

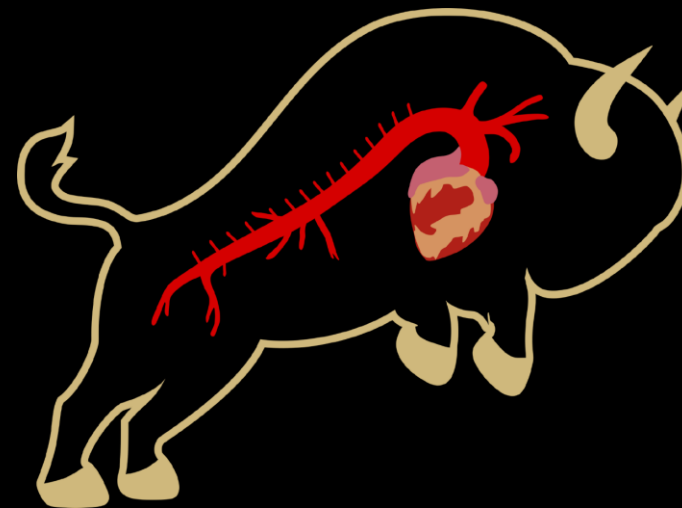
The background features a stylized human silhouette in a light olive green color. Overlaid on this is a detailed anatomical illustration of the heart and aorta in a dark red color. A prominent feature is a fistula, which is a direct connection between the aorta and the pulmonary artery, shown as a red vessel branching off from the aorta and connecting to the pulmonary artery. The title text is centered over this illustration.

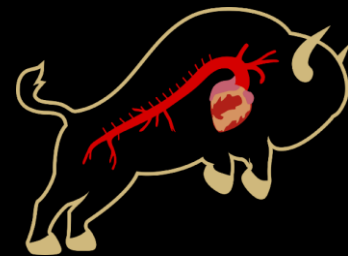
# A Case Series of Aorto-Pulmonary Fistula: Review of Operative Management, and an Algorithm for Treatment

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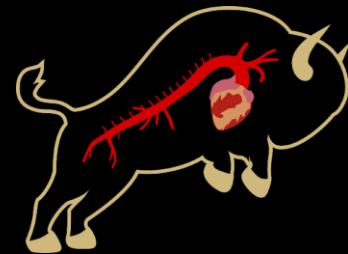
No disclosures





# Introduction

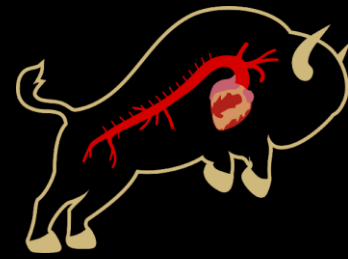
- Aorto-pulmonary fistulas carry a high risk of morbidity and mortality
  - Patients are typically complex, present with either congenital aortopathy and/or prior aortic intervention
  - High risk of infection and bleeding
- Management sparsely described given rarity of occurrence
- We describe a case series of three patients at our institution who presented with aorto-pulmonary



# Methods

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- We review three cases of aorto-pulmonary fistula from 2017 to 2023
  - Presentation, operative management, subsequent follow-up and ongoing management
- Develop an algorithm for treatment based on institutional experience

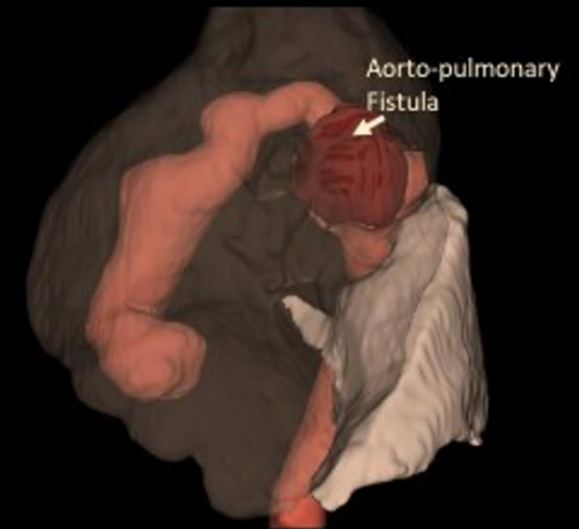


# Patient 1

- History of Loeys-Dietz Syndrome
  - 1999: type A dissection, underwent hemiarch repair followed by open descending thoracic aortic repair
  - 2009: Thoraco-abdominal aortic repair for aneurysmal degeneration
- 2019: Presented with hemoptysis, intubated at outside hospital
  - Fluid collection around mid descending thoracic aortic graft, contrast blush likely from fistula to lung parenchyma

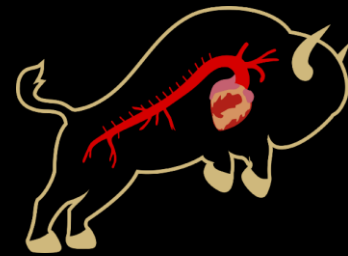


B.



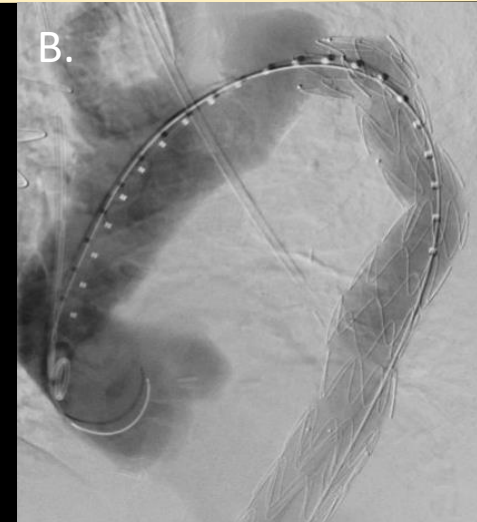
A. Outside Hospital Angiography

B. Aorta & Fistula Reconstruction in 3-D Slicer

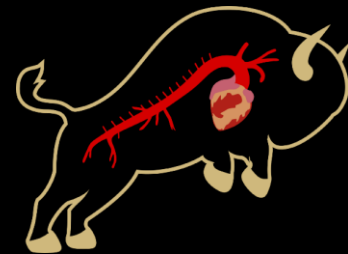


# Patient 1

- Underwent urgent TEVAR with 28 x 22 x 207mm stent-graft with distal extension
- Post-operative CTA with no endoleak, thrombus of perigraft area of blush
- Discharged on post-operative day 6 with suppressive antibiotics, daily aspirin
- Six months prior to two-year follow-up, developed colon cancer
- At two-year follow-up, thrombus had increased in size to 1.1cm, non-occlusive, started on DOAC
  - Prior mild aortic regurgitation had increased to moderate

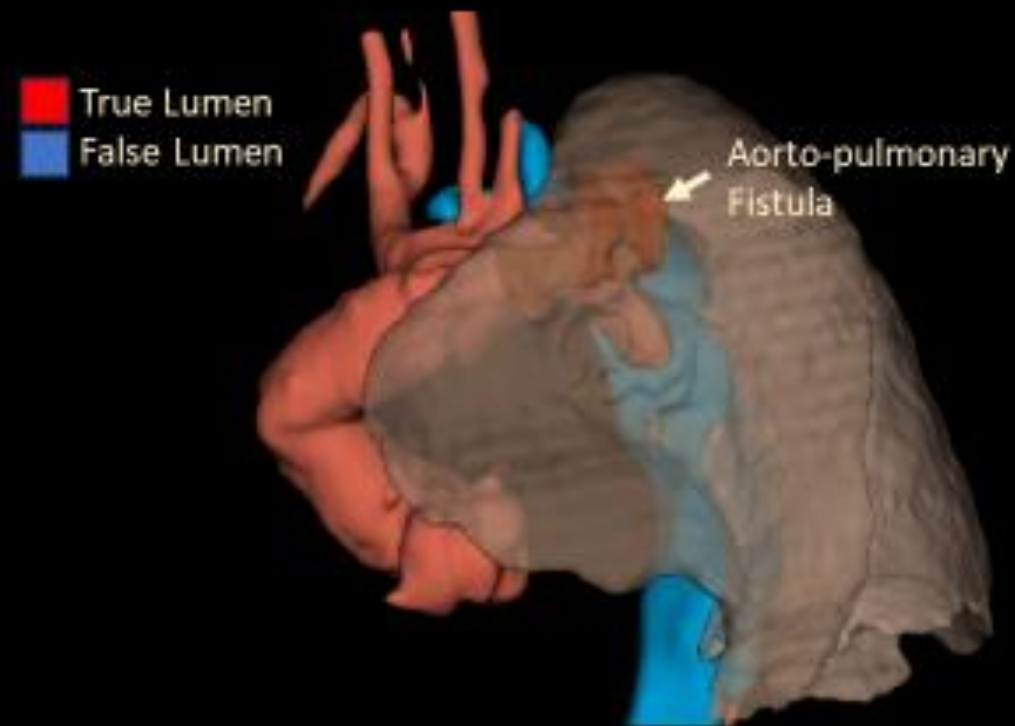


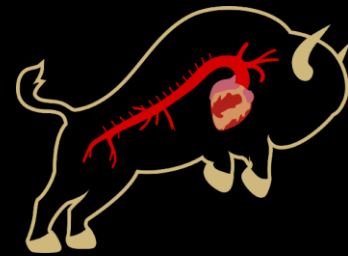
- A. Pre-deployment angiography
- B. Post-deployment angiography
- C. Increased in-stent thrombus at two-year surveillance



# Patient 2

- Two years prior presented with Type A dissection
  - Underwent hemiarch/root replacement
  - Prolonged hospitalization due to respiratory failure requiring tracheostomy
- Presented with hemoptysis, hypoxia, growth of residual Type B, aneurysmal degeneration and concern for aortopulmonary fistula





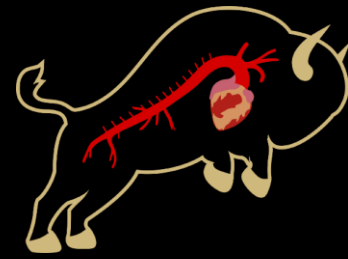
# Patient 2

- Underwent staged procedure, with debranching of head and neck vessels, ligation of left common carotid and coil embolization of the left subclavian
- Following underwent “Zone 0” TBE with no endoleak and no residual fistula
- Post-operative stay uncomplicated
  - Maintained on antimicrobial therapy, follow-up imaging stable



A. Post-Debranching  
B. Zone 0 TBE Angiography

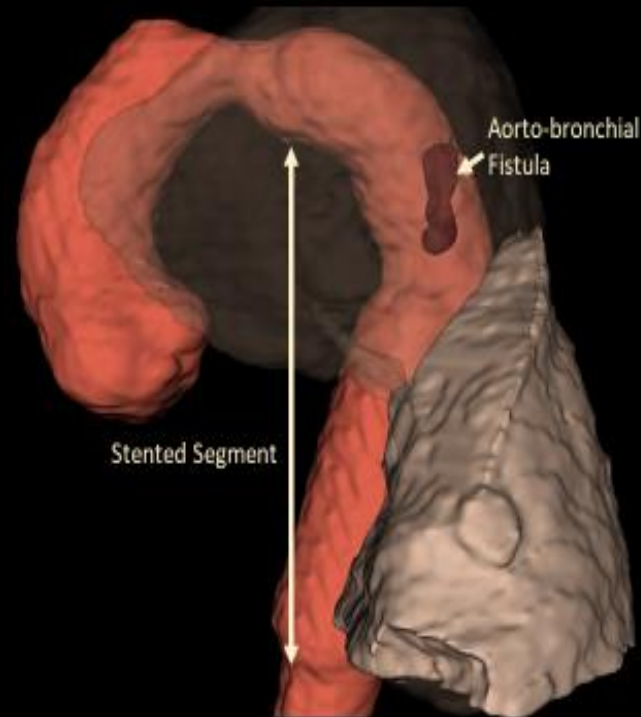




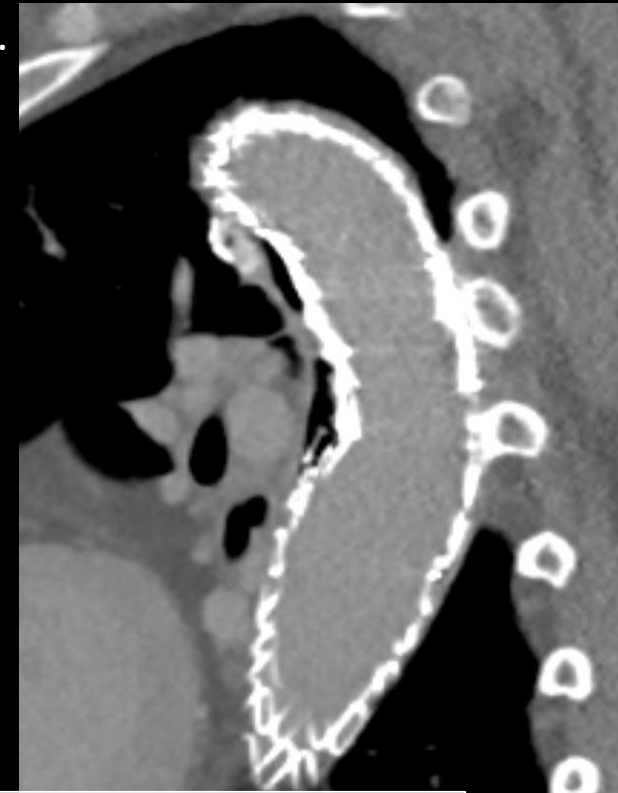
# Patient 3

- **Prior History:**
  - Bicuspid aortic valve s/p Ross
  - Aortic coarctation requiring multiple interventions
  - Following coarctation intervention developed aortopulmonary fistula managed with TEVAR
- Presented with hemoptysis, bacterial pneumonia, concern for recurrence of aortopulmonary fistula
  - Underwent successful management with TEVAR without endoleak or residual fistula
  - Placed on long term antimicrobial therapy
- At 5-year follow-up, developed new perigraft air, however, was asymptomatic with normal inflammatory markers
  - No changes in imaging for over one year; likely empty space with resolved abscess cavity

A.

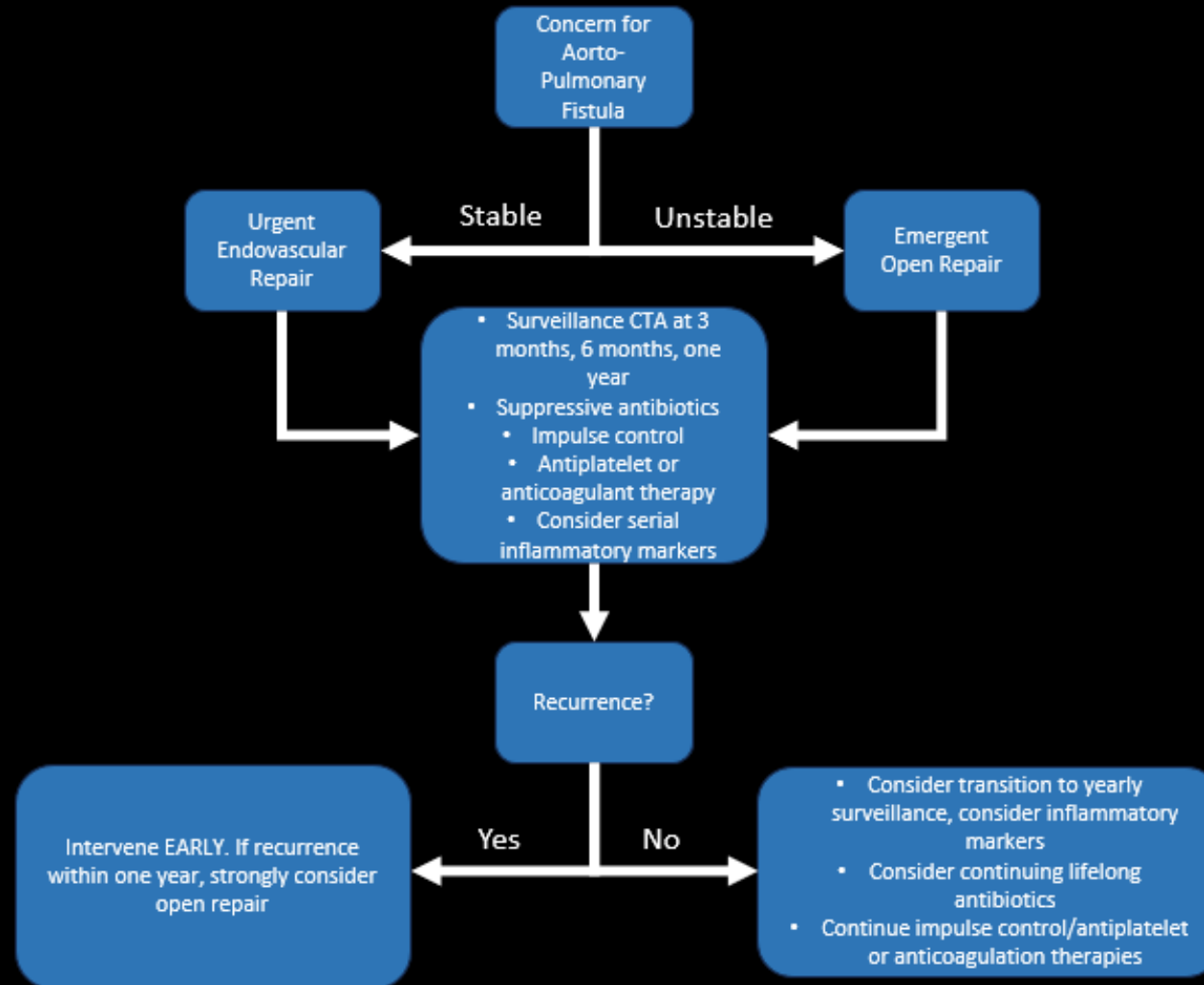
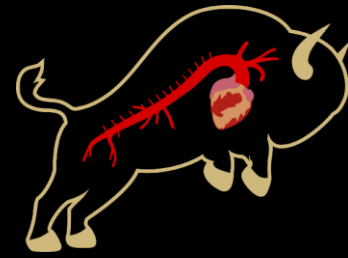


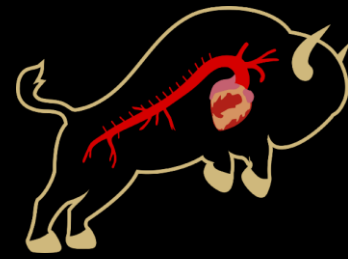
B.



- A. Fistula Presentation
- B. Resolved Abscess Cavity

# Algorithm for Management of Aorto-Visceral Fistula





# Conclusions

- Aorto-pulmonary fistula remains a rare, but challenging pathology that carries high risk of morbidity and mortality
  - This is exacerbated by potential hemodynamic instability and a contaminated, inflammatory, and *often* re-operative surgical field
  - Typically, amenable to endovascular repair in stable patients
    - However, it should be performed promptly, any delays can increase the risk of mortality
- Given high risk of recurrence, close surveillance is of paramount importance
  - Although we monitor inflammatory markers, and put patients on lifelong antimicrobial therapy no clear evidence supporting these practices

Questions???

