4 was associated with severe RVF (OR 3.62, CI [1.37-9.56], p = 0.009). The multivariable model (which included age, INTERMACS level, total bilirubin over 2.5 mg/dL, RV dysfunction on echocardiogram, and gender) found that maximum VIS score within 48 hours for quartile 4 independently correlated with severe RVF (OR 3.04, CI [1.5 - 8.83], p = 0.04). The ROC-curve for this model had an AUC of 0.68.

Conclusion: Our results demonstrate that the highest VIS score within the first 48 hours after LVAD implantation correlates with severe RVF.

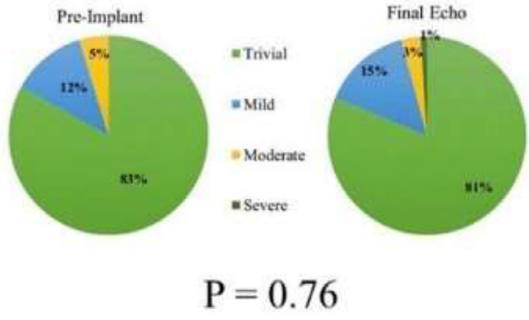
	All Patients (n = 240)	VIS 0 - 10 (n = 72)	VIS 11 - 15 (n = 50)	VIS 16 - 22 (n = 61)	VIS 23 - 87 (n = 57)	*P* value
Mean VIS Score	18 ± 12	7 ± 2	13 ± 2	19 ± 2	33 ± 12	
Age, year	56 ± 13	53 ± 13	56 ± 14	54 ± 12	60 ± 11	0.01
BMI, m2/kg	27 ± 7	27 ±8	28 ± 6	28 ± 7	27 ± 7	0.83
Gender						0.12
Female	56 (23)	23 (32)	7 (14)	12 (20)	14 (25)	
Male	184 (77)	49 (68)	43 (86)	49 (80)	43 (75)	
INTERMACS Level						0.03
1	33	5	12	6	10	
2	48	8	11	15	14	
3	139	52	21	35	31	
4	19	7	5	5	2	
LVAD Indication						0.32
Destination	148 (62)	41 (57)	30 (60)	35 (57)	42 (74)	
Bridge to transplant	58 (24)	22 (31)	12 (24)	17 (28)	7 (12)	
Possible bridge to transplant	34 (14)	9 (12)	8 (16)	9 (15)	8 (14)	
Heart Failure Etiology						0.42
Nonischemic	145 (60)	48 (67)	29 (58)	38 (62)	30 (53)	
Ischemic	95 (40)	24 (33)	21 (42)	23 (38)	27 (47)	
LVAD Type						0.24
HeartMate 2	180 (75)	50 (69)	37 (74)	45 (74)	48 (84)	
HeartMate 3	26 (11)	10 (14)	8 (16)	4 (7)	4 (7)	
HeartWare	34 (14)	12 (17)	5 (10)	12 (19)	5 (9)	
Total bilirubin, mg/dL	1.5 ± 1.1	1.2 ± 0.8	1.8 ± 1.3	1.5 ± 1.2	1.5 ± 1.2	0.05
Creatinine, mg/dL	1.5 ± 0.6	1.4 ± 0.5	1.5 ± 0.6	1.6 ± 0.7	1.6 ± 0.5	0.11
Pre-operative hemodynamics						
Mean RA pressure (mmHg)	12 ± 7	10 ± 7	12 ± 7	13 ± 7	14 ± 7	0.02
Mean PA pressure (mmHg)	36 ± 10	34 ± 11	36 ± 7	36 ± 11	36 ± 10	0.67
PAPi	3.8 ± 4.3	4.3 ± 4.8	3.7 ± 4.7	3.4 ± 3.6	3.6 ± 4.2	0.72
PCWP (mmHg)	24 ± 9	23 ± 10	26 ± 8	26 ± 10	24 ± 8	0.31

progression (p=0.76). One patient developed severe AI and required an AV replacement (0.68%).

Conclusion: Although increasing AI post-Impella support is rare, careful follow up is warranted.

Figure 1: Degree of AI pre-Impella implantation and post-explantation

Device	Degree of AI	PreImplant (n)	PreImplant (%)	Post Explant (n)	Post Explant (%)
Total Impella	Trivial	88	83.0	78	81.3
	Mild	13	12.3	14	14.6
	Moderate	5	4.7	3	3.1
	Severe	0	0.0	1	1.0
	Total	106	100	96	100
Impella 5.0	Trivial	32	86.5	21	87.5
	Mild	2	5.4	1	4.2
	Moderate	3	8.1	1	4.2
	Severe	0	0.0	1	4.2
	Total	37	100	24	100
Impella CP	Trivial	56	81.2	57	79.2
	Mild	11	15.9	13	18.1
	Moderate	2	2.9	2	2.8
	Severe	0	0.0	0	0.0
	Total	69	100	72	100



(1014)

The Effect of Percutaneous Left Ventricular Assist Device Placement to the Native Aortic Valve Competency

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Purpose: Impella percutaneous left ventricular assist devices (LVAD) (Abiomed, Danvers, MA) use is rapidly expanding for cardiogenic shock management. Devices are delivered through the aortic valve (AV). Due to the design, there remains concern that Impella may disrupt aortic valve morphology and competency, potentially causing secondary aortic insufficiency (AI) after explantation. Secondary AI could compromise cardiac function and may further reduce the efficacy of future mechanical circulatory support. Prior reports are limited and results remain unclear. The aim of this study is to characterize the relationship between Impella placement and AI after explantation.

Methods: This was a single center retrospective analysis. All patients who had Impella LVAD support from April 2014 to August 2019 were included. Patient demographics, implant indications, duration of support, and pre- and post-implant echocardiograms were analyzed. Post-implant echocardiograms were analyzed at eight time points, with focus on the most recent finding. ASE guidelines were used to quantify AI. Impella CP and Impella 5.0 patients were sub-analyzed separately. A Mann Whitney U-test was performed on AI analysis. Any AV complications requiring surgical procedures were reviewed.

Results: 146 patients received Impella (CP: n= 104, 71.2%, 5.0: n=37, 25.3%, 2.5: n=5, 3.4%) support. Mean age was 63.8 years (16-88). 27.4% of patients were female (n=40). Mean days of support was 4.8 days (0-28). Mean follow up time was 70.2 days post-implant (0-1484 days). Indications were bridge to recovery, bridge to LVAD or heart transplant, ECPELLA, and high-risk PCI, respectively (n=57, 39.0%; n=19, 13.0%; n=18, 12.3%; n=52, 35.6%). The pre-implant and post-explant degree of AI is shown in figure 1. There was no statistically significant AI

(1015)

EUROMACS-RHF Risk Score and 3D Echocardiography as Predictors of Right Heart Failure after Left Ventricular Assist Device Implantation

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Purpose: Right heart failure (RHF) after LVAD implantation is associated with significant morbidity and mortality. Recently, the EUROMACS-RHF risk score was developed to predict postoperative RHF in this setting. In a single-center analysis, we assessed the added value of 3D-echocardiography for predicting RHF after LVAD implantation. We hypothesized that measuring RV function based on pre-LVAD 3D-echocardiography right ventricle ejection fraction (3D RVEF) further improves the accuracy of predicting RHF.

Methods: We retrospectively studied adult patients who underwent durable LVAD implantation between 2015 and 2018. RV function was evaluated intraoperatively by transesophageal echocardiography (TEE). 3D RVEF was assessed pre-implantation using dedicated software (TomTec Imaging Systems; Figure). Early RHF was defined as need for right ventricular assist device, or inotropic or inhaled pulmonary vasodilator support for >7 post-operative days. Two-sample *t*-tests were performed for differences between RHF and No-RHF groups. Multivariable logistic regression analysis was conducted to identify independent predictors of RHF. A subset analysis was performed in patients with available 3D RVEF data.

Results: A total of 192 patients were studied. RHF occurred in 108 patients (56%). Pre-implant patient characteristics are presented in the Table. We identified two independent predictors of RHF: African-American race (OR=2.32, 95% CI:1.18-4.52, p=0.01) and pre-implant right atrial (pre-RA) pressure (OR=1.12/mmHg, 95% CI:1.04-1.2, p=0.001). EUROMACS-RHF score was not an independent predictor. Among the 79 patients with 3D TEE data included in the subset analysis, 3D RVEF did not independently predict RHF.

Conclusion: Neither EUROMACS-RHF risk score nor 3D RVEF predicted RHF in our study cohort. African-American race and pre-RA pressure