

Editorial

Description of the origins and epicardial course of the coronary arteries in complete transposition

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It will be clear from the articles contained within this issue of *Cardiology in the Young* that, in hearts with the segmental combinations of complete transposition, there is marked variability in the aortic origins and epicardial course of the coronary arteries. Prior to the introduction of the arterial switch procedure, this variability was largely of academic interest. Now, however, with the arterial switch procedure being performed with increasing frequency, these anatomic features become of crucial importance to the surgeon. Although of vital importance, the very extent of the variability conspires against there being a simple system for their categorization and description. This is well illustrated by the articles within this issue.

Kurosawa and his colleagues¹ categorize their cases according to the system derived by Shaher and Puddu.² In contrast, Planché et al³ and Mee⁴ use the simpler system proposed by Yacoub and Radley-Smith.⁵ But, as illustrated by the recent report of Yamagushi et al,⁶ when confronted with large numbers of patients, then up to 10% will not fit into the five categories of Yacoub and Radley-Smith. Kirklin, contributing a letter as the editor of his own journal,⁷ provides the same solution to this dilemma which my colleagues and I have adopted,⁸ namely, to describe the origin of the coronary arteries within the Leiden convention.¹⁰ Even then, there are problems.

The simple convention proposed by the group from Leiden was not designed to account for an abnormal course of the coronary arteries relative to the vascular pedicle, nor for such important factors as an intramural course of the initial segment of one coronary artery. The solution of Yamagushi to this failing is to modify the Leiden convention so that it carries this additional information.¹⁰ This, to my mind, is not a solution at all, since it produces a system which becomes almost as complex as the alphanumeric notation of Shaher and Puddu.² Yamagushi understands that "sinus 1, suppl L, sinus 2 R, L, Cx" means that a solitary coronary artery arises from the left hand sinus and divides into three.

The right coronary artery takes its usual course; the circumflex artery passes behind the pulmonary trunk, while the anterior interventricular artery courses in front of the aorta. There is then a supplementary artery arising from the right hand facing sinus which supplies the wall of the left ventricle (Figure 1). With such a complicated arrangement, I would prefer to be given the diagram and a full description! I do not see that modification of a simple system so as to make it excessively complex is of help to anyone unless they are using it every day.

The Leiden convention was designed to account for the origins of the arteries from the aortic sinuses. In this respect, as Kirklin states,⁷ it is all-inclusive. Additional information, as required for unusual epicardial courses of the arteries, can be provided descriptively, as we have suggested on page 44 of this issue. I am against alphanumeric systems on principle, in part because of their Procrustean nature, but also because they impose unnecessary strain upon the memory. For this very reason, it is my own preference to describe the sinuses of the aorta which face the pulmonary trunk as being to the right hand or left hand of the observer standing in the non-facing sinus. I dislike the codifications of "sinus 1" and "sinus 2", since I often forget which sinus is described as "#1". Thus far, I have not mistaken my right hand for my left! For this reason, the articles in this issue have been edited so as to provide descriptions of the coronary arterial patterns accounted for more succinctly as "Yacoub type A", or "Shaher and Puddu type 1c", and so on. On page 56 there is a pictorial display of the various patterns identified by Shaher and Puddu.² This display reinforces the old adage that a picture is worth a thousand words. For those who, like me, are unsure of the precise patterns identified in the categorizations of Yacoub and Radley-Smith,⁵ Figure 2 illustrates those patterns.

Despite the apparent simplicity of this approach, and the possibility of modifying any system to make it all-embracing, my preference for categorization of the

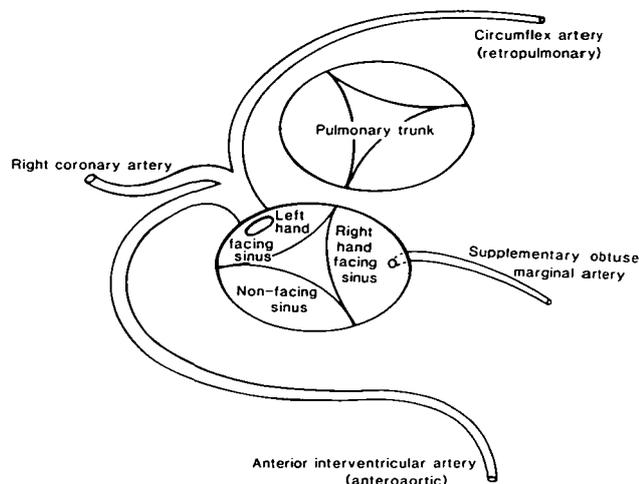


Figure 1. This diagram illustrates a potential variant in the origin and course of the coronary arteries in complete transposition which Yamaguchi¹⁰ has suggested could be codified as "Sinus 1 suppl L; Sinus 2,R,L,Cx".

coronary arteries remains to use the Leiden convention to account for their sinusal origins and then to give a full description of other anomalous findings. Only time will tell whether the modification suggested by Yamagushi is sufficiently appealing to attract widespread use.

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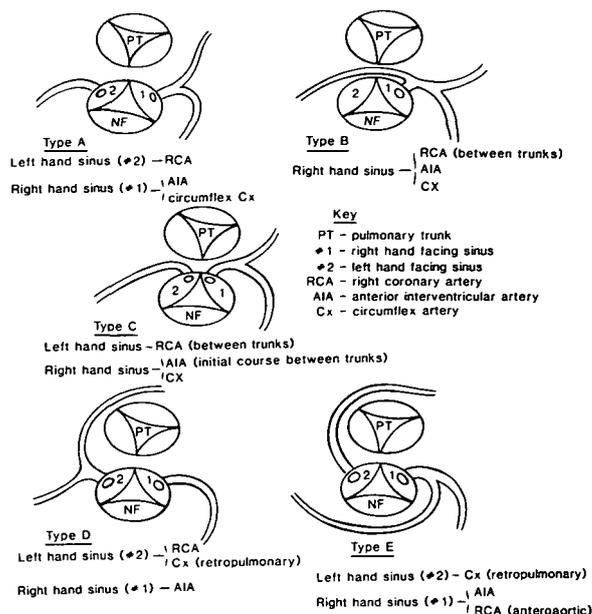


Figure 2. This diagram shows the sinusal origins and the initial course of the coronary arteries in complete transposition for the five patterns identified by Yacoub and Radley-Smith⁵ as their types A through E.

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