

The background of the slide features a large, light blue watermark of the University of Florida seal. The seal is circular and contains a central emblem of a lamp of knowledge, surrounded by a laurel wreath. The text of the title is centered over the seal.

The Impact of Birth Weight and Gestational Age on Neo-Aortic Root Dilation in Post Arterial Switch Patients

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Background

- **Arterial switch operation (ASO) initially described in 1975 is the standard surgical approach for transposition of the great arteries¹.**
- **Neo-aortic root dilation is a near ubiquitous natural sequelae after an arterial switch operation^{2,3}.**
- **Several studies have demonstrated accelerated neo-aortic root growth within the first year of life after an arterial switch operation that severely outpaces normal somatic growth in the general population^{4,5}.**
- **Despite the importance of first year post ASO growth velocity and near universal prevalence of neo-aortic root dilation, few studies have analyzed what patient characteristics correlate with neo-aortic root dilation during this period.**

Objective

- **To determine the impact of multiple factors including birth weight and gestational age on patients with transposition of the great arteries that underwent an arterial switch operation.**

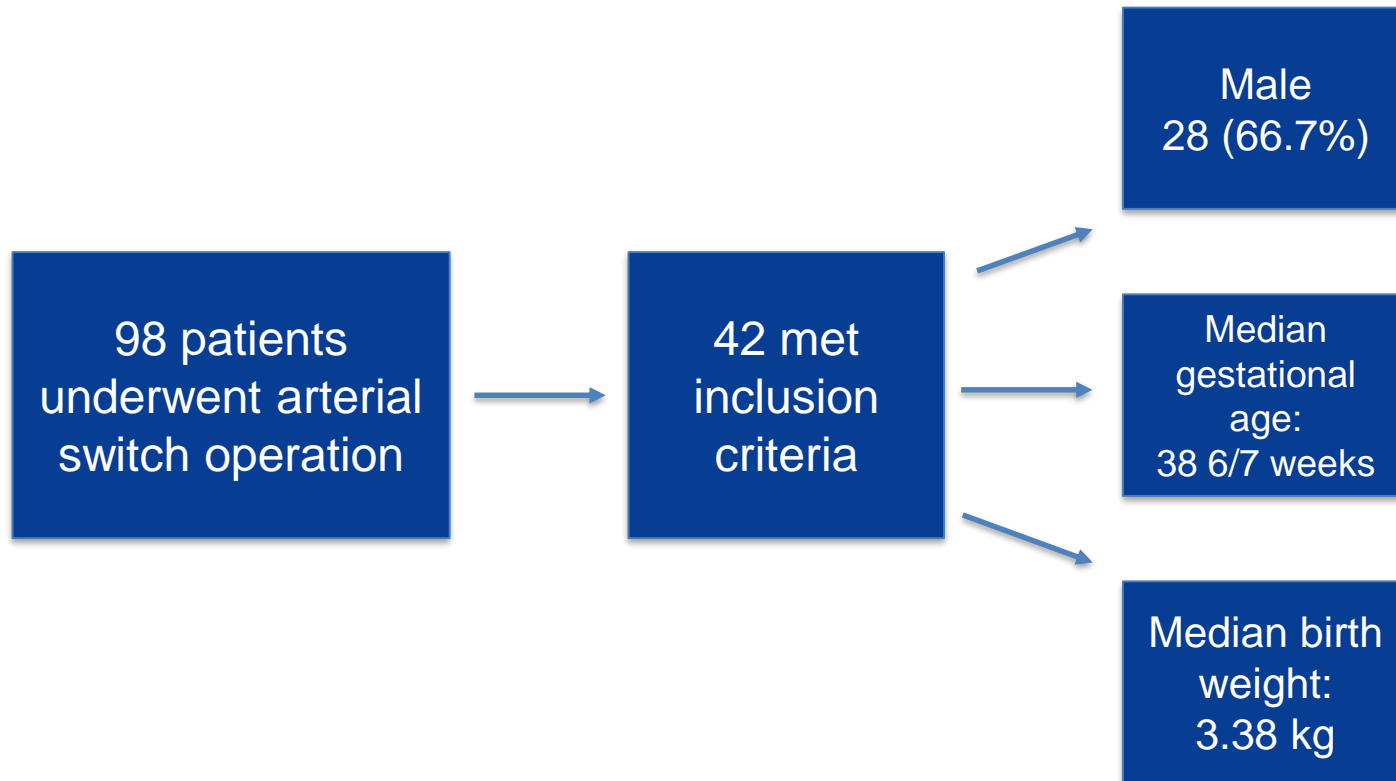
Methods

- Retrospective chart review of patients that underwent an arterial switch operation (ASO) from March 2002-July 2023.
- Linear regression and multiple linear regression were used to identify predictive relationships between perinatal and anatomical features and neo-aortic growth rate during the first year post ASO.
- Neo-aortic growth rate during the first year of life post ASO was calculated using the formula below:

$$\frac{(\text{Neo-aortic root diameter at 1 year post-op echo}) - (\text{Neo-aortic root diameter at first post-op echo})}{\text{Time between echocardiograms (years)}}$$

Time between echocardiograms (years)

Results: Demographics



Results: Demographics (cont.)

- Additional medical history and morphological subtype listed in Table 1.

Table 1.

Demographics	
Male	28 (66.7%)
Median gestational age, weeks	38 6/7 [37 6/7,39 2/7]
Median birth weight, kg	3.38 [2.91,3.69]
Median age at ASO, days	15.5 [9,20]
Neo-aortic Root Growth Rate (cm/year)	0.74 [0.56,0.97]
Medical History	
Abnormal coronary anatomy	15 (35.7%)
Chromosomal abnormality	10 (23.8%)
Morphological Subtype	
TGA/IVS	31 (73.8%)
TGA/VSD	7 (16.7%)
TGA/VSD/Hypoplastic Aortic Arch	2 (4.8%)
DORV/TGA	2 (4.8%)

Results: Birthweight and Gestational Age

- Neither birth weight nor gestational age have a significant correlation with neo-aortic root growth rate during the first year of life when analyzed in isolation.
- However, when analyzed in tandem as part of a multiple linear regression model:
 - Birth weight (0.93) and gestational age (-0.22) had a statistically significant predictive relationship with neo-aortic root growth in the first year of life.

Conclusion

- **Birth weight and gestational age when modeled together can be statistically predictive of neo-aortic root growth within the first year of life post arterial switch operation.**
- **Future studies should analyze the mechanism by which these two factors influence neo-aortic root growth during this physiologically sensitive time in the post arterial switch course.**

References

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Thank You

