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Commentary: Anomalous retro-aortic circumflex artery off of the right coronary artery: Whatever works!

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Fukunaga and colleagues¹ present a case of a 64-year-old man with a degenerative aneurysm of his root and ascending aorta measuring 5.3 cm and 6 cm, respectively. Preoperative workup revealed an anomalous retro-aortic circumflex arising from the right coronary artery coursing in close proximity to the aortic valve annulus. This altered the operative approach such that the authors performed a root remodeling technique, sewing to the edge of the transected aorta just above the sinus rather than performing a valve-sparing procedure that would have required annular or subannular stitches. They avoided any risk to the aberrant vessel. We commend the authors for using discretion and having a flexible operative strategy to deal with this unusual anatomy.

Anomalous coronaries are not necessarily unusual, and this particular anomaly can be found at a frequency of 0.31% to 1.3% amongst all patients undergoing coronary angiography.² However, this particular anomaly is only rarely encountered during aortic valve replacement³ or root⁴ operations. Certainly compression of the circumflex artery can be an issue, and several authors have published reports on this phenomenon.⁵⁻⁷ The options for dealing with this pesky artery include careful dissection and avoidance, mobilization and reimplantation, abandoning annular or subannular suturing (ie, changing operative

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The authors utilized a root remodeling technique to avoid injury to an anomalous retro-aortic circumflex artery arising from the right coronary artery.

approach from reimplantation to remodeling), or ligation with bypass.

Certainly, the approach to this anomaly must be tailored to each individual patient. Patients with this particular coronary anomaly are typically not symptomatic, but rarely the retroaortic coronary can be predisposed to accelerated atherosclerosis.⁸ It seems that in most cases, avoidance of the intact vessel during aortic root surgery may be paramount. Yet in those handful of cases showing a proximally diseased retro-aortic anomalous left circumflex artery, a bypass to the diseased vessel with ligation may be more prudent, particularly if an elderly patient has developed coronary symptoms. It might be worthwhile to dissect out and preserve or reimplant the artery in a younger Marfan syndrome patient who needs root stabilization to avoid complications in the future.⁹ Although the root remodeling approach was safe for this older patient with degenerative disease and a 5.3-cm aortic root, one might wonder what the fate of the root would be in a much younger patient with Marfan syndrome. In this younger population, larger root aneurysms can grow by 0.46 cm per year, and a sharp increase in complications occurs at diameters >5.5 cm.¹⁰ Thus the decision to avoid the coronary artery is complicated and must be carefully thought out before and during these operations.

Root procedures in patients with anomalous coronaries are always courageous endeavors because coronary complications can be disastrous in these patients undergoing valve-sparing root operations. Any port in a storm truly applies to these complex situations. We congratulate the authors for

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identifying this anomaly and demonstrating safe decision making in the operating room to achieve an excellent clinical outcome.

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