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Commentary: A stitch too far

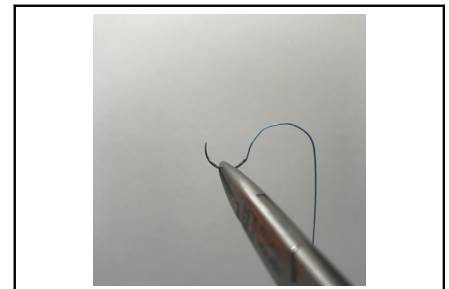
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The complication of circumflex artery injury leading to regional ischemia during or related to mitral valve surgery has been well described.¹ In their study, Caruso and colleagues² seek to better quantify the risk factors for this complication. They describe a case series of 95 consecutive patients who, in addition to the usual preoperative workup, underwent coronary computed tomography angiography (CCTA). The images were rigorously analyzed to determine the course of the circumflex artery relative to the mitral annulus. The region was divided into zones, and the distances from the artery to the annulus were reported.

The authors identify 3 mm as the critical distance, although admitting that they chose this value somewhat arbitrarily. Given this parameter, they also note that the most dangerous area is zone 1, the proximal circumflex/posterolateral portion of the annulus. They found a 25% incidence of this critical value.

They go on to describe the steps that they take to minimize the risk of arterial injury in the presence of the critical distance. These include a median sternotomy approach, the use of flexible rings or bands for the annuloplasty, modifications to the ring or band, and avoiding suture placement in those regions.

The incidence of this complication in most series has been reported as <2%.^{3,4} In addition, knowledge of the potential for this complication, prompt recognition when it occurs, and published responses have helped keep the rate of long-term consequences even lower.⁵ Nonetheless, prevention is the ultimate goal. This and other studies have shown that, unfortunately, preoperative coronary angiography is



Correct suture placement is still the key.

CENTRAL MESSAGE

Better knowledge of coronary anatomy may reduce the risk of circumflex artery injury during mitral valve surgery.

not sufficiently predictive of arterial injury. In addition, coronary angiography is not necessarily the standard of care in younger patients.

The maneuvers to avoid the complication that the authors describe should be viewed critically, as they may have a negative effect on the outcomes of these operations. Although the authors claim no changes in the results up to 1 year, they do not address the long-term consequences of modifying annuloplasty devices and skipping areas of suture fixation.

As is often the case, more study is warranted. This would include collecting evidence to show that the proximity of the artery is indeed a major risk factor. This is not a given, as the incidence of such anatomy seen here is much higher than the incidence of the complication generally reported. There should also be examination into whether CCTA could be used in place of standard coronary angiography to evaluate not only for artery anatomy, but also for disease. This would help improve the cost-benefit analysis.

At the end of the day, it remains to be seen what to do with this information. There is the implication that this complication may be exacerbated by a minimally invasive approach. Major alterations in technique as described here are suspect. Perhaps simply being aware of the increased risk would be beneficial. Ultimately, it comes down to attention to suture placement. Most of us are careful drivers; we are even more careful in the rain.

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