

persistence or recurrence of a late localized dissection, and any evolving aortic valve regurgitation.

Similar comments could be applied to the problem of detached valvular cusps. Their reimplantation may be technically difficult and anatomically somewhat imperfect. The physiologic coaptation may be missing, and some regurgitation increasing with time may then be observed, necessitating some late valve or total root replacement.

Commenting on the responsibility of gelatin-resorcinol-formalin glue in the occurrence of late impairment of the root repair seems irrelevant now, because this adjunct seems to have currently totally disappeared from the surgical armamentarium.

Anyway, despite their excellent statistical analysis, Ikeno and coworkers<sup>1</sup> leave the readership somewhat disappointed. They do not clearly define the threshold beyond which a systematic replacement of the root is indicated, and they do not exactly define which patients and which type of initial procedure would allow reductions in the rates of adverse events and reoperations on the aortic root.

If we analyze the evolution of emergency surgery for acute type A dissection during the last 3 decades, we

may observe an increasing tendency toward replacing more and more frequently the distal segments of the aorta (hemiaortic arch, total arch, and proximal thoracic aorta with the use of the frozen elephant trunk technique). Therefore, applying a similar strategy to the proximal aorta, would it be quite irrelevant or undue to suggest that, except for the few patients in whom the aortic root and valve are absolutely spared by the pathologic process, the aortic root should be systematically replaced through the performance of a valve-sparing or bio-Bentall procedure?

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ADULT

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## Commentary: Balancing the extent, balancing the risk

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Acute type A aortic dissection (ATAAD) remains a surgical challenge associated with very high operative mortality (18.4%) even in contemporary cohort studies.<sup>1</sup> With regard to the management of the aortic root in ATAAD in particular, conservative supracoronary aortic replacement (SCR) may effectively treat the proximal aorta in the majority of patients, whereas extensive aortic root replacement



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**CENTRAL MESSAGE**

While root-preserving aortic replacement remains mainstay of treatment in acute aortic dissection, risk can be well balanced by fine patient selection for aggressive root approach.

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(ARR) is selectively required for patients such as those with extensive root dissection or root dilatation or those with genetic aortopathy. Although advocates of an aggressive root approach have shown equivalent perioperative safety of ARR compared with conservative approaches,<sup>2</sup> this perhaps is not generalizable to real-world practice. ARR certainly carries procedural complexity, with concomitantly higher projected operative risks than conservative methods for most average surgeons. On the other hand, more conservative SCR may also occasionally contribute to early fatal outcomes associated with proximal anastomosis control failure, subsequent rupture, or remnant dissection. Beyond the early postoperative phase, requirement of late root reoperation after SCR is another concern. In these regards, appropriate patient selection for the conservative root repair and the root replacement is an important clinical issue in ATAAD.

In the current issue of the *Journal*, Ikeno and colleagues<sup>3</sup> selectively reviewed data from 339 patients who underwent SCR in the setting of ATAAD to examine determinants of adverse aortic root events, which consisted of aortic-related death (including operative death) and aortic root–related reoperation. During follow-up (median, 3.7 years; interquartile range, 1.4–8.4 years), 25 patients underwent root-related reoperations, demonstrating 5- and 10-year cumulative incidences of composite adverse aortic root events of 17.1% and 24.7%, respectively. Larger sinus diameter and number of commissural detachments were identified as significant predictors of the root events in the multivariable analysis. This retrospective, single-center observational study appropriately analyzed an important clinical issue with a large and homogeneous group of patients. Late aortic root events were evaluated at a 96.9% follow-up rate with quality operative data, including detailed anatomic profiles. The study of Ikeno and colleagues<sup>3</sup> repeatedly confirmed stable long-term outcomes after SCR for ATAAD, showing long-term survival, beyond the acute perioperative period, comparable to that of an age- and sex-matched healthy population.

Because the institutional surgical volume has been demonstrated to be an important contributor affecting

outcomes in cardiovascular surgeries, it seems important to note the reports from the Society of Thoracic Surgeons database regarding aortic surgical volumes across centers: (1) the median number of annual proximal aortic operations is only 12,<sup>4</sup> and (2) more surprisingly, the median number of root replacement procedures was only 2 (excluding aortic dissection and infective endocarditis) in 2009.<sup>5</sup> These small numbers indicate that maintaining adequate surgical volumes of ARR to achieve high-quality outcomes may not be feasible for most centers, and excellent outcomes after ARR for this surgically challenging disease may therefore not be generalizable but rather possible only in experienced hands familiar with this type of surgery.

In these regards, establishing well-balanced criteria to sort out patients who will truly benefit from ARR may be our further step. The study by Ikeno and colleagues<sup>3</sup> suggests that SCR may be safe and effective surgical method for majority of patients presenting with ATAAD and that ARR can be saved for selected patients presenting with multiple commissural detachments or an enlarged aortic root. Although it is not doubtful that the cited study adds value as a guidance in selecting patients for the more extensive procedure of ARR, further studies with larger samples from multiple centers are warranted to draw stronger conclusions.

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