Commentary: Axillary cannulation and plan B

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Despite remarkable improvements in the current surgical outcomes of acute type A aortic dissection (ATAAAD) repair, the reported real-world data have still been unsatisfactory, showing a high surgical mortality rates up to 20%. Moreover, the reported surgical outcomes have been highly divergent, depending on the institutional surgical volumes, and this perhaps is closely related with the ability of each institution or surgeon to expedite straightforward but flexible surgical procedures. In the presence of life-threatening complications such as organ-malperfusion syndrome, in particular, surgical strategies for swift revascularization of the vital organs are the most crucial processes to decrease surgical mortality in ATAAD.

The arterial cannulation strategies for ATAAD repair usually depend on surgeon or institutional preferences, and it has long been debated on which site would be most potent as the primary arterial inflow access. In recent years, axillary artery cannulation seems to have gained popularity over groin access because of its availability as the source for antegrade cerebral perfusion; meanwhile, direct cannulation of the innominate artery is on the rise. However, it is regrettable that fair comparisons among the cannulation strategies seem to be almost impossible because of inherent selection biases in observational studies, even with the statistical adjustments such as propensity score matching or multivariable analyses methods.

In this issue of the Journal, Rosinski and colleagues from the Division of Cardiovascular surgery at Cleveland Clinic Foundation afford their institutional data on 775 patients undergoing surgery for ATAAD from January 2000 to January 2017. Among those patients, most of the patients received surgery using initial axillary cannulation (80%), which was the institutional default setting over the study period, whereas femoral and central accesses were used in 12% and 8%, respectively, for every reason. Early outcomes were excellent with mortality and stroke rates of 8.6% and 8.3%, respectively. On multivariable risk factor analyses, cannulation site was not significantly associated with mortality; however, central cannulation site without shifting was one of the significant risk factors for stroke (odd ratio, 2.3; \(P = .04\)). The authors are to be congratulated not only for their excellent surgical outcomes in a large number of patients but also for the excellence in their sophisticated analyses with clear presentation of the results. The study is unique in its well-designed nature derived from a large quantity of data to assess the effectiveness of initial axillary cannulation in ATAAD and it is believed to add to the body evidence in this field.

Although an initial axillary cannulation by the experienced hands may be safe and provide acceptable outcomes, this technique also has limitations. For instance, the procedure is time-and effort-consuming; especially for early-carrier surgeons, this may be distracting to focus for main procedures. Fatal complications by technical errors also may occur, as for any other procedure. Of note, 28% patients who underwent initial axillary cannulation in the paper from Rosinski and colleagues required shifting or adding additional cannulation at other sites, which was lower than those with initial femoral cannulation (65%). Interestingly, there were no significant differences in the risks of mortality and stroke depending on the shifting the arterial inflow sites. This may demonstrate that swift, flexible conversion of the arterial inflow sites is as important as choosing the initial default setting whenever any hindering issue for maintaining initial access is detected. Such patients perhaps are those under greater risks of fatal complications, and the outcomes may diverge among centers depending on how well those patients are managed. As the authors mention in their discussion, their data...
indicate that the arterial cannulation sites can also be used interchangeably depending on the patient’s presentation. Although the advantages of initial axillary cannulations as a “default set” in the ATAAD repair was a key point in this study, their flexible application of the arterial cannulation techniques need to also be paid attention. In summary, “plan B” should always be readily available in addition to the primary default cannulation setting for the excellent surgical outcomes of ATAAD.

References