70TH ESCVS CONGRESS
& 7TH IMAD MEETING

20 I 23 JUNE 2022

CHU de Liège · LIÈGE université · ANEURYSMAL PATHOLOGY Foundation 2009

Is DOR-plasty still there?

Lorenzo A. Menicanti
IRCCS Policlinico San Donato
Milano- Italy

No Conflict of interest

Lorenzo A. Menicanti MD

IRCCS Policlinico San Donato

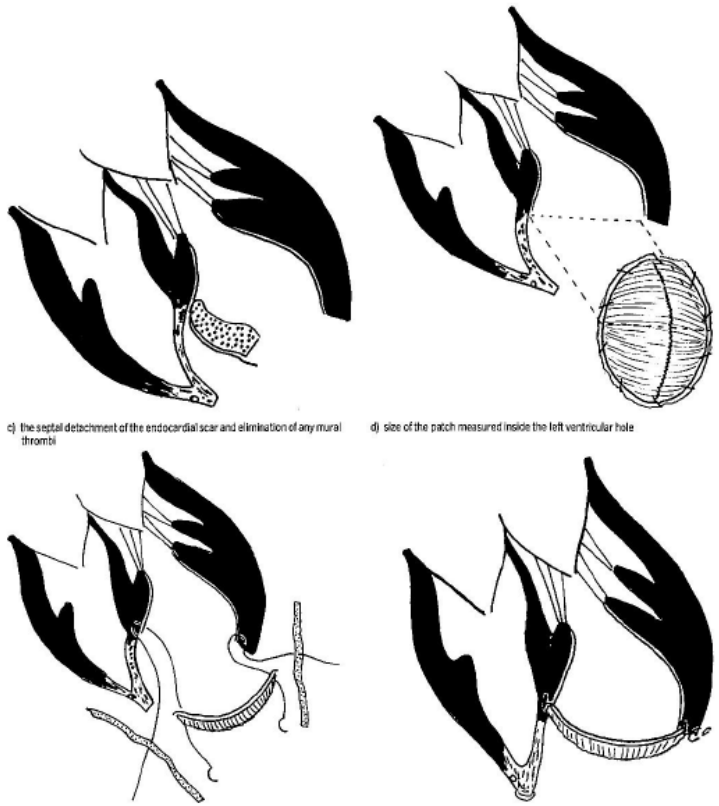
San Donato Milanese – Milano Italy

Left Ventricular Aneurysm: A New Surgical Approach

V. Dor, M. Saab, P. Coste, M. Kornaszewska, and F. Montiglio*

Centre Cardiothoracique de Monaco, Monaco

* Service de chirurgie cardiaque, Hopital Pasteur, CHU, Nice, France



c) the septal detachment of the endocardial scar and elimination of any mural thrombi

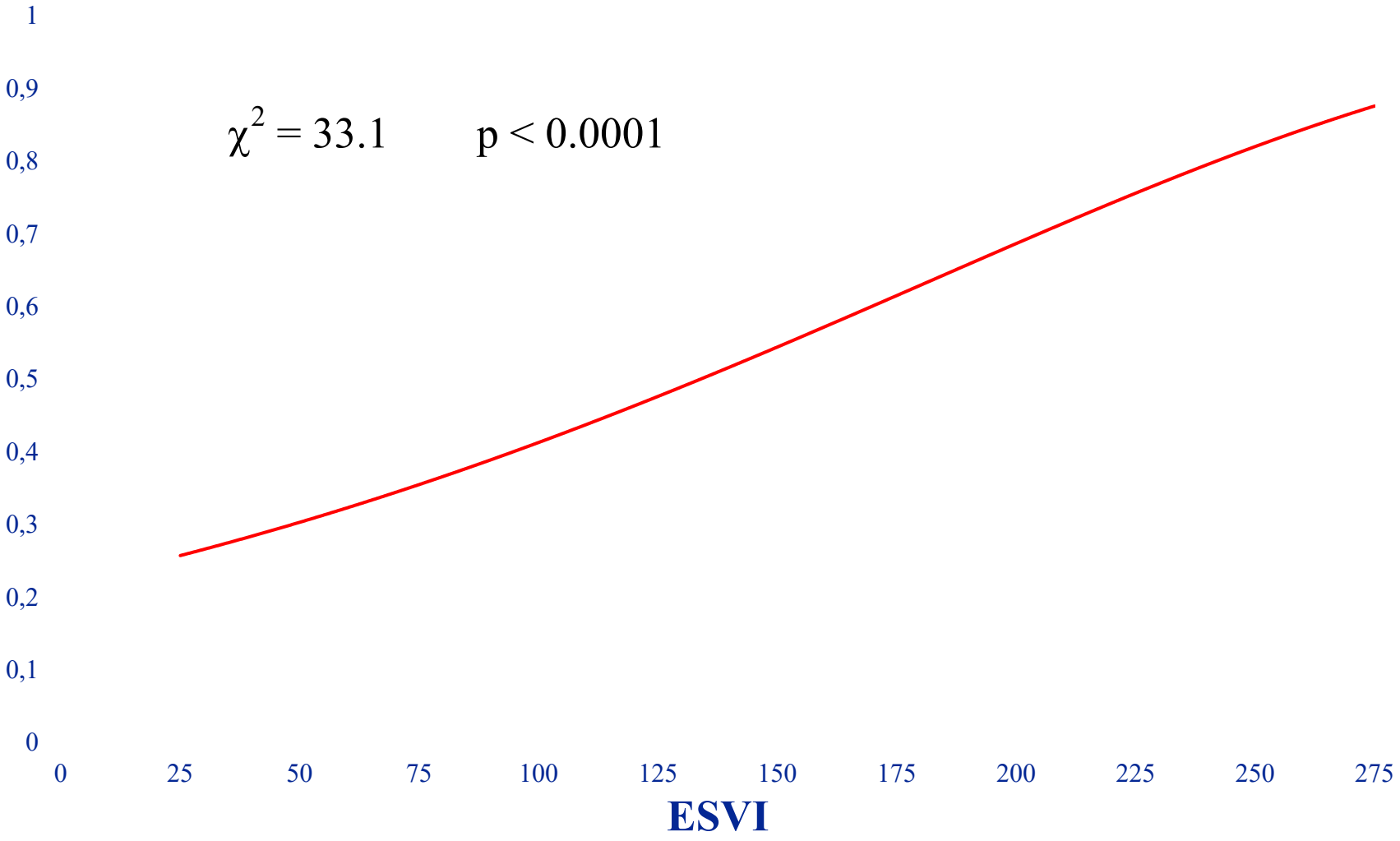
d) size of the patch measured inside the left ventricular hole

The technique involves the following steps:

- Resection of dyskinetic or akinetic LV free wall and thrombectomy when indicated.
- A dacron patch lined with pericardium is secured at the junction of the endocardial muscle and scarred tissue, thereby excluding non contractile portions of the LV and septum.
- Myocardial revascularization is performed as indicated with particular attention paid to revascularizing the proximal left anterior descending segment.

Presented in part at the 17th Annual Meeting of the German Society for Thoracic and Cardiovascular Surgery, Bad Nauheim, 1988

5-Year Mortality vs. ESVI



Courtesy of Kerry Lee

I.R.C.C.S. POLICLINICO SAN DONATO

8 Myocardial revascularization in patients with heart failure

8.1.2 Ventricular reconstruction and aneurysm resection

The aim of surgical ventricular reconstruction (SVR) is to restore physiological volume, and achieve an elliptical shape of the LV, by scar resection and LV wall reconstruction on a mannequin of predefined size. The aim of ventricular aneurysmectomy is to remove fibrous scars in cases of severe dilatation, thrombus formation, or as a source of life-threatening ventricular arrhythmias.

Recommendations on revascularizations in patients with chronic heart failure and systolic left ventricular dysfunction (ejection fraction ≤35%)

Recommendations	Class[a]	Level[b]
In patients with severe LV systolic dysfunction and coronary artery disease suitable for intervention, myocardial revascularization is recommended.[81,250]	I	B
CABG is recommended as the first revascularization strategy choice in patients with multivessel disease and acceptable surgical risk.[68,81,248,255]	I	B
In patients with one- or two-vessel disease, PCI should be considered as an alternative to CABG when complete revascularization can be achieved.	IIa	C
In patients with three-vessel disease, PCI should be considered based on the evaluation by the Heart Team of the patient's coronary anatomy, the expected completeness of revascularization, diabetes status, and comorbidities.	IIa	C
LV aneurysmectomy during CABG should be considered in patients with NYHA class III/IV, large LV aneurysm, large thrombus formation, or if the aneurysm is the origin of arrhythmias.	IIa	C
Surgical ventricular restoration during CABG may be considered in selected patients treated in centres with expertise.[252–254,256,257]	IIb	B

The NEW ENGLAND JOURNAL of MEDICINE

I.R.C.C.S. POLICLINICO SAN DONATO

Coronary Bypass Surgery with or without Surgical Ventricular Reconstruction

Robert H. Jones, M.D., Eric J. Velazquez, M.D., Robert E. Michler, M.D., George Sopko, M.D., Jae K. Oh, M.D., Christopher M. O'Connor, M.D., James A. Hill, M.D., Lorenzo Menicanti, M.D., Zygmunt Sadowski, M.D., Patrice Desvigne-Nickens, M.D., Jean-Lucien Rouleau, M.D., and Kerry L. Lee, Ph.D., for the STICH Hypothesis 2 Investigators*

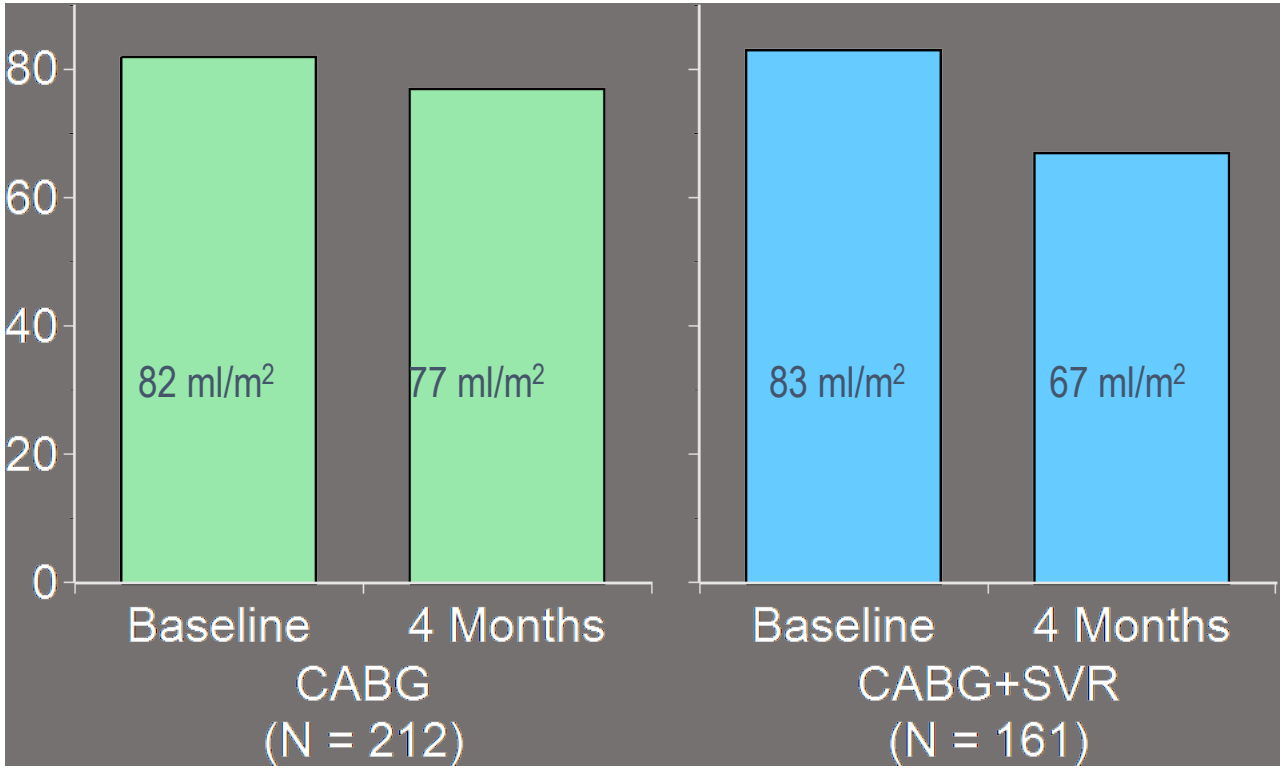
CONCLUSIONS

Adding surgical ventricular reconstruction to CABG reduced the left ventricular volume, as compared with CABG alone. However, this anatomical change was not associated with a greater improvement in symptoms or exercise tolerance or with a reduction in the rate of death or hospitalization for cardiac causes. (ClinicalTrials.gov number, NCT00023595.)

N Engl J Med 2009;360

Baseline and Four Month End-Systolic Volume Index (ESVI) in 373 Hypothesis 2 Patients With Quantitative Echocardiogram at Both Intervals

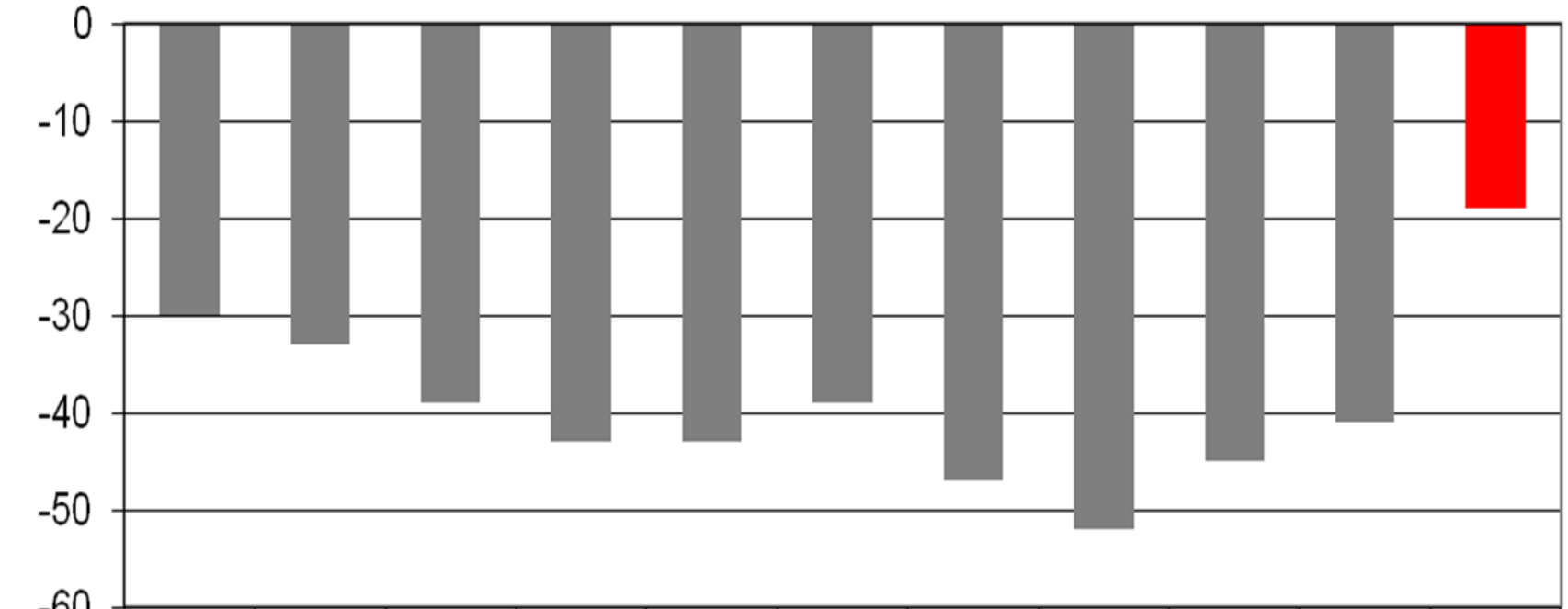
Esvi ml



P<0.001

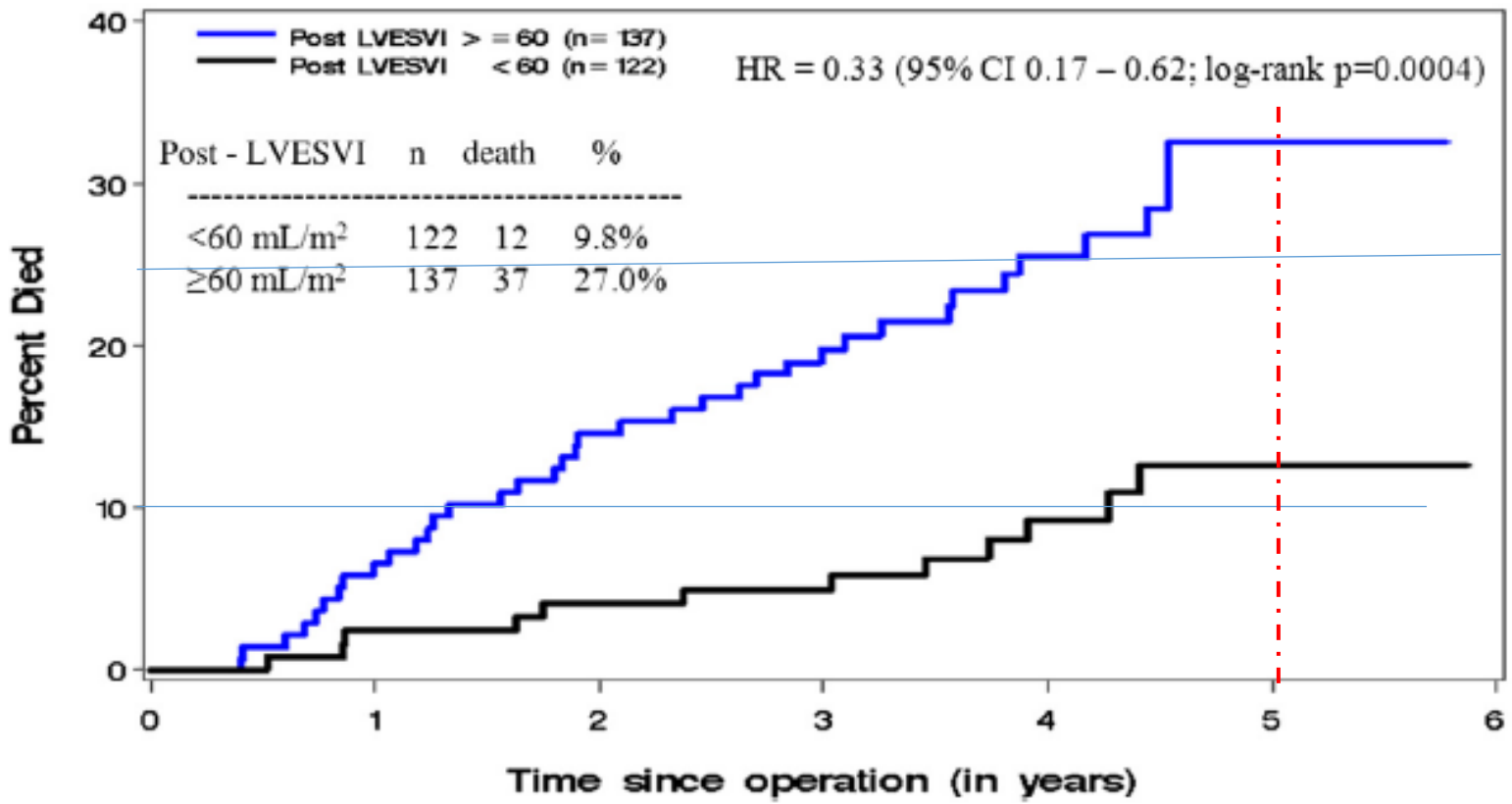
I.R.C.C.S.
POLICLINICO
SAN DONATO

Percentage (%) of LVESV Reduction following SVR



	RESTORE (2004)	Micklebor ough (2004)	Menicanti (2007)	Williams (2007)	Ribeiro (2006)	Dzemali (2009)	Cirillo (2004)	Yamaguc hi (2005)	Dor (2008)	Di Donato 2010	Jones 2009
%	-30	-33	-39	-43	-43	-39	-47	-52	-45	-41	-19

I.R.C.C.S.
POLICLINICO
SAN DONATO



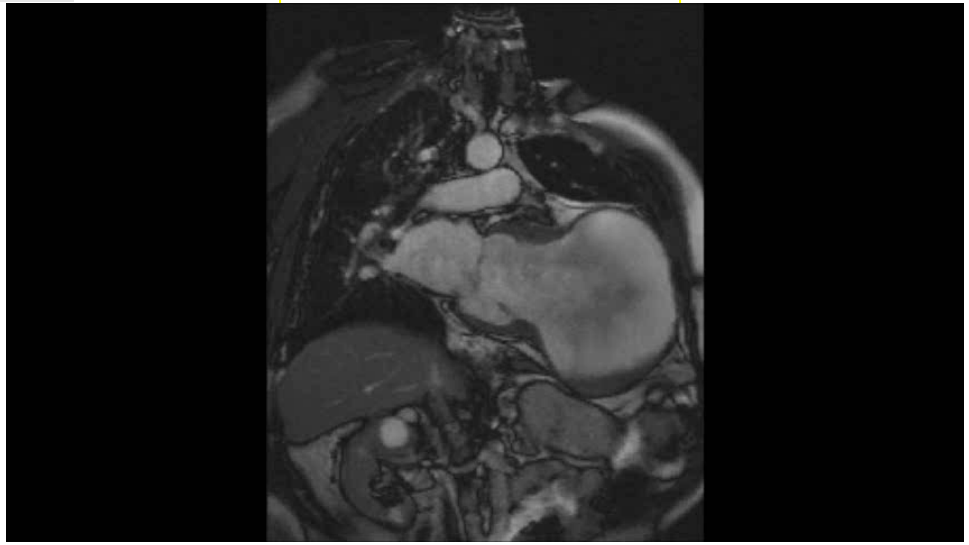
(J Thorac Cardiovasc Surg 2013;146:1139-45)

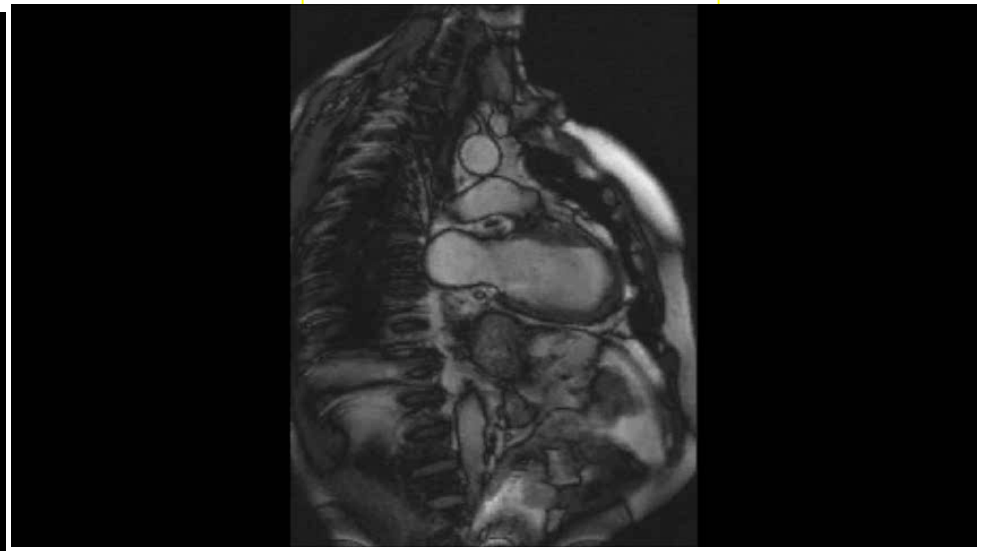
I.R.C.C.S.
POLICLINICO
SAN DONATO

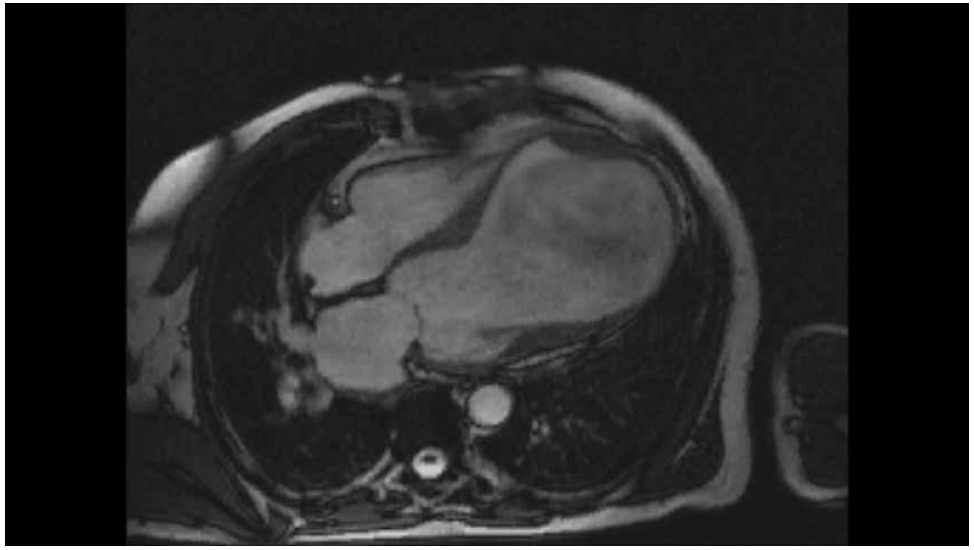
I.R.C.C.S.
POLICLINICO
SAN DONATO

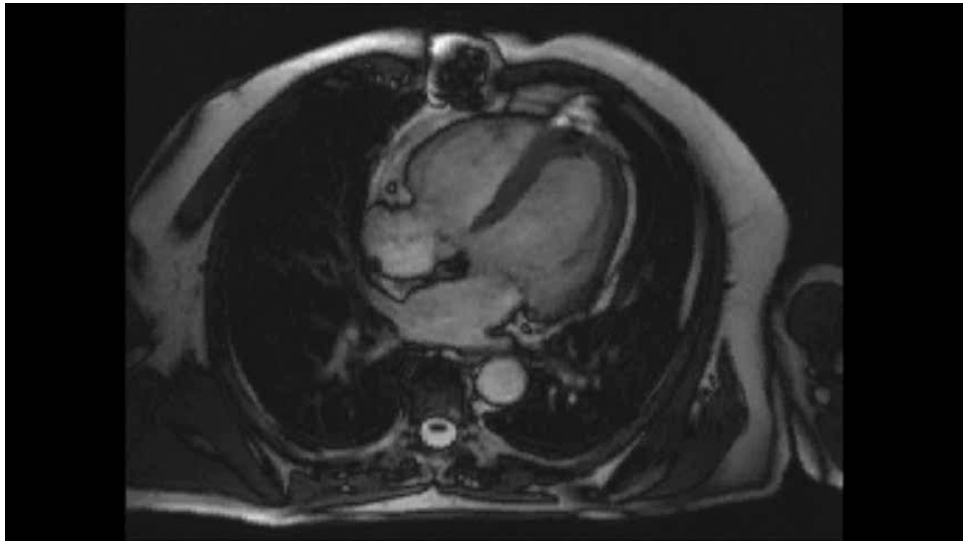
EDVI 485 ml/m2
ESVI 435 ml/m2
EF 10%
SVI=50ml/m2

EDVI 57ml/m2
ESVI 26 ml/m2
EF 54%
SVI=31ml/m2





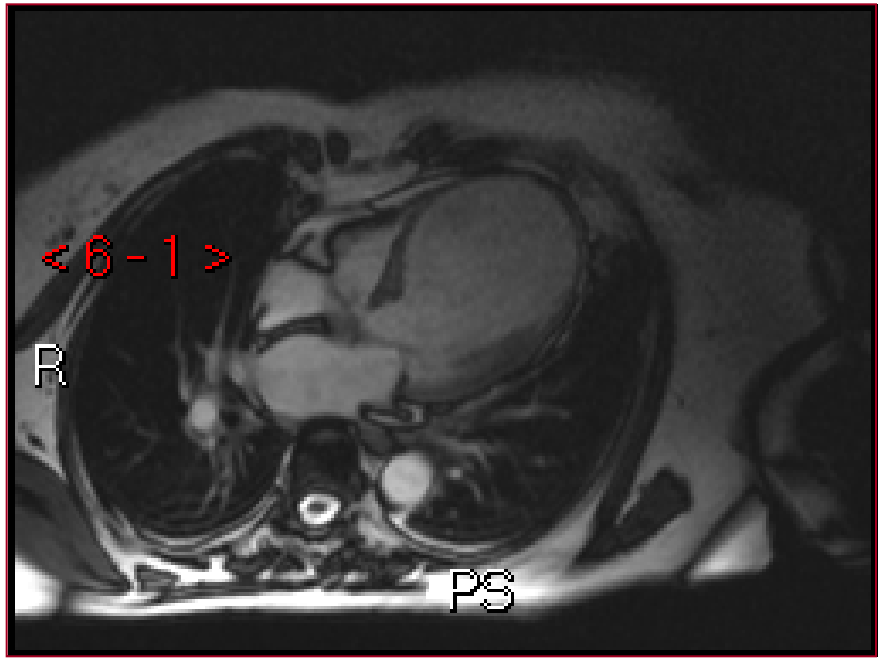


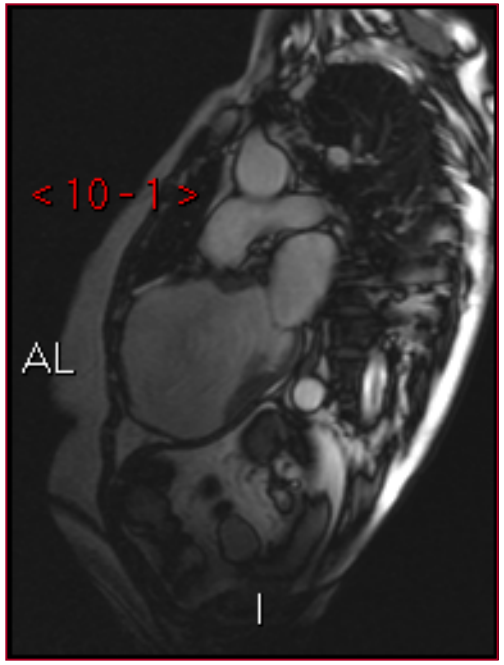


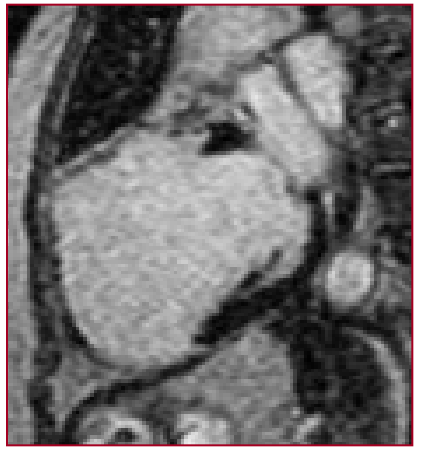
R.M. ♀ 70 years old

NYHA IV transplant candidate

Magnetic Risonance Imaging – LGE MRI



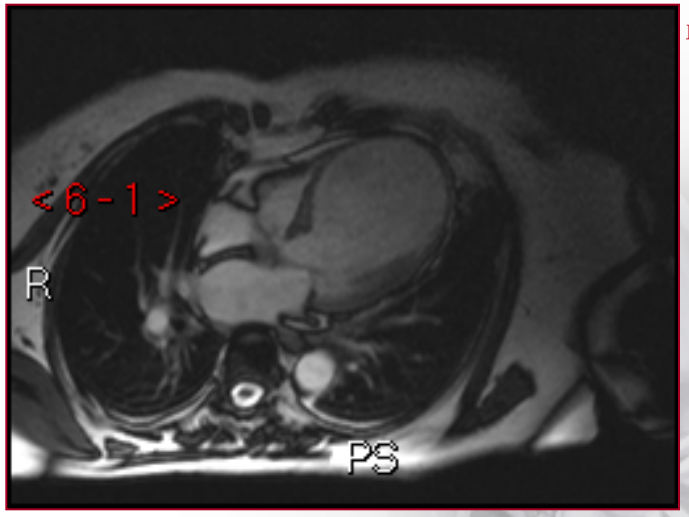




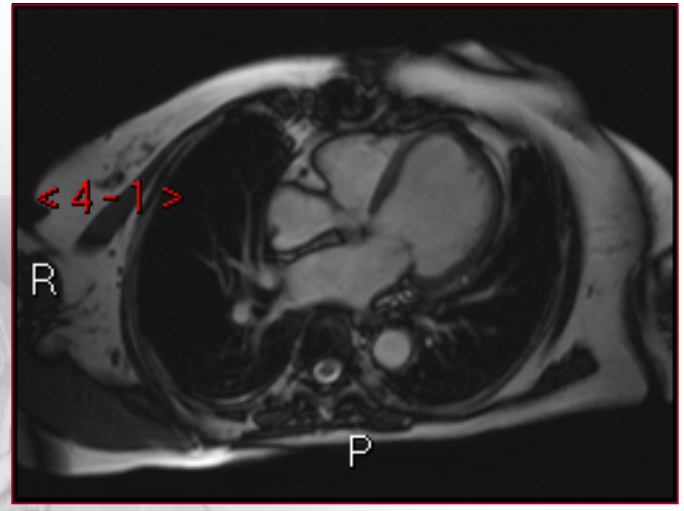
Surgical LV Remodeling for Ischemic HF

I.R.C.C.S. Policlinico San Donato

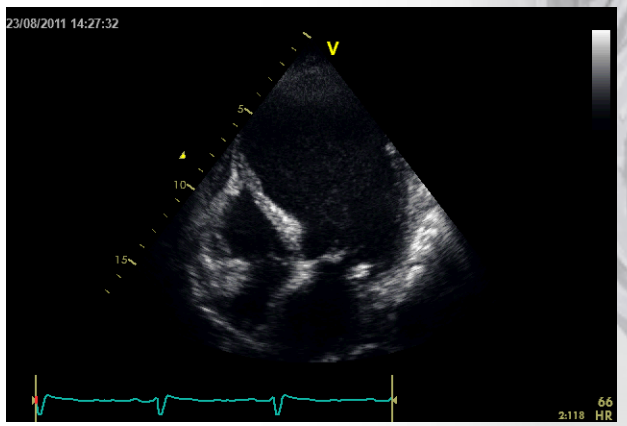
Pre-op



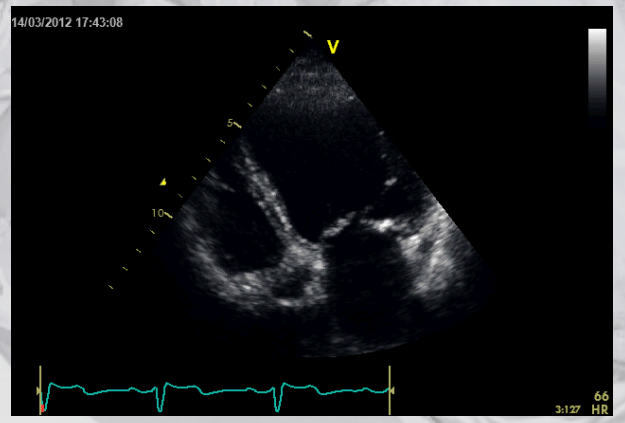
6 - Months



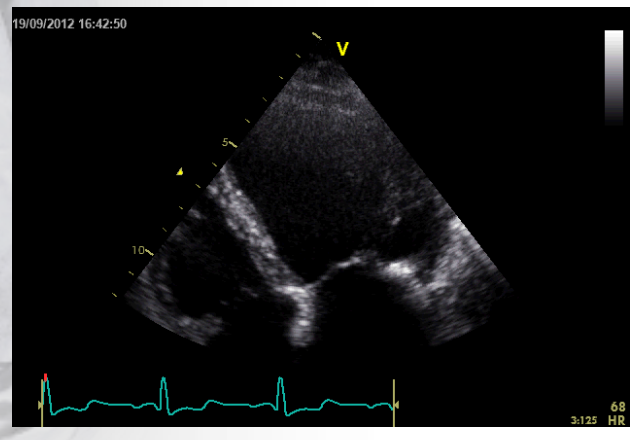
Pre-op



6 - Months



12 - Months



EF= 25%, NT-proBNP= 7.885

EF= 34%, NT-proBNP= 1.722

EF= 35%, NT-proBNP= 822

Long-term results of surgical ventricular reconstruction and comparison with the Surgical Treatment for Ischemic Heart Failure trial

Mario Gaudino, MD, PhD,[a] Serenella Castelvecchio, MD,[b] Mohamed Rahouma, MD,[a] N. Bryce Robinson, MD,[a] Katia Audisio, MD,[a] Giovanni J. Soletti, MD,[a] Gianmarco Cancelli, MD,[a] Derrick Y. Tam, MD,[c] Andrea Garatti, MD,[b] Umberto Benedetto, MD, PhD,[d] Torsten Doenst, MD, PhD,[e] Leonard N. Girardi, MD,[a] Robert E. Michler, MD,[f] Stephen E. Fremes, MD,[c] Eric J. Velazquez, MD,[g] and Lorenzo Menicanti, MD[b]

Comparison Between the San Donato and STICH Cohorts

The San Donato cohort was compared with the SVR group of the hypothesis 2 of STICH and with the medical therapy group and the CABG group of STICHES in 3 separate pairwise comparisons. To reduce confounders, propensity scores (PS) for each of the compared techniques was developed using a generalized boosted regression model.

Exploratory Analysis on the Association Between Postoperative LVESVI and Mortality

Based on data from both the San Donato and STICH groups on the prognostic role of postoperative LVESVI, we investigated the association between postoperative LVESVI and mortality in both groups of patients who underwent SVR. For this purpose, we included all patients from the San Donato cohort with available paired echocardiographic data at baseline and at 6-month follow-up (n = 506/725, 69.8%of the San Donato population) and all patients from the STICH-SVR cohort with available paired imaging studies at baseline and at 4-month follow-up (n = 259/501, 51.7% of the STICH-SVR cohort)

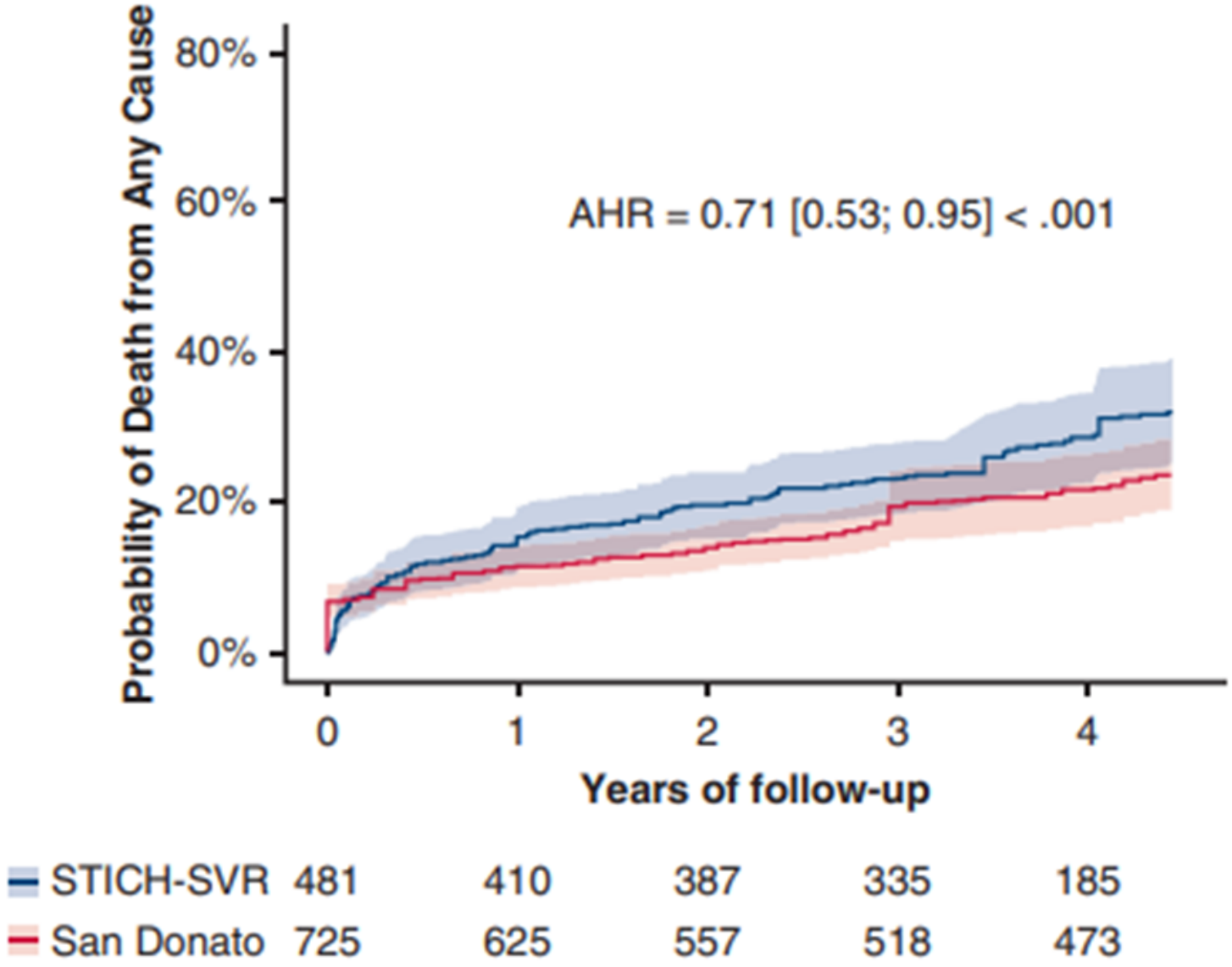
(J Thorac Cardiovasc Surg 2022;-:1-10)

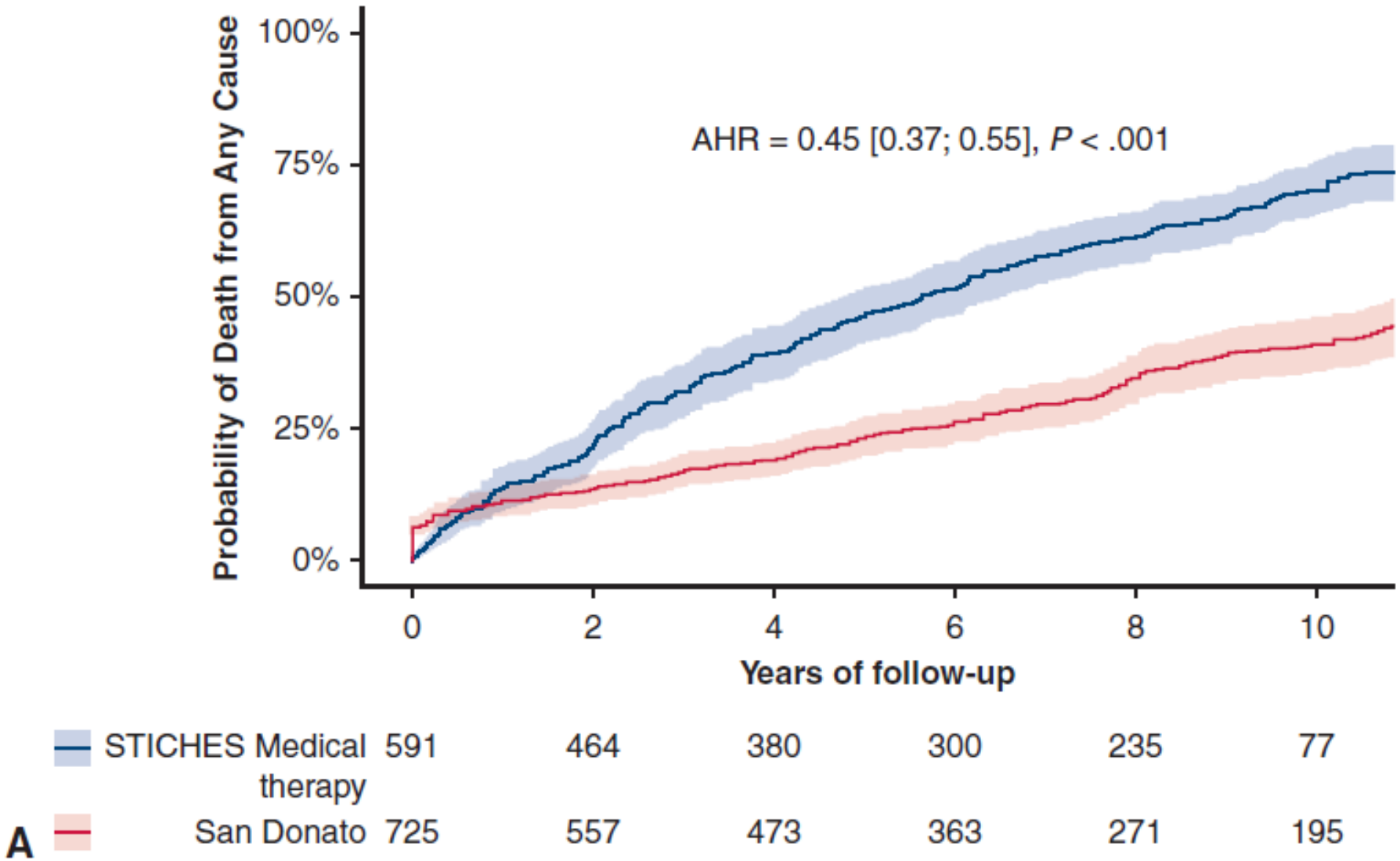
TABLE 3. Comparison of baseline characteristics between the San Donato, STICH-SVR, and STICHES cohorts

	San Donato	STICH-SVR	SMD	STICHES-medical therapy	SMD	STICHES-CABG	SMD
No. of patients (as-treated)	725	481		591		621	
Age, y, median [Q1, Q3]	66.0 [58.0, 72.0]	61.5 [54.5, 68.4]	0.32	59.2 [53.7, 67.1]	0.43	59.9 [53.4, 67.3]	0.45
Female sex	128 (17.7)	67 (13.9)	0.10	70 (11.8)	0.16	78 (12.6)	0.14
BSA, m^2, median [Q1, Q3]	1.8 [1.7, 2.0]	1.94 [1.8, 2.1]	0.54	1.9 [1.8, 2.1]	0.43	1.9 [1.8, 2.1]	0.38
Hypertension	425 (58.6)	285 (59.3)	0.01	363 (61.4)	0.06	365 (58.8)	<0.01
Hyperlipidemia	418 (57.7)	343 (71.5)	0.29	356 (60.2)	0.05	374 (60.4)	0.06
Diabetes	192 (26.5)	164 (34.1)	0.17	241 (40.8)	0.31	237 (38.2)	0.25
Current smoker	138 (19.0)	93 (19.3)	0.01	118 (20.0)	0.02	134 (21.6)	0.06
Renal failure	56 (7.7)	43 (8.9)	0.04	50 (8.5)	0.03	44 (7.1)	0.02
Previous stroke	58 (8.0)	29 (6.0)	0.08	39 (6.6)	0.25	53 (8.5)	0.32
NYHA			0.20		0.37		0.31
I	31 (4.3)	42 (8.7)		75 (12.7)		64 (10.3)	
II	336 (46.4)	196 (40.7)		303 (51.3)		323 (52.0)	
III	315 (43.5)	215 (44.7)		196 (33.2)		216 (34.8)	
IV	42 (5.8)	28 (5.8)		17 (2.9)		18 (2.9)	

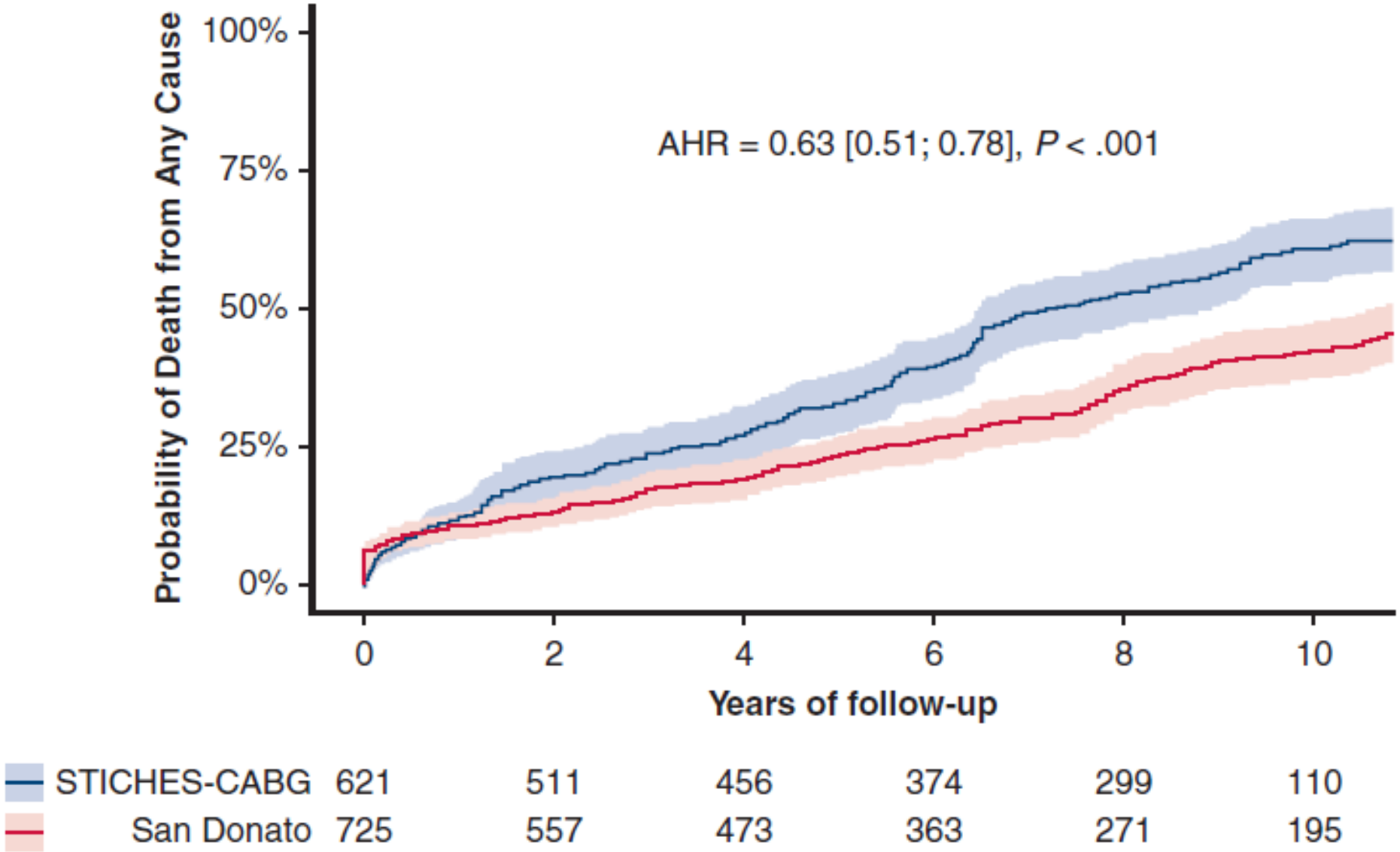
TABLE 4. LVESVI and LVEF at baseline and follow-up in the different groups

	San Donato (n = 506)	STICH-SVR (n = 259)	STICH-CABG (n = 296)
Baseline LVESVI, mL/m^2, mean ± standard deviation	82.0 ± 34.9	83.8 ± 41.6	76.9 ± 31.1
Follow-up* LVESVI, mL/m^2, mean ± standard deviation	49.4 ± 25.2	74.8 ± 38.4	72.1 ± 31.7
Baseline LVEF, %, median [Q1, Q3]	32.0 [26.0, 37.0]	27.0 [21.1, 33.0]	27.0 [22.0, 32.8]
Follow-up LVEF,* %, median [Q1, Q3]	41.0 [35.0, 46.0]	32.9 [25.4, 40.6]	27.5 [21.2, 33.6]


Probability of Death from Any Cause
80%
60%
40%
20%
0%
AHR = 0.71 [0.53; 0.95] < .001
0
1
2
3
4
Years of follow-up
STICH-SVR 481 410 387 335 185
San Donato 725 625 557 518 473


Probability of Death from Any Cause
100%
75%
50%
25%
0%
AHR = 0.45 [0.37; 0.55], P < .001
0
2
4
6
8
10
Years of follow-up
STICHES Medical therapy 591 464 380 300 235 77
San Donato 725 557 473 363 271 195

A


Probability of Death from Any Cause
100%
75%
50%
25%
0%
AHR = 0.63 [0.51; 0.78], P < .001
0
2
4
6
8
10
Years of follow-up
STICHES-CABG 621 511 456 374 299 110
San Donato 725 557 473 363 271 195

B

In conclusion, in an experienced center the long-term results of SVR in patients with depressed ventricular function and postinfarction LV remodeling were favorable and significantly better than those reported in the STICH trial. Our data suggest that a new trial testing the SVR hypothesis with clearly defined and standardized criteria for patient enrollment and intervention delivery may be warranted

Choosing to add SVR to CABG should be based on a careful evaluation of patients, including symptoms (HF symptoms should be predominant over angina), measurements of LV volumes, assessment of the transmural extent of myocardial scar tissue, and should be performed only in centres with a high level of surgical expertise


European Heart Journal
doi:10.1093/eurheartj/ehq277

ESC/EACTS GUIDELINES

Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)†

Authors/Task Force Members: William Wijns (Chairperson) (Belgium)*, Philippe Kolh (Chairperson) (Belgium)*, Nicolas Danchin (France), Carlo Di Mario (UK), Volkmar Falk (Switzerland), Thierry Folliguet (France), Scot Garg (The Netherlands), Kurt Huber (Austria), Stefan James (Sweden), Juhani Knuuti (Finland), Jose Lopez-Sendon (Spain), Jean Marco (France), Lorenzo Menicanti (Italy) Miodrag Ostojic (Serbia), Massimo F. Piepoli (Italy), Charles Pirlet (Belgium), Jose L. Pomar (Spain), Nicolaus Reifart (Germany), Flavio L. Ribichini (Italy), Martin J. Schalij (The Netherlands), Paul Sergeant (Belgium), Patrick W. Serruys (The Netherlands), Sigmund Silber (Germany), Miguel Sousa Uva (Portugal), David Taggart (UK)

ESC Committee for Practice Guidelines: Alec Vahanian (Chairperson) (France), Angelo Auricchio (Switzerland), Jeroen Bax (The Netherlands), Claudio Ceconi (Italy), Veronica Dean (France), Gerasimos Filippatos (Greece), Christian Funck-Brentano (France), Richard Hobbs (UK), Peter Kearney (Ireland), Theresa McDonagh (UK), Bogdan A. Popescu (Romania), Zeljko Reiner (Croatia), Udo Sechtem (Germany), Per Anton Sirnes (Norway), Michal Tendera (Poland), Panos E. Vardas (Greece), Petr Widimsky (Czech Republic)

EACTS Clinical Guidelines Committee: Philippe Kolh (Chairperson) (Belgium), Ottavio Alfieri (Italy), Joel Dunning (UK), Stefano Elia (Italy), Pieter Kappetein (The Netherlands), Ulf Lockowandt (Sweden), George Sarris (Greece), Pascal Vouhe (France)

Document Reviewers: Peter Kearney (ESC CPG Review Coordinator) (Ireland), Ludwig von Segesser (EACTS Review Coordinator) (Switzerland), Stefan Agewall (Norway), Alexander Aladashvili (Georgia), Dimitrios Alexopoulos (Greece), Manuel J. Antunes (Portugal), Enver Atalar (Turkey), Aart Brutel de la Riviere