

UPDATE SULLA RIVASCOLARIZZAZIONE CHIRURGICA «OFF-PUMP»

Giovanni Troise

U.O. DI CARDIOCHIRURGIA



FONDAZIONE
POLIAMBULANZA
Istituto Ospedaliero
BRESCIA



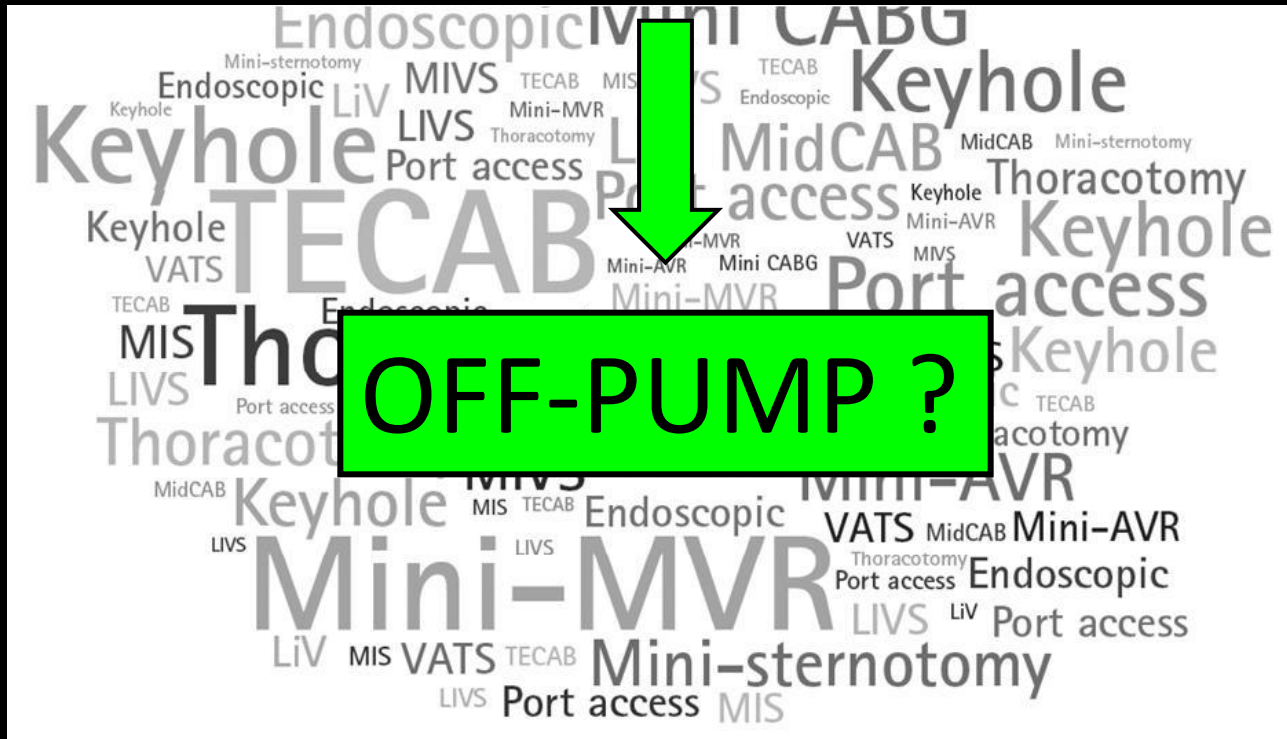
Organization Accredited
by Joint Commission International



ECOCARDIOCHIRURGIA 2017

Milano 27-28-29 marzo 2017

CARDIOCHIRURGIA MININVASIVA



- Definizione del database **STS** :

*“...any procedure not performed with a full sternotomy and/or **CPB** support .”*

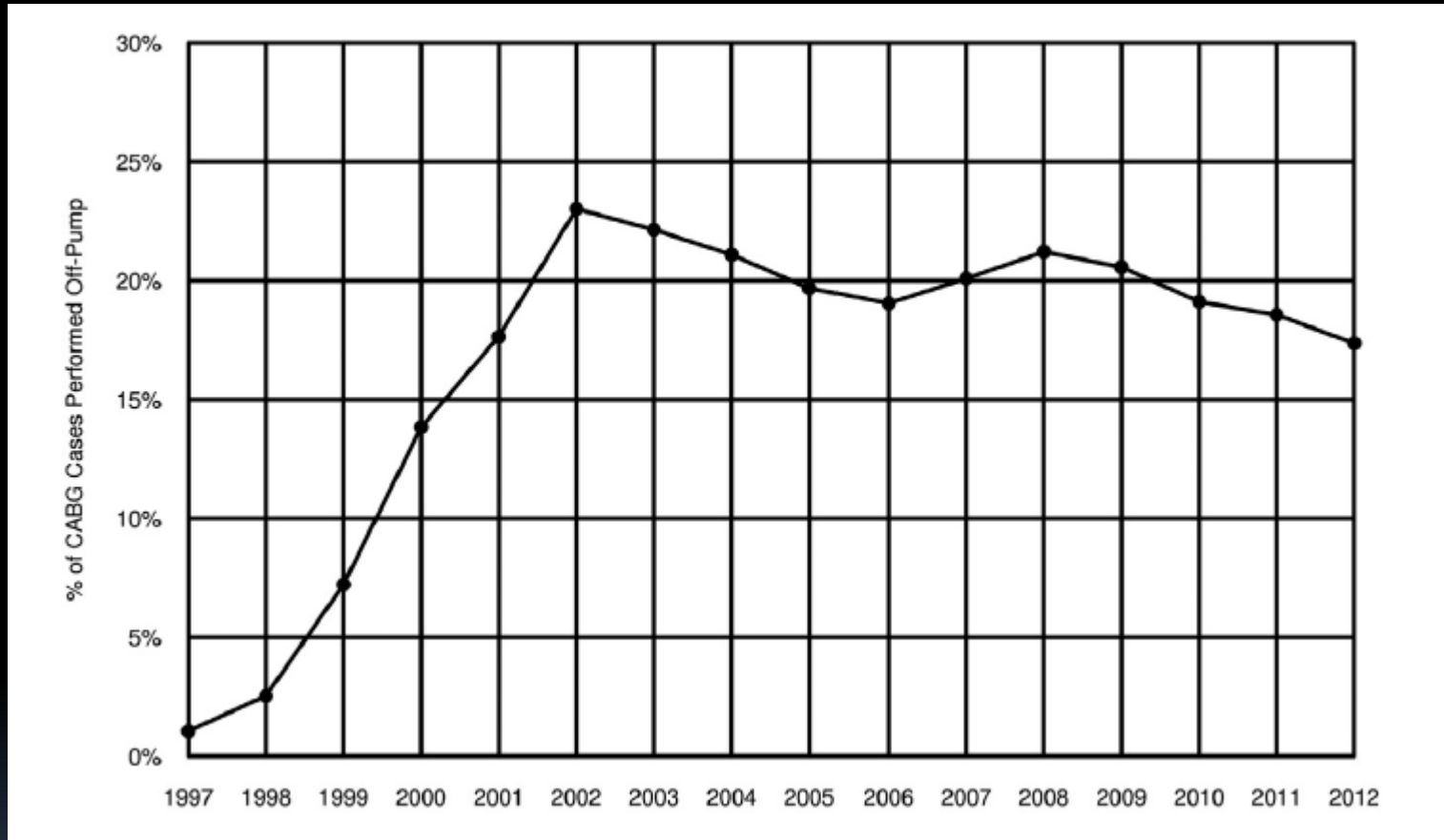
CHIRURGIA OFF-PUMP IN EUROPA (2006)

Belgio	35 %	Ungheria	24.8 %
Olanda	7.1 %	Italia	19.2 %
Germania	5.7 %	Spagna	19.7 %
Austria	10.1 %	Russia	13.2 %
Svizzera	14.3 %	Polonia	16.8 %
Francia	13.6 %	Svezia	6.6 %

*Dopo più di 10 anni
la situazione è sostanzialmente invariata !*



CHIRURGIA OFF-PUMP IN U.S.A.



Trends in use of off-pump coronary artery bypass grafting: Results from the Society of Thoracic Surgeons Adult Cardiac Surgery Database

J Thorac Cardiovasc Surg 2014



Ministernotomy in Myocardial Revascularization Without Cardiopulmonary Bypass: Technical Aspects and Early Results

(#2001-22980)

Giovanni Troise, MD¹, Federico Brunelli, MD¹, Marco Cirillo, MD¹, Zen Mhagna, MD¹, Giordano Tasca, MD¹, Bruno Amari, MD², Gian Battista Danzi, MD³, Eugenio Quaini, MD¹

¹Department of Cardiac Surgery, ²Department of Cardiac Anaesthesia, and ³Catheterization Laboratory, Poliambulanza Hospital, Brescia, Italy

Heart Surg Forum 2002;5(2):168-72

Original articles

Off-pump coronary surgery in a single center experience: from selective to systematic use

Giovanni Troise, Federico Brunelli, Marco Cirillo, Margherita Dalla Tomba, Giordano Tasca, Zen Mhagna, Gian Battista Danzi*, Bruno Amari**, Eugenio Quaini

Cardiac Surgery Unit, *Catheterization Laboratory, **Cardiac Anesthesia and Intensive Care Unit, Poliambulanza Hospital, Brescia, Italy

Studi osservazionali Rivascolarizzazione miocardica senza circolazione extracorporea in pazienti con malattia coronarica multivasale

Giovanni Troise, Federico Brunelli, Marco Cirillo, Margherita Dalla Tomba, Giordano Tasca, Zen Mhagna, Eugenio Quaini

Unità Funzionale di Cardiocirurgia, Ospedale Poliambulanza, Brescia

Ital Heart J 2004;5(4):276-281

Ital Heart J 2002;3(8):446-454

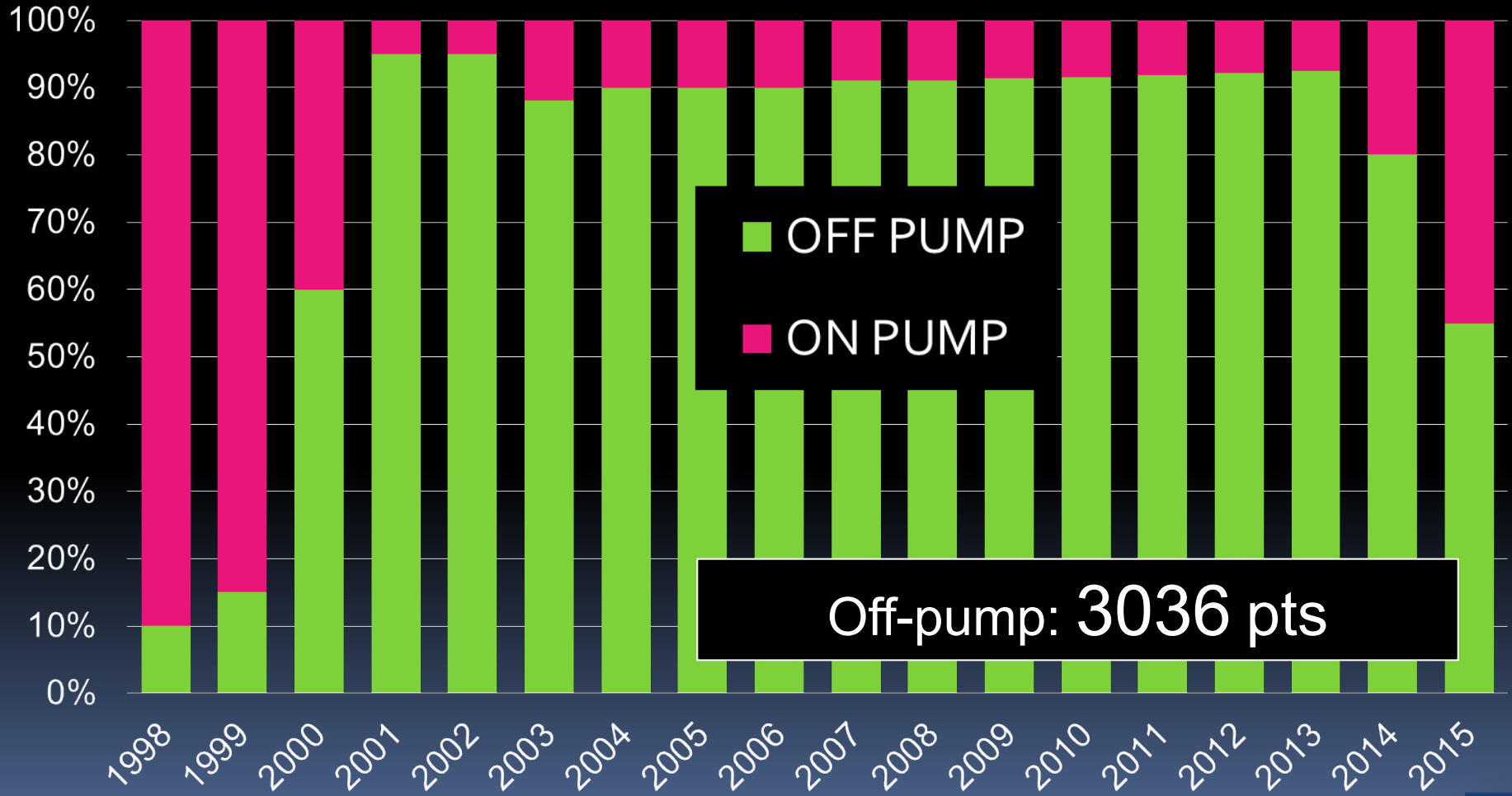
Beating heart coronary surgery: significance of systematic use.
Villa E, Cirillo M, Troise G.
G Ital Cardiol (Rome). 2006 Oct;7(10):709-10.



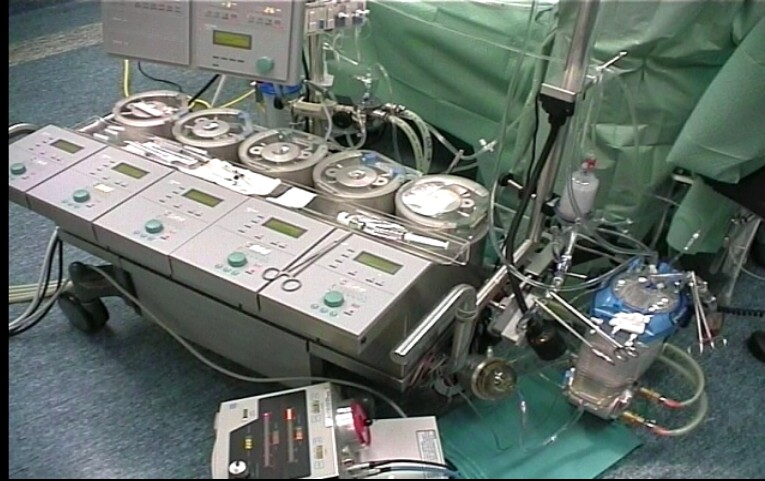
FONDAZIONE POLIAMBULANZA

CHIRURGIA CORONARICA SENZA CEC

Utilizzo sistematico dal settembre 2000



INDICAZIONI INDISCUTIBILI ALLA CEC (da settembre 2000)



**INFARTO MIOCARDICO ACUTO
ISCHEMIA ACUTA INGRAVESCENTE
SEVERA DISFUNZIONE DI POMPA
ANATOMIA COMPLESSA**

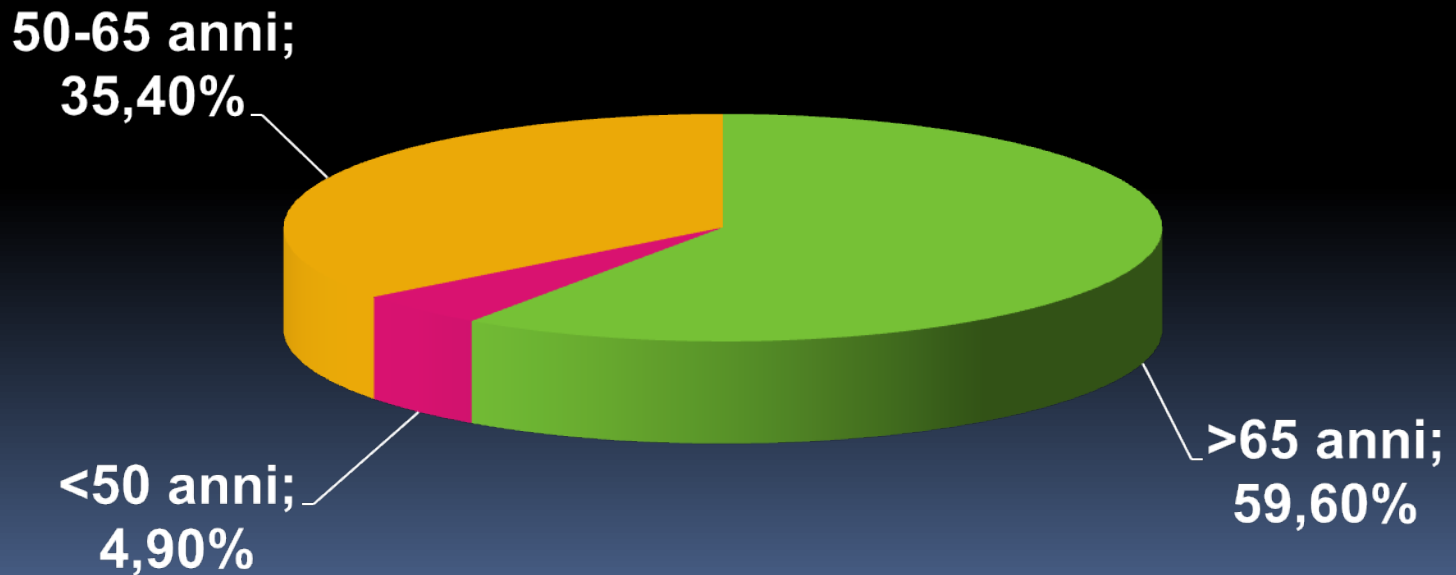
DATI PREOPERATORI

3036 Pts

DEMOGRAFICI

ETA' MEDIA: 67 anni \pm 9,5

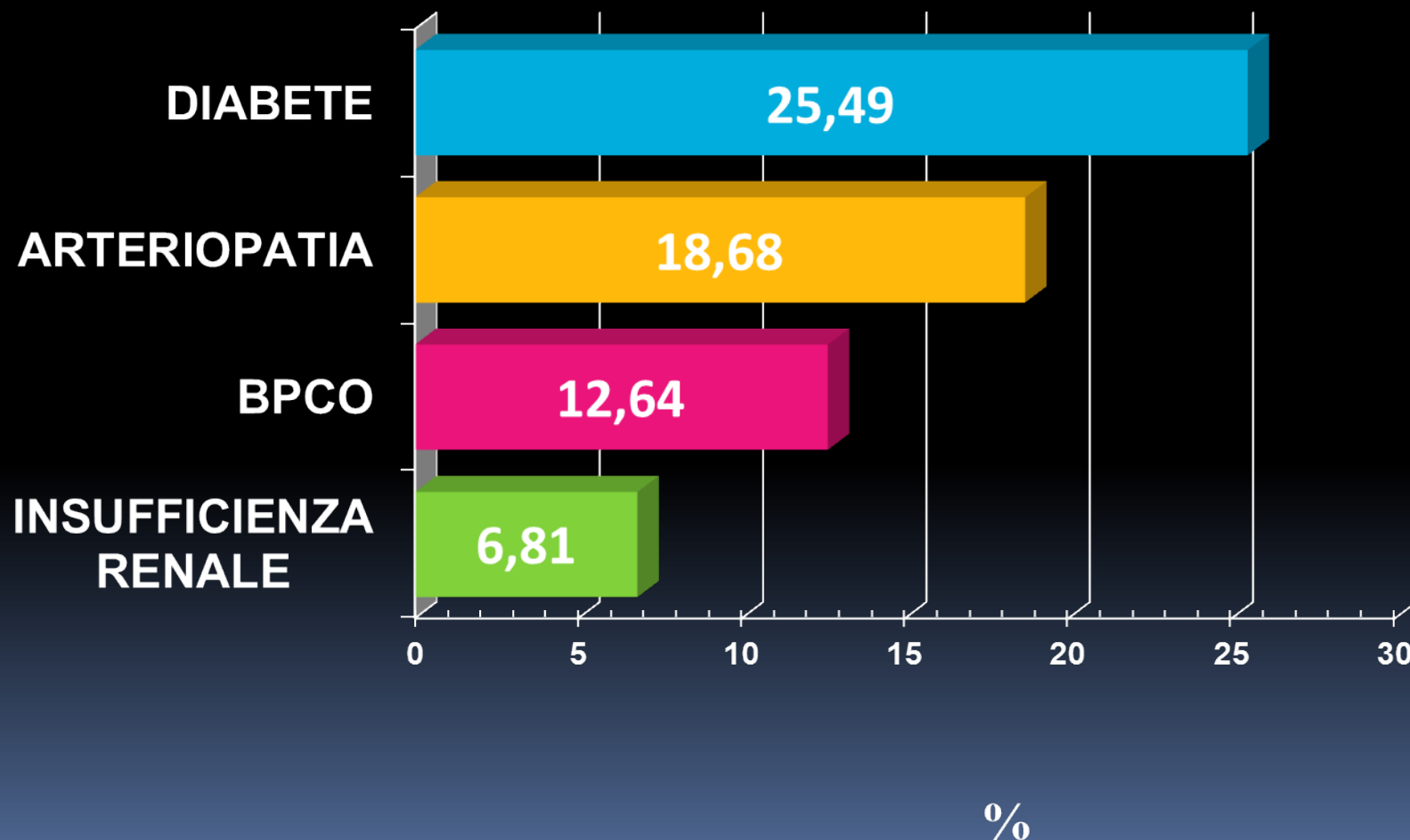
M/F RATIO : 4.2



DATI PREOPERATORI

3036 Pts

COMORBIDITA'



DATI PREOPERATORI

CARDIOLOGICI

	3036	%
ANGINA INSTABILE	388	12,8
PREGRESSO IMA	631	20,8
FE >50%	2116	69,7
FE 30-50%	780	25,7
FE < 30%	139	4,6
IABP PREOPERATORIO	94	3,1
TRONCO COMUNE	922	30,4

DATI PREOPERATORI

3036 Pts

CRITERIO PRIORITA'

Emergenza

5%

Urgenza

20%

Elezione

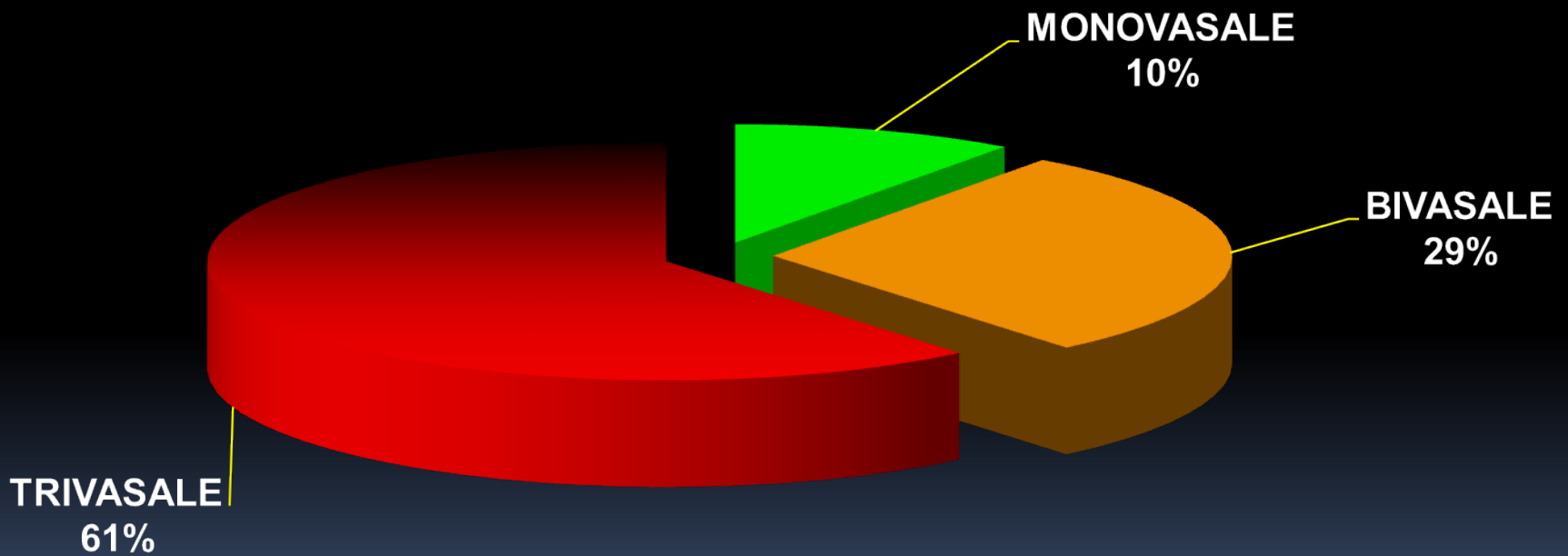
75%



DATI PREOPERATORI

3036 Pts

CORONAROPATIA



STENOSI TCCS 30,4%

DATI INTRAOPERATORI

Fondazione Poliambulanza - Brescia

SISTEMI TRATTATI

3036

ANAST./PZ.

2.6 ± 0.8

TEMPO MEDIO OPCAB
(MIN)

214 ± 56

CONVERSIONI

236

7,8 %

IVA

2990

98.5 %

DIAG

507

16,7 %

CIRCONFLESSA

1915

63,1 %

INTERMEDIO

306

10,1 %

POSTEROLATERALE

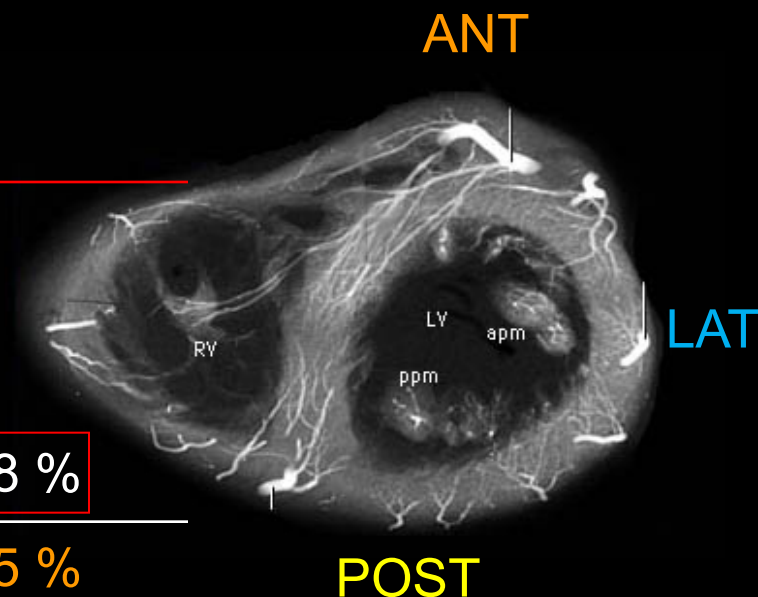
203

6,7 %

CORONARIA DX-IVP

437

14,4 %



STRATEGIA CHIRURGICA IN ALCUNI PAESI EUROPEI

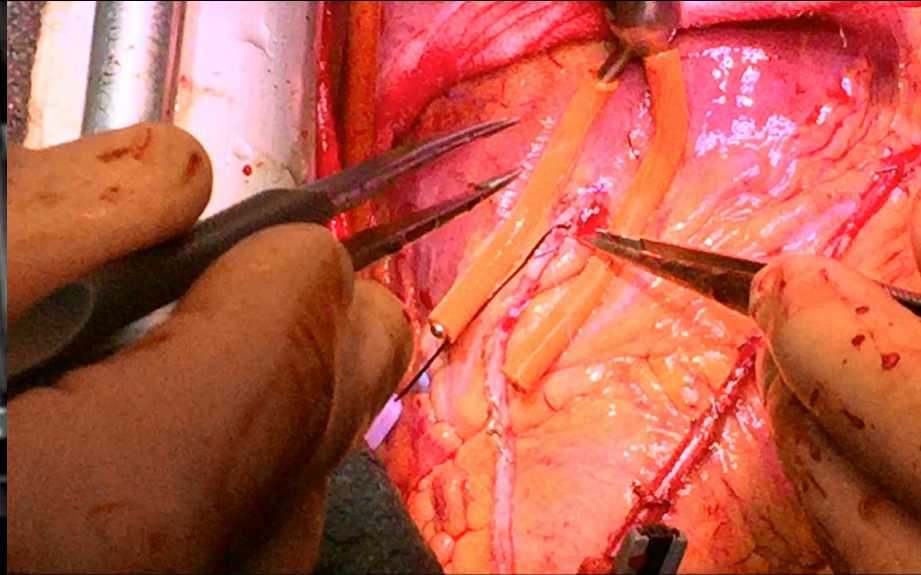
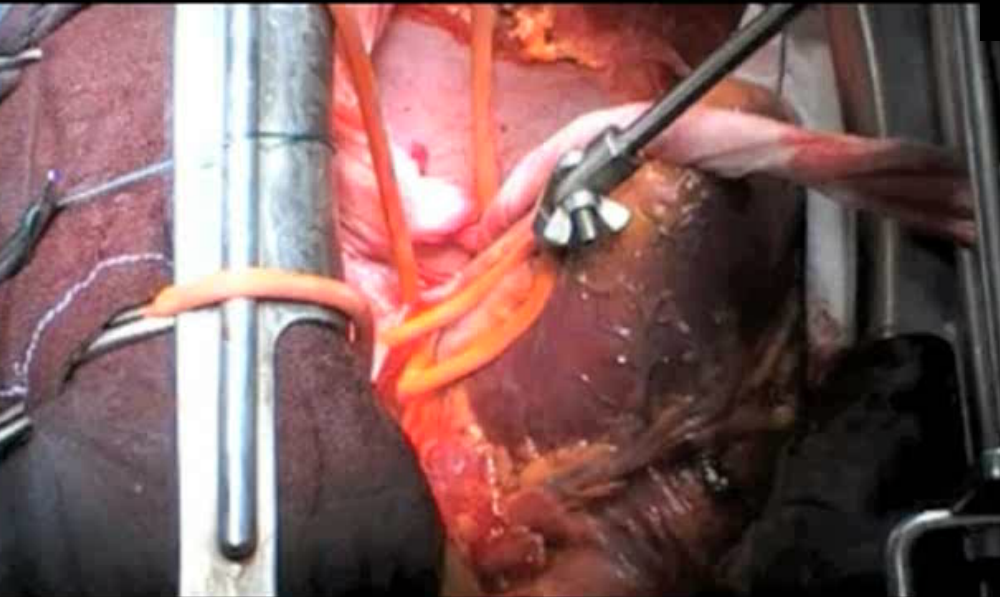
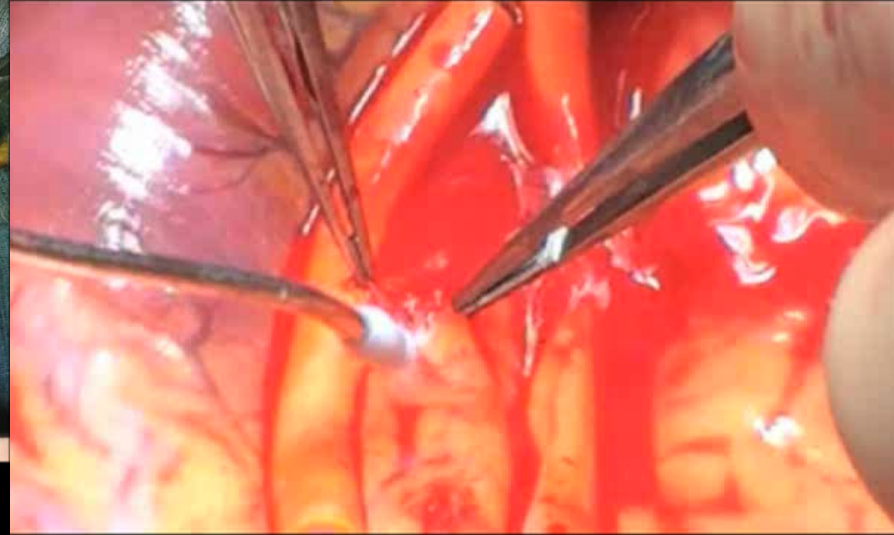
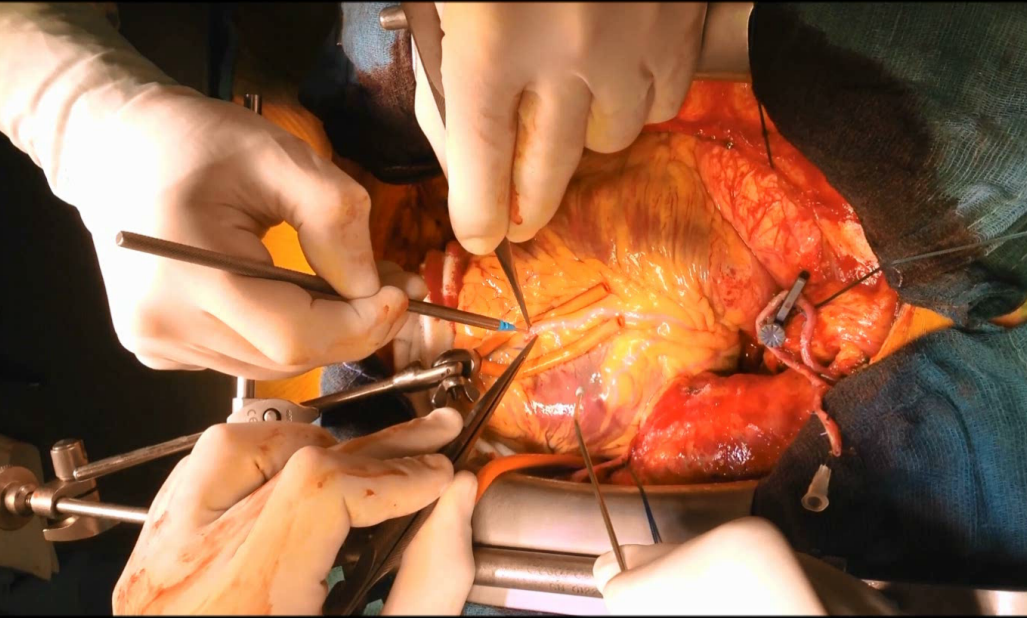
Coronary surgery in Europe: comparison of the national subsets of the European System for Cardiac Operative Risk Evaluation database[☆]

S.A.M. Nashef*, F. Roques, P. Michel, J. Cortina, A. Faichney, E. Gams, A. Harjula, M.T. Jones

EJCTS 2000;17:396-399

Centres	Emergency operation as a percentage of total	Preoperative IABP (%)	Mean number of IMA conduits	Mean number of distal anastomoses
Germany	4.5	0.1	0.88	3.2
UK	3.9	0.7	0.85	3.1
Spain	2.0	2.3	0.76	2.7
Finland	4.0	0.0	0.93	3.9
France	4.3	2.0	1.12	2.7
Italy	4.6	1.5	0.96	2.7
<i>P</i> -value	0.007	0.0001	0.0001	0.0003

TECNICA BYPASS A CUORE BATTENTE



DATI POSTOPERATORI

3036 Pts

COMPLICANZE PERIOPERATORIE

	n	%
Riapertura per sanguinamento	41	1,36
IMA perioperatorio	42	1,39
IABP post-operatorio	57	1,9
Fibrillazione atriale	670	22,1
Eventi cerebrovascolari	16	0,54
Necessità di CVVH	20	0,68

DATI POSTOPERATORI

3036 Pts

MORTALITA' OSPEDALIERA

26 (0,86%)

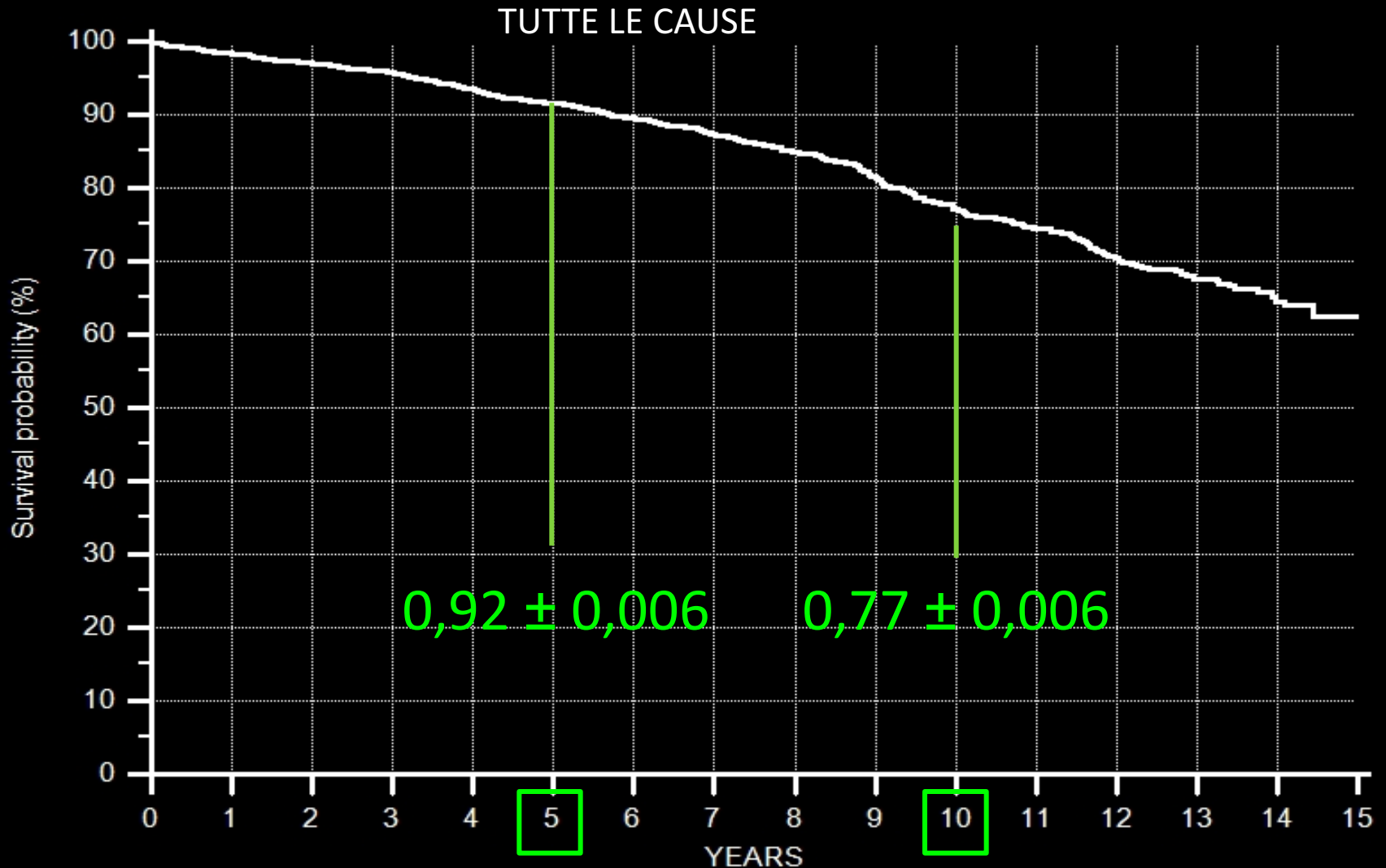
CAUSE



RISULTATI

3036 Pts

Fondazione Poliambulanza – Brescia (1997-2015)



Number at risk

2876 2607 1749 1573 1366 1171 1047 874 661 523 439 403 300 203 112 44



RISULTATI

3036 Pts

Fondazione Poliambulanza – Brescia (1997-2015)



Number at risk

2876 2607 1749 1573 1366 1171 1047 874 661 523 439 403 300 203 112 44



RISULTATI

3036 Pts

Fondazione Poliambulanza – Brescia (1997-2015)



Number at risk

2876 2574 1709 1520 1302 1103 978 810 605 479 400 355 262 178 96 37



RISULTATI

3036 Pts

Fondazione Poliambulanza – Brescia (1997-2015)

LIBERTA' DA MACCE

Major Adverse Cardiac and Cerebrovascular Event



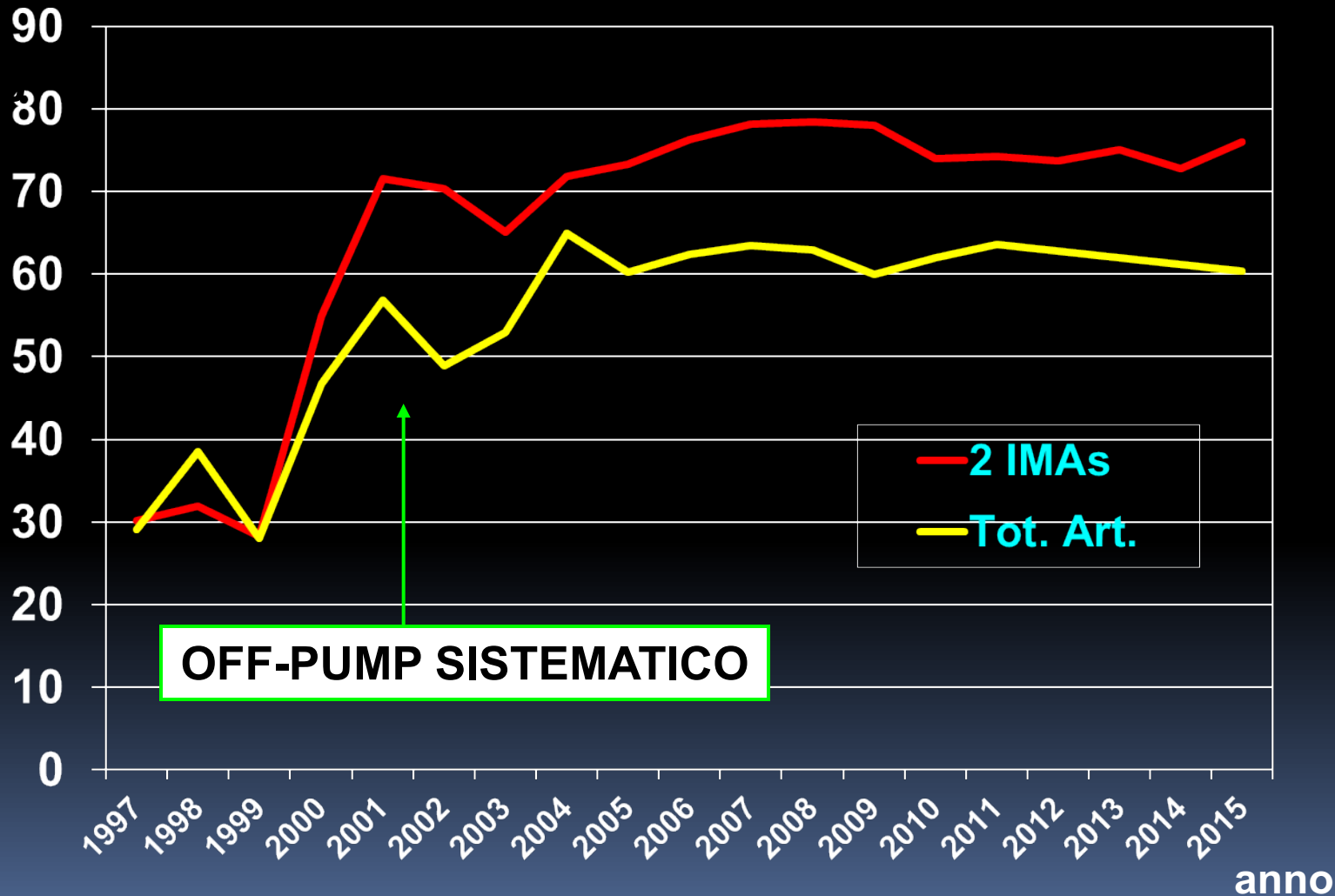
Number at risk

2876 2607 1749 1573 1366 1171 1047 874 661 523 439 403 300 203 112 44



RIVASCOLARIZZAZIONE ARTERIOSA

Fondazione Poliambulanza - Brescia



«NO-TOUCH AORTA» ED EVENTI NEUROLOGICI

DOES THE "NO-TOUCH" TECHNIQUE ENHANCE
NEUROPROTECTIVE EFFECTS OF OFF-PUMP
CORONARY SURGERY?

*Antonio Messina, Emmanuel Villa, Zen Mhagna, Marco Cirillo,
Federico Gabriele Brunelli, Margherita Dalla Tomba,
Eugenio Quaini, Giovanni Troise*
Poliambulanza Foundation Hospital, Brescia

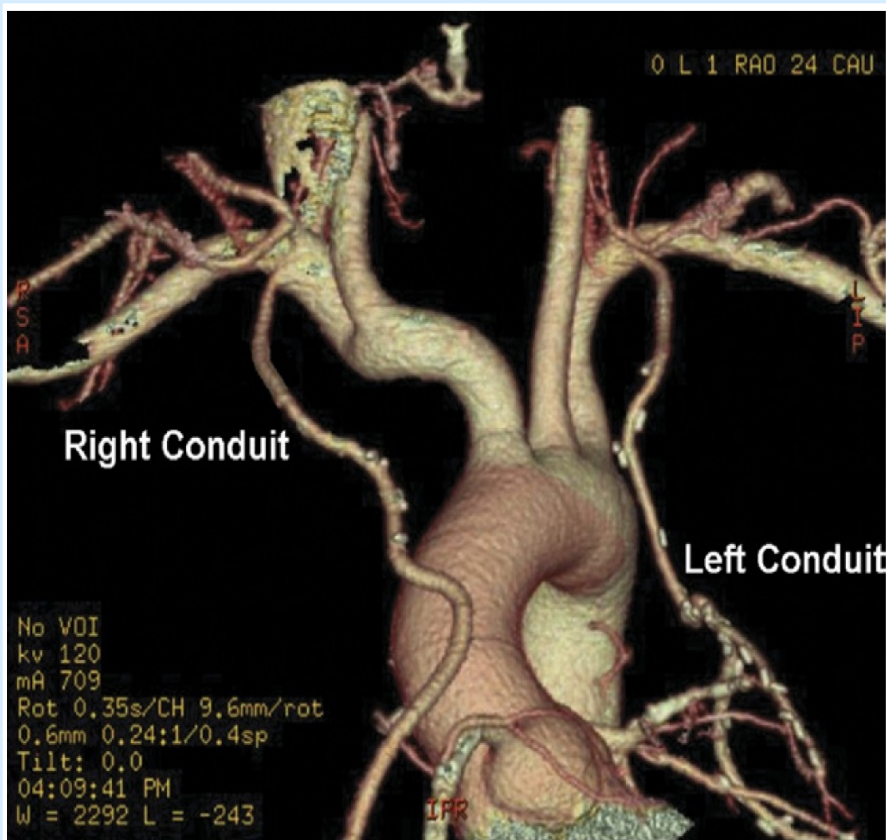


	NO TOUCH AORTA	CLAMP LATERALE	
Mortalità ospedaliera	0.3 %	1.2 %	P=0.06
Eventi neurologici	0.1 %	0.9 %	P=0.04

A New No-Touch Aorta Technique for Arterial-Source, Off-Pump Coronary Surgery

Marco Cirillo, MD, Antonio Messina, MD, Margherita Dalla Tomba, MD, Federico Brunelli, MD, Zean Mhagna, MD, Emmanuel Villa, MD, Ernesto Dettori, MD, and Giovanni Troise, MD

Cardiovascular Department, Heart Surgery Unit, and Radiology Unit, Poliambulanza Foundation Hospital, Brescia, Italy



Ann Thorac Surg 2009;88:e46-7

Safenous vein
anastomosed on
the proximal
stump of the
RIMA

- Intrathoracic arterial source
- Reduced pressure stress on vein graft
- No tangential clamping of aorta

OFF-PUMP e TRAINING

Fondazione Poliambulanza - Brescia



23rd EACTS Annual Meeting
17 - 21 October, 2009
Vienna, Austria



VOLUME 38 NUMBER 4 APRIL 2010 ISSN 1038-4851



EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY

Official Journal of
the European Association for Cardio-Thoracic Surgery and
the European Society of Thoracic Surgeons

OXFORD
UNIVERSITY PRESS



ELSEVIER

European Journal of Cardio-thoracic Surgery 38 (2010) 380–386

EUROPEAN JOURNAL OF
CARDIO-THORACIC
SURGERY

www.elsevier.com/locate/ejcts

Medium-term results of systematic off-pump coronary surgery performed by trainee surgeons[☆]

Antonio Messina^{a,*}, Emmanuel Villa^a, Zean Mhagna^a, Margherita Dalla Tomba^a,
Marco Cirillo^a, Federico Brunelli^a, Eugenio Quaini^b, Giovanni Troise^a

^a Cardiovascular Department, Cardiac Surgery Operating Unit, Poliambulanza Foundation Hospital, Via Bissolati 57, 25124 Brescia, Italy

^b Cardiac Surgery Operating Unit, Ospedali Riuniti, Bergamo, Italy

Received 30 September 2009; received in revised form 8 February 2010; accepted 16 February 2010; Available online 25 March 2010

Eur J Cardiothorac Surg 2010;38:380-386



OFF-PUMP e TRAINING



Number at risk						
Group: Expert	0	1	2	3	4	5
Expert	967	911	831	677	111	48
Group: Trainee	0	1	2	3	4	5
Trainee	354	349	291	229	67	65

Fig. 2. Medium-term survival of patients operated on by expert or trainee surgeons. Log rank = 0.4.

OFF-PUMP e TRAINING



Number at risk						
Group: Expert	967	900	814	657	101	53
Group: Trainee	354	343	274	209	14	12

Fig. 3. Actuarial freedom from new re-vascularisation in patients operated on by expert or trainee surgeons. Log rank = 0.3.

Off-pump coronary artery bypass grafting: Misperceptions and misconceptions

Shahzad G Raja, Umberto Benedetto

World J Methodol 2014 March 26;4(1):6-10

Completezza della rivascolarizzazione e numero di grafts

Furthermore, it is equally important to understand that completeness of revascularization and number of grafts should not be used synonymously. A more logical way to address the issue of completeness of revascularization is to use the index of completeness of revascularization [number of grafts performed divided by the number of grafts needed (number of graftable vessels with angiographically significant stenoses)]^[20].

IMPATTO DELL'USO ESTESO DELLA PROCEDURA

Surgical volume and outcomes of off-pump coronary artery bypass graft surgery: Does it matter?

Suma H. Konety, Gary E. Rosenthal and Mary S. Vaughan-Sarrazin
J Thorac Cardiovasc Surg 2009;137:1116-1123

Studio retrospettivo

Mortalità ospedaliera e complicanze postoperatorie

26.011 pz Off-pump vs 99.344 pz On-pump

124 Ospedali della California

California Patient Discharge Database

Conclusions: Outcomes were significantly better for off-pump compared with on-pump coronary artery bypass grafting. Although the benefit of off-pump bypass grafting increased as the relative use of the procedure at a hospital increased, off-pump bypass grafting can be safely implemented across numerous hospitals.





FONDAZIONE
POLIAMBULANZA
Istituto Ospedaliero
BRESCIA



U.O. DI CARDIOCHIRURGIA

Direttore: Giovanni Troise

Staff: Federico Brunelli
Marco Cirillo
Margherita Dalla Tomba
Antonio Messina
Zen Mhagna
Emmanuel Villa

www.poliambulanza.it

www.giovanitroise.it

