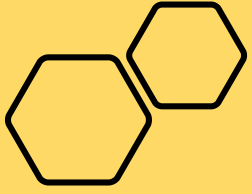


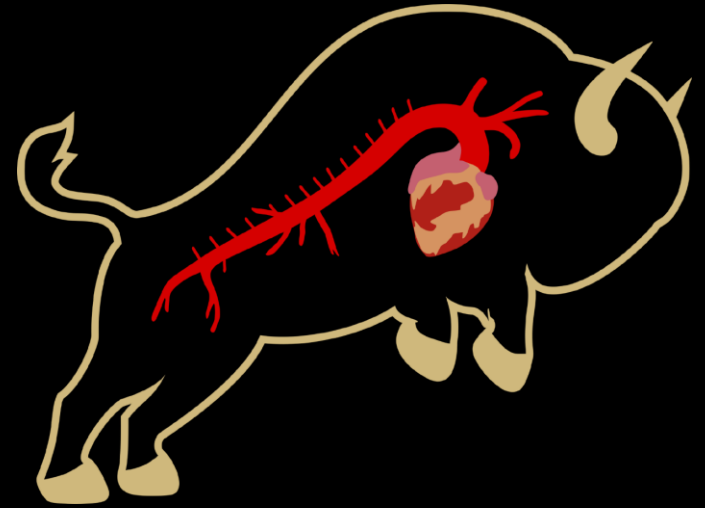


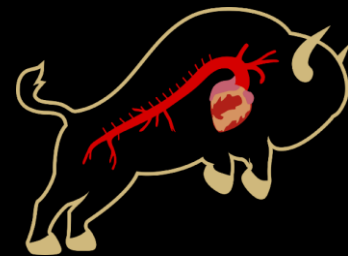
Effect of Renal Recovery on Long-Term Survival After Aortic Arch Surgery

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No disclosures

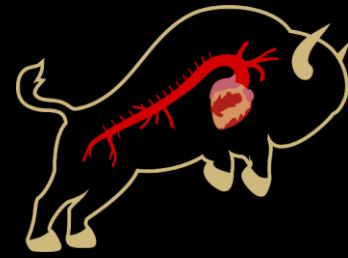




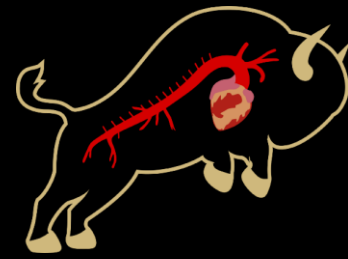
Introduction

- Acute kidney injury (AKI) after aortic arch surgery is common
 - Significantly increases morbidity, mortality, length of stay
- Some patients will have renal recovery
 - Frequency, contributing factors to recovery after arch surgery unknown
- Impact of whether renal recovery occurs on long-term mortality unclear

Aim

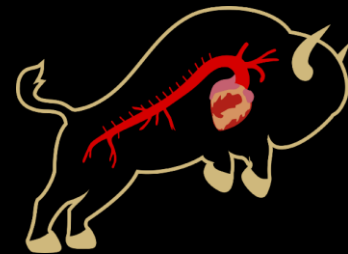


- Investigate incidence of renal recovery after severe AKI requiring hemodialysis in aortic arch surgery
- Investigate contributing factors to renal recovery
- Assess impact of whether renal recovery occurs on long-term mortality



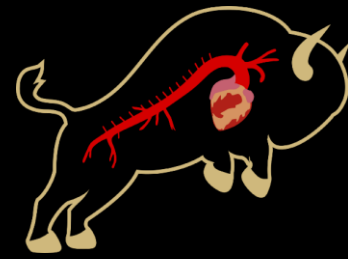
Methods

- A retrospective review of a prospectively maintained single institution aortic database from 2011-2023
- Identify patients who had a severe AKI requiring renal replacement therapy (RRT)
 - Determine percentage of patients who suffer in-hospital mortality
- Split patients who survive initial stay into two cohorts (Renal Recovery, RR versus No Renal Recovery, NR)
 - Renal recovery defined as no longer requiring dialysis therapy
 - Assess pre-operative, operative, post-operative differences
 - Perform adjusted cox proportional hazard analysis for survival differences post-discharge



Results

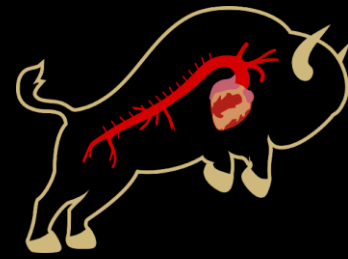
- In total, 944 aortic procedures reviewed, 49 patients had severe AKI requiring RRT
 - 24 patients (49.0%) suffered in-hospital mortality
- Post-discharge, 20 patients had renal recovery, 5 did not
 - 11 (55.0%) had recovery prior to discharge
 - Remaining 9 had recovery within 3 months of discharge



Results: Preoperative

- Lower baseline creatinine in patients without recovery, otherwise no difference between cohorts

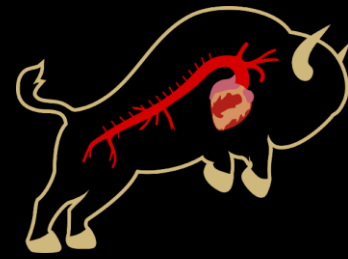
	No Renal Recovery	Renal Recovery	p value
N	5	20	
Age (years)	62.1 (57.6-68.6)	58.4 (49.4-71.9)	0.786
Male	2 (40.0%)	15 (75.0%)	0.283
BMI (kg/m²)	23.0 (22.7-36.6)	30.9 (24.6-33.4)	0.594
Obesity (BMI>30)	2 (40.0%)	10 (50.0%)	0.999
Dyslipidemia	2 (40.0%)	5 (25.0%)	0.597
HTN	3 (60.0%)	15 (75.0%)	0.597
Current Smoker	1 (20.0%)	6 (30.0%)	0.999
Diabetes Mellitus	0 (0.0%)	5 (25.0%)	0.544
Pulmonary Disease	2 (40.0%)	5 (25.0%)	0.597
Prior Stroke	1 (20.0%)	5 (25.0%)	0.999
Coronary Artery Disease	0 (0.0%)	2 (10.0%)	0.999
Baseline Creatinine	0.98 (0.90-1.00)	1.39 (1.25-1.78)	0.014
Urgent/Emergent	4 (80.0%)	14 (70.0%)	0.999



Results: Intraoperative, Postoperative

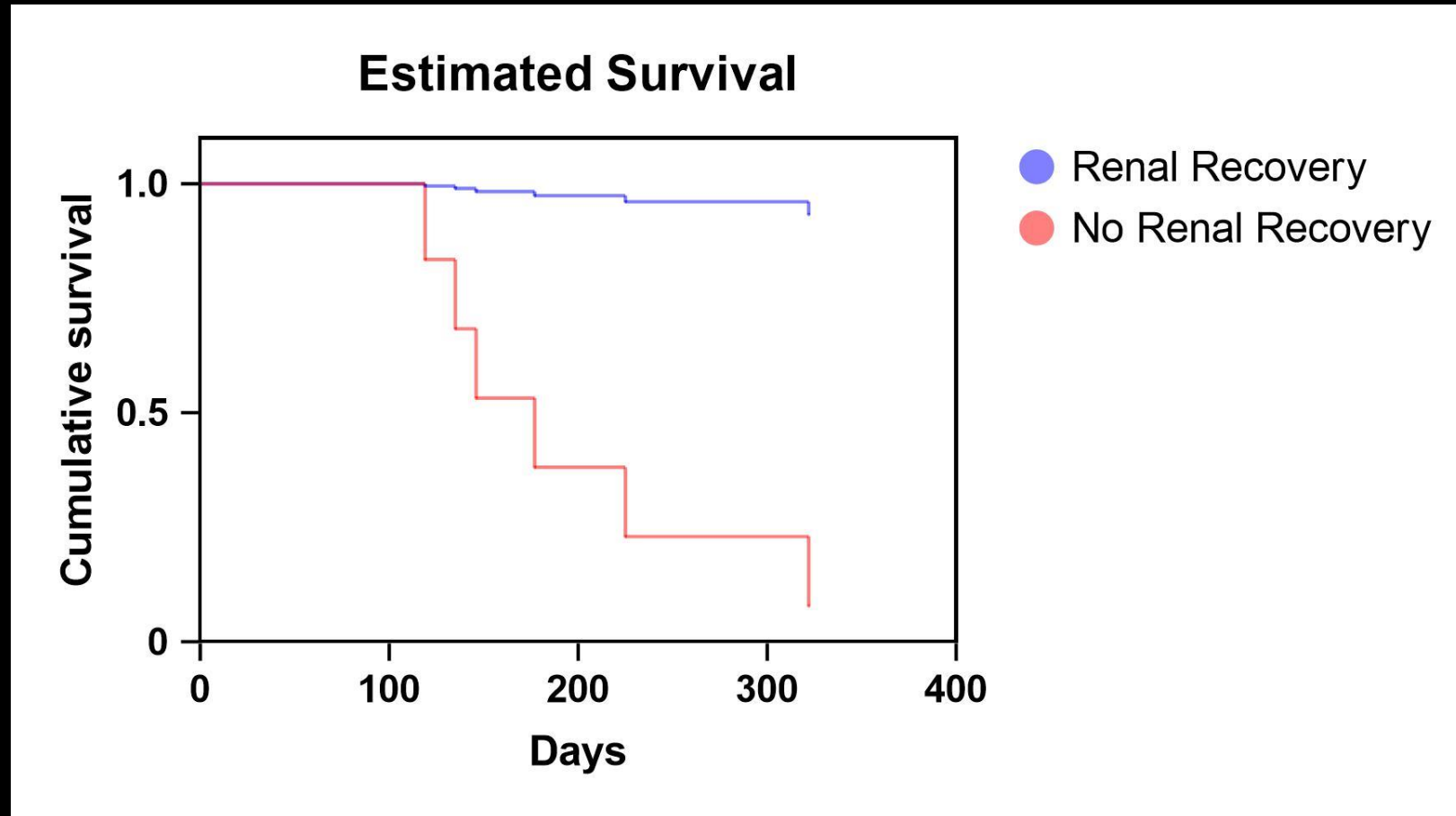
No operative or post-operative differences between two cohorts

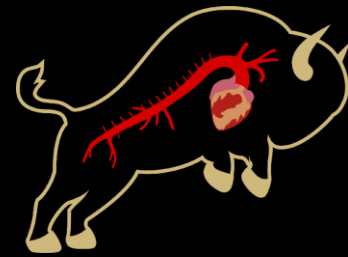
Intraoperative	NR (N=5)	RR (N=20)	P value
Root Only	0 (0.0%)	2 (10.0%)	0.999
Hemiarch	3 (60.0%)	7 (35.0%)	0.358
Total Arch	2 (40.0%)	11 (55.0%)	0.645
Frozen Elephant Trunk	2 (40.0%)	9 (45.0%)	0.999
Nadir Bladder Temp	26.0 (24.9-26.1)	26.0 (23.5-27.4)	0.943
Cardiopulmonary Bypass Time	247 (223-261)	216 (185-255)	0.377
Aortic Cross Clamp Time	155 (152-167)	138 (93-161)	0.415
Circulatory Arrest Time	20 (17-32)	22 (16-31)	0.973
Postoperative			
Length of Stay	45 (28-48)	28 (23-34)	0.201
ICU Length of Stay	38 (15-43)	19 (10-29)	0.117
DVT/PE	1 (20.0%)	2 (10.0%)	0.504
Coagulopathy	1 (20.0%)	4 (20.0%)	0.999
Stroke	1 (20.0%)	5 (25.0%)	0.999
Delirium	2 (40.0%)	11 (55.0%)	0.645
Prolonged Ventilation (>48 hr)	3 (60.0%)	9 (45.0%)	0.645
Infection	2 (40.0%)	8 (40.0%)	0.999
Mechanical Circulatory Support	2 (40.0%)	4 (20.0%)	0.562



Results: Post-Discharge

- All patients in NR cohort died within one year (median 177, IQR 146-225)
- One patient died in RR cohort
- Cox proportional hazard model with significant differences in late mortality between two cohorts ($p < 0.001$)





Conclusions

- In-hospital mortality common among patients with severe AKI requiring RRT after aortic arch surgery
- Most patients who survive will have recovery of renal function
- Failure to recover renal function results in absolute risk of mortality within the first year

Questions???

