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## Could Descending Septal Artery Be Another Variant of the Dual Left Anterior Descending Artery?



### ¿Podría ser la arteria septal descendente otra variante de la doble arteria descendente anterior?

#### To the Editor,

We read with great interest the article by Montero-Cabezas et al,<sup>1</sup> which prompted us to ask the question forming the title of this letter.

Absence of the first septal branch of the left anterior descending artery (LAD) on left coronary angiography not only raises the suspicion of the presence of a descending septal artery, or Bonapace's branch, as mentioned by the authors themselves mention,<sup>1</sup> but also clearly demonstrates the existence of a congenital coronary anomaly of the LAD.

According to Spindola-Franco et al,<sup>2</sup> the LAD is the coronary artery with the most constant origin, course, and distribution in the

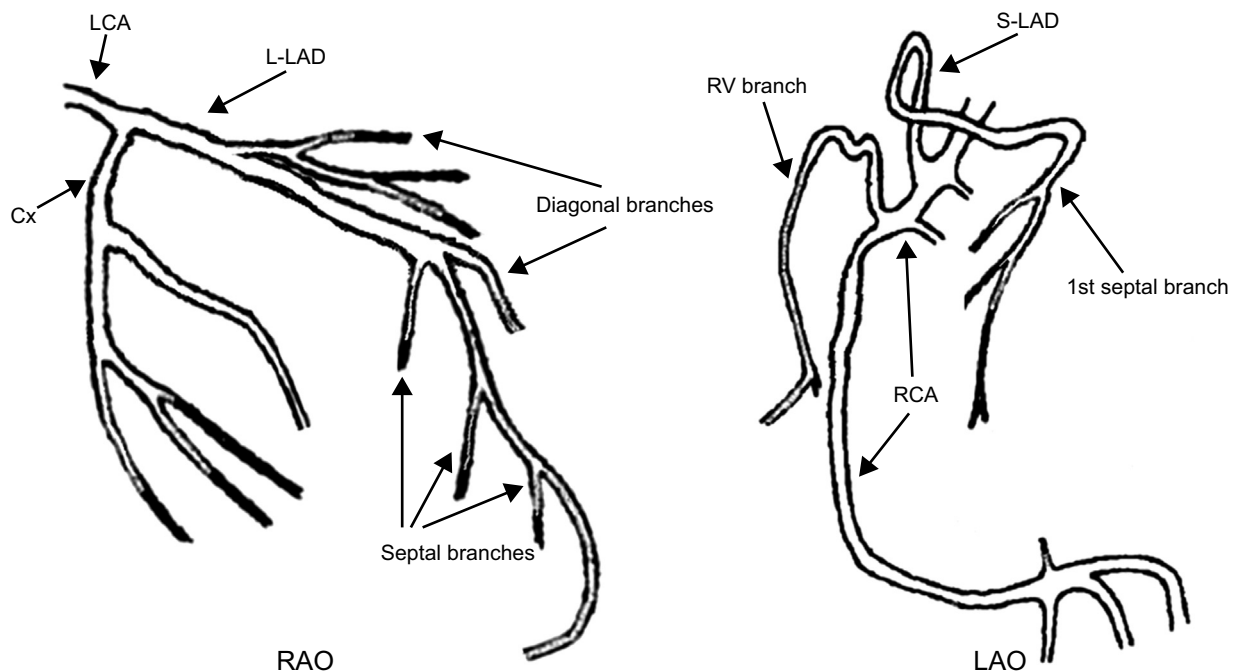
human heart; however, many anatomical variants have been described in the literature.<sup>2–10</sup>

Such congenital coronary anomalies are rare. Their incidence is between 0.64% and 1.3% but can reach almost 6%. Dual LAD represents 1.2% to 6.1% of all coronary anomalies.<sup>3</sup>

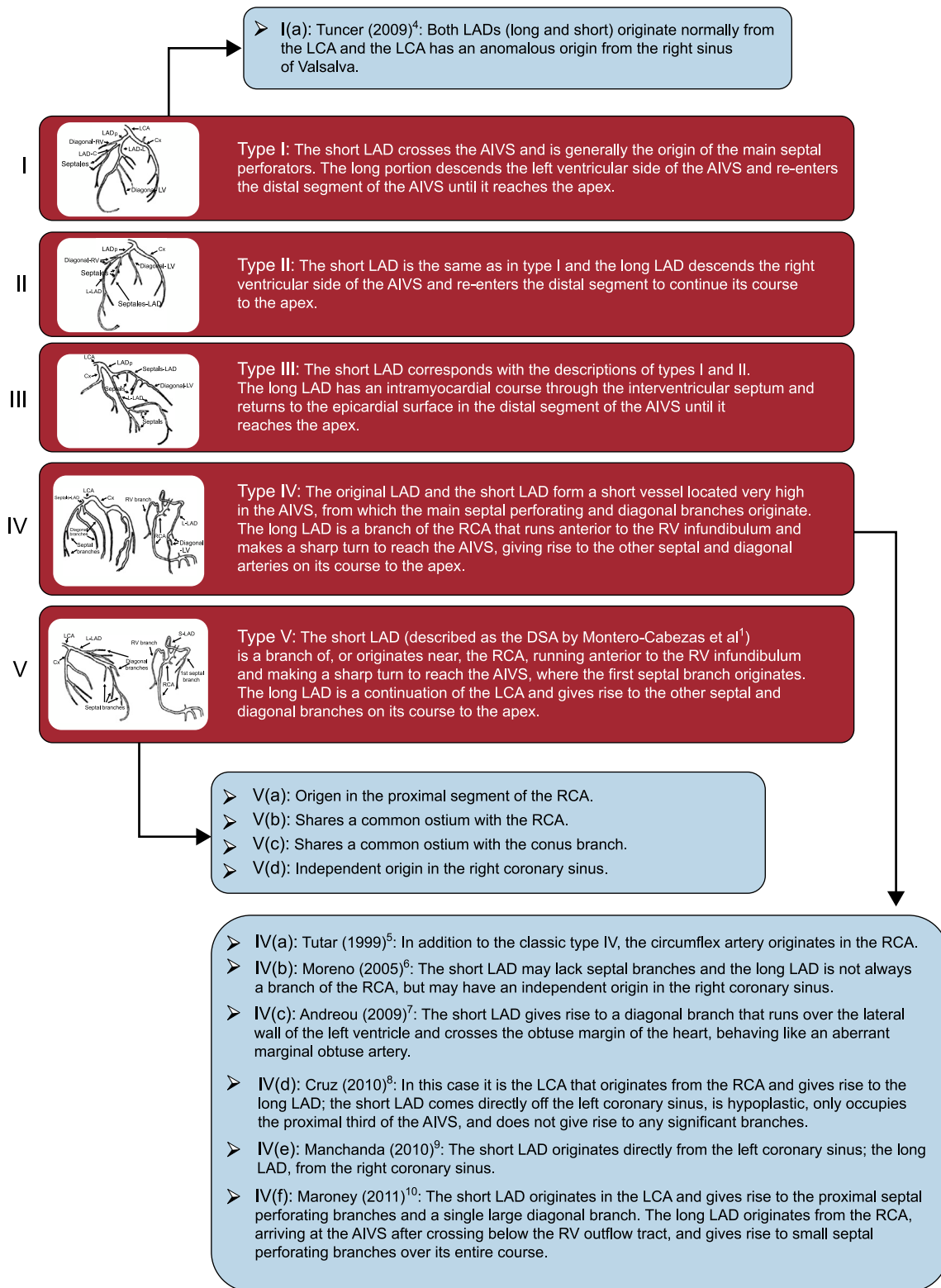
Notably, the definition of the descending septal artery by Montero-Cabezas et al<sup>1</sup> has similarities to the updated classification of type IV dual LAD,<sup>3</sup> except that it could be considered the opposite: in the description by Montero-Cabezas et al, it is the short LAD (in this case the descending septal artery) that originates from the right coronary artery, or close to it, and the long LAD continues normally as a branch of the left coronary artery (Figure 1).

In such cases, the descending septal artery could be considered a new type of dual LAD, rather than an isolated variant of coronary anomalies. The types proposed by Montero-Cabezas et al<sup>1</sup> would constitute its anatomical variants; therefore, the classification of dual LAD would remain as described in Figure 2.

The possibility of combining these types of anomaly of the origin, course, and distribution of the LAD could have important implications in clinical practice.



**Figure 1.** Type V left anterior descending artery. Modified with permission from Moreno-Martínez et al,<sup>3</sup> showing a graphical representation of the other types of dual left anterior descending artery. Cx, circumflex artery; LAO, left anterior oblique; LCA, left coronary artery; L-LAD, long left anterior descending artery; RAO, right anterior oblique; RCA, right coronary artery; RV, right ventricle; S-LAD, short left anterior descending artery.



**Figure 2.** Classification of the types and subtypes of dual left anterior descending artery (respecting the classic description by Spindola-Franco from 1983<sup>2</sup>) Modified with permission from Moreno-Martínez et al.<sup>3</sup> AIVS, anterior interventricular sulcus; DSA, descending septal artery; LAD, left anterior descending artery; LCA, left coronary artery; LV, left ventricle; RCA, right coronary artery; RV, right ventricle.

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## Could Descending Septal Artery Be Another Variant of the Dual Left Anterior Descending Artery? Response



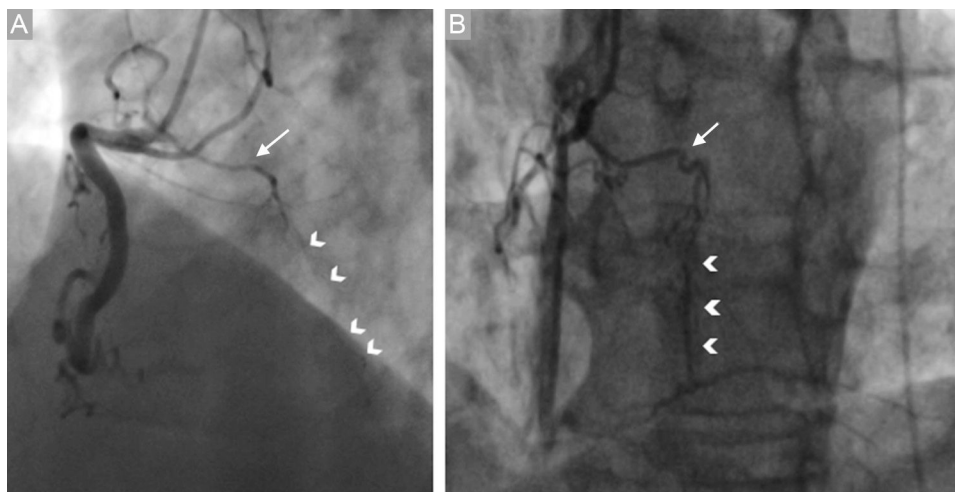
### ¿Podría ser la arteria septal descendente otra variante de la doble arteria descendente anterior? Respuesta

#### To the Editor,

We thank Moreno-Martínez et al for their comments regarding our letter.<sup>1</sup> As they mention, the incidence of dual left anterior descending artery in healthy hearts is approximately 1%. Although the true incidence of descending septal artery based on coronary angiographic findings is unknown, its presence has been detected in a surprisingly high percentage of postmortem studies. Rodríguez

et al<sup>2</sup> identified the descending septal artery in 12% of 427 specimens; Taylor,<sup>3</sup> in 68% of 112; and Sahni and Jit,<sup>4</sup> in 85% of 500 autopsy subjects. As we stated in the above-mentioned letter, this could be explained by the high perfusion pressures used during these studies (reaching 280 mmHg) and the loss of muscle tone, or by the absence of surrounding tissue, which would facilitate the visualization of this vessel.<sup>5</sup>

This high detection rate, in contrast to the 1% reported for dual left anterior descending artery, could indicate that the descending septal artery is an anatomical variant that is underdetected by conventional angiography, rather than a coronary artery anomaly per se. Its development appears to be more evident in the presence of obstructive coronary artery disease,<sup>5</sup> suggesting the “recruitment” of descending septal artery as a source of collateral circulation (Figure).



**Figure.** Anterior descending septal artery (arrows), which provides homocoronary collateral circulation (arrow heads) toward distal right coronary artery in the presence of an acute occlusion (A) and chronic occlusion (B) of right coronary artery.