Destruction of the Button: Unplanned CABG in Aortic Root Replacement Significantly Increases Mortality

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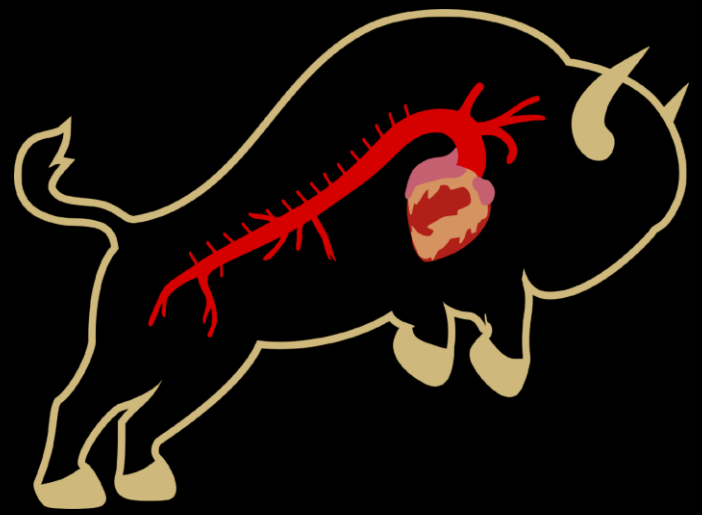
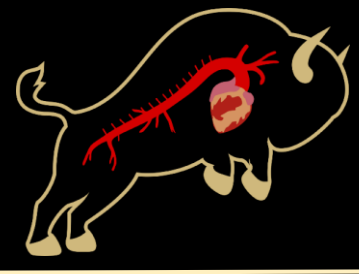
No disclosures



Introduction

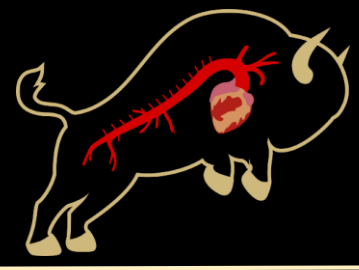


- Aortic root replacement has seen significant improvement in outcomes with changes in root substitutes and operative technique
- Risk remains with re-implantation of the coronary arteries when the buttons are of poor quality, potentially leading to malperfusion and compromising cardiac function
- Prior studies have demonstrated unplanned CABG in re-do root increases mortality, however, no study has compared planned versus unplanned CABG regardless of prior root status

Aim

- Evaluate patients who underwent aortic root replacement with concomitant CABG
  - Compare outcomes when CABG was planned versus unplanned

Methods



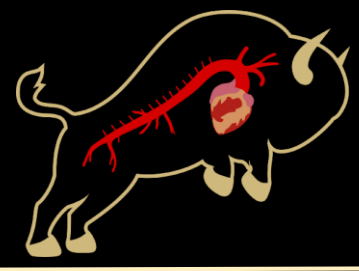
- Retrospective review of a single institution prospective database from 2011-2023
  - Identify patients who underwent root replacement with concomitant CABG
  - Stratify patients into two groups: Unplanned CABG versus planned CABG
- Compare pre-operative and operative characteristics, post-operative outcomes

Results

- 33 total patients underwent aortic root replacement with CABG
  - 11 unplanned, 22 planned
- No significant difference in pre-operative characteristics with exception of more dyslipidemia in planned CABG group

	Planned CABG	Unplanned CABG	p value
N	22	11	
Preoperative			
Age	70 (66-72)	65 (49-70)	0.121
Male	18 (81.8%)	6 (54.5%)	0.121
BMI	28 (25-31)	32 (26-34)	0.487
Obesity (BMI>30)	5 (22.7%)	6 (54.5%)	0.240
HLD	13 (59.1%)	2 (18.2%)	**0.034**
HTN	20 (90.9%)	9 (81.8%)	0.586
DM2	6 (27.3%)	2 (18.2%)	0.687
CKD	1 (4.5%)	3 (27.3%)	0.097
Pulm Disease	2 (9.1%)	3 (27.3%)	0.304
Prior Sternotomy	4 (18.2%)	3 (27.3%)	0.661

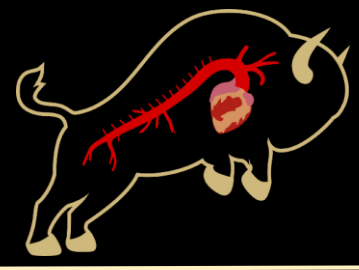
Results



- No significant difference in type of root procedure, or adjunct aortic procedure performed
- Unplanned CABGs performed either due to destruction of coronary button, or evidence of button flow compromise
- Significantly higher cardiopulmonary bypass, circulatory arrest times
- Majority of unplanned CABGs were left open for bleeding or central cannulation
  - Most unplanned CABG required adjunctive MCS
- Significantly higher amount of pRBC and FFP transfused during unplanned CABG

	Planned CABG	Unplanned CABG	p value
Intraoperative			
Root Type			
Non-Valve Sparing	17 (77.2%)	10 (90.9%)	0.637
Valve Sparing	5 (22.7%)	1 (9.1%)	
Adjunctive Aortic Procedure			
Hemiarch	14 (63.6%)	8 (72.8%)	0.630
Total Arch	5 (22.8%)	1 (9.1%)	
Cardiopulmonary Bypass Statistics			
Nadir Bladder Temp	**27 (26-28)**	26 (23-27)	**0.045**
Cardiopulmonary Bypass Time	222 (167-287)	317 (283-402)	**0.011**
Aortic Cross Clamp Time	139 (126-176)	187 (144-225)	0.064
Circulatory Arrest Time	13 (9-18)	21.5 (19-35)	**0.033**
Chest Closure	21 (95.5%)	3 (27.3%)	**<0.001**
Need for Adjunct MCS	3 (13.6%)	**7 (63.6%)**	**0.006**
Intraoperative Product (units)			
Packed Red Blood Cells	3 (1-4)	7 (4-9)	**0.039**
Fresh Frozen Plasma	4 (3-6)	9 (6-14)	**0.007**
Platelets	3 (2-3)	3 (2-5)	0.277

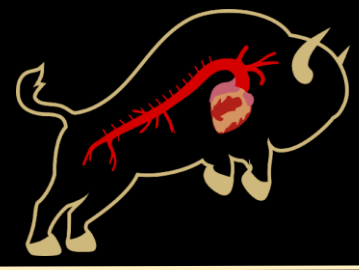
Results



	Planned CABG	Unplanned CABG	p value
Postoperative	(N=22)	(N=8, excluding death before 48 hours)	
Stroke	2 (9.1%)	2 (25.0%)	0.284
Prolonged Ventilation (>48 hr)	5 (22.7%)	7 (87.5%)	**0.003**
Infection	3 (13.6%)	3 (37.5%)	0.300
Acute Kidney Injury (STS Criteria)	0 (0.0%)	1 (1.3%)	0.267
Total Mortality (Including Intra-operative)	4 (18.2%)	7 (63.6%)	**0.018**

- Regarding ICU outcomes, excluding perioperative deaths (<48 hours), majority of unplanned CABGs required prolonged ventilation (>48 hours)
- For the full cohort, over half of unplanned CABG patients had in-hospital mortality, significantly higher than planned CABG

Conclusions



- Unplanned CABG due to coronary button compromise in aortic root replacement significantly compromises cardiac function due to malperfusion, with higher rates of need for adjunctive MCS
- Majority of patients have significant bleeding, and the chest is left open
- Significantly higher rates of morbidity and mortality in unplanned CABG compared to planned CABG during aortic root replacement

Questions???