

STS/EACTS Latin America Cardiovascular Surgery Conference

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When to Address the TV in Heart Transplant and VADs



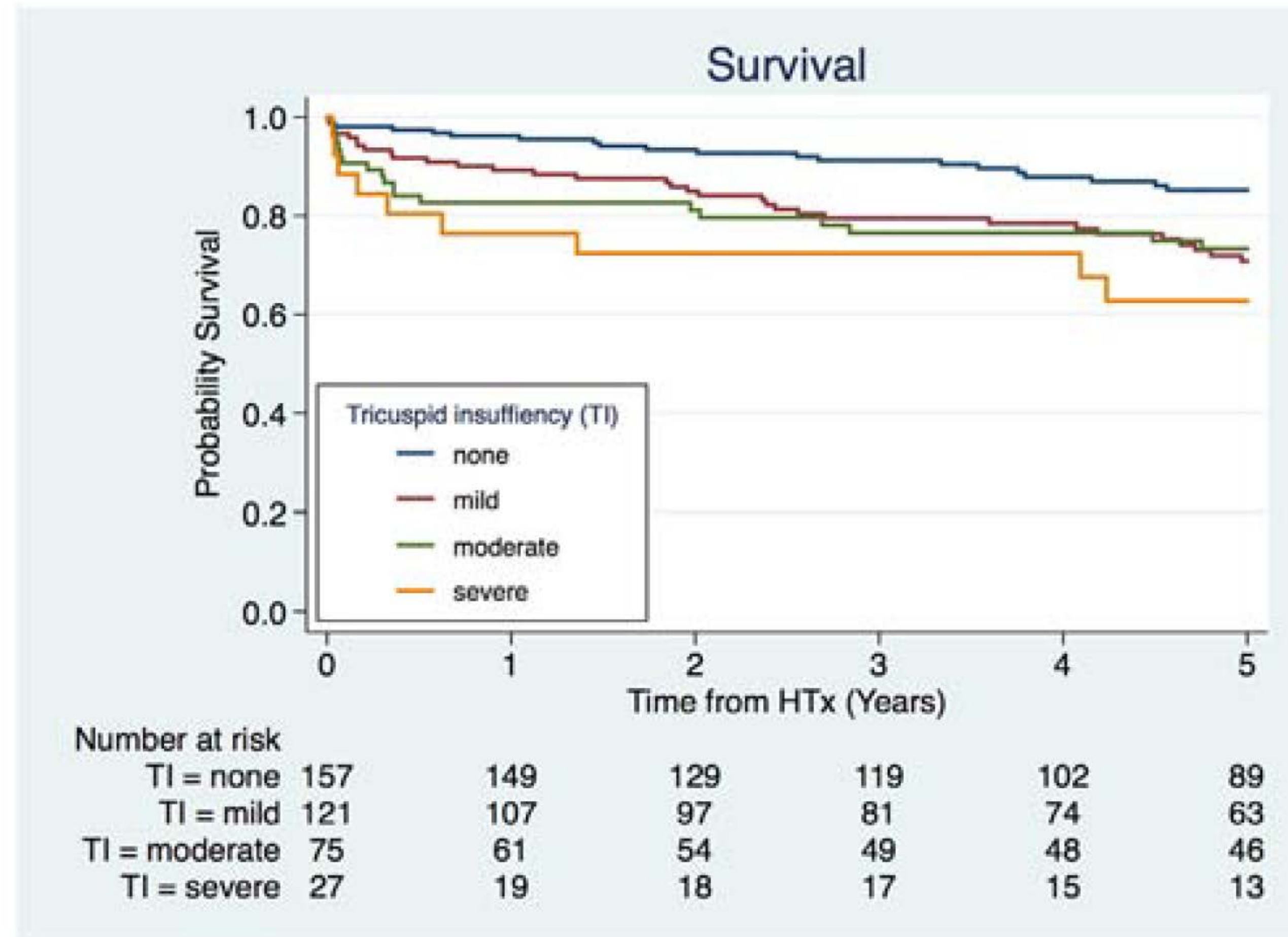
The Society
of Thoracic
Surgeons



EACTS
European Association For Cardio-Thoracic Surgery



Impact of Tricuspid Regurgitation following Heart Transplantation



$p < 0.01$

When To Intervene on the TV: Transplant

- Does routine TV repair of the donor heart prevent early or late development of TR?

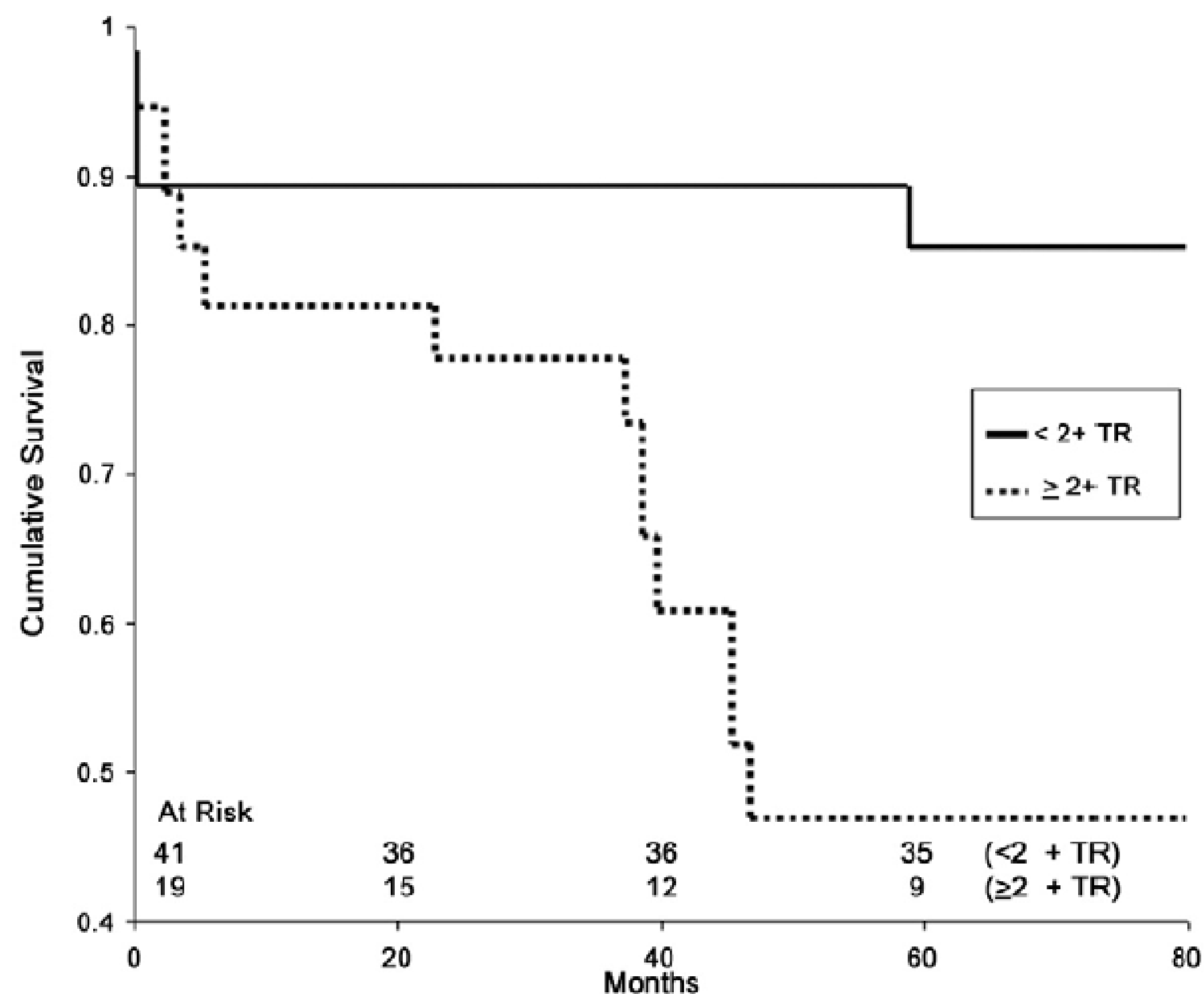
When To Intervene on the TV: Transplant

Donor Tricuspid Annuloplasty During Orthotopic Heart Transplantation: Long-Term Results of a Prospective Controlled Study

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When To Intervene on the TV: LVAD



Complications and Mortality After Heart Transplantation

Group	STD	TVA	<i>p</i> Value
Intraoperative complications	Bleeding 3 Pul HTN/RHF 5 CVA 1 Pulm hem 1 Donor dys 2	Bleeding 3 Pul HTN/RHF 4 Donor dys 3	
Mortality 1 year	RHF 3 Rejection 1	Rejection 1 Sepsis 1 Pneumonia 1	ns
Mortality 6 years	AF 3 Cancer 1	AF 2 Perforated bowel 2 Pneumonia 1	ns
Cardiac deaths	7	3	0.03

AF = allograft failure; CVA = cerebral vascular accident; Donor dys = biventricular donor dysfunction; Pul HTN = pulmonary hypertension; Pulm hem = pulmonary hemorrhage; ns = not significant; RHF = right heart failure; STD = standard orthotopic heart transplantation group; TVA = tricuspid valve annuloplasty group.

When To Intervene on the TV: Transplant

- Small cohort of only 60 patients
- Included patients receiving both Bi-atrial and Bi-caval transplant technique
- One of the most common causes for late TR is biopsy-related TV injury which may not be preventable by TV repair

Association of Donor Tricuspid Valve Repair with Outcomes after Cardiac Transplantation

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When To Intervene on the TV: Transplant

- Jan 20, 2002 to November 30, 2013
- 330 patients; 173 (52%) with TV repair (DeVega Stitch sized with a 26mm Hegar dilator)
- Propensity matched analysis
- The primary endpoint was a composite of death, post-transplant TVR (pTVR), kidney transplant following heart transplant, or chronic dialysis

	No dTVR	dTVR	P value
Echo at First RHC			
TR grade			<0.0001
None	89 (61.1%)	147 (89.1%)	
Mild	33 (25.2%)	18 (10.9%)	
Moderate	16 (12.2%)	0	
Severe	2 (1.5%)	0	
6 Months			
TR grade			0.0005
None	42 (55.3%)	66 (85.7%)	
Mild	27 (35.5%)	10 (13%)	
Moderate	4 (5.3%)	1 (1.3%)	
Severe	3 (4%)	0	
12 Months			
TR grade			0.004
None	46 (61.3%)	86 (83.5%)	
Mild	23 (30.7%)	16 (15.5%)	
Moderate	3 (4%)	1 (1%)	
Severe	3 (4%)	0	

	No dTVR	dTVR	P value
Composite endpoint	56 (36.4%)	39 (22.5%)	0.006
First composite endpoint achieved			0.04
Death	42 (27.6%)	32 (18.5%)	
Dialysis	12 (7.9%)	7 (4.1%)	
Kidney transplant after heart transplant	1 (0.7%)	0	
pTVR	0	0	
Endpoint occurred, including if occurred after another Composite endpoint reached earlier			
Death	50 (32.4%)	36 (20.8%)	0.2
pTVR	4 (2.6%)	0	0.03
Dialysis at time of follow up or censoring	19 (12.3%)	14 (8.1%)	0.2
Of patients on dialysis at time of follow up or censoring -			0.6
Early (0-30 days post-txp)	4 (21.1%)	2 (14.3%)	
Late (>30 days post-txp)	15 (79%)	12 (85.7%)	

Donor TV Repair

- Current data does not definitely support a role for routine TV repair of the donor heart at the time of transplantation
- TV Repair is effective at reducing early and late TR
- Further studies are warranted to examine the role of routine TV repair

When To Intervene on the TV: LVAD

Clinical Impact of Concomitant Tricuspid Valve Procedures During Left Ventricular Assist Device Implantation

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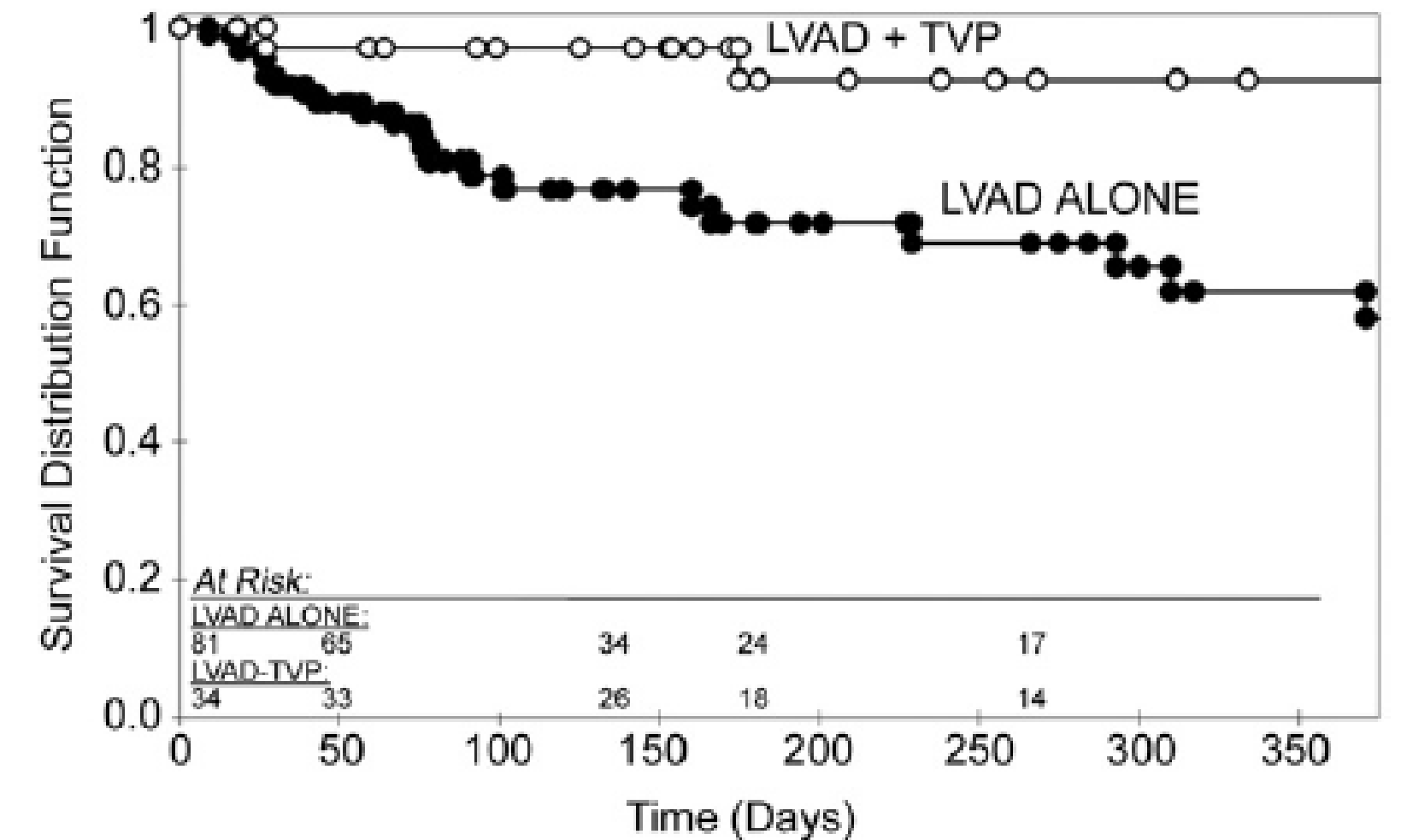


Table 2. Tricuspid Regurgitation Grade for LVAD Alone Versus LVAD With Concomitant Tricuspid Procedure

	LVAD Alone (n = 81)				LVAD Plus Tricuspid (n = 34)			
	None/Trace	Mild	Moderate	Severe	None/Trace	Mild	Moderate	Severe
Preimplant	0	0	67%	33%	0	0	38%	62%
Immediately postimplant	0	25%	50%	25%	63%	31%	6%	0
Late follow-up	11%	44%	31%	14%	48%	31%	21%	0

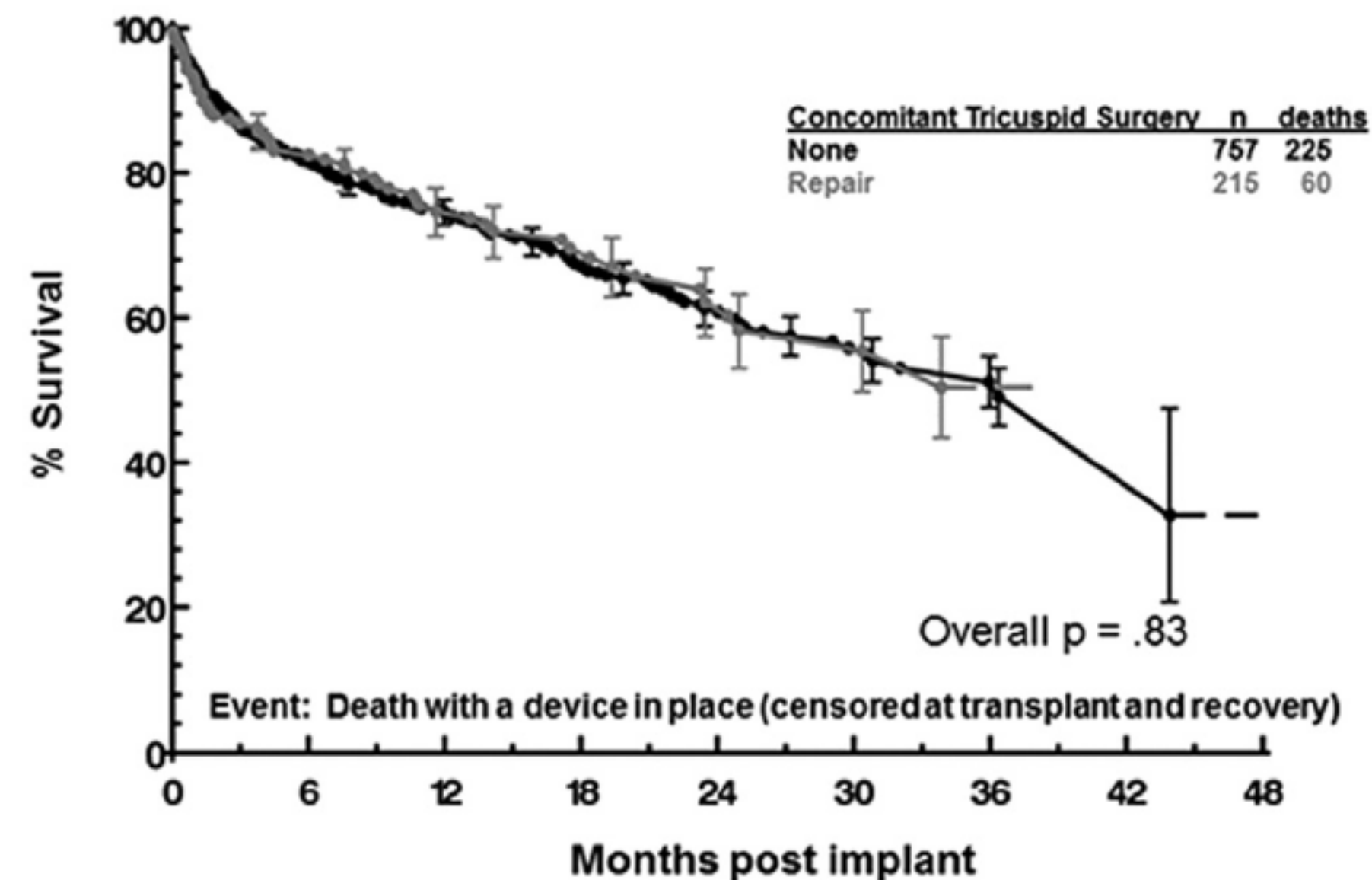
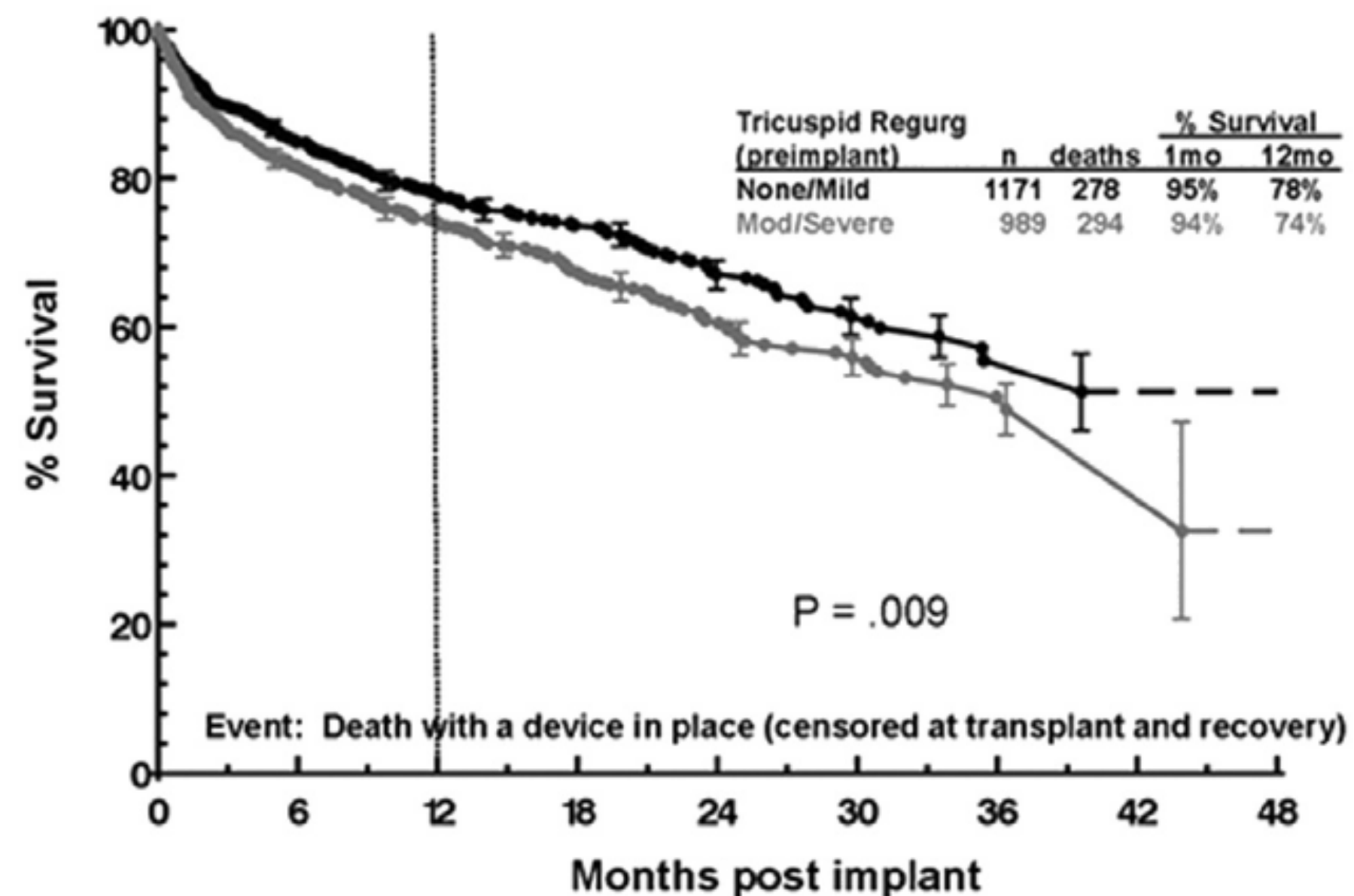
LVAD = left ventricular assist device.

Tricuspid Regurgitation

Limited Utility of Tricuspid Valve Repair at the Time of Left Ventricular Assist Device Implantation

Howard K. Song, MD, PhD, Jill M. Gelow, MD, James Mudd, MD, Christopher Chien, MD, Frederick A. Tibayan, MD, Kathryn Hollifield, BSN, David Naftel, PhD, and James Kirklin, MD

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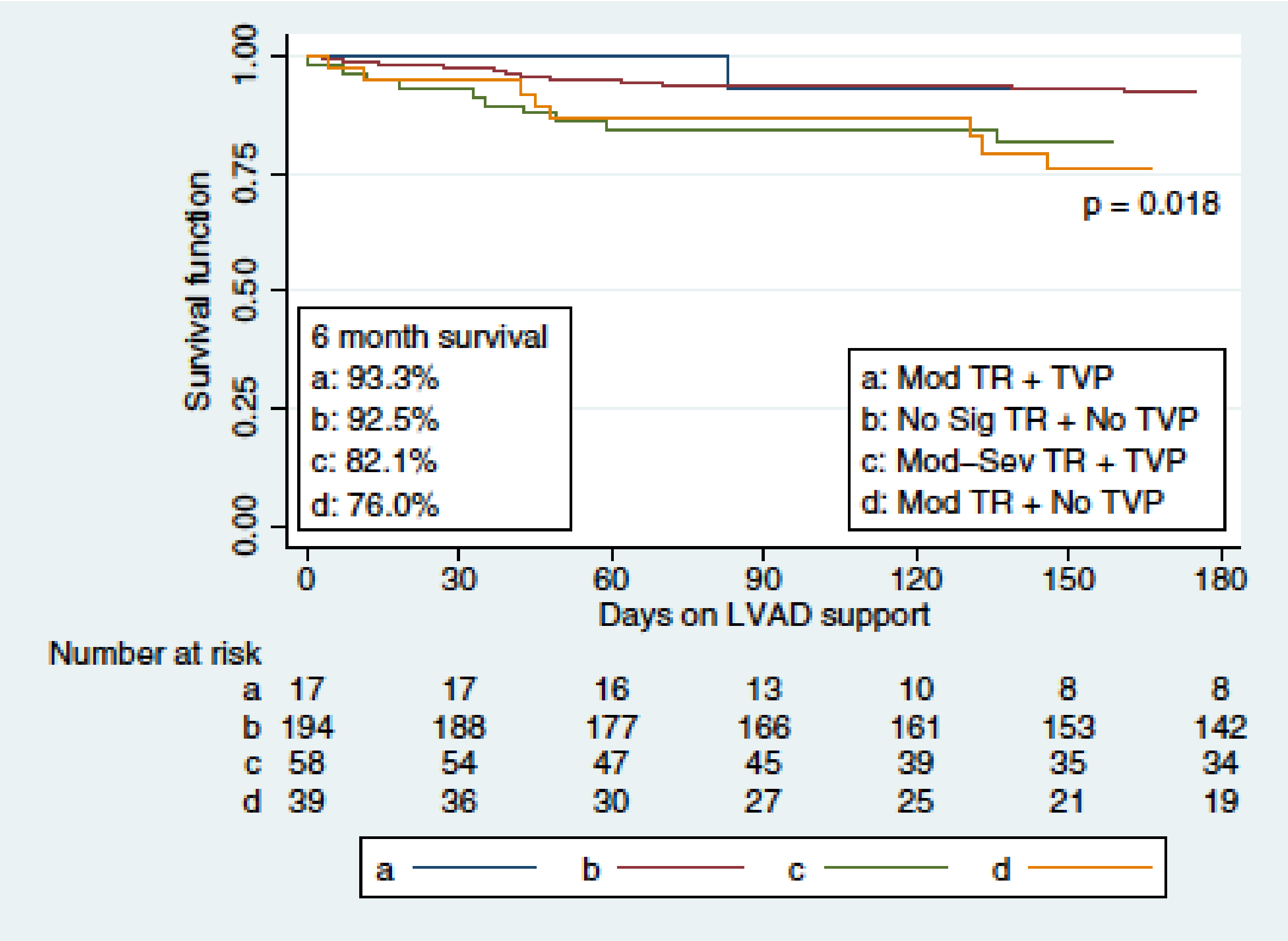
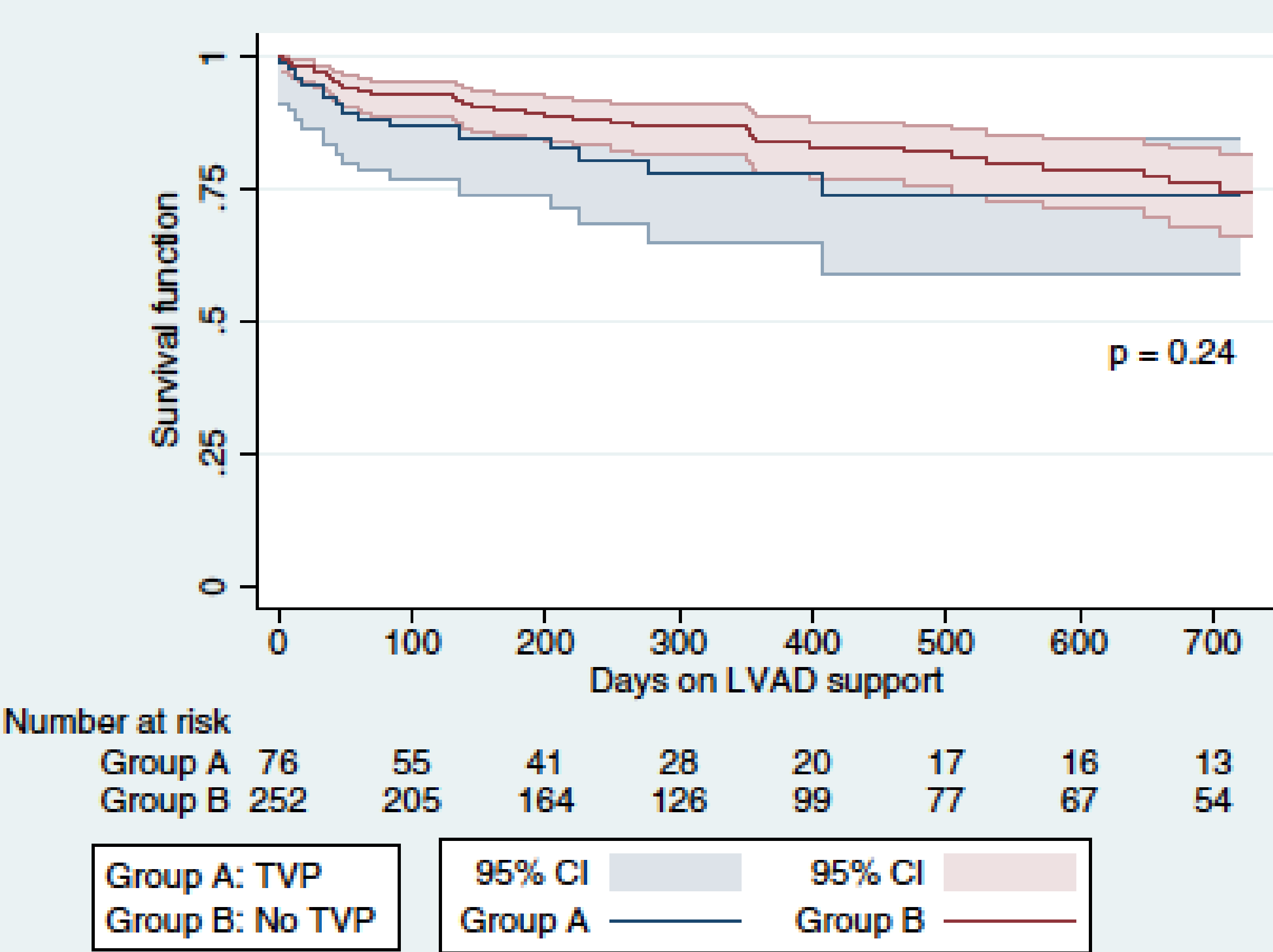
Conclusions. Tricuspid valve repair is performed commonly at the time of LVAD implant despite the fact that it does not confer a clear survival benefit. For many patients, LVAD implant alone relieves preimplant TR as effectively as LVAD implant with TVR. Further study is necessary to determine what factors lead to recurrence of late TR in LVAD patients both with and without TVR.

(Ann Thorac Surg 2016;101:2168–75)

Tricuspid Regurgitation

Durability and clinical impact of tricuspid valve procedures in patients receiving a continuous-flow left ventricular assist device

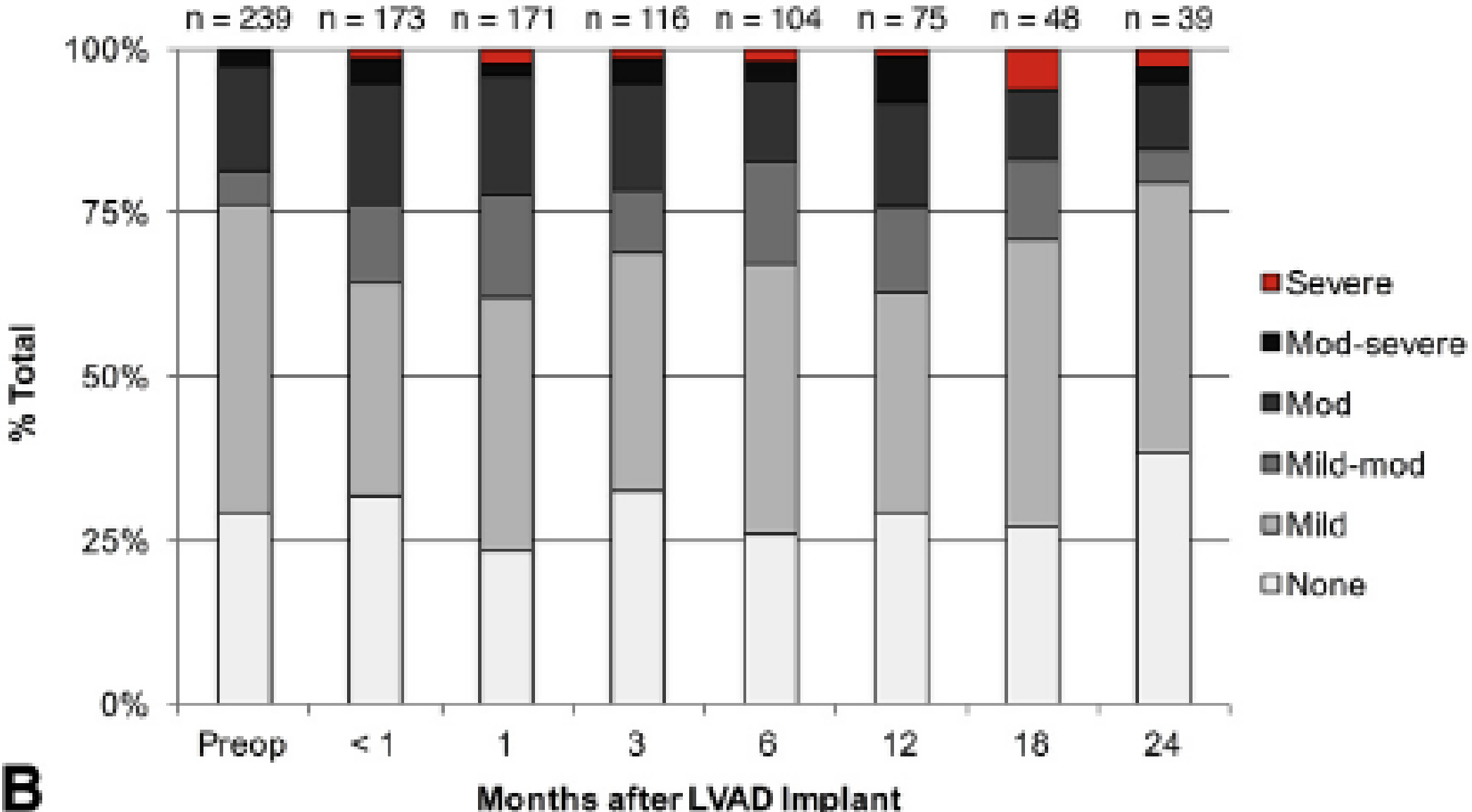
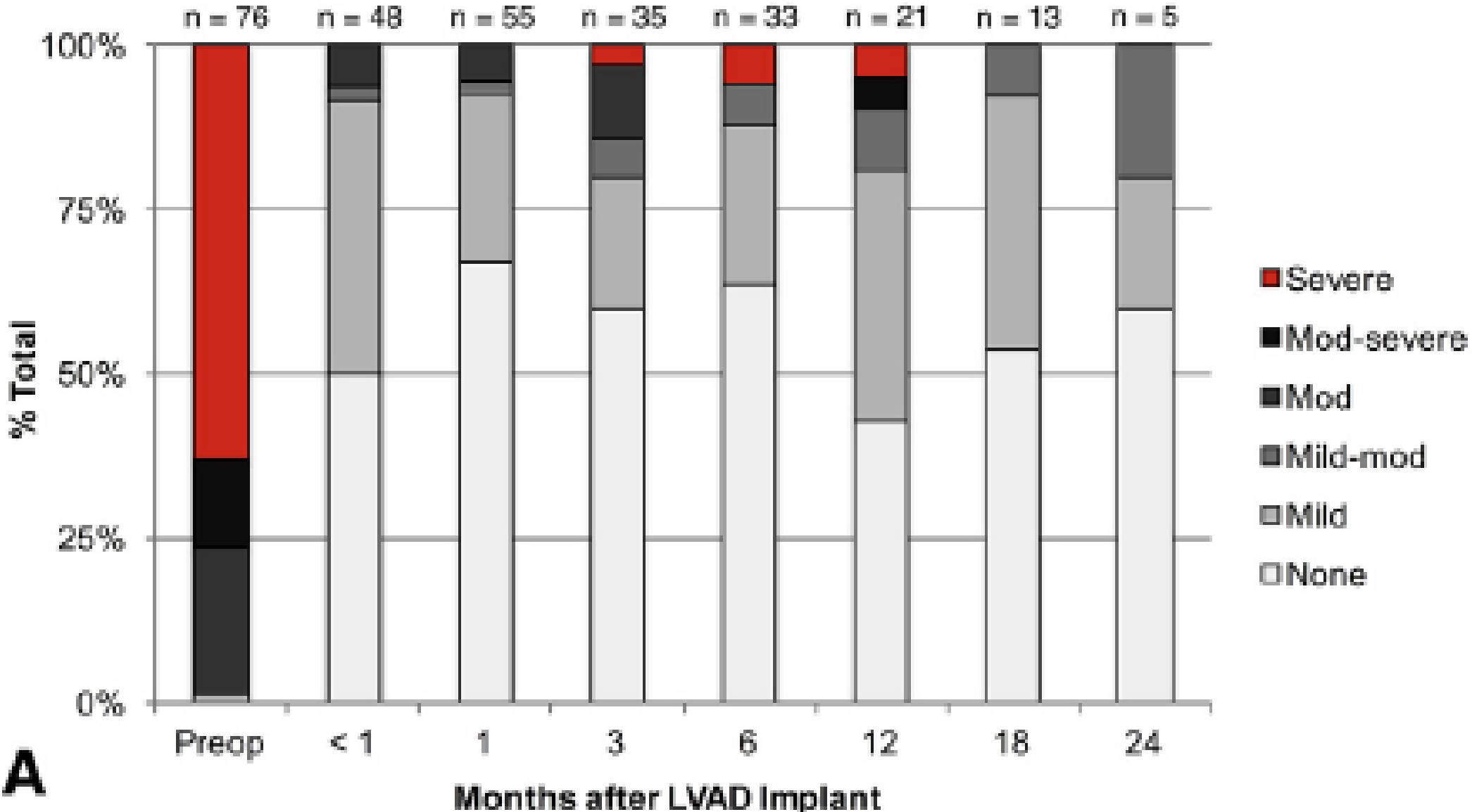
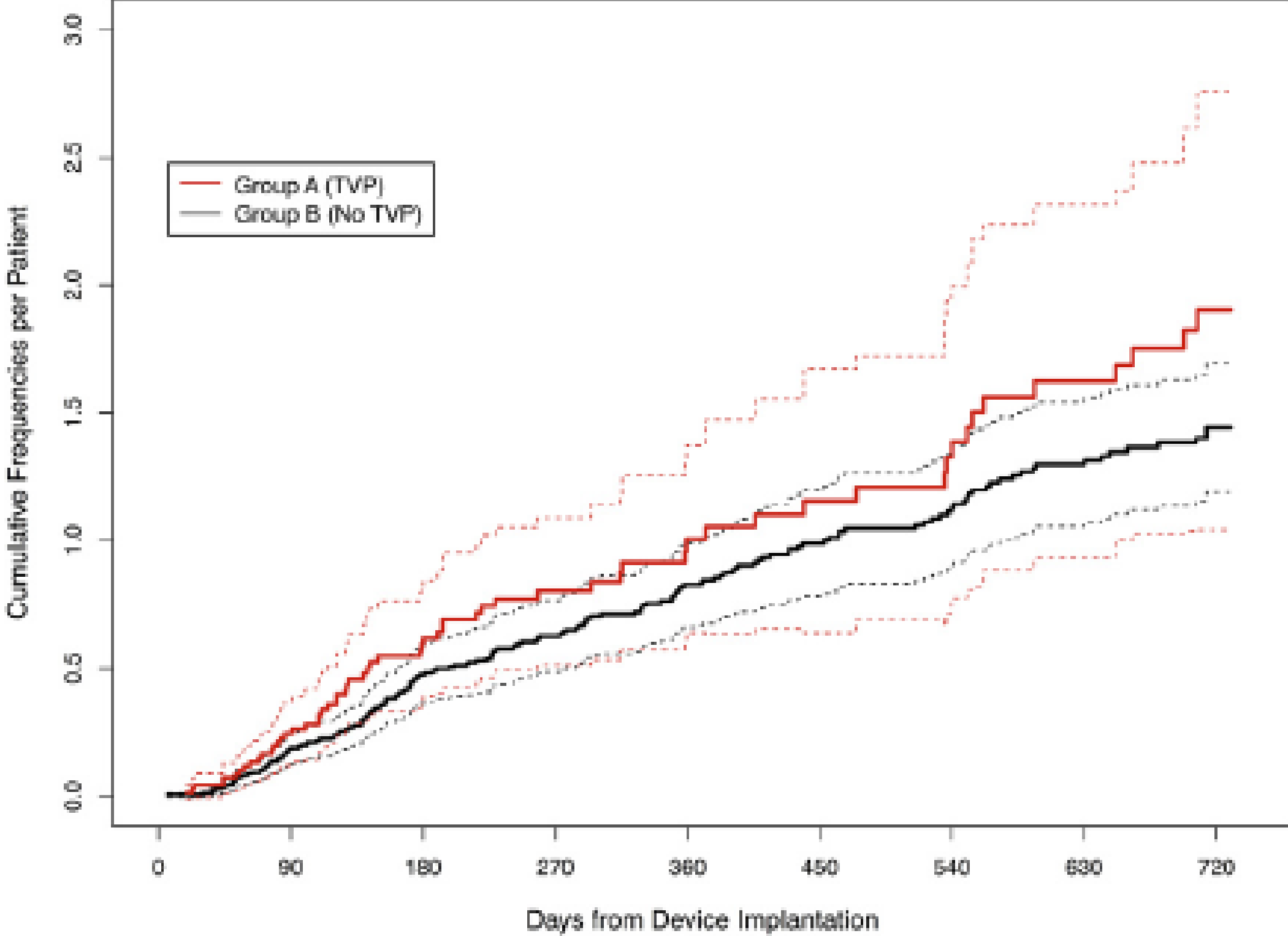
Jiho Han, BS,^a Koji Takeda, MD, PhD,^a Hiroo Takayama, MD, PhD,^a Paul A. Kurlansky, MD,^a Christine M. Mauro, PhD,^c Paolo C. Colombo, MD,^b Melana Yuzefpolskaya, MD,^b Shinichi Fukuhara, MD,^a Lauren K. Truby, MD,^a Veli K. Topkara, MD,^b Arthur R. Garan, MD,^b Donna M. Mancini, MD,^b and Yoshifumi Naka, MD, PhD^a



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Conclusions: Concomitant tricuspid valve procedures at continuous-flow left ventricular assist device implantation can be performed safely and are protective against worsening tricuspid regurgitation during the first 2 years of support. (J Thorac Cardiovasc Surg 2016;151:520-527)

TV Repair

- The data for TV repair in transplants or LVAD does not definitively support routine application
- LVAD
 - > Moderate TR
 - Mild (+annular dimension >4cm) or Moderate TR in patients with high PVR where LVAD unloading may not significantly affect RV afterload
 - Annuloplasty ring
- Transplant
 - No data to support routine TV repair
 - DeVega annuloplasty