Commentary: The intercoronary pillar—Not necessarily an innocent bystander

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Unroofing of an intramural segment is the most common surgical procedure performed for anomalous aortic origin of a coronary artery (AAOCA).¹ The incidence of aortic insufficiency (AI) after unroofing seems to be underappreciated. Some studies have shown that AI occurs in as many as 17% of patients and may develop or progress with time.^{2,3}

In this issue of the *Journal*, Yerebakan and colleagues⁴ describe the results of universal resuspension of the intercoronary commissure regardless of whether the commissure is taken down. They hypothesize that unroofing above the commissure alters the support of the valve by leading to a drop of the commissural level equal to half the diameter of the unroofed coronary artery. They compared 9 patients who did not have commissural resuspension with 17 who did. One patient who did not have commissural resuspension had progressive AI, required aortic valve replacement 7 years later, and died of aortic valve endocarditis 11 years after unroofing. At last follow-up, which was variable between the groups, all patients who had commissural resuspension had no or trivial AI, whereas 6 of the 9 patients who did not have commissural resuspension had mild or greater AI.

This study pertinently suggests that the integrity of the intercoronary commissure, although necessary, is not sufficient to support the aortic valve adequately. Support of the valve is dependent on cranial traction and on support of the commissure itself. If one pays close attention to the aortocoronary complex, there is a segment of the aortic wall just cranial to the intercoronary commissure that is thicker than the rest of the wall. This segment, which we have called the intercoronary pillar and can be quite thick in some patients (Figure 1), not only seems to be important for valve support but also may play a significant role in the pathophysiology of AAOCA. The coronary artery arising from the incorrect sinus usually

The intercoronary pillar can be quite thick in some patients.

Central Message

The intercoronary pillar, a thickening of the aortic wall above the commissure, may contribute to both aortic valve support and the pathophysiology of anomalous aortic origin of a coronary artery.

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FIGURE 1. The intercoronary pillar, a thickening of the aortic wall extending from the intercoronary commissure cranially toward the sinotubular junction, can be quite thick in some patients (arrow). This pillar likely contributes to the aortic valve support and may play a role in the pathophysiology of anomalous aortic origin of a coronary artery. (©2014 Texas Children's Hospital, reprinted with permission.)

FIGURE 2. Effect of surgical unroofing of an anomalous coronary artery. A, Unroofing of a long intramural segment increases the size of the ostium, eliminates the intramural portion of the anomalous coronary, and places the ostium in the correct sinus, away from the intercoronary pillar. B, Unroofing of a short intramural segment increases the size of the ostium and eliminates the intramural portion of the coronary artery but may leave the coronary artery in close proximity to the intercoronary pillar and at risk for compression. An alternative surgical intervention, such as coronary translocation, may be preferred. RCA, Right coronary artery; PA, pulmonary artery; ALCA, anomalous left coronary artery. (©2016 Texas Children's Hospital, reprinted with permission.)

travels behind and in close proximity to this thickened segment. Unroofing of a long intramural segment will move the ostium into the correct sinus and away from the intercoronary pillar (Figure 2). In contrast, unroofing of a short intramural segment may leave the coronary artery in close proximity to the pillar and potentially at risk for compression. In our experience,⁵ patients with unroofing of short intramural segments may show persistent compression of the coronary after unroofing. Alternative procedures, such as coronary translocation, may be preferable for these patients. This would become more important if we resuspend the commissure after unroofing a short intramural segment,⁴ because this would place the intercoronary pillar back closer to the ostium and potentially lead to persistent obstruction.

It is clear that despite the ability to achieve good perioperative outcomes, surgical intervention for AAOCA is not completely benign. It is incumbent on us to carefully weigh all the risks and benefits for a particular patient, especially given all the uncertainty surrounding the natural history of

AAOCA. In the meantime, careful consideration ought to be made to resuspending the commissure of these patients at the time of surgical unroofing.

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