

Arterial Switch Operation for Transposition of the Great Vessels - What about the Coronary Arteries?

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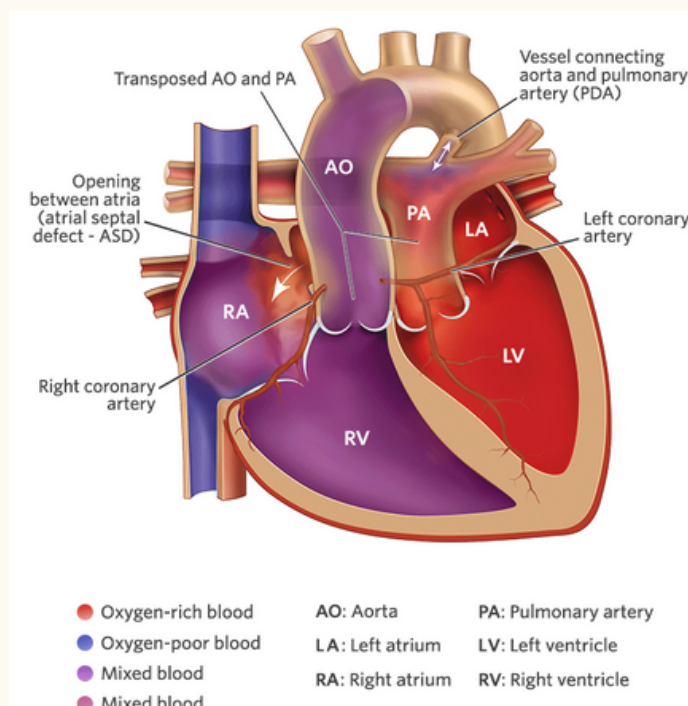
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BACKGROUND

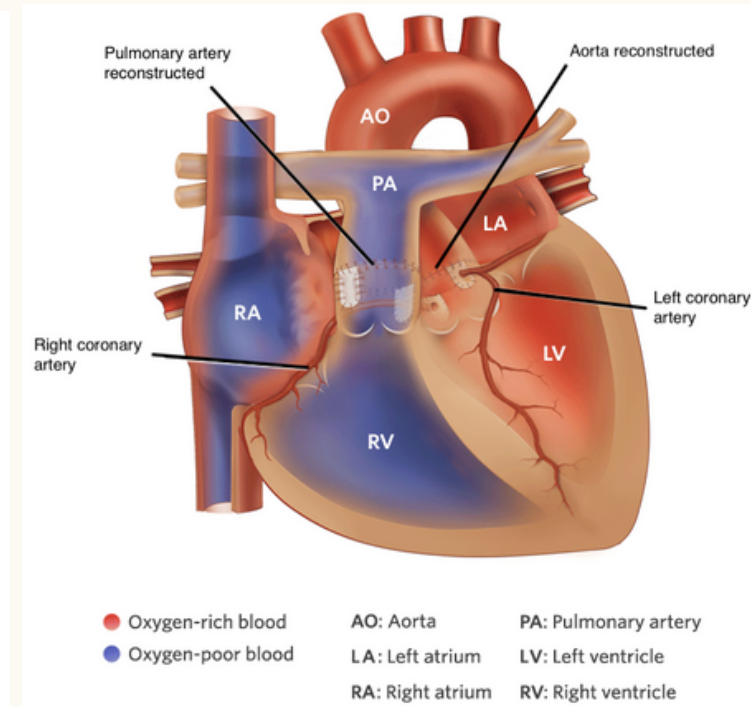
Transposition of the great arteries (TGA) is one of the most common causes of cyanosis in the newborn¹. Left untreated it has significant morbidity and mortality, but with timely diagnosis and correction by the Arterial Switch Operation (ASO), the immediate and long-term outlooks are excellent².

A crucial part of ASO involves the translocation of the coronary arteries from the previous aortic root to the pulmonary root. Early technical issues related to the translocation such as mechanical kinking and transmural course of coronary arteries have generally been mastered by surgeons³. However, later complications may develop, an increasingly relevant issue as the adult population ages and is exposed to co-morbidities and ischemic changes⁴.

Fetal heart with TGA



Post ASO for TGA



Adapted from Children's Hospital of Philadelphia⁵

AIM

This scoping review aimed to identify and synthesize the reported findings of the prevalence, clinical presentation, investigations and management of coronary artery complications following ASO.

METHODS

Systematic search of two databases (Medline, Embase), followed by selection of studies and analysis of full texts.

Inclusion criteria:

- Studies reporting patients who underwent ASO for TGA
- Studies reporting coronary artery complications and/or reinterventions, including morbidity and mortality at least 30 days after ASO

Exclusion criteria:

- Studies where full text was unavailable or not reported in English
- Case reports, editorials, commentaries, preprints

RESULTS

The review yielded 73 articles.



Prevalence: There was a relative infrequency of coronary artery complications following ASO with a prevalence of 3% to 11%⁶.



Clinical Presentation: There were difficulties detecting such complications clinically as patients' symptoms were often absent or non-specific⁷.



Investigations: Recommendations varied as to what multimodal imaging was required, whether routine or following the development of symptoms⁸.

- Selective coronary angiography was the most accurate modality, though guidelines as to when it should be performed were limited.
- An abnormal CT coronary angiogram helped guide the need for direct coronary angiography.
- In most cases CMR and stress echocardiography were useful screening tests.



Management: 1% to 25% of ASO patients required coronary artery intervention, which were mainly achieved by percutaneous coronary interventions⁹. Coronary artery bypass surgery was occasionally required in 2% to 9% of patients with coronary artery complications¹⁰.

CONCLUSION

Coronary artery complications following ASO for TGA were relatively uncommon. They may be missed as many affected patients remain asymptomatic or present with atypical chest pain. There is an ongoing need for evidence-based guidelines and recommendations both for the investigation and management of such complications as the population of successful ASO adult patients continues to grow and age.