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Ecocardiografia

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15/16 Ottobre 2015

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LA RIVASCOLARIZZAZIONE MIOCARDICA CON CONDOTTI ARTERIOSI

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UO Cardiocirurgia
AORN S. Anna e San Sebastiano
CASERTA

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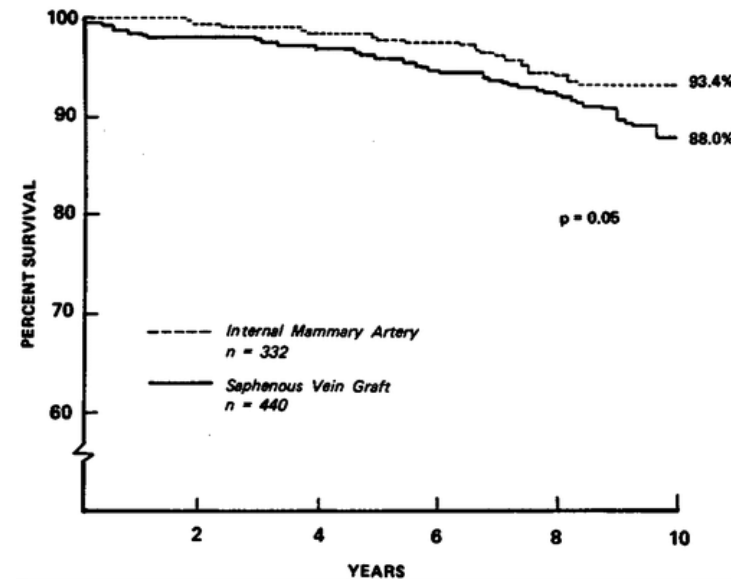
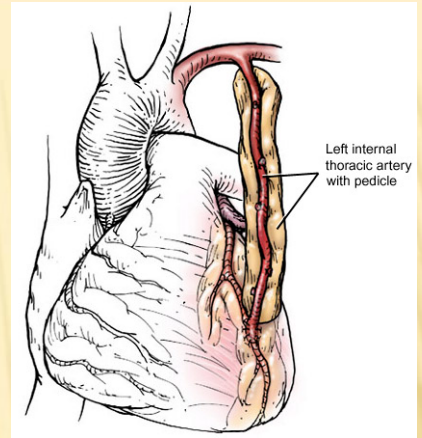
Number 1

INFLUENCE OF THE INTERNAL-MAMMARY-ARTERY GRAFT ON 10-YEAR SURVIVAL AND OTHER CARDIAC EVENTS

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Abstract We compared patients who received an internal-mammary-artery graft to the anterior descending coronary artery alone or combined with one or more saphenous-vein grafts (n = 2306) with patients who had only saphenous-vein bypass grafts (n = 3625). The 10-year actuarial survival rate among the group receiving the internal-mammary-artery graft, as compared with the group who received the vein grafts (exclusive of hospital deaths), was 93.4 percent versus 88.0 percent (P = 0.05) for those with one-vessel disease; 90.0 percent versus 79.5 percent (P<0.0001) for those with two-vessel disease; and 82.6 percent versus 71.0 percent (P<0.0001) for those with three-vessel disease. After an adjustment for demographic and clinical differences by Cox multivariate analysis, we

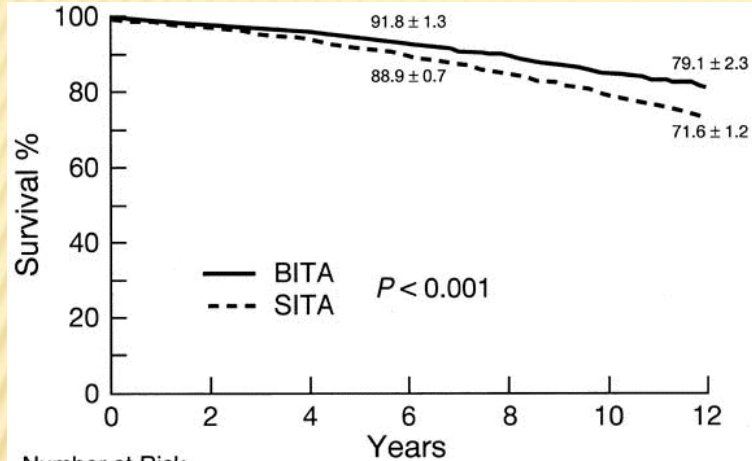
found that patients who had only vein grafts had a 1.61 times greater risk of death throughout the 10 years, as compared with those who received an internal-mammary-artery graft. In addition, patients who received only vein grafts had 1.41 times the risk of late myocardial infarction (P<0.0001), 1.25 times the risk of hospitalization for cardiac events (P<0.0001), 2.00 times the risk of cardiac reoperation (P<0.0001), and 1.27 times the risk of all late cardiac events (P<0.0001), as compared with patients who received internal-mammary-artery grafts. Internal-mammary-artery grafting for lesions of the anterior descending coronary artery is preferable whenever indicated and technically feasible. (N Engl J Med 1986; 314:1-6.)



I Grafts arteriosi a 10 anni hanno una pervietà superiore al 90%

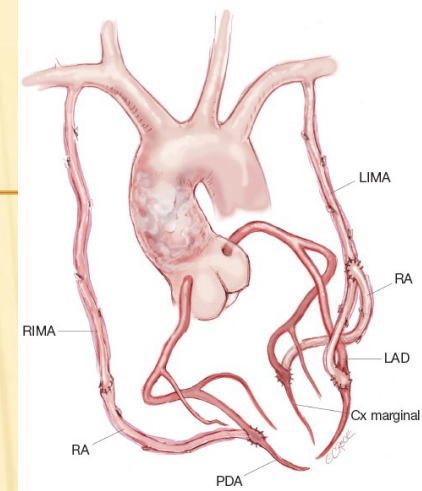
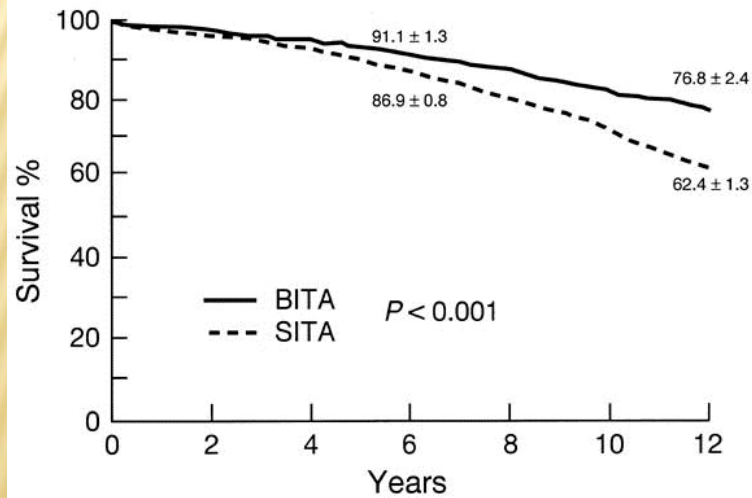
I Grafts venosi a 10 anni 50% occlusi e gli altri 50% risultano affetti da patologia aterosclerotica

BIMA



Number at Risk

Years	0	2	4	6	8	10	12
— BITA	1976	1916	1871	1778	1530	1168	302
- - - SITA	8123	7690	7419	6180	5496	4869	2687



TWO INTERNAL THORACIC ARTERY GRAFTS ARE BETTER THAN ONE

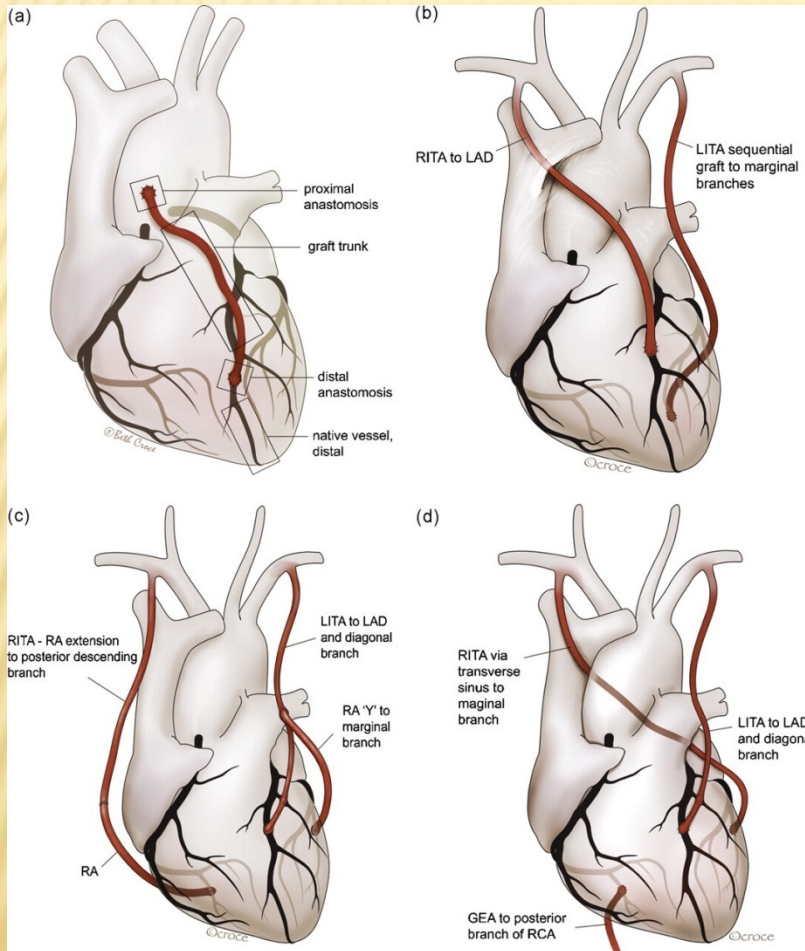
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Objective: Does the use of bilateral internal thoracic artery (ITA) grafts provide incremental benefit relative to the use of a single ITA graft?

Methods: We conducted a retrospective, nonrandomized, long-term (mean follow-up interval of 10 postoperative years) study of patients undergoing elective primary isolated coronary bypass surgery who received either single (8123 patients) or bilateral ITA grafts (2001 patients), with or without additional vein grafts. Multiple statistical methods including propensity score matching, and multivariable parsimonious and nonparsimonious risk factor analyses were used to address the issues of patient selection and heterogeneity.

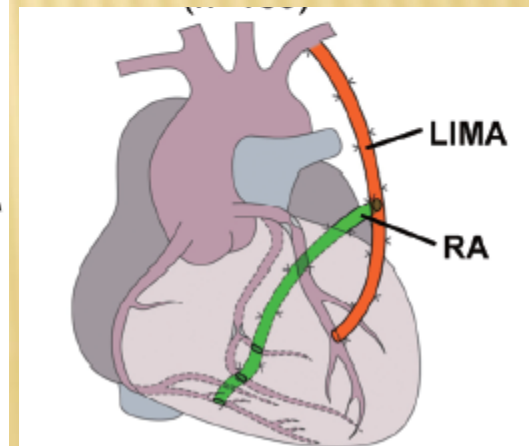
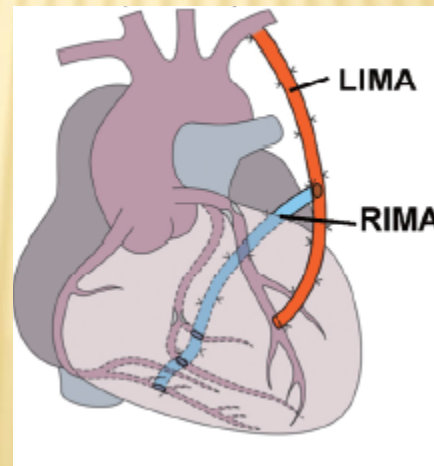
Results: In-hospital mortality was 0.7% for both the bilateral and single ITA groups. Survival for the bilateral ITA group was 94%, 84%, and 67%, and for the single ITA group 92%, 79%, and 64% at 5, 10, and 15 postoperative years, respectively ($P < .001$). Death, reoperation, and percutaneous transluminal coronary angioplasty were more frequent for patients undergoing single rather than bilateral ITA grafting, and this observation remained true despite multiple adjustments for patient selection, sampling, and length of follow-up. The differences between the bilateral and single ITA groups were greatest in regard to reoperation. The extent of benefit of bilateral ITA grafting varied according to patient-related variables, but no patient subsets were identified for whom single ITA grafting could be

RIVASCOLARIZZAZIONE MIOCARDICA TOTALMENTE ARTERIOSA



- BIMA + Arteria Radiale + Gastroepiploica

- Rivascolarizzazione arteriosa a sx



A meta-analysis comparing bilateral internal mammary artery with left internal mammary artery for coronary artery bypass grafting

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Background: Increasing evidence continues to demonstrate a survival advantage for bilateral internal mammary artery (BIMA) over left internal mammary artery (LIMA) for coronary artery bypass grafting (CABG). We performed an updated meta-analysis of published studies comparing BIMA versus LIMA in CABG operations and assessed differences in long-term survival.

Methods: Electronic searches for studies comparing BIMA versus LIMA were performed using three databases from 1972 to December 2012. Studies with at least four years of follow-up and at least 100 patients in each group were included for review. We used a random-effect model and pooled hazard ratios from across all included studies.

Results: No randomized controlled trials and 27 observational studies totaling 79,063 patients (19,277 BIMA, 59,786 LIMA) were included for final analysis. The BIMA group demonstrated significantly better long-term survival than the LIMA group [hazard ratio, 0.78; confidence interval, 0.72-0.84; $P < 0.00001$].

Conclusions: In an updated meta-analysis, we demonstrate an increase in long-term survival in patients receiving BIMA as a primary grafting strategy over those receiving a LIMA. Although no randomized controlled trials were included in this meta-analysis, the survival benefit seen with a BIMA cannot be overlooked when determining which operation to perform in CABG patients. Until the long-term results of the ART trial are published, we offer best available evidence in favor of BIMA over LIMA for CABG surgery.

Effect of Bilateral Internal Mammary Artery Grafts on Long-Term Survival A Meta-Analysis Approach

Gijong Yi, PhD; Brian Shine, MD; Syed M. Rehman, MD; Douglas G. Altman, DSc;
David P. Taggart, MD, PhD, FRCS

Background—Although the potential survival benefit of bilateral internal mammary artery (BIMA) grafting in comparison with single internal mammary artery (SIMA) grafting has been emphasized by many investigators, the use of BIMA is still low in clinical practice in the absence of randomized trials and long-term results. In the current study, we aimed to assess if there is a long-term survival benefit of BIMA up to 10 years after coronary bypass surgery.

Methods and Results—We selected published articles comparing survival between SIMA and BIMA patients with follow-up duration of more than a mean of 9 years. We evaluated the log hazard ratio with 95% confidence interval for included studies by using a random-effects meta-analysis. Nine eligible observational studies provided 15 583 patients (8270 SIMA and 7313 BIMA) for meta-analysis. Five studies used propensity score methods for statistical adjustment, 2 with a propensity score–based patient-matching method and 3 with quintile-based stratification. A significant reduction in mortality by using BIMA was observed (hazard ratio, 0.79; 95% confidence interval, 0.75–0.84); no study showed any significantly harmful effect of BIMA on survival. Subgroups of studies using different statistical approaches—unmatched, quintile-based propensity score analysis, and propensity score–based exact patient matching—all showed the survival benefit of BIMA grafting.

Conclusions—BIMA grafting appears to have better survival with up to 10 years follow-up in comparison with SIMA grafting. Long-term survival benefit of BIMA seems to continue in the second decade after surgery. An ongoing randomized trial comparing SIMA and BIMA groups will add evidence on this issue. (*Circulation*. 2014;130:539-545.)

Key Words: coronary artery bypass ■ coronary disease ■ internal mammary arteries ■ meta-analysis ■ survival

Table 5. Effect of Bilateral Internal Mammary Artery Grafting on Early Outcomes

Study (Year)	Patient Number		Hospital Mortality, %			Reoperation for Bleeding, %			Sternal Infection, %			Length of Stay, Day		
	SIMA	BIMA	SIMA	BIMA	P Value	SIMA	BIMA	P Value	SIMA	BIMA	P Value	SIMA	BIMA	P Value
Pick (1997) ^a	160	160	0.6	0	NS	2.5	5.0	NS	2.5	2	NS	NA	NA	NA
Stevens (2004) ^a	2547	1835	2.6	1.3	0.003	5	4	NS	1.4	1.2	NS	8	8	NS
Kurlansky (2010) ^b	2369	2215	4.6	2.6	0.001	3.2	1.8	0.003	1.1	1.4	NS	15.5	12.6	0.001
Grau (2012) ¹⁰	928	928	1.1*	0.8*	NS	1.7	1.1	NS	0.3	0.3	NS	6.9	6.9	NS
ART ¹⁶	1554	1548	1.2†	1.2†	NS	3.5	4.3	NS	0.6	1.9	3.24 (1.54–6.83)‡	7.5	8.0	NA

BIMA indicates bilateral internal mammary artery; NA, no data available; NS, no significance; and SIMA, single internal mammary artery.

*In-hospital to 30 days mortality data.

†30-day mortality data.

‡Hazard ratio with 95% CI.

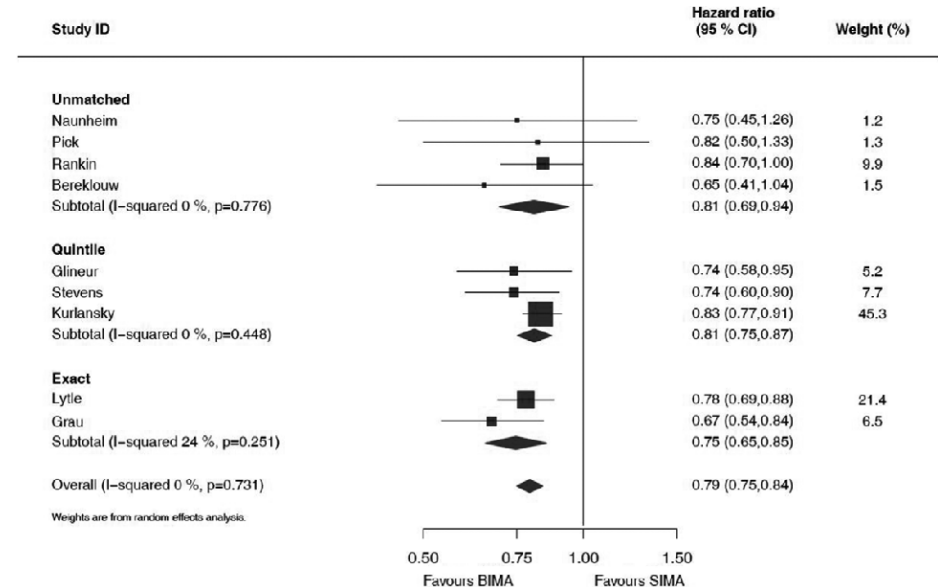
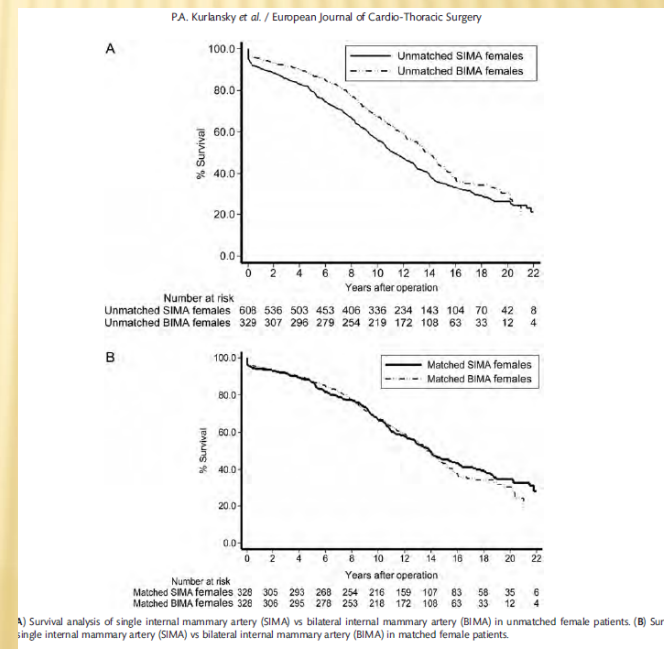
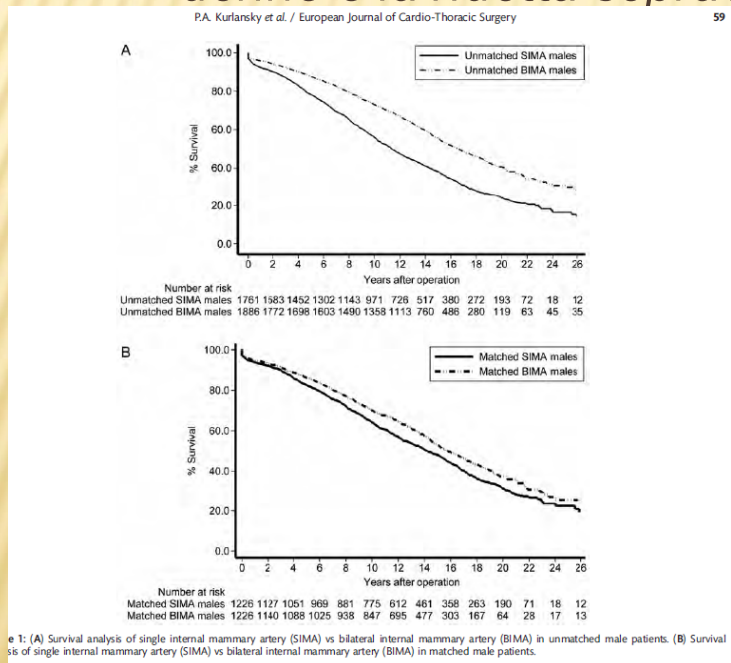


Figure 2. Effects of bilateral internal mammary artery grafting on long-term survival. Random-effects meta-analysis from 9 studies. Horizontal lines indicate 95% confidence interval. Unmatched group included studies with no statistical matching method. Quintile group included studies using quintile-based stratification method with propensity score. Exact group included studies with propensity score–based exact (1:1) matching method. The reference numbers of the studies are as follows: Naunheim et al⁸; Pick et al⁴; Rankin et al⁶; Berrekloov et al⁵; Glineur et al¹¹; Stevens et al⁹; Kurlansky et al¹⁰; Lytte et al⁶; and Grau et al¹⁰. BIMA indicates bilateral internal mammary artery; and SIMA, single internal mammary artery.

Bilateral internal mammary artery grafting reverses the negative influence of gender on outcomes of coronary artery bypass grafting surgery[†]

Paul A. Kurlansky^{a,*}, Ernest A. Traad^a, Malcolm J. Dorman^b, David L. Galbut^a, Melinda Zucker^a and George Ebra^a

“L’utilizzo della doppia mammaria inverte l’influenza del genere sull’outcome dei CABG a breve e lungo termine in entrambi migliorando la mortalità nelle donne e la ridotta sopravvivenza a lungo termine nei maschi”



LA RIVASCOLARIZZAZIONE ARTERIOSA ANTAGONIZZA GLI EFFETTI NEGATIVI DELLA INCOMPLETEZZA NEI SOGGETTI DI ETÀ <80 ANNI

Arterial grafts balance survival between incomplete and complete revascularization: A series of 1000 consecutive coronary artery bypass graft patients with 98% arterial grafts

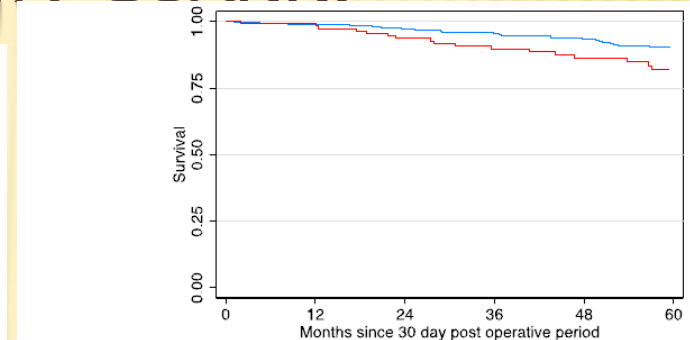
Teresa M. Kieser, MD,^a Helen J. Curran, MD,^b M. Sarah Rose, PhD,^a Colleen M. Norris, PhD,^c and Michelle M. Graham, MD^c

Objective: Coronary artery bypass grafting (CABG) with incomplete revascularization (ICR) is thought to decrease survival. We studied the survival of patients with ICR undergoing total arterial grafting.

Methods: In a consecutive series of all-comer 1000 patients with isolated CABG, operative and midterm survival were assessed for patients undergoing complete versus ICR, with odds ratios and hazard ratios, adjusted for European System for Cardiac Operative Risk Evaluation category, CABG urgency, age, and comorbidities.

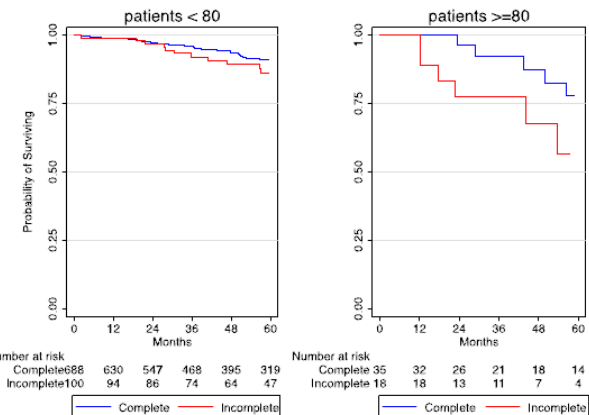
Results: In this series of 1000 patients with 98% arterial grafts (2922 arterial, 59 vein grafts), 73% of patients with multivessel disease received bilateral internal mammary artery grafts. ICR occurred in 140 patients (14%). Operative mortality was 3.8% overall, 8.6% for patients with ICR, and 3.2% for patients with complete revascularization ($P = .008$). For operative mortality using multivariable logistic regression, after controlling for European System for Cardiac Operative Risk Evaluation category ($P < .001$) and CABG urgency ($P = .03$), there was no evidence of a statistically significant increased risk of death due to ICR (odds ratio, 1.73; 95% confidence interval, 0.80-3.77). For midterm follow-up (median, 54 months [interquartile range, 27-85 months]), after controlling for European System for Cardiac Operative Risk Evaluation category ($P < .001$) and comorbidities ($P = .017$) there was a significant interaction between age ≥ 80 years and ICR ($P = .017$) in predicting mortality. The adjusted hazard ratio associated with ICR for patients older than age 80 years was 5.7 (95% confidence interval, 1.8-18.0) versus 1.2 (95% confidence interval, 0.7-2.1) for younger patients.

Conclusions: This is the first study to suggest that ICR in patients with mostly arterial grafts is not associated with decreased survival perioperatively and at midterm in patients younger than age 80 years. Arterial grafting, because of longevity, may balance survival between complete revascularization and ICR. (J Thorac Cardiovasc Surg 2014;147:75-84)



A

— Complete — Incomplete



A, Unadjusted overall survival rates by complete and incomplete revascularization. B, Unadjusted Kaplan-Meier survival curves stratified by age ($n = 788$) and age ≥ 80 years ($n = 53$).

PERCHÉ IL BYPASS IN VENA NON È IDEALE

- ✘ La vena ha caratteristiche istologiche diverse dalle arterie (pressione di 25-30mmHg invece di 120/80mmHg)
- ✘ Nonostante i progressi tecnici e della terapia farmacologica (antiaggreganti) a 10 anni sono pervi il 48% dei grafts e a 15 anni sono pervi il 40% (Fitz Gibbon's study JACC 1996)

IMPIEGO DEI GRAFTS ARTERIOSI NELLA RIVASCOLARIZZAZIONE MIOCARDICA OGGI

- ✘ Europa 10% / CABG
- ✘ USA 4% / CABG

Tabata Circ 2009

Nonostante indicato dalle linee guida in Europa (IA) e USA (IIB)

PARADOSSO

Se i migliori chef non usano pollo congelato o verdure non fresche perché il chirurgo deve utilizzare un condotto peggiore?

Fast-food mentality?



Kieser 2013

PERCHÉ IL CHIRURGO UTILIZZA LA VENA IN UNA PERCENTUALE COSÌ ALTA?

NO

- ✘ Risultato immediato buono
- ✘ La doppia mammaria devascularizza lo sterno e quindi espone il paziente a maggior rischio di deiscenza e/o mediastinite (negli Stati Uniti Medicare e Medicaid Services non rimborsano i costi necessari per il trattamento delle complicanze sternali)

CAUSE DI NON UTILIZZO BIMA

In una Survey di 101/127 chirurghi in Canada (Mastrobuoni) la causa di NON utilizzo della Doppia mammaria è stata:

- × RISCHIO DI COMPLICANZE STERNALI 35%
- × Non conoscenza della superiorità della RIMA su altri condotti 30%
- × RIMA ritenuta non adeguata per lunghezza 28%
- × Durata del prelievo 6%
- × Rischio di sanguinamento 1%

TABLE 1. Prevalence of common concerns to bilateral internal thoracic artery use among young surgeons (<10 years in practice, group A) and senior surgeons (>10 years in practice, group B) ($P = .01$)

Main concern	Group A n = 40	Group B n = 61
Sternal wound infection	51%	24%
Reduced length of RITA	23%	31%
Unknown superiority of RITA over other conduits	16%	40%
Operative time	10%	3%
Bleeding	0%	2%

ELEMENTI CHE HANNO LIMITATO L'UTILIZZO DEI GRAFTS ARTERIOSI MULTIPLI

- ✘ Difficoltà tecniche
- ✘ Maggiore durata intervento
- ✘ Complicanze immediate (deiscenze e/o mediastiniti $>1.3\%$) (*nell'ART trial l'incidenza di ricostruzioni sternali è più alta nel gruppo BIMA (SIMA 0.6% versus BIMA 1.9%).*)
- ✘ 50% dei pz con revisione sono diabetici (25% del totale dei pazienti)

COMPLICANZE E DEISCENZA/MEDIASTINITE IN BIMA E DIABETE

RUOLO DELLA HB GLICOSILATA

- ✘ Il dosaggio della Emoglobina glicosilata H1c (HbA1c) ha un ruolo predittore per mortalità e morbidità
- ✘ Complicanze e Deiscenze/mediastiniti sono \uparrow in $HbA1c \geq 7\%$
- ✘ La mortalità nei soggetti con $HbA1c > 8.6\%$ è quadruplicata

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BEST EVIDENCE TOPIC – ADULT CARDIAC

Is there a role for HbA1c in predicting mortality and morbidity outcomes after coronary artery bypass graft surgery?

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The art of arterial revascularization—total arterial revascularization in patients with triple vessel coronary artery disease

Varie opzioni per la rivascularizzazione arteriosa

Brian F. Buxton, Philip A. Hayward

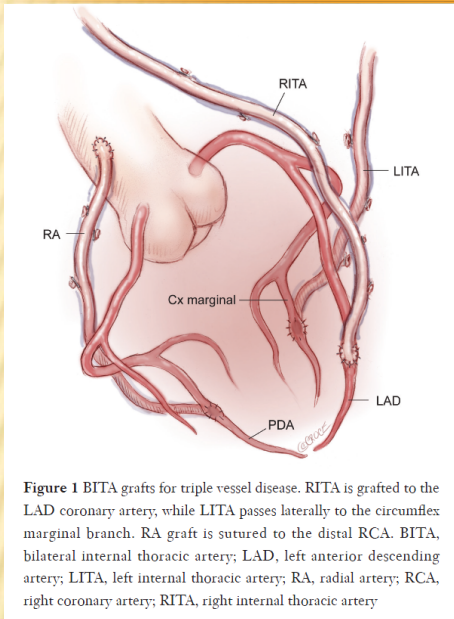


Figure 1 BITA grafts for triple vessel disease. RITA is grafted to the LAD coronary artery, while LITA passes laterally to the circumflex marginal branch. RA graft is sutured to the distal RCA. BITA, bilateral internal thoracic artery; LAD, left anterior descending artery; LITA, left internal thoracic artery; RA, radial artery; RCA, right coronary artery; RITA, right internal thoracic artery

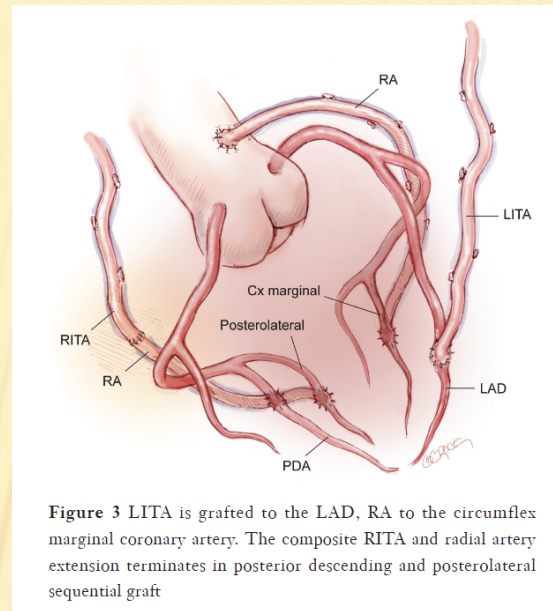


Figure 3 LITA is grafted to the LAD, RA to the circumflex marginal coronary artery. The composite RITA and radial artery extension terminates in posterior descending and posterolateral sequential graft

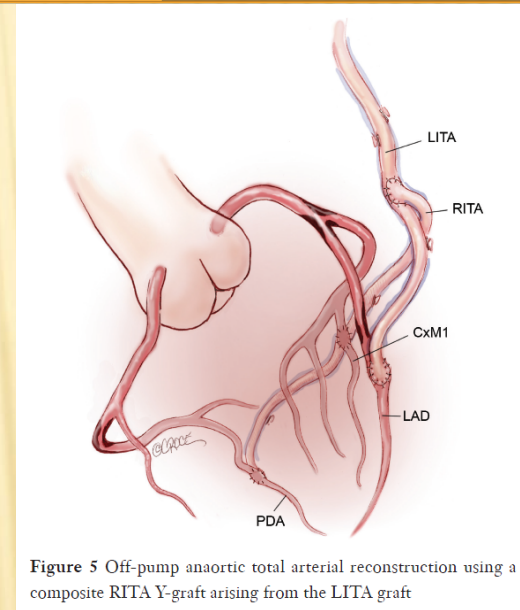


Figure 5 Off-pump anaortic total arterial reconstruction using a composite RITA Y-graft arising from the LITA graft

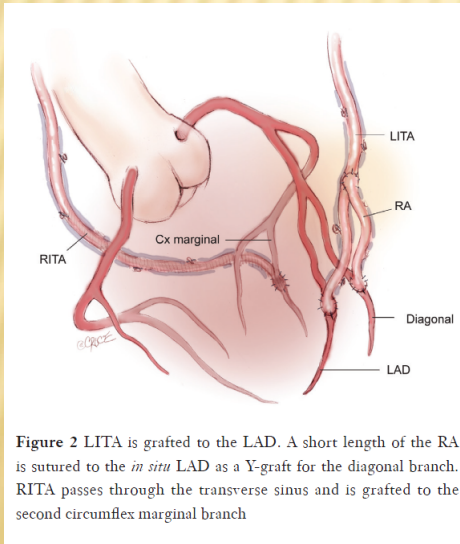


Figure 2 LITA is grafted to the LAD. A short length of the RA is sutured to the *in situ* LAD as a Y-graft for the diagonal branch. RITA passes through the transverse sinus and is grafted to the second circumflex marginal branch

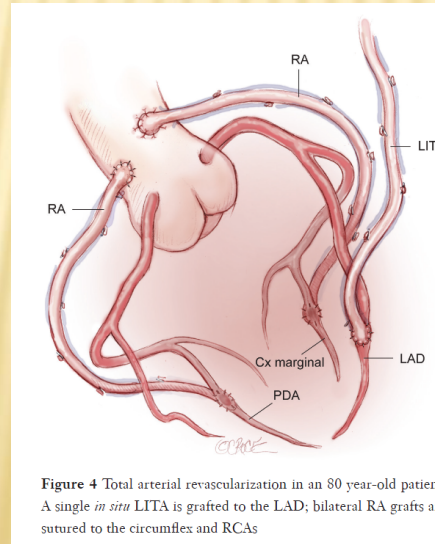


Figure 4 Total arterial revascularization in an 80 year-old patient. A single *in situ* LITA is grafted to the LAD; bilateral RA grafts are sutured to the circumflex and RCAs

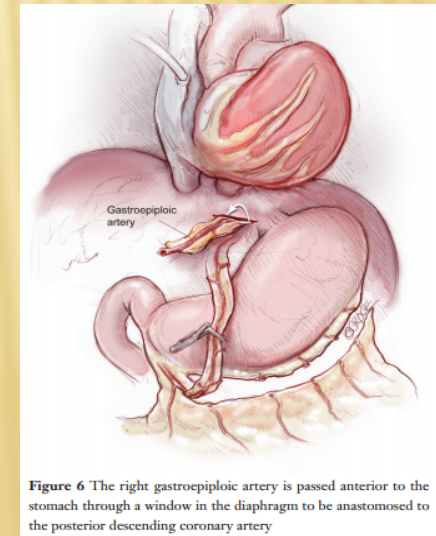


Figure 6 The right gastroepiploic artery is passed anterior to the stomach through a window in the diaphragm to be anastomosed to the posterior descending coronary artery

CAUSA DI SCARSO UTILIZZO DEI CONDOTTI CON ARTERIA RADIALE

- ✘ In passato utilizzate in arterie con stenosi subcritiche hanno dimostrato risultati deludenti.
- ✘ Ma un corretto utilizzo (stenosi critiche, utilizzo dei calcio antagonisti 6 mesi PO, Trattamento intraoperatorio con vasodilatatori,...) garantisce una pervietà a 7 anni del 92.5%

Tatoulis MMCTS 2013

2004

A Randomized Comparison of Radial-Artery and Saphenous-Vein Coronary Bypass Grafts

Nimesh D. Desai, M.D., Eric A. Cohen, M.D., C. David Naylor, M.D., D.Phil., and Stephen E. Fremes, M.D., for the Radial Artery Patency Study Investigators

ABSTRACT

BACKGROUND

In the past decade, the radial artery has frequently been used for coronary bypass surgery despite concern regarding the possibility of graft spasm. Graft patency is a key predictor of long-term survival. We therefore sought to determine the relative patency rate of radial-artery and saphenous-vein grafts in a randomized trial in which we controlled for bias in the selection of patients and vessels.

METHODS

We enrolled 561 patients at 13 centers. The left internal thoracic artery was used to bypass the anterior circulation. The radial-artery graft was randomly assigned to bypass the major vessel in either the inferior (right coronary) territory or the lateral (circumflex) territory, with the saphenous-vein graft used for the opposing territory (control). The primary end point was graft occlusion, determined by angiography 8 to 12 months postoperatively.

RESULTS

Angiography was performed at one year in 440 patients: 8.2 percent of radial-artery grafts and 13.6 percent of saphenous-vein grafts were completely occluded ($P=0.009$). Diffuse narrowing of the graft (the angiographic "string sign") was present in 7.0 percent of radial-artery grafts and only 0.9 percent of saphenous-vein grafts ($P=0.001$). The absence of severe native-vessel stenosis was associated with an increased risk of occlusion of the radial-artery graft and diffuse narrowing of the graft. Harvesting of the radial artery was well tolerated.

CONCLUSIONS

Radial-artery grafts are associated with a lower rate of graft occlusion at one year than are saphenous-vein grafts. Because the patency of radial-artery grafts depends on the severity of native-vessel stenosis, such grafts should preferentially be used for target vessels with high-grade lesions.

VANTAGGIO DI RA E GE

- ✘ Se stenosi native >80-90%
(effetto negativo del flusso di competizione-→FFR?)
- ✘ Pervietà >90%

I rischi delle complicanze sono ridotti:

- ✘ dalla tecnica chirurgica utilizzata (arteria scheletrizzata che garantisce anche maggiore lunghezza [2-4cm]);
- ✘ ottimizzazione glicemica pre e intraoperatoria;
- ✘ Selezione dei pazienti (no comorbidità multiple)

Randomized trial to compare bilateral vs. single internal mammary coronary artery bypass grafting: 1-year results of the Arterial Revascularisation Trial (ART)

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See page 2444 for the editorial comment on this article (doi:10.1093/eurheartj/ehq341)

Aims

Observational data suggest that the use of bilateral internal mammary arteries (BIMA) during coronary artery bypass graft surgery provides superior revascularization to a single internal mammary artery (SIMA), but concerns about safety have prevented the widespread use of BIMA. The Arterial Revascularisation Trial (ART) is a randomized trial of BIMA vs. SIMA, with a primary outcome of survival at 10 years. This paper reports mortality, morbidity, and resource use data at 1 year.

Methods and results

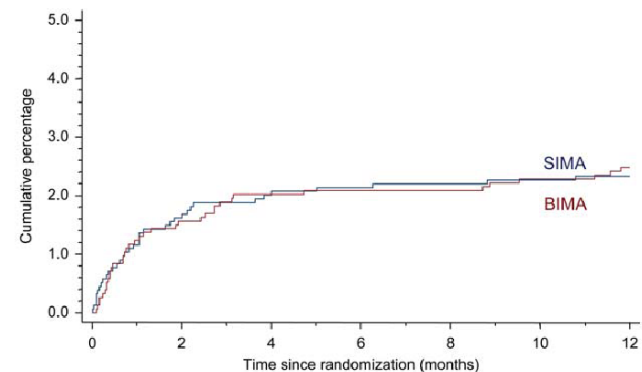
Coronary artery bypass graft patients were enrolled in 28 hospitals in seven countries. Three thousand one hundred and two patients were randomly assigned to SIMA ($n = 1554$) or BIMA ($n = 1548$). The mean number of grafts was 3 for both groups. Forty per cent of the SIMA procedures and 42% of the BIMA were performed off-pump. Mortality at 30 days was 18 of 1548 (1.2%) for SIMA and 19 of 1537 (1.2%) for BIMA, and at 1 year was 36 of 1540 (2.3%) and 38 of 1529 (2.5%), respectively. The rates of stroke, myocardial infarction, and repeat revascularization were all $\leq 2\%$ at 1 year and similar between the two groups. Sternal wound reconstruction was required in 0.6 and 1.9% of the SIMA and BIMA groups, respectively.

Conclusion

Data from ART demonstrate similar clinical outcomes for SIMA and BIMA at 1 year but BIMA grafts are associated with a small absolute increase (1.3%) in the need for sternal wound reconstruction. The results suggest that the use of BIMA grafts is feasible on a routine basis. The 10-year results of the ART will confirm whether BIMA grafting results in lower mortality and the need for repeat intervention.
Trial registration: Controlled-trials.com (ISRCTN46552265).

Keywords

Revascularization • Bypass



Survival to 1 year.

Table 3 Adverse event data by randomized group

Safety	SIMA ($n = 1552$) ^a	BIMA ($n = 1542$) ^a	Relative risk (95% CI) ^b
Sternal wound reconstruction ^c	9 (0.6%)	29 (1.9%)	3.24 (1.54–6.83)
No history of diabetes	4	15	
Insulin-dependent diabetes	2	5	
Non-insulin-dependent diabetes	3	9	
MI event at 30 days	23 (1.5%)	22 (1.4%)	0.96 (0.54–1.72)
CVA event at 30 days	19 (1.2%)	15 (1.0%)	0.79 (0.40–1.56)
Revascularization at 30 days ^d	6 (0.4%)	11 (0.7%)	1.85 (0.68–4.98)
	($n = 1540$)	($n = 1529$)	
MI event at 1 year	31 (2.0%)	30 (2.0%)	0.97 (0.59–1.60)
CVA event at 1 year	28 (1.8%)	23 (1.5%)	0.83 (0.48–1.43)
Revascularization at 1 year ^d	20 (1.3%)	27 (1.8%)	1.36 (0.77–2.41)

^aParticipants with in-hospital or 6-week follow-up details available.

^bBIMA vs. SIMA.

^cTo 6 weeks from randomization.

^dIncluding any repeat CABG or PCI.

Table 4 Mortality details by randomized group

	SIMA	BIMA	Relative risk (95% CI) ^a
	($n = 1548$)	($n = 1537$)	
All-cause mortality at 30 days [n (%)]	18 (1.2)	19 (1.2)	1.06 (0.56–2.02)
Cardiac	12	9	
Other vascular	2	5	
Non-cardiovascular	4	5	
	($n = 1540$)	($n = 1529$)	
All-cause mortality at 1 year [n (%)]	36 (2.3)	38 (2.5)	1.06 (0.68–1.67)
Cardiac	18	18	
Other vascular	8	7	
Non-cardiovascular	10	13	

^aBIMA vs. SIMA.

ART Trial

“L’outcome ad 1 anno dimostra che l’utilizzo di una seconda mammaria aumenta la durata della procedura chirurgica di 23minuti circa senza senza incrementare l’incidenza di morte, di stroke o infarto miocardico sia a 30 giorni che ad un anno”

-
- ✘ Gli svantaggi immediati nel diabetico sono bilanciati dai vantaggi a distanza (aterosclerosi coronarica più severa)
 - ✘ I grafts in mammaria hanno effetto protettivo sulla progressione aterosclerotica
(↑ sintesi di NO, ↓ rilascio di vasocostrittori)

A CHE ETÀ EFFETTUARE LA RIVASCOLARIZZAZIONE ARTERIOSA

✘ MOHAMMADI	2008	60 anni
✘ Kieser	2011	70 anni
✘ Pettinari	2015	70 anni
✘ Kieser (incompl)	2014	80 anni

I benefici dell'utilizzo della mammaria come graft si confermano nella seconda e terza decade di Follow-up

The Effect of Bilateral Internal Thoracic Artery Grafting on Survival During 20 Postoperative Years

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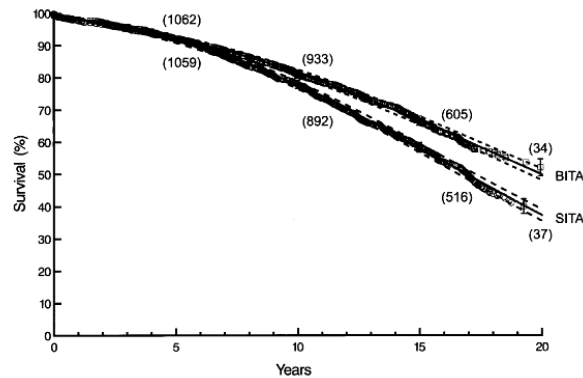
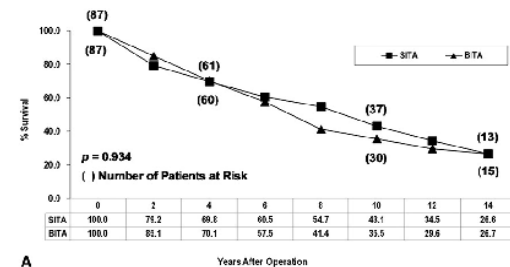


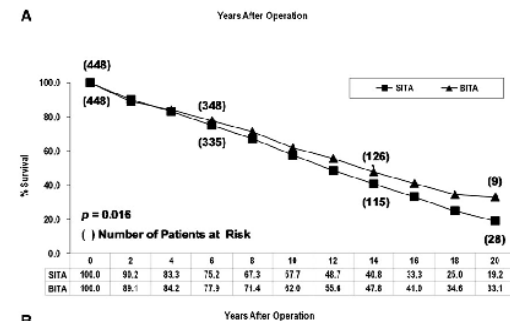
Fig 1. Comparison of matched pairs of patients receiving BITA and SITA grafts. The numbers of patients surviving at selected follow-up intervals are listed ($p < 0.001$). Each symbol represents a death, and vertical bars depict the 68% confidence limits (equivalent to one standard error) of Kaplan-Meier estimates. Solid lines, enclosed within 68% confidence limits, are parametric estimates. (BITA = bilateral internal thoracic artery; SITA = single internal thoracic artery.)

Bilateral internal thoracic artery grafting improves long-term survival in patients with reduced ejection fraction: A propensity-matched study with 30-year follow-up

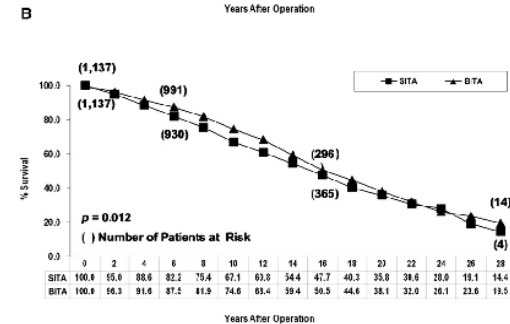
David L. Galbut, MD,^a Paul A. Kurlansky, MD,^b Ernest A. Traad, MD,^b Malcolm J. Dorman, MD,^c Melinda Zucker, MSRN,^c and George Ebra, EdD^{a,c}



EF < 30%



EF 30-50%



EF > 50%

FIGURE 1. A, Matched group I SITA and BITA recipients (EF < 0.30). B, Matched group II SITA and BITA recipients (EF 0.30–0.50). C, Matched group III SITA and BITA recipients (EF > 0.50). SITA, Single internal thoracic artery; BITA, bilateral internal thoracic artery; EF, ejection fraction.

CONCLUSIONI

- ✘ Nonostante i progressi della cardiologia interventistica la rivascolarizzazione miocardica chirurgica rappresenta la migliore terapia (per prognosi e sintomi) della cardiopatia ischemica multivasale severa.
- ✘ La rivascolarizzazione arteriosa, se non controindicata, DEVE essere sempre preferita nei pazienti di età < 70 anni, anche nei diabetici (con Hb_{glic} < 7%) non associata a severa BPCO e/o Obesità.

TAKE HOME MESSAGE

- ✘ La rivascolarizzazione arteriosa rappresenta la prima opzione nella rivascolarizzazione miocardica chirurgica
- ✘ Non bisogna temere le complicanze sternali che possono essere ridotte con accorgimenti tecnici
- ✘ Effettuare una selezione ed una gestione accurata dei pazienti
- ✘ Rivascolarizzazione arteriosa + off-pump: “No-touch technique” assoluta

Bilateral internal mammary artery grafting in CABG surgery: an extra 20 minutes for an extra 20 years...

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