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See Article page 984.

Commentary: Timely repair of acute aortic dissection: Every minute counts

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CENTRAL MESSAGE

Acute aortic dissection is a life-threatening condition in which survival is critically linked to timeliness of definitive surgical repair.

Acute type A aortic dissection (ATAAD) with malperfusion remains a lethal emergency with high morbidity and mortality rates. Data from the International Registry of Acute Aortic-Dissection revealed an incremental risk of death (1%-2%) for every hour without immediate repair after symptom onset.¹ Rapid assessment, immediate medical optimization, and early surgery are lifesaving and likely to improve early and late clinical outcomes.^{2,3}

In this issue of the *Journal*, Nakai and colleagues⁴ investigated the importance of timing from symptom onset to surgical repair in patients with ATAAD complicated by malperfusion syndrome. They found that surgery within

5 hours of symptom onset was a predictor of long-term survival. Although their analysis was limited by smaller patient numbers, the authors contribute additional important data that associate earlier surgery with improved outcomes. The authors should be congratulated for identifying the exact timing of symptom onset, a parameter that previous studies often estimate, allowing the authors to carefully link the timing of the dissection to definitive therapy. It was impressive that they were able to get their early-surgery patients (69%) into the operating room within a mean of 3.5 hours from symptom onset, which may limit the generalizability of their findings. Although early mortality and complication rates were not different, the intermediate and late survival was significantly better in the early-surgery group. Unfortunately, no information about late aortic-remodeling or aortic outcomes was presented to explain how this survival difference was related to the initial dissection repair. More data are required to understand better the authors' approach to coronary

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malperfusion, which in some cases was treated with percutaneous intervention before central aortic repair.

Timeliness of surgery in ATAAD likely requires an aggressive protocol-based approach to enable expeditious surgery, similar to CODE-STEMI and CODE-Stroke protocols; however, 2 major challenges exist. First, delays in diagnosis are common and exacerbated in patients with atypical presentation or initial presentation to a nontertiary hospital.^{2,3} As outlined by previous thoracic aortic disease guidelines,^{5,6} high-risk conditions in addition to clinical findings suggestive of dissection should trigger a high index of suspicion and immediate computed tomographic imaging. Second, the time from diagnosis to definitive surgical repair in the operating room must be prioritized. An analysis of the Ontario population demonstrated improved survival of patients diagnosed with ATAAD at a cardiac surgery center compared with those diagnosed at a noncardiac surgery center,⁷ highlighting the need for rapid surgical evaluation, mobilization of critical operating room resources, and expeditious transport of the patient to cardiac and ideally specialized aortic-team care with minimal delay.⁸ This time from diagnosis to operative repair can likely serve as an important quality metric where there is likely substantial room for improvement, even in the most established aortic centers. For patients presenting to centers without cardiac surgery availability, difficult decisions must be made balancing the expertise available at the nearest cardiac center with the delay expected by transferring patients farther away for a greater level of aortic expertise. The development of rapid,

protocol-based CODE Aorta pathways for early diagnosis and management of ATAAD will save lives, as every minute counts.

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