



## EDITORIAL COMMENT

## Arterial switch operation for transposition of great arteries: Is coronary artery circulation evaluation necessary?

### *Switch* arterial: a avaliação da circulação coronária é necessária?

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Arterial switch operation (ASO) for transposition of great arteries (TGA) was first performed by Jatene in the late 70s.<sup>1</sup> To achieve a normal spatial arterial relationship, the excision of the coronary artery buttons and their implantation in the new aorta is required. The difficulty of this step is related to the type of coronary origin and distance to the new insertion site. As this anatomical normalization step is completed, cardiac functional normalization is sought. Post-surgical sequelae are mostly related to the original complexity of TGA-associated anomalies (ventricular septal defect, coarctation, etc.) and acquired stenosis, related to Lecompte maneuver or neo-vessel suture sites. Also, well known, late complications of congenital or acquired coronary circulation may occur too, with variable incidence (8-27.5%) and related to different mechanisms.<sup>2,3</sup>

Since the beginning of the year 2000, coronary computed tomography angiography (CCTA) has assumed an increasingly important role in the assessment of coronary anomalies, especially after TGA correction using the Jatene procedure.<sup>4</sup> Most coronary problems and events described so far, tend to occur in childhood in the first few years after surgery where complaints are difficult to assess. Looking for coronary artery abnormalities despite apparent “normality”, was a

task we did in the past using conventional angiography with unnecessary patient exposure to radiation and catheterization complications. Nowadays, new imaging tools that are less or noninvasive are available to assess functional and anatomical coronary abnormalities. Examples of these are: new Doppler echocardiography techniques of the heart or dual-energy computed tomography myocardial perfusion imaging.<sup>5-7</sup> The role of CCTA in coronary anatomy interrogation is less validated in children than in adults.<sup>8</sup> The paper from Abreu et al. published in this issue of the Journal<sup>9</sup> seeks to reinforce the importance of this diagnostic imaging method in this setting. Despite a small number of analyzed patients, a high prevalence of lesions was found (39%). This corresponds to half of the patients presenting lesions “suggestive of myocardial ischemia”, which shows there is some disagreement between previous fundamental complaints/imaging tools.

Since this is a retrospective study, it has several limitations, which are well explained by the authors. However, the paper is not a mere academic exercise, as it demonstrates the need for additional therapeutic measures (including surgery) to preserve cardiac function.

Owing to lack of symptomatology, how to identify patients with coronary abnormalities and a disease that may ultimately compromise their lives is the challenge that this paper poses. In the future, the use of more accessible tech-

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niques, such as stress echocardiography or modalities of tissue Doppler imaging may help in risk stratification and, therefore, support the rationale to use CCTA in a productive way. But, clearly, the published results reinforce the need for universalization of the technique (CCTA) and as it can prevent the need for general anesthesia and aggressive invasive methods, in almost all studies, it is of great importance in this small patient population. Although some international guidelines support this view,<sup>10</sup> others do not.<sup>11</sup> Of course, if clinical symptoms (arrhythmia, thoracic pain, or excessive fatigue) or abnormalities in the standard exams are present, cardiac assessment using coronary computed tomography (or Dual-CT) should be performed immediately at any time. However, should one basal evaluation of coronary circulation in all post-operative ASO patients be reasonable too?<sup>12</sup> The general reported low incidence of coronary related problems makes it questionable. The article from Abreu et al. warns us of the limitations that most methods, such as standard exercise testing, have for the identification of ischemia. Furthermore, the paper gathers information that may be useful in the future design of guidelines, which may include CCTA as a fundamental tool in the follow-up of these patients.

### Conflicts of interest

The author has no conflicts of interest to declare.

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