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second-generation citations, expected citation rates, and C-index (which takes into account differences between specialty fields). We definitely need bibliometricians to gauge those complex winds! Ultimately, careful evaluation of these compiled data by cardiothoracic surgeons will make the *Journal* better and help to focus its future. Rather than be subject to the blowing winds, we should control them. As Drucker cautioned, “If knowledge isn’t challenged to grow, it disappears fast.”⁴

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THE CONSIDERATIONS OF SURGICAL TREATMENT STRATEGIES OF ACUTE TYPE A AORTIC DISSECTION

To the Editor:

Acute type A aortic dissection (ATAAD) is a serious life-threatening disease. Surgery is the optimal strategy to treat this condition; however, there are numerous surgical approaches, none of which has been conclusively demonstrated to be superior. Lawton and colleagues, in their article titled “The Impact of Surgical Strategy on Survival After Repair of Type A Aortic Dissection,”¹ compared patients who had been treated with combined surgical strategies including avoiding cross-clamping of the ascending aorta, deep hypothermic circulatory arrest (DHCA), and immediate restoration of antegrade perfusion (intervention group) with those who had been treated with aortic cross-clamping (control group). Their results showed no significant differences between these 2 groups in terms of 30-day mortality after surgery

or the patency rate of the false lumen; however, long-term survival was significantly higher in intervention group compared with the control group. This single-center retrospective study included 49 patients in the intervention group and 147 patients in the control group. The unequal group sizes might be associated with the differing views regarding surgical strategies for treating ATAAD. The authors indicated that avoiding cross-clamping of the ascending aorta can improve long-term survival; however, in our clinical practice, most patients require ascending aorta replacement plus total aortic arch replacement procedure. We normally use surgical strategies of ascending aorta cross-clamping, DHCA circulatory arrest, and open distal anastomosis. In our experience, cross-clamping of the ascending aorta does not affect long-term survival.

Currently, arterial perfusion through the axillary artery is a widely accepted surgical strategy for ATAAD. This approach can provide selective cerebral blood perfusion during circulatory arrest and also meets the needs of conventional cardiopulmonary bypass, avoiding perfusion of the false lumen or exaggeration of the dissection caused by femoral artery cannulation.²⁻⁴ We believe that the perfusion approach is feasible in practice. Conversely, in some patients, the axillary artery is not suitable for arterial perfusion because it is affected by dissection. In these cases, we can use femoral artery cannulation if the femoral artery is not affected and has a large true lumen for effective perfusion. Combined cannulation is recommended in patients with poor perfusion.

The advantages of open distal anastomosis include direct observation of the dissected aortic arch and proximal descending aorta to facilitate accurate distal anastomosis^{5,6} and selective cerebral blood perfusion during circulatory arrest, which may reduce the risk of neurologic complications, prolong the safety period of surgery, and perhaps improve the survival rate after surgery in patients with ATAAD.^{7,8}

The Stanford classification system is a concise approach to classifying aortic dissections. However, because of the simplicity of classification, it is difficult to use it as instructions to determine a specific treatment. Based on our extensive clinical practice, we propose the Fu Wai classification scheme, which we believe provides a simple way to identify an appropriate instructional strategy and facilitate an effective clinical treatment plan. This classification scheme comprises 4 categories (A, B, C, and D) based on the anatomic site and scope of the dissection. Type A involves the ascending aorta and is restricted to the aorta proximal to the innominate artery. This type of aortic dissection requires ascending aorta replacement by open surgery. If the aortic root is affected by the dissection, it is replaced as well.

Type B is limited to the thoracic descending aorta, which may extend into the abdominal aorta and/or the iliac

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arteries. The ascending aorta and aortic arch are not involved. Thoracic endovascular aortic repair (TEVAR) is the first choice for treating this type of dissection.

Type C involves the aortic arch, with or without involvement of the ascending aorta and/or descending thoracic aorta. This type of dissection can be repaired with a total aortic arch replacement, with elephant trunk implantation depending on the intraoperative conditions. Hybrid total aortic arch replacement can be used in patients age >60 years and those intolerant of DHCA. Type C includes 2 subtypes. Type Cp (C proximal) involves the proximal aortic arch, including the innominate artery and/or the left common carotid artery, but without involvement of the distal aspect of the aortic arch. Surgical repair involves partial or subtotal arch replacement. Type Cd (C distal) involves the distal aortic arch including the left subclavian artery and/or the left common carotid artery, but not the proximal aorta. Surgical repair includes reconstruction of the left subclavian artery or both the left subclavian and left common carotid arteries plus direct vascular stent implantation. A debranching procedure plus TEVAR may be performed in patients age >60 years or those who cannot tolerate DHCA.

Type D involves the abdominal aorta and/or the iliac arteries below the level of the diaphragm. This type of dissection is usually treated with conservative medical management.

Compared with Western countries, patients with aortic dissection in China have the following features:

1. Hypertension is a major cause of aortic dissection. Although the incidence of hypertension is high in China, many persons do not know that they are suffering from hypertension, and most of them cannot comply with the prescribed medication regimen.
2. The age of onset of aortic dissection is younger in China. Patients with aortic dissection typically also have Marfan syndrome or another connective tissue disease. These patients develop aortic dissection at an earlier age.⁹
3. The majority of patients have a limited budget for follow-up care following surgical treatment.¹⁰

Based on the foregoing factors, we use total arch replacement plus a modified elephant trunk procedure to treat Fu Wai type C dissection (Stanford A dissection) to eliminate the tear and the false lumen, expand the true lumen, and promote false lumen thrombosis as possible, and have achieved good results. A DHCA duration of <30 minutes was associated with a hospital mortality rate of 4.6% and a complication rate of 14.5%. A postoperative CT review found a 94.5% rate of false lumen complete thrombosis at the level of the stent

and of 71.9% at the level of the diaphragm.¹¹ The advantages of the modified elephant trunk procedure include not only closing the intimal tear, but also enabling expansion of the compressed true lumen, as well as elimination of the false lumen. This procedure may effectively repair the torn blood vessel wall and restore normal perfusion.

The total arch replacement plus modified elephant trunk procedure is a complex operation. Age is an independent risk factor associated with increasing operative mortality and postoperative complications. In recent years, we have used the hybrid total arch replacement procedure to treat patients classified as Fu Wai type C who are age >65 years, who are with or without preoperative multiple organ dysfunction, and who cannot tolerate DHCA. For this operation, we apply 4 branched prostheses to replace the ascending aorta under mild hypothermia. At the same time, we implement the debranching procedure, as well as TEVAR. These techniques can help prevent DHCA, shorten operation times, reduce surgical injury, and greatly reduce the technical difficulty of the operation and the mortality and complication rates.¹²

The 4-branch artificial vascular prosthesis for aortic arch replacement and elephant trunk that we currently use are not perfectly designed. How to design a more suitable structure for the aortic arch, along with a more readily implemented replacement system so as to simplify the procedures and improve outcomes, merits further study. The clinical treatments for ATAAD are challenging and require a multidisciplinary team to perform a prospective multicenter study and to confirm the optimal surgical approach to obtain the best results and improve treatment strategies.

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WHAT DEFINES THE OPTIMAL SAFE OPERATIVE MANAGEMENT OF ACUTE TYPE A AORTIC DISSECTION?

Reply to the Editor:

In our recent report on the influence of surgical strategy on survival after repair of type A aortic dissection (Figure 1), we reported long-term outcomes on 196 patients who underwent operative repair via a variety of surgical techniques. Patients who were treated with an operative strategy including no aortic crossclamp use, deep hypothermic circulatory arrest, and the use of only antegrade perfusion after aortic replacement had improved long-term survival compared with patients who were treated with an operative strategy without all 3 of these technical steps.¹

In his letter to the Editor, Yu² summarizes his various operative treatment strategies for the repair of type A aortic dissection in China. Yu² notes that unequal group sizes in our study may be associated with the different views about operative strategies and suggests that a prospective multicenter study is required to confirm the optimal surgical approach and improve treatment strategies. We agree that the optimal therapy could only be determined by a randomized study that is not likely to occur due to surgeon preference and other factors. The group sizes were different in our study due to the fact that there were 6 different operative combinations (largely due to surgeon preference) of the 3 technical steps proposed by David and colleagues in 1999.³

David and colleagues³ proposed a safe and reliable method for the surgical treatment of type A aortic dissection that was associated with a dramatic reduction in operative mortality. David⁴ added another excellent contribution on this topic in 2015 with technical details and noted, “this is an operation that every cardiac surgeon should be able to perform, and if it is planned and executed well, the mortality and morbidity rates can be reduced.” And further, “do this operation as described, and your patient will have a 90% chance to go

FIGURE 1. Computed tomography scan image of a classic type A aortic dissection.

home alive and without neurologic deficit.”⁴ Many of the technically challenging procedures proposed by Yu² do not fall into this category. Yu notes that in his clinical practice “most of the patients have to undergo ascending aortic replacement plus total arch replacement procedure.”² We do not see that in our practice. In contrast, we find that the majority of tears are in the ascending aorta and can thus be excluded with an ascending aortic graft only. Similarly, David⁴ noted that most tears they encountered were just above the sinotubular junction in the greater curvature of the ascending aorta and that “the safest thing for you to do in this case is to replace the ascending aorta... and leave the tear in the aortic arch” in an effort to save the patient’s life at that time.

Yu² notes that in his experience, crossclamping the ascending aorta will not affect a patient’s long-term survival. This is a difficult statement to make without long-term data, critical evaluation, and statistical analysis.

The benefits and drawbacks of various cannulation and cerebral protection strategies could also be debated as adjuncts to the repair of acute type A aortic dissection. However, we argue that not every cardiac surgeon is comfortable with axillary artery cannulation and complicated cerebral protection strategies when he or she may not encounter this deadly disease frequently and its repair requires swift action with high associated risk.

Yu² details the Fu Wai classification as an alternative to the Stanford classification of aortic dissection. In our practice, even the simple Stanford classification is often too complicated for primary care and emergency medicine physicians who are typically the referring physicians for these patients. Interpreting the imaging modalities is quite complicated and the choice of surgical versus medical management should be as clear and simple as possible. Thus, the Fu Wai classification is much too complicated for the treatment of this rapidly deadly disease that requires prompt triage and treatment.

Although patient populations in China may be very different from those in North America, we cannot support