Re: "A Rare Case of Bilateral Coronary Artery Fistula to Pulmonary Artery"

I read with interest the case report of Casazza and colleagues in the February issue of *CLD* showing bilateral coronary artery fistulae. It's an excellent case and I appreciate the wonderful demonstration in the angiograms.

An important implication of this finding, however, was not discussed, likely due to space considerations. The authors show a fairly typical left anterior descending (LAD) to pulmonary artery (PA) fistula, but very interestingly, a conus to PA fistula. If the images could be superimposed, a perfect demonstration of Vieussens' Ring would be observed. I have previously reported on this implication (see references), but I think that this case report is the clearest demonstration I have seen that proves the point of the likely embryologic origin of the coronary arteries.

Coronary artery to PA fistulae are a manifestation of the coronary buds arising in the truncus arteriosus and instead of septating into the aorta, instead become partitioned into the pulmonary artery. What is important is that they don't seem to directly connect to the coronary, but rather form a ring shape, seen as a half ring in my case reports and as a wonderfully complete circle in the case report in *CLD*. The origin from the conus branch also shows the embryologic origin, as in the embryo there are actually 3 coronary arteries, but the third or conus vessel diminishes, and becomes either a right coronary artery (RCA) branch or a vestigial separate ostium.

What these images demonstrate is a re-emergence of Vieussens' Ring through collateral development when coronary stenoses distal to the branch point increase in severity, causing an increase in flow through this vestigial channel. Indeed, collateral vessels generally are not due to neovascularization but rather arterialization of sinusoidal channels from the embryologic state which re-open with favorable hemodynamic forces. ■

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References

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2. Klein LW, Campos EP. The embryologic origin of Vieussens' Ring. *J Invasive Cardiol*. 2019 Mar; 31(3): 49-51. https://www.hmpgloballearningnetwork.com/site/jic/articles/embryologic-origin-vieussens-ring

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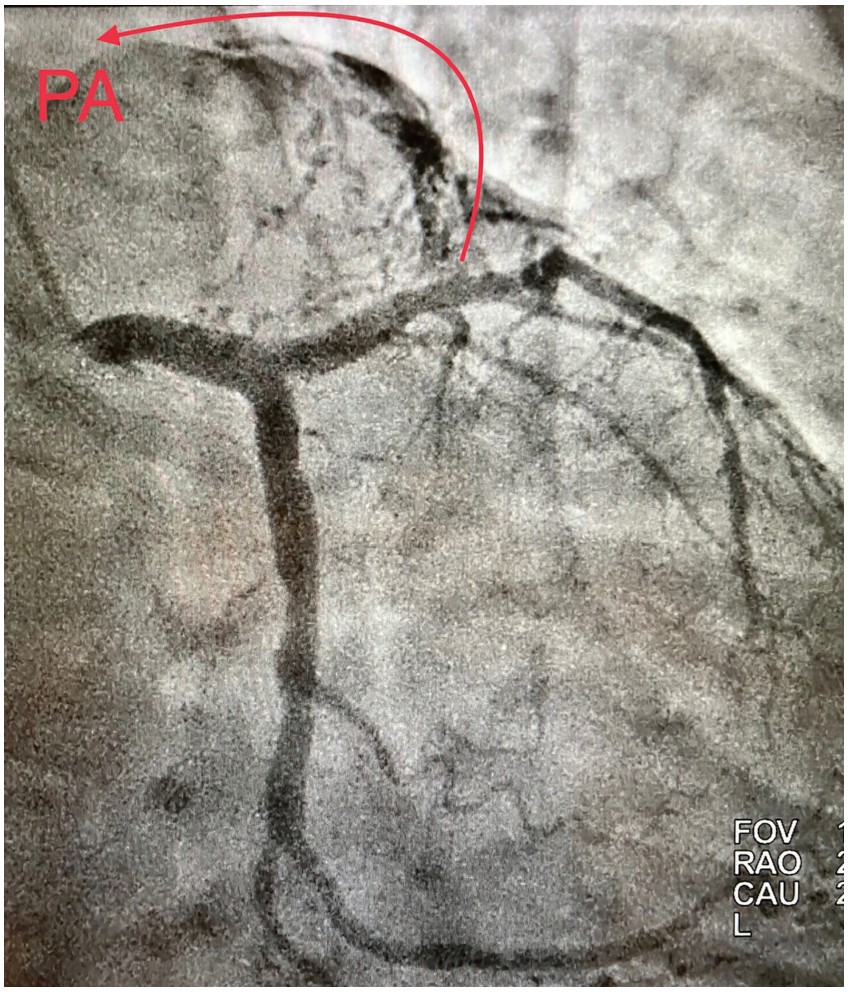

Figure 1. Left anterior descending (LAD) coronary artery to left pulmonary artery fistula.

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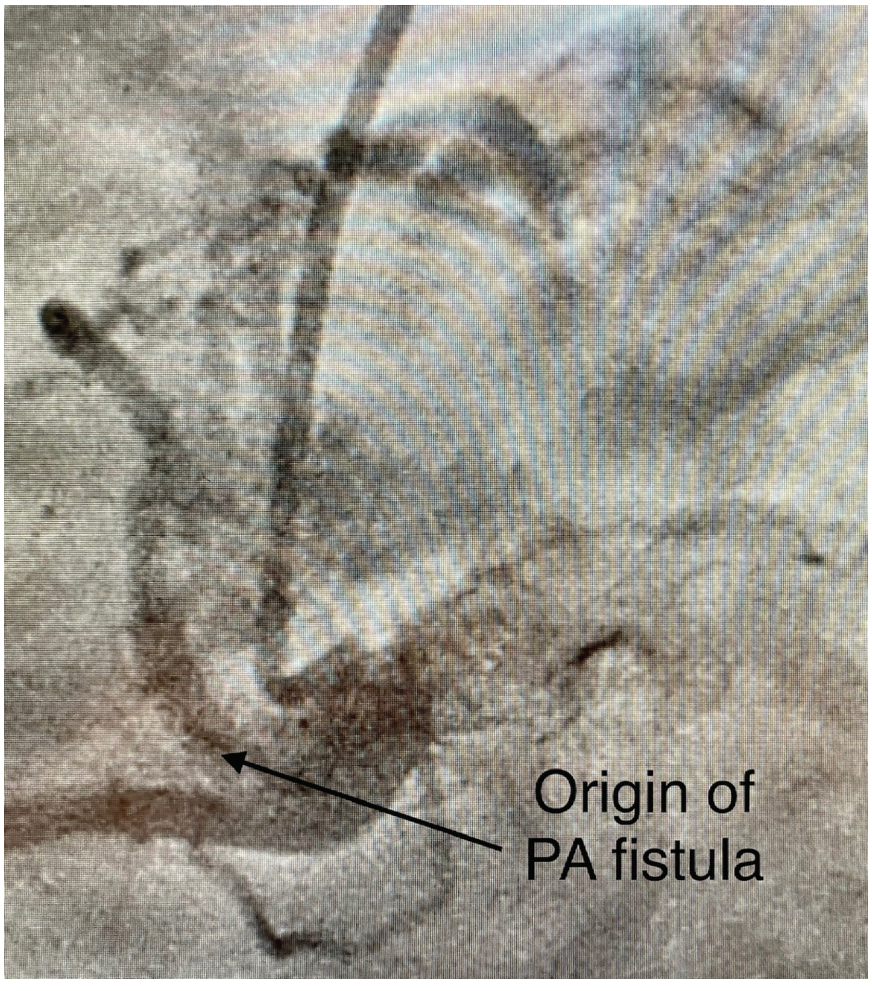

Figure 2. Proximal right coronary artery (RCA)/conus to right pulmonary artery fistula.

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