

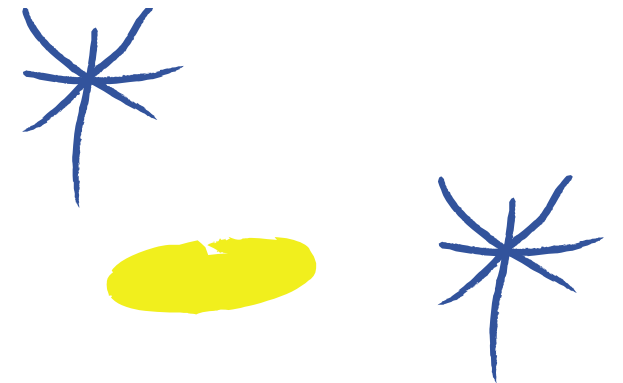
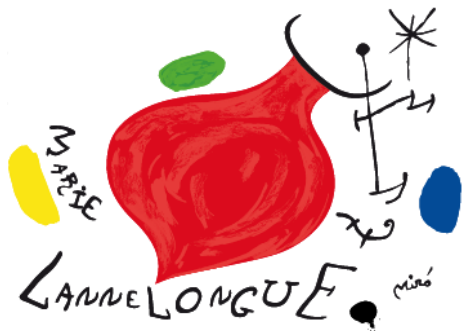
# Challenging BEVAR!

Stéphan Haulon, A. Gaudin, T. Le Houérou, C. Bosse, J. Bendavid, D. Fabre

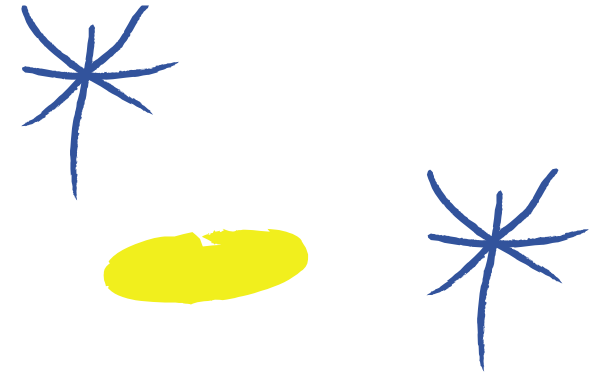
M. Raux, B. Boura, R. de Blic, A. Maillos, A. Costanzo, Y. Goueffic  
J. Guihaire, R. Ramadan, M. Gaillard, A. Vallee, P. Deleuze

Centre de l'Aorte, Hôpital Marie Lannelongue,  
GHPSJ, Université Paris Saclay, France

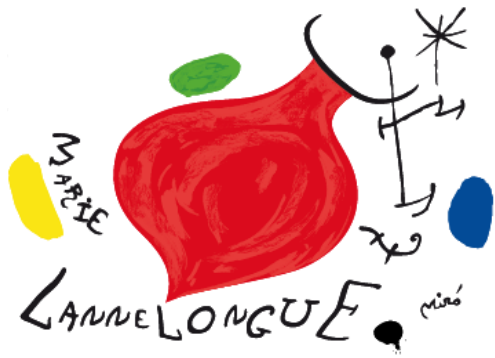
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# Disclosures



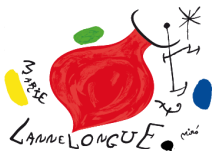
- Research support, Consulting
  - Cook Medical, GE Healthcare, Bentley



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# Patient History

- 61-year-old Male
- PMHx: Obesity, HTN, Dyslipidemia, Smoking
- June 2017
  - Type A dissection with replacement of ascending aorta

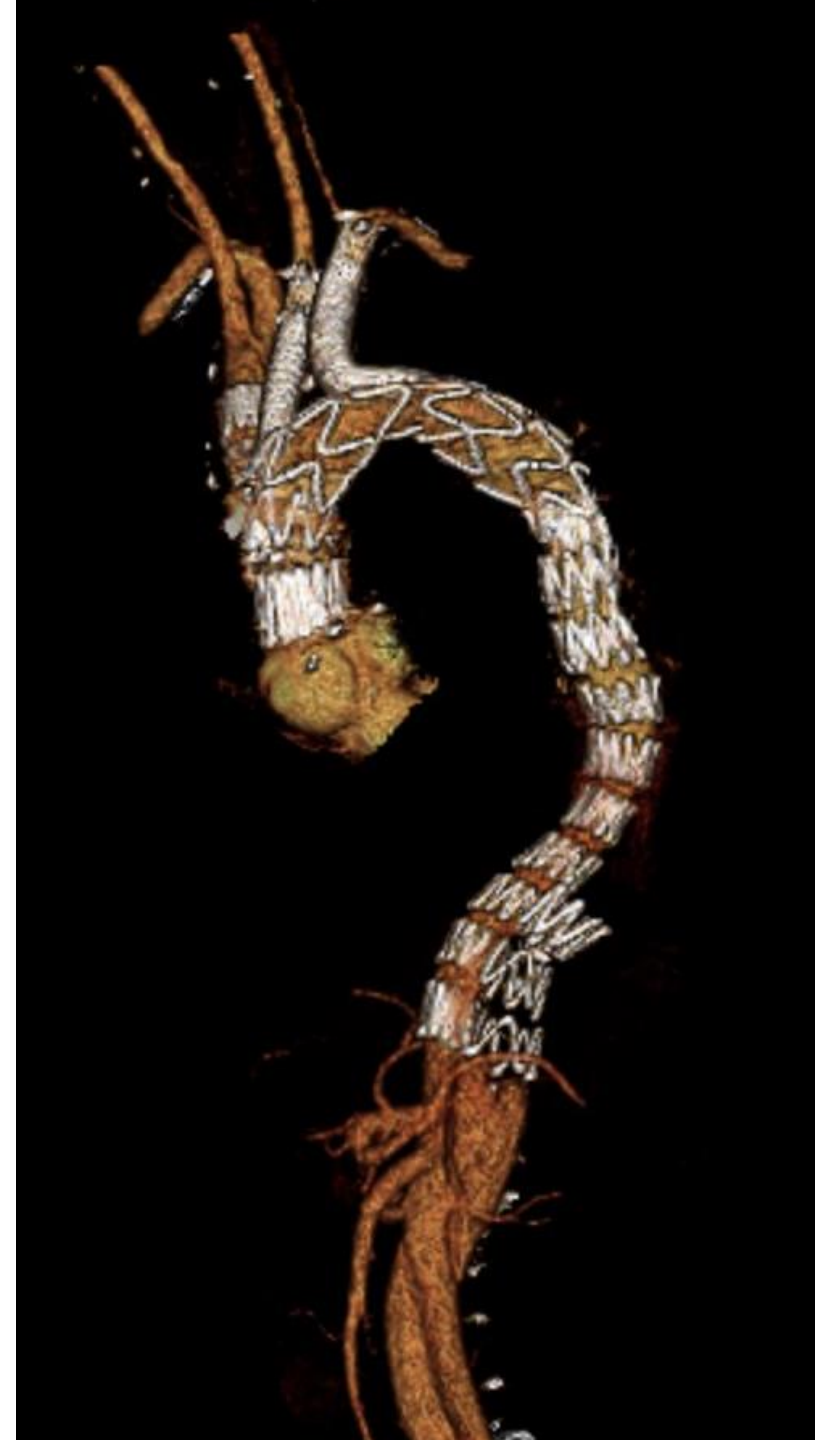


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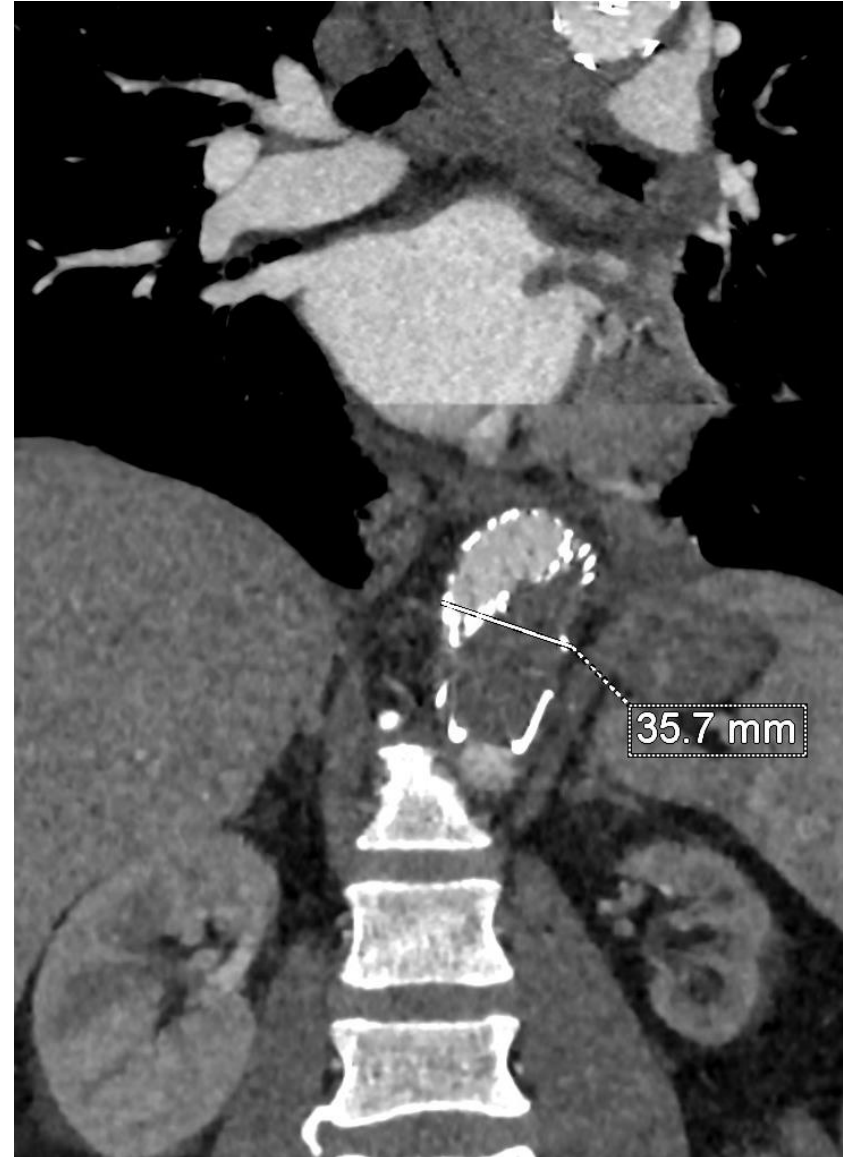


# Patient History

- 61-year-old Male
- PMHx: Obesity, HTN, Dyslipidemia, Smoking
- June 2017
  - Type A dissection with replacement of ascending aorta
- March 2019
  - 3-branch arch graft with TEVAR and candyplug for aneurysmal degeneration

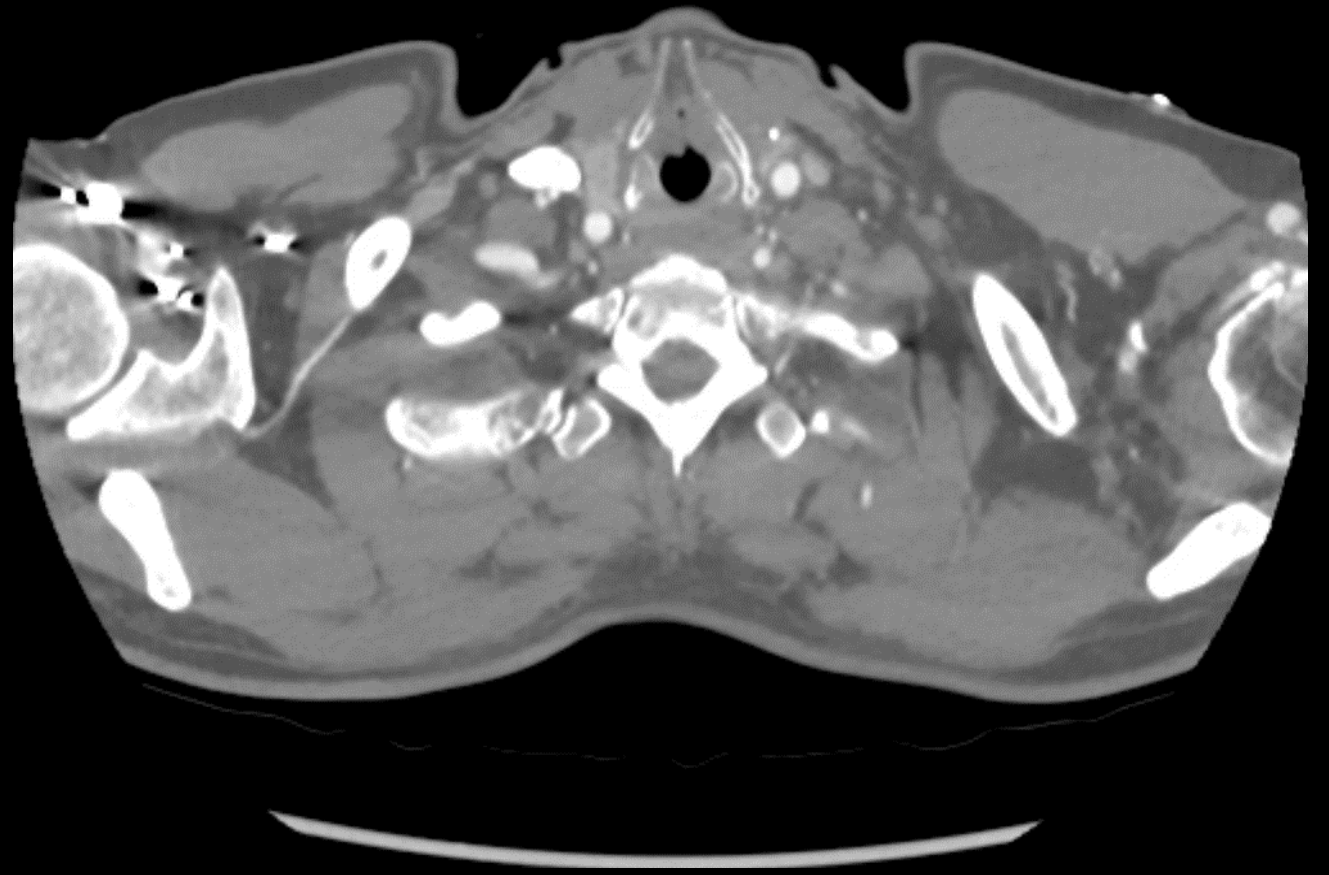


# 2019



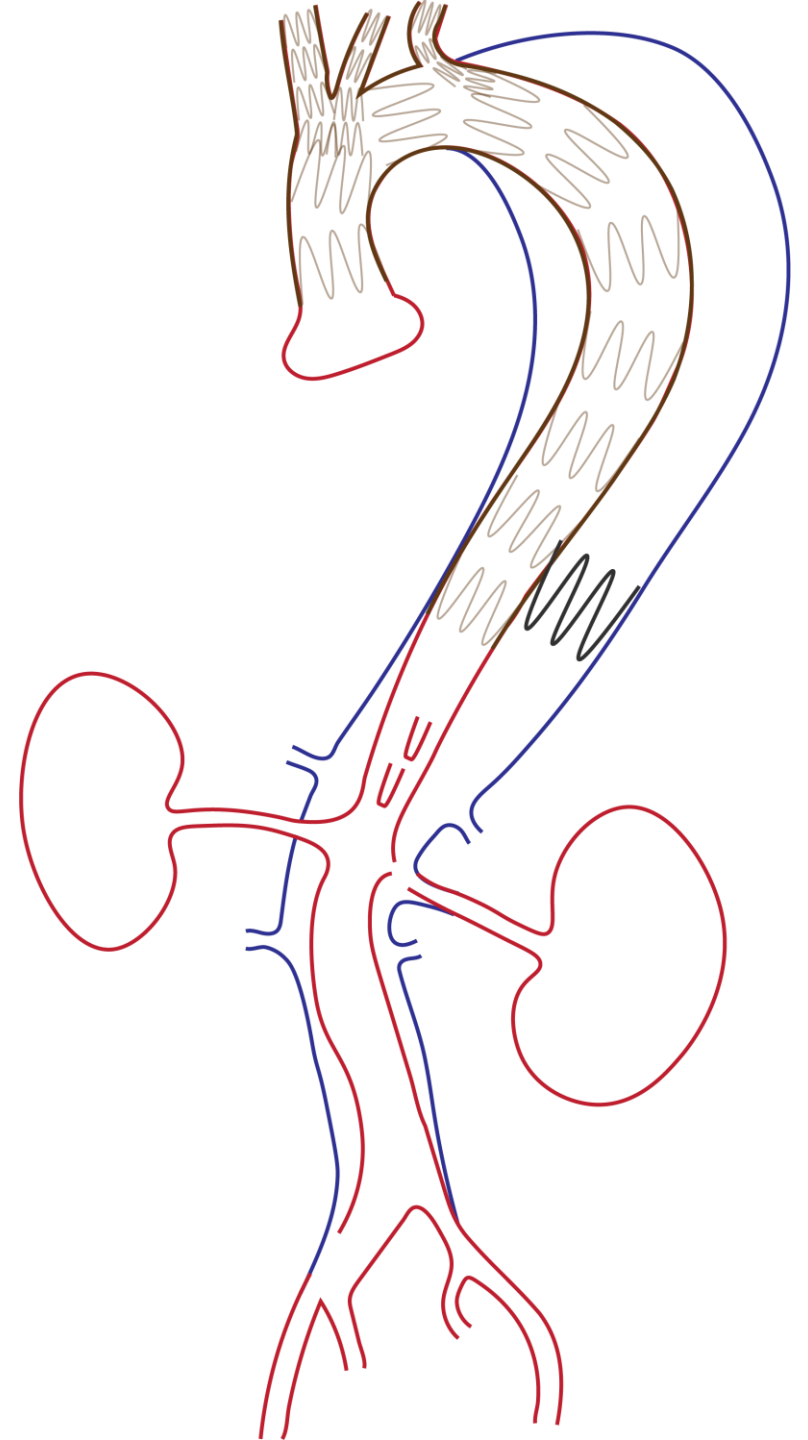
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2022



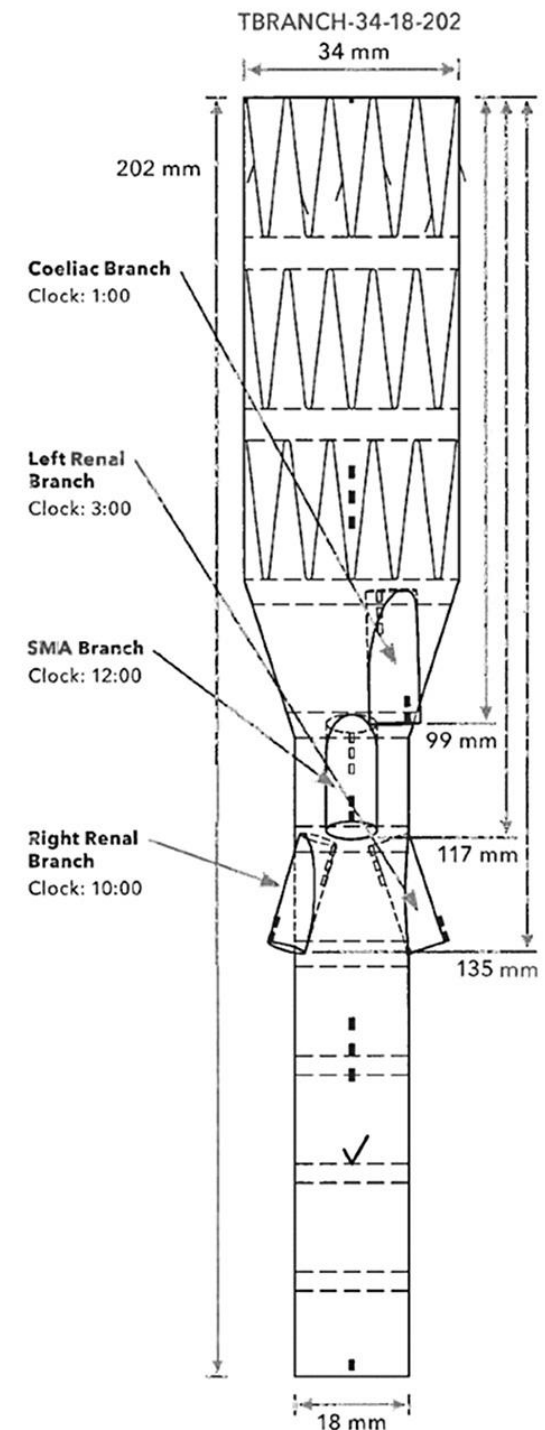
# Patient History

- Now presenting with back pain and an acute enlargement of the thoracic aorta to 90 mm



# Patient History

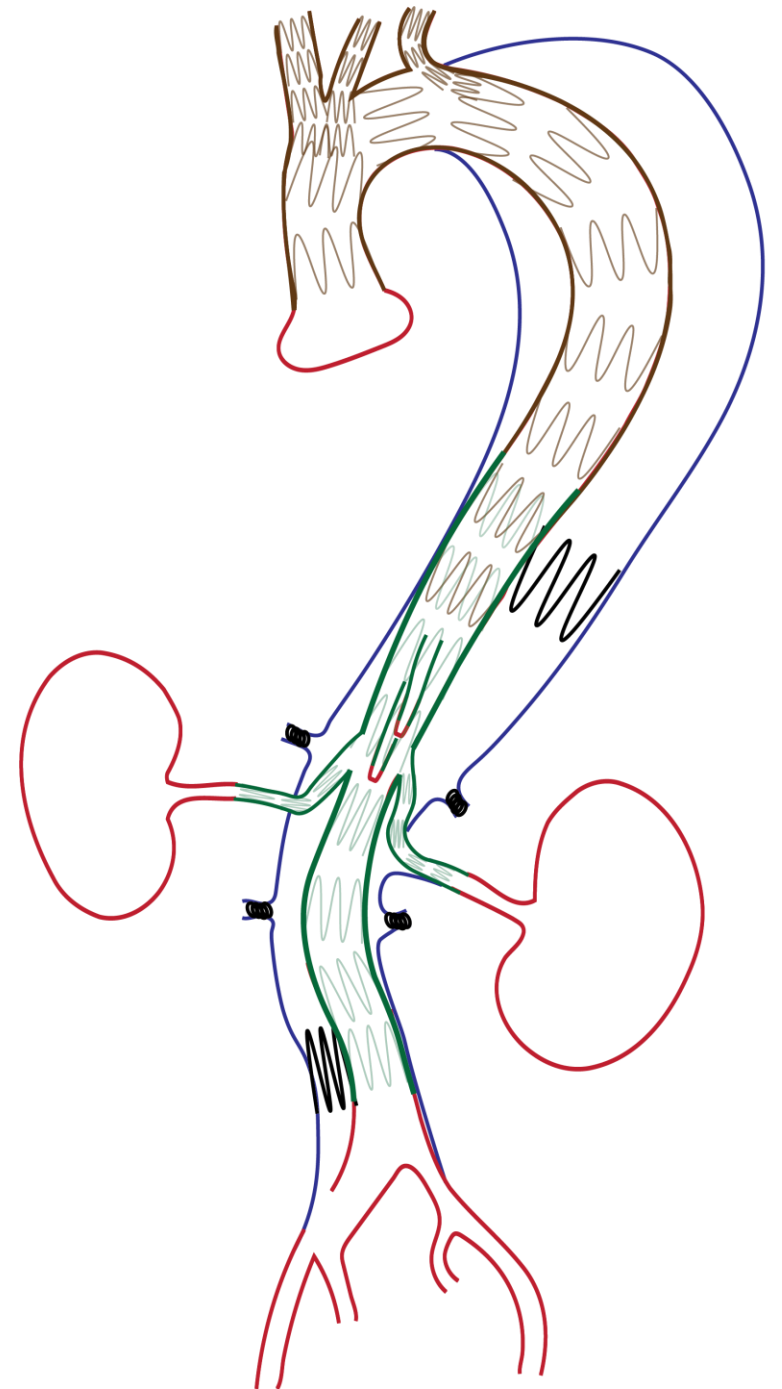
- Now presenting with back pain and an acute enlargement of the thoracic aorta to 90 mm
- Decision to treat endovascularly
  - t-Branch
  - Embolization of large intercostals
  - Candy plug





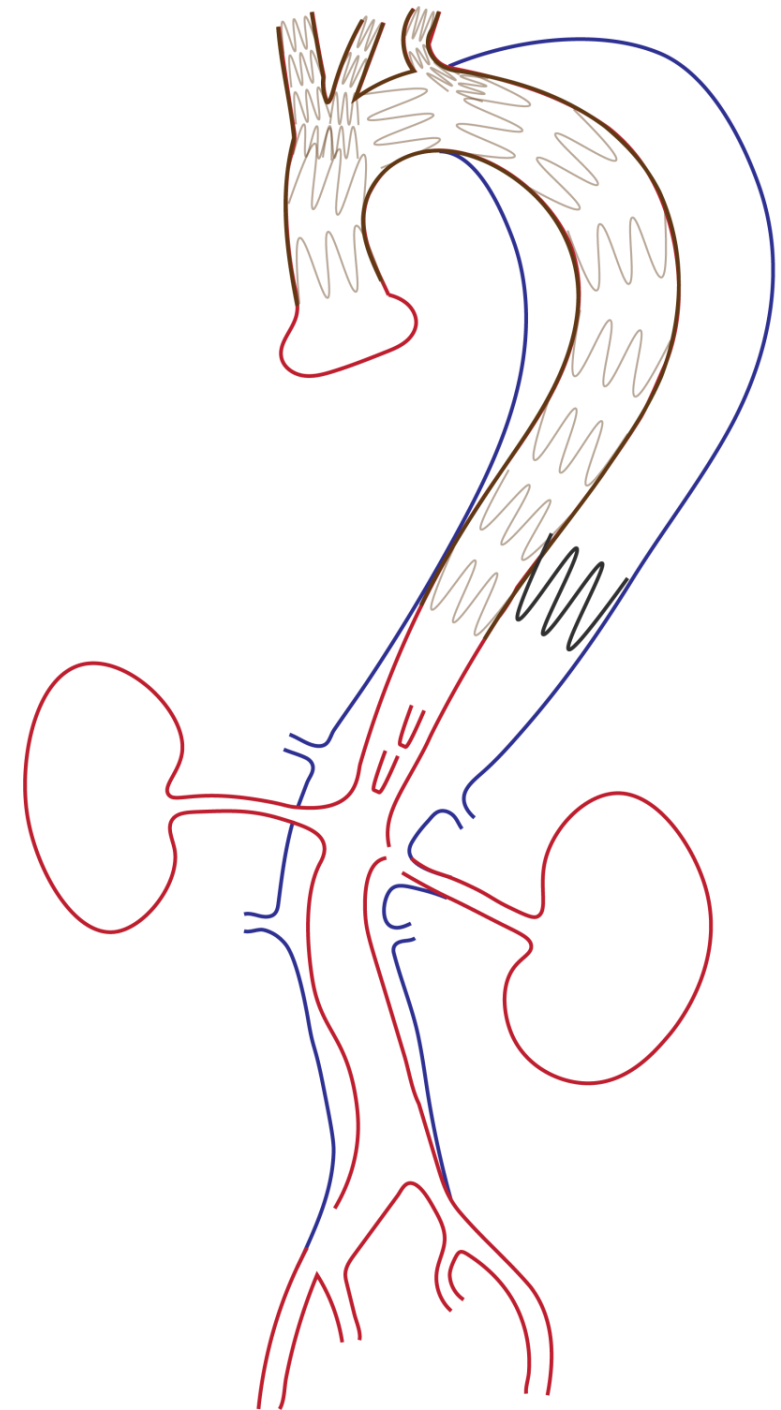
# Patient History

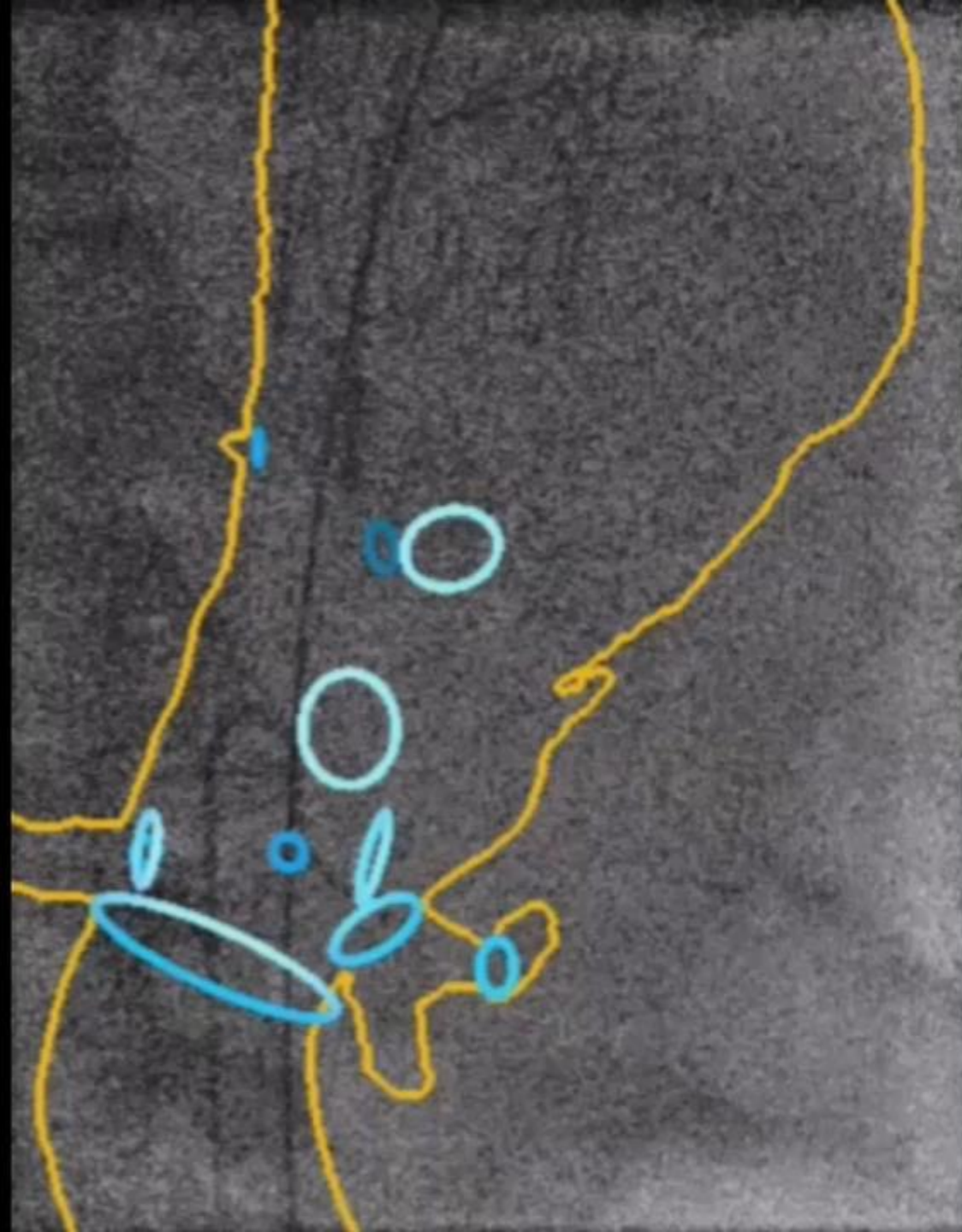
- Now presenting with back pain and an acute enlargement of the thoracic aorta to 90 mm
- Decision to treat endovascularly
  - t-Branch
  - Embolization of large intercostals
  - Candy plug

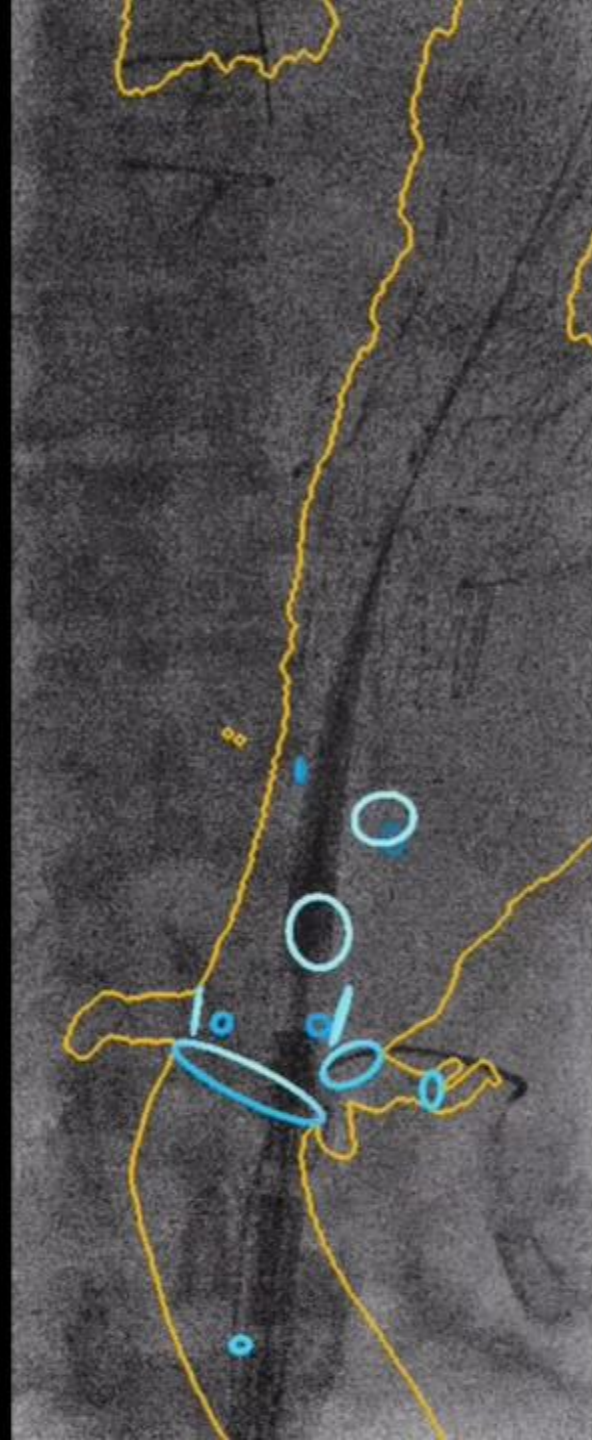


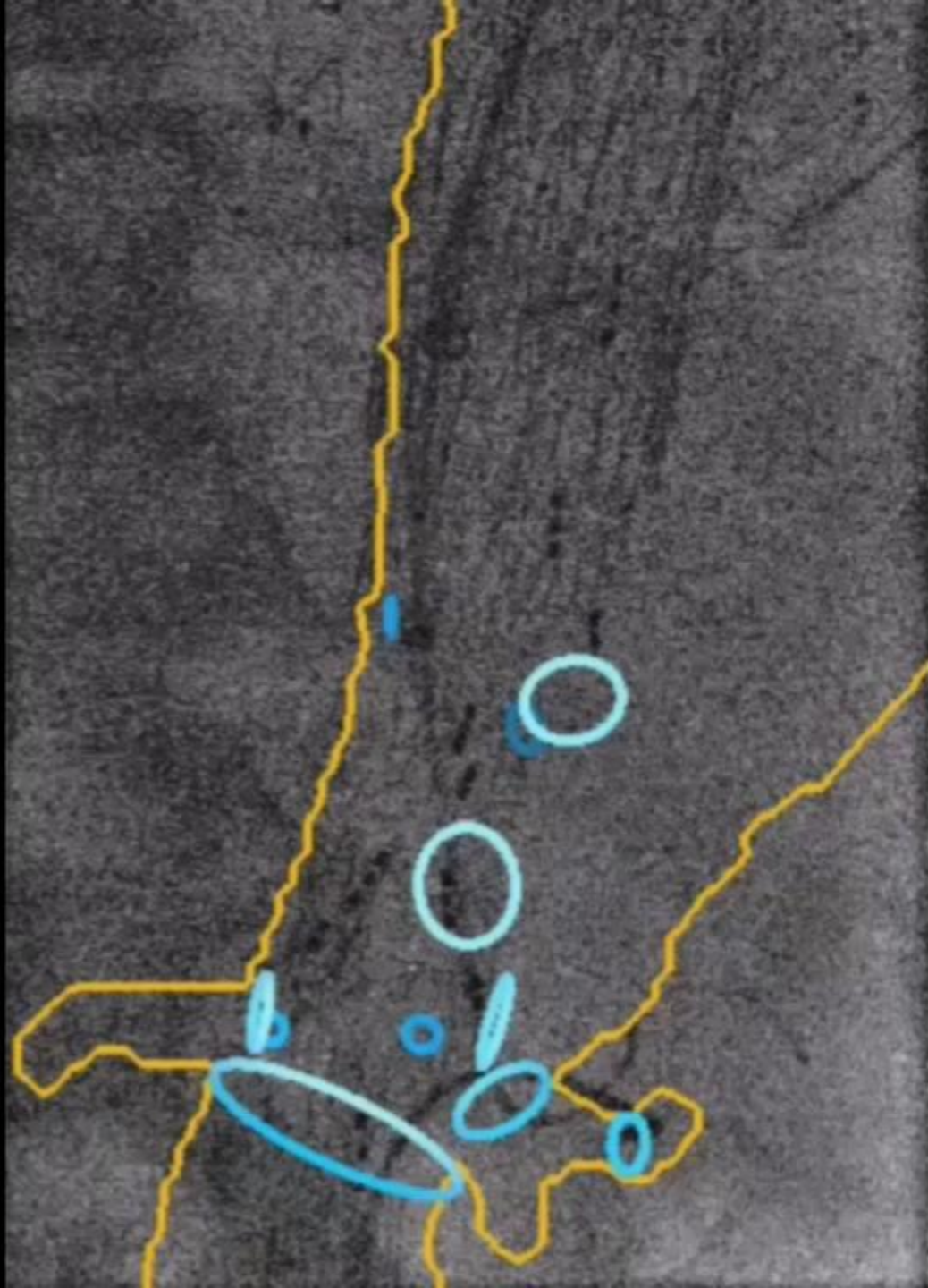
# Anticipated Challenges

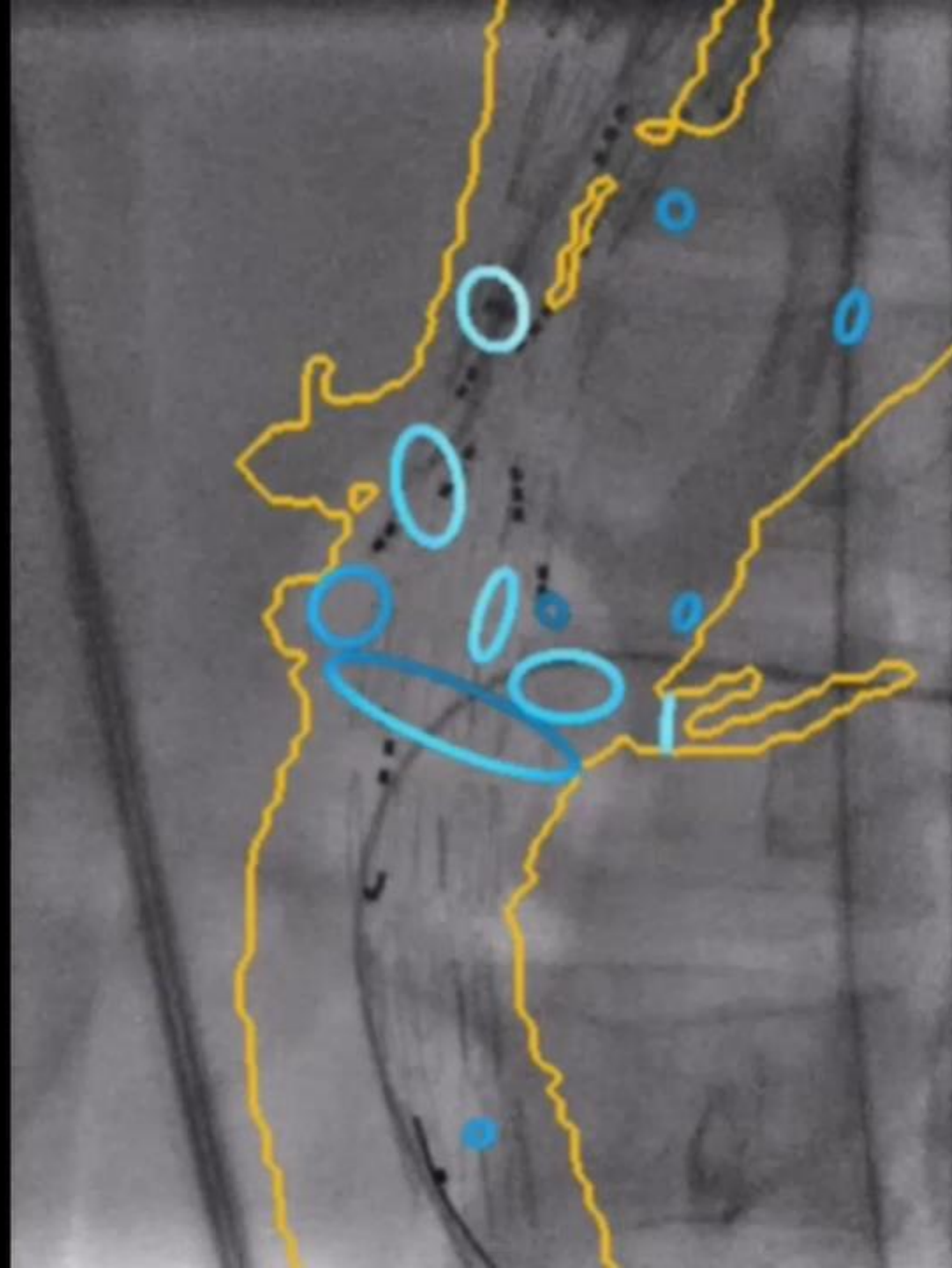
- Narrow true lumen
- Previous arch graft
- Dissected left renal artery
- Large intercostal arteries

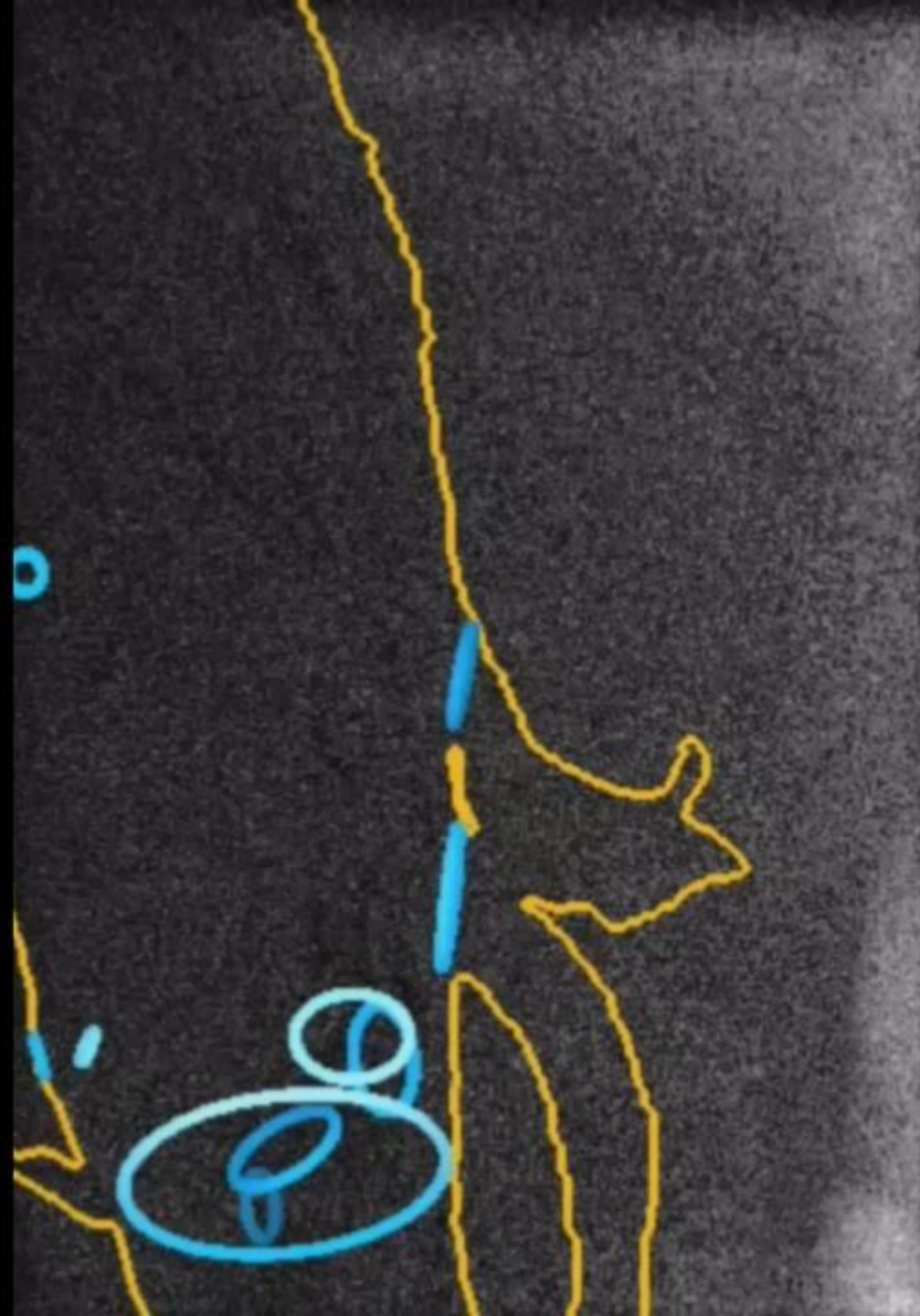


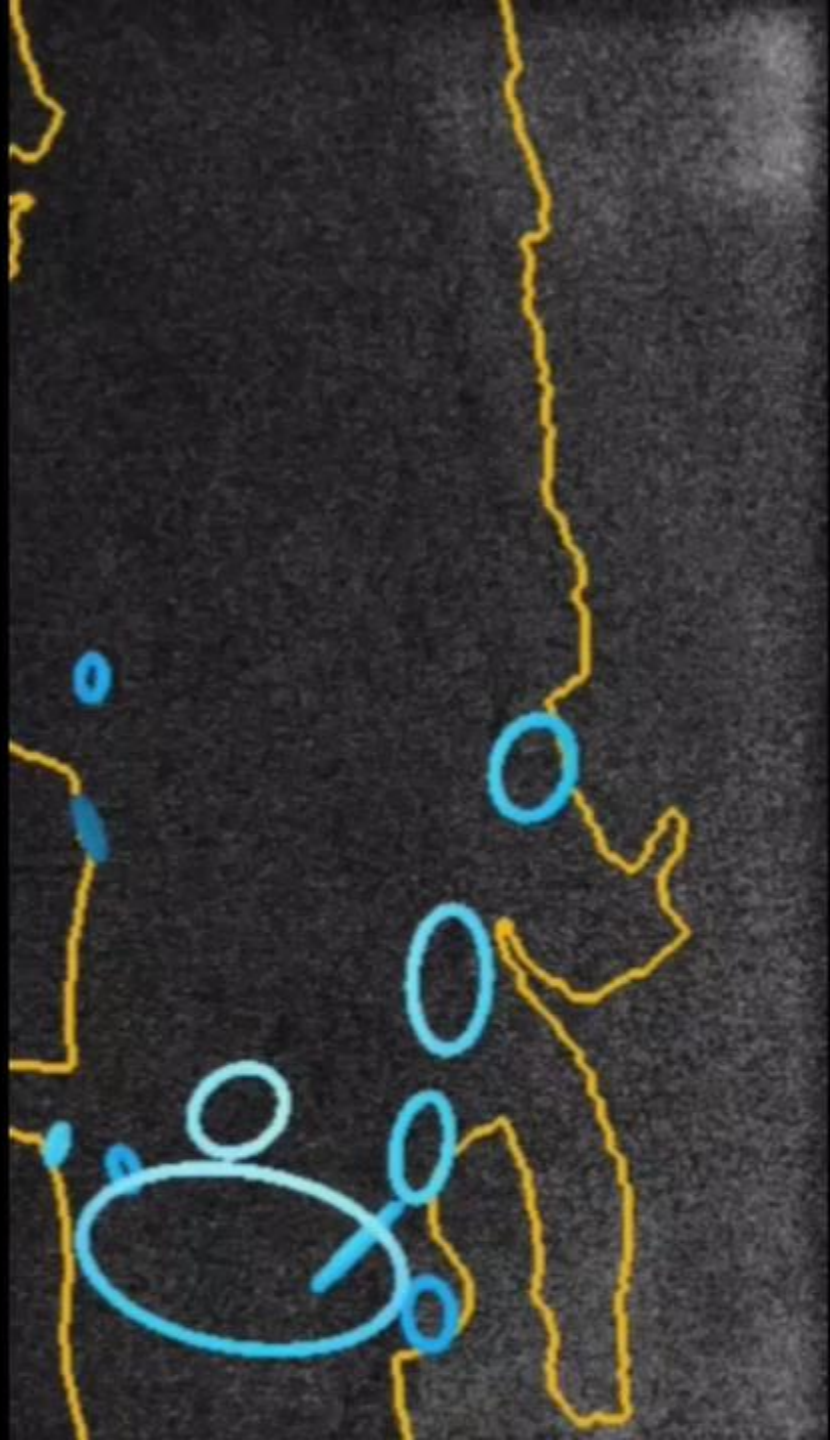




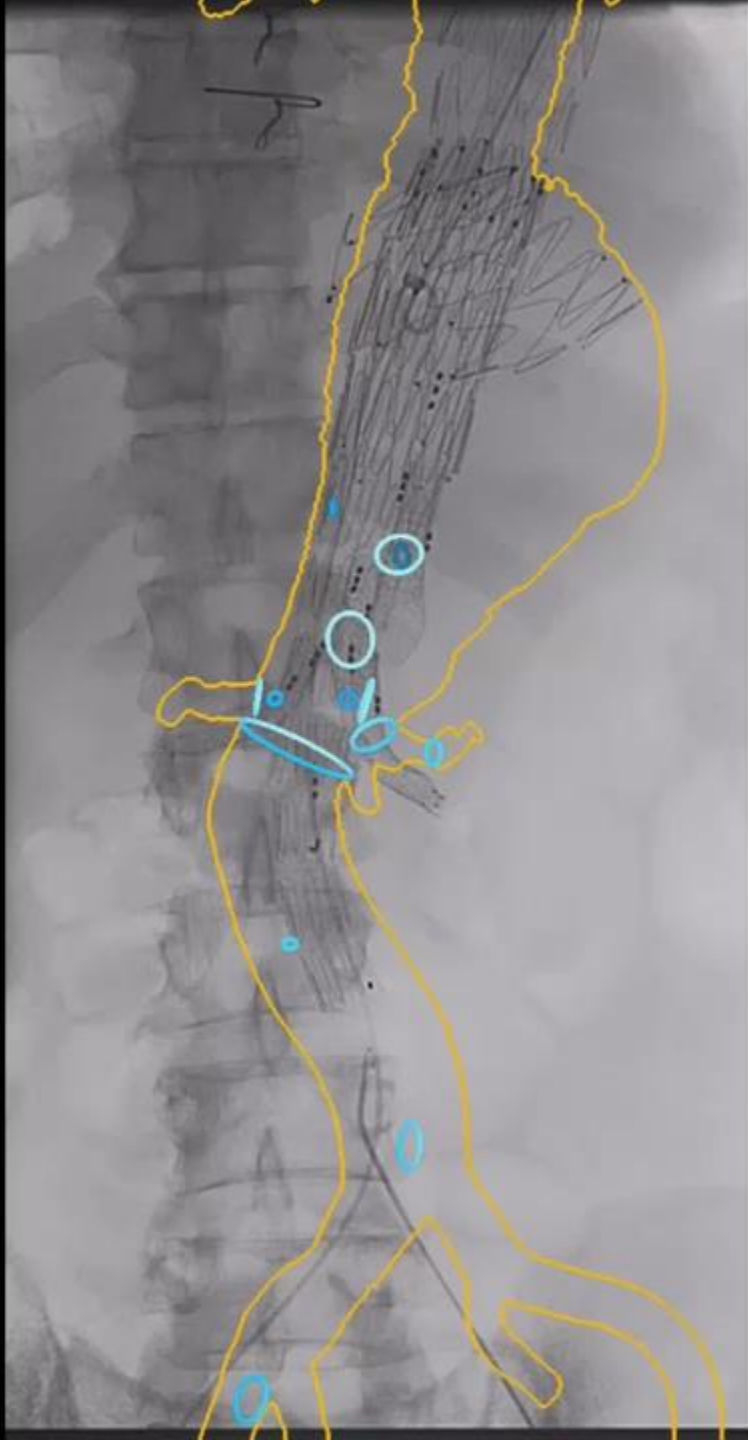


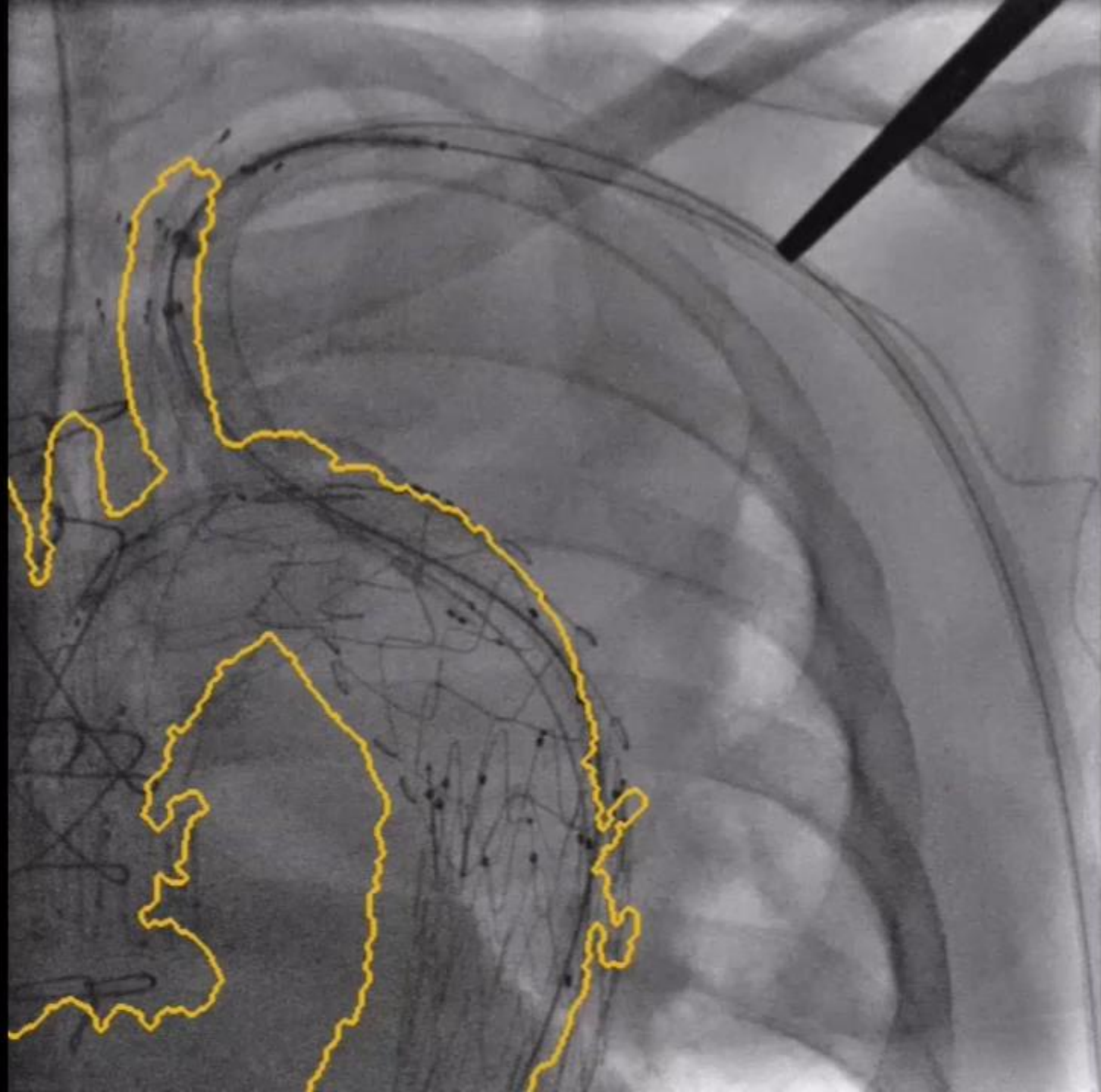


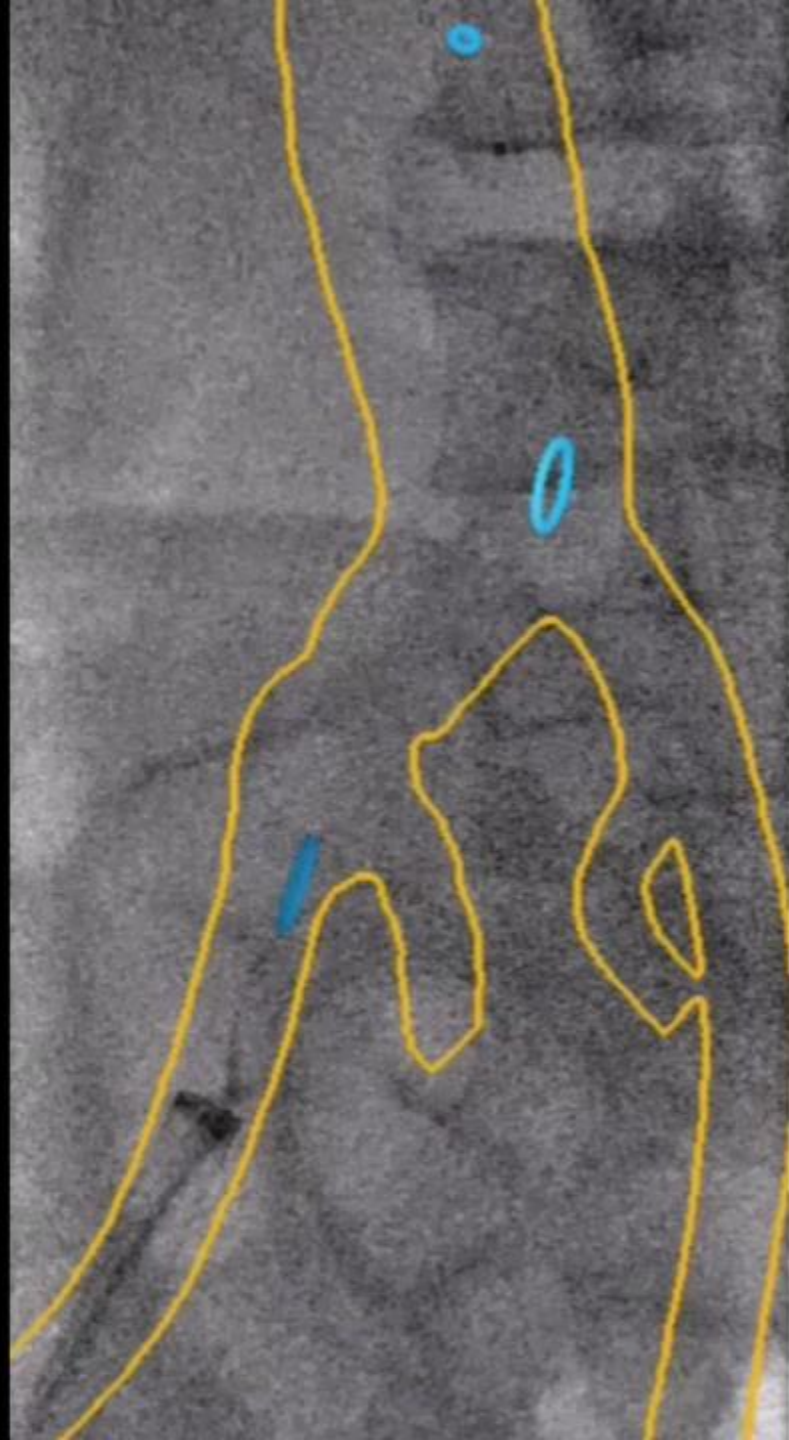


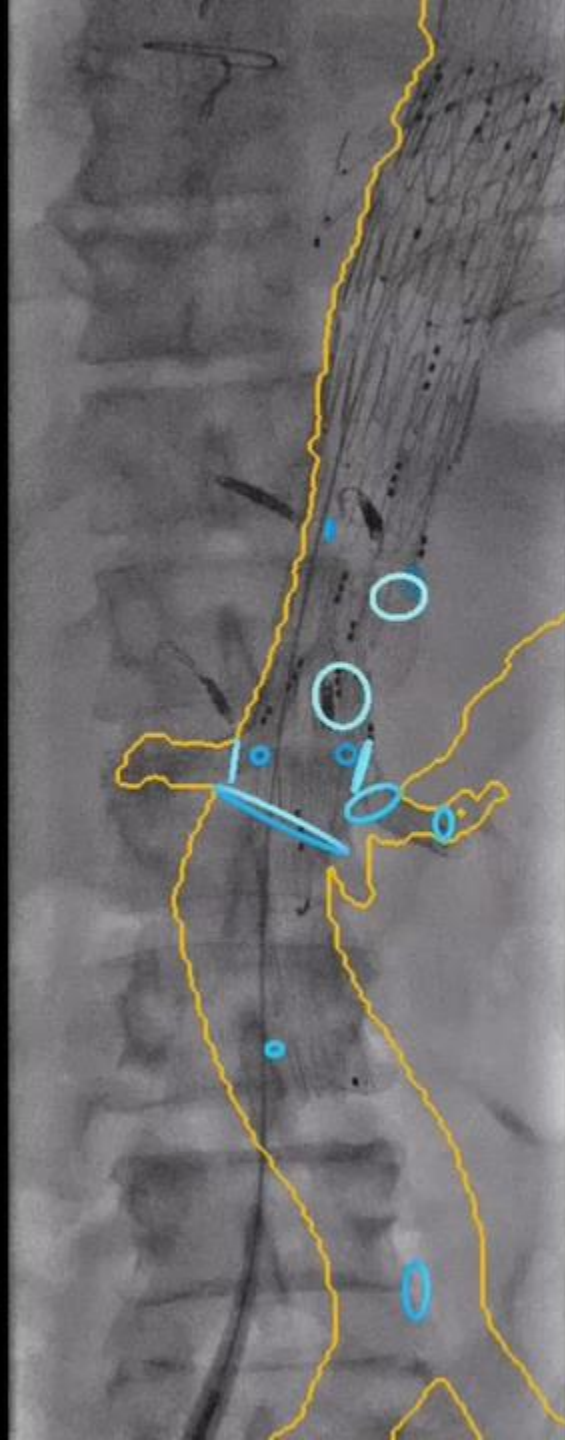






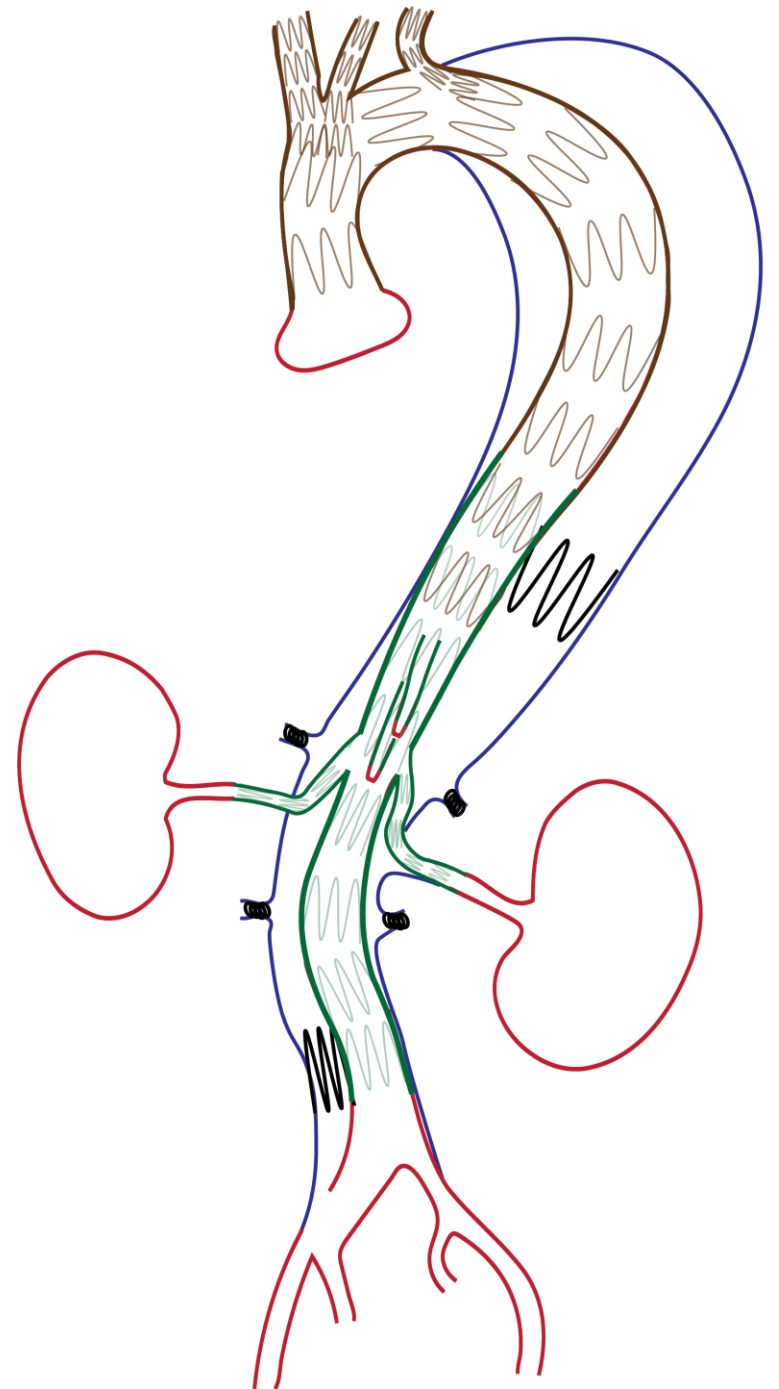






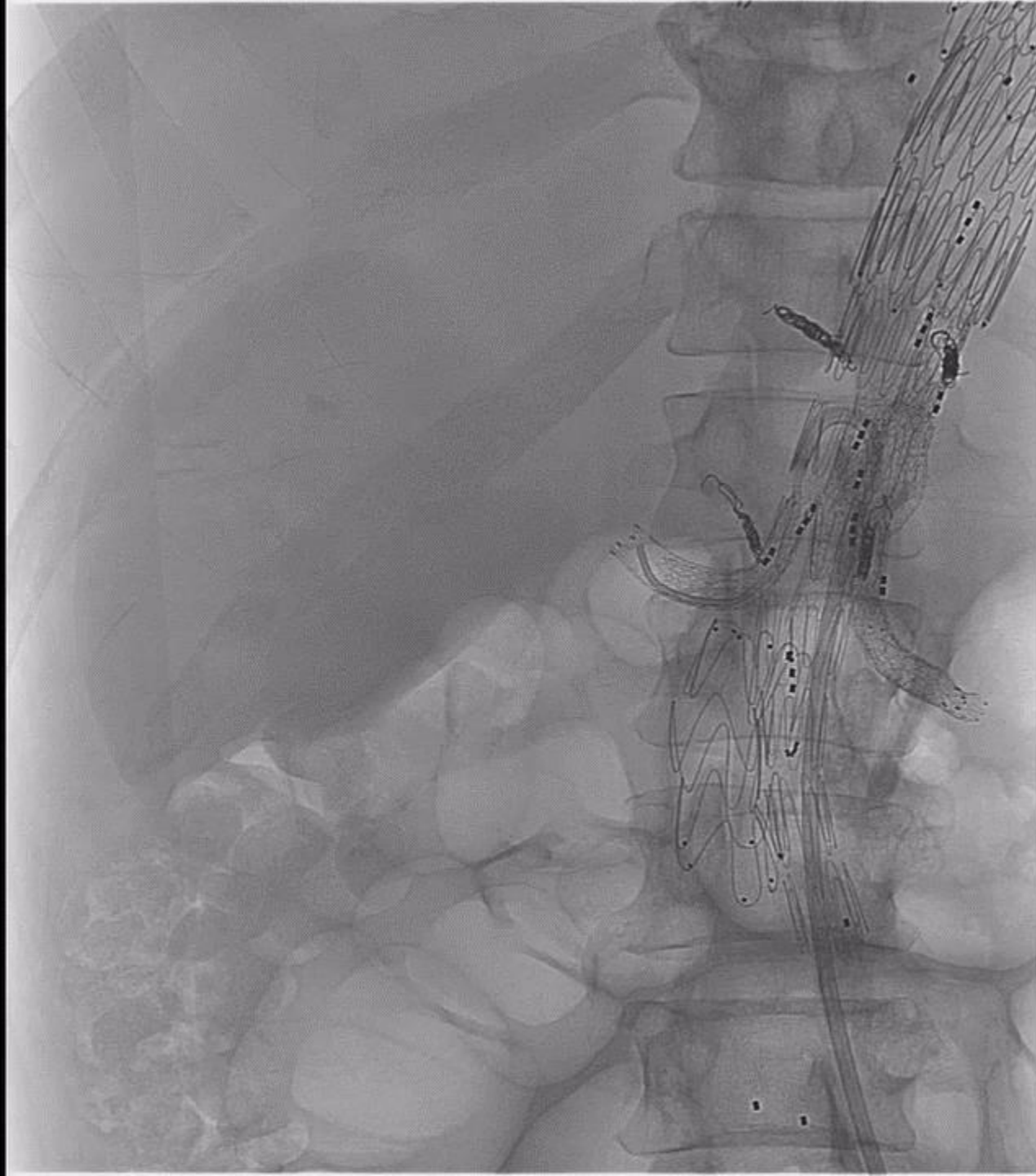
# Post-op Course

- Neurologically intact
- Hemodynamically stable
- Developed abdominal pain on Post-op Day #1
- CT Angiogram showing large right renal hematoma



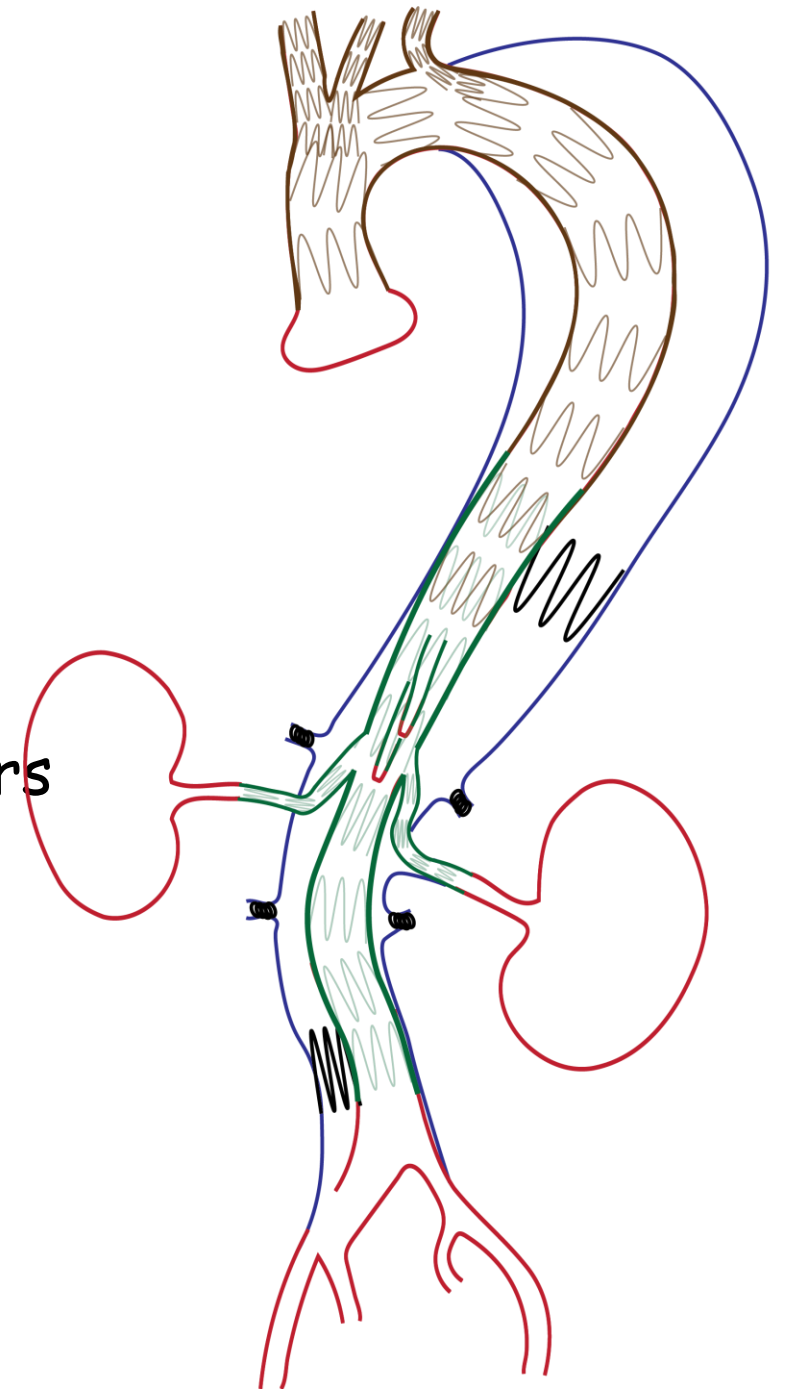
# Right Renal Hematoma





# Post-op Course

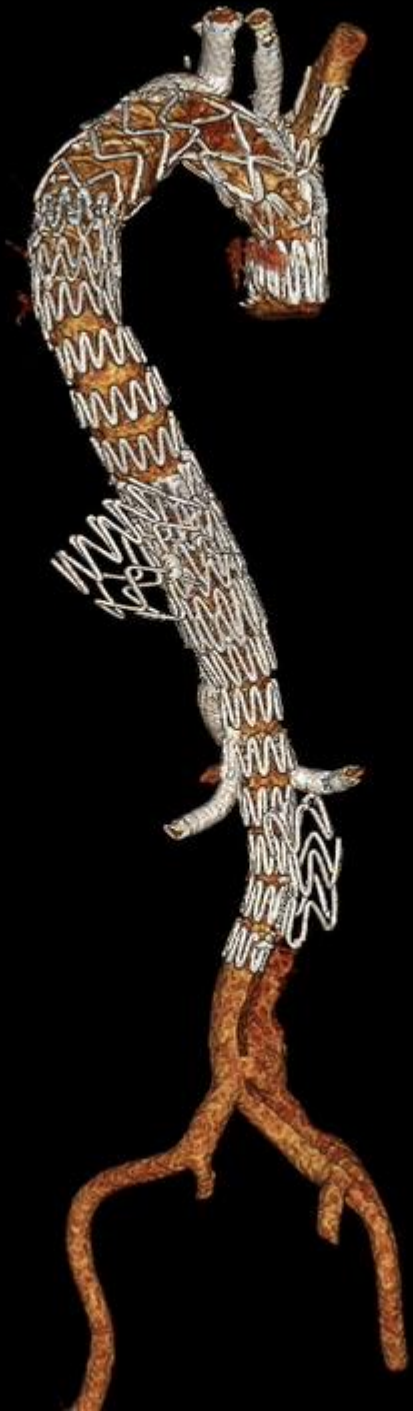
- Renal function stable
  - Transient rise in Creatinine to 300
  - Return to baseline of 105 within 48 hours
- Discharged on Post-op Day # 11



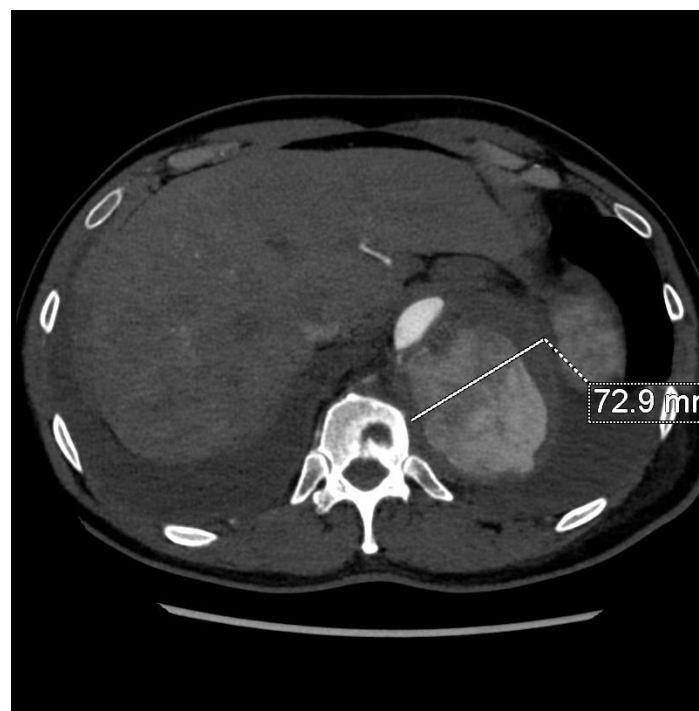


# Post-op Course

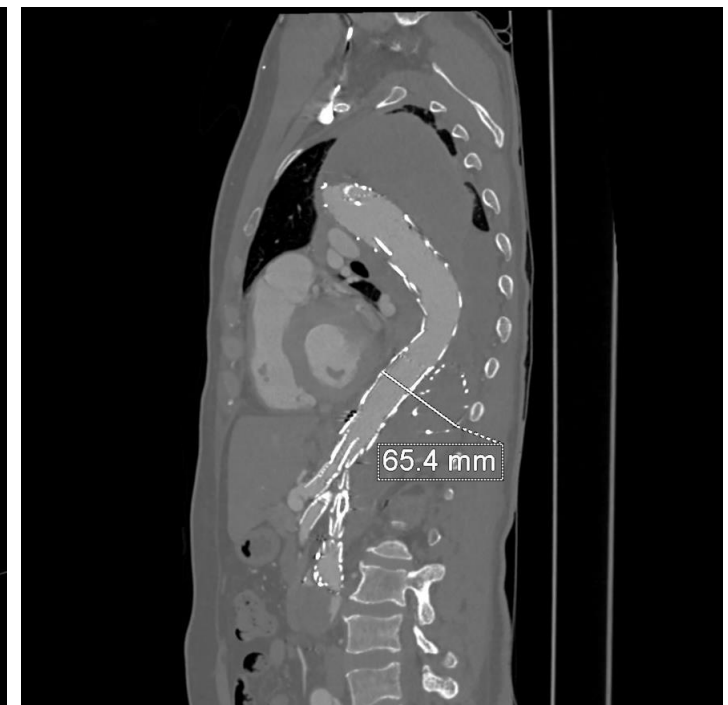
- Continues to do well at 2 months post-op
- CTA angiogram
  - Patency of all 4-branches
  - Exclusion of false lumen
  - No evidence of endoleak



# Pre-op



# 2-Months



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69 years old, hypertension

- Stanford type A dissection 6 years before

Dacron straight tube in ascending aorta

- Acute bilateral lower limb ischemia

- Left renal artery malperfusion

Infra-renal, left renal and bi-iliac stenting





69 years old, hypertension

- Residual dissection

TEVAR

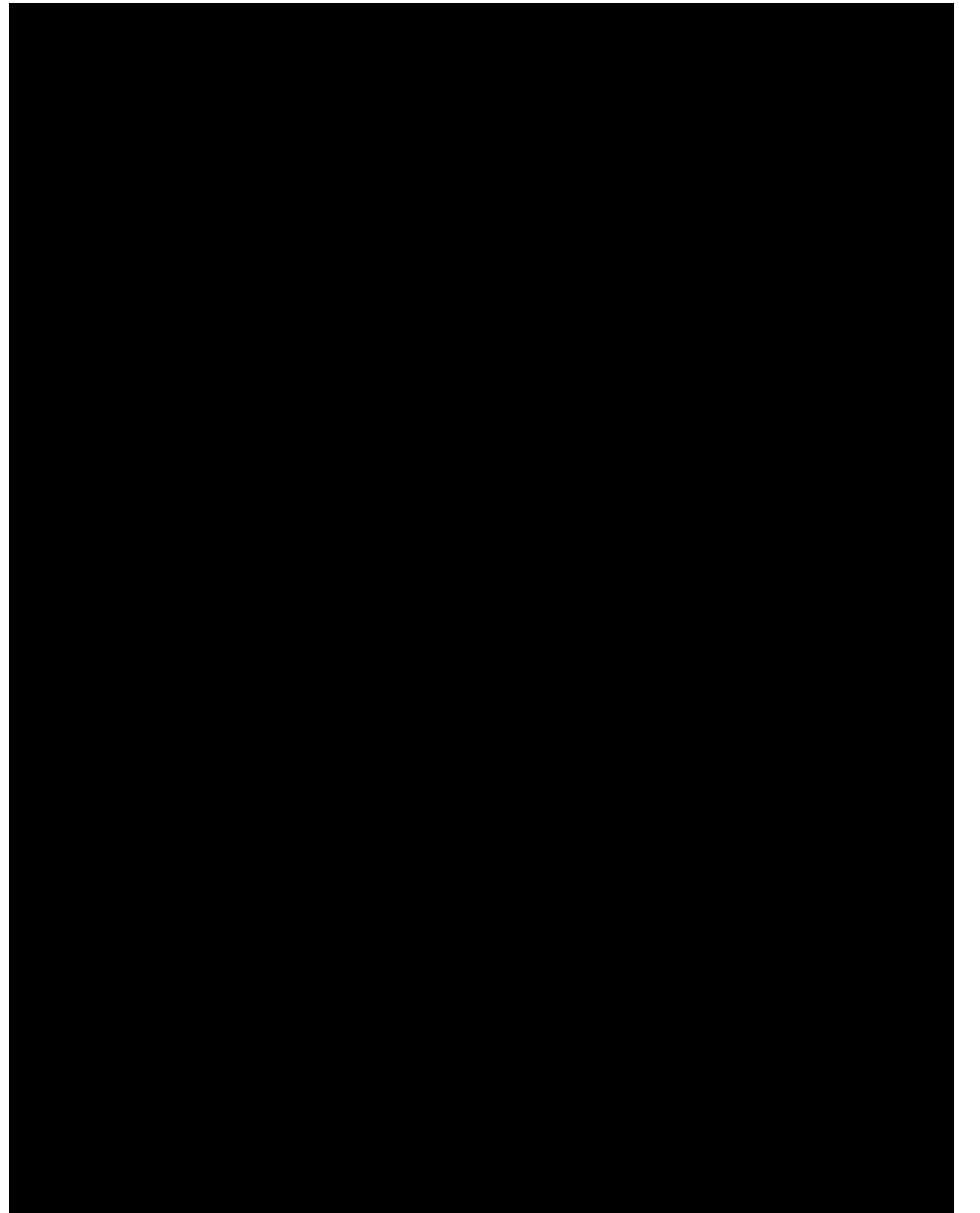
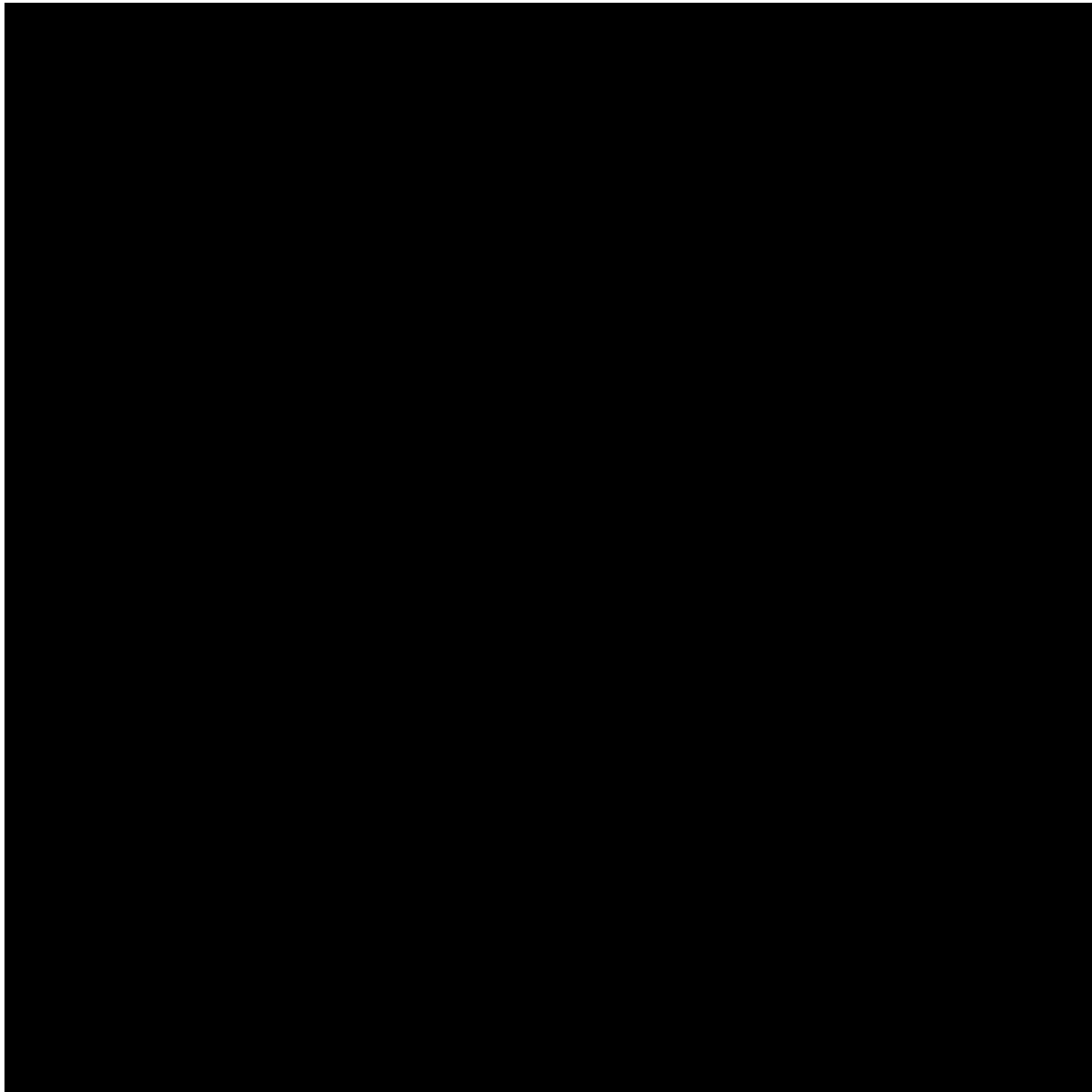


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**SIX YEARS**

**LATER...**



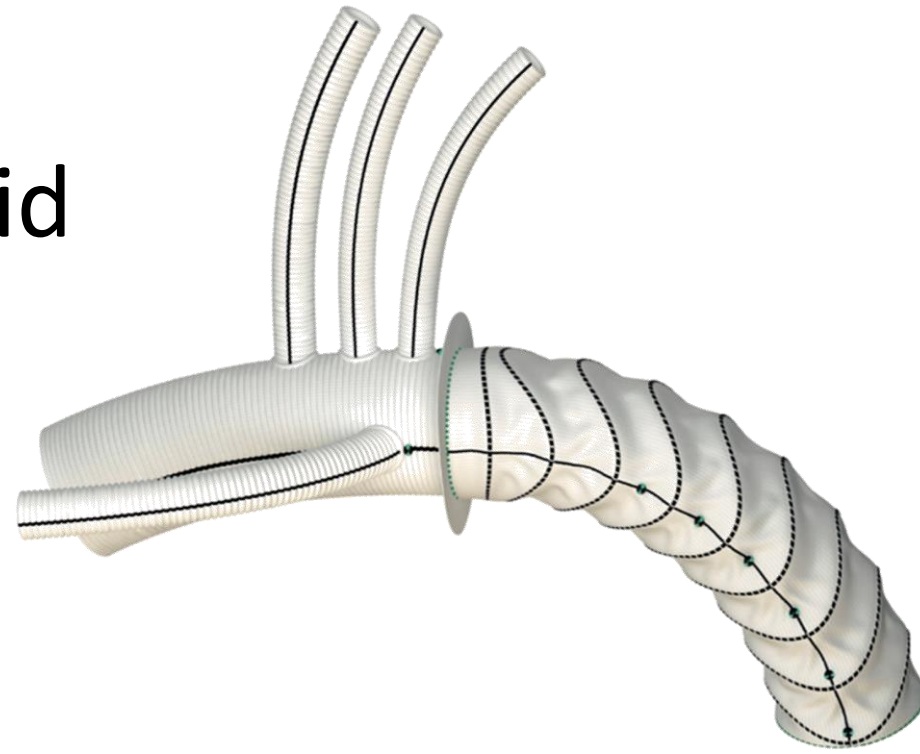
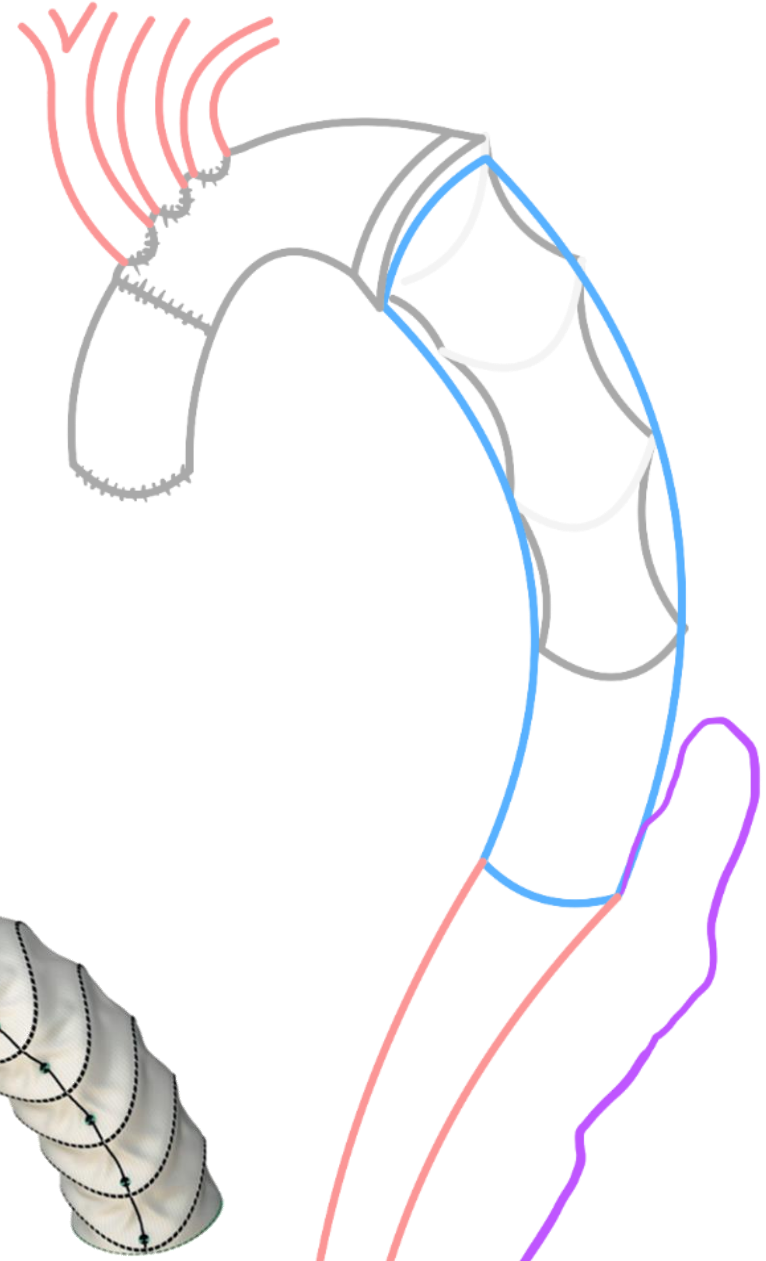
# Frozen elephant trunk

Re-do sternotomy

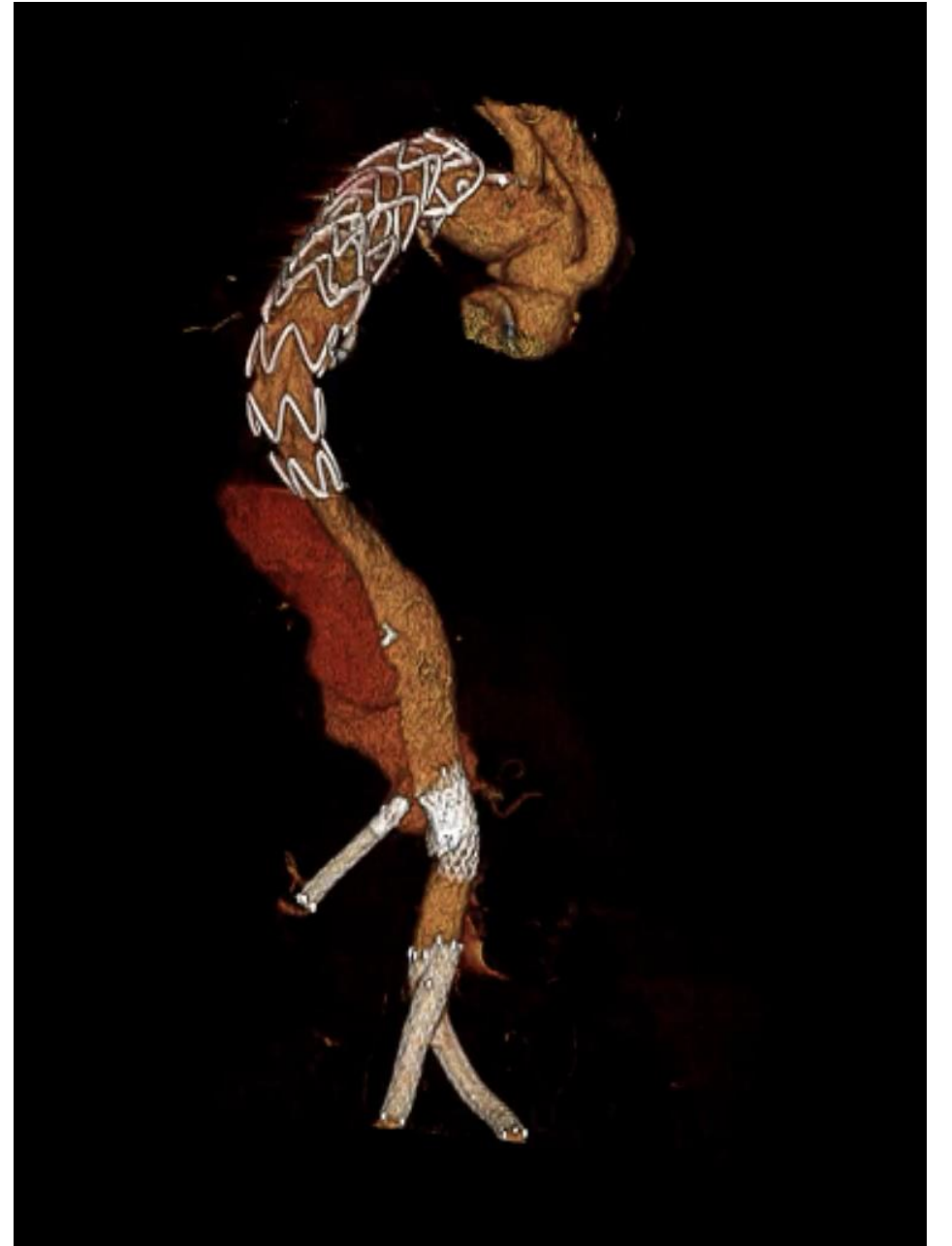
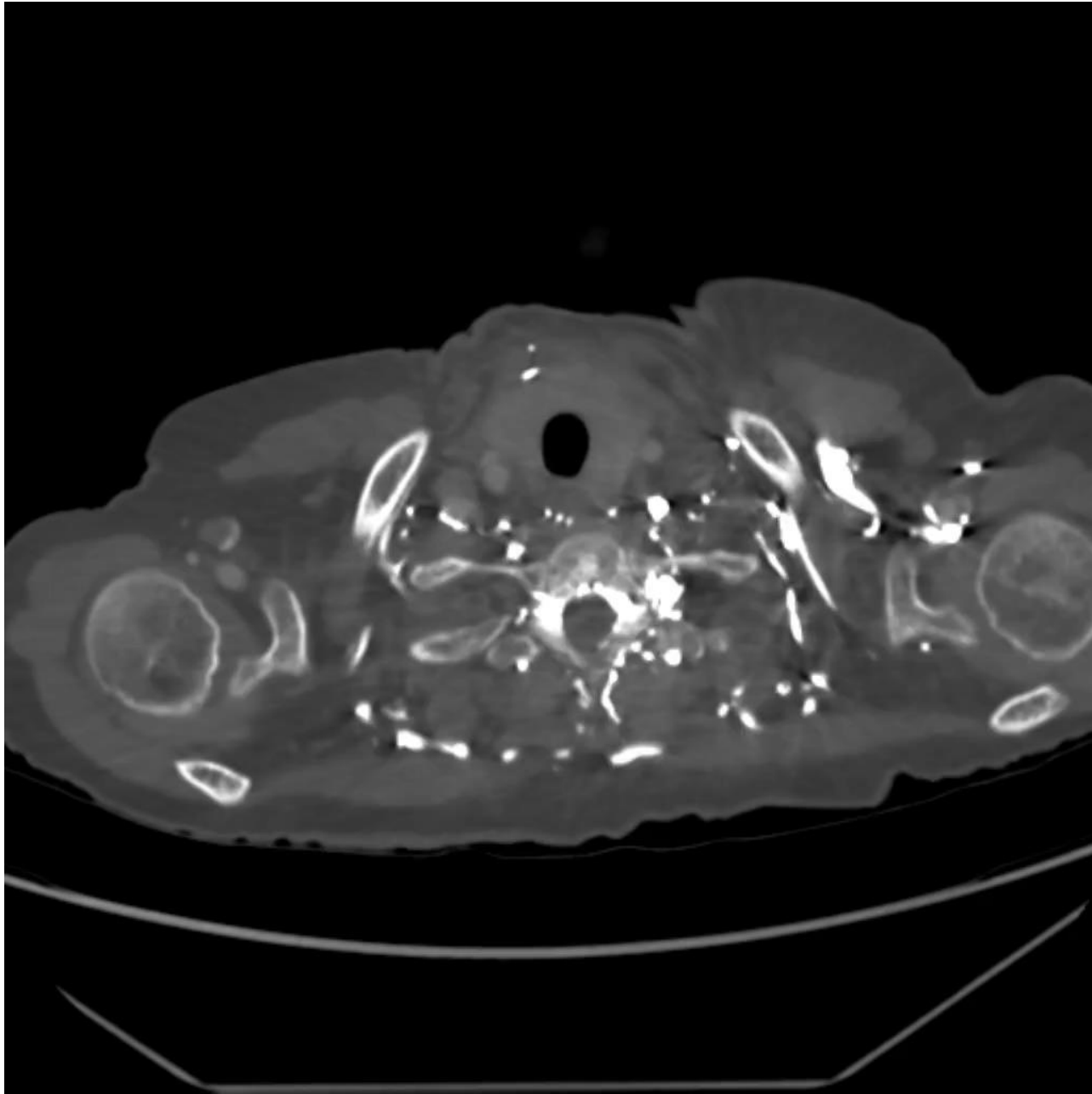
Hypothermic circulatory

arrest

# Thoraflex Hybrid

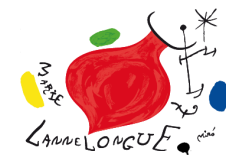




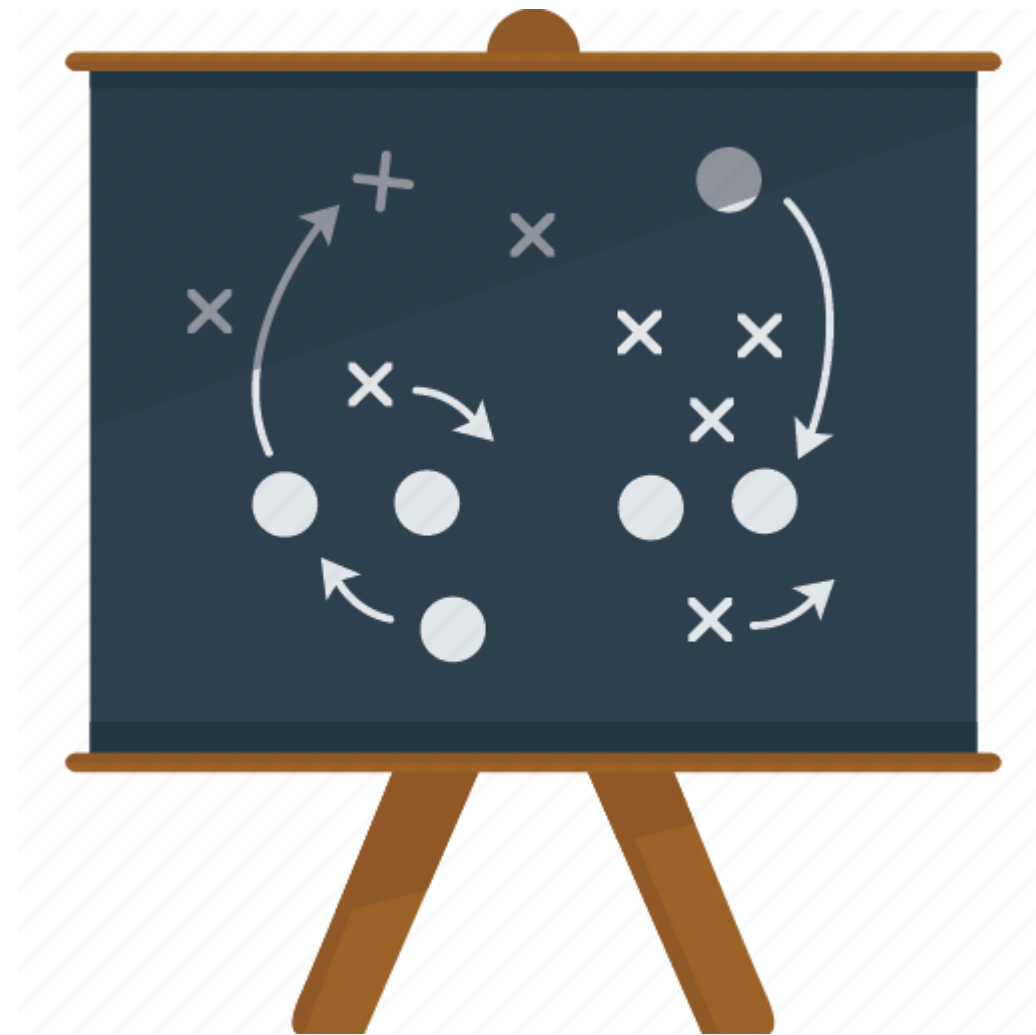




True – false lumen  
communication



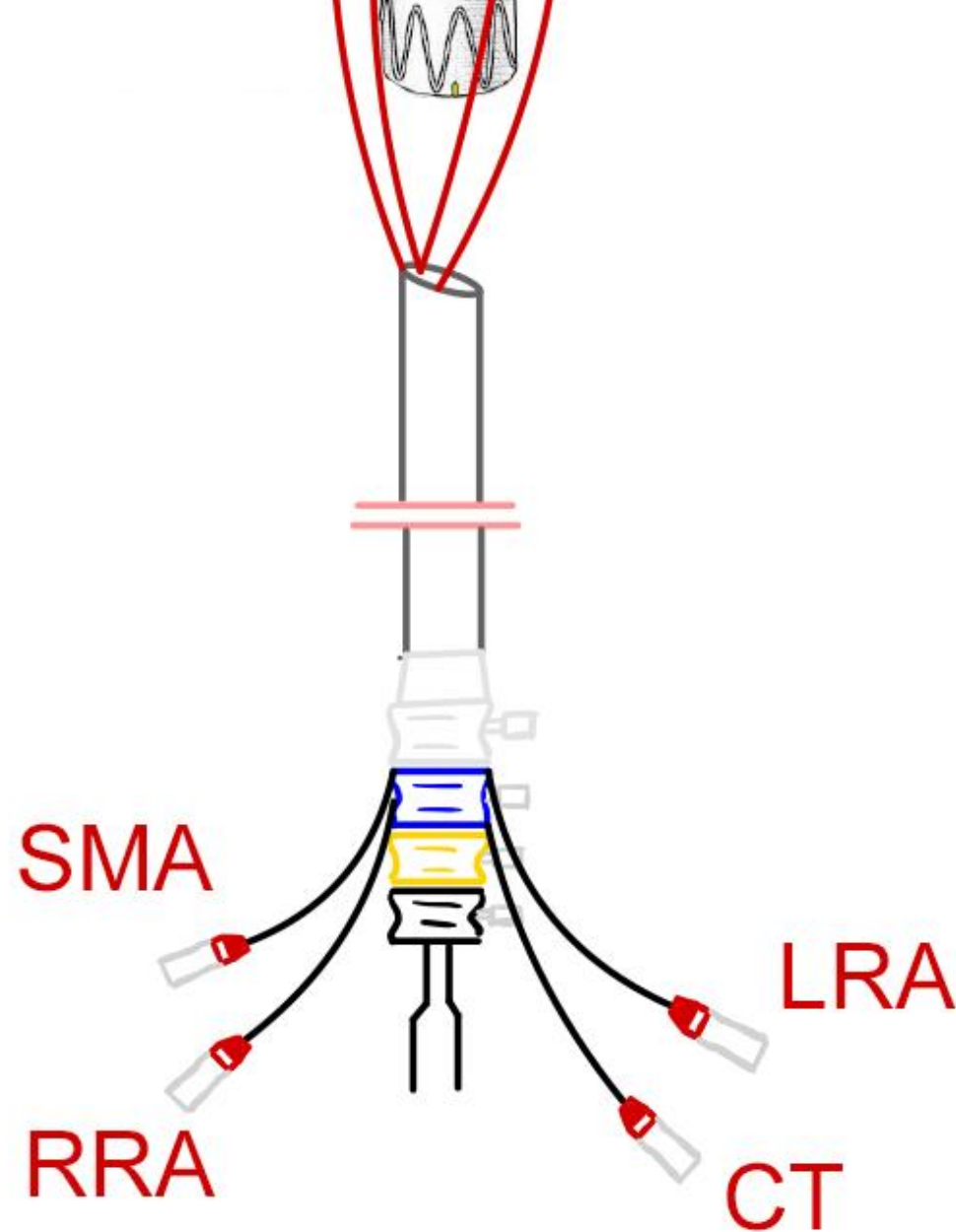
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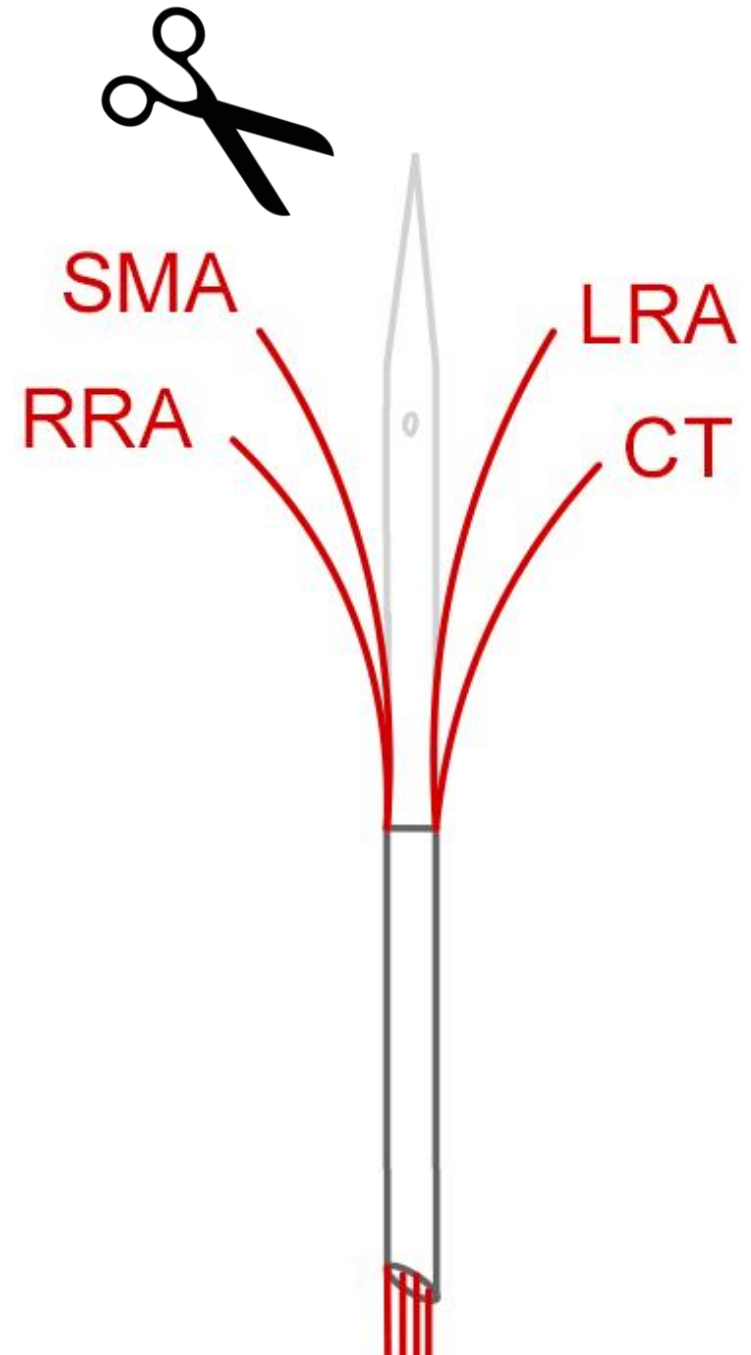
# Preloaded T-Branch

1. Snare **4 m Terumo guidewire**
2. Through-and-through
3. Cut the emerging guidewires
4. Exchange for **8F x 90 cm**  
Cook Flexor Shuttle sheath
5. Cannulate



# Preloaded T-Branch

1. Snare **4 m Terumo guidewire**
2. Through-and-through
3. Cut the emerging guidewires
4. Exchange for **8F x 90 cm**  
Cook Flexor Shuttle sheath
5. Cannulate

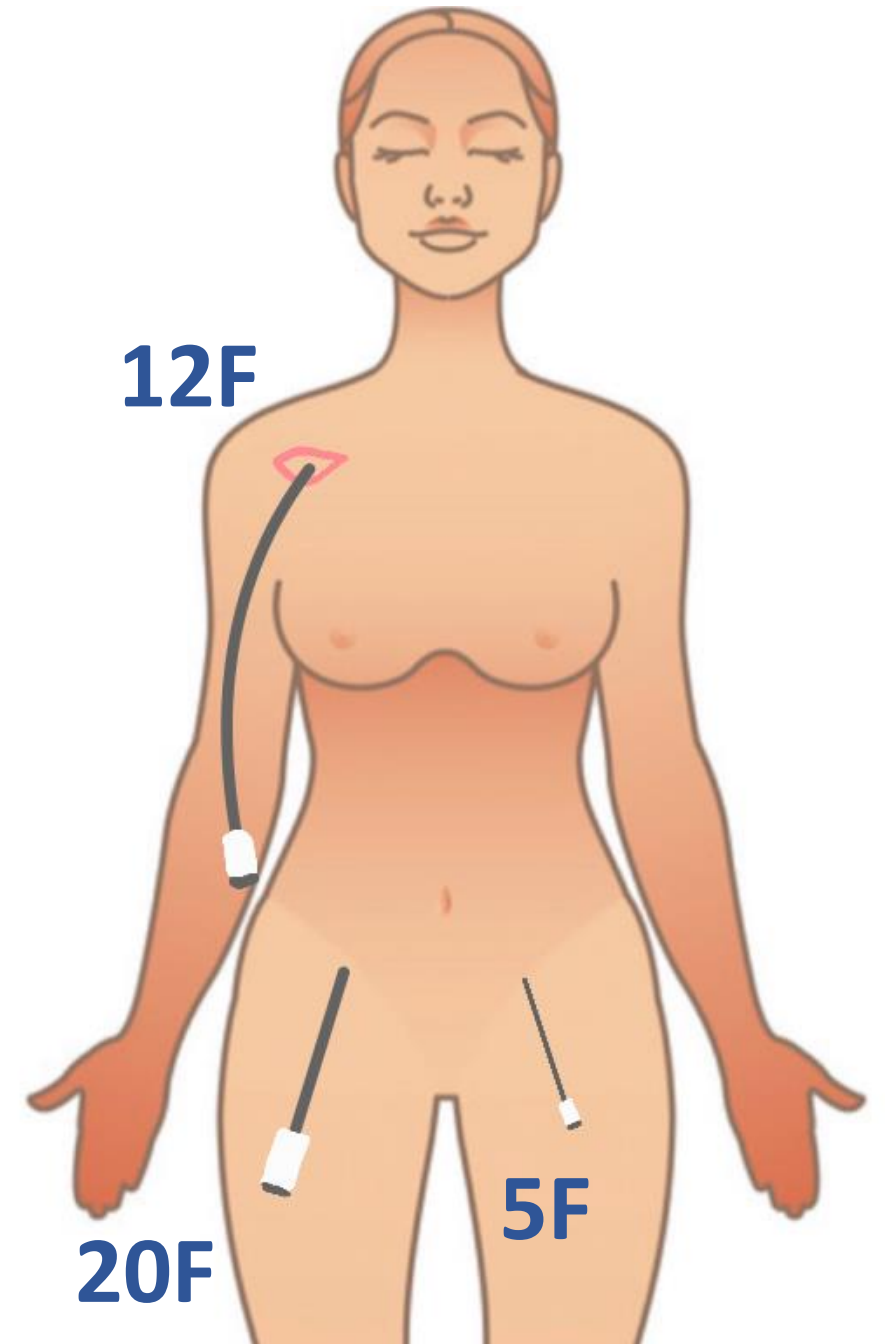


# Setup

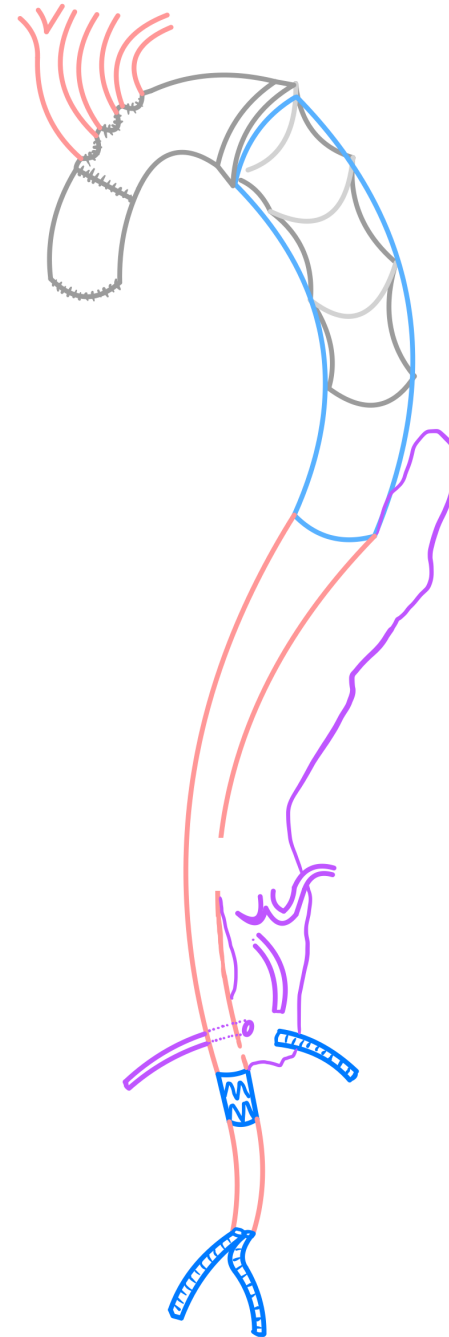
Gore DrySeal **12F** x 45 cm right axillary

Gore DrySeal **20F** x 33 cm right femoral

5F short sheath left femoral

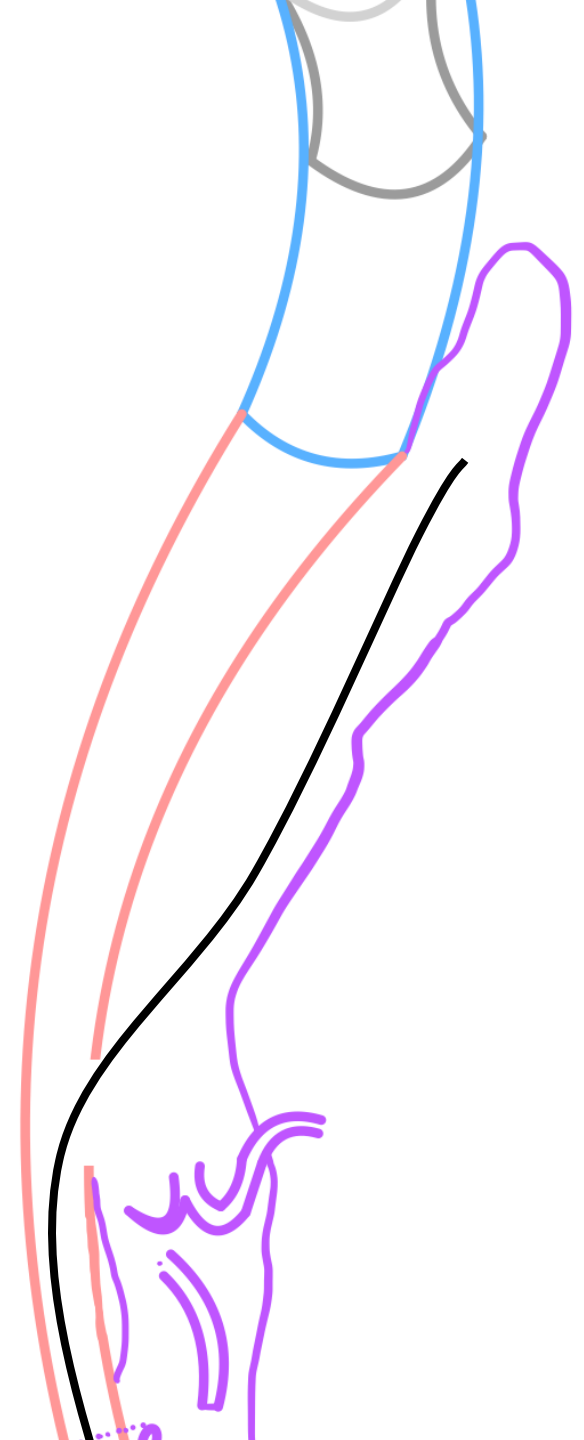


# Positioning the t-Branch



# Positioning the t-Branch

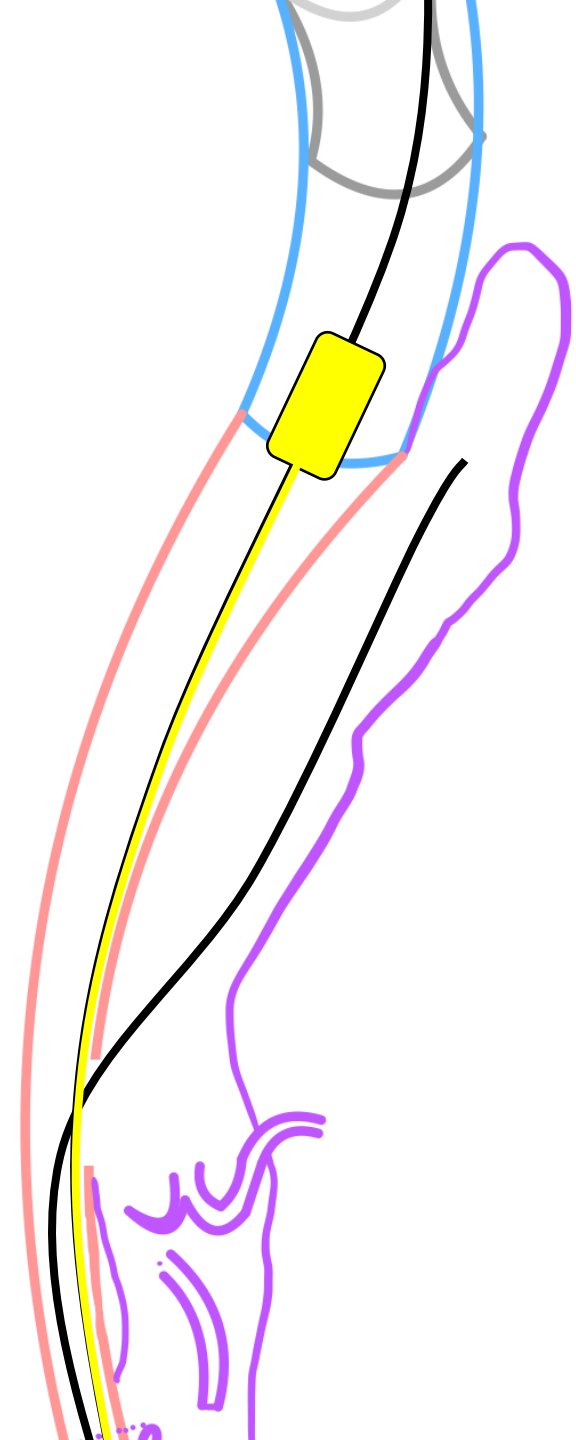
- Cannulating the false lumen
- Creating a re-entry tear
- Cannulate the TEVAR
- Deploy the t-Branch





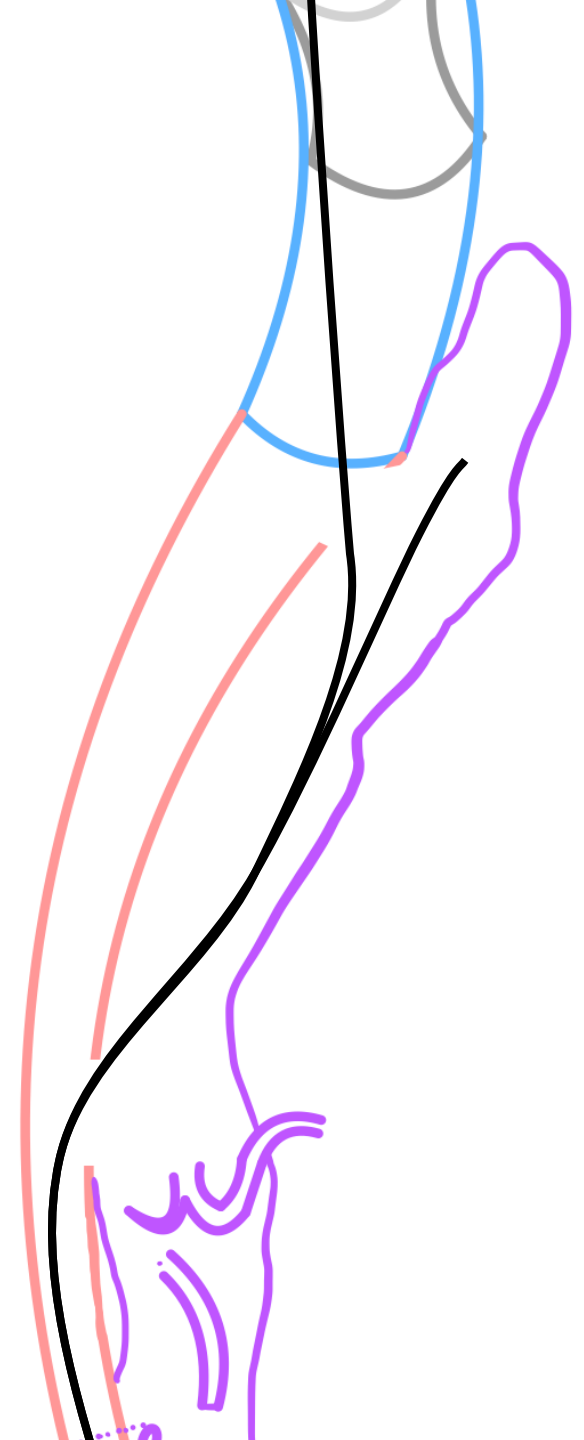
# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear
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- Deploy the t-Branch



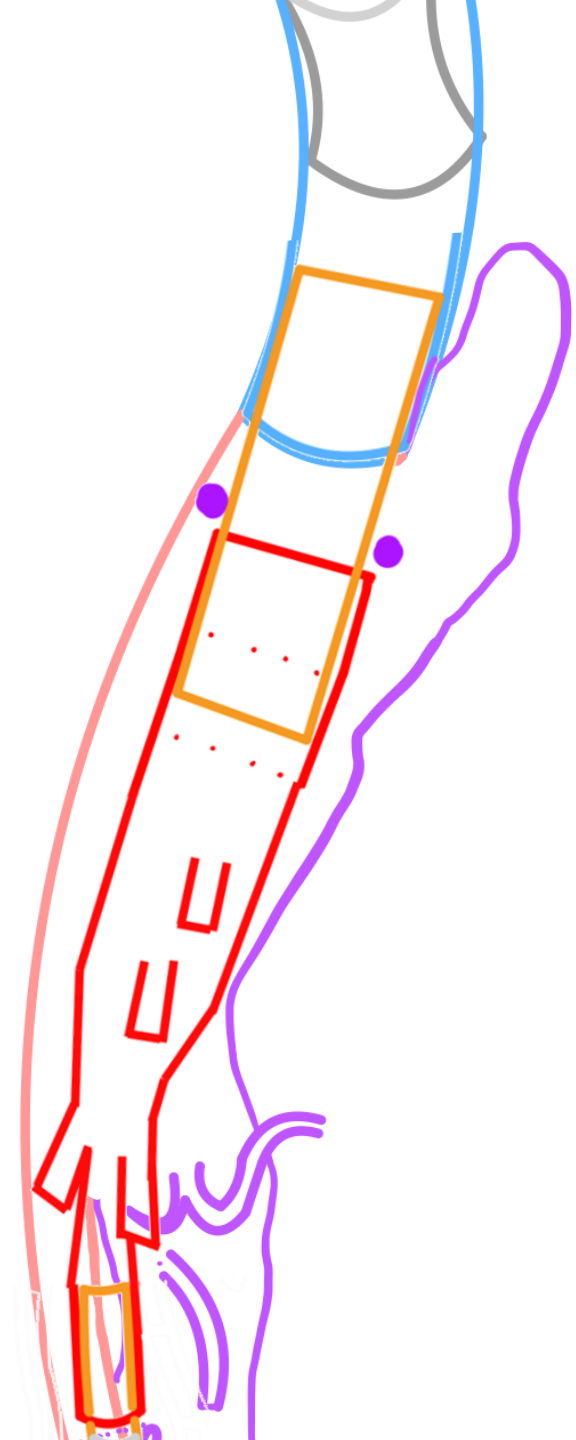
# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear
- Cannulate the TEVAR
- Deploy the t-Branch



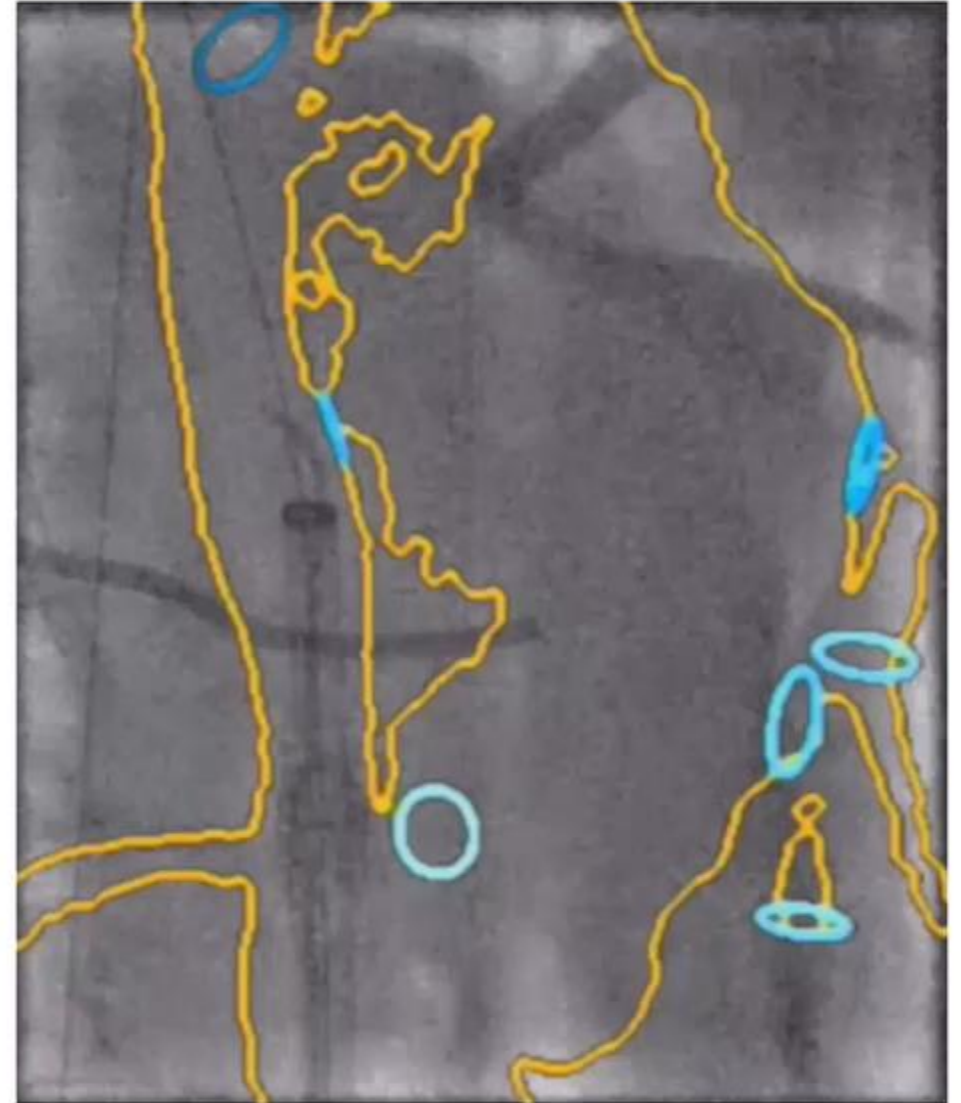
# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear
- Cannulate the TEVAR
- Deploy the t-Branch



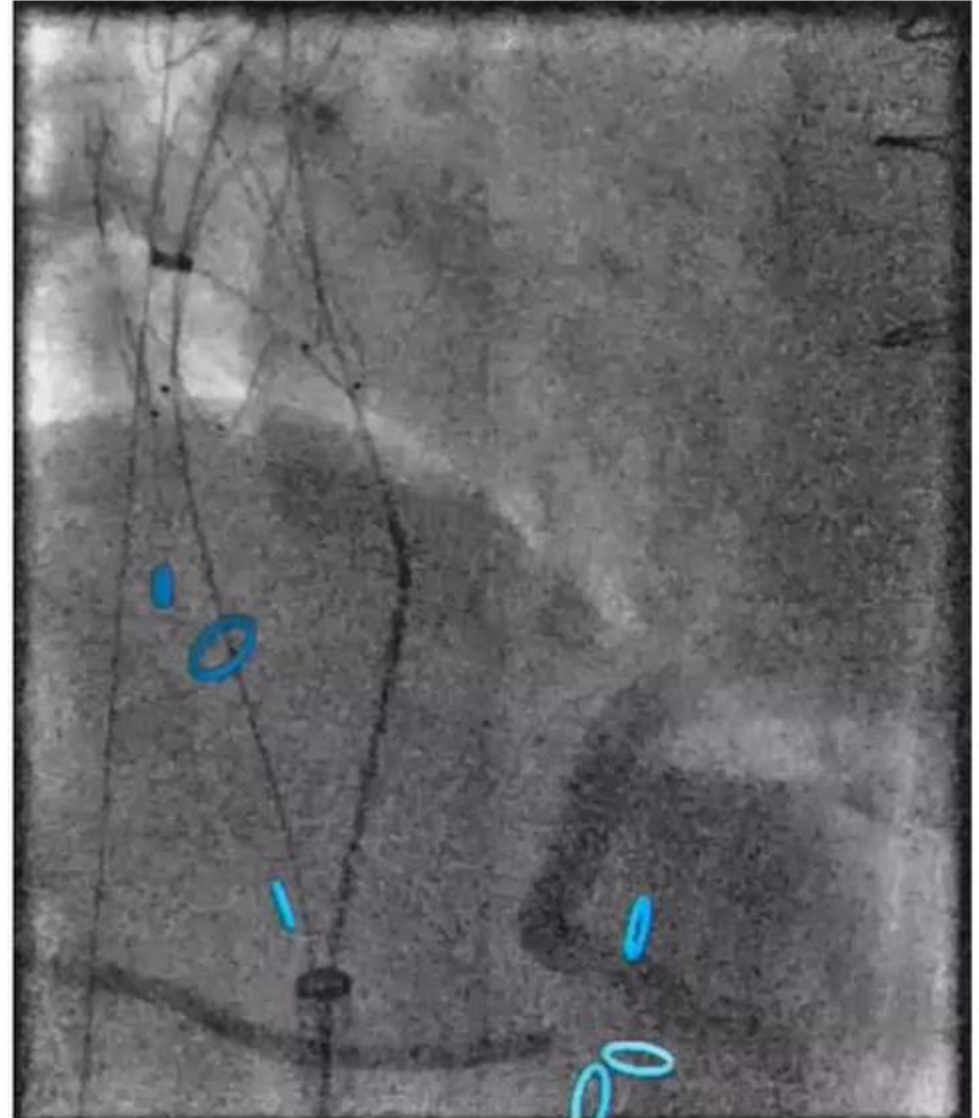
# Positioning the t-Branch

- Cannulating the false lumen



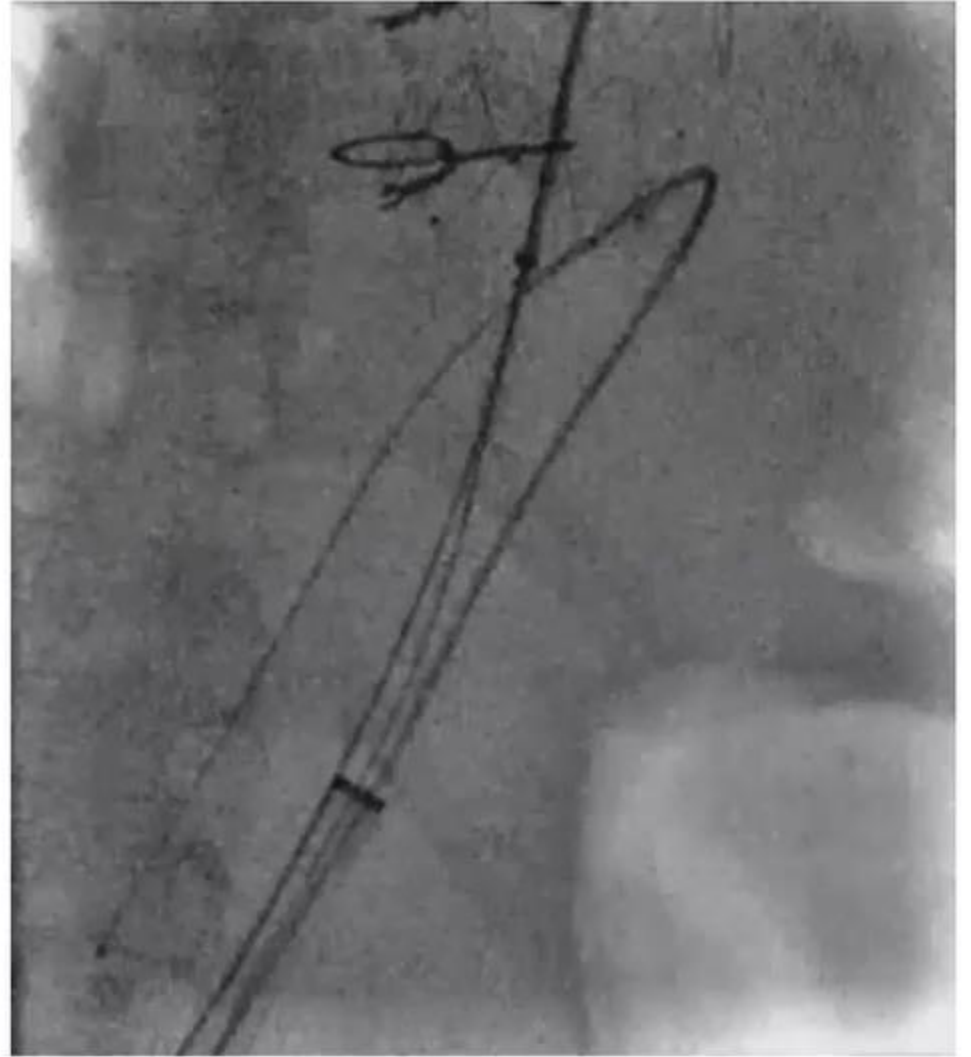
# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear



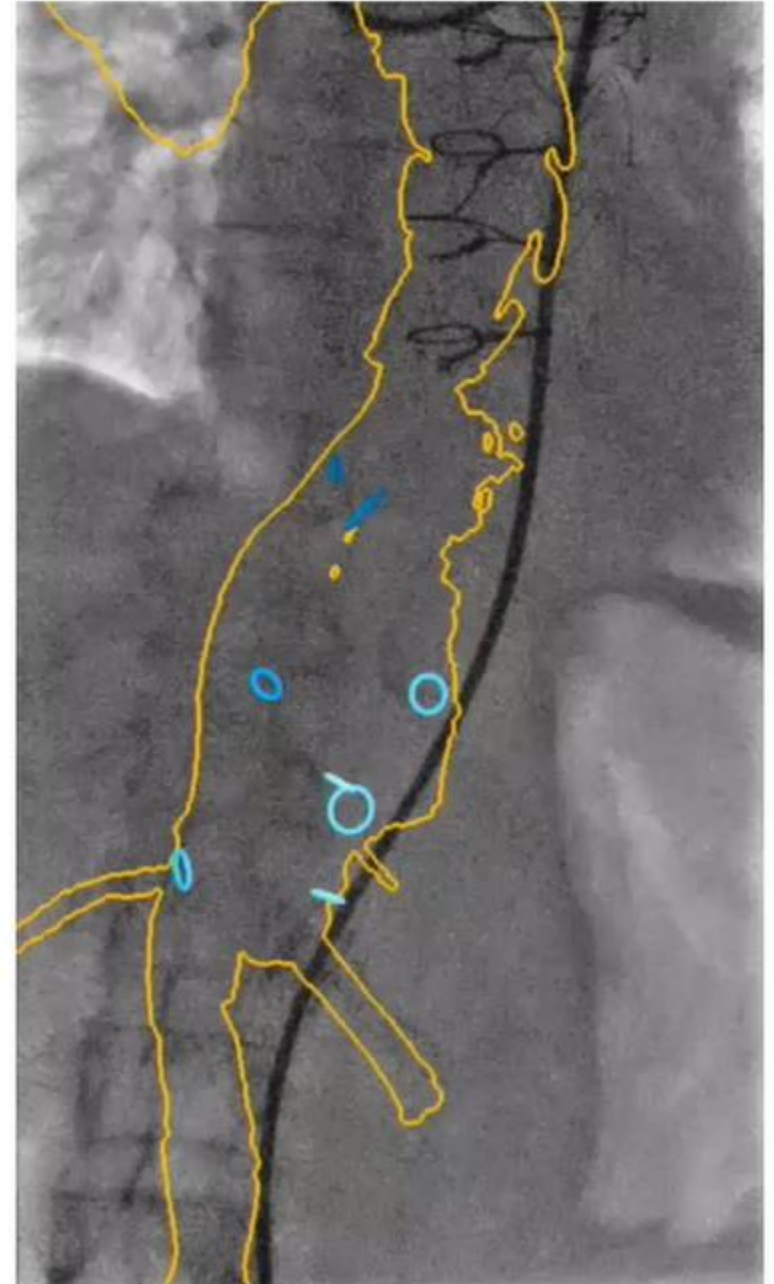
# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear
- Cannulating the TEVAR



# Positioning the t-Branch

- Cannulating the false lumen
- Creating a re-entry tear
- Cannulating the TEVAR
- Deploying the t-Branch



# Left renal artery Sheath advancement over pre-loaded guidewire

## Catheterization

TERUMO + KMP CATHETER



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PARIS  
SAINT-JOSEPH



# Left renal artery

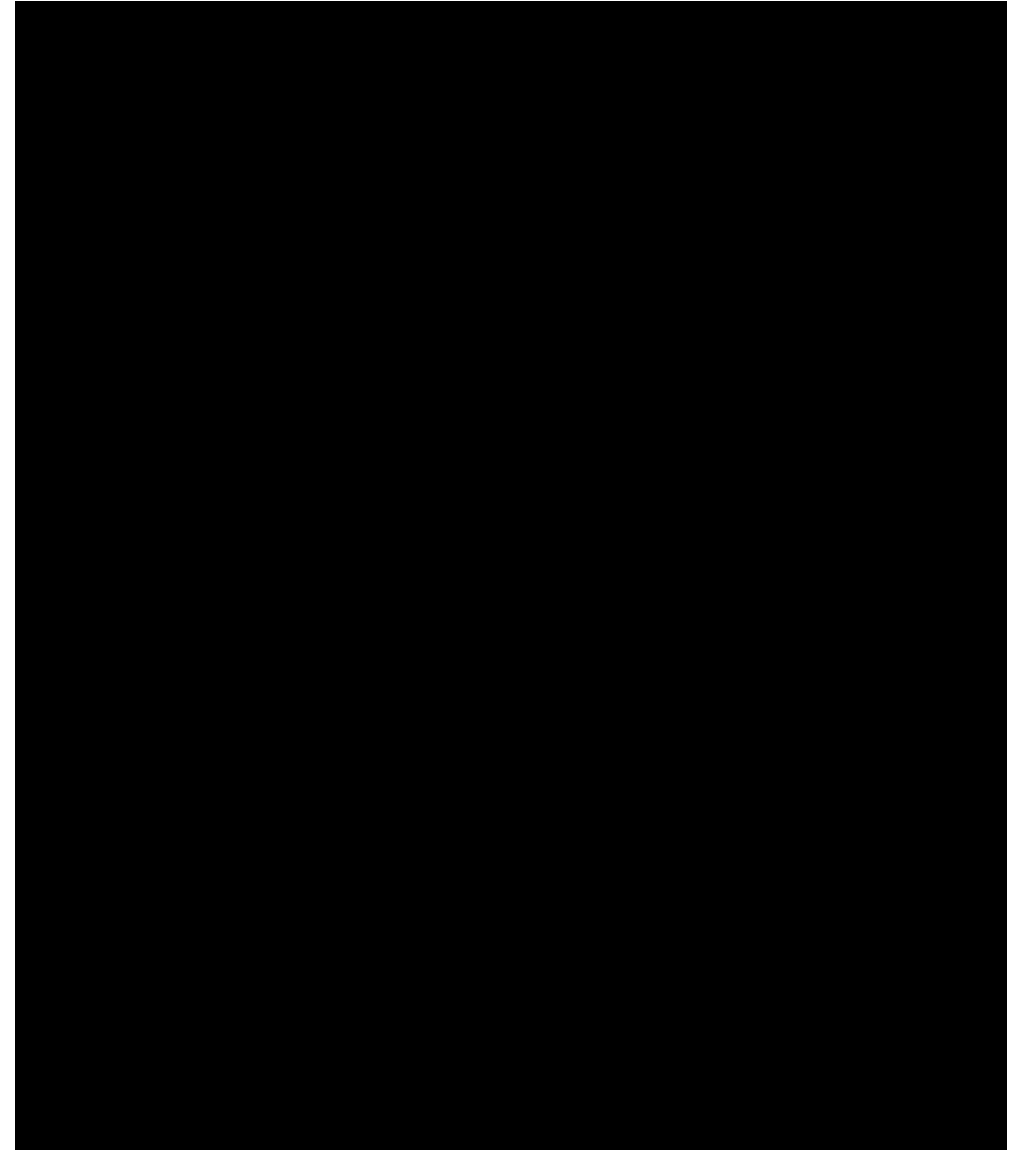
## BRIDGING STENTS

- Bentley BeSmooth 7 x 27 mm
  - Gore Viabahn 7 x 100 mm
- Bentley BeGraft 7 x 57 mm



# Right renal artery

## Catheterization



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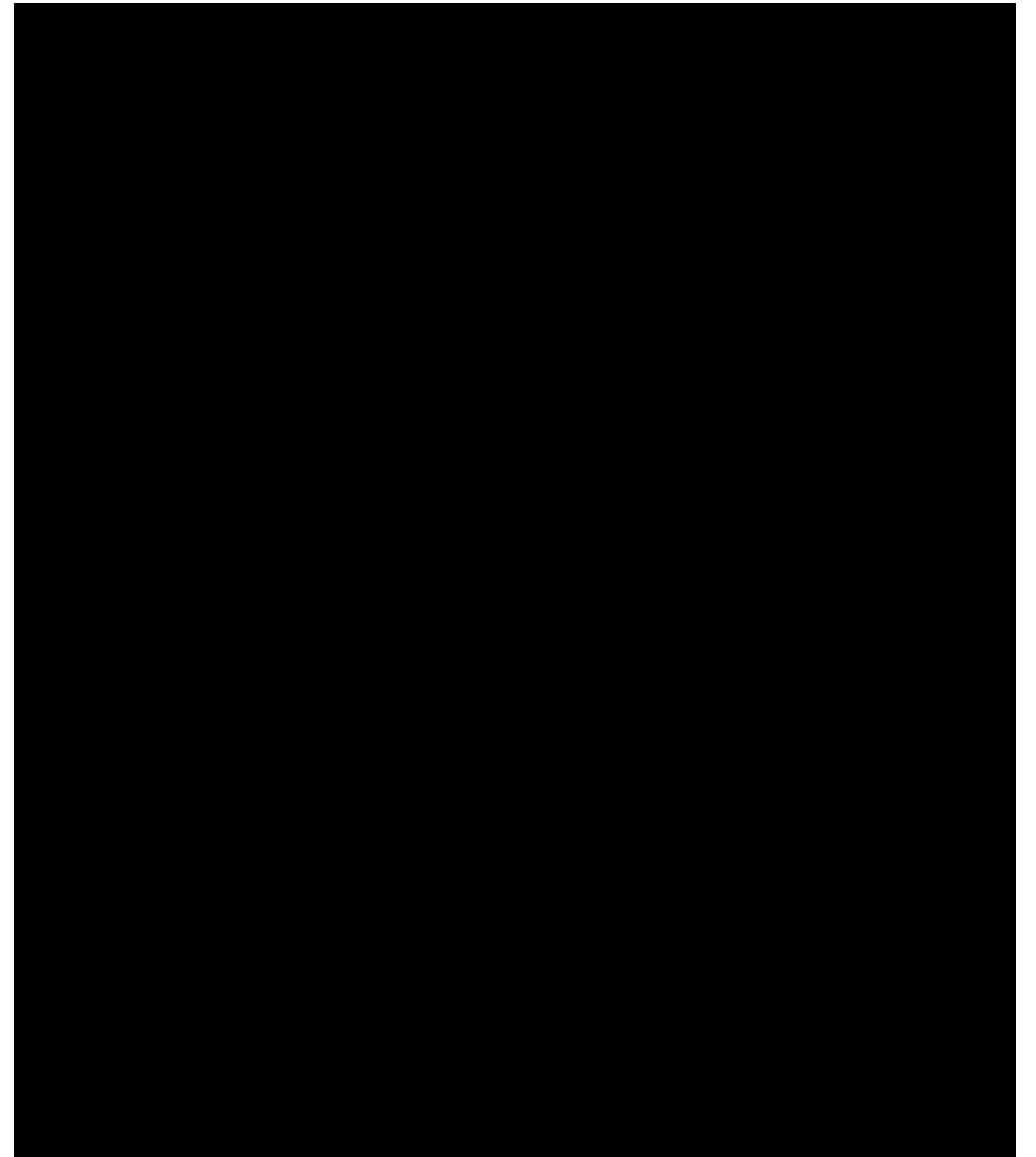
# Right renal artery

## Catheterization

## Angiographic check



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# Right renal artery

## BRIDGING STENTS

- Gore Viabahn 8 x 100 mm



# Right renal artery

## BRIDGING STENTS

- Gore Viabahn 8 x 100 mm
- Bentley BeGraft 8 x 57 mm



# Right renal artery

## BRIDGING STENTS

- Gore Viabahn 8 x 100 mm
- Bentley BeGraft 8 x 57 mm
- Gore Viabahn 8 x 100 mm



# Right renal artery

## BRIDGING STENTS

- Gore Viabahn 8 x 100 mm
- Bentley BeGraft 8 x 57 mm
- Gore Viabahn 8 x 100 mm

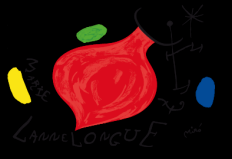


# Superior Mesenteric Artery

- Catheterization of SMA







# Completion TEVAR

- Proximal overlap

38 x 117 mm Zenith Alpha



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# Procedure details

Procedure duration

5 h 35 min

Total contrast volume

60 mL

Fluoroscopy time

110 min

Total dose

6283 cGy.cm<sup>2</sup>

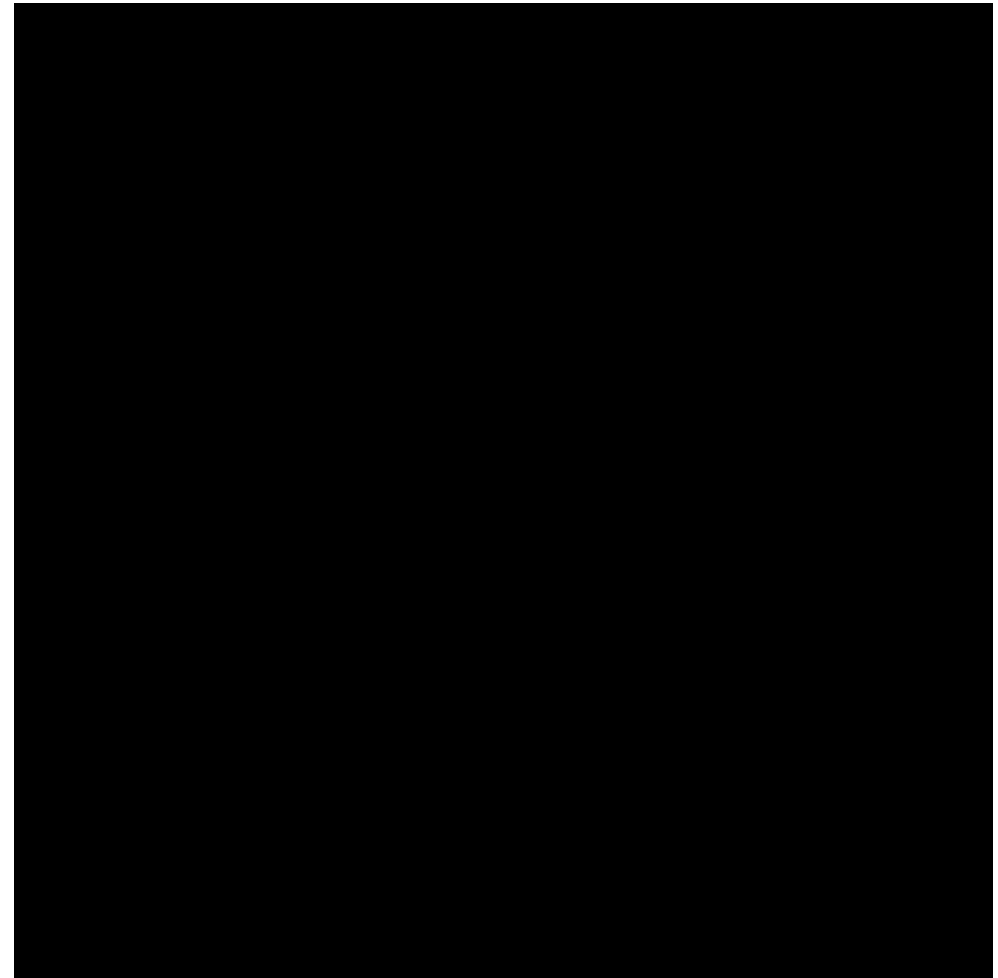
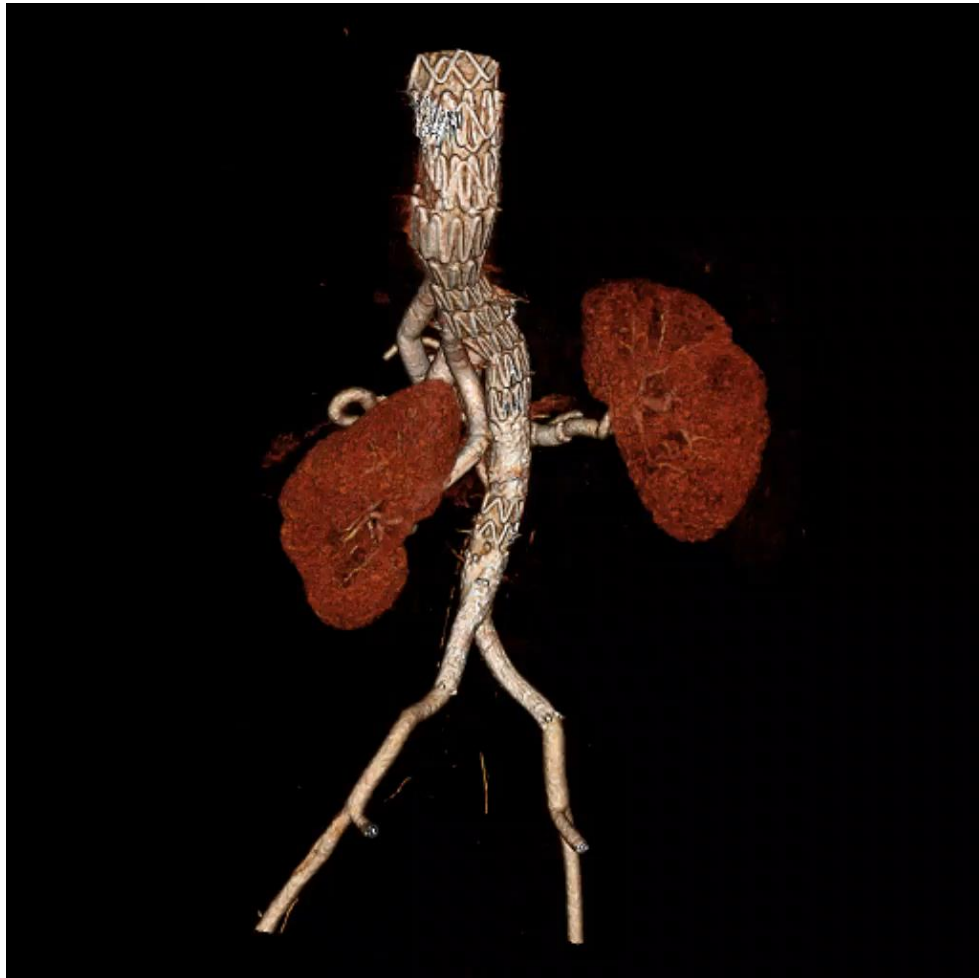
Air kerma

665 mGy





# Postoperative CT angiogram





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