Restoration of 3D Aortic Hemodynamics after Ross Procedure for Unicuspid Aortic Valve Disease Using 4D Flow MRI

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Disclosures

- I have nothing to disclose

Unicuspid Aortic Valve (UAV) Background

- **UAV disease and demographics**
  - Rare, congenital disease
  - Often mis- and underdiagnosed
  - Presents 10-20 years earlier than bicuspid aortic valve (BAV)

- **Treatment approach**
  - No uniform approach to intervention
  - Replace > repair
  - Ross procedure has recently re-emerged as an option for patients under 50

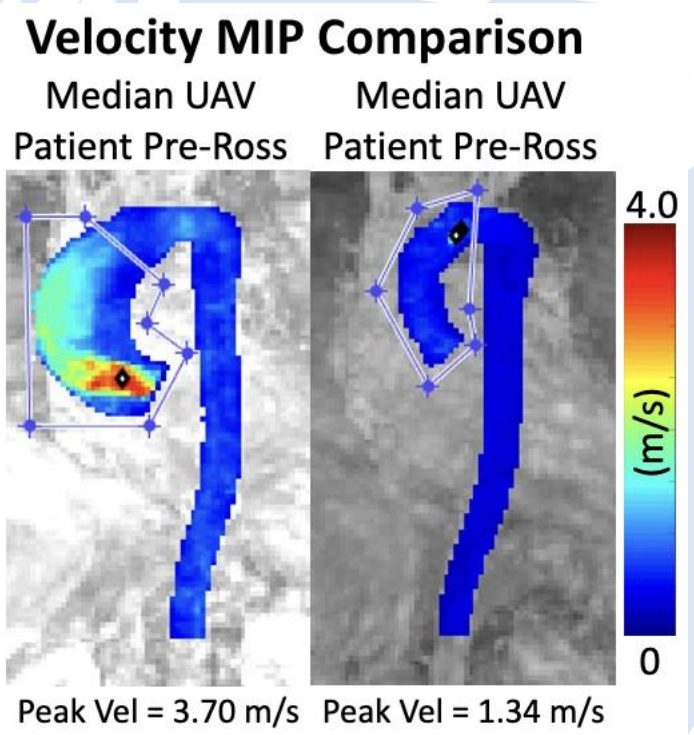
Methods

- **Identified 25 patients who underwent pulmonary autograft replacement of their UAV between February 2020 and August 2023**
  - **13 patients had both pre- and post-op 4D Flow MRI's (*n*=26)**
- **Patients were age and gender-matched 1:1 with healthy control patient with no history of heart disease (*n*=13)**

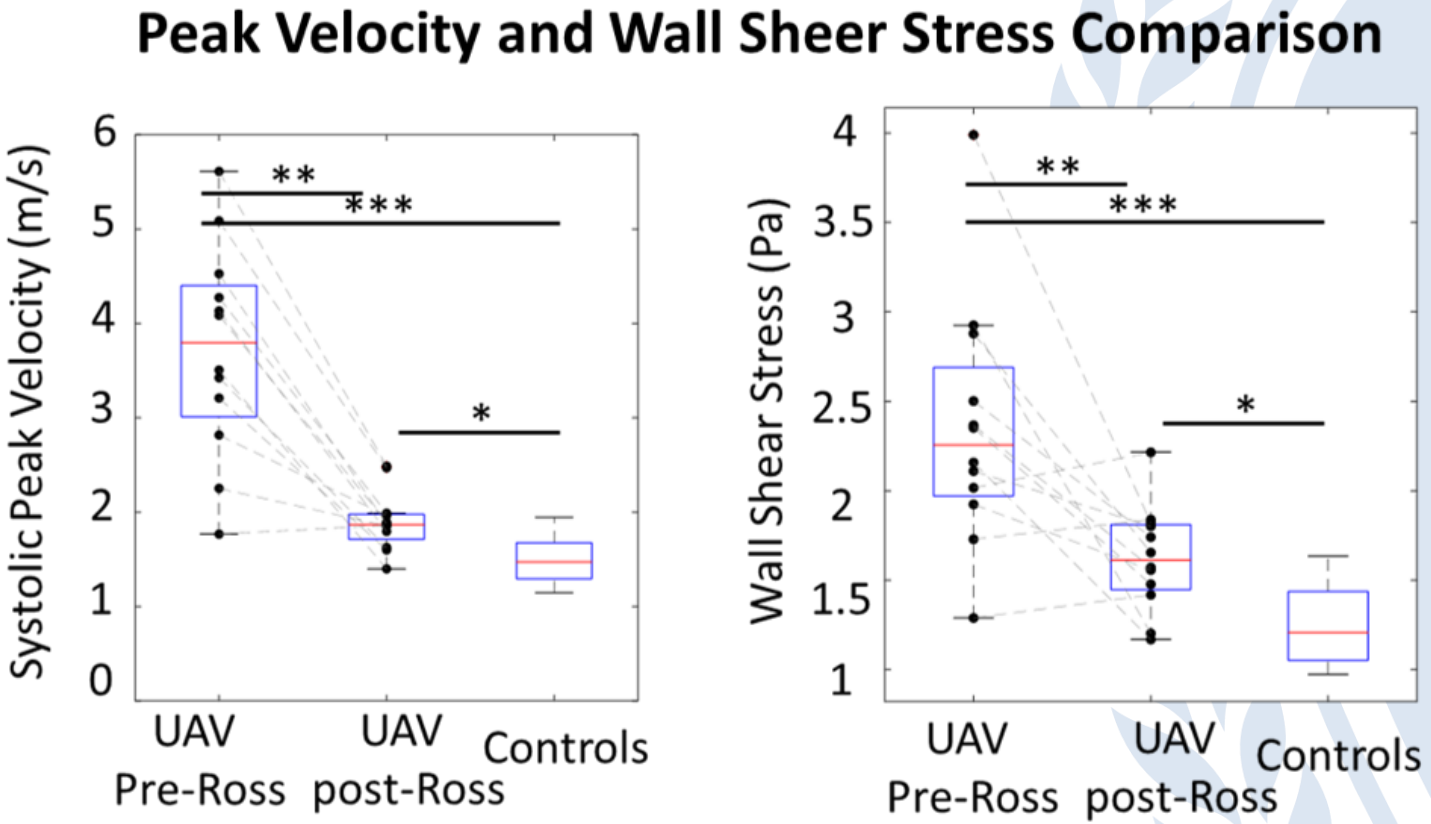
Characteristics at Baseline (*n*=13)	
Age	36.7 ± 9.8
Male Sex	11 (85%)
BMI (kg/m^2)	28.2 ± 5.9
HR (beats/min)	74.2 ± 10.8
LVEDV (mL)	187.4 ± 54.1
LVESV (mL)	82.5 ± 50.3
SV (mL)	104.8 ± 21.2
EF (%)	58.7 ± 13.1
CO (L/min)	7.1 ± 1.3
Aortic Stenosis Grade	
None to trace	1
Mild	1
Moderate to severe	11
Aortic Regurgitation Grade	
None to trivial	5
Mild	5
Moderate to severe	3
Concomitant Procedures	
Aorta Replacement	12
Hemiarch Repair	8
Aortoplasty	4
External Aorta Annuloplasty	5

Methods

- kjl


Velocity MIP Comparison
Median UAV
Patient Pre-Ross
Median UAV
Patient Pre-Ross
4.0
(m/s)
0
Peak Vel = 3.70 m/s
Peak Vel = 1.34 m/s

Results



* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.0001$

Title Only – Open for Graphics, etc.