



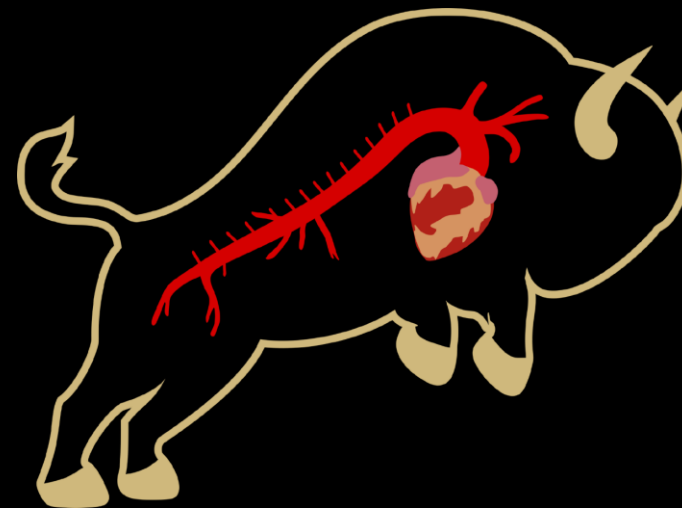
Assessment of Wound Infection Risks Post-Hemiarch Surgery: A Logistic Regression Approach

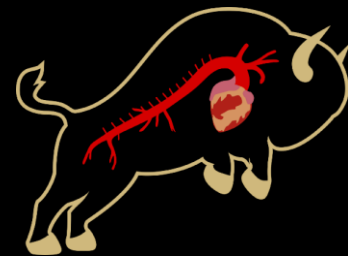
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No disclosures





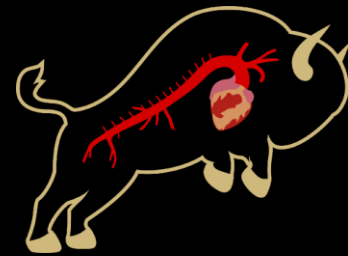
Introduction

- Surgical site infection carries a risk of increased mortality and cost
- Hemiarch patients at particular risk due to sternotomy and graft
- Identifying patients at risk for infection may help to guide patient and clinician decision making

Aim

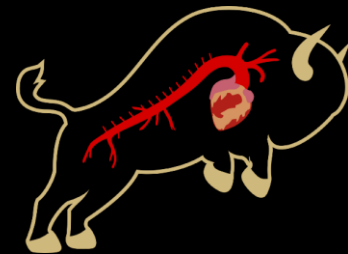


- Investigate predictors of infection after hemiarth surgery
- Focus on pre-operative demographics and characteristics to optimize patient risk stratification independent of other post-operative morbidity



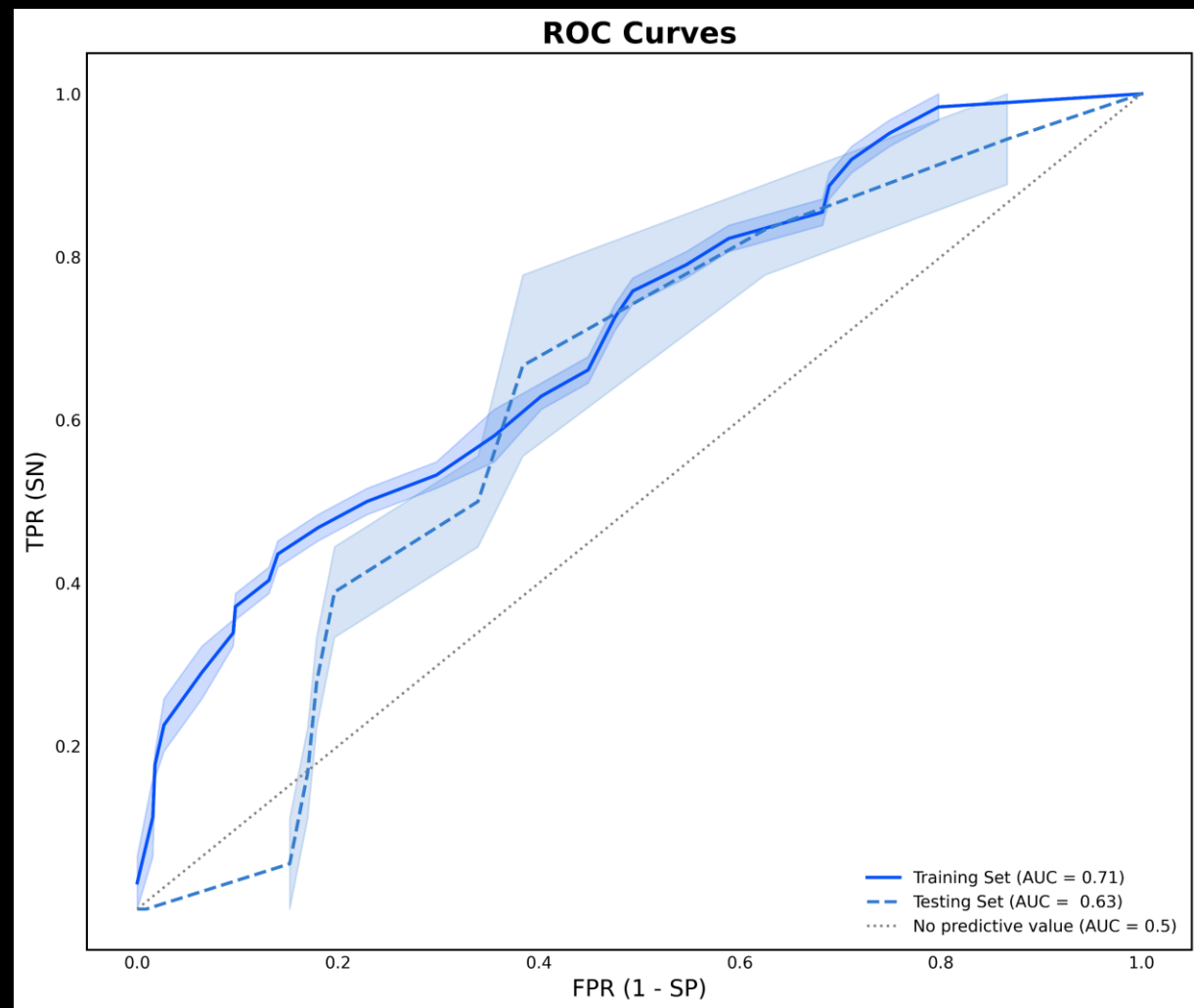
Methods

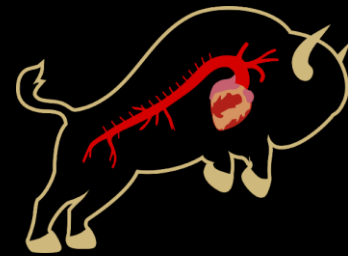
- Retrospective review of aortic database for all patients who underwent hemiarch surgery from 2009 to 2022
- Patients divided into training (70%) and testing (30%) sets of different logistic regression models
- Included 17 input parameters from pre-operative characteristics and operative procedures performed
- Assess model performance and accuracy with area under receiver operating curve (AUC-ROC)
- Determine individual variable impact by assessing odds ratio, confidence intervals



Results

- In total, 602 hemiarch patients included in analysis
- 40 patients (6.64%) developed infection
- Logistic regression model demonstrated cross-validation accuracy of 94%, well calibrated with Brier score of 0.06
- Best performing model with AUC-ROC of 0.71



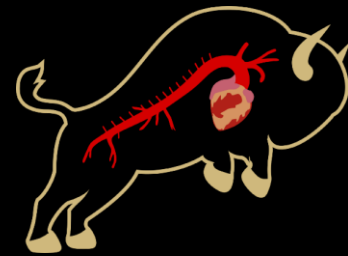


Results: Variable Odds Ratio

- Variables increasing infection risk (in order of significance)
 - History of diabetes
 - Prior CT Surgery (Re-operative sternotomy)
 - History of CAD
 - History of pulmonary disease
 - Concomitant root replacement
 - History of autoimmune disease
 - Urgent, emergent procedure
- Patients without comorbidities and elective patients not undergoing adjunctive root at slightly decreased risk

Comorbidities		
No Comorbidities	28 (4.7%)	0.97 (0.95, 0.99)
HTN	394 (65.4%)	1.08 (1.03, 1.13)
Diabetes	59 (9.8%)	1.39 (1.35, 1.43)
Renal Disease	58 (9.6%)	1.17 (1.13, 1.20)
PVD	11 (1.8%)	1.06 (1.05, 1.07)
CVA	35 (5.8%)	1.11 (1.08, 1.13)
Liver Disease	15 (2.5%)	1.04 (1.02, 1.05)
Pulmonary Disease	133 (22.1%)	1.29 (1.24, 1.34)
CAD	91 (15.1%)	1.31 (1.26, 1.35)
Afib	44 (7.3%)	1.09 (1.06, 1.12)
Autoimmune Disease	10 (1.7%)	1.14 (1.13, 1.15)
Surgical History		
Hx CT Surgery	186 (30.9%)	1.33 (1.27, 1.39)
Hx Aortic Surgery	49 (8.1%)	1.06 (1.03, 1.09)
Procedure Type		
Hemiarch	602 (100%)	0.94 (0.94, 0.94)
Root + Hemiarch	242 (40.2%)	1.12 (1.06, 1.17)
Operative Urgency		
Elective	414 (68.8%)	0.87 (0.83, 0.90)
Urgent/Emergent	188 (31.2%)	1.09 (1.04, 1.14)

Figure: Patient Characteristics including odds ratios and confidence intervals from the logistic regression model. Values are n (%).



Conclusions

- Given clinical implications of wound infection, knowledge of potential risk factors of paramount importance
- Personal history of diabetes, prior history of sternotomy carried particularly increased risk of wound infection
- Assessing risk of wound infection may help to guide clinical decision making
 - Pre-operatively, can optimize control of high-risk comorbidities
 - Patients at high risk for wound infection may alter intra-operative decision making

Questions???

