Reoperation after acute type A dissection: Is less more?

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Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication March 20, 2018; accepted for publication March 22, 2018; available ahead of print April 21, 2018.

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J Thorac Cardiovasc Surg 2018;156:935-6

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2018.03.084>

The extent of resection and reconstruction required to treat an acute type A aortic dissection (ATAAD) successfully requires that we define what constitutes success. First and foremost is a live patient, something that is not a given for this particular pathology and is typically defined by operative and 30-day mortalities. Up for debate is the degree to which extensive proximal resection (for example, root replacement with a composite valve graft or valve-sparing procedure) or distal repair (including total arch replacement and frozen elephant trunk technique) add to 30-day mortality. Depending on the center and its experience, similar early results have been reported with these techniques when compared with lesser resections. That said, a general consensus is that the surgeon's best bet is to perform a repair strategy that balances center-specific (and surgeon-specific) expertise, as well as patient-specific (and dissection-specific) characteristics.

When choosing a repair strategy, midterm and long-term survival are also important, and the occurrence of postoperative complications, such as stroke and myocardial infarction, matter. Less often discussed is the need for reoperation and whether the need is secondary to progression of disease or a result of an event directly tied to the original operation. In this issue of the *Journal*, Pan and colleagues¹ review the Nordic experience with reoperation after repair of ATAAD, drawing data from the Nordic Consortium for Acute Type A Aortic Dissection (NORCAAD). Eight small to medium-sized cardiothoracic centers participate in NORCAAD, and each collects and submits data retrospectively to the registry. Between 2005 and 2014, more than 1000 consecutive patients undergoing repair for ATAAD were enrolled. A recent study from NORCAAD investigators reported 30-day mortality of 17.6% in this cohort,² which is similar to the early outcomes from the International Registry of Acute Aortic Dissections.³ For NORCAAD patients surviving the initial operation, midterm survival was 86% at 5 years and 85% at 8 years, with a linearized rate of all-cause death of 3.4% per patient-year.²

The surgical strategy reported in NORCAAD¹ is by all accounts conservative. Proximally, 73.7% of patients had

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Central Message

Nordic Consortium for Acute Type A Aortic Dissection (NORCAAD) investigators report low rates of proximal and distal reoperation after acute type A dissection repair. Should this be our new benchmark?

See Article page 939.

a “root-conservative” approach with a supracoronary graft, whereas 25.2% had root replacement. Most distal anastomoses were performed open, with 70.6% to the ascending aorta, 22% hemiarch replacements, and 5.9% total arch replacements. Other groups have described a similar conservative approach, including Moon and associates⁴ in their classic article, as well as more contemporary reports from the Stanford group⁵ and the International Registry of Acute Aortic Dissections investigators.³ The potential downside of the conservative approach is that more diseased aorta is left behind, which may increase the chance of redissection, dilatation of the residual dissected aorta, and aortic valve incompetence.

Distal or proximal reoperation in the NORCAAD series was low.¹ Freedom from proximal reoperation was 97.8% at 5 years, and freedom from distal reoperation was 96.9% at 5 years. At first glance, these results are encouraging; however is easy to argue that “reoperation is performed” is not a good surrogate for “reoperation is indicated.” The latter is difficult to capture in surgical series, particularly those with retrospective data collection.

NORCAAD does give us perspective on the frequency of reoperations in a real-world setting, given that the ATAAD volume of the participating centers was not high. The experience is clearly different than that reported by high-volume referral centers. For example, the Cleveland group reported a probability of distal reintervention of 38% at 10 years after repair of ATAAD, with 31% of cases including endovascular techniques.⁶ This aggressive approach to

reintervention clearly reflects center-specific expertise in aortic surgery (open, endovascular, and hybrid), which will inevitably result in treatment bias.

Of the reoperations related to the distal aorta in NORCAAD, a significant proportion demonstrated progression of disease, or disease not amenable to treatment during the original operation. The frozen elephant trunk technique⁷ promotes distal false lumen thrombosis, and in-so-doing, may lower the incidence of distal aneurysmal dilatation. This technique was not part of the initial treatment strategy in NORCAAD, and it is possible that some of the subsequent thoracoabdominal procedures might have been avoided had it been used. That said, short of using the frozen elephant trunk technique or adopting the arch-first approach of Kouchoukos and colleagues⁸ (which has been well described for chronic type A dissections but not for acute dissections), a certain proportion of patients with type A dissections will eventually need a distal reoperation.

Have NORCAAD investigators set a new benchmark for reoperation rates after ATAAD? The answer is, at best, maybe.

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