

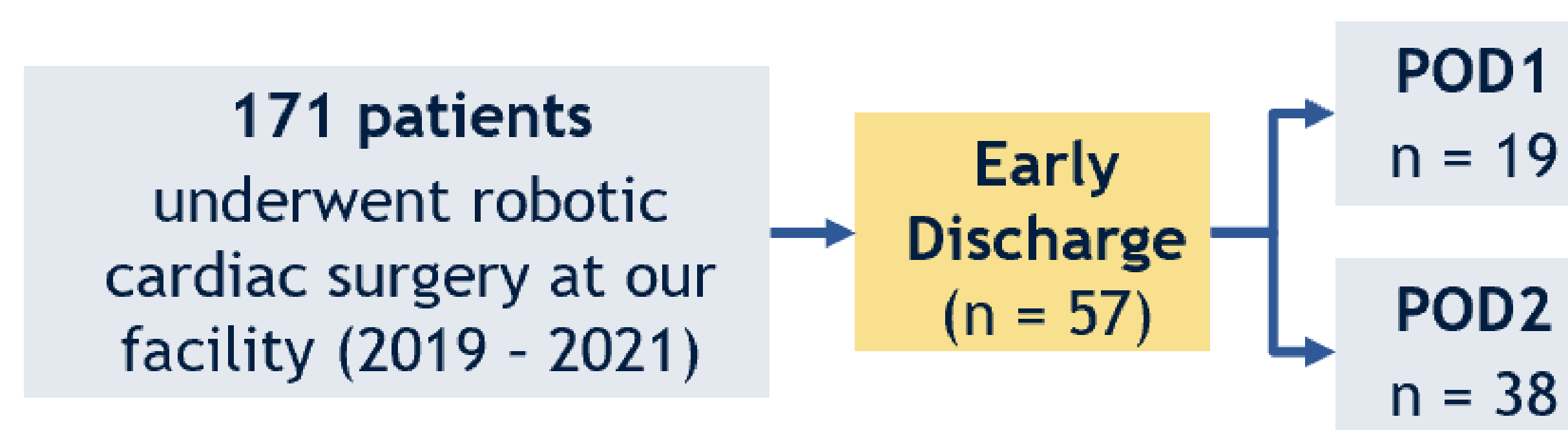
Background

Cardiac surgery is traditionally associated with a postoperative length of stay (LOS) of at least one week.¹⁻² The reduced invasiveness of the robotic platform facilitates discharge on postoperative day one (POD1) or two (POD2), thus minimizing cost and risk of hospital-associated complications.

We sought to evaluate the characteristics of patients who underwent POD1 or POD2 discharge after robotic cardiac surgery at Jefferson.

Methods

A retrospective review of 171 patients who underwent robotic cardiac surgery at our facility between 2019 and 2021 identified 57 patients discharged on POD1 (n=19) or POD2 (n=38). Relevant data were extracted and analyzed. Results are reported as % (n/N) or median [IQR].



Major Findings

Most patients [82.5% (47/57)] were extubated in the operating room. Median ICU length of stay was 22 [IQR: 18, 28] hours. All patients were discharged home. At 30 days postoperatively, readmission rate was 8.8% (5/57), and all patients were free from mortality.

Patient Characteristics

Variable	Overall (n = 57)
Age, years	62 [55, 66]
Male	70.2 (40/57)
Body Mass Index, kg/m ²	25.1 [22.6, 28.3]
Hypertension	49.1 (28/57)
Coronary artery disease*	21.1 (12/57)
Atrial fibrillation	19.3 (11/57)
Heart failure	5.3 (3/57)
Preoperative ejection fraction, %	63 [60, 65]
Current everyday cigarette smoking	7.0 (4/57)
Prior stroke	7.0 (4/57)
Diabetes mellitus	3.5 (2/57)
Prior myocardial infarction	3.5 (2/57)
Peripheral artery disease	1.8 (1/57)
Society for Thoracic Surgeons predictive risk of mortality score, %**	0.36 [0.25, 0.56]

*One young, otherwise healthy patient did not undergo preop cardiac catheterization

**Among patients who underwent procedures for which risk calculation was available

Operative Details

Variable	Overall (n = 57)
Mitral valve repair	66.6 (38/57)
Concomitant septal myectomy	1.8 (1/57)
Concomitant Cox-Maze	1.8 (1/57)
Atrial mass resection (myxoma or fibroelastoma)	10.5 (6/57)
Coronary artery bypass grafting	10.5 (6/57)
Secundum atrial defect closure	5.3 (3/57)
Concomitant residual atrial septum resection, Cox-Maze	1.8 (1/57)
Isolated Cox-Maze IV cryoablation	1.7 (1/57)
Mitral valve replacement	1.8 (1/57)
Aortic valve replacement	1.8 (1/57)
Resection of aortic valve mass (fibroelastoma)	1.8 (1/57)
Off-pump	5.3 (3/57)
Operative time, minutes	267 [242, 305]
Cardiopulmonary bypass time (if applicable), minutes	109 [95, 128]

Postoperative Outcomes

Variable	Overall (n = 57)
Extubated in operating room	82.5 (47/57)
Total postoperative ventilation time, hours (if applicable)	6 [5, 6]
ICU length of stay, hours	22 [18, 28]
In-hospital postoperative event	3.5 (2/57)
30-day mortality	0.0 (0/57)
Readmission within 30 days	8.8 (5/57)
Readmission reason	
Respiratory - fluid overload relieved by diuresis	40.0 (2/5)
Respiratory - pleural effusion	20.0 (1/5)
Chest wall cellulitis	20.0 (1/5)
Stroke	20.0 (1/5)

Conclusions

Our results suggest POD1-2 discharge after robotic cardiac surgery is a safe option to improve quality of care for patients with a relatively low preoperative risk and uncomplicated postoperative course.

Linkage to Healthcare Disparities

Prior studies have demonstrated higher in-hospital mortality rates for female patients and Black patients after coronary artery bypass grafting compared to males and other races/ethnicities, respectively.³

Future directions include investigating the impact of sex and race/ethnicity on LOS - and the associated risk of in-hospital complications - after cardiac surgery.

Disclosures

Dr. Guy is a consultant for Edwards Lifesciences, Medtronic, and a case observation site and proctor for Intuitive Surgical.

References

- Lazar HL, Fitzgerald C, Gross S, Heeren T, Aldea GS, Shemin RJ. Determinants of length of stay after coronary artery bypass graft surgery. *Circulation*. 1995;92(9 Suppl):II20-II24.
- Li M, Zhang J, Gan TJ, Qin G, Wang L, Zhu M et al. Enhanced recovery after surgery pathway for patients undergoing cardiac surgery: a randomized clinical trial. *Eur J Cardiothorac Surg* 2018;54:491-7 .
- Becker ER, Rahimi A. Disparities in race/ethnicity and gender in in-hospital mortality rates for coronary artery bypass surgery patients. *J Natl Med Assoc*. 2006;98(11):1729-1739.