

Outcomes of Right Anterior Mini-Thoracotomy Aortic Valve Replacement Performed by Fellows in an Advanced MICS Training Program: A Comparison with Predicted STS Outcomes

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Abstract

The safety and efficacy of Right anterior Mini-thoracotomy (RAMT) Aortic valve replacement (AVR) performed by advanced fellows in a dedicated MICS training program has not been previously reported.

Methods

This study evaluates the outcomes of RAMT AVR performed by five advanced fellows over several years, comparing observed results to predicted outcomes based on the Society of Thoracic Surgeons (STS) risk models using the institutional STS database. A total of 129 MICS AVR procedures performed by advanced fellows under the direct supervision of senior surgeons between July 2017 and July 2024 were included. Only cases completed entirely by fellows were analyzed. Observed outcomes—including mortality, stroke, renal failure, surgical site infections (SSI), and reoperations—were compared with STS-predicted outcomes. Statistical analyses, including Fisher’s Exact Test and observed-to-expected (O/E) ratio calculations, were used to evaluate the results.

Results

Fellows completed 15–25 RAMT AVR per year of training. There were no conversions to sternotomy. Observed and predicted outcomes for the cohort are summarized in Table 1 and Figure 1.

Key findings include:

- Mortality: 0.00% vs. 1.35% (p = 1.00)
- Stroke: 1.55% vs. 0.92% (p = 1.00)
- Renal Failure: 0.78% vs. 1.37% (p = 1.00)
- Surgical Site Infections: 0.00% vs. 0.12% (p = 1.00)
- Reoperations: 6.20% vs. 3.07% (p = 0.05)

Figure 1

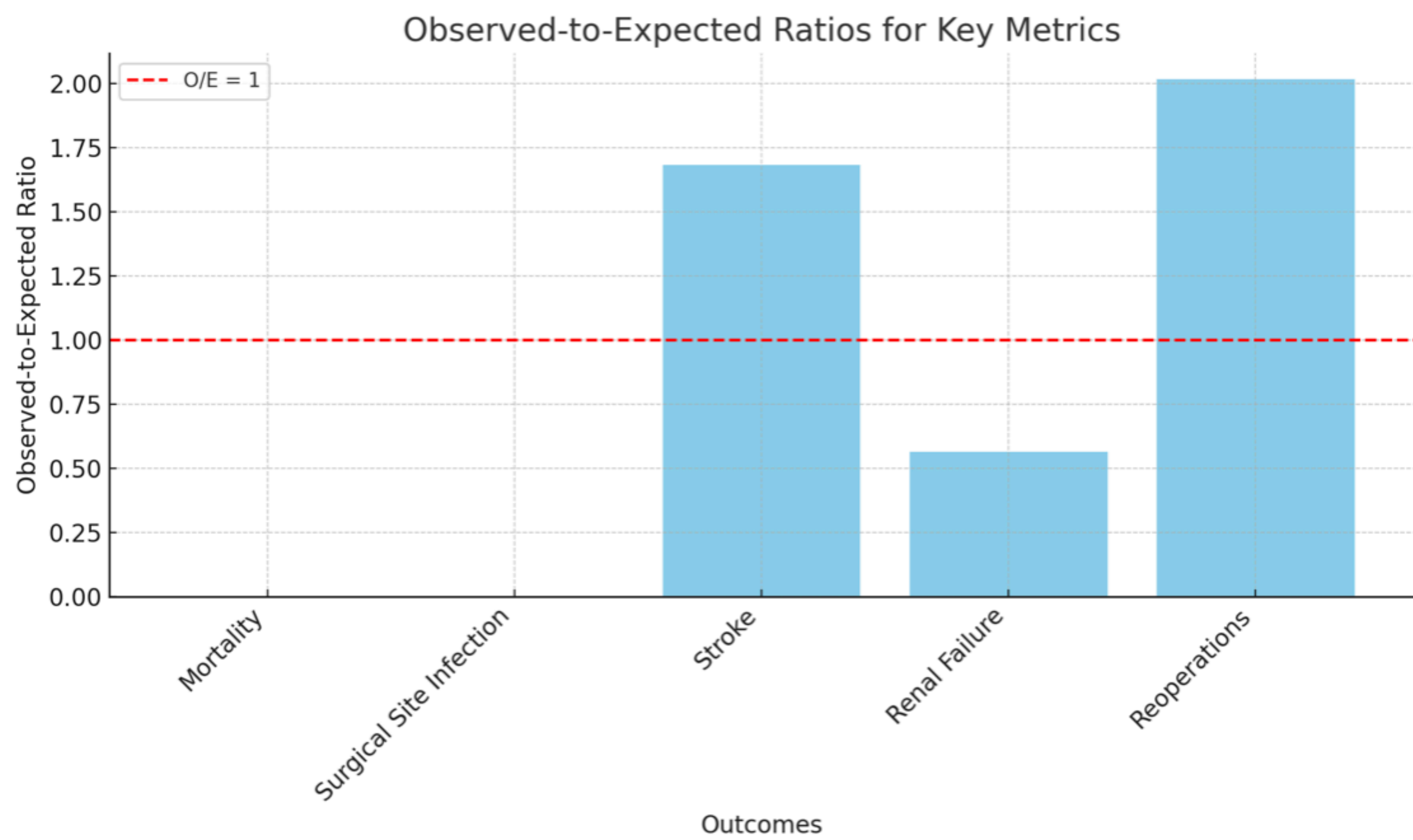


Table 1: Observed vs. Predicted Outcomes

Metric	Observed (%)	Predicted (%)	P-Value
Mortality	0.00	1.35	1.00
Stroke	1.55	0.92	1.00
Renal Failure	0.78	1.37	1.00
Surgical Site Infection	0.00	0.12	1.00
Reoperations	6.20	3.07	0.05

Conclusion

MICS AVR performed by advanced fellows under senior supervision is safe, with outcomes comparable to or exceeding STS-predicted risk scores for most metrics. The reoperation rate was higher than predicted and was due to peri-operative bleeding. All were successfully managed without adverse long-term consequences. Importantly, there were no conversions to sternotomy. These findings underscore that appropriately supervised advanced Fellows can achieve excellent outcomes in MICS AVR.