Commentary: Extending into zone 0 with a little help

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In this issue of the *Journal*, Lou and colleagues¹ present a case report of an acute retrograde type A aortic dissection (rTAAD) that originated from a presumably subacute type B aortic dissection.¹ A complicating factor in this scenario was that the patient's religious beliefs precluded him from accepting blood or blood products as a potential consequence of open surgery. The surgeons proceeded with an alternative approach comprised of a staged hybrid repair with debranching of the great vessels, followed a few days later by a zone 0 thoracic endovascular aortic repair supplemented with a chimney graft from the innominate artery. This unique application of the chimney technique was successfully completed, and at 3 months the patient was apparently alive and well with thrombosis of the false lumen.

Acute rTAADs may arise de novo or as a complication of thoracic endovascular aortic repair. Data from the International Registry of Acute Aortic Dissection (IRAD) documented an overall incidence of 7% in all acute dissections,² similar to the 9% incidence seen by Kim and colleagues.³ The IRAD data are a little confusing, in that a different IRAD study from the same period notes an incidence of 16.5%; however, this was in isolated type B dissections.⁴ Early mortality was lower among patients in whom the rTAAD was limited to the arch than among those in whom the dissection extended into the ascending aorta, although this difference did not achieve statistical significance (8.6% vs 18.6%; $P = .14$). In addition, mortalities for open surgical repair (18.2%), medical management (9.1%), and endovascular repair (13.6%) did not differ significantly, with the caveat that the presentation, extent of disease, and degree of false-lumen thrombosis differed among the groups and most likely guided the therapeutic options. There was a difference in clinical presentation seen between zone 0 and zone 1 or 2 rTAAD, with more frequent pericardial effusion (35.9% vs 3.6%, $P < .0001$), tamponade (9.8% vs 0%; $P = .03$), and aortic insufficiency (27.5% vs 9.4%; $P = .02$).² It is not apparent that this patient had any of these issues.

Stented arch with open debranching of arch.

Central Message

Retrograde type A aortic dissections are not uncommon, and there are a variety of techniques to repair the aorta. For a select subset of patients, thinking outside the box is necessary.

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Open repair of type A dissections^{5,6} and staged approaches for ruptured type B dissections⁷ have been described for Jehovah's Witnesses. There are other options for the clinical scenario described, including on- or off-pump open arch debranching with a trifurcated graft followed by thoracic endovascular aortic repair⁸ or medical management. Conservative management might have been sufficient for this patient given his presentation and the subacute nature of the rTAAD. Patients with chronic type A dissections seem to do better than those with acute type A dissections, and those with rTAADs better than those with classic type A dissections, and this patient thus may have been on track to survive without intervention. As is frequently experienced in surgery, however, we just do not know, nor do we have the benefit of extensive experience with these particular cases to determine a perfect algorithm. This hybrid approach may not become a standard of care, but it is a well-described, justified, and thoughtful approach to the problem at hand.

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