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## Commentary: Anomalous pulmonary veins and antlers—oh deer me

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Shi and colleagues<sup>1</sup> focus on a relatively large cohort of patients with infracardiac total anomalous pulmonary venous connection (TAPVC), a unique approach compared with most reports about anomalous veins, which typically include all categories of TAPVC (supracardiac, cardiac, and infracardiac). They based this approach on the premise that sutureless repair (SR) may indeed offer selective benefit in the context of infracardiac TAPVC. It is an interesting premise that, to our knowledge, has not previously been investigated. Of 82 patients, 15 underwent SR and 67 underwent conventional repair (CR). Postrepair stenosis (PRS) was nonexistent in the SR group but occurred in more than 50% of patients in the CR group. As PRS typically occurs within 6 months of repair, the relatively short follow-up in the SR group is not a major issue. The main point is that despite excellent results in the SR group, 15 patients simply won't sway the debate regarding superiority of a particular repair technique. Other caveats include (1) the authors began using SR in a more recent era; (2) they continue to use CR in the recent era; and (3) PRS in more than 50% of CR patients seems inordinately high, even for infracardiac veins. This all opens the possibility of underlying bias related to surgeon and/or patient selection, as there was no standardized protocol determining which type of repair would be done. But, bias aside, no PRS in the SR group is still quite commendable.

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### CENTRAL MESSAGE

In infracardiac total anomalous pulmonary veins, an “antler” configuration may confer unique risk. Further data are needed to investigate this hypothesis.

The unique feature of this report is the introduction of a new anatomic subcategory termed “antler” configuration—not to be confused with the antler sign resulting from pulmonary hypertension. This subtype conferred substantial risk for worse outcomes. The authors theorize plausible explanations related to greater distance of the confluence to the atrial mass and resultant tension or torsion of the suture line as well as flow-pattern abnormalities created by a combination of anatomy and repair technique. While this could be true, no distance comparisons or flow pattern assessments were made between the Christmas tree and antler configurations. Remarkably, the authors demonstrated perfect agreement between 2 blinded imaging experts tasked with assigning anatomical subtype. Further verification of these preliminary findings could provide relevant prognostic data and maybe, emphasize maybe, inform surgical decision making. But here's the catch—identifying the antler configuration requires a computed tomography scan. Getting a computed tomography requires a relatively stable baby, which occurred in 87% of their patients. In fact, 70% underwent surgery more than 24 hours after presentation. We regard this as rather unique for infracardiac TAPVC, suggesting a cohort for which results may not be widely applicable. Furthermore, no comment was made regarding echocardiographic findings to correlate with the different anatomic configurations. Echocardiographic identification would be ideal, as this is more readily done in a typical newborn with infracardiac TAPVC. Nevertheless, we congratulate the authors for their excellent SR

results and their introduction of a unique, potentially high-risk anatomical subtype. Perhaps further investigation will confirm the importance of their findings.

**Reference**

1. Shi G, Zhu F, Wen C, Qiu L, Zhang H, Zhu Z, et al. Single-institutional outcomes of surgical repair of infracardiac total anomalous pulmonary venous connection. *J Thorac Cardiovasc Surg.* 2021;161:1408-17.e2.