STS/EACTS Latin America Cardiovascular Surgery Conference

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Hilton Cartagena | Cartagena, Colombia

Coronary Artery Bypass Grafting in Diabetics: All Arterial or Hybrid?

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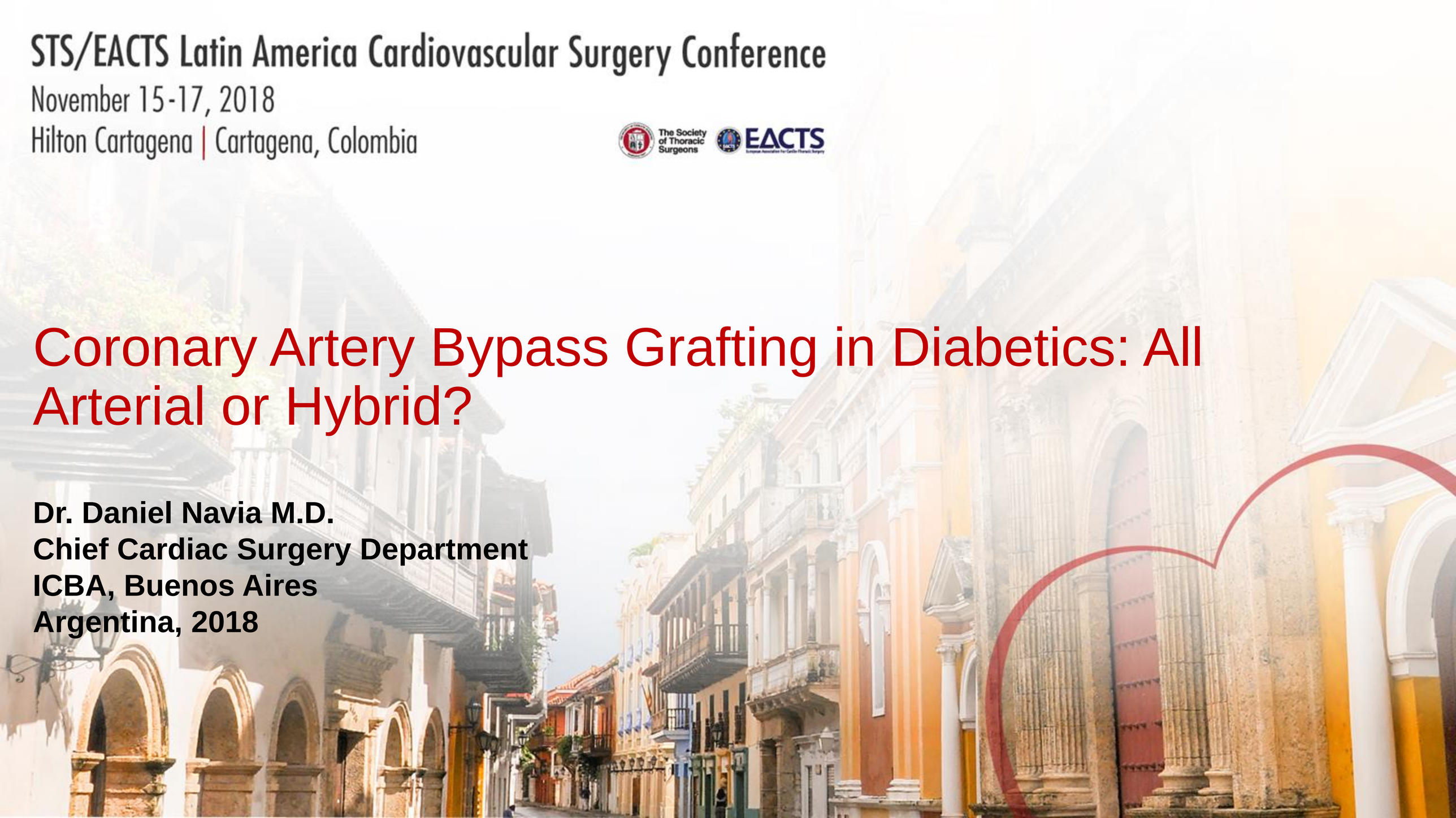

No disclosures

Current evidence

- The FREEDOM trial showed that coronary artery bypass grafting (CABG) should be the preferred revascularization strategy for patients with diabetes mellitus with multivessel coronary artery disease (CAD).

- However, it did not attempt to answer the important question of which surgical revascularization techniques will optimize the outcomes of CABG in these patients.

Surgical revascularization techniques that minimize surgical risk and maximize late survival after coronary artery bypass grafting in patients with diabetes mellitus

Sajjad Raza, MD,[a] Joseph F. Sabik III, MD,[a] Khalil Masabni, MD,[a] Ponnuthurai Ainkaran, MS,[b] Bruce W. Lytle, MD,[a] and Eugene H. Blackstone, MD[a,b]

Methods: From January 1972 to January 2011, 11,922 patients with diabetes underwent primary isolated CABG. The revascularization techniques investigated included bilateral internal thoracic artery (BITA) grafting (n = 938; 7.9%) versus single ITA (SITA) grafting, off-pump (n = 602; 5.0%) versus on-pump CABG, and incomplete (n = 2109; 18%) versus complete revascularization. The median follow-up was 7.8 years and total follow-up, 104,516 patient-years. Multivariable analyses were performed to assess the effects of surgical techniques on hospital outcomes and long-term mortality.

J Thorac Cardiovasc Surg 2014; 148:1257-66

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Risk of DSWI

Factor	Estimate ± SE	OR (68% CL)	*P* value
Demographic data			
Female sex	0.59 ± 0.59	1.80 (1.64-1.99)	<.0001
BMI	0.057 ± 0.01†	—	<.0001
Cardiac comorbidity			
Previous MI	0.46 ± 0.13	1.58 (1.39-1.80)	.0006
Noncardiac comorbidity			
PAD	0.55 ± 0.15	1.73 (1.49-2.01)	.0003
Diabetes			
Pharmacologically treated	0.55 ± 0.24	1.73 (1.36-2.20)	.02
Insulin treated	−0.0094 ± 0.16	0.99 (0.84-1.16)	>.9
Procedure			
ITA graft			
Single (vs SVG only)	0.27 ± 0.19	1.31 (1.08-1.58)	.15
Bilateral (vs SVG only)	1.01 ± 0.25	2.75 (2.14-3.53)	<.0001

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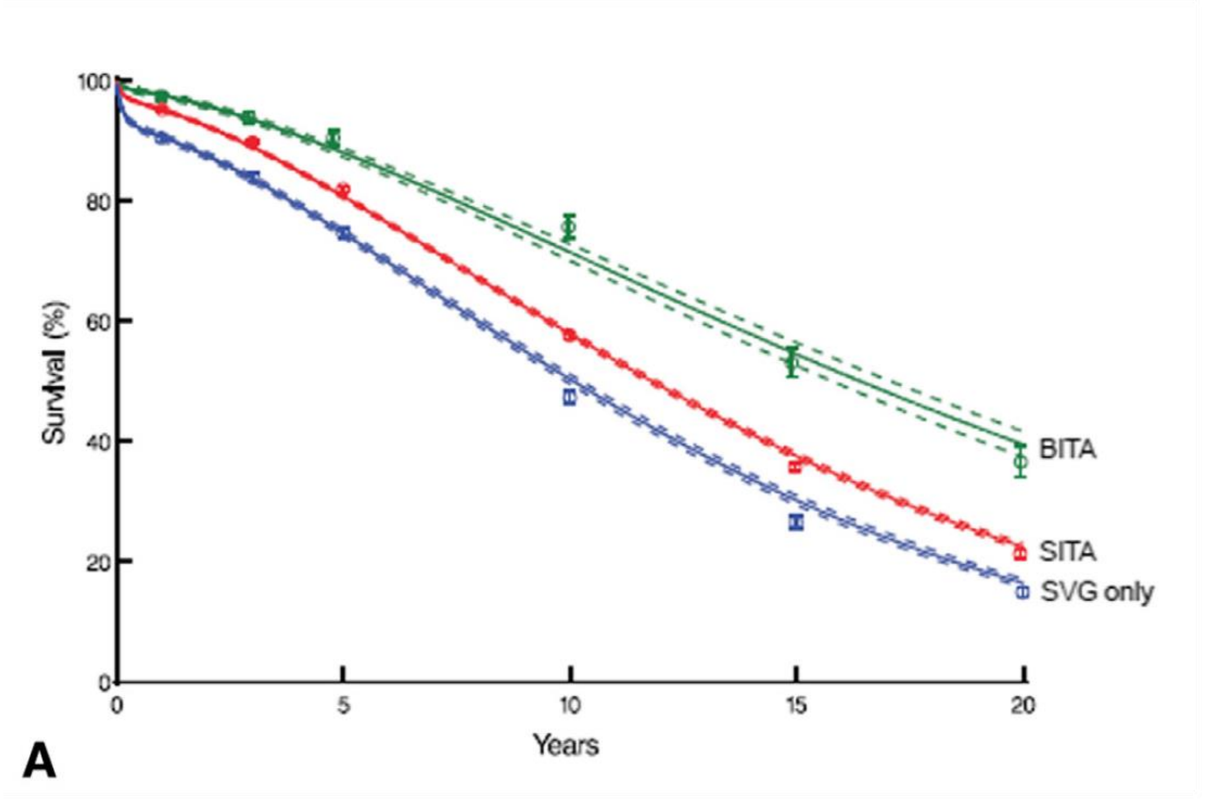

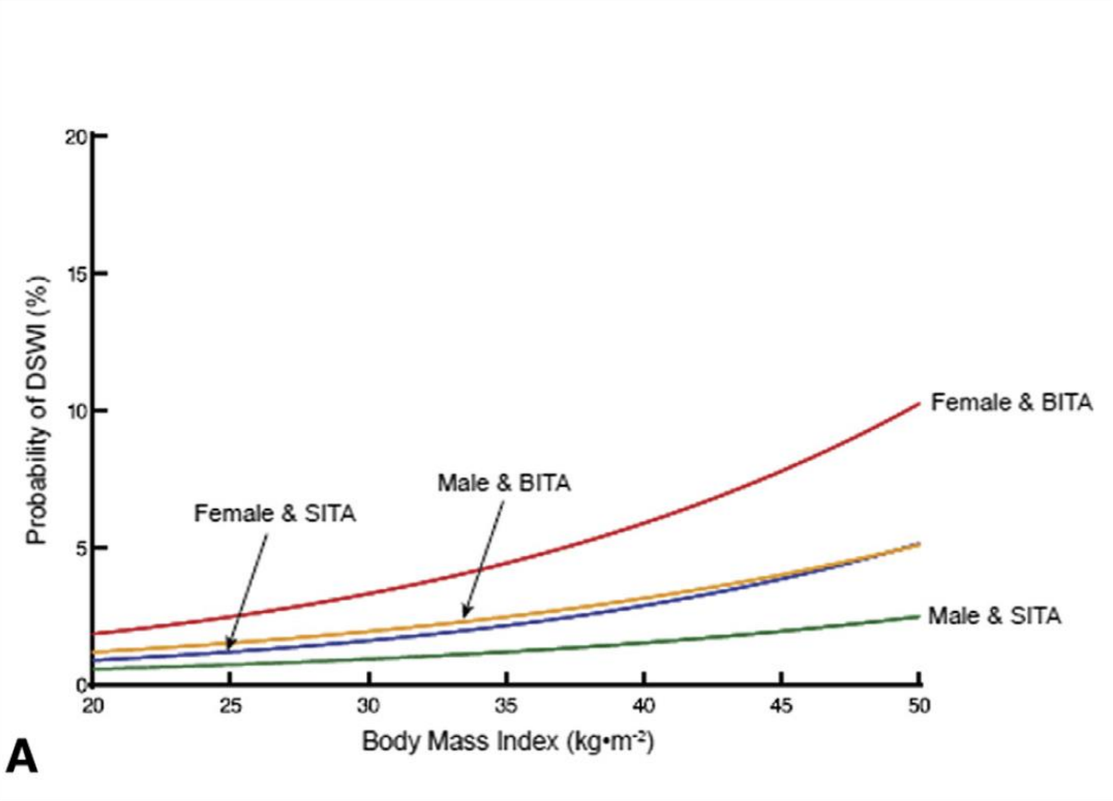

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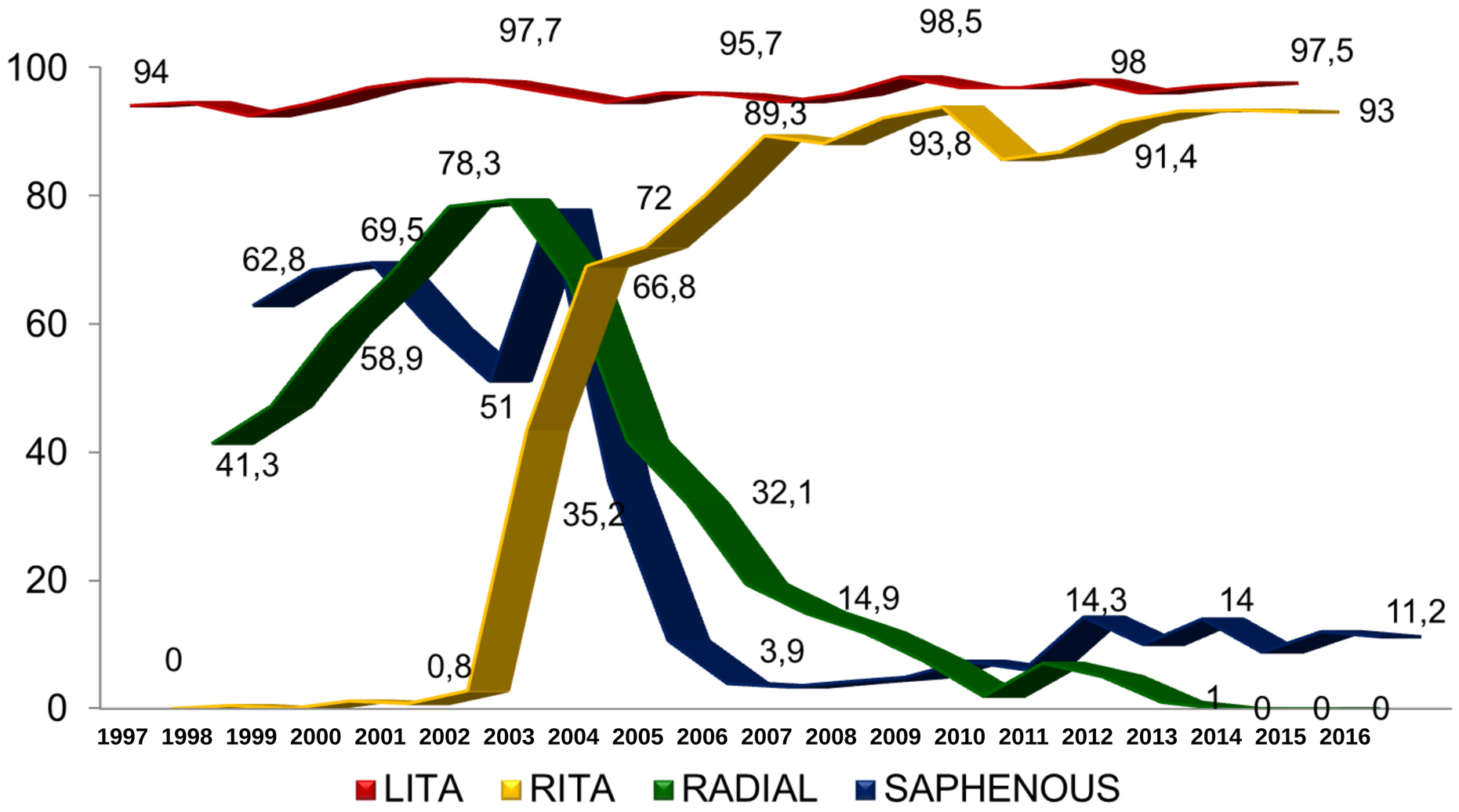
Conclusions:

- BITA grafting with complete revascularization results in the best long-term survival, whereas off-pump versus on-pump surgery resulted in similar long-term survival.
- Although BITA grafting was associated with a higher risk of DSWI than SITA grafting or SVG, the considerable mortality from DSWI minimally affected overall survival because of its rare occurrence.

J Thorac Cardiovasc Surg 2014; 148:1257-66

Our work

Conduit Selection over time

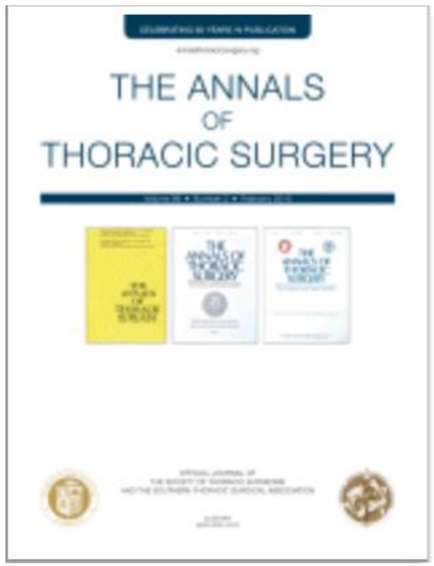


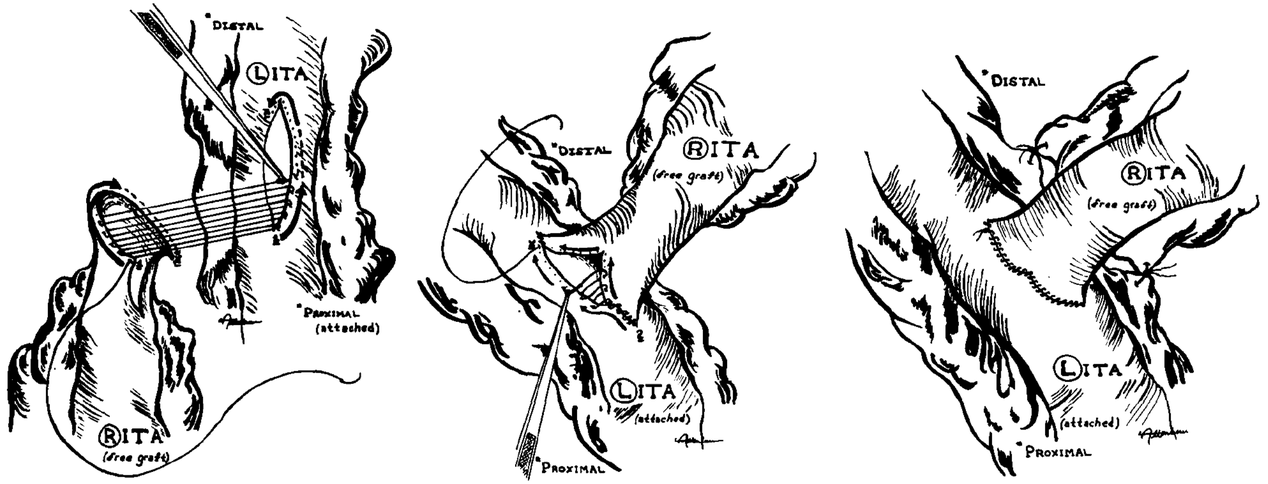
How to do BITA?

(2003-2018) = n: 3297

Total Revascularization With T Grafts

Alfred J. Tector, MD, Susan Amundsen, PA-C, Terence M. Schmahl, MD,
David C. Kress, MD, and Mohan Peter, MD





(Ann Thorac Surg 1994;57:33–9)

Current evidence

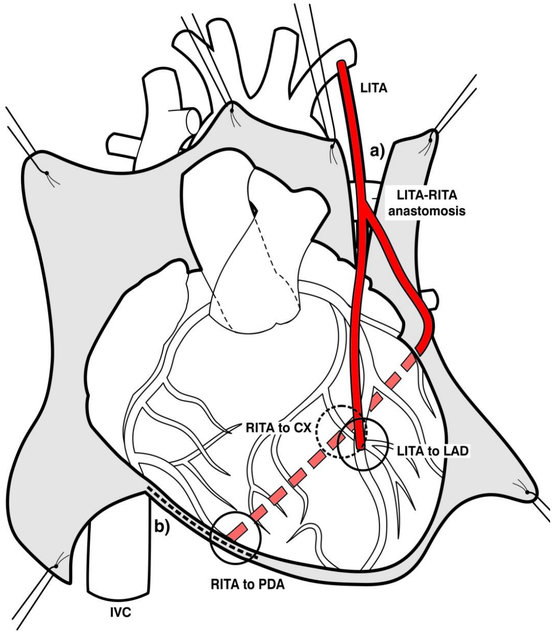
- The routine use of bilateral ITA grafting (BITA) has not been widely adopted in diabetics patients, because of concern about a potential increase in rates of cardiac, respiratory, bleeding, and wound complications

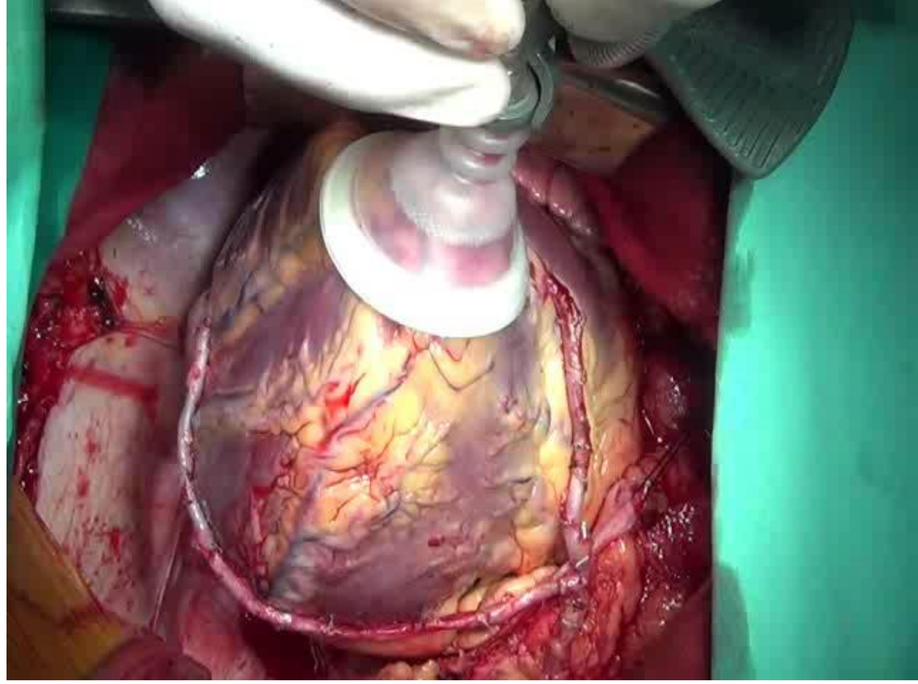
Aim of the study:

- The purpose of this study was to determine in patients with diabetes mellitus whether Off-pump with bilateral internal thoracic artery (BITA) grafting provides similar outcomes compared with patients without diabetes mellitus.

Patients and Methods:

- Retrospective analysis of patients with Off-pump CABG with exclusive use of BITA grafting
- Period of study: from 2004 through 2016.
- 2579 patients for analysis.
- Single center study using data from our surgical data base.
- 95% follow-up complete.
- Short and long term results were analyzed.
- Multivariable analysis with Cox proportional regression model were utilized to identified independent predictors for short and long term outcomes.
- Exclusion Redo CABG, SVD, Emergency Cx, Valvular Cx.





2579 patients 2-3VD

BITA Off-pump

Elective Surgery 67%

No DBT

N:1832 (56%)

DBT

N:747 (44%)

Patients	Characteristics				
		DBT		Total	P
		No	Yes		
n		1832	747	2579	-
Years		63.1(9.5)	65.5(8.3)	63.8(9.2)	,000
Weigh (kg)		82.8(12.9)	85.6(14.9)	83.6(13.6)	,000
Height (cm)		172.0(7.5)	171.5(8.0)	171.9(7.6)	,104
BMI (kg/m2)		27.9(3.7)	29.0(4.3)	28.3(3.9)	,000
Gender	Male	91,0%	89,2%	90,5%	,150
HTA		77,8%	87,8%	80,7%	,000
DLP		81,8%	86,5%	83,2%	,004
Current Smoking	No	32,3%	36,3%	33,4%	,000
	Ex	47,4%	50,5%	48,3%	
	Si	20,3%	13,3%	18,3%	
Family History		28,2%	20,5%	26,0%	,000
HbA1c (%)		5.7(.5)	7.0(1.7)	6.2(1.2)	,000
CABG		,4%	,9%	,6%	,130
PCI		21,8%	21,2%	21,6%	,702
COPD		4,0%	3,2%	3,8%	,319
Stroke		3,5%	4,6%	3,8%	,202
Renal Failure		4,1%	8,6%	5,4%	,000
LVEF	Preserved	60,1%	57,3%	59,3%	,058
	Mild	27,0%	25,7%	26,6%	
	Moderate	9,4%	12,7%	10,4%	
	Severe	3,5%	4,3%	3,8%	
Priority	Urgency	33,1%	32,3%	32,8%	,689
	Elective	66,9%	67,7%	67,2%	
MI		7,9%	7,6%	7,8%	,844
LMT		24,2%	23,3%	23,9%	,632
Nro of vessels	2	22,2%	19,1%	21,3%	,084
	3	77,8%	80,9%	78,7%	

Postoperative Outcomes:

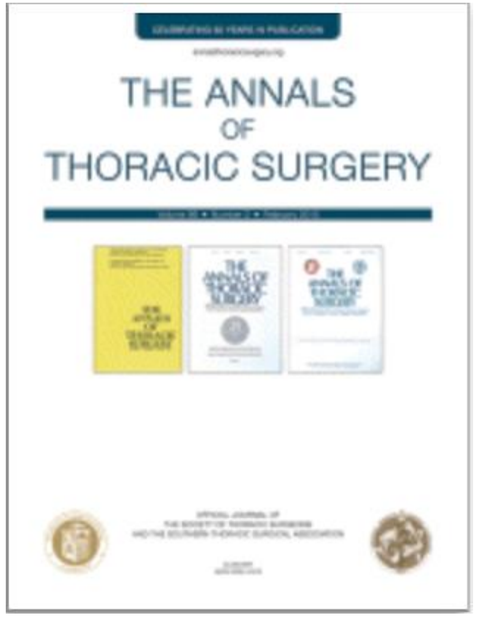
	DBT		Total	P
	No	Yes		
Mortality	1,3%	1,2%	1,2%	,916
Stroke (>24hrs)	,4%	,4%	,4%	,901
DSWI	1,1%	3,3%	1,7%	,000
Prolonged Vent	1,6%	1,1%	1,4%	,321
Renal failure Po	8,6%	11,9%	9,5%	,009
Dialysis	,7%	,8%	,7%	,682
Redo for Bleeding	,5%	0,0%	,4%	,043
Redo for Ischemia	,4%	,3%	,3%	,655
OR extubation	83,4%	78,3%	81,9%	,002
AF	11,4%	14,1%	12,1%	,057
Peak glycemic (mg%)	175.9(39.5)	200(51.9)	182.9(44.8)	,000

Independent predictors for Hospital Mortality

	p	OR	CI 95%	
			Lower	Upper
Age	,000	1,092	1,044	1,142
Urgency Cx	,000	4,152	1,876	9,193
Smoking History	,000	4,404	1,964	9,877
LVEF (<30%)	,000	5,705	2,275	14,311

Cox proportional regression model

DBT : p= 0,916

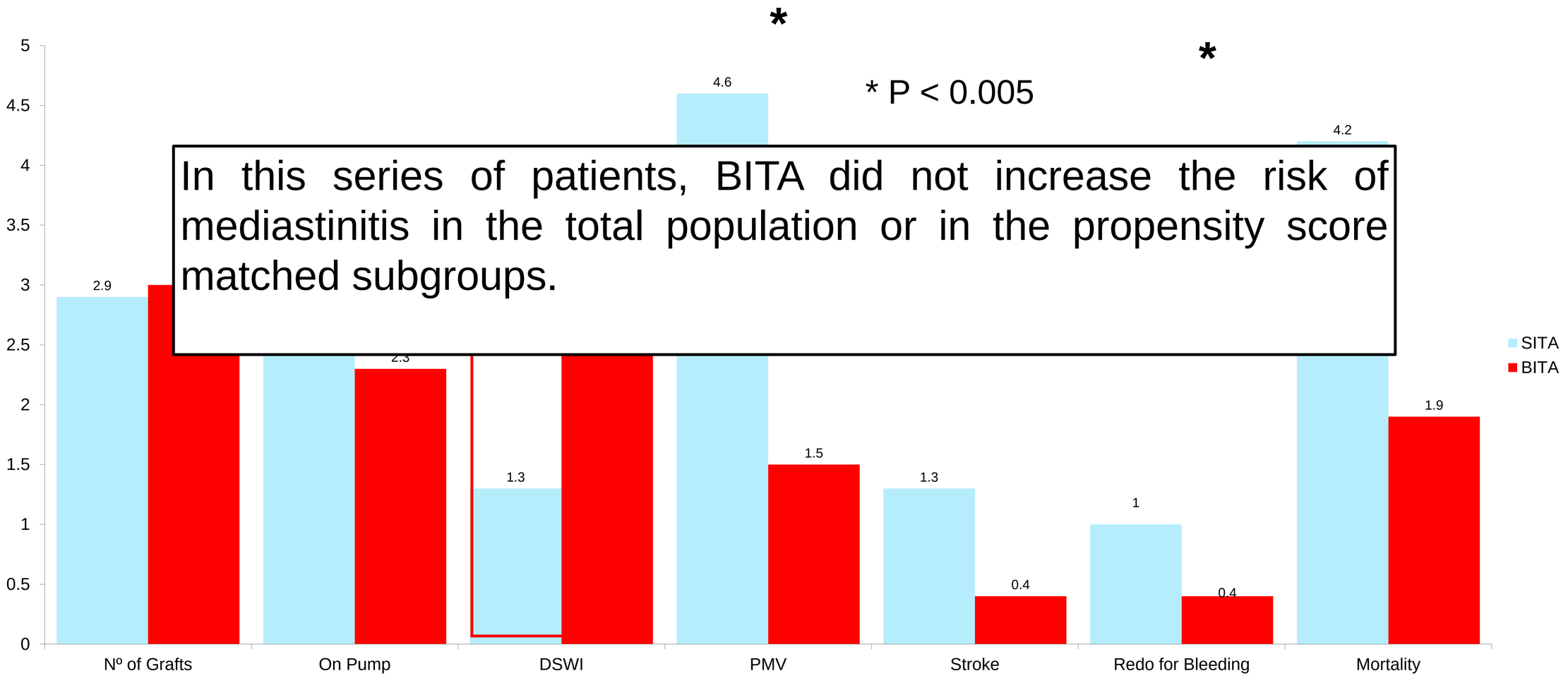


Bilateral Internal Thoracic Artery Grafting Increases Mediastinitis: Myth or Fact?

Juan M. Vrancic, MD, Fernando Piccinini, MD, Mariano Camporrotondo, MD, Juan C. Espinoza, MD, Juan I. Camou, MD, Francisco Nacinovich, MD, Pablo Fernandez Oses. MD. and Daniel Navia. MD

(Ann Thorac Surg 2017;103:834–9)

Intra - Postoperative Results
Propensity Matched Group (n: 1040)



In this series of patients, BITA did not increase the risk of mediastinitis in the total population or in the propensity score matched subgroups.

(Ann Thorac Surg 2017;103:834–9)

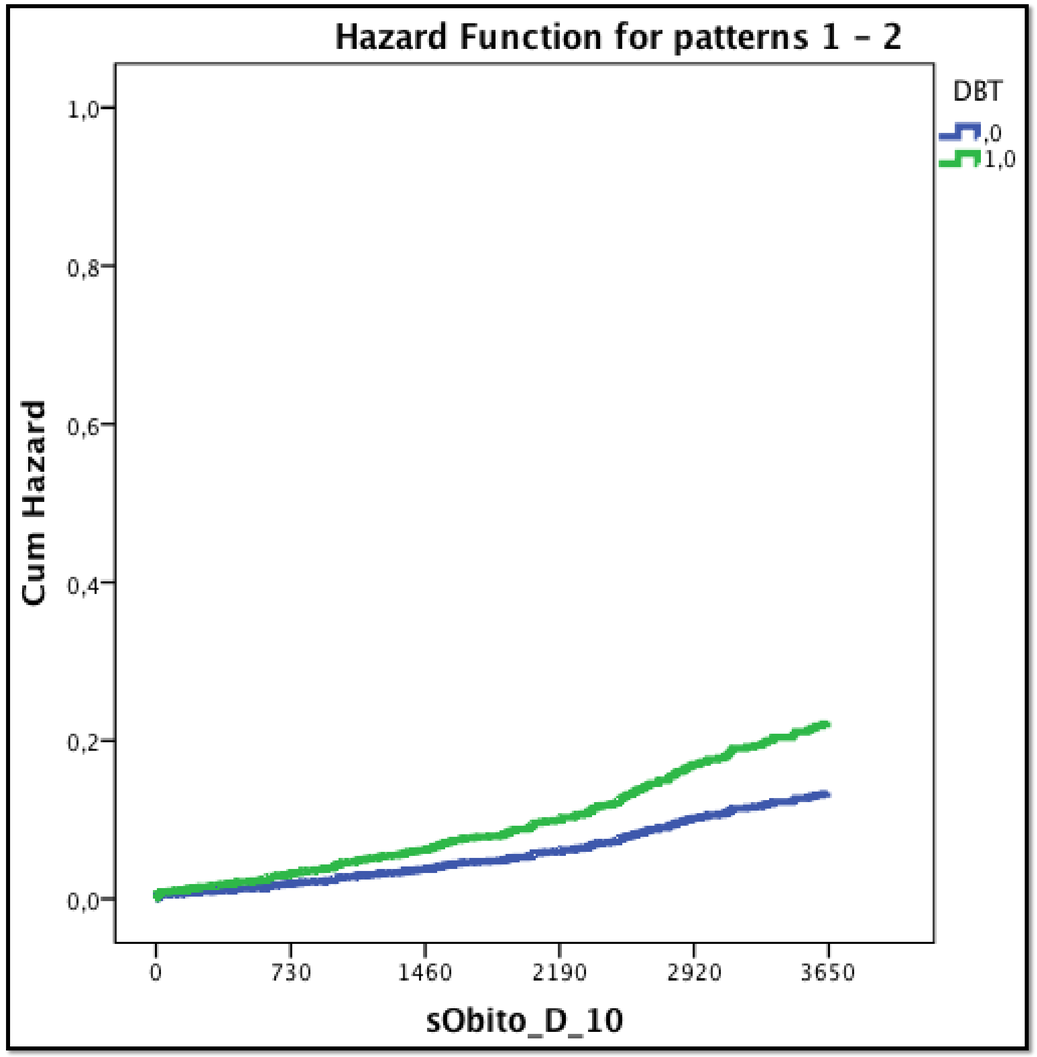
Independent predictors for po Mediastinitis

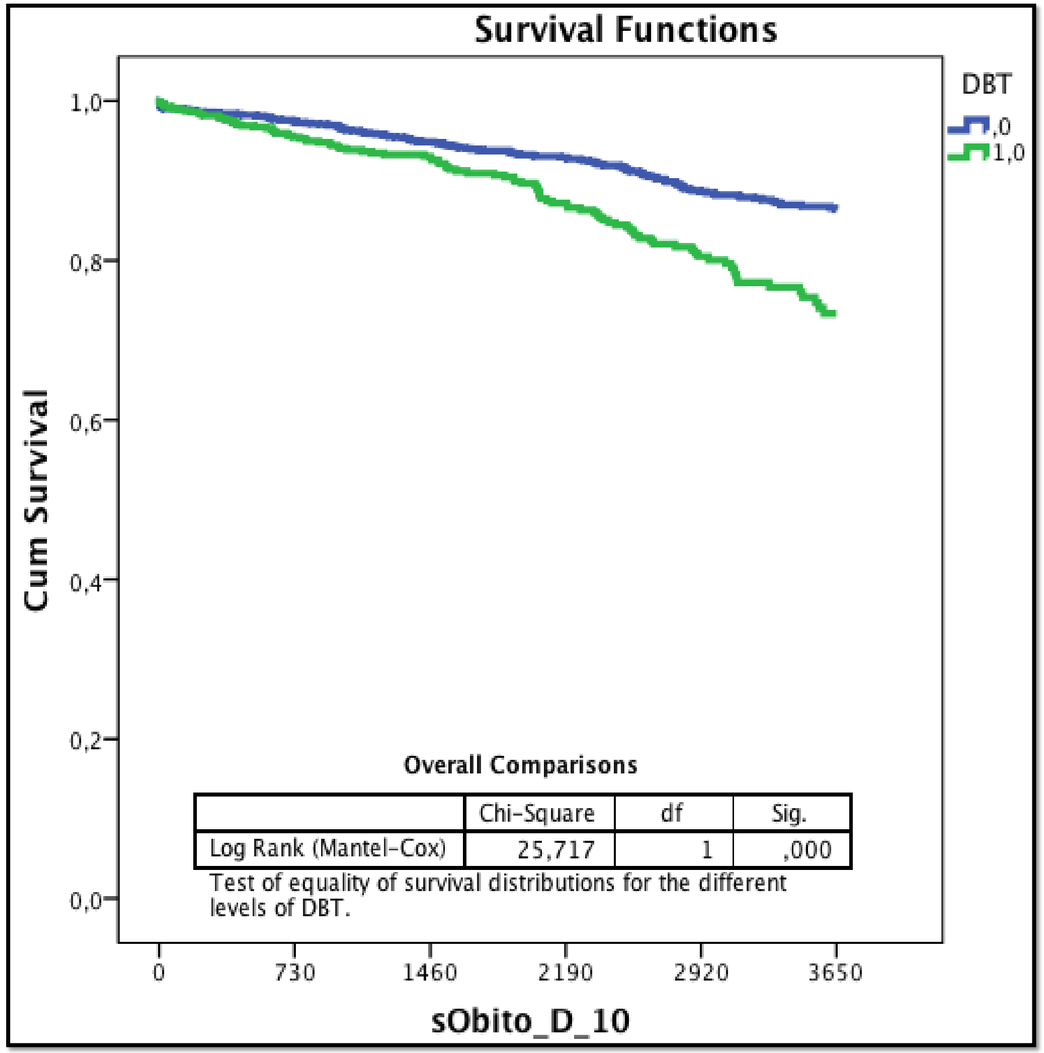
	p	OR	CI 95%	
			Lower	Upper
DBT	,000	3,085	1,697	5,609
LVEF (<30%)	,026	3,017	1,144	7,955
Urgency Cx	,008	2,247	1,235	4,089
Female	,043	2,181	1,025	4,638

Cox proportional regression model

Long Term follow-up

Long Term Survival: DBT vs. no-DBT





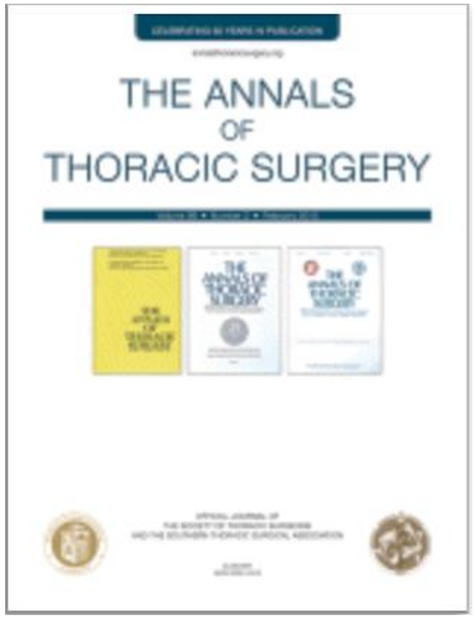
Independent predictors for Long Term Survival

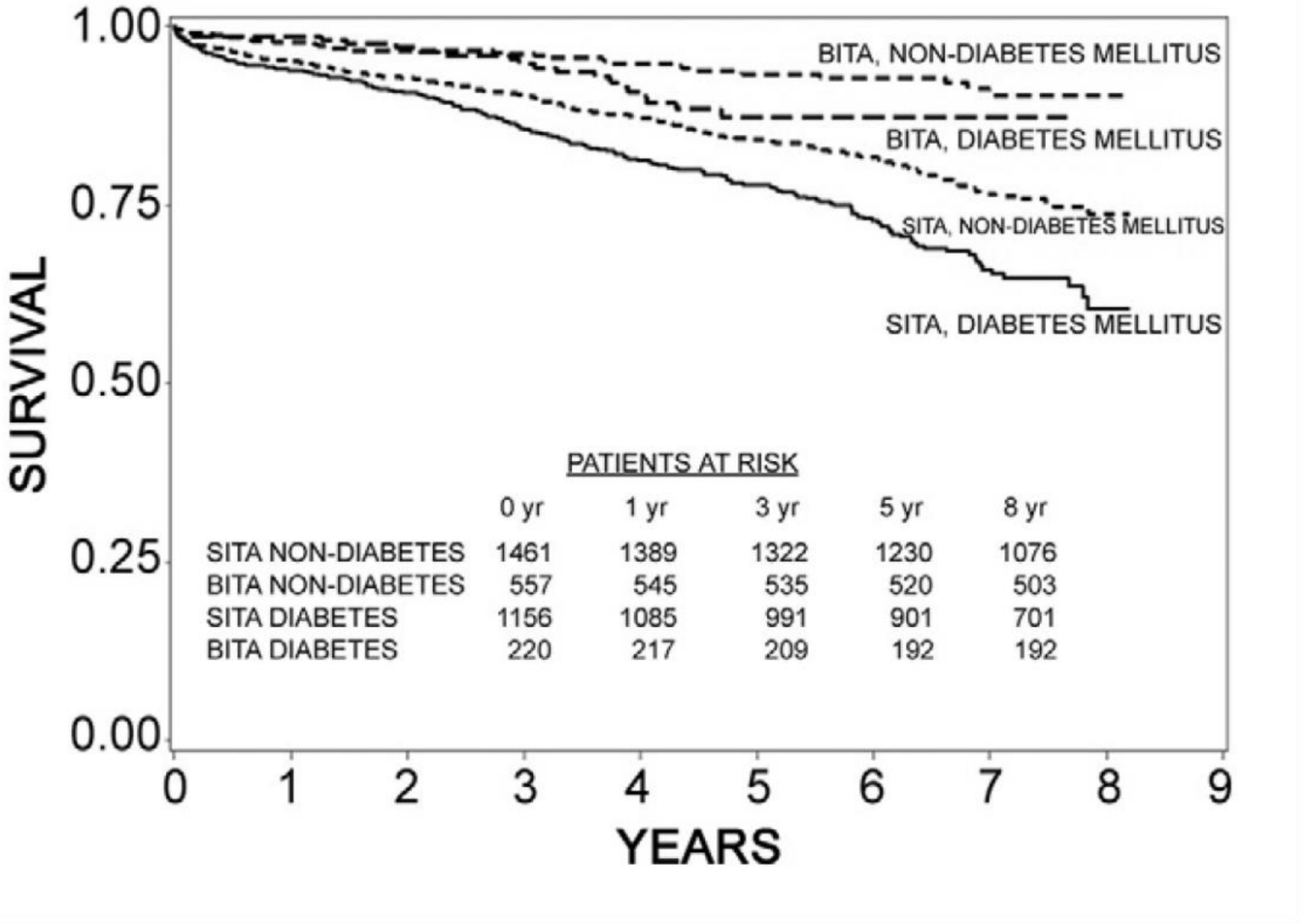
	p	HR	CI 95%	
			Lower	Upper
COPD	,043	1,693	1,017	2,820
Urgency Cx	,013	1,376	1,069	1,773
LVEF (<30%)	,001	2,224	1,416	3,493
Renal Failure/dialysis	,001	1,990	1,333	2,970
DBT	,000	1,649	1,279	2,126
Age > 65 yo	,000	2,953	2,245	3,883

Cox proportional regression model

Bilateral Internal Thoracic Artery Grafting Is Associated With Significantly Improved Long-Term Survival, Even Among Diabetic Patients

John D. Puskas, MD, Adil Sadiq, MS, MCh, Thomas A. Vassiliades, MD,

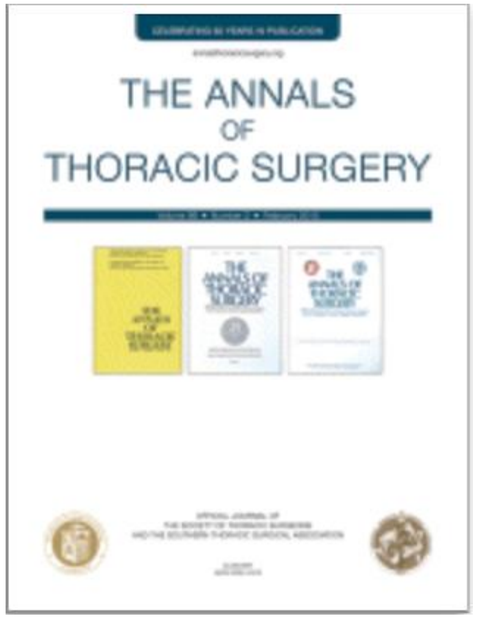




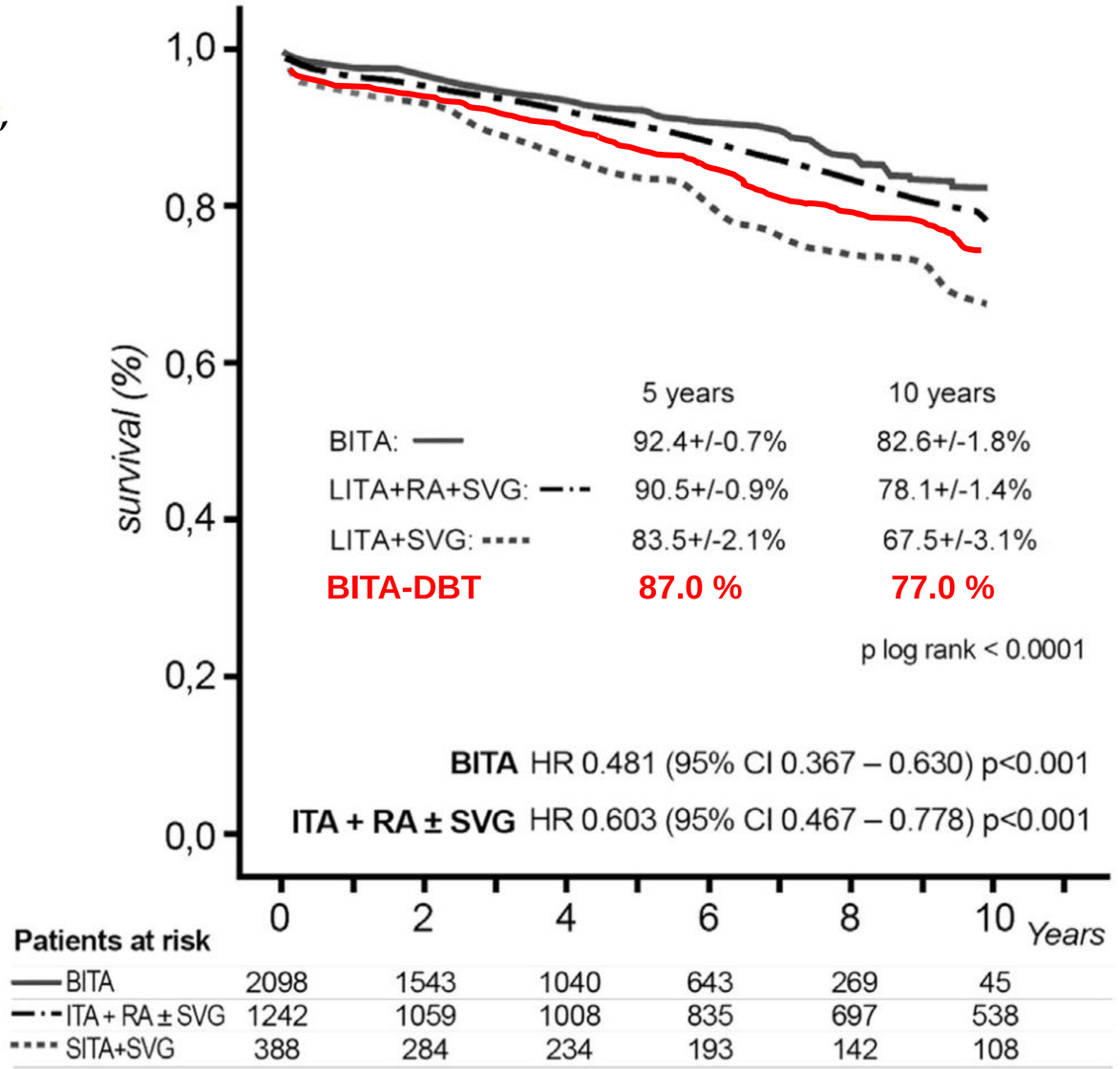
Ann Thorac Surg 2012;94:710–6

Myocardial Revascularization Exclusively With Bilateral Internal Thoracic Arteries in T-Graft Configuration: Effects on Late Survival

Daniel O. Navia, MD, Mariano Vrancic, MD, Fernando Piccinini, MD, Mariano Camporrotondo, MD, Alberto Dorsa, MD, Juan Espinoza, MD, Mariano Benzadon, MD, and Juan Camou, MD



Ann Thorac Surg 2016;101:1775–81

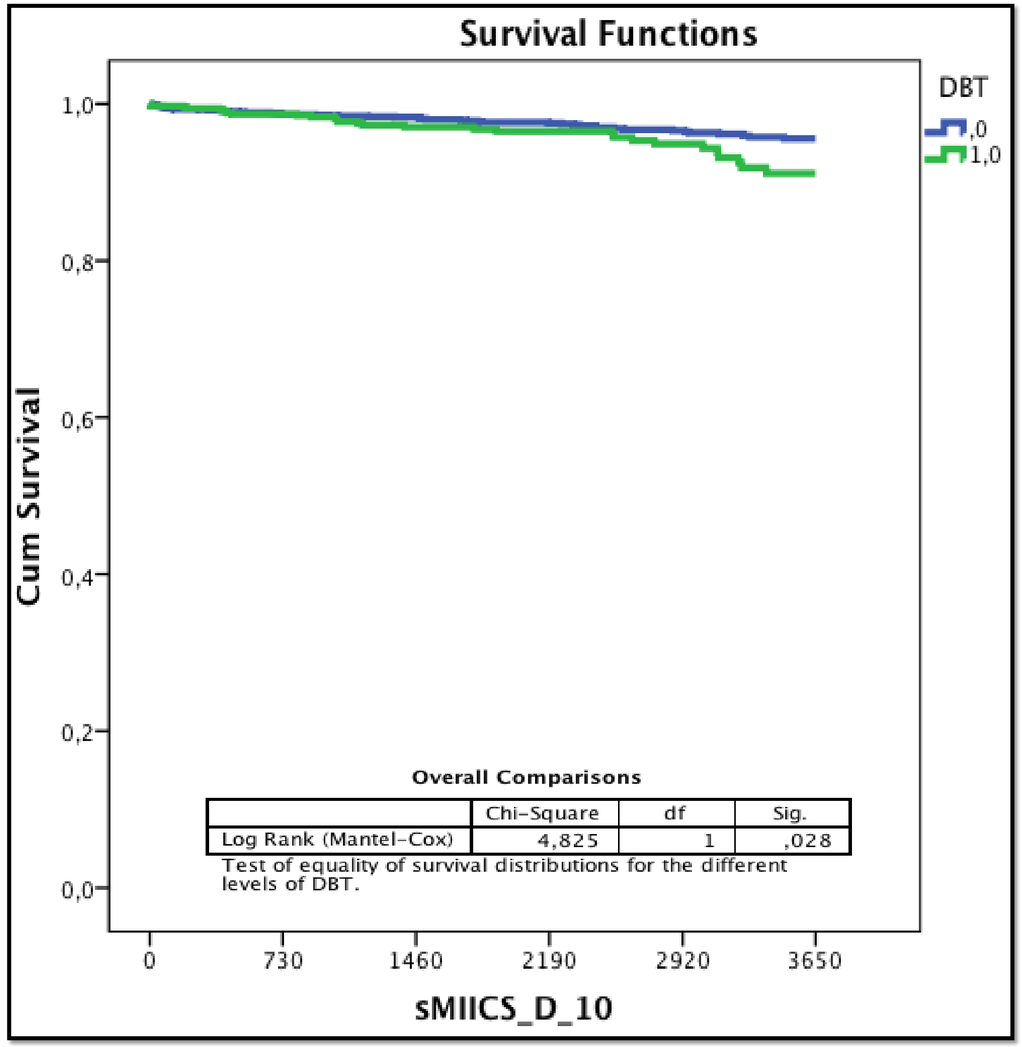


Independent predictors for Readmission

(MI, HF, Med. Stroke)

	p	HR	CI 95% Lower	CI 95% Upper
Renal failure / Dialysis	**,000**	**3,430**	**1,838**	**6,401**
Age > 65 yo	**,000**	**2,514**	**1,561**	**4,051**
DBT	,214	1,345	,843	2,146

Cox proportional regression model

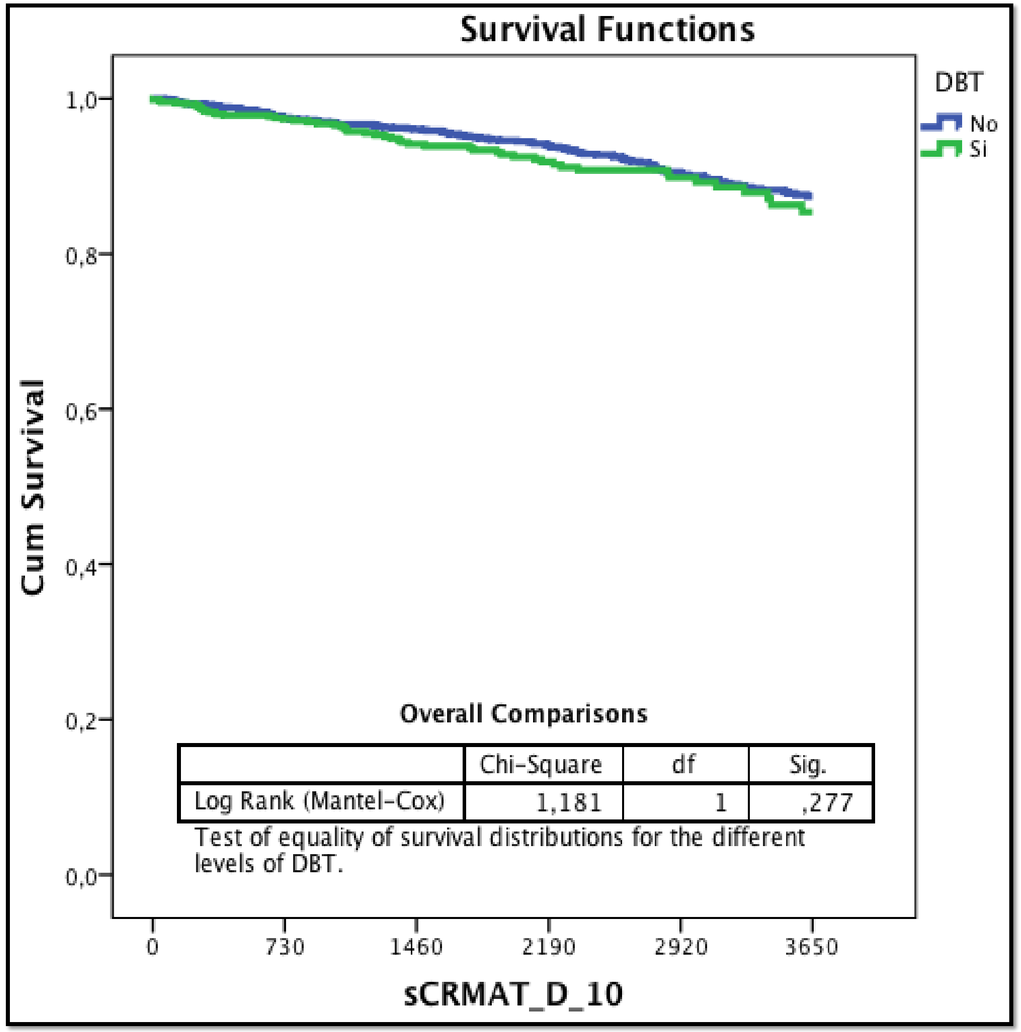


Independent predictors for Reintervention

(PCI +/- CABG)

	p	HR	CI 95%	
			Lower	Upper
Female	**,000**	**2,287**	**1,530**	**3,419**
Age < 65 yo	**,013**	**1,480**	**1,086**	**2,017**
DBT	,226	1,225	,882	1,702

Cox proportional regression model



Conclusions:

- DBT was not an independent predictor for worse po outcomes between groups.
- DBT and female sex were independent predictors for the incidence of Mediastinitis, but not the use of BITA.
- Patients with DBT had a significantly lower survival rate a 10 years of follow-up.

Conclusions:

- At ten years of follow-up, patients with DBT had similar periods of freedom from readmission and reintervention than patients w/o DBT.

- Off-pump CABG with BITA in DBT patients with MVD is a safe procedure with similar short and long term outcomes than patients w/o DBT.

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THANK YOU