Surgical outcomes of patients at prohibitive risk who are reconsidered for surgery

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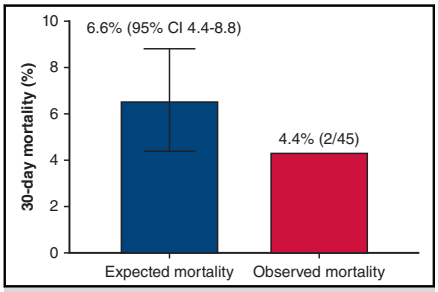
ABSTRACT

Objectives: Transcatheter treatment of advanced mitral and tricuspid valve disease is largely limited to patients at prohibitive surgical risk, although many are not candidates for transcatheter treatment. Here, we describe surgical outcomes of patients at prohibitive risk who were ineligible for transcatheter therapies to guide surgeons in management of this unique population.

Methods: Patients at prohibitive risk, defined per surgeon or cardiologist discretion, who were initially referred for a transcatheter mitral or tricuspid intervention in a multidisciplinary atrioventricular valve clinic, were identified from 2019 to 2022. Preoperative risk, operative outcomes, and long-term mortality were evaluated.

Results: A total of 337 patients at prohibitive risk were referred for evaluation in a multidisciplinary atrioventricular valve clinic. Of those, 161 underwent transcatheter therapy, 130 patients underwent continued medical management, and 45 were reevaluated and had high-risk surgery. Among surgical patients, 51% were women with a median age of 76 years (quartile 1-quartile 3, 65-81 years). Most patients presented in heart failure (83%; n = 37 out of 45), and 73% were in New York Heart Association functional class III or IV. Most patients (94%; n = 43) had a mitral valve intervention, of whom 56% (24 out of 43) had a mitral valve replacement. The 30-day mortality rate was 4% (2 out of 45) and major morbidity occurred in 33% (15 out of 45). By Kaplan-Meier analysis, 1-year survival was 86% ± 9%.

Conclusions: Select patients at prohibitive risk who were ineligible for transcatheter mitral or tricuspid valve intervention underwent surgery with overall low operative mortality and excellent 1-year survival. Patients a prohibitive risk whose anatomy is not amenable to transcatheter devices should be reconsidered for surgery. (JTCVS Open 2023;16:234-41)



Patients at prohibitive surgical risk had a predicted mortality of 6.6% but a 4.4% observed mortality.

CENTRAL MESSAGE

Select patients at prohibitive risk patients have low operative mortality, acceptable morbidity, and excellent long-term survival and should be reconsidered for surgery.

PERSPECTIVE

Despite their moniker, select patients at prohibitive risk should be reconsidered for surgery because they have low operative mortality and excellent long-term survival. For these select patients, a heart team should consider surgery as a viable treatment option and not only as a last resort or salvage procedure to reduce time to surgical intervention and optimize postoperative outcomes.

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Abbreviations and Acronyms
PROM = predicted risk of mortality
STS = Society of Thoracic Surgeons

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For low, medium, and even high-risk patients with mitral or tricuspid valve disease, surgery is presently the recommended therapy of choice.[1-3] However, for patients at prohibitive risk, the management path is more complex. These patients may be referred for evaluation by a multidisciplinary valve team composed of cardiac surgeons (specializing in the mitral valve), structural heart interventional cardiologists, cardiac anesthesiologists, imaging experts, and general cardiologists to determine eligibility for a transcatheter atrioventricular valve intervention.[2,3] For these patients at prohibitive risk, transcatheter intervention has been shown to have a mortality benefit over medical management.[4-13] However, some patients will be ineligible for a transcatheter intervention, usually due to anatomic factors.[14,15] At this time, the valve team must decide between medical management or prohibitive-risk surgery.

However, the surgical outcomes of patients at prohibitive risk undergoing surgery have not been well described. Moreover, there is not a singular definition of what makes a patient at prohibitive risk. A series of patients at prohibitive risk who underwent surgery after failed transcatheter approach had extremely poor outcomes postoperatively with high morbidity and mortality, supporting that patients at prohibitive risk should only be offered surgery as a last resort or salvage procedure.[14,15] However, this was a patient population that had already been selected for a transcatheter intervention where surgery was being performed as an emergency bailout approach—a timing of surgery that is known to portend worse outcomes—and thus not our population of interest for patients at prohibitive risk deciding between medical management and surgery.[14,15] Another group examined outcomes of patients at prohibitive risk who were ineligible for transcatheter therapies, which showed acceptable immediate postoperative outcomes.[16] However, the only inclusion criterion for prohibitive risk was older than age 80 years and did not include other accepted prohibitive risk criterion such as predicted risk of mortality (PROM) >8%, hostile chest, immobility, or frailty.[16,17] There are 2 takeaways from this. First, there is not 1 clear definition of prohibitive risk. Second, outcomes for patients at prohibitive risk deemed ineligible for transcatheter intervention, who ultimately underwent surgery, are not well described.

Therefore, we first sought to define what makes a patient at prohibitive risk. Second, we sought to describe the preoperative risk profiles, operative outcomes, and long-term mortality of patients at prohibitive surgical risk who underwent surgery at a single American Heart Association Mitral Valve Reference Center. We hypothesized that these patients would have high 30-day mortality, high rates of complications, and high resource utilization such as length of stay and discharge to a rehabilitation facility or nursing facility.

PATIENTS AND METHODS

Data Source

This study was deemed exempt from review by the University of Michigan Institutional Review Board (HUM00148119; August 7, 2018). Operative data, echocardiogram measurements, and outcomes data were collected through individual chart review and the University of Michigan institutional component of the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database.

Defining Prohibitive Risk

The prohibitive risk population was defined as patients who were referred for evaluation by the atrioventricular valve team who had at least 1 prohibitive risk criterion. Referral to the atrioventricular valve team is recommended for patients who are deemed to be at prohibitive risk for surgery (either by outside referring physicians or internal cardiologists or surgeons) for consideration of transcatheter intervention. Next, to create prohibitive risk criteria, we sought out previous definitions of the prohibitive-risk population, specifically by Lim and colleagues,[17] who described prohibitive risk criteria that determined eligibility for transcatheter mitral valve repair. Lim and colleagues[17] defined patients as being at prohibitive risk if they met any of the following criteria: STS PROM for mitral valve replacement >8%, porcelain aorta, frailty, hostile chest (defined as at least 2 prior cardiac surgeries or previous mediastinal radiation), severe liver disease, pulmonary hypertension (with pulmonary artery pressure greater than two-thirds systemic arterial pressure), severe right ventricular dysfunction, chemotherapy for malignancy, high bleeding risk or Jehovah's witness, immobility, severe dementia, previous internal thoracic artery graft or prior coronary artery bypass grafting, age older than 80 years, or current immunosuppression, including steroids or biologic agents. Identification of criteria primarily occurred through documentation from evaluation in the atrioventricular valve clinic or the preoperative history and physical exam. Select criteria (2 prior cardiac surgeries, previous mediastinal radiation, previous internal thoracic artery graft, prior coronary artery bypass grafting, age older than 80 years, and immunosuppression) were defined using the STS database.

Multidisciplinary Atrioventricular Valve Team and Patient Selection

The multidisciplinary atrioventricular valve team functions as a heart team and composed of cardiac surgeons (specializing in the mitral valve), structural heart interventional cardiologists, cardiac anesthesiologists, imaging experts, and general cardiologists. Referral to the multidisciplinary atrioventricular valve team is recommended for all patients who are deemed to be at prohibitive risk for surgery, either by

outside referring physicians or internal cardiologists and surgeons. The atrioventricular valve team reviews each patient's clinical history and the patient's echocardiogram is reviewed in detail with imaging specialists, structural heart cardiologists, and cardiac surgeons. Eligibility for transcatheter intervention is based on this collective assessment.

If patients are not eligible for transcatheter intervention, the atrioventricular valve team reconsiders prohibitive risk surgery. In making this decision, the atrioventricular valve team wholistically evaluates each patient and considers patient risk factors, comorbidities, assessment from clinic, and patient wishes (Figure 1). If the patient is not eligible for transcatheter intervention or prohibitive risk surgery, then medical management is recommended.

Patient Population

All adult patients with mitral and/or tricuspid valve disease who were initially referred for evaluation by the multidisciplinary atrioventricular valve team at an American Heart Association certified Mitral Valve Repair Reference Center were identified from 2019 to 2022 (n = 337). Of these, 161 (48%) underwent transcatheter therapy. Among patients not eligible for transcatheter therapy (n = 176), the multidisciplinary atrioventricular valve team recommended continued medical management for 130 (74%) patients, and prohibitive-risk surgery for the remaining 46 (26%). One patient did not have any prohibitive risk criteria and was excluded, leaving a final population of 45 patients.

Outcomes

Primary outcomes were major morbidity, 30-day and midterm mortality, and resource use. Major morbidity was defined in accordance with the STS performance measures and includes having any of the following postoperative complications: reoperations for any cardiac reason, including valvular dysfunction or postoperative bleeding; renal failure; deep sternal wound infection; prolonged ventilation/intubation; and cerebrovascular accident/permanent stroke. Thirty-day mortality was defined as death in-hospital or within 30 days of the index operation. Follow-up was defined as time from the date of index operation to the most recent hospital or clinic encounter. Resource use examined hospital length of stay, discharge to subacute rehab facility or skilled nursing facility, and 30-day readmission rate.

Secondary outcomes examined postoperative echocardiogram outcomes and need for mitral valve reintervention. Data were collected using the most recent echocardiogram available. Atrioventricular valve regurgitation grade was coded 0 for trivial/none, 1 for mild, 2 for moderate, 3 for moderate-severe, and 4 for severe. Recurrent mitral regurgitation was defined as moderate or greater mitral regurgitation. Need for mitral valve reintervention was assessed with chart review.

Statistical Analysis

Categorical variables are presented as percentages of the total number of patients and analyzed by χ^2 or Fisher exact tests, as appropriate. Continuous variables are presented as median (quartile 1-quartile 3). There was missing data for long-term echocardiographic follow-up, and the follow-up data presented comes from patients with at least 1 recorded postoperative echocardiogram. Time to event analysis was performed to characterize long-term survival. Analyses were performed using Stata version 17.0 (StataCorp LLC).

RESULTS

Patient Demographic Characteristics

Forty-five prohibitive risk patients underwent surgery for atrioventricular valve disease. Their median age was 76 years (interquartile range [IQR], 65-81 years) and 51% (n = 23) were women (Table 1). Thirty-three patients (73%) had preoperative atrial fibrillation, and 13 (29%) had diabetes. Approximately three-quarters of patients had New York Heart Association functional class III and IV heart failure (73%; n = 22). Patients were most commonly considered to be prohibitive risk by meeting the older than age 80 years criterion (43%; n = 20), followed by hostile chest (35%; n = 16), pulmonary

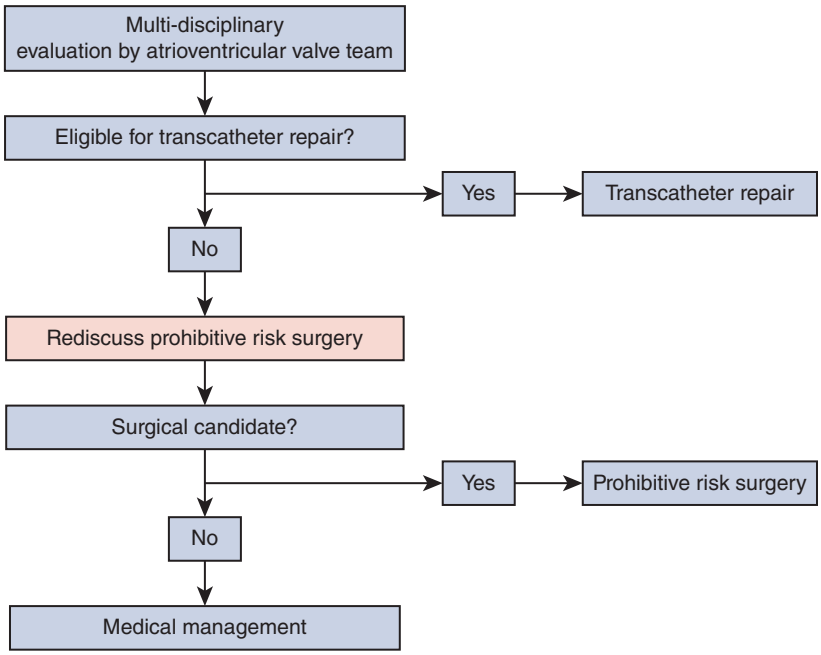

FIGURE 1. Decision-making algorithm and process for the atrioventricular valve team's patient evaluation.

TABLE 1. Patient and operative characteristics

Variable	Patients at prohibitive risk (n = 45)
Patient characteristics	
Age (y)	76 (65-81)
Female	23 (51)
Diabetes	13 (29)
Previous stroke or transient ischemic attack	7 (16)
Heart failure	37 (83)
New York Heart Association functional class (n = 44)	
1	2 (5)
2	10 (23)
3	21 (48)
4	11 (25)
Preoperative atrial fibrillation	33 (73)
No. of criteria met for prohibitive risk	
1	11 (24)
2	18 (40)
3	13 (29)
4	2 (4)
5	1 (2)
Redo	16 (36)
Urgent or emergency status	5 (11)
Operative characteristics	
Crossclamp used	36 (80)
Crossclamp time	87 (63-130)
Cardiopulmonary bypass time	111 (87-166)
Mitral valve procedure	43 (94)
Mitral valve replacement	24/43 (56)
Mechanical valve	0/24 (0)
Valve size	27 (25-27)
Mitral valve repair	19/43 (44)
Repair technique	
Gore Tex* chords	5/19 (26)
Leaflet resection	5/19 (26)
Edge-to-edge repair	5/19 (26)
Commissuroplasty	4/19 (22)
Annuloplasty ring size	35 (28-36)
Tricuspid valve procedure	18 (39)
Tricuspid valve replacement	4/18 (22)
Mechanical valve	0/4 (0)
Valve size	30 (28-32)
Tricuspid valve repair	14/18 (78)
Annuloplasty ring size	28 (26-32)
Isolated tricuspid procedure	4 (9)
Isolated mitral procedure	22 (49)
Mitral and tricuspid procedure	15 (33)
Concomitant aortic valve replacement	4 (9)
Concomitant coronary artery bypass grafting	2 (4)
Atrial fibrillation procedure†	22/33 (67)

Values are presented as median (interquartile range), n/N (%), or n (%). *W. L. Gore & Associates. †Among patients with preoperative atrial fibrillation, n = 33.

hypertension (26%; n = 12), immobility (22%; n = 10), and having an STS PROM >8% (17%; n = 8) (Table 2). Most patients met more than 1 of the prohibitive risk criteria (76%; n = 34).

Operative Characteristics

Of the 45 patients who underwent prohibitive-risk surgery, 16 (36%) required redo sternotomy, and 5 (11%) were either urgent or emergency cases (Table 1). The median cardiopulmonary bypass time was 111 minutes (IQR, 87-166 minutes). A crossclamp was used in 36 patients (80%). The remaining patients either underwent surgery via right thoracotomy with a beating heart or had an isolated tricuspid procedure. Of those with crossclamp, the median crossclamp time was 87 minutes (IQR, 63-130 minutes). Most patients had a mitral valve procedure (94%; n = 43), of whom 56% (n = 24) had a mitral valve replacement. A total of 18 patients had a tricuspid valve procedure, of whom 14 (78%) had a tricuspid valve repair. Of patients with a history of preoperative atrial fibrillation, 67% (n = 22 out of 33) had a concomitant atrial fibrillation procedure, such as ablation and/or left atrial appendage obliteration.

Short and Midterm Mortality

The 30-day mortality was 4.4% (n = 2). Of those with a PROM procedure (94%; n = 43), this was lower than the STS PROM of 6.6% for these patients (Figure 2), although this difference was not significant ($P = .55$). One patient died from a massive thromboembolic stroke on postoperative day 1. This patient's prohibitive risk criterion was a porcelain aorta, although he was peripherally cannulated and did not undergo aortic crossclamping. The second patient died due to right ventricular failure and ensuing end organ failure. This patient's prohibitive risk criterion was immunosuppression. Median midterm follow-up for survival was 12 months (IQR, 7-20 months). On Kaplan-Meier analysis, there was 86% ± 9% 1-year survival (Figure 3).

Major Morbidity

A total of 15 (33%) patients had major postoperative morbidity (Table 3). The main driver of major morbidity was prolonged ventilation, which occurred in 9 (20%) of patients, followed by renal failure (9%), postoperative stroke (7%), and need for reoperation (2%). No patient had a postoperative wound infection.

Resource Utilization

The median intensive care unit length of stay was 4 days (IQR, 2-5 days) and 1 (2%) patient required intensive care unit readmission (Table 3). The median total length of stay

TABLE 2. Reason for prohibitive risk

Variable	Patients at prohibitive risk (n = 45)
STS predicted risk of mortality >8%	8 (17)
Age >80 (y)	20 (43)
Frailty	14 (30)
Porcelain aorta	2 (4)
Hostile chest	16 (35)
Liver disease	1 (2)
Pulmonary hypertension*	12 (26)
Bleeding risk	3 (7)
Advanced dementia	1 (2)
Active chemotherapy	3 (7)
Immobility	10 (22)
Advanced right ventricular dysfunction	2 (4)
Immunosuppression	7 (15)
Acquired immunodeficiency syndrome	0 (0)

Values are presented as n (%). *STS*, Society of Thoracic Surgeons. *Pulmonary artery pressure greater than two-thirds systemic pressure.

was 7 days (IQR, 6-10 days). Excluding operative mortalities, 13% (6 out of 43) required discharge to a subacute rehabilitation facility or skilled nursing facility, and the remaining patients were discharged home. The 30-day readmission rate was 23% (10 out of 43), and the most common reason for readmission was postoperative arrhythmia (30%; n = 3 out of 10).

Echocardiogram Follow-up

More than 95% (42 out of 44) of patients had a postoperative echocardiogram, with a median follow-up time of 4 months (IQR, 1-16 months) (Table 4). The median postoperative ejection fraction was 55% (IQR, 40%-60%).

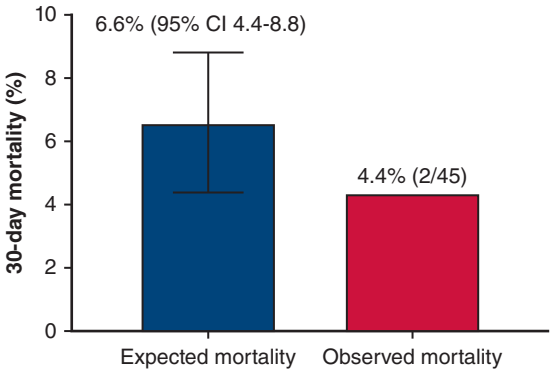

FIGURE 2. Comparison of predicted 30-day mortality and observed 30-day mortality. For those patients with a Society of Thoracic Surgeons predicted risk of mortality procedure (93% [n = 43 out of 45]), the predicted 30-day mortality was 6.6% compared with the observed 30-day mortality of 4.4% (2 out of 45) ($P = .55$).

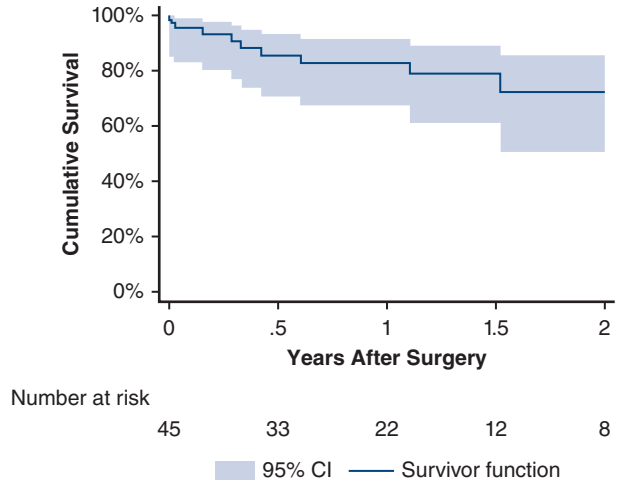

FIGURE 3. Kaplan-Meier analysis of midterm survival. On Kaplan-Meier analysis, there was 86% ± 9% 1-year survival.

Of the 42 patients, the median mitral valve gradient after surgery was 4 mm Hg (IQR, 3-5 mm Hg). At follow-up, 95% of patients had mild or less mitral regurgitation, and 2 patients had recurrent mitral regurgitation. Both patients with recurrent mitral regurgitation had a mitral valve repair at their index operation. There were 10% (4 out of 41) of patients with severe tricuspid regurgitation at echocardiogram follow-up, 1 of whom (25%) had severe tricuspid regurgitation preoperatively. No patient who had severe tricuspid regurgitation at follow-up had received a tricuspid intervention at his or her index operation.

DISCUSSION

In this study, we first present a definition of a prohibitive risk patient population: Patients initially referred for transcatheter mitral or tricuspid valve intervention due to prohibitive surgical risk who were ineligible for transcatheter therapies and ultimately underwent surgical intervention. Next, we examined outcomes of patients at prohibitive risk. Patients at prohibitive risk who underwent surgery had high rates of major morbidity primarily due to pulmonary complications, which reflects the complexity of this patient population. However, they had low operative mortality and excellent midterm survival. Additionally, resource utilization was low with just 13% (6 out of 43) requiring a subacute rehabilitation or nursing facility on discharge. However, readmission rates were high, highlighting an opportunity for improvement.

Defining what deems a patient to be at prohibitive risk is highly variable and may be different for each surgeon. Other groups have attempted to create a definition of a patient at prohibitive risk. One study defined prohibitive risk as patients older than age 80 years.[16] Another group had a list of 14 criteria that deemed a patient to be at prohibitive risk, and used these 14 criteria to determine

TABLE 3. Patient postoperative outcomes

Variable	Patients at prohibitive risk (n = 45)
Intensive care unit length of stay	4 (2-5)
Intensive care unit readmission	1 (2)
Major morbidity	15 (33)
Postoperative stroke	3 (7)
Prolonged ventilation	9 (20)
New renal failure	4 (9)
Need for reoperation during index hospitalization	1 (2)
30-d Mortality	2 (4)
Discharge to location other than home (n = 43)	6 (13)
Length of stay	7 (6-10)
Readmission (n = 43)	10 (23)

Values are presented as median (interquartile range) or n (%).

TABLE 4. Echocardiogram follow-up

Variable	Outcomes for patients at prohibitive risk (n = 42/45)
Time to echocardiogram (mo)	4 (1-16)
Postoperative ejection fraction	55 (40-60)
Mitral valve gradient (mm Hg)	4 (3-5)
MR grade at follow-up (n = 40)	
Trivial/trace	28 (70)
Mild	10 (25)
Moderate	1 (2.5)
Severe	1 (2.5)
TR grade at follow-up (n = 41)	
Trivial/trace	15 (37)
Mild	11 (27)
Moderate	11 (27)
Severe	4 (10)

Values are presented as median (interquartile range) or n (%). *MR*, Mitral regurgitation; *TR*, tricuspid regurgitation.

candidacy for transcatheter atrioventricular valve intervention.[17] This study builds on these definitions, using referral for evaluation by an atrioventricular valve team—which is recommended for all patients subjectively deemed to be at prohibitive risk for surgery—and presence of at least 1 prohibitive risk criterion to define the prohibitive risk population. A more standard definition will be important for future areas of research and as transcatheter atrioventricular valve devices continue to evolve.

As treatment options for atrioventricular valve disease emerge, the role of valve teams, a multidisciplinary team typically consisting of a general cardiologist, interventional cardiologist, an imaging specialist, heart failure specialist, and cardiac surgeon, has grown in importance. A valve team is essential for the management of patients are prohibitive risk with mitral or tricuspid valve disease. This multidisciplinary group can provide patients with expert insights regarding surgical risk, candidacy for transcatheter options, and expected outcomes with medical management for advanced atrioventricular valve disease. Integration of a valve team into the care of these complex patients informs patients of their options and enables patients to fully participate in deciding on the treatment course that matches their values.

However, it may be challenging to contextualize for patients what prohibitive risk means with regard to surgical outcomes. Valve teams may rely on risk calculators such as the STS morbidity and mortality calculator—with or without incremental risk factors that include additional comorbidities such as frailty—to provide patients with estimated likelihood of mortality and major complications. However, these risk calculators are models that cannot consider all factors that contribute to a patient's outcome and therefore are limited in being able to truly inform patients of surgical risk. Ideally, valve teams would rely on studies with real-world surgical outcomes of patients at prohibitive risk with atrioventricular valve disease to guide and inform patients of their risk; however, such studies are limited. In 1 of the largest series reported, outcomes were described for 56 patients with advanced mitral or tricuspid valve disease who were defined as prohibitive risk based on age older than 80 years.[16] Within the case series of the 56 patients at prohibitive risk, operative mortality was more than 7%, the mean length of stay was 18 days, and more than 25% had at least 1 major complication, such as hospital-acquired pneumonia, heart block requiring a pacemaker, perioperative stroke, or acute kidney injury.[16] Although the most common prohibitive risk criterion in our study was also age older than 80 years, our cohort and definition of prohibitive risk—which includes factors such as hostile chest or severe dementia—builds on this work by including a more diverse population of patients who require complex decision making for mitral or tricuspid valve intervention. Compared with this series, our operative mortality and length of stay were lower, whereas our incidence of a major complication was higher. The observed variability in outcomes may be due to the different definitions of prohibitive risk and the small sample size in each study, highlighting the need for both a uniform definition of a patient with prohibitive risk and larger studies or pooled analyses to better understand expected postoperative outcomes for this population.

Due to the limited outcomes data available for patients with prohibitive risk with mitral or tricuspid valve disease—and the high reported operative mortality and morbidity—valve teams may recommend medical management or transcatheter therapy, reserving surgery as a last

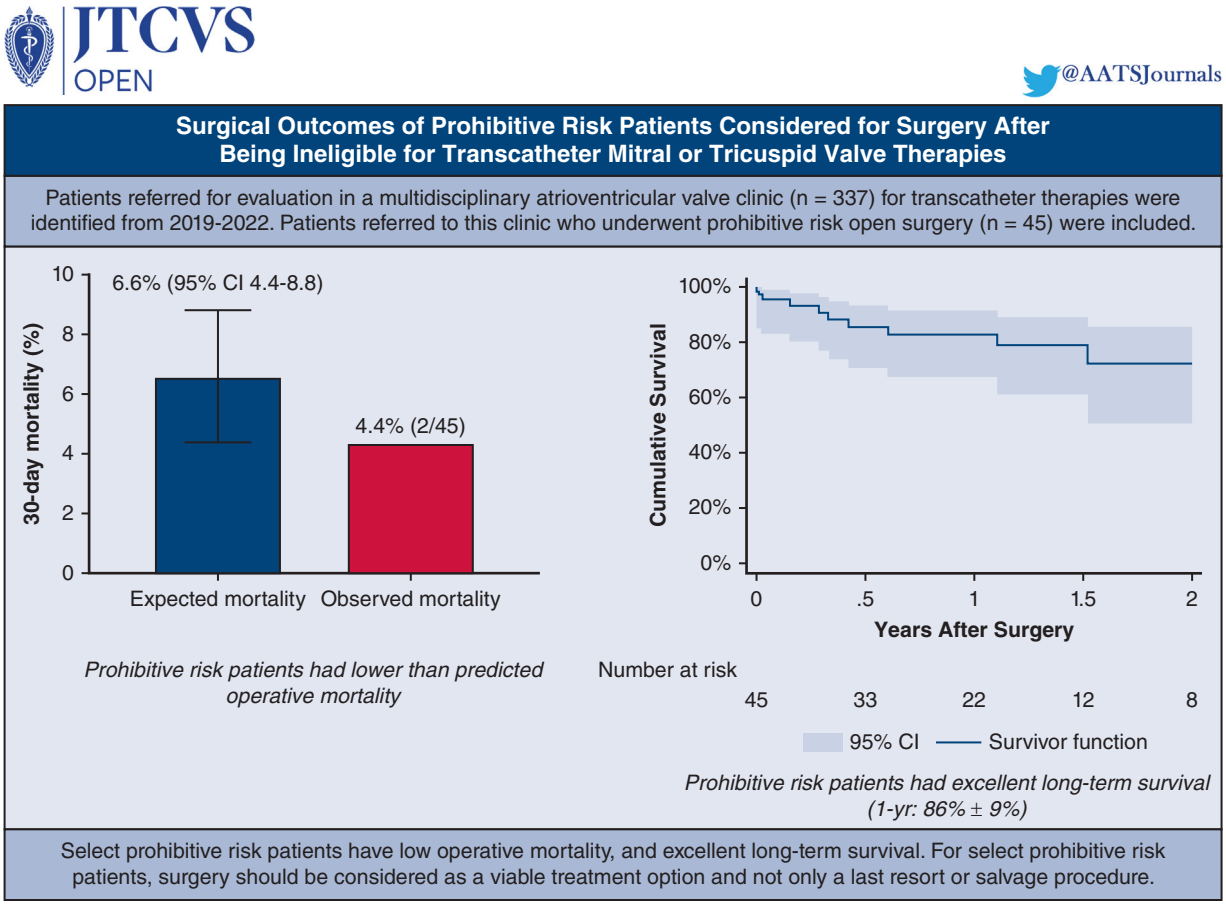

FIGURE 4. Description of findings.

resort. However, doing so creates 2 problems. First, delaying surgical intervention until patients are at their last resort is associated with progressive heart failure, cardiogenic shock, and subsequently worse outcomes in this already high-risk population.[16] Rather, surgery should be considered as a viable treatment option for select patients at prohibitive risk. Should surgery be deemed an option, a timely elective procedure would likely lead to improved outcomes for this population, rather than delaying surgery until a patient's disease has progressed to the point of requiring urgent or emergency surgery. The second problem with surgery as a last resort is that patients may present with such advanced valve disease, or damaged valve leaflets from previously failed transcatheter intervention, that valve repair is not possible.[14,15,18-20] Reported rates of mitral valve replacement for patients at prohibitive risk ranged from 60%[19] to 100%.[20] Within our study, just more than 50% of patients undergoing a mitral valve procedure required a mitral valve replacement, and no patient undergoing mitral valve repair has required reintervention. More prohibitive risk patients may have a successful valve repair (vs replacement) if they have more timely surgical intervention on their valve disease.

A main limitation of our study is the lack of a uniform definition of a patient at prohibitive surgical risk, which may limit generalizability to other practices. However, the definition we employed was previously used to define a cohort of patients with advanced atrioventricular valve disease who were not operative candidates.[17] Next, patients at prohibitive risk who underwent surgery were a highly selected population who are likely different from patients who underwent medical management. However, the goal of this article was to describe outcomes of patients at prohibitive risk who underwent surgery, and not to compare surgery versus medical management. Third, this is a single-center study at a large quaternary referral center, which may not be representative of all centers or surgeons operating on patients with prohibitive risk. However, due to complexity of care and consideration of transcatheter atrioventricular valve therapies, many patients at prohibitive risk may be referred to a similar high-volume referral center. Additionally, our institution has a robust support

team composed of nursing, physical and occupational therapy, advanced practice providers, and physicians to avoid failure to rescue in these patients deemed to be at prohibitive risk. Centers that wish to reconsider these high-risk patients for surgery should ensure an effective safety net team of providers is in place to achieve the best possible outcome for patients at prohibitive risk.

CONCLUSIONS

Despite their moniker, select patients at prohibitive risk with mitral or tricuspid valve disease may be acceptable operative candidates and can go on to have excellent postoperative outcomes (Figure 4). Potentially, more patients at prohibitive risk would have improved outcomes if surgery was viewed as a viable treatment option for these patients in conjunction with transcatheter therapies and medical management, rather than as a last resort. Should a patient at prohibitive risk be deemed an operative candidate, he or she should proceed to the operating room in a timely manner to achieve the best possible outcomes.

Webcast

You can watch a Webcast of this AATS meeting presentation by going to: https://www.aats.org/resources/surgical-outcomes-of-prohibitive-risk-patients-reconsidered-for-surgery-after-being-ineligible-for-transcatheter-mitral-or-tricuspid-valve-therapies.

Conflict of Interest Statement

Dr Ailawadi is a consultant for Abbott, Edwards, Medtronic, Anteris, Atricure, and Gore. Dr Bolling is a consultant for Abbott, Edwards, Medtronic, Atricure, and Gore. Dr Romano is a consultant for Edwards, Medtronic, and Atricure. All other authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

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