Aortic root replacement (ARR) is performed for a variety of indications, including aneurysm, infection, dissection, and degeneration of a previous conduit. The operation is considered safe, with overall operative mortality reported to be approximately 5% in a recent national series. With an aging population, patients may require ARR after a previous cardiac operation or may require redo ARR to address a degenerated or infected original repair. While multiple recent series demonstrate the safety of a redo ARR, few have drawn a comparison between first-time and redo ARR. Furthermore, data directly comparing first-time ARR with redo ARR, both in the setting of a redo sternotomy, are lacking.

In this issue, Brown and colleagues present a retrospective analysis of aortic root operations at a single institution. Included in the analysis were patients who underwent complete ARR for any indication—other aortic root operations such as valve-sparing root replacement were excluded. The authors have achieved an excellent follow-up rate at 98.4%; midterm follow-up data are presented. The goals of their study are 2-fold. First, the authors compare patients undergoing ARR via first-time sternotomy (n = 595) and patients undergoing ARR via redo sternotomy, regardless of the indication for the original operation (n = 298). Propensity matching was performed, resulting in 220 well-matched pairs for analysis. The redo group had longer cardiopulmonary bypass and ischemic times. The groups had similar rates of operative mortality, length of stay, and postoperative complications; survival was similar at 1 and 5 years. Second, the authors performed a subgroup analysis within the redo sternotomy group. Patients undergoing first-time ARR via redo sternotomy (n = 229) were compared with those undergoing redo ARR (n = 69). Propensity matching provided 66 well-matched pairs. In this subgroup analysis, the authors found no difference between groups in any of the analyzed outcomes. Midterm survival was again similar.

The authors note that their outcomes represent those of 3 surgeons at their large-volume center. They have indeed honed their technique extensively, as described in the operative methods. However, across the country, the vast majority of centers perform fewer than 5 ARRs per year. With the inverse relationship between site volume and survival well established, it is reasonable to question whether these results would be reproduced in an analysis of all redo ARRs across the country.

In addition, patients who were not offered ARR are not captured in this study. As seen in Table E3 of their manuscript, within the redo sternotomy subgroup, patients who underwent reoperative ARR were younger, had fewer comorbidities, and underwent fewer concomitant procedures. Herein may lie significant selection bias if those offered reoperative ARR represent a healthier cohort. It would be of interest whether differences between groups emerge with further subgroup analyses, stratifying by various patient factors.
Overall, the authors have presented data that address a gap in the literature. All other variables being equal, redo ARR is not riskier than first-time ARR in the postoperative and midterm follow-up periods. However, thoughtful patient selection and meticulous surgical technique may still be the best defense against poor outcomes. Long-term results of these patients with ARR in the reoperative setting are of interest.

References

Commentary: Redo of aortic root surgery: Tackling the nightmare successfully

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Brown and colleagues1 investigate the outcome of reoperative aortic root replacement (ARR) in patients having undergone previous cardiac operations. They included all patients who underwent ARR (ie, aortic valve and aortic root) and divided them into the first sternotomy and redo sternotomy. Within the redo sternotomy population, they performed a subgroup analysis to look at the difference between the ARR in patients who were resternotomy for any other surgery and ARR redo of previous aortic root surgery. They found that redo ARR can be safely done with similar results to first-time ARR and previous sternotomy. In particular, mortality for such surgery reported by Brown and colleagues1 is comparable to other studies, especially for the first-time ARR.2,3 The authors have to be congratulated for those brilliant results in such complex reoperative surgery. However, looking at the details of the numbers, some questions rise and remain unanswered. Among the significant findings of this study is that there is no difference in survival among redo ARR to redo-sternotomy to first ARR, with 12% mortality in both groups after propensity matching. This is a favorable result, but the lack of differences among the 2 matched groups is not due to the low redo ARR mortality, which is a remarkable achievement, but to the slightly higher mortality in redo first ARR than in other reports.2,3 We could not tease out the reasons for such incremental mortality after matching. Conceptually, despite being a resternotomy, a first-time ARR should not have such a mortality rate considering that the aortic root...