanged in false lumen
- * Presence of Intercostals originating from false lumen
- * False lumen back flow to Intercostals
- * FL-TAA in 1/3 of TEVAR-patients!

Direct False Lumen Occlusion



- * TEVAR-extension to CA
- * Embolisation by
 - * Plugs, coils, glue
 - * Candy-plug
 - * Knickerbocker-technique
- * Does not restrict further distal techniques like fenestrated EVAR

Coils, Plugs, Glue



Preop. CT

Intervention

Postop. CT

Iliac Occluder



Outcomes after false lumen embolization with covered stent devices in chronic dissection

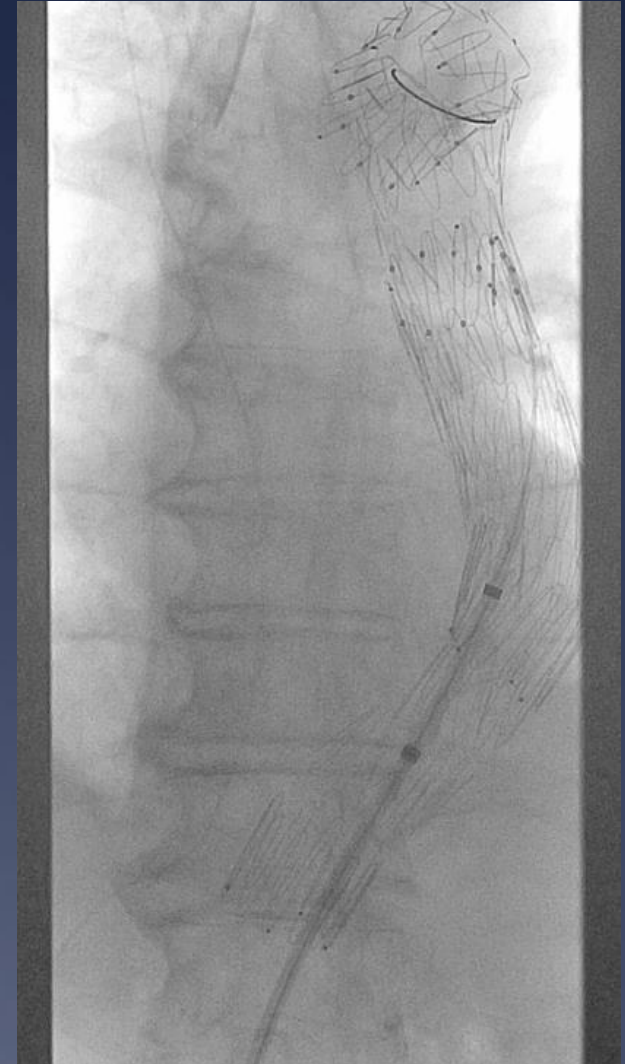
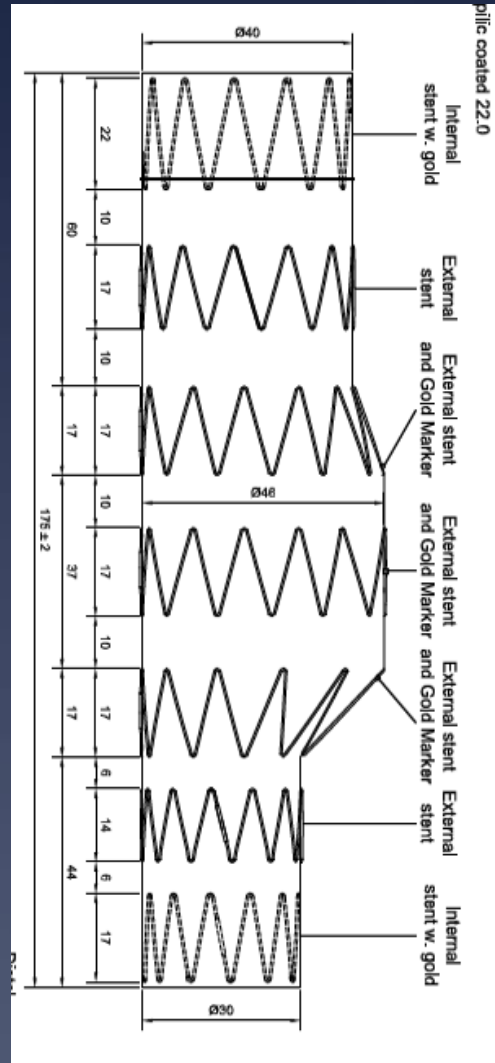
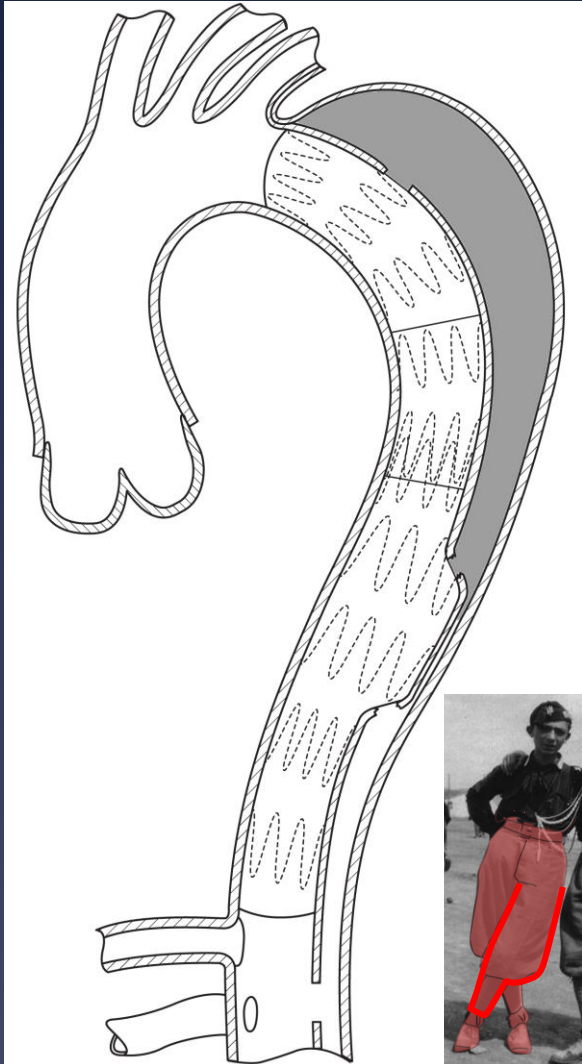
Jahanzaib Idrees, MD, Eric E. Roselli, MD, Susan Shafiq, MD, Bruce W. Lytle, MD, Cleveland, Ohio

Maximum Diameter: 24 mm!



| | Outcome ^a (N = 21) |
|--|----------------------------------|
| 30-day mortality | 1 (4.7) |
| Follow-up, median months | 26 (2-42) |
| Aortic rupture | 0 |
| Complete thrombosis after index embolization | 15 (71) |
| Partial thrombosis | 6 (29) |
| Endovascular reintervention (re-embolization) | 4 (19) |
| Complete thrombosis after further embolization | 19 (90) |
| Failure of thrombosis | 0 |
| Reduction in postoperative max descending diameter | 13 (62) |
| Shrinkage, median mm | 4.6 (0.2-27) |

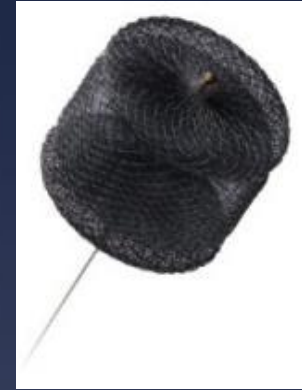
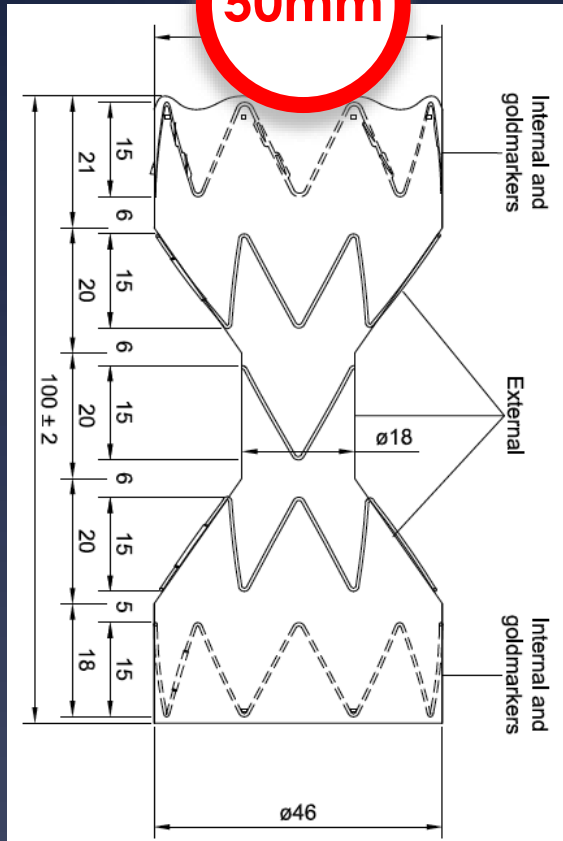
Knickerbocker-Technique



Candy-Plug



50mm



22mm Amplatzer plug II



22mm ZIP iliac-occluder

Candy-Plug

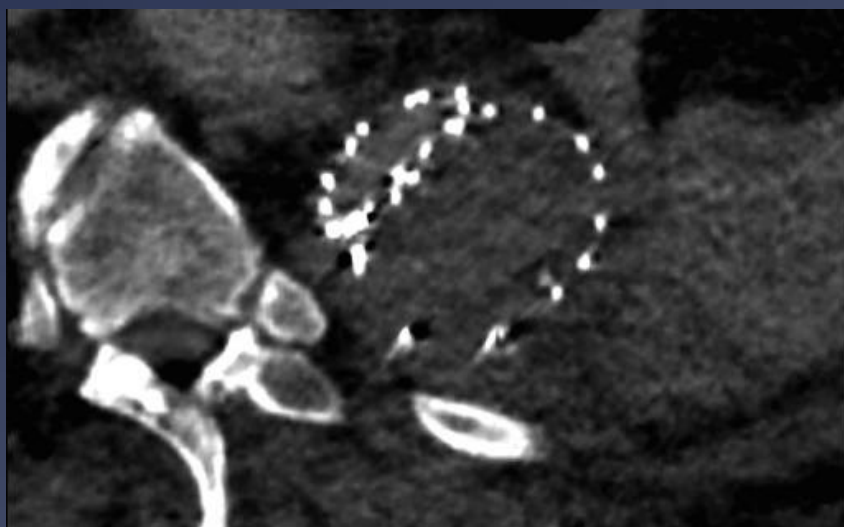


October 2013

January 2014

January 2016

Candy-Plug



February 2016



July 2016



Long-Term Predictors of Descending Aorta Aneurysmal Change in Patients With Aortic Dissection

Jong-Min Song, MD, PhD,* Sung-Doo Kim, MD,* Jeong-Hoon Kim, MD,* Mi-Jeong Kim, MD,*

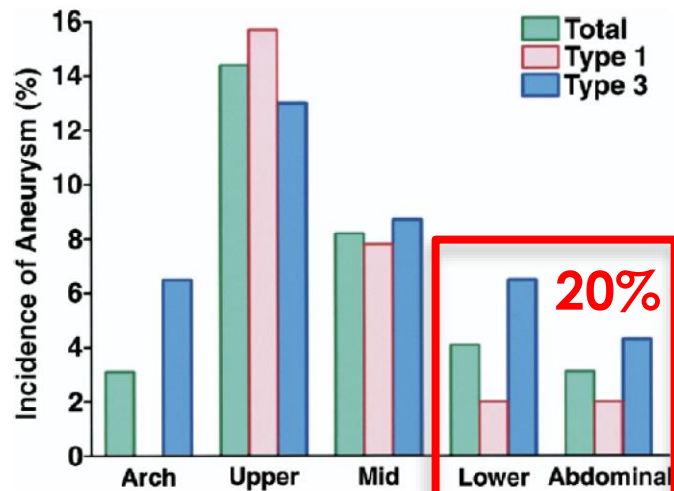


Figure 1 Incidence of Distal Aorta Aneurysm

Incidences of aneurysm at the aortic arch; upper, mid, and lower descending thoracic aorta; and abdominal aorta in patients with type 1 and type 3 aortic dissection.

- * N=100: 51 post TAAD; 49 TBAD
- * FU: 53±26 months: FL-Aneurysm
 - * Aortic arch 3%
 - * Upper desc. aorta 14%
 - * Mid desc. aorta 8%
 - * Lower desc. aorta 4%
 - * Abdominal aorta 3%



Outcomes of Fenestrated/Branched Endografting in Post-dissection Thoracoabdominal Aortic Aneurysms

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^a Department of Surgery, Division of Vascular Surgery, University Hospital Regensburg, Regensburg, Germany

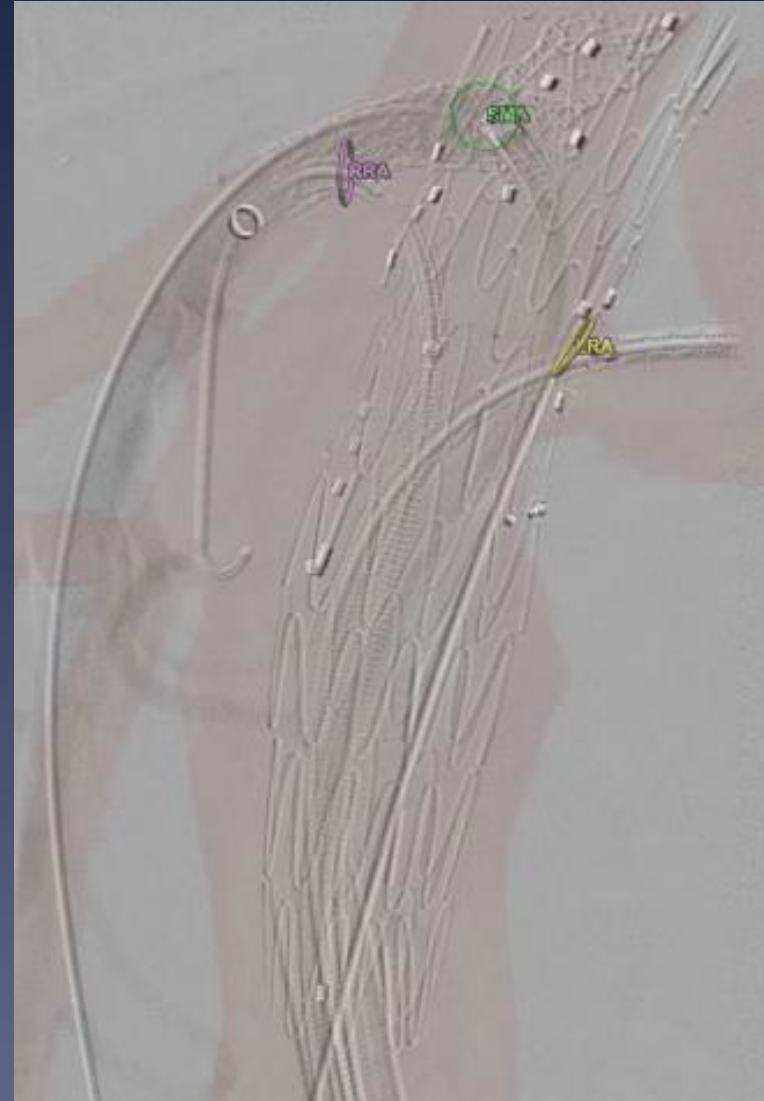
^b Department of Vascular and Endovascular Surgery, Paracelsus Medical University, Nürnberg, Germany



- * 2010-2014
- * N=31, 17 months FU
- * 6 Type II EL; 6 type 1b EL
- * 30d-mortality: 9.6%
- * Technical success: 93.5%
- * FL-thrombosis: 88%



- * Narrow True-Lumen
- * Stiff dissection membrane
- * Origin of the renovisceral vessels from different Lumina
- * Triple-Barrel complex Dissections
- * Dissected distal landing zones
 - * Target vessels (SMA/cealic/renals)
 - * Iliac vessels
- * distance from main graft to target vessels



Case 1



- * 56-year-old female
- * Type B Aortic dissection 3 years ago
- * Thoracic Aortic FL-Aneurysm of 7cm
- * Entry 3cm behind LSA
- * No Abdominal FL-Aneurysm
- * Ascending aorta 4.6cm



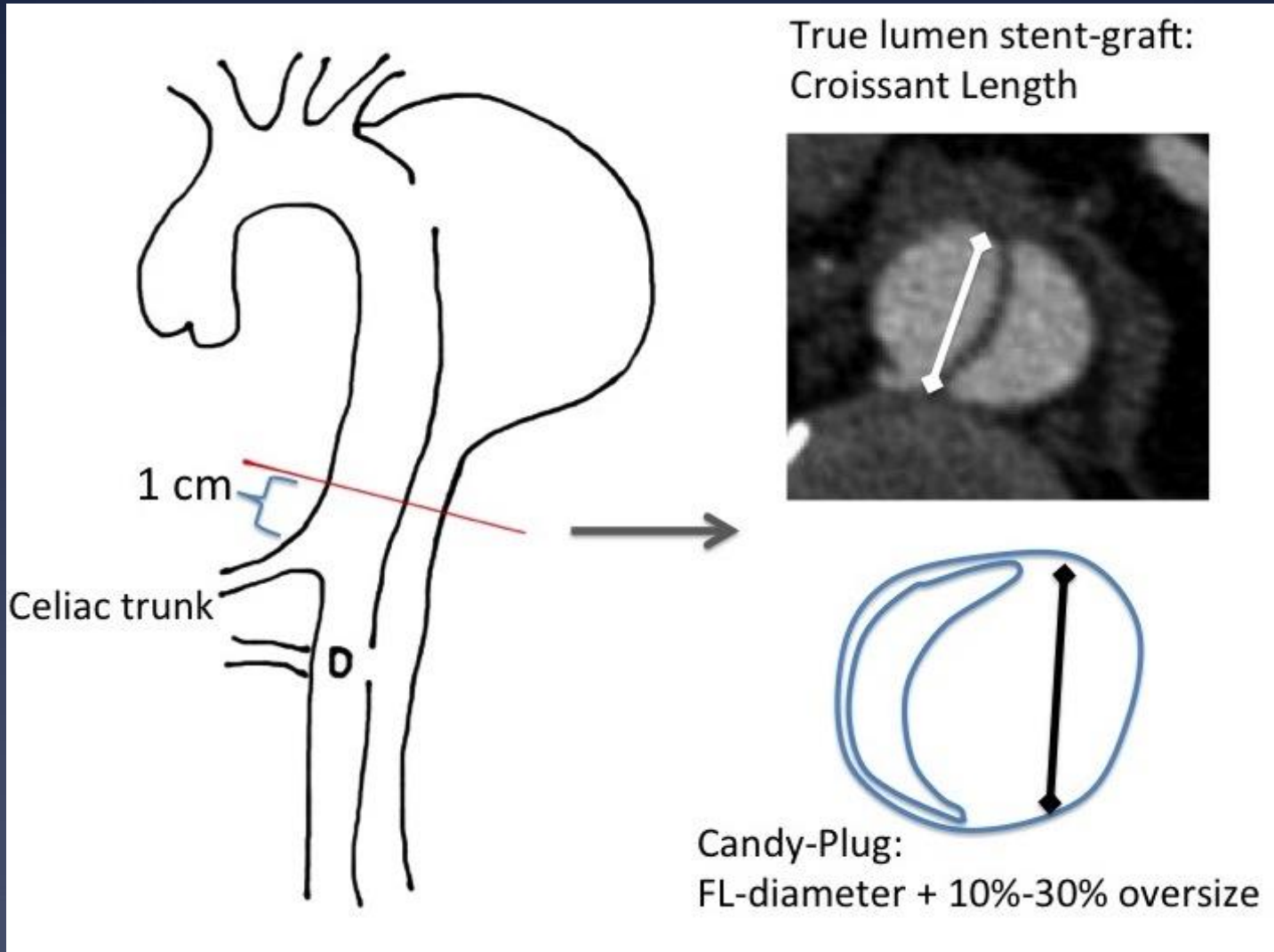


Options

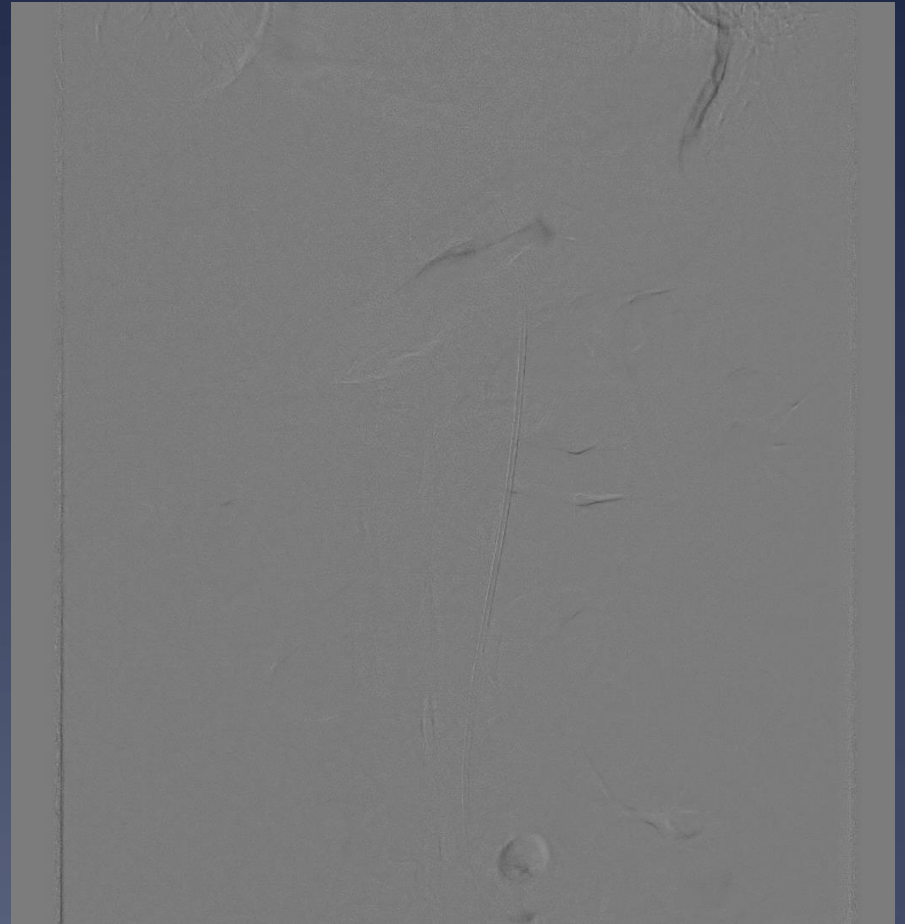


- * Frozen Elephant Trunk?
- * Open thoracic or thoracoabdominal repair?
- * False Lumen Occlusion?
- * Fenestrated branched endograft?

Planning of a Candy-Plug



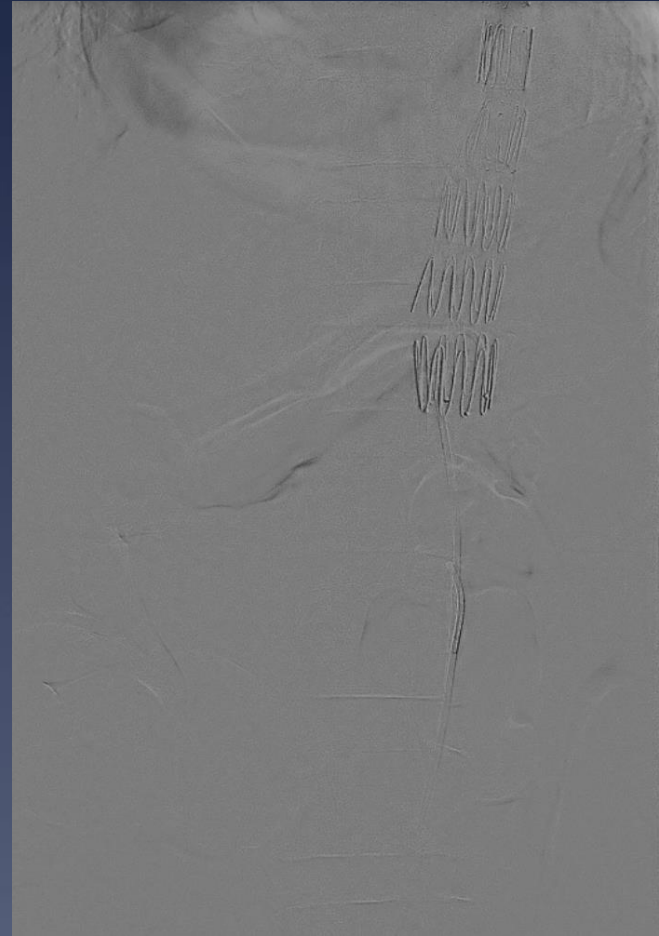
False lumen access



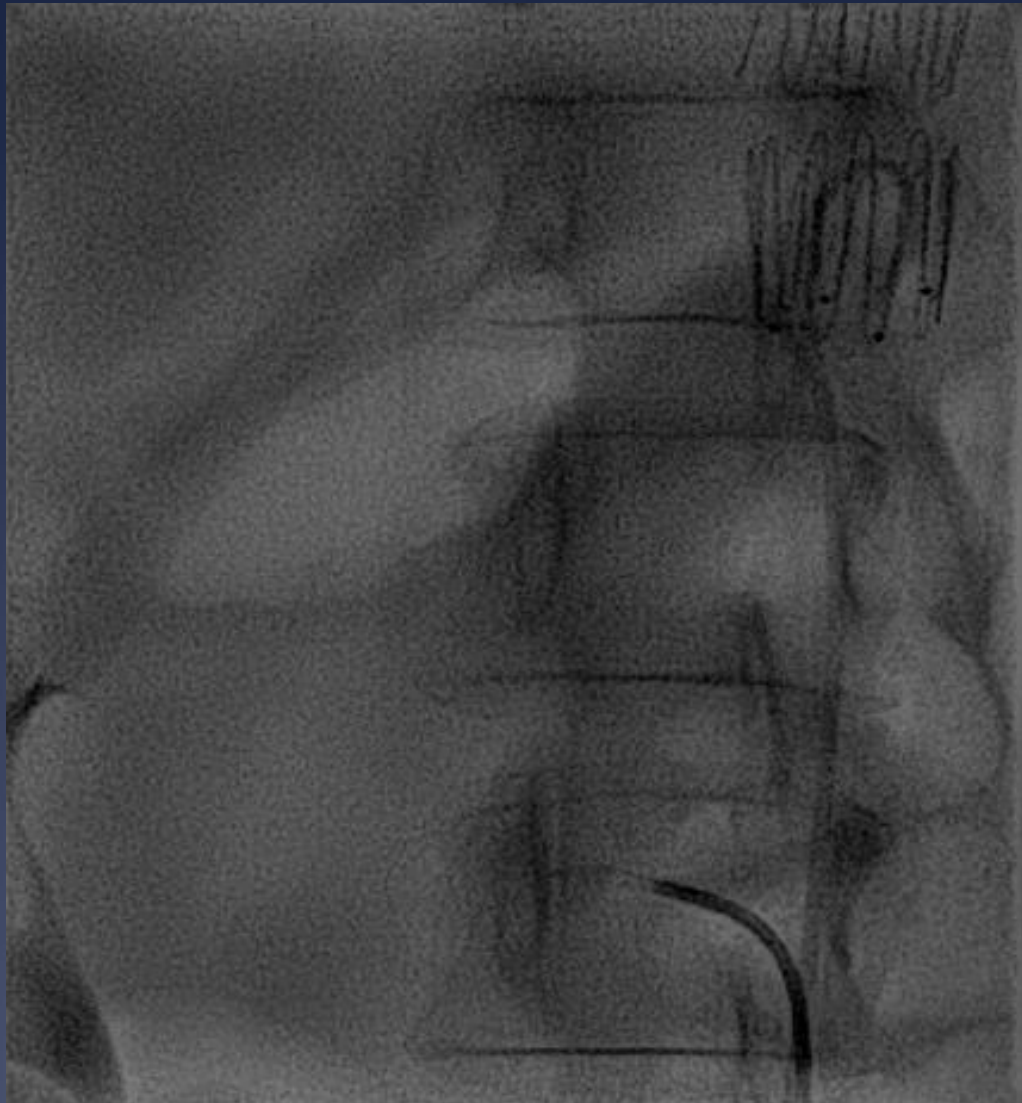
TEVAR



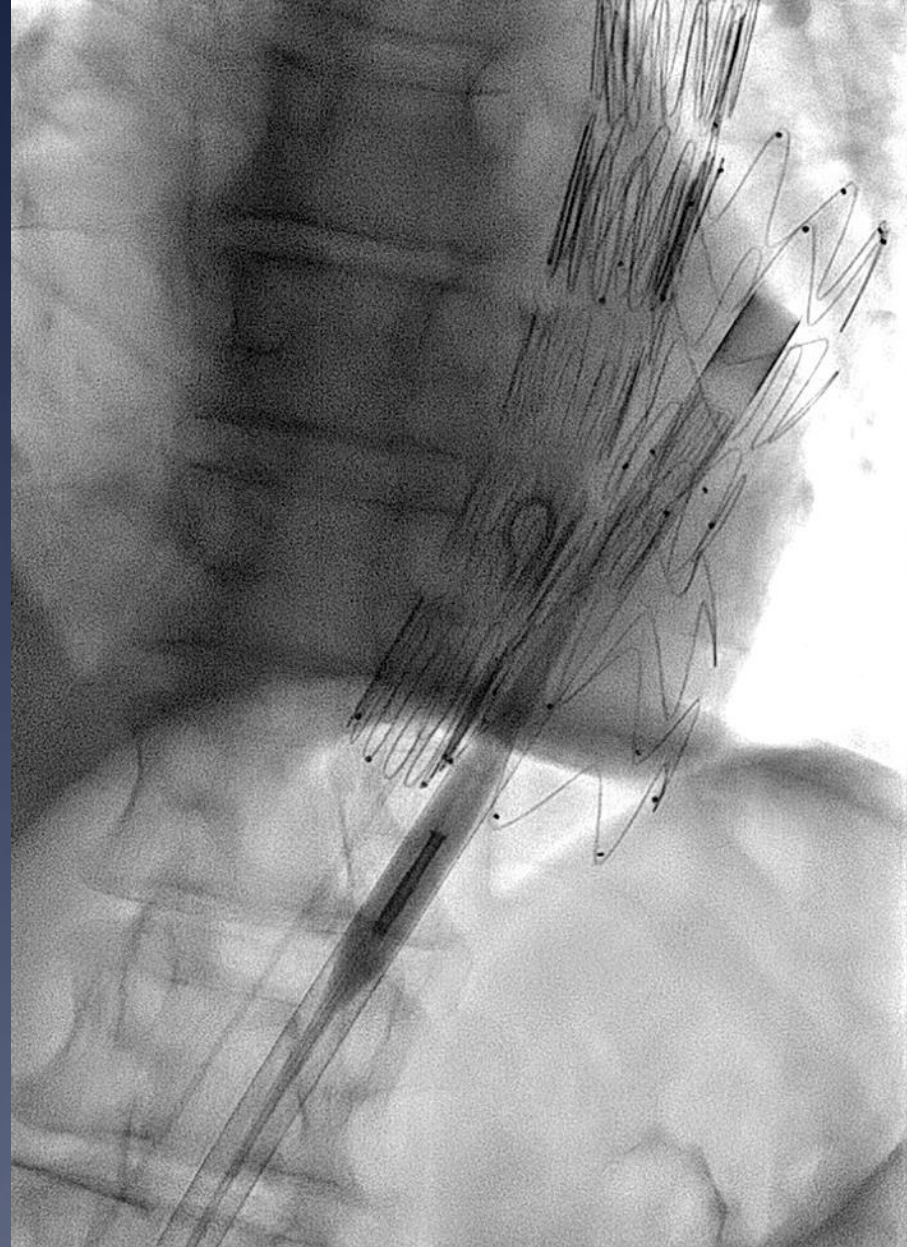
TEVAR extension to the celiac



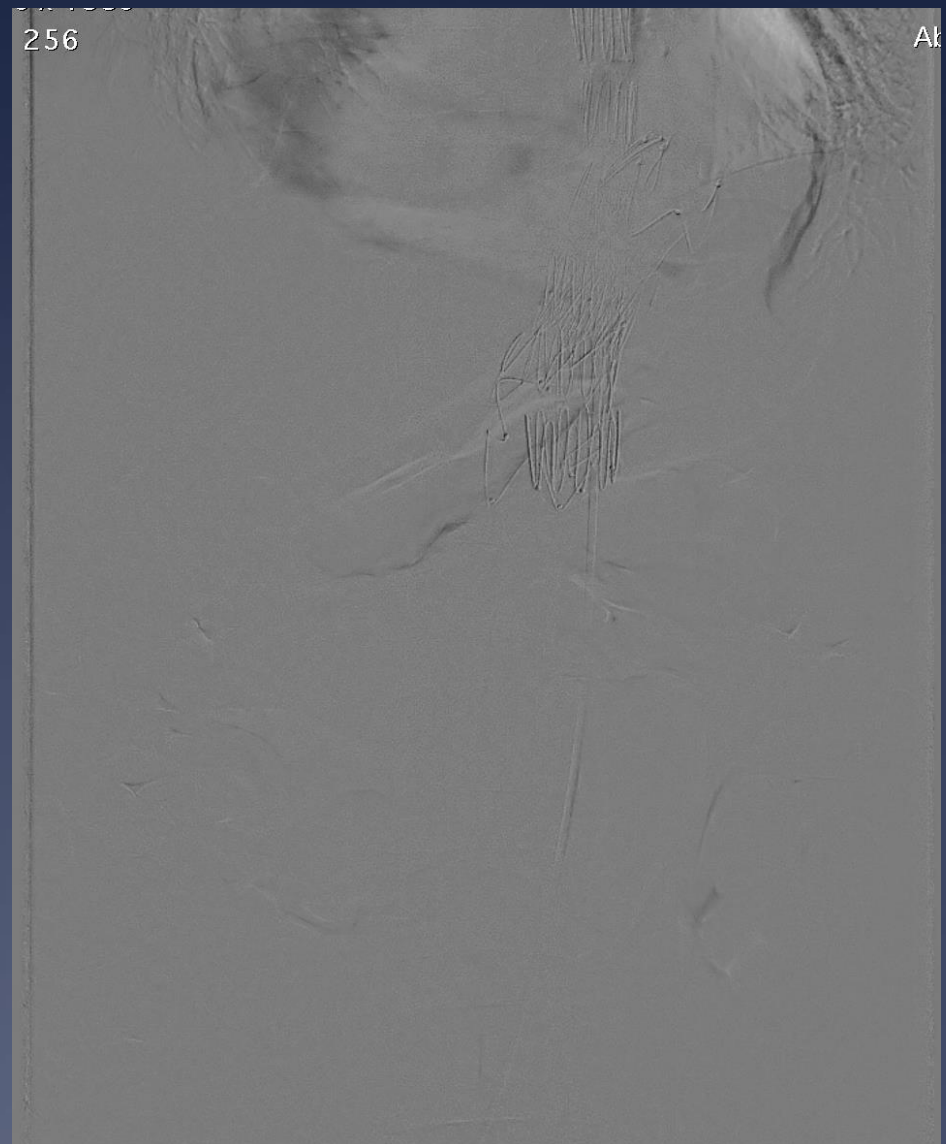
Access in FL at the visceral level



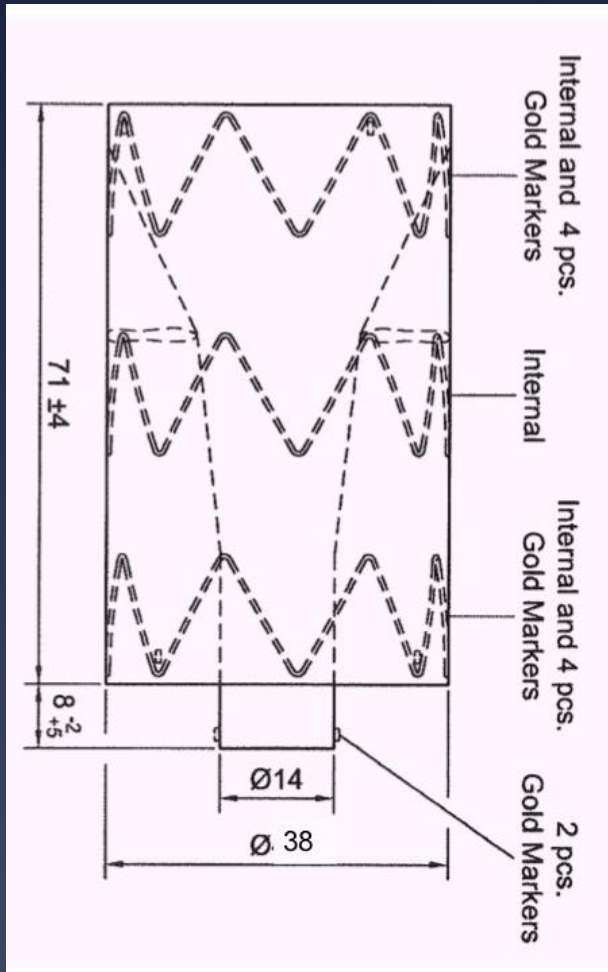
Candy Plug



Final Result



Next generation Candy Plug II



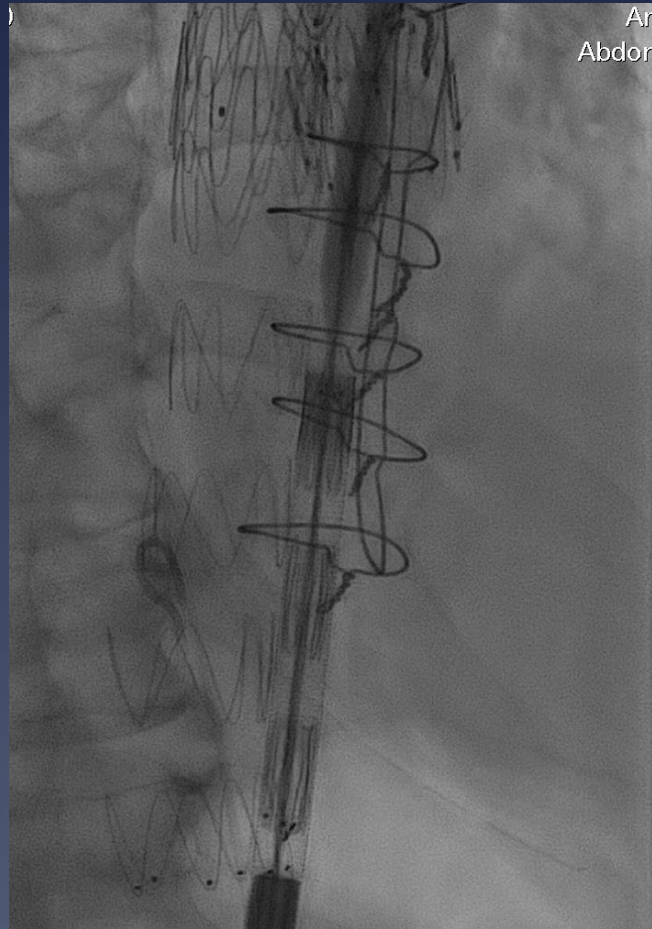
- ❖ Shorter (70mm vs. 110)
- ❖ No central occluder or Plug needed
- ❖ Over the wire dilatator retrieval
- ❖ But... Attention required while retrieving dilatator

Candy Plug II implantation



1190 x 1190
WW: 252

Angiogr
Abdomen D



An
Abdon

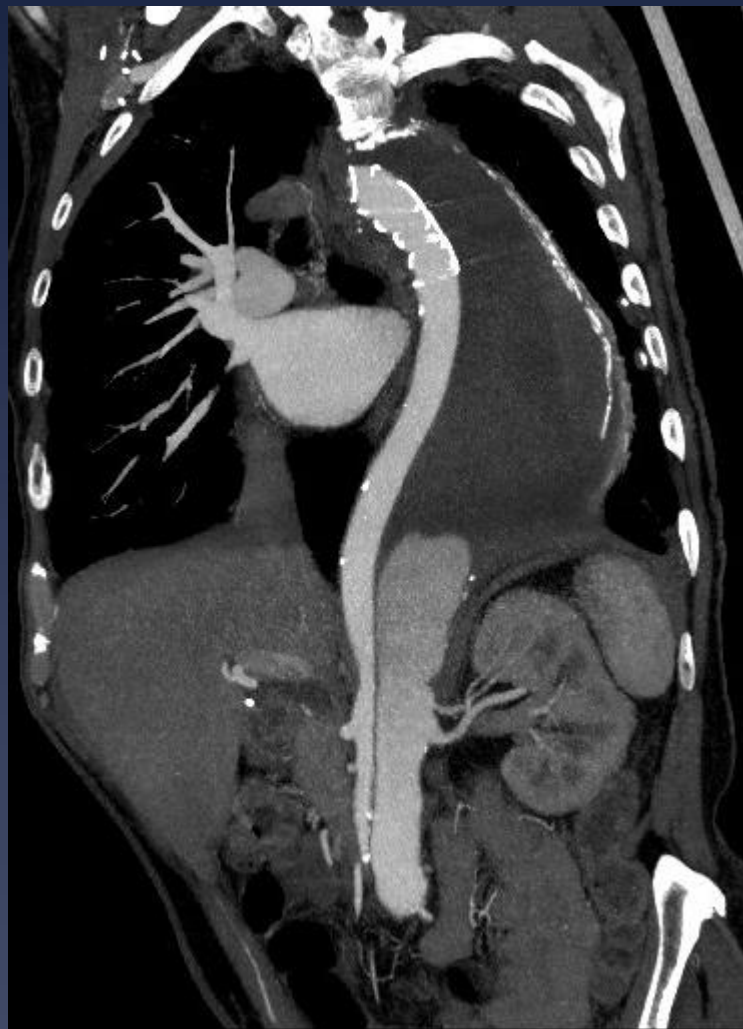


False lumen access

CP II deployment

Final angigram

Case 2



67year old patient



Options

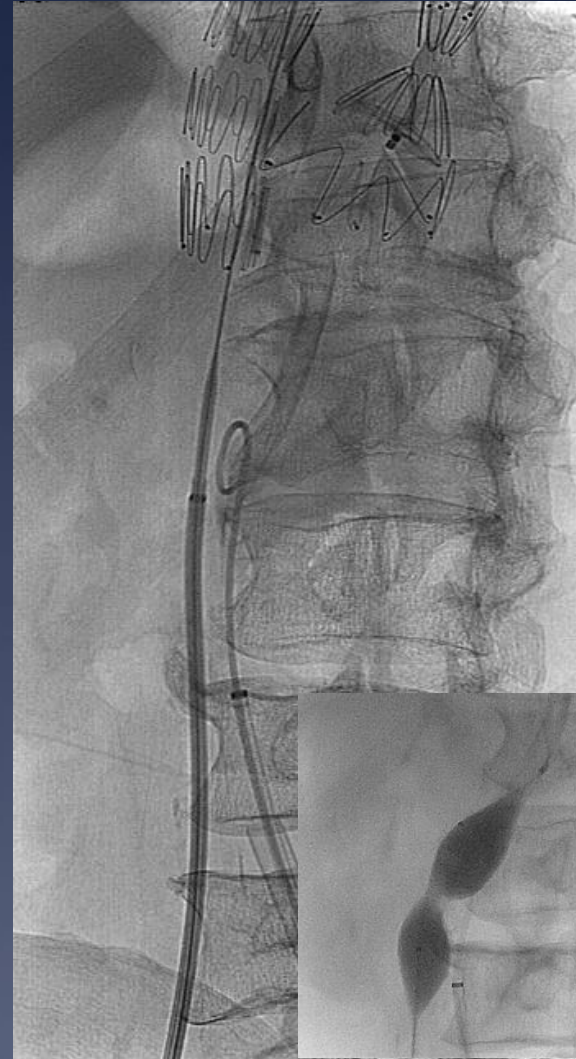


- * Frozen Elephant Trunk?
- * Open thoracic or thoracoabdominal repair?
- * False Lumen Occlusion?
- * Fenestrated branched endograft?

Staged approach



FET, TEVAR+Candyplug



+ Fenestration

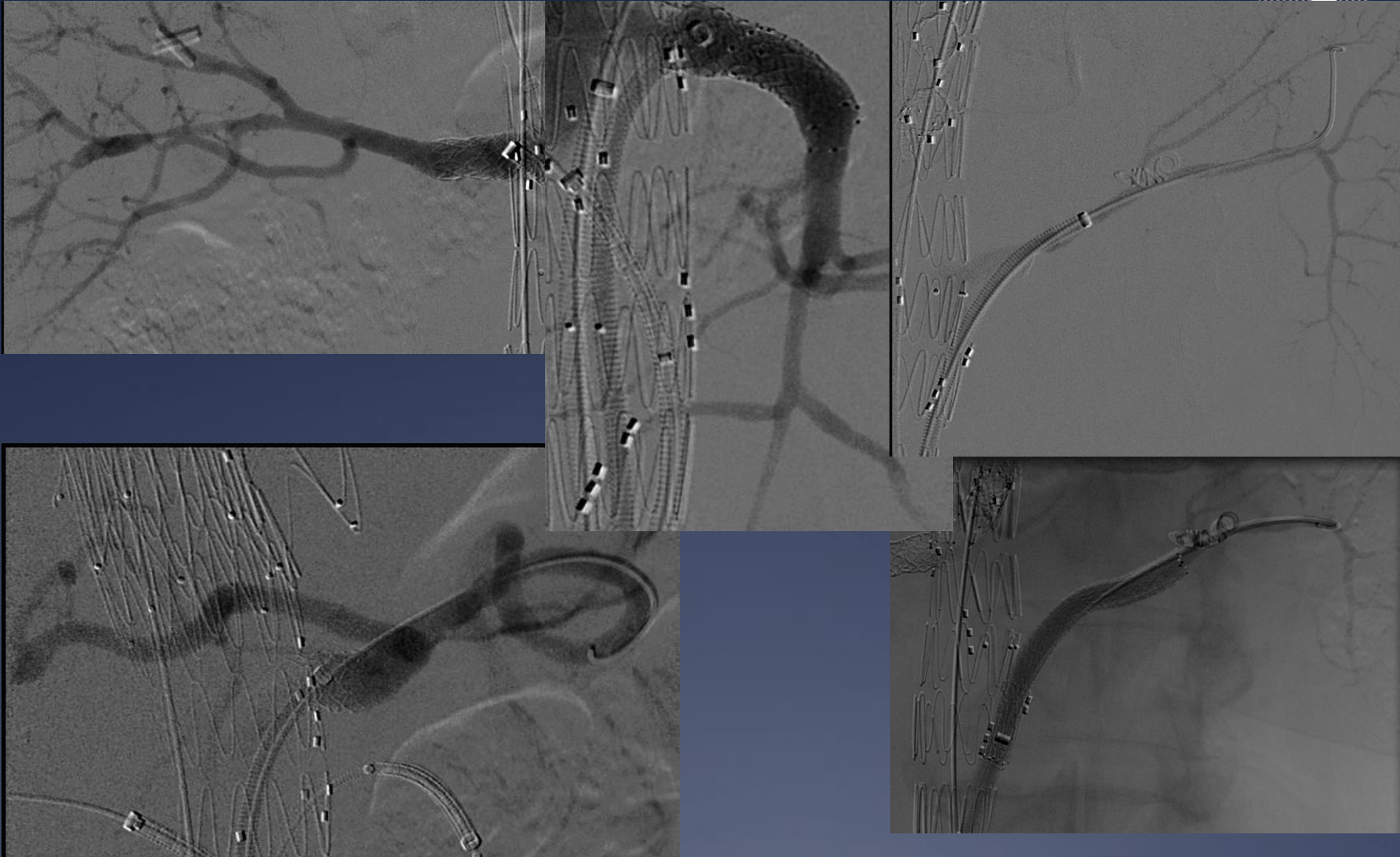
“Preconditioning” of the aorta



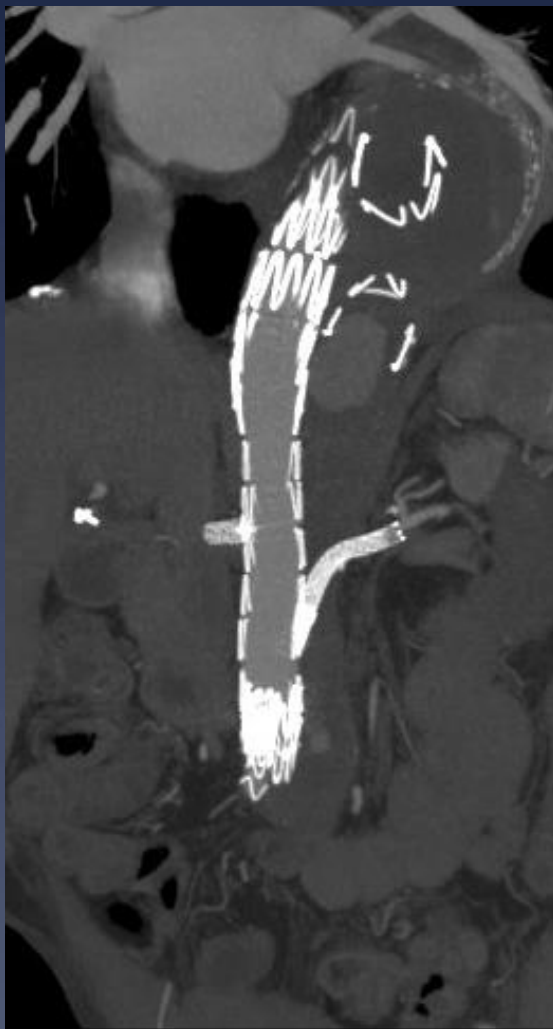
Procedural steps



Procedural steps



Secondary F/B EVAR

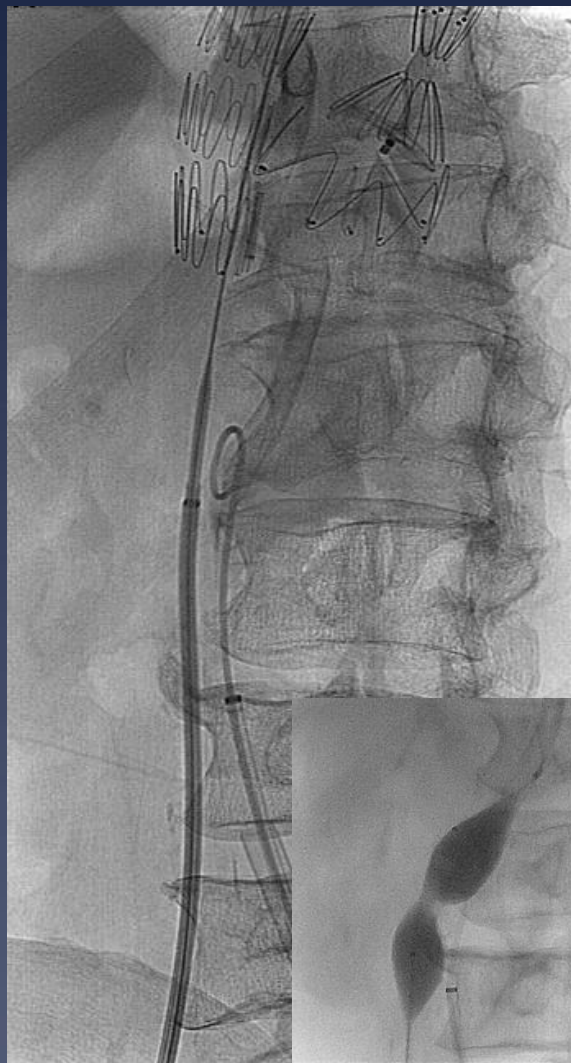


F/B EVAR

Secondary F/B EVAR



FET, TEVAR+Candyplug

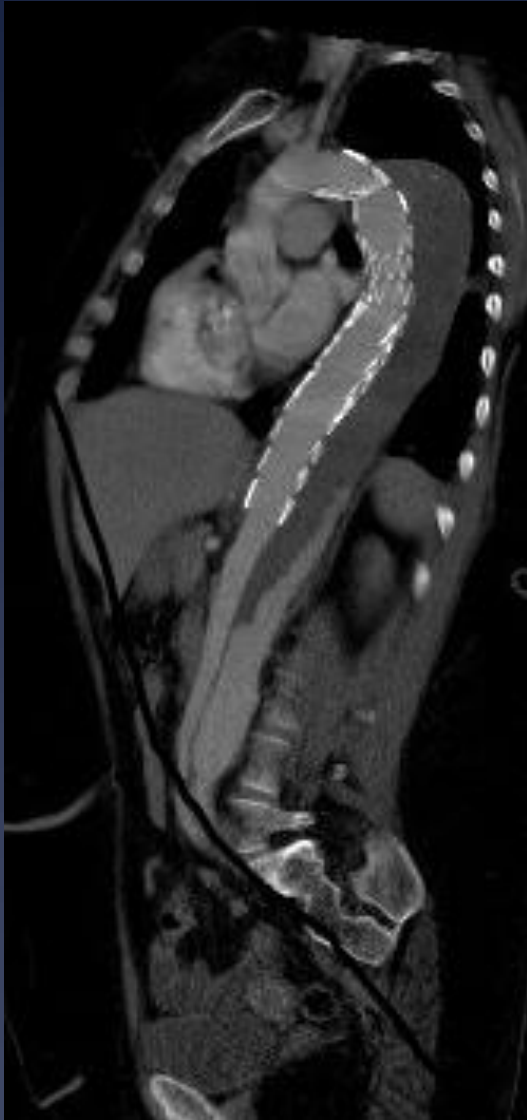


+ Fenestration



F/B EVAR

Case 3



- ❖ 30-year old female patient
- ❖ Marfan
- ❖ Stentgraft in the thoracic with good seal
- ❖ No ascending pathology

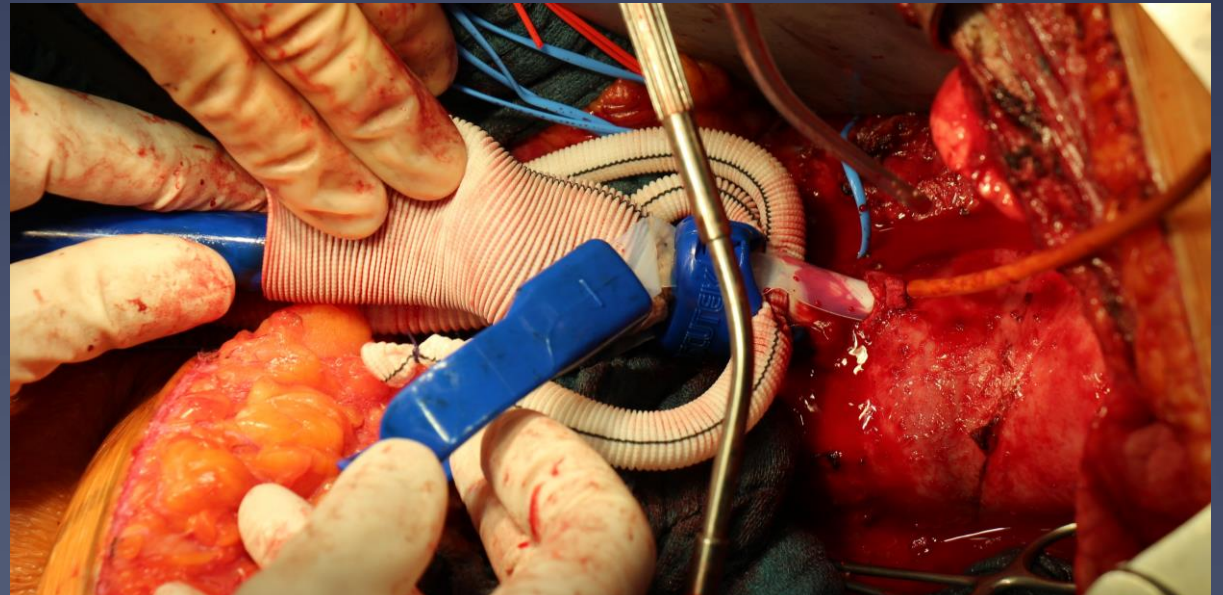
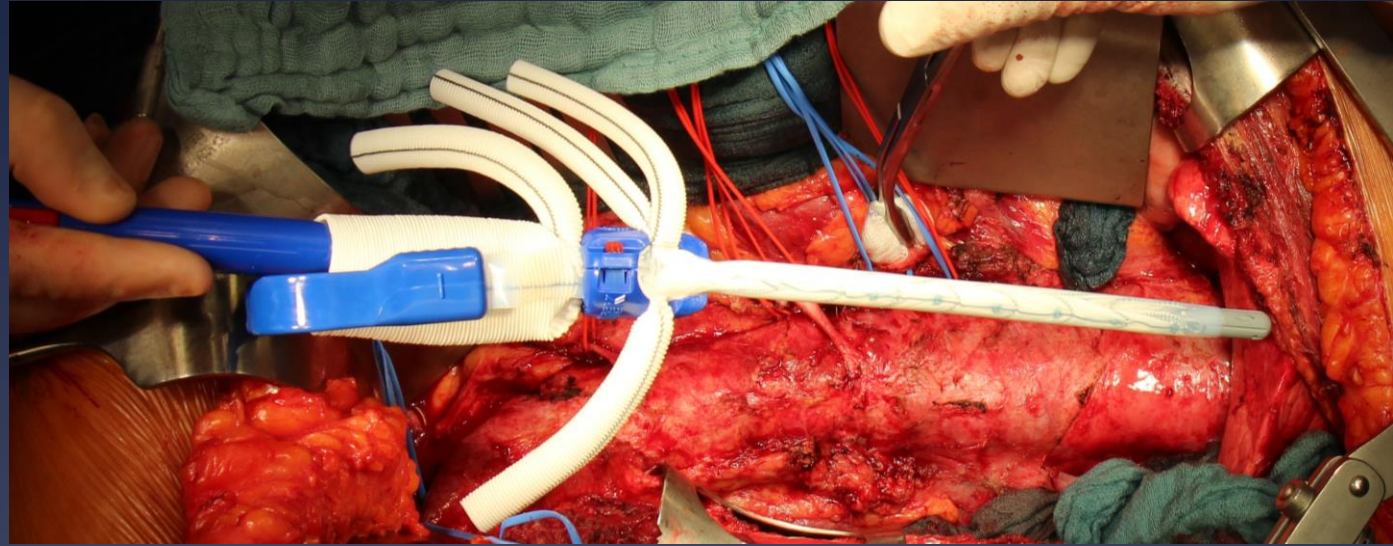


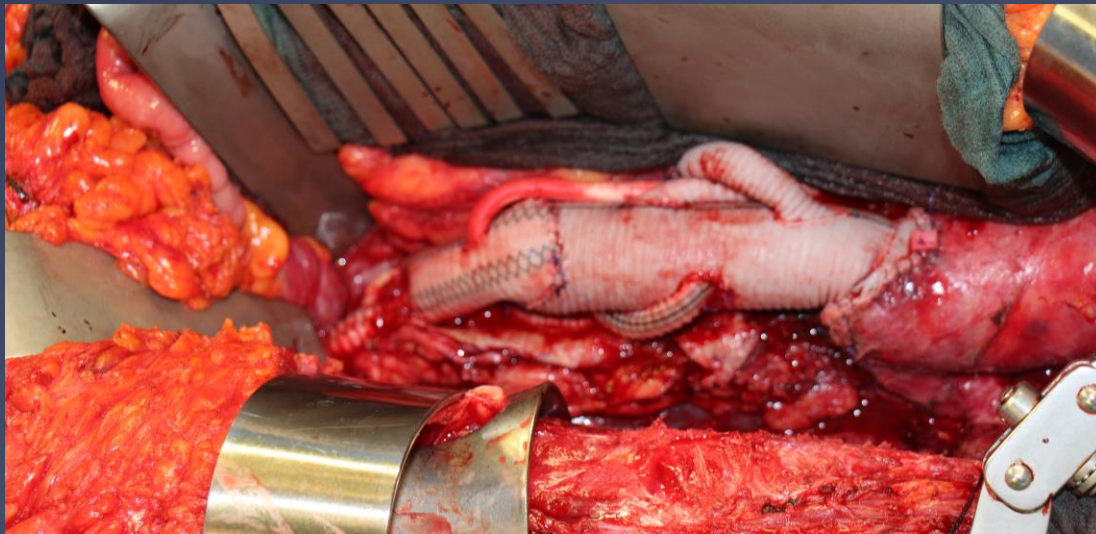
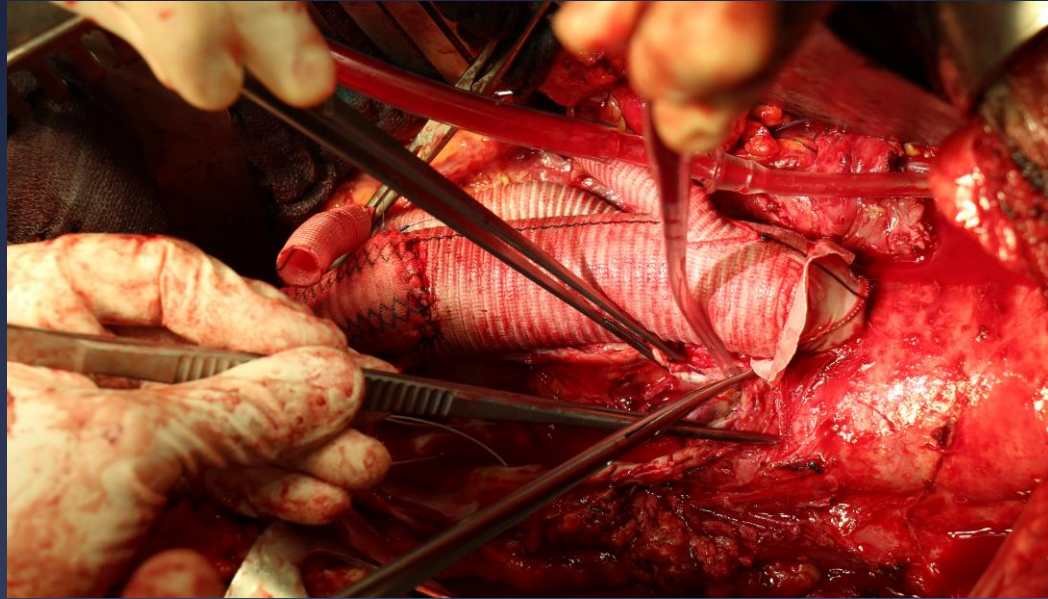
Options?



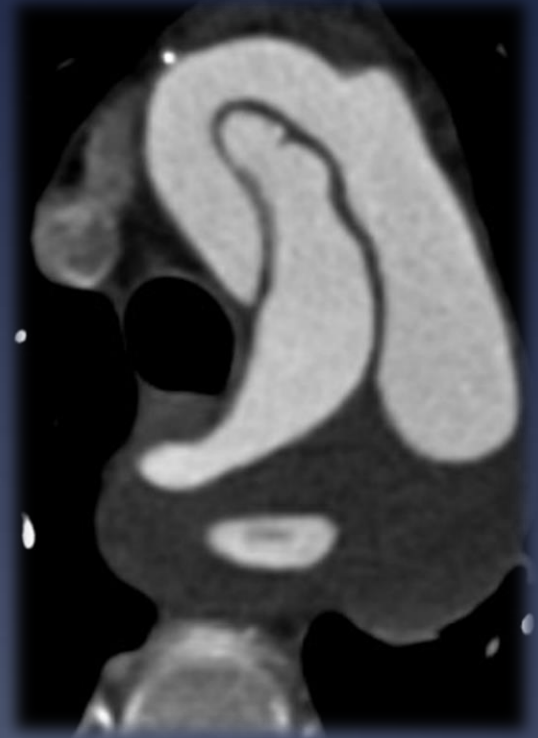
- * Frozen Elephant Trunk?
- * Open thoracic or thoracoabdominal repair?
- * False Lumen Occlusion?
- * Fenestrated branched endograft?

Reversed Elephant Trunk





Treatment of DeBakey I Dissections



Endovascular approach for post open repair residual dissection aneurysms

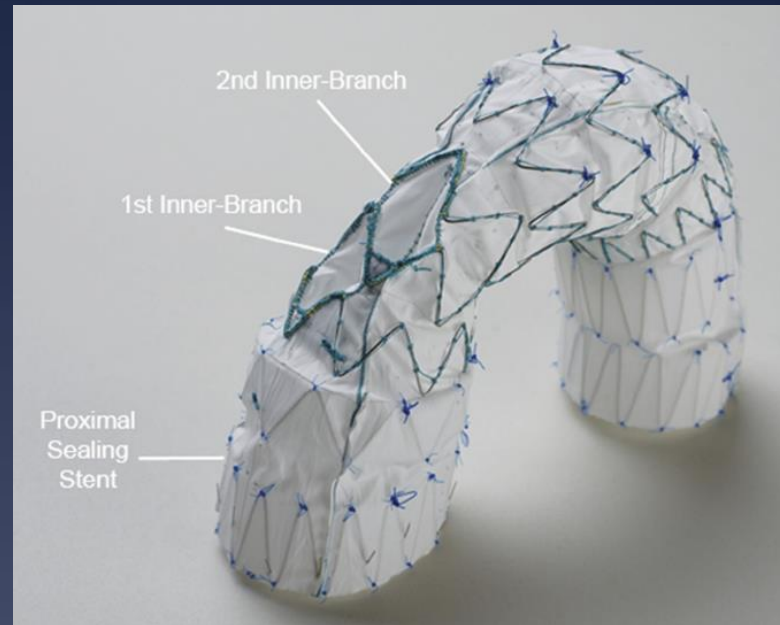


Table 6. Suitability for Aortic Arch Inner-Branched Endograft

| Endograft Suitability | No. (%) |
|---|--------------|
| Suitable | 52/73 (71.2) |
| Suitable (standard procedure) | 38/52 (73) |
| Suitable (simple adjunctive procedure) | 8/52 (15.4) |
| Suitable (complex adjunctive procedure) | 6/52 (11.5) |
| Requirement for left subclavian artery branch | 3/52 (4.1) |
| Not suitable | 21/73 (28.8) |

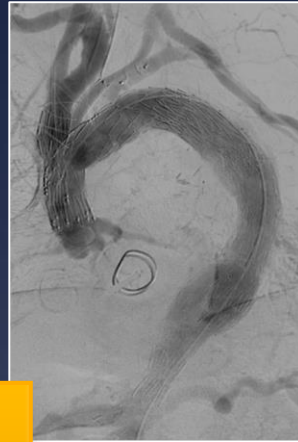
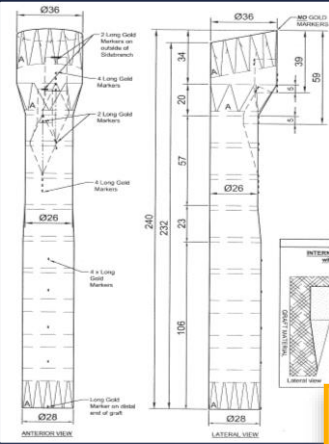
Branched Endografts for Arch Post-Dissection Aneurysms



- 2012-2016 => 48 patients with Arch branched endografts
- **20 patients** with Arch dissections post open ascending repair
- Indications:
 - chronic false lumen aneurysms n=19
 - persistent malperfusion syndrome post open repair n=1
- Mean diameter of the post-dissection aneurysms: 63 ± 12 mm

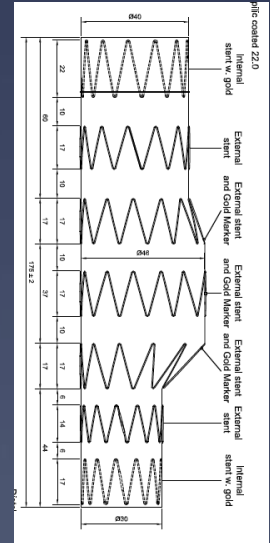
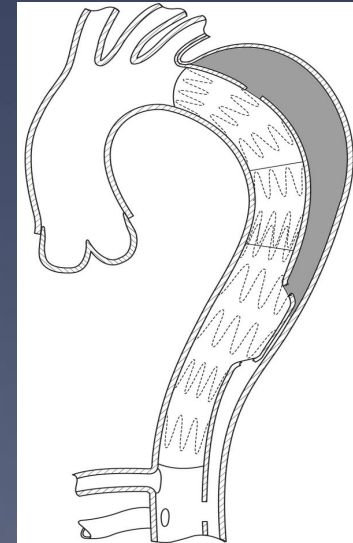
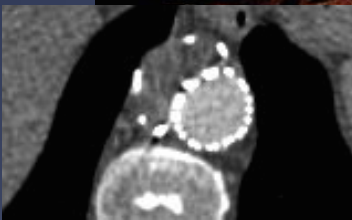


Adjunctive measures for FL Occlusion



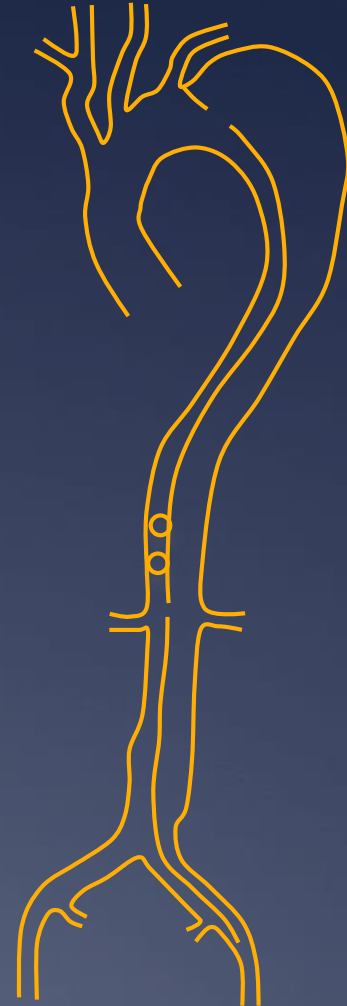
Candy Plug n= 7

Knickerbocker n= 3





FL-Aneurysm in CAD



Chronic Dissection Strategy



FL-Aneurysm in CAD



TEVAR to the Celiac



Chronic Dissection Strategy



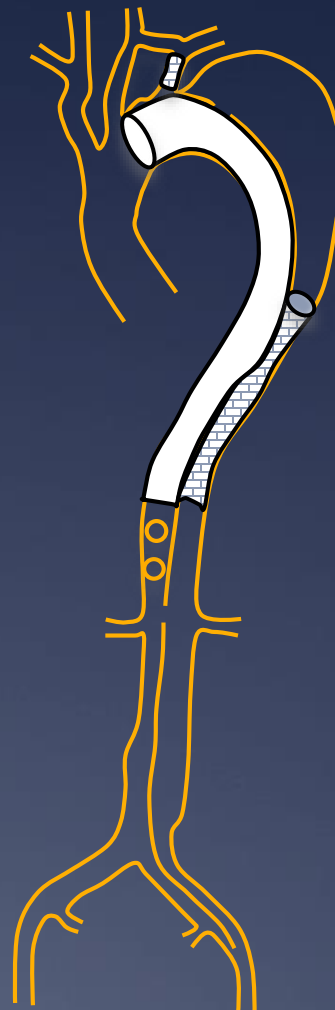
FL-Aneurysm in CAD



TEVAR to the Celiac



+ FL-Occlusion



Chronic Dissection Strategy



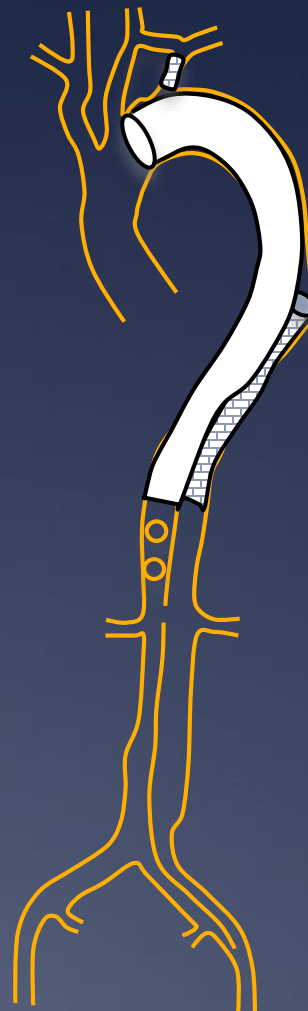
FL-Aneurysm in CAD



TEVAR to the Celiac



+ FL-Occlusion





FL-Aneurysm in CAD



TEVAR to the Celiac



+ FL-Occlusion



Fen/Branch EVAR



Chronic Dissection Strategy



FL-Aneurysm in CAD



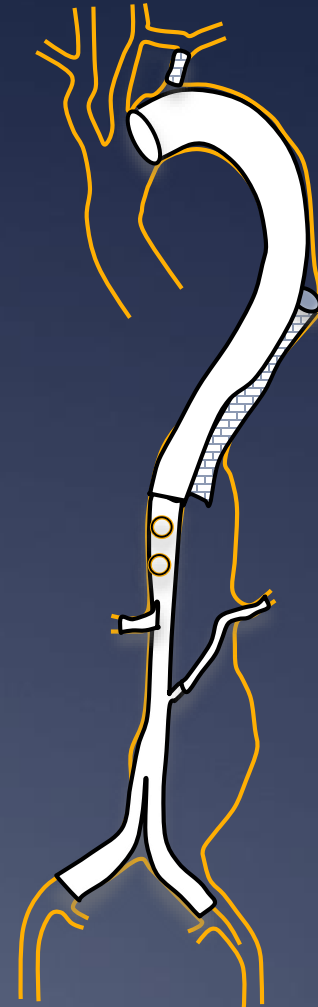
TEVAR to the Celiac



+ FL-Occlusion



Fen/Branch EVAR





FL-Aneurysm in CAD



TEVAR to the Celiac



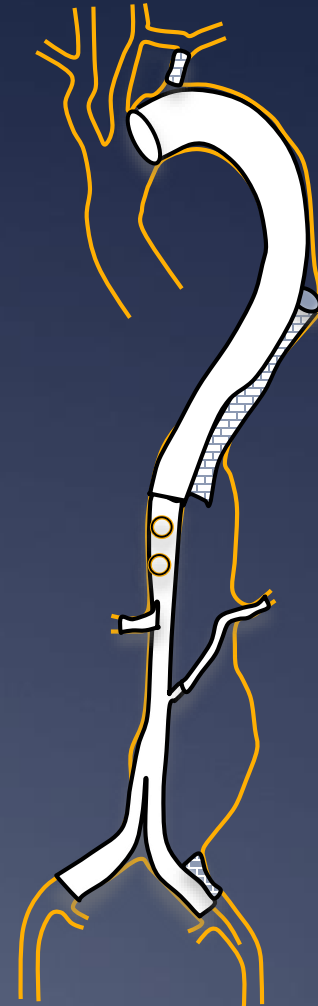
+ FL-Occlusion



Fen/Branch EVAR

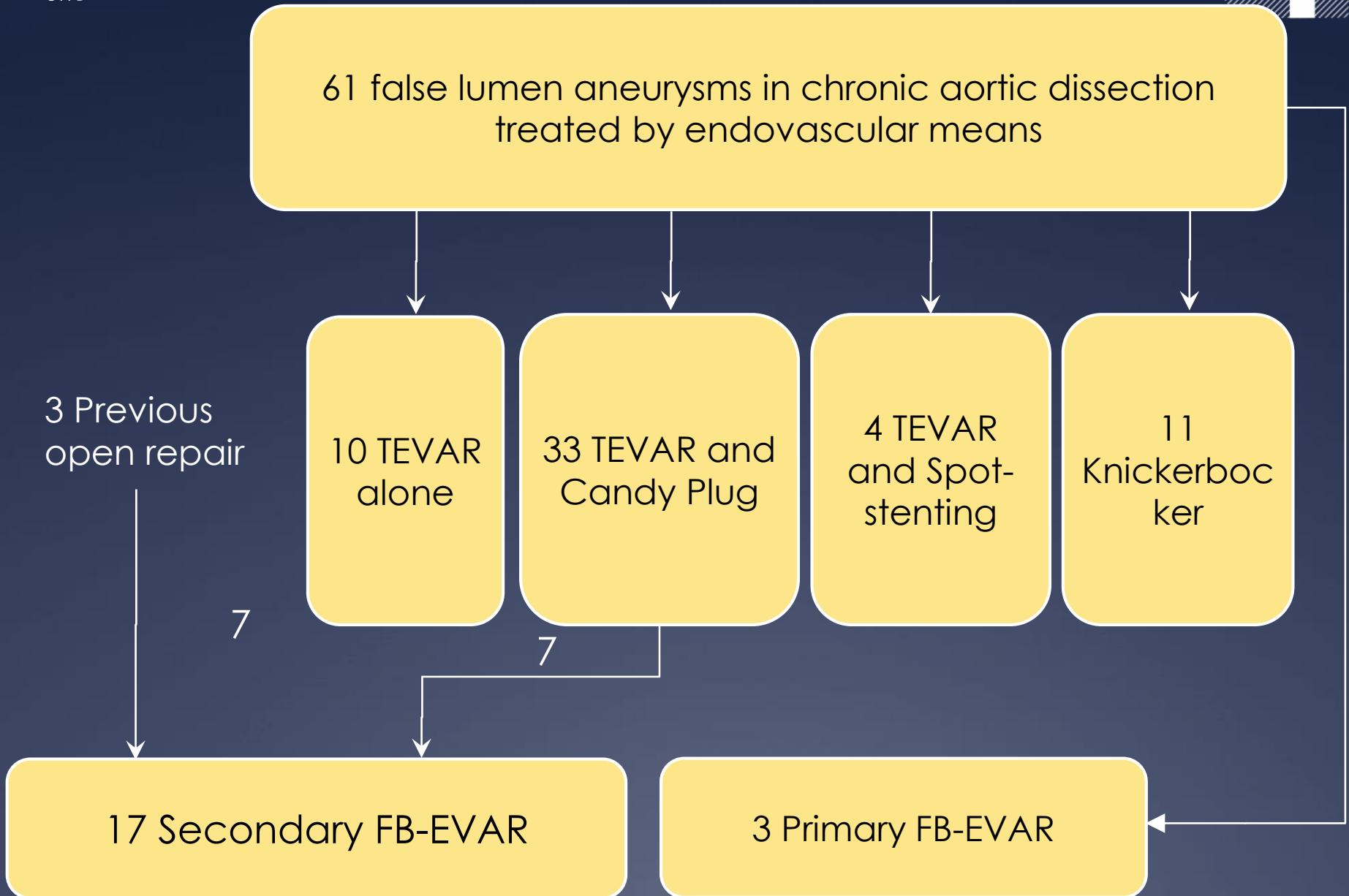


+ FL-Occlusion





Hamburg Algorithmus in Chronic dissections



Conclusion



- * Tubular stent-graft sufficient in majority cases of TBAD.
- * False lumen backflow limiting treatment success in chronic TBAD.
- * Techniques for false-lumen embolisation:
 - * Plugs, coils, glue
 - * Candy-plug
 - * Knickerbocker-technique
- * Experience promising, but future role to be defined.
- * F/B stentgrafts reserved for abdominal FL-aneurysm.