Commentary: Occam’s razor: The simplest solution is always the best

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In surgery, Occam’s razor is a matter of practicality for which the simplest solution is preferable to one that is more complex. Why? When faced with a complex problem, one with a myriad of potential solutions, there is usually a choice that is simple and safe. Type A aortic dissection is a life-threatening condition associated with high operative mortality rates (18%-20%) according to the International Registry for Aortic Dissection. Data from this registry showed that 59% of patients with type A aortic dissection underwent conservative aortic repair (eg, supracoronary ascending aortic replacement), 27% underwent proximal hemiarch replacement, and only 12% underwent total aortic arch replacement. The International Registry for Aortic Dissection database is a confluence of patients from North America, Europe, Asia, and Australia. Consequently, these data represent a wide spectrum of patients undergoing an acute, high-risk event that is nearly uniformly lethal without treatment; most commonly, this treatment was conservative—just enough to ensure immediate survival. Replacement of either the ascending aorta or hemiarch is considered safe, simple, and reproducible, with no substantial difference in aortic reoperation or reoperation between the 2 approaches.

In this issue of the Journal, Chen and colleagues present outstanding results with their acute type A aortic dissection repair technique and should be congratulated for pushing the envelope. They not only performed the procedure via a less invasive upper sternotomy but also repaired the arch by open deployment of a triple-branched stent graft of their own design and creation. Of the 254 patient procedures, 112 were performed via an upper mini-sternotomy, whereas 142 were performed via a full sternotomy. No significant differences were observed in aortic crossclamp time, cardiopulmonary bypass time, or total operative time between the 2 groups. The amount of blood loss, the transfusion rate, and the intubation time were significantly reduced in the upper sternotomy group compared with the full sternotomy group. Likewise, their patients in the upper sternotomy group did not show any significant advantage with respect to length of stay, reoperation for bleeding, or in-hospital mortality; rather, the primary identified benefit was a more cosmetic incision.

The retrospective study by Chen and colleagues represents a single-surgeon experience with a triple-branched endograft that is not widely available for use. Patients with Marfan syndrome, arch rupture, or atypical origin of the arch branches were not deemed suitable candidates for the use of this specialty device. Several of the patients who underwent a full sternotomy possibly required a coronary bypass graft or a mitral or tricuspid valve repair, which are known to be associated with higher rates of morbidity and mortality; however, these data were not presented in detail. Also important to note is that the average patient age was 55 years and that the body mass index in only a few patients was greater than 29 kg/m^2. Younger, nonobese

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patients with few comorbidities will tolerate aortic repair more so than will older patients who are obese and otherwise health compromised, and thus, a complex aortic repair can be “offset” when performed in young healthy patients.

This study substantiates that complex operations can be performed via less-invasive incisions with excellent results. However, when dealing with an acute type A aortic dissection, most surgeons in a dedicated, high-volume aortic center will follow the principle of Occam’s razor, keeping the operation as simple and safe as possible. Central to our understanding of the treatment for acute type A aortic dissection is that unless specific circumstances dictate the immediate inclusion of transverse aortic arch—namely, the presence of a heritable thoracic aortic disease, a fusiform aneurysm of the arch itself, or frank destruction of the arch by the dissection process—any such repair is prophylactic in nature. At the end of the day, the surgeon’s goal is to enhance immediate survival of a life-threatening acute aortic event.

References

Commentary: “Incidental” total aortic stent graft in acute type A dissection surgery

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How much to do at the time of acute aortic dissection has long been a topic of debate among cardiothoracic surgeons. We have felt that doing an ascending resection with hemi-arch and then delivering the patient to intensive care unit alive, awake, and not bleeding represents an outcome of which the surgeon can be proud.1 A life has been saved. Doing more, in expert hands, may be indicated to improve the long-term prognosis down the road. We read with interest the article by Xie and colleagues2 describing their experience with “extensive repair of acute type A aortic dissection through a partial upper sternotomy and using complete stent-graft replacement of the arch.” We congratulate the authors on their novel technique. They are to be congratulated for their creativity and courage.

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The triple-branched stent graft proposed by Xie et al for use in type A aortic dissection.

CENTRAL MESSAGE
The authors have presented an imaginative method to incorporate a simply delivered stent graft into the hemi-arch operation for acute type A aortic dissection.