

Objective

Octogenarians are often excluded from mitral valve (MV) surgery due to perceived increased perioperative risks/morbidity and mortality.^{1,2,3,4} We seek to show how sternal-sparing MV surgery, including robotic, have the potential to reduce these risks^{5,6} and highlight early and midterm clinical and echocardiographic outcomes of octogenarian individuals who underwent robotic MV surgery at our center.

Patients & Methods

Study Design: Retrospective Study

- ❖ Between 2013-2024: 40 out of 600 patients who underwent robotic totally endoscopic MV surgery at our institution were octogenarians.
- ❖ 90% of patients underwent MV repair.
- ❖ Mean STS risk score = 4.4 ± 2.1%

Results

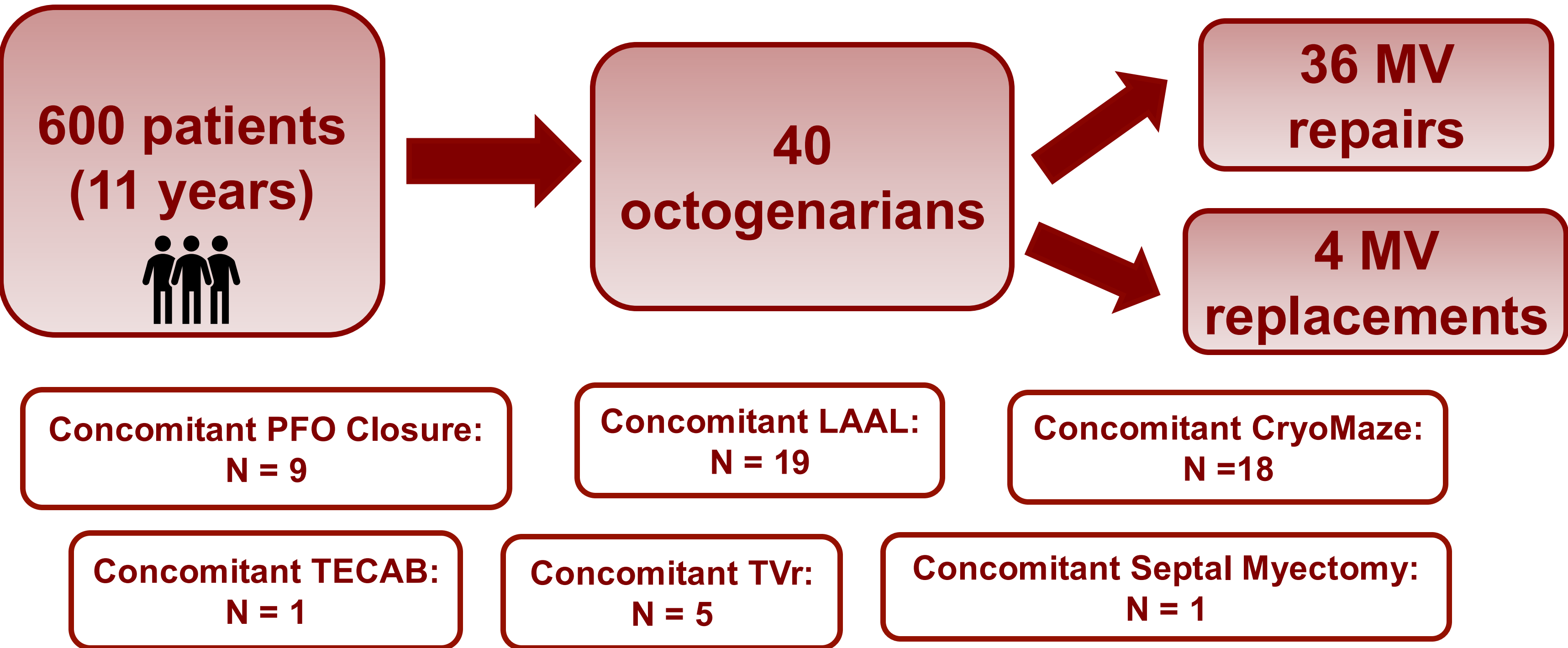
Baseline Characteristics	All patients (n=40)
Age (years), mean ± SD	83 ± 2.7
Female gender, n (%)	22 (55)
BMI > 30, n (%)	9 (23)
Hypertension, n (%)	35 (88)
Diabetes mellitus, n (%)	4 (10)
PVD, n (%)	2 (5)
Atrial dysrhythmia, n (%)	21 (53)
COPD, n (%)	3 (7.5)
Congestive heart failiure, n (%)	13 (33)
Prior cerebrovascular accident, n (%)	4 (10)
STS predicted mortality, mean ± SD	4.4 ± 2.1
Degenerative MV disease, n (%)	35 (88)
Prior permanent pacemaker, n (%)	4 (10)
Prior mitralclip, n (%)	4 (10)
Previous cardiac surgery, n (%)	2 (5)
Previous sternotomy, n (%)	1 (2.5)
Ejection fraction (%), mean ± SD	58 ± 10
Operative time, mean, mean ± SD	183 ± 52
MV repair, n (%)	36 (90)
MV replacement, n (%)	4 (10)
Concomitant procedures, n (%)	26 (65)
Conversion to sternotomy, n (%)	1 (2.5)
Arrest Method:	
Fibrillating heart, n (%)	14 (35)
Endoballoon, n (%)	25 (62.5)
Cross-clamp, n (%)	1 (2.5)
Intraoperative blood transfusion, n (%)	11 (28)
Inotropes use, n (%)	4 (10)

Table 1 (Left): Baseline demographic and intraoperative characteristics [PVD: peripheral vascular disease; MV: mitral valve; LAA: left atrial appendage; PFO: patent foramen ovale]

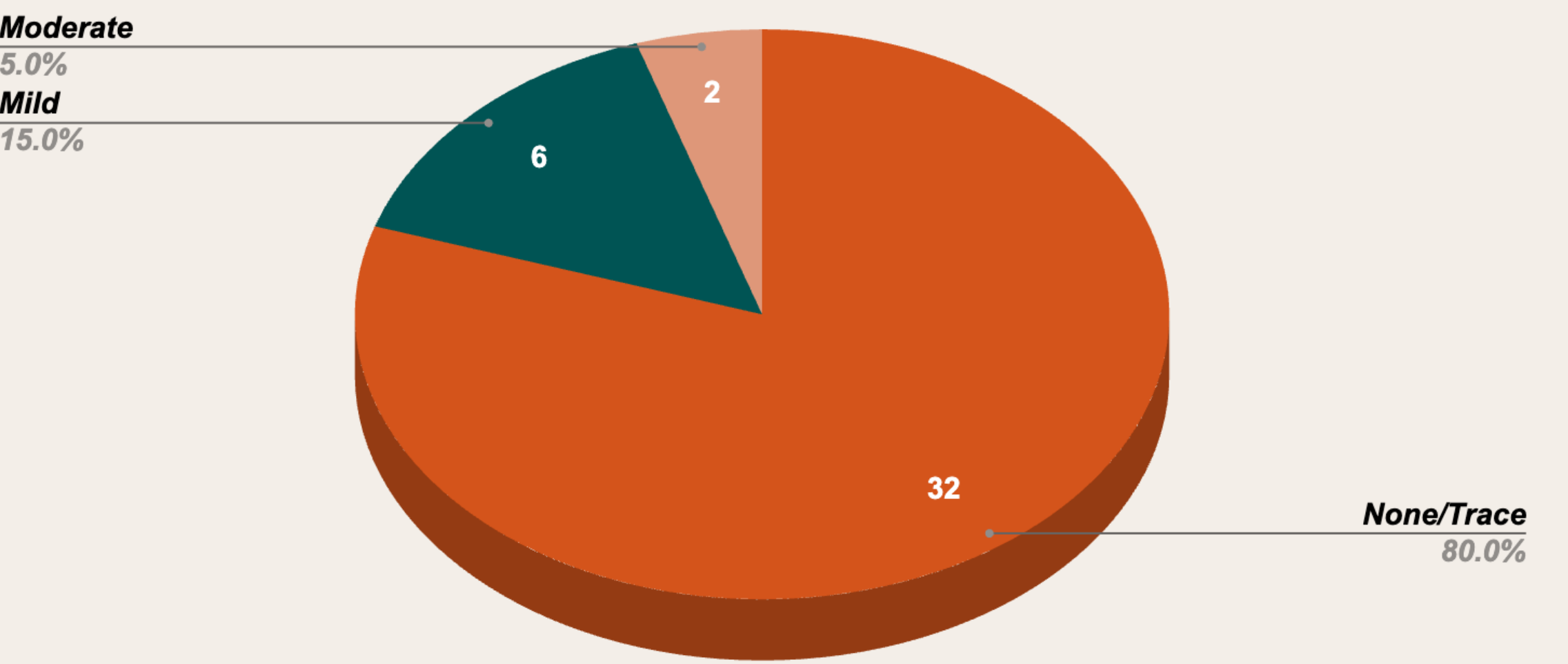
Table 2 (Below): Postoperative Outcomes

Postoperative Outcomes	All patients (n=40)
Extubation within 6 hours, n (%)	22 (55)
Prolonged intubation (> 24 hours), n (%)	5 (13)
Postoperative blood transfusion, n (%)	16 (40)
ICU length of stay (days), mean ± SD	1.5 ± 0.8
Hospital length of stay (days), mean ± SD	3.5 ± 1.5
Discharge destination:	
Home, n (%)	28 (70)
Rehabilitation facility, n (%)	12 (30)
New atrial fibrillation, n (%)	6 (15)
Wound infection, n (%)	0 (0)
Postoperative pneumonia, n (%)	1 (2.5)
Postoperative acute kidney injury, n (%)	1 (2.5)
New permanent pacemaker, n (%)	2 (5)
Tracheostomy, n (%)	1 (2.5)
ECMO, n (%)	1 (2.5)
Return to OR for bleeding, n (%)	3 (7.5)
Postoperative myocardial infarction, n (%)	0 (0)
Postoperative stroke, n (%)	0 (0)
Hospital mortality, n (%)	0 (0)

Results



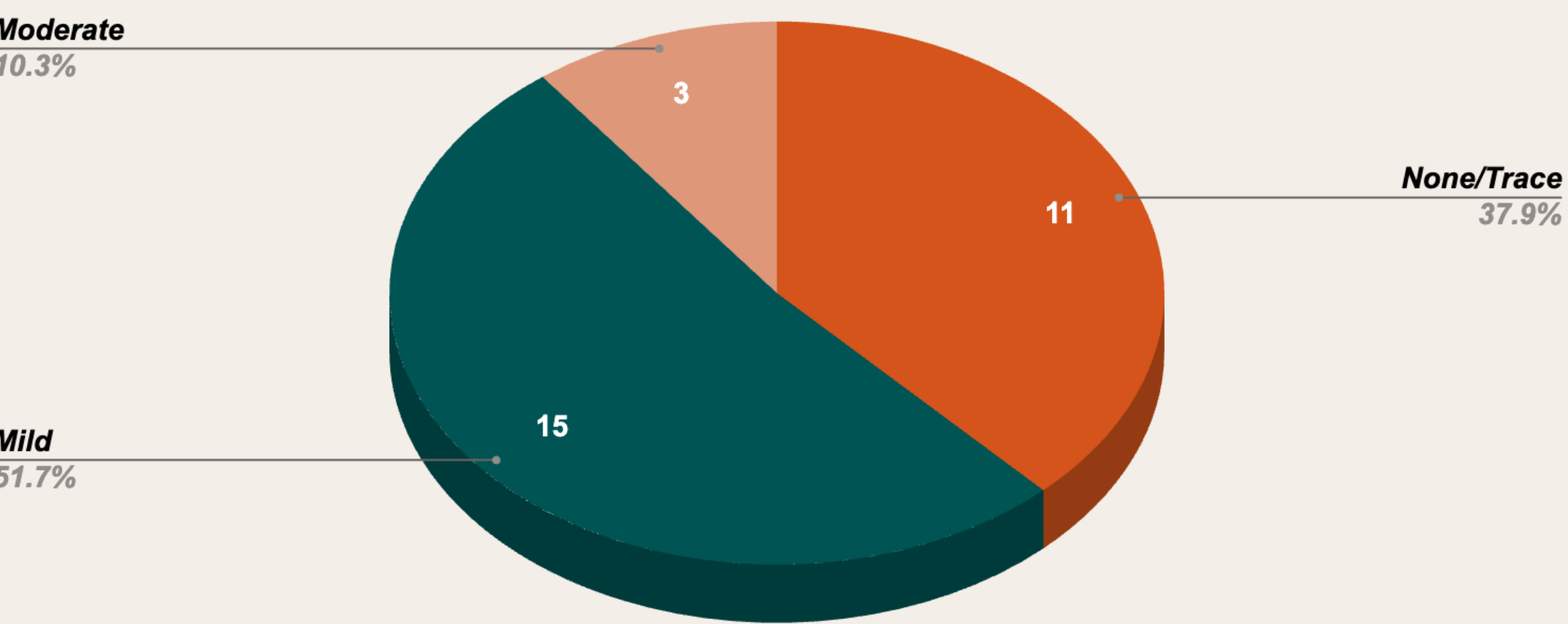
Early Postoperative Echocardiographic Results for MR (n=40)



Graph 1 (Left): Early postoperative echocardiographic results

Midterm Postoperative Echocardiographic Results for MR (n=29)

Mean time to follow-up = 36 months



Graph 2 (Right): Midterm postoperative echocardiographic results at mean of 36 months.

Results

Midterm Outcomes	All patients (n=40)
Time to clinical follow-up (months), mean ± SD	37.3 ± 29.8
Overall mortality, n (%)	9 (23)
Cardiac-related mortality, n (%)	1 (2.5)
Repeat cardiac surgery, n (%)	0 (0)
Myocardial Infarction, n (%)	0 (0)
Mitraclip, n (%)	0 (0)
Freedom from MACCE, n (%)	38 (95)

Table 3: Midterm Outcomes

Surgical Technique

All procedures were performed using the Da Vinci Si or Xi robot using an endoscopic approach with an 8-10 mm working port.

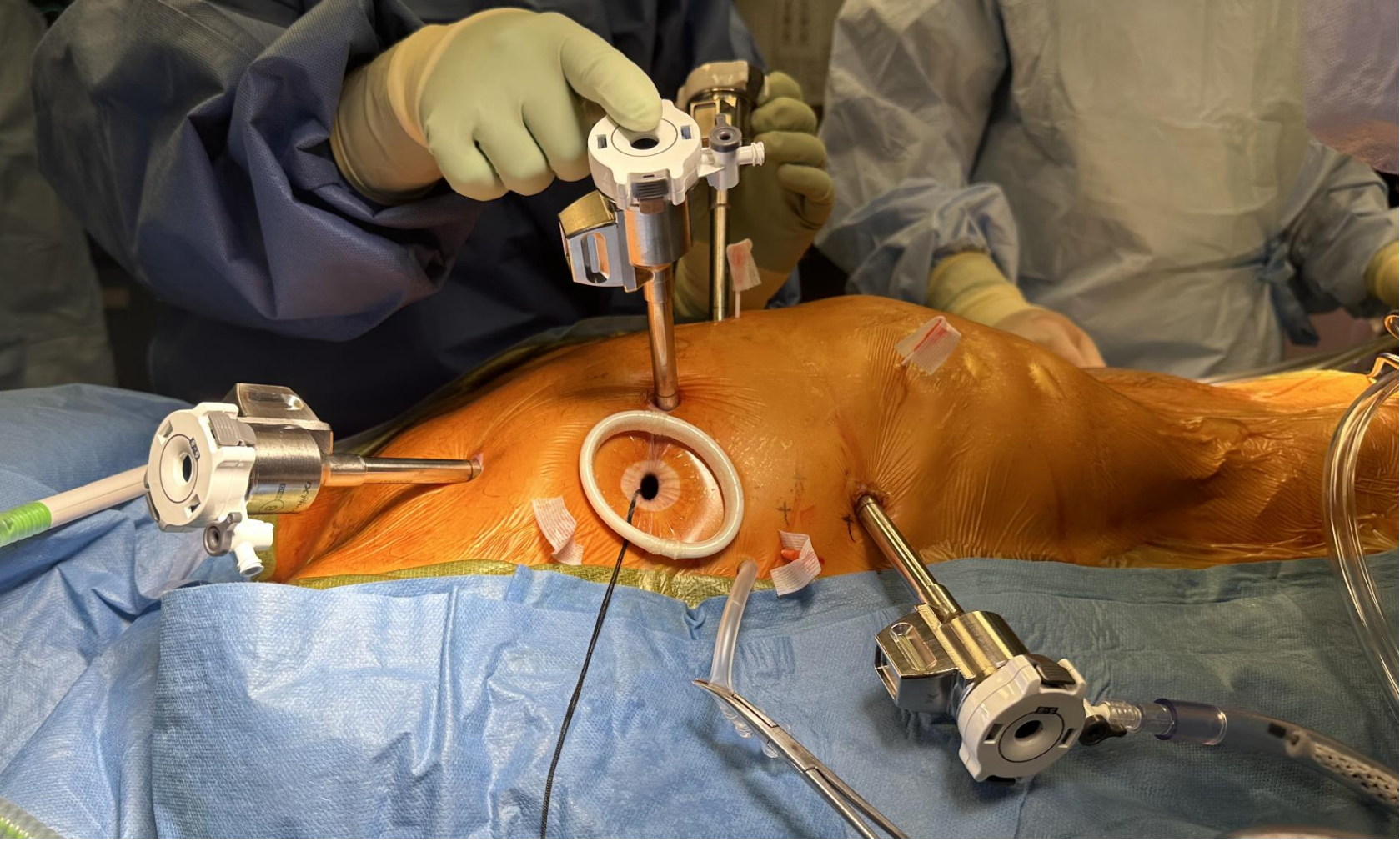


Image 1 (Left): Port placement for endoscopic mitral valve repair with an 8-10 mm working port between 3rd and 4th intercostal spaces.

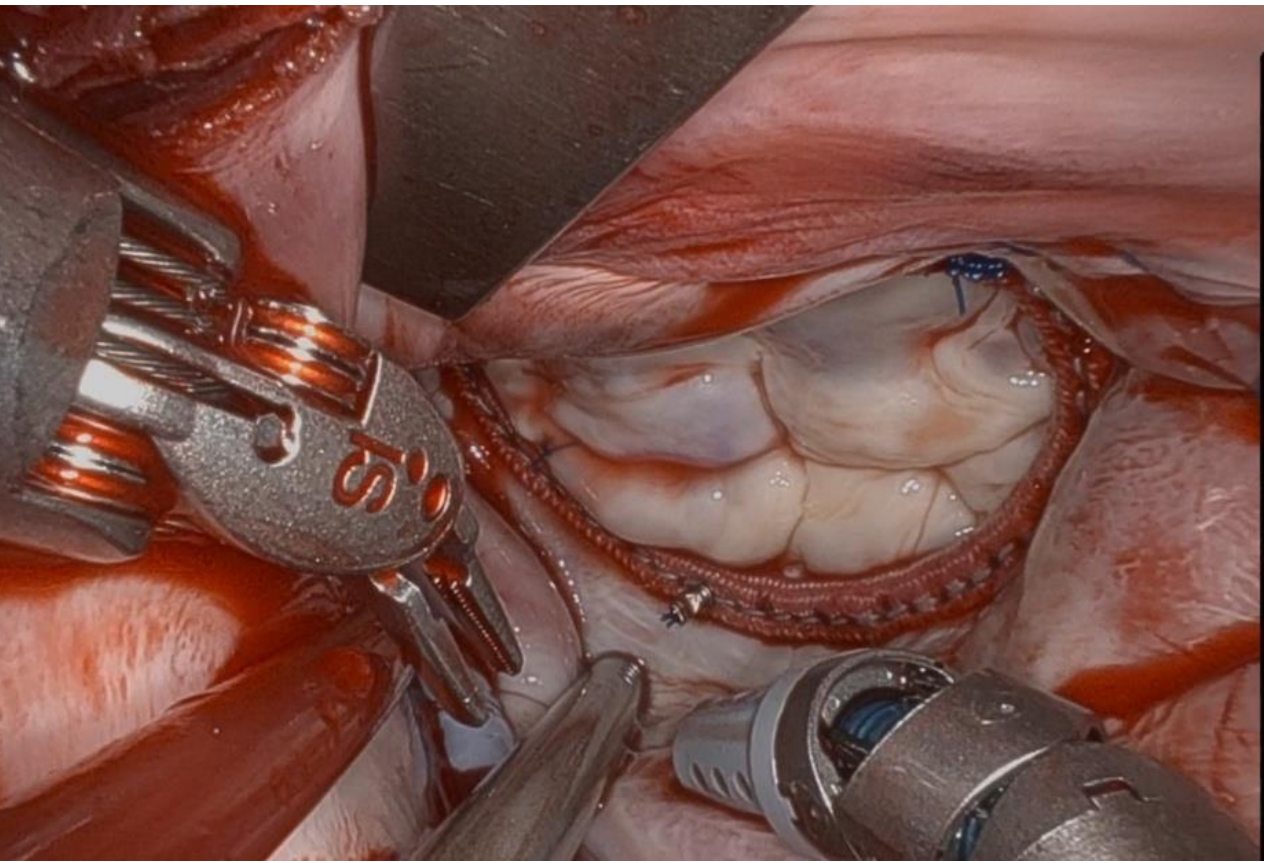


Image 2 (Left): Partial semi-rigid annuloplasty ring implanted in dilated annulus of MV.



Image 3 (Above): Incision healing at 6 week postoperative-follow-up visit.

Conclusions

We conclude that robotic totally endoscopic mitral valve surgery is safe and effective in octogenarians. The use of robotic techniques allows for greater visualization and dexterity when repairing valvular tissue. Our series demonstrates good early and midterm outcomes, while specifically recognizing the benefits of robotic MV surgery in higher-risk and older patients.

Disclosures

Dr. Balkhy is a proctor for Intuitive Surgical.

References

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