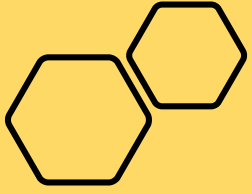


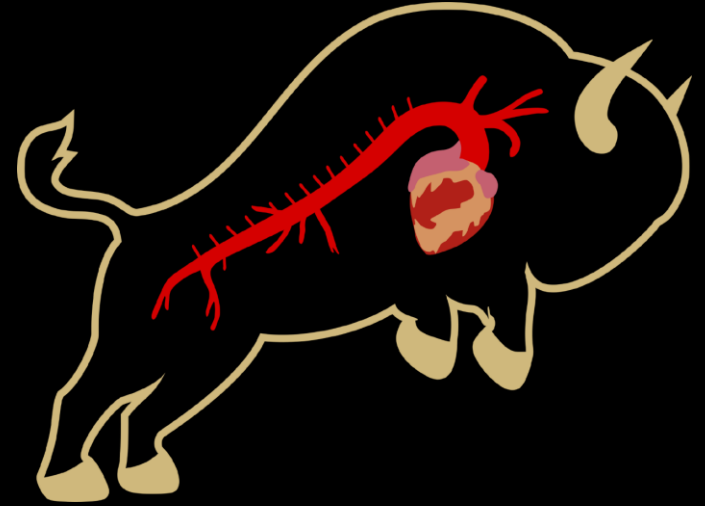
# Institutional Experience of Post-Dissection Repair Aortic Root Pseudoaneurysms and an Algorithm for Treatment

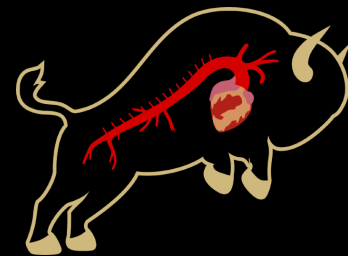
Adam Carroll (1), Michael Kirsch (1), Nicolas Chanes (1), Elizabeth Devine (1), Muhammad Aftab (1), T. Brett Reece (1)

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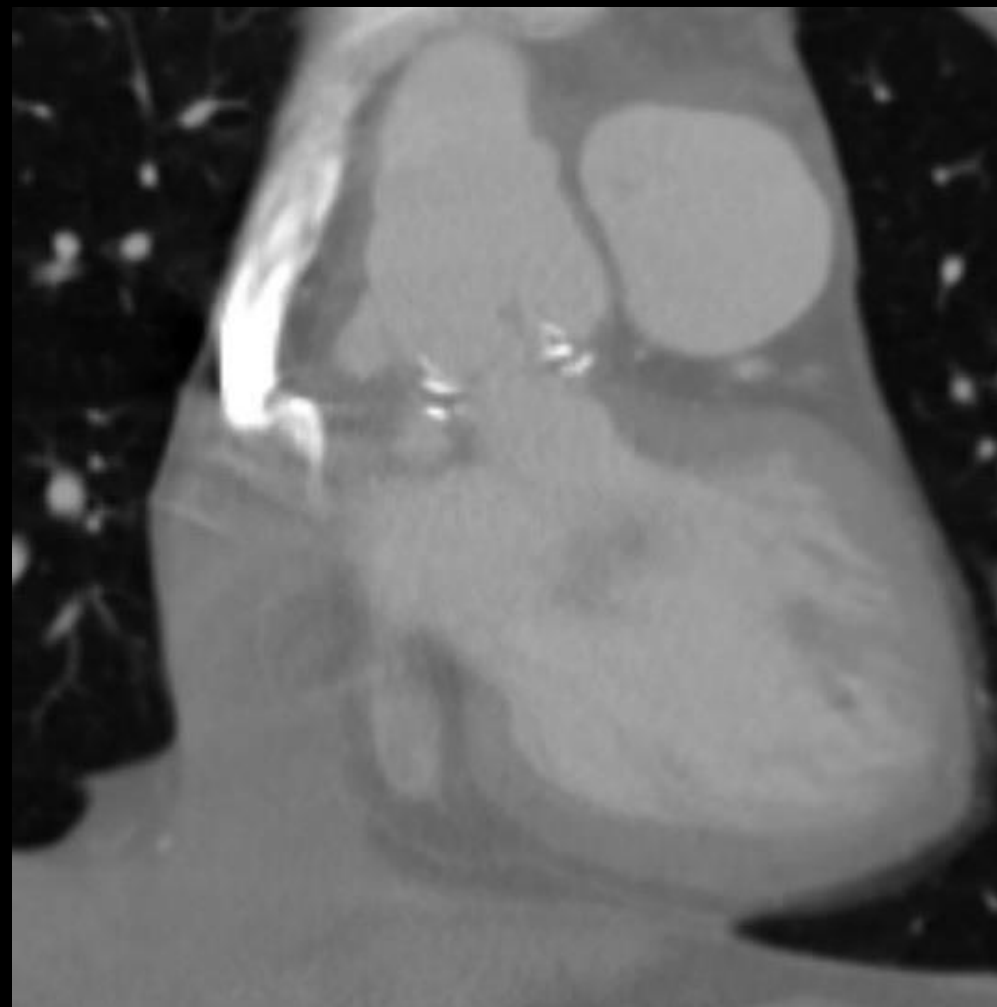
No disclosures



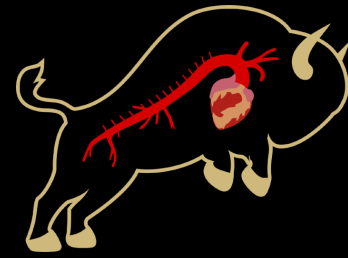


# Introduction

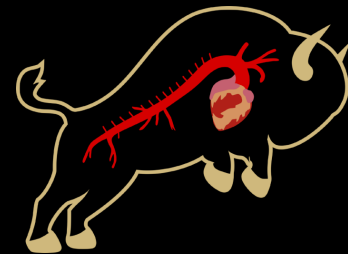
- Aortic root pseudoaneurysms (PSA) are recognized complications after arch surgery for type A dissection
  - Often related to dehiscence of suture lines, breakdown of cannulation sites
- Surgical management of PSA is complex
  - Necessity to work in re-operative field
  - Potential proximity of PSA to posterior sternal table
- Developing endovascular techniques and technologies present an opportunity for alternative management



# Aim

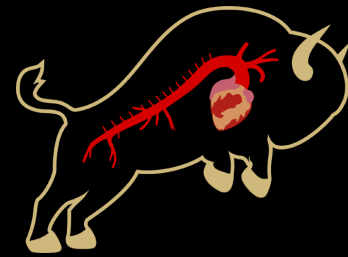


- Describe institutional experiences with root PSA post Type A repair
- Propose an algorithm for treatment



# Methods

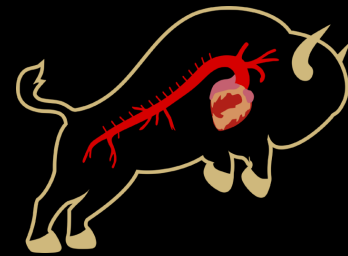
- Single institution-maintained aortic database, identified patients over past decade who developed aortic root PSA after type A repair
- Assessed pre-operative characteristics, subsequent management and outcomes
- Based on institutional experience and outcomes, created an algorithm for treatment



# Results

- In total, 31 patients identified
  - Majority of patients underwent open surgical repair (27, 87.1%)
- Over a third of patients had surgery within the past years

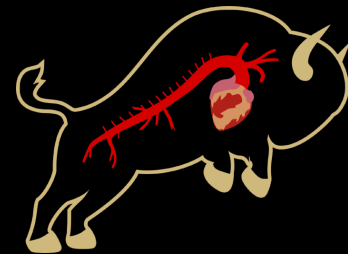
<b>Surgical Management Post-Dissection</b>	
<b>Root Pseudoaneurysm</b>	<b>N=27</b>
<b>Preoperative Characteristics</b>	
<b>Age (years)</b>	60.1 (53.7-67.5)
<b>Male</b>	22 (81.5%)
<b>BMI</b>	26.1 (23.9-30.2)
<b>Connective Tissue Disease</b>	2 (7.4%)
<b>Familial Aortopathy</b>	1 (3.7%)
<b>History of Bicuspid Aortic Valve</b>	1 (3.7%)
<b>Prior Aortic Interventions</b>	
<b>Prior Sternotomies (N)</b>	1 (1-1)
<b>Prior AV/Arch Surgery Within One Year</b>	10 (37.0%)
<b>Years from Last AV/Arch Intervention</b>	3.0 (1.0-6.5)
<b>Aortic Valve Replacement</b>	3 (11.1%)
<b>Aortic Valve Resuspension</b>	10 (37.0%)
<b>Root Replacement</b>	3 (11.1%)
<b>Ascending/Hemiarch</b>	20 (74.1%)
<b>Total Arch</b>	7 (25.9%)
<b>TEVAR</b>	7 (25.9%)
<b>EVAR</b>	2 (7.4%)
<b>Open Descending Thoracic Aorta Repair</b>	1 (3.7%)



# Results

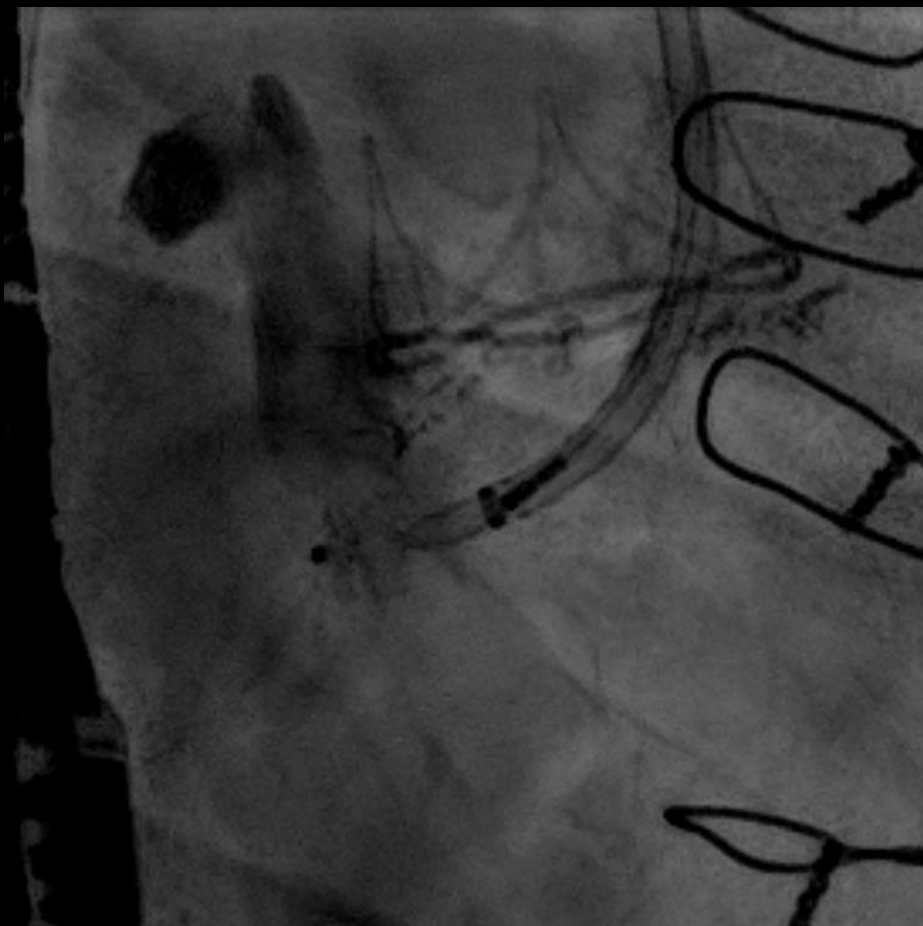
- Most patients required adjunctive aortic intervention
- Given significant scar tissue:
  - Iatrogenic PA injury occurred in ~25% of cohort
  - Significant intra-operative transfusion, coagulopathy, rate of post-operative open chest
- Two patients developed recurrent root pseudoaneurysms

Operative Characteristics	N=27
<b>Root Intervention Type</b>	
Non-Valve Sparing	23 (85.2%)
Valve-Sparing	4 (14.8%)
<b>Adjunctive Procedures Performed</b>	
Hemiarch	3 (11.1%)
Total Arch	18 (66.7%)
Elephant Trunk	16 (59.3%)
Coronary Artery Bypass Grafting	3 (11.1%)
Pulmonary Artery Repair	7 (25.9%)
<b>Intraoperative Statistics</b>	
Nadir Bladder Temperature	26.0 (24.7-27.1)
Cardiopulmonary Bypass Time	224.5 (173.8-258.8)
Aortic Cross-Clamp Time	136.5 (112.0-163.0)
Circulatory Arrest Time	18.0 (14.0-26.0)
<b>Intraoperative Transfusion</b>	
Packed Red Blood Cells	5.0 (2.0-8.5)
FFP	6.0 (4.0-9.0)
Platelets	3.0 (2.0-4.0)
Open Chest	7 (25.9%)
<b>Post-Operative Outcomes</b>	
New Renal Replacement Therapy	0.0 (0.0%)
Prolonged Ventilation	4 (14.8%)
Infection	4 (14.8%)
Coagulopathy	7 (25.9%)
Stroke	4 (14.8%)
Recurrent Pseudoaneurysm	2 (7.4%)
Mortality	2 (11.1%)



# Results: Endovascular

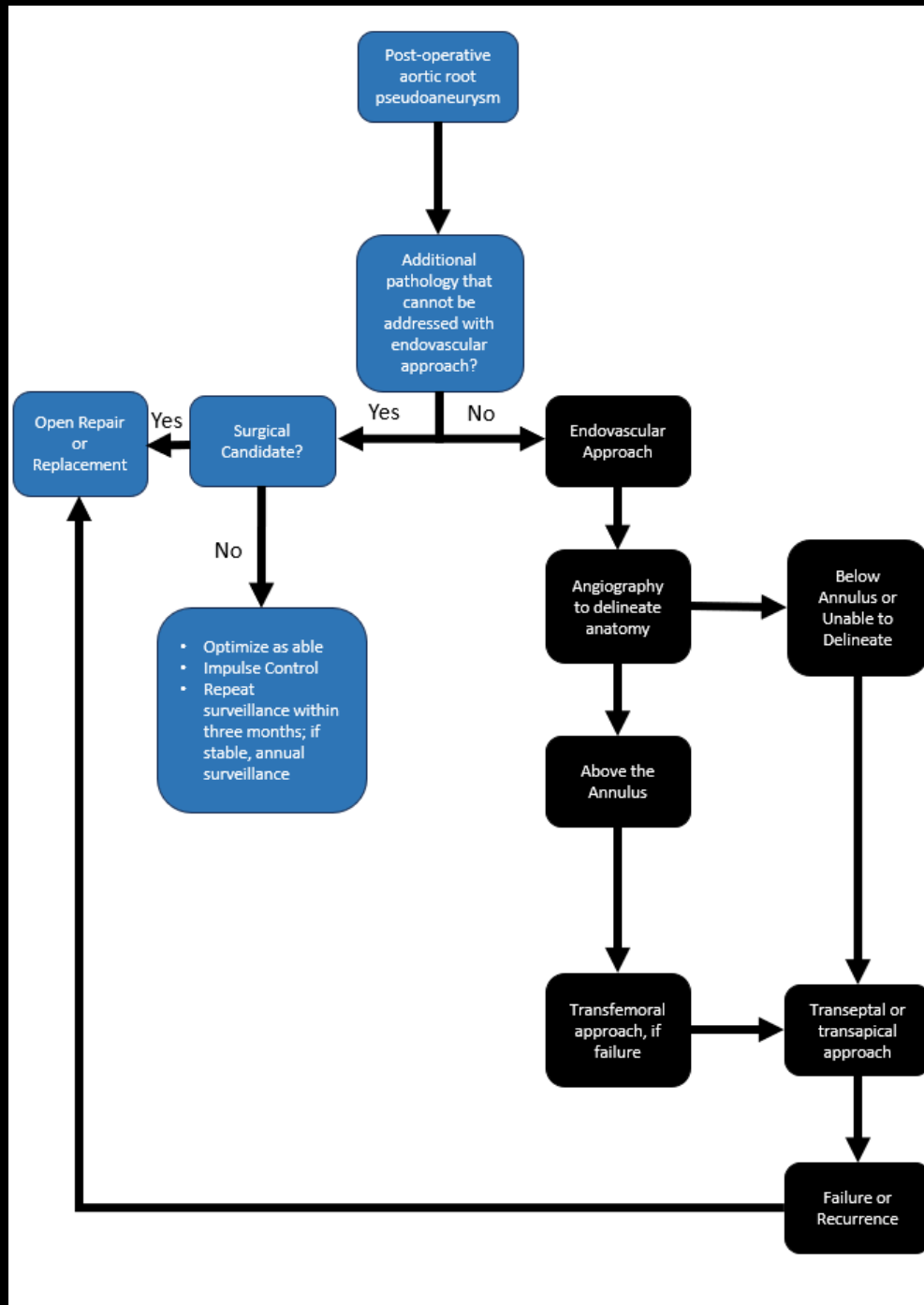
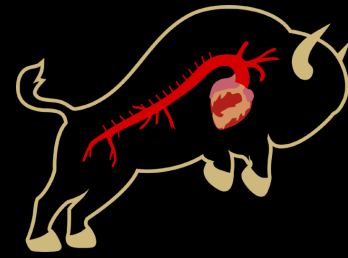
- Six patients selected for endovascular management
  - Three with remote history of dissection
  - Three with root replacement within past year, including two from prior cohort
  - Did not have other pathology requiring surgical intervention
- Successful endovascular repair in four cases
  - 2 (transfemoral), 2 (transapical)
  - In both failures, unable to access PSA tract
    - One procedure successfully converted to open, uncomplicated post-operative LOS
    - Other patient procedure was aborted, elected to observe patient; PSA has been stable for over three years

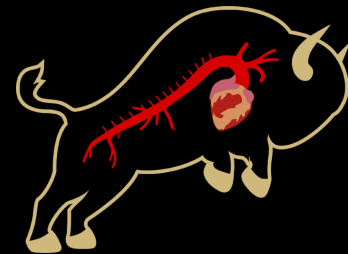


Example of Successful Transfemoral Closure of PSA



# Post-Dissection Repair Root PSA Algorithm for Treatment





# Conclusion

- Surgical management of post-dissection repair aortic root PSA carries a high risk of morbidity
  - Significant scar tissue increasing risk of iatrogenic PA injury, bleeding
- In the setting of isolated root PSA, we advocate for an endovascular first approach
- In select, stable patients who wish to avoid further intervention, can consider close surveillance
  - Need for further research to determine which root PSA will remain stable

Questions???

