

## **Abstract**

**Objectives:** The complexity of aortic arch operations may preclude early fellows from participation as operating surgeons. We hypothesized that the year of training for participating fellows does not adversely affect the surgical outcomes.

**Methods:** Between June of 2009 and May of 2021, 21 cardiothoracic residents trained in our institution's cardiothoracic surgery fellowship program. Using our single institution-maintained database, we reviewed all total aortic (TAR) and hemiaortic arch repairs performed during this period. The cardiothoracic surgery resident performing each case was identified and their year in training, first through third, was specified. The patients were stratified into three cohorts: those operated on by first-year fellows, second-year fellows, and third-year fellows. The preoperative characteristics as well as intraoperative and postoperative outcomes for the groups were analyzed using ANOVA and Fisher's chi-squared test of significance.

**Results:** A total of 651 urgent, emergent, and elective hemiaortic repairs and TARs were performed. Fellows did not perform 12 of the 651. Overall, 639 cases were analyzed; first-years performed 55 cases, second years performed 168, and third years performed 416. There was no difference in aortic presentation or operative acuity among the three groups. Intraoperatively, aortic crossclamp ( $121.1 \pm 60.3$  minutes (first years),  $123.8 \pm 61.6$  minutes (second years),  $103.2 \pm 49.2$  minutes (third years),  $p = <0.0001$ ), circulatory arrest times ( $26.8 \pm 16.7$  minutes (first years),  $19.5 \pm 14.7$  minutes (second years),  $15.6 \pm 11.7$  minutes (third years),  $p = <0.0001$ ), and nadir bladder temperature ( $24.4 \pm 3.0$  °C (first years),  $25.7 \pm 2.8$  °C (second years),  $26.2 \pm 2.4$  °C (third years),  $p = <0.0001$ ) demonstrated a significant difference between the groups. Though cardiopulmonary bypass times were

not significantly different, a gradual decrease in time was noted as fellows advanced in training. Most of the postoperative outcomes, including ICU and overall length of stay, spinal cord ischemia, stroke, and myocardial infarction did not show any significant differences.

**Conclusions:** Overall, the outcomes between the training years were similar. Clinically insignificant differences in operative times naturally occur with less experienced trainees. In conclusion, these data demonstrate no difference in overall outcomes among the trainee levels. Programs should encourage early exposure of fellows to these complex cases.