Arritmias no pós operatório de TGA

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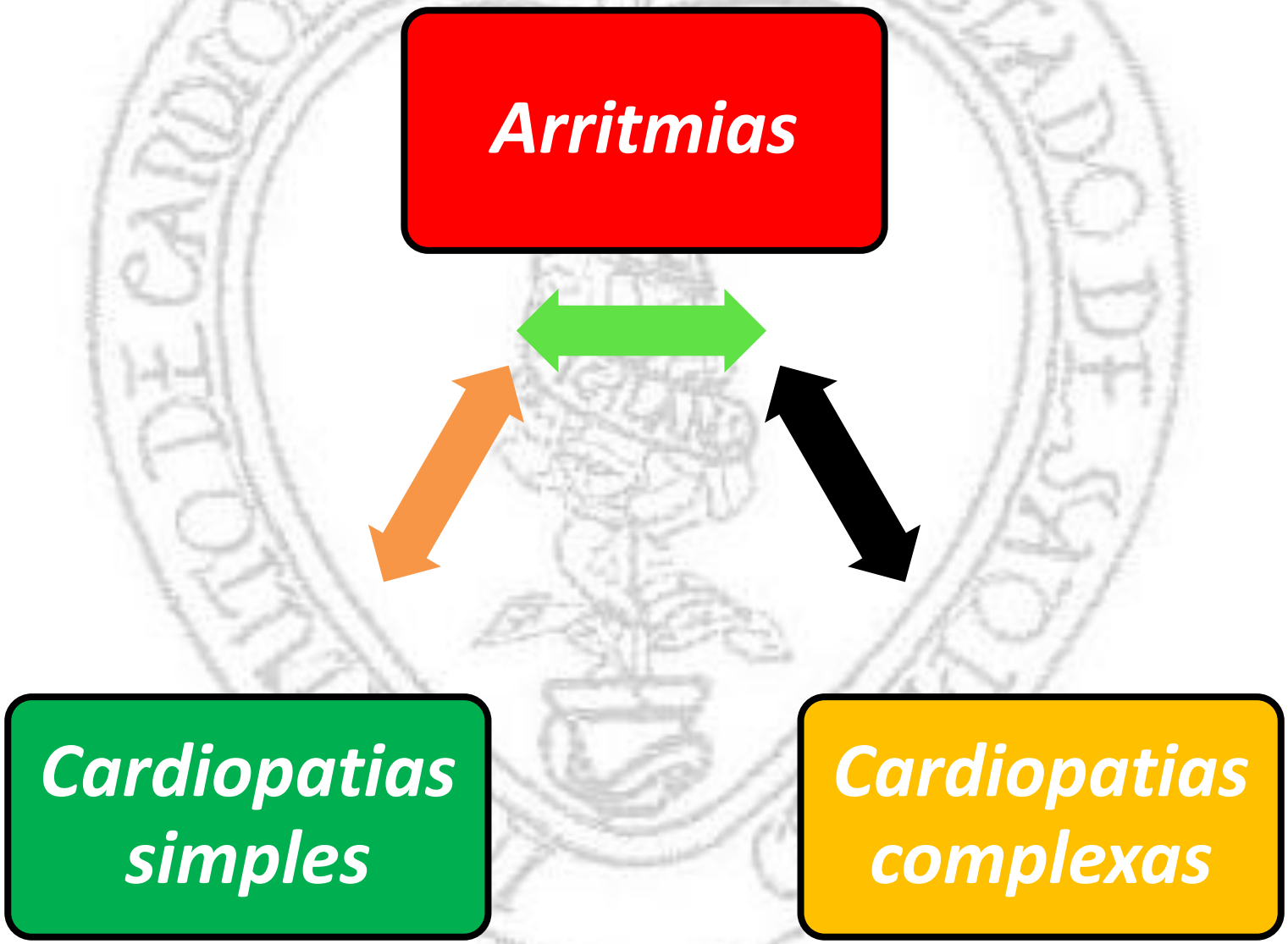
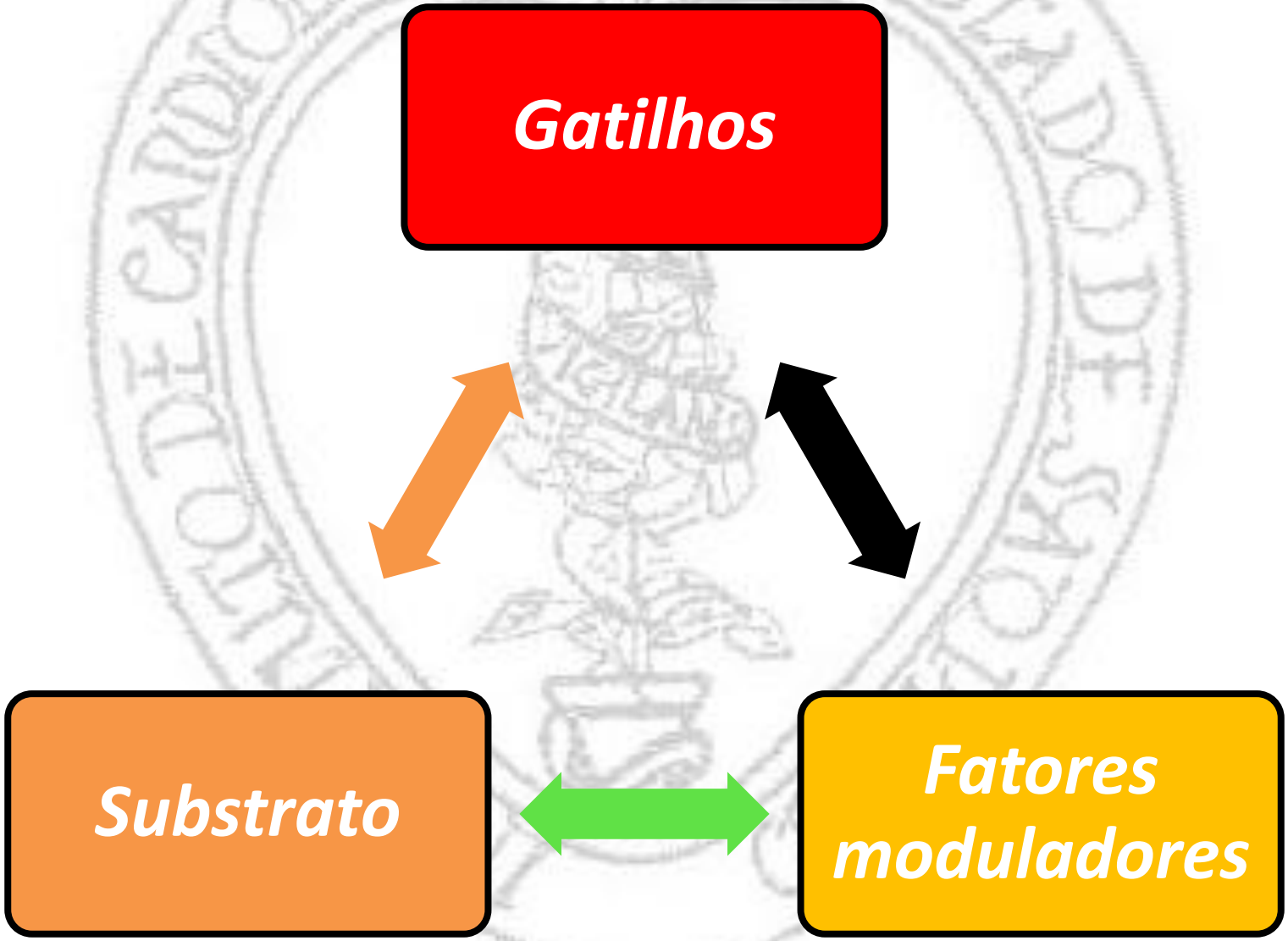
Instituto Dante Pazzanese de Cardiologia

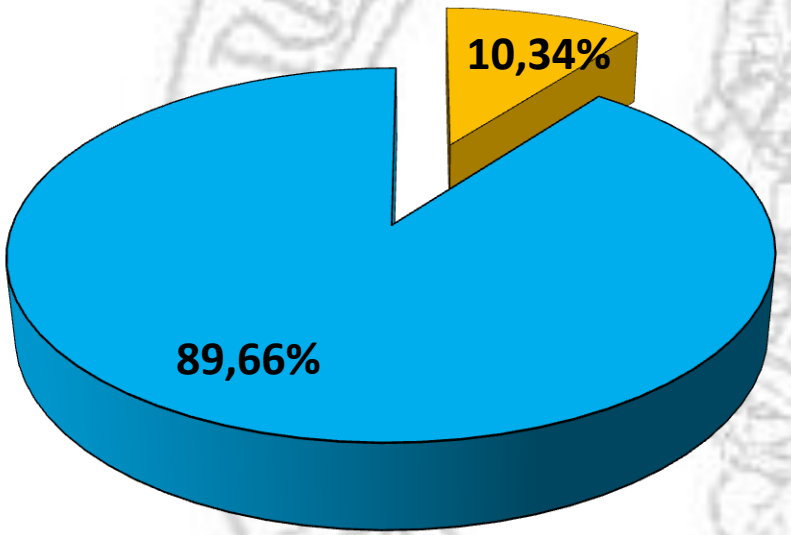
PACES

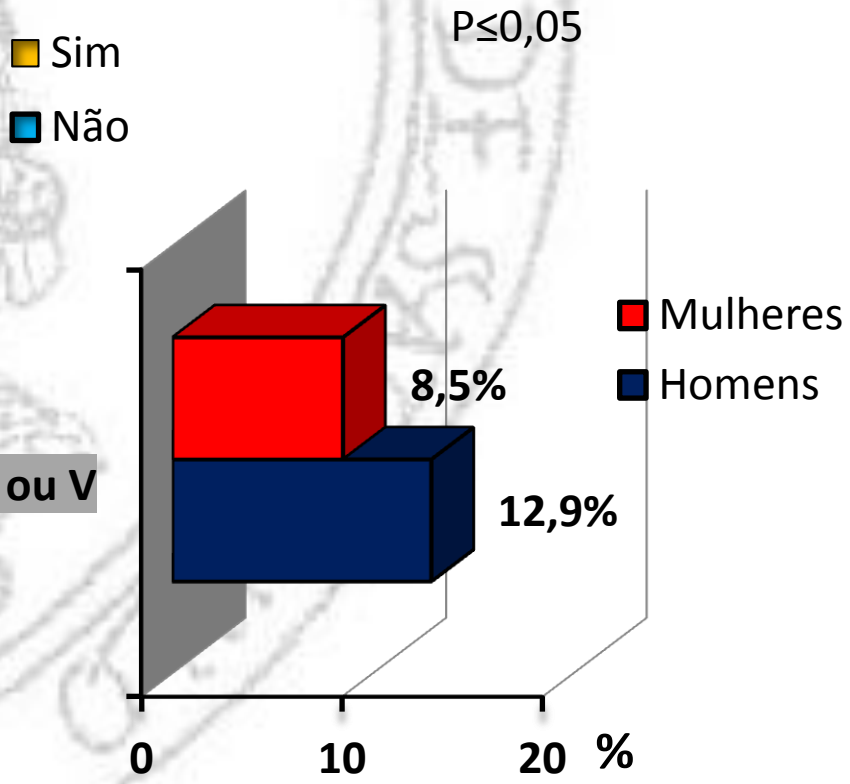

Arritmias
Cardiopatias simples
Cardiopatias complexas


Gatilhos
Substrato
Fatores moduladores

Distribuição das arritmias n= 462815 exames

Presença de arritmias supraventriculares ou ventriculares

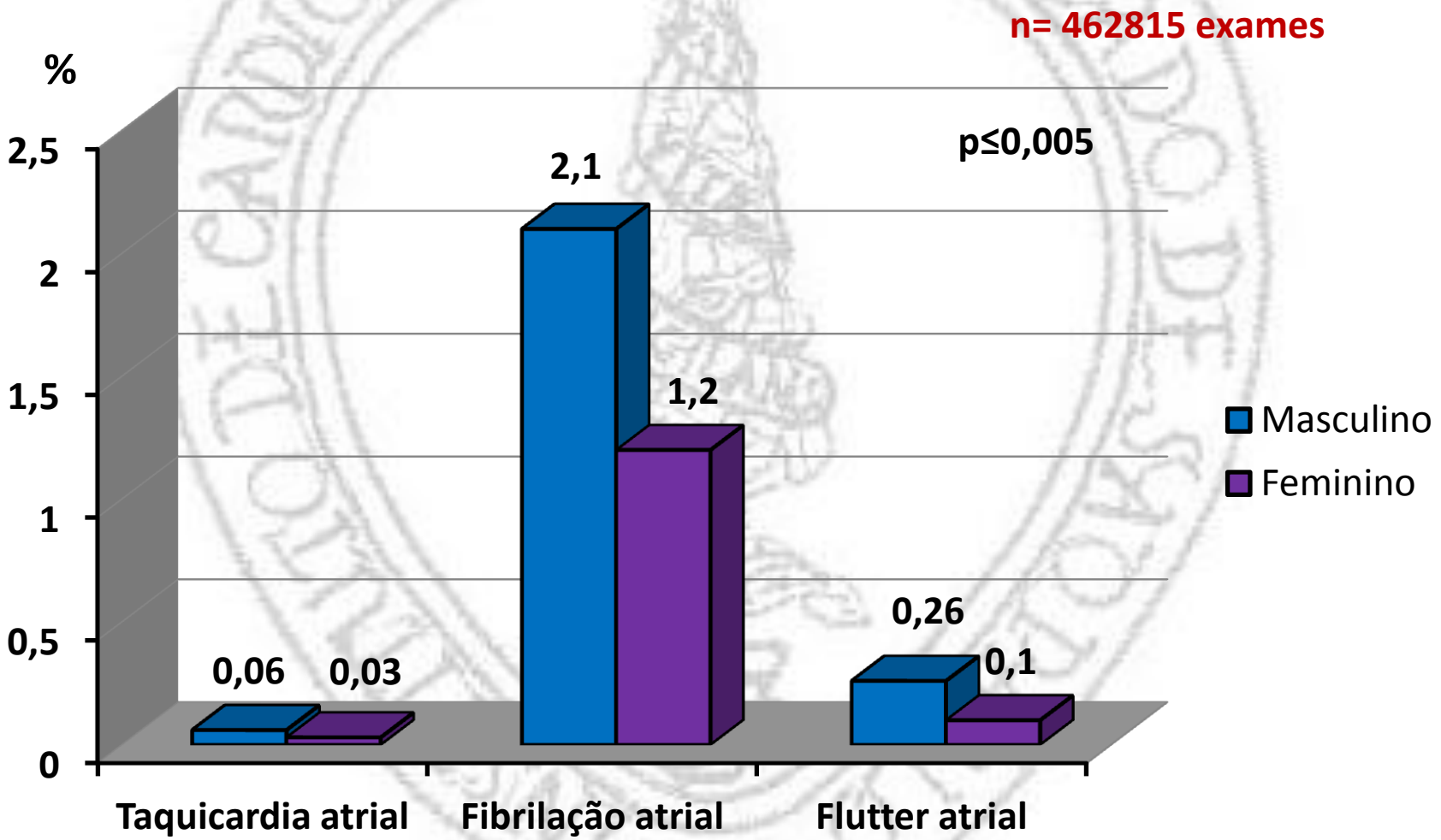




Sexo masculino 178513 exames
Sexo feminino 284302 exames

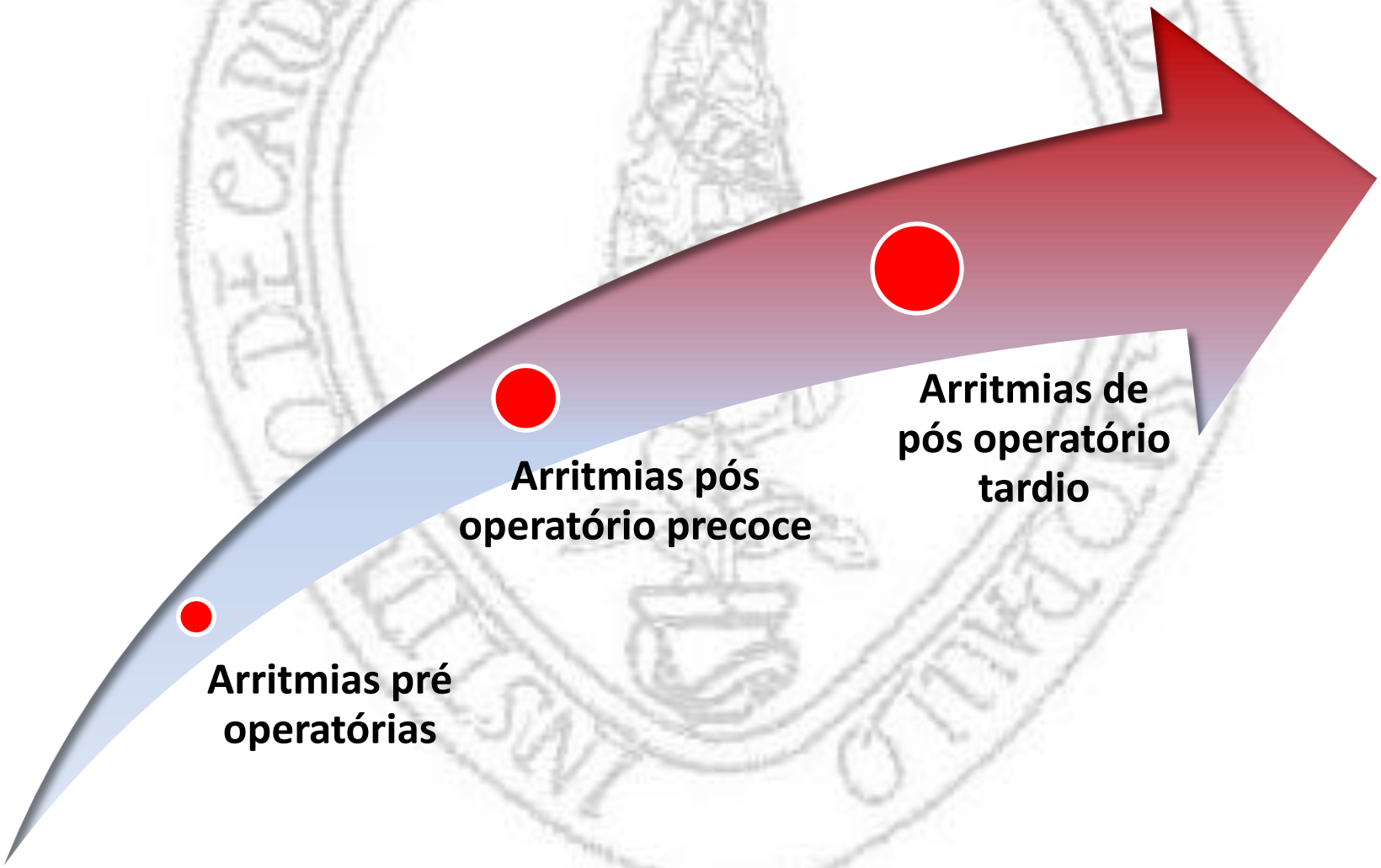
Andalaft, R; França F, Almeida C et al – Relampa 2013

Distribuição das arritmias atriais

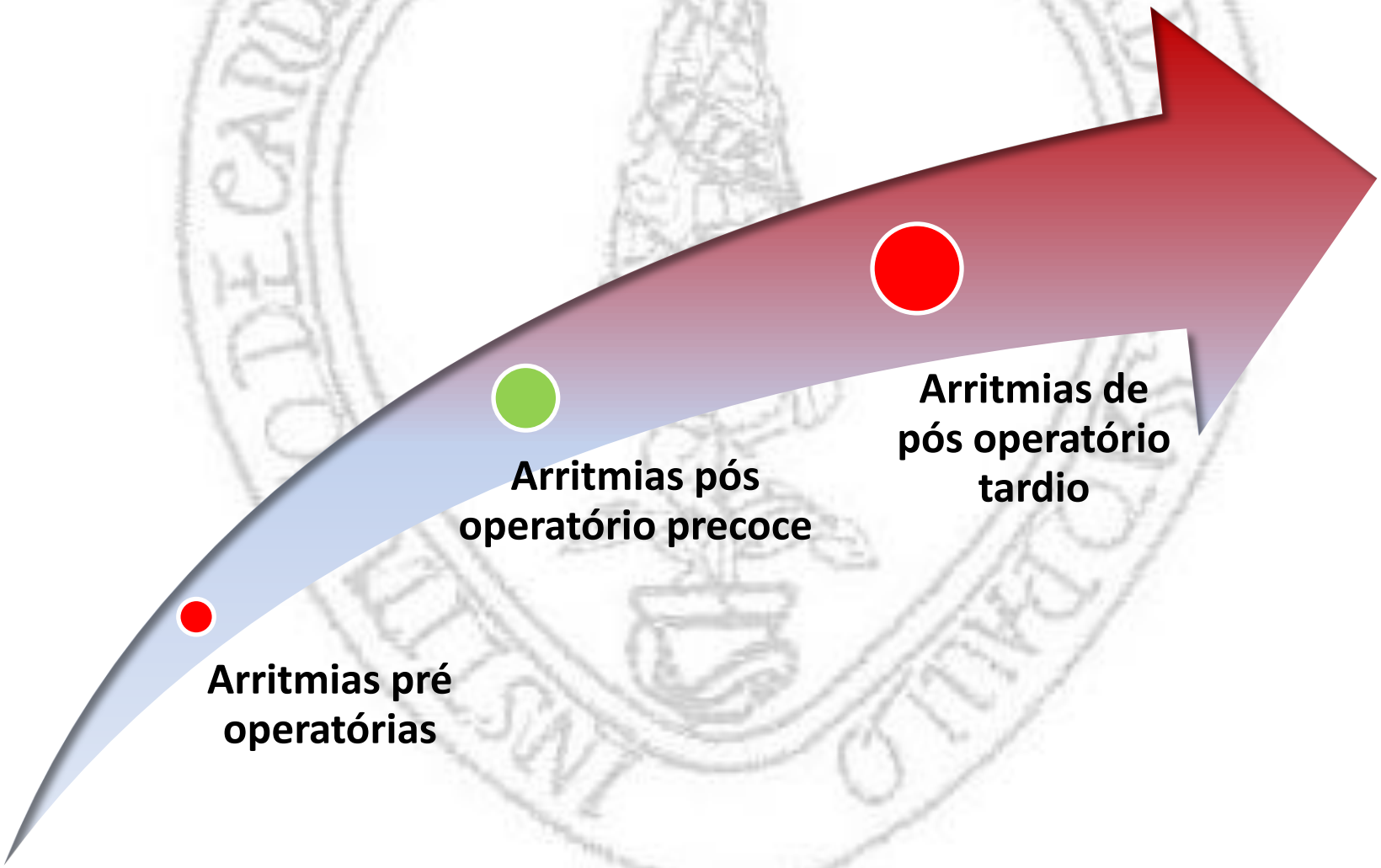


Andalaft, R; França F, Almeida C et al – Relampa 2013

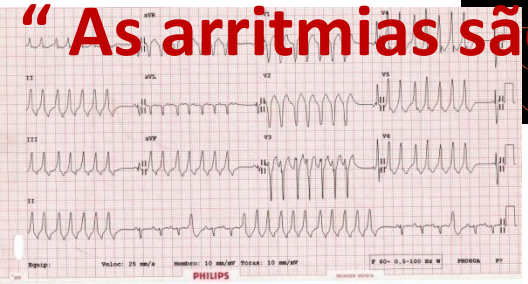
Identificação dos eventos arrítmicos



Identificação dos eventos arrítmicos



- CEC
- Disturbios metabólicos
- Stress catecolaminérgico
- DVA



“ As arritmias são os gritos de um coração doente “

Arritmias

Taquicardias

TSV

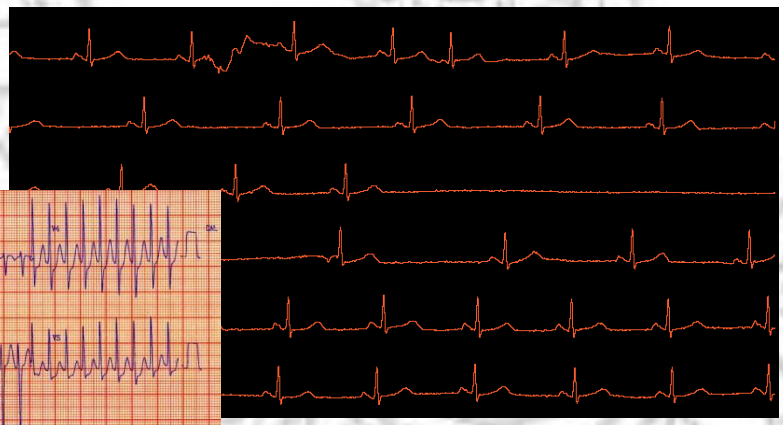
Ventriculares

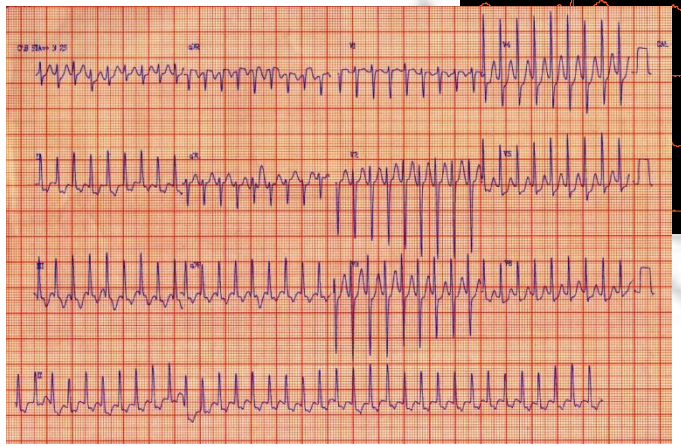
Bradicardias

Automatismo

Bloqueios sinoatriais

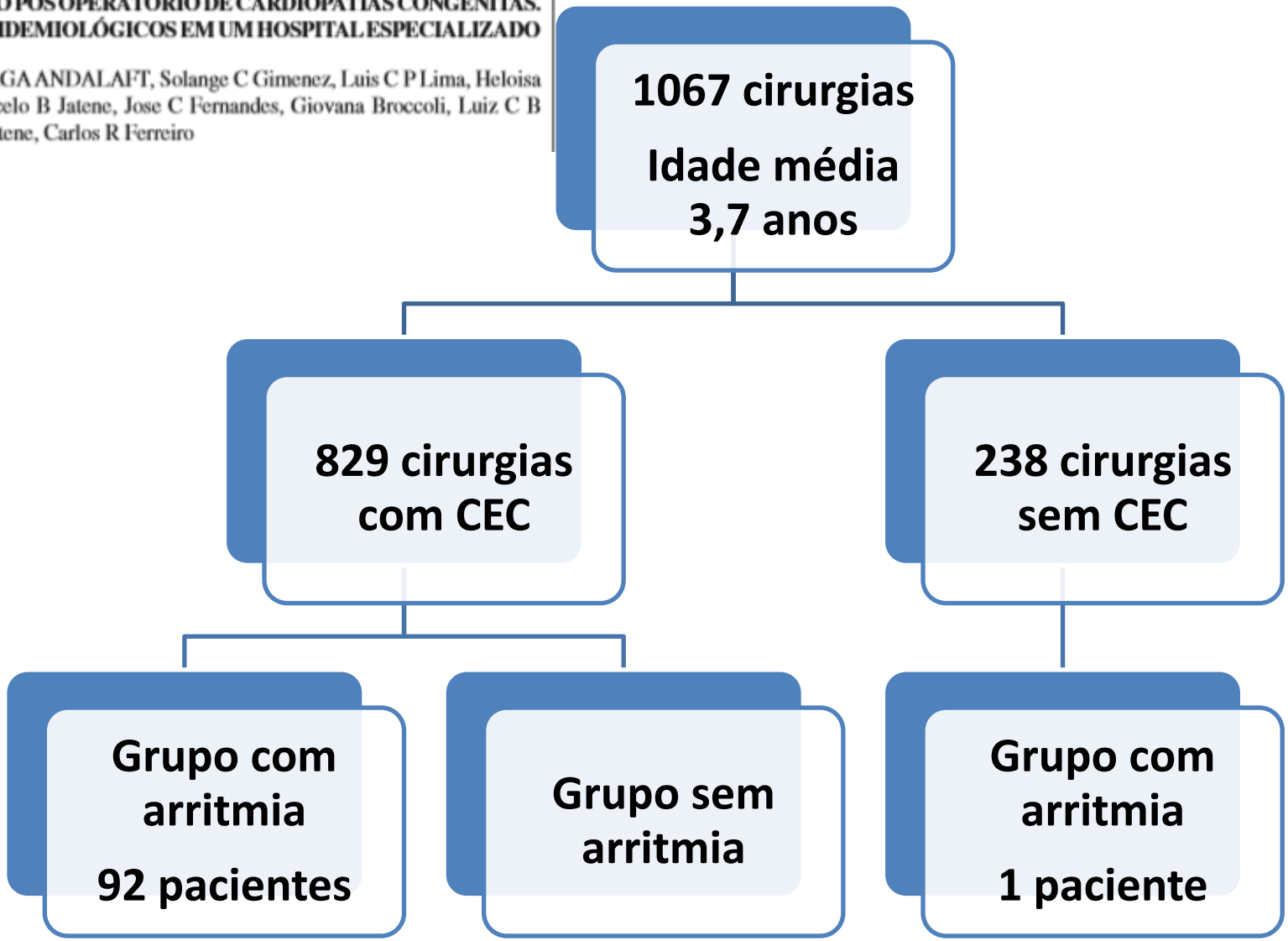
Bloqueios AV





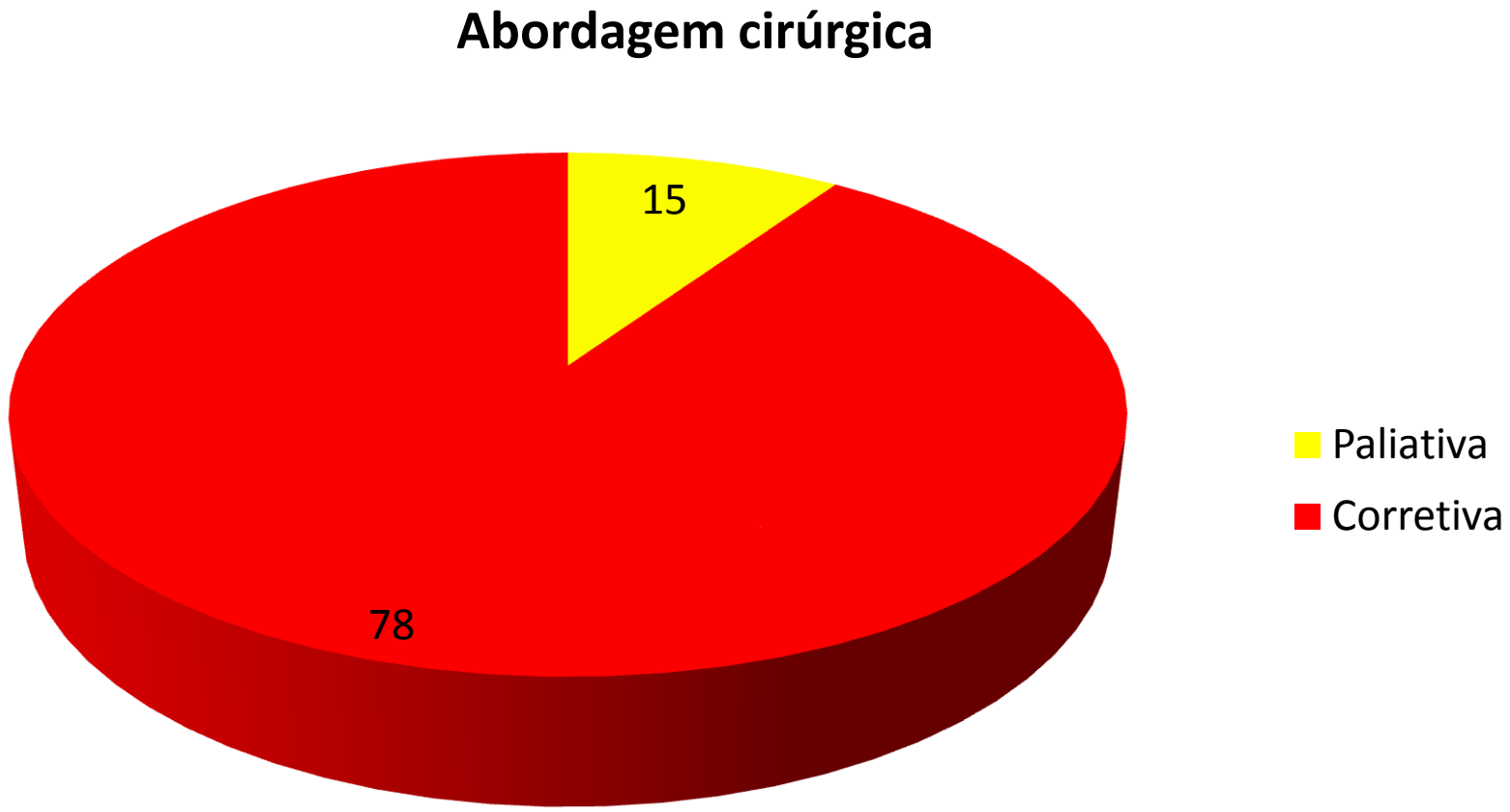
ARRITMIAS NO PÓS OPERATÓRIO DE CARDIOPATIAS CONGÊNITAS. ASPECTOS EPIDEMIOLÓGICOS EM UM HOSPITAL ESPECIALIZADO

ROGÉRIO BRAGA ANDALAFT, Solange C Gimenez, Luis C P Lima, Heloisa M Khader, Marcelo B Jatene, Jose C Fernandes, Giovana Broccoli, Luiz C B Souza, Ieda B Jatene, Carlos R Ferreiro



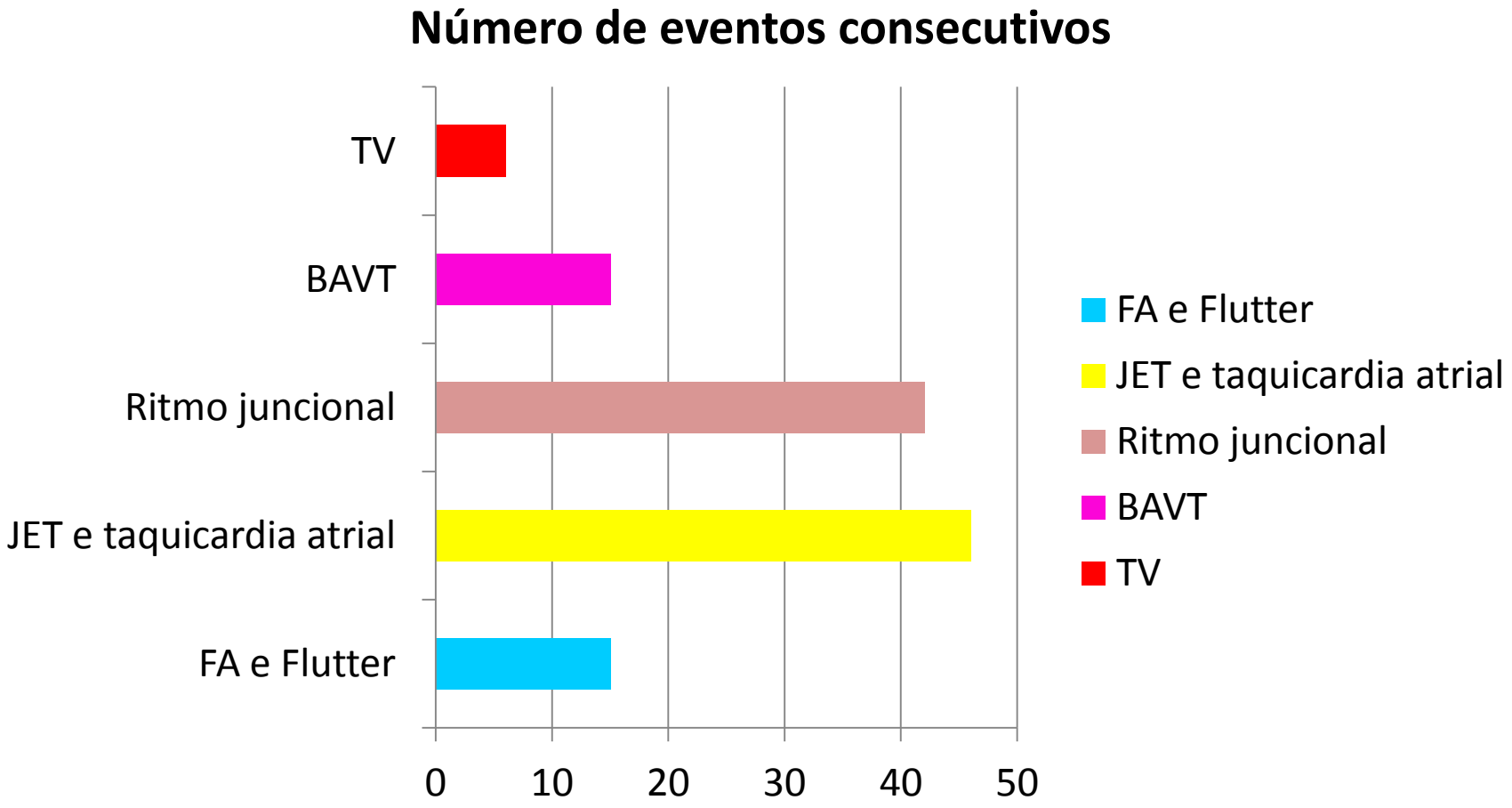
Andalaft, R; Gimenez S C Relampa 2010

Abordagem cirúrgica nos pacientes portadores de arritmia (n=93)



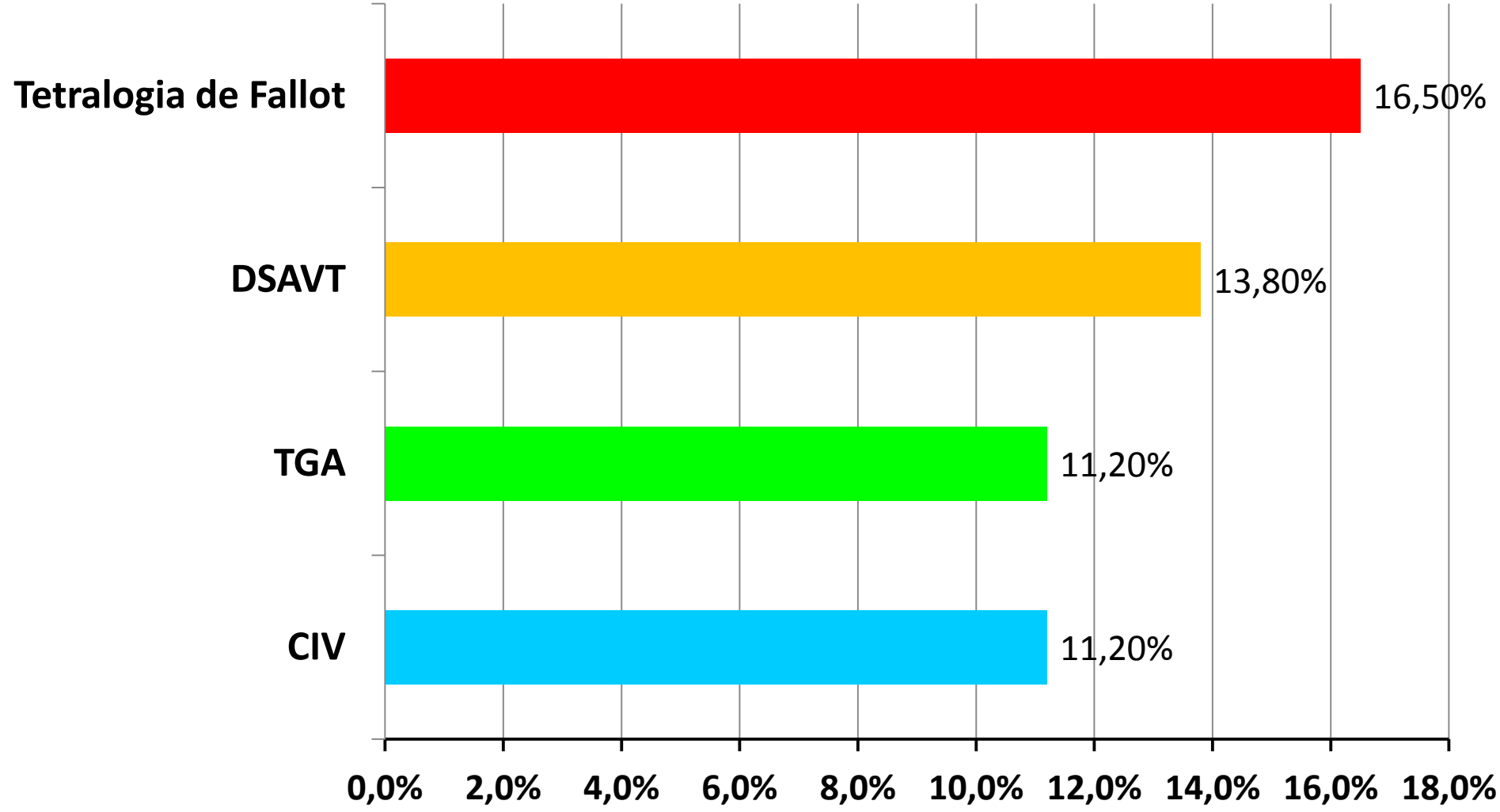
Andalaft, R; Gimenez S C Relampa 2010

Eventos arritmicos consecutivos (124) em 93 pacientes portadores de arritmias



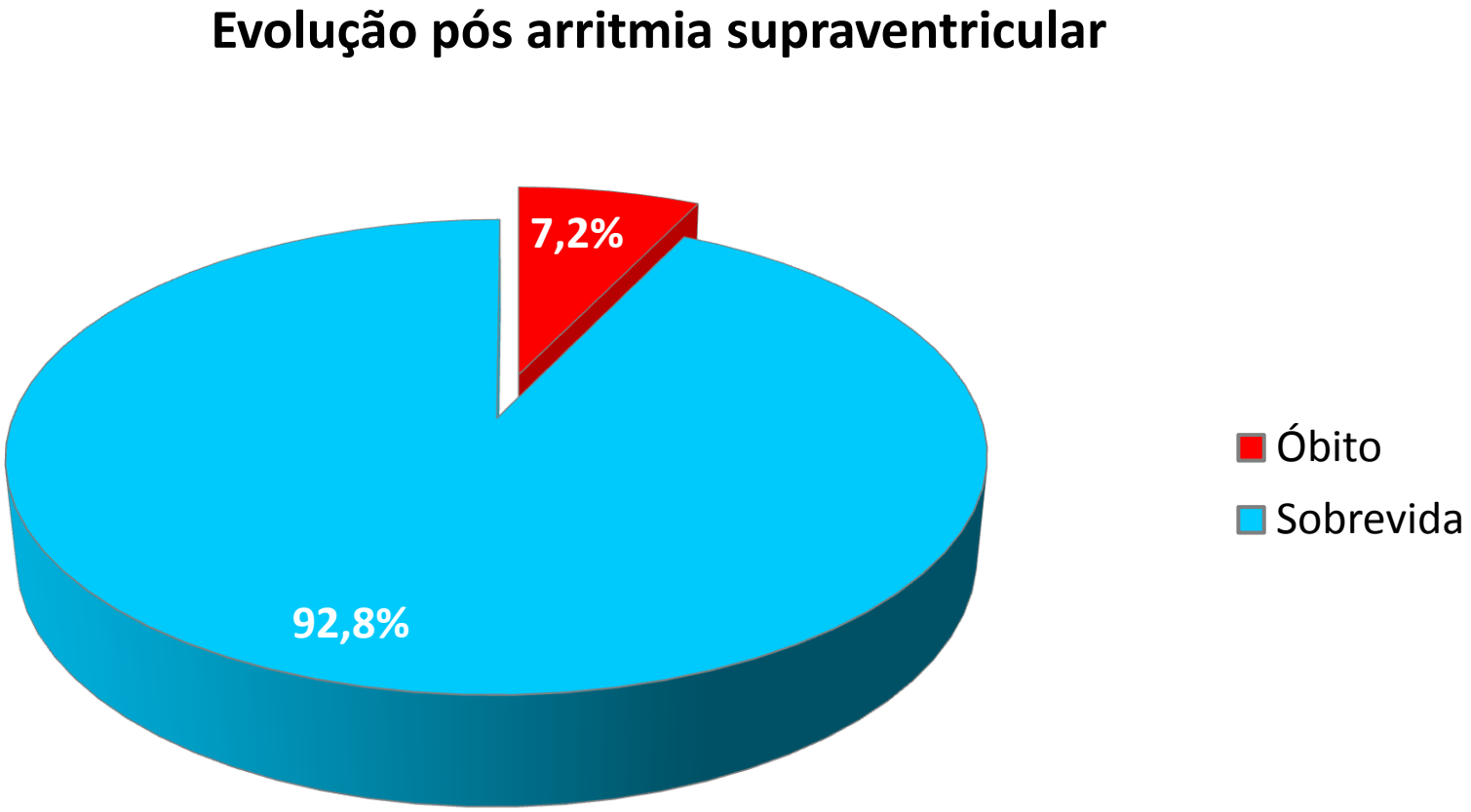
Andalaft, R; Gimenez S C Relampa 2010

Cardiopatias mais propensas à arritmia



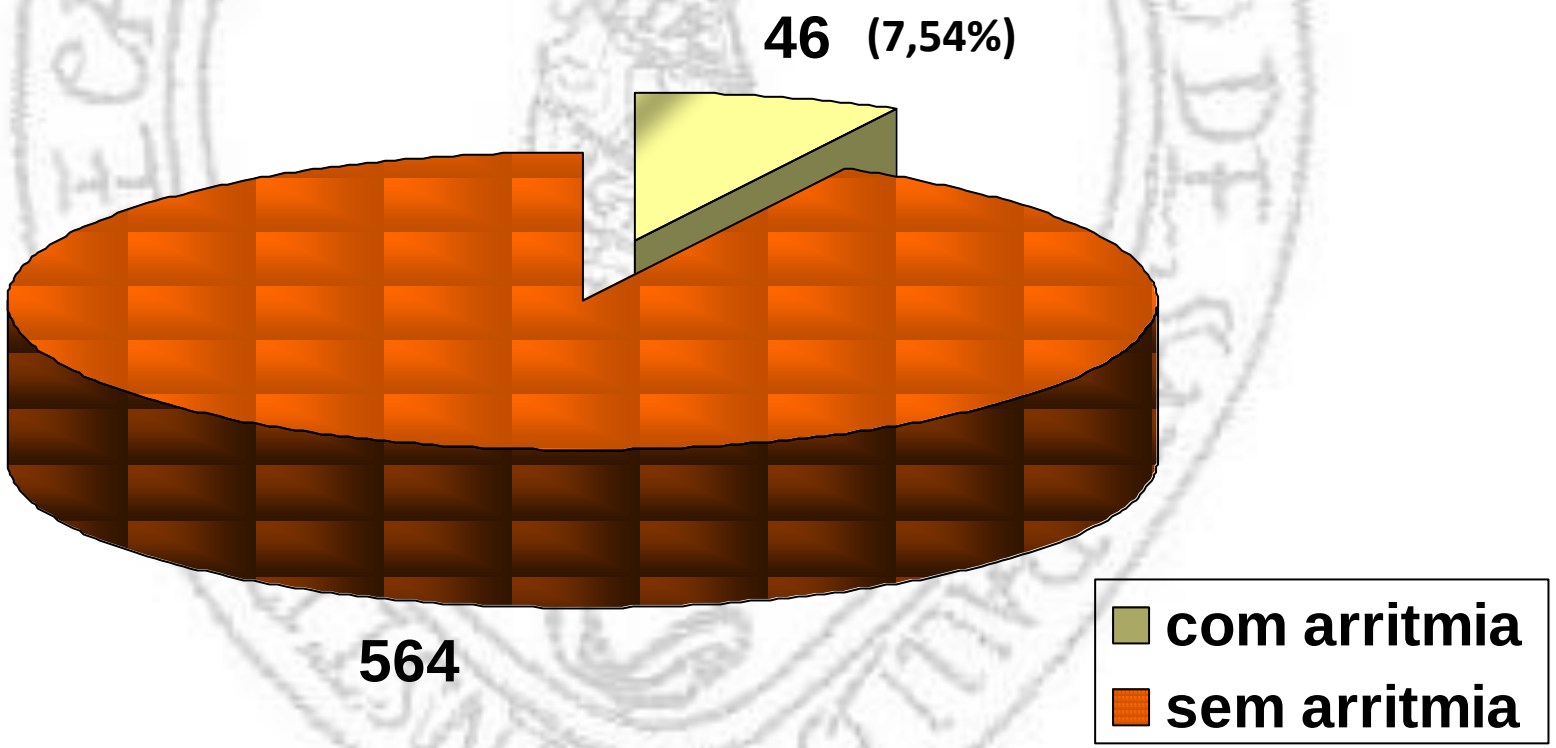
Andalaft, R; Gimenez S C Relampa 2010

Índice de mortalidade após TSV



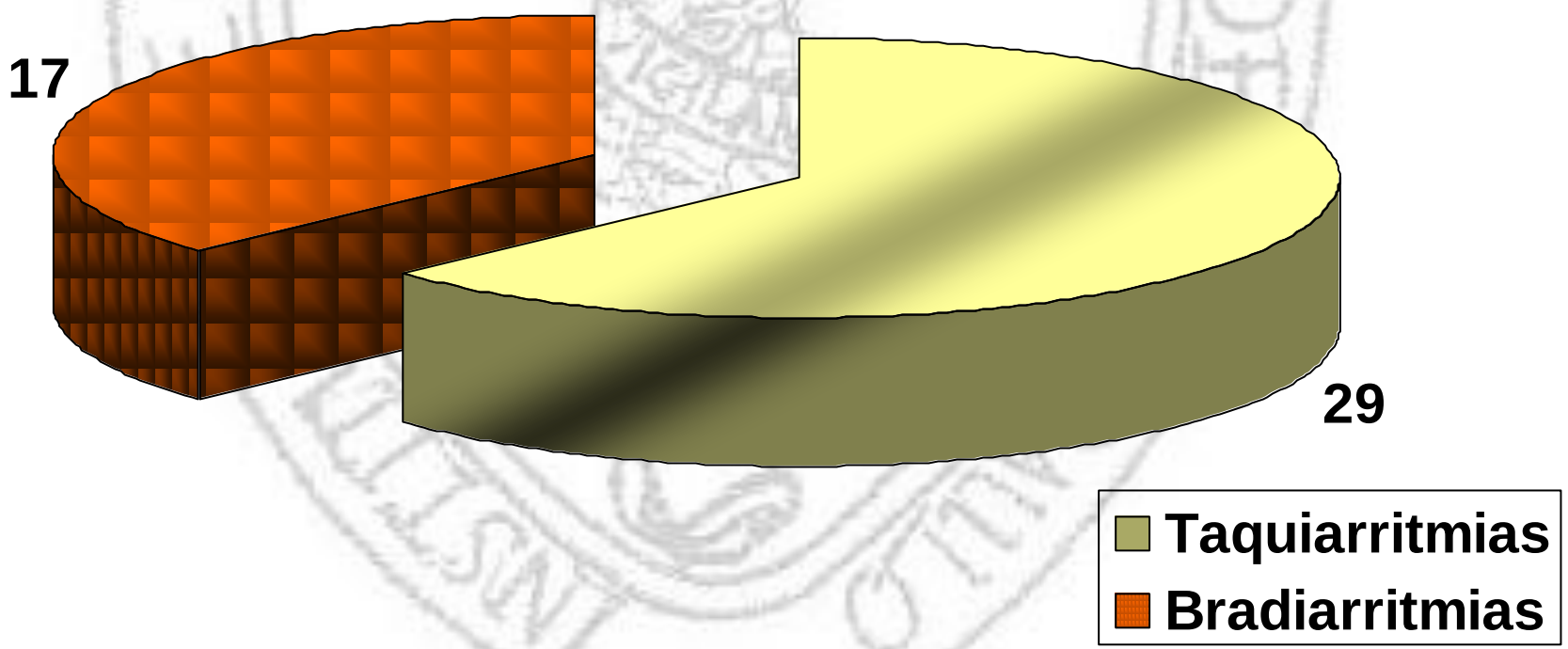
Andalaft, R; Gimenez S C Relampa 2010

Resultados – Incidência de eventos arrítmicos



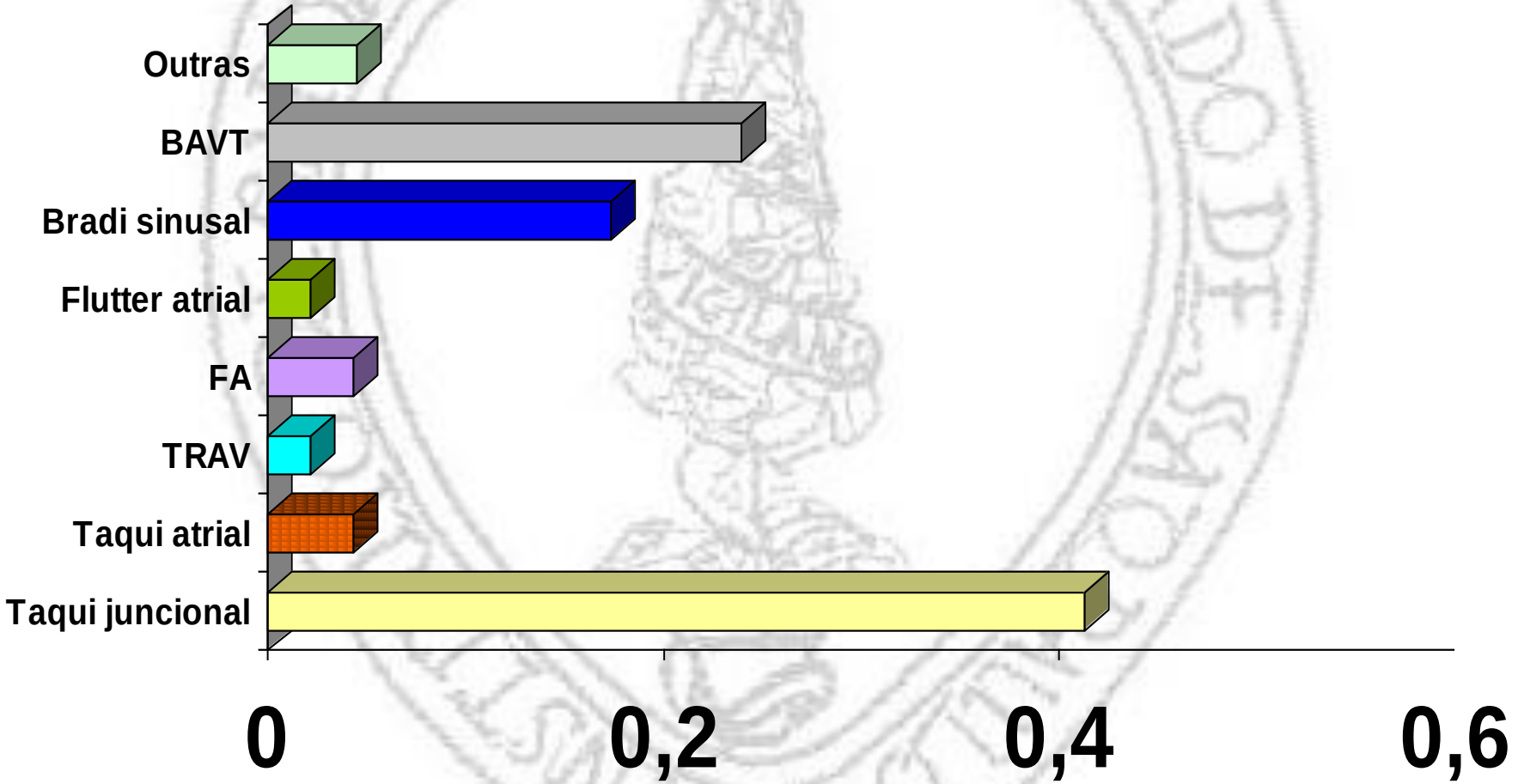
Andalaft et al - Rev. Soc Cardiol Estado de São Paulo 2007 17(2): 67

Distribuição dos eventos arrítmicos



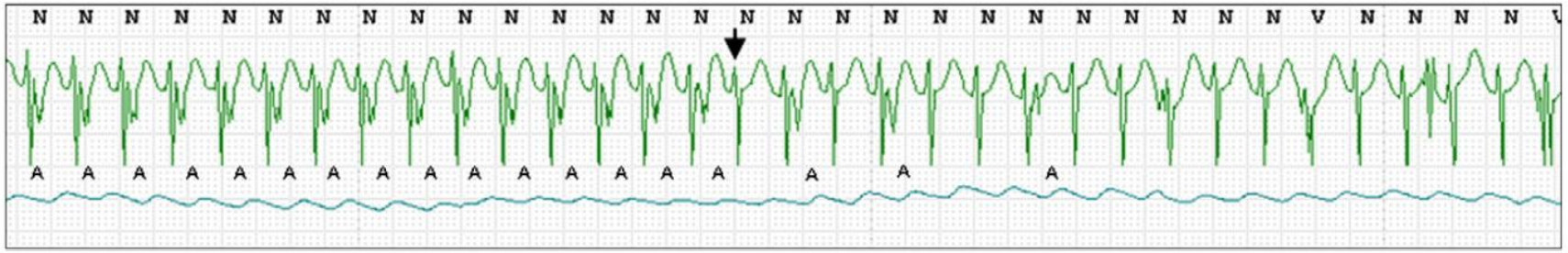
Andalaft et al - Rev. Soc Cardiol Estado de São Paulo 2007 17(2): 67

Distribuição dos eventos arrítmicos

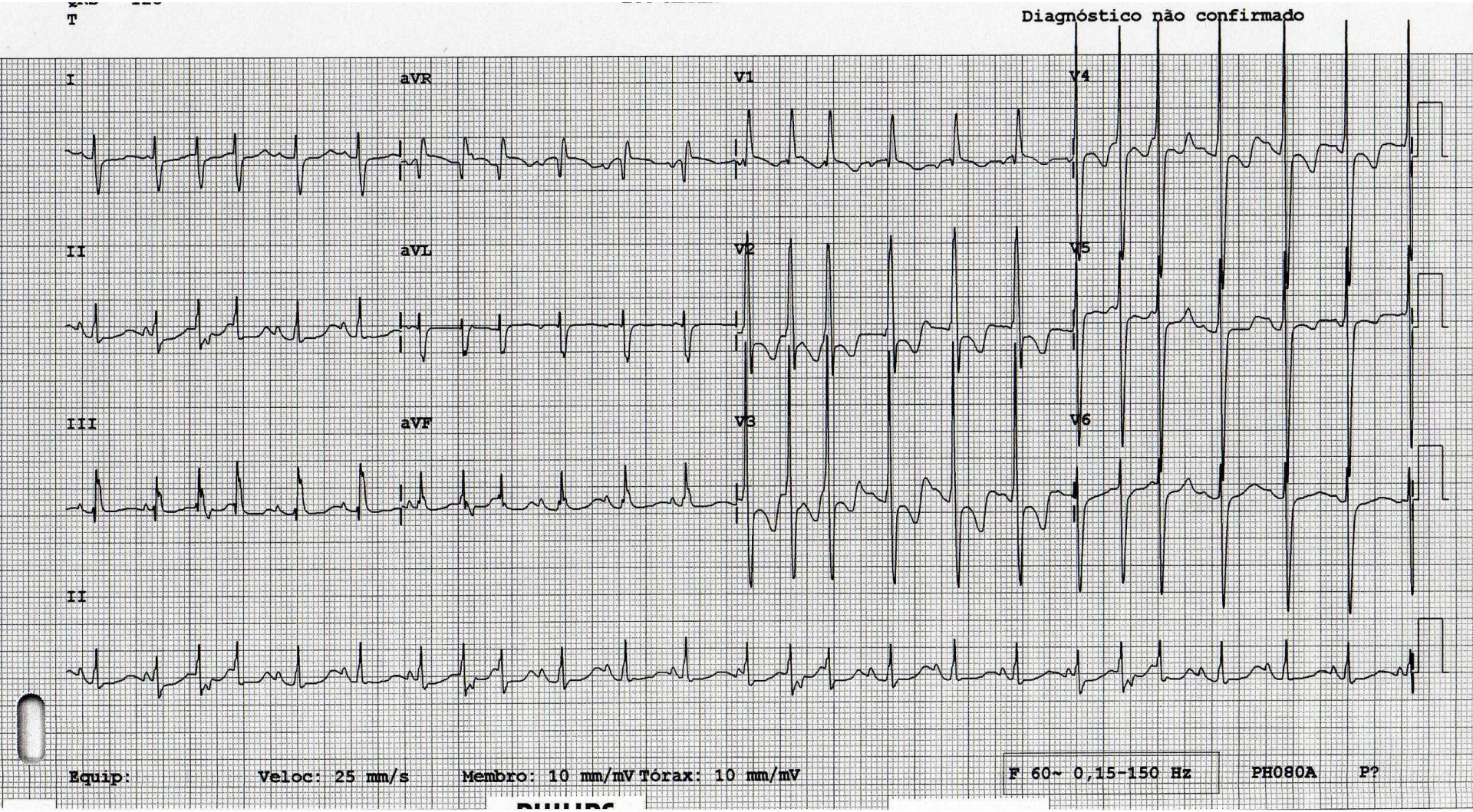


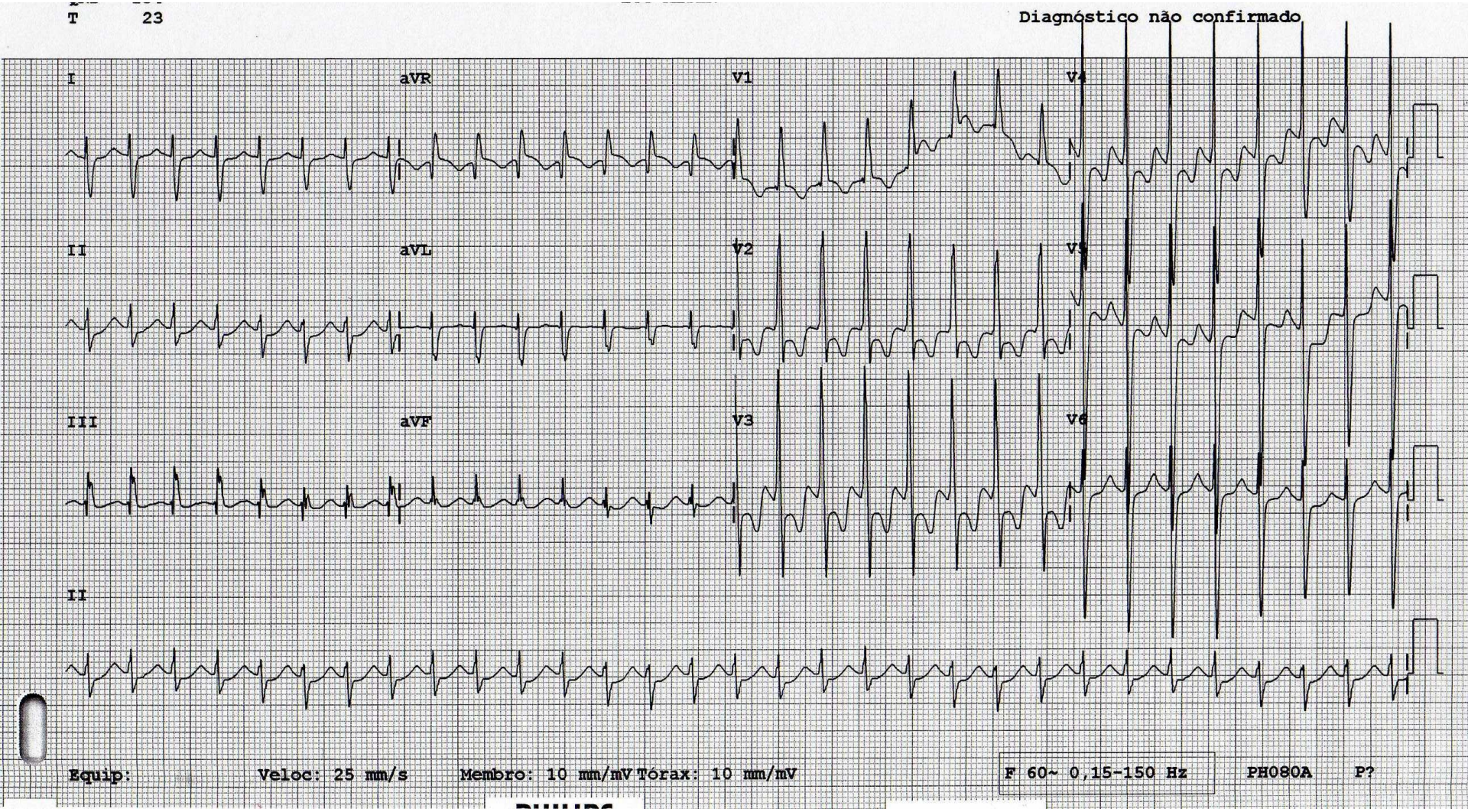
Andalaft et al - Rev. Soc Cardiol Estado de São Paulo 2007 17(2): 67

Taquicardia juncional



- Onda P pode vir antes, durante ou após o QRS
- Discordância entre P e QRS
- Arritmia automática frequente no Pós operatório de cirurgias com manipulação ventricular e da junção (ex ventriculosseptoplastia)
- Por vezes necessitam de drogas que controlem o automatismo
- Por vezes diagnóstico difícil
  - Utilidade de fio atrial ou eletrodo esofágico


T
Diagnóstico não confirmado
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Equip:
Veloc: 25 mm/s
Membro: 10 mm/mV Tórax: 10 mm/mV
F 60~ 0,15-150 Hz
PH080A
P?


T 23
Diagnóstico não confirmado
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
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V6
II
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Veloc: 25 mm/s
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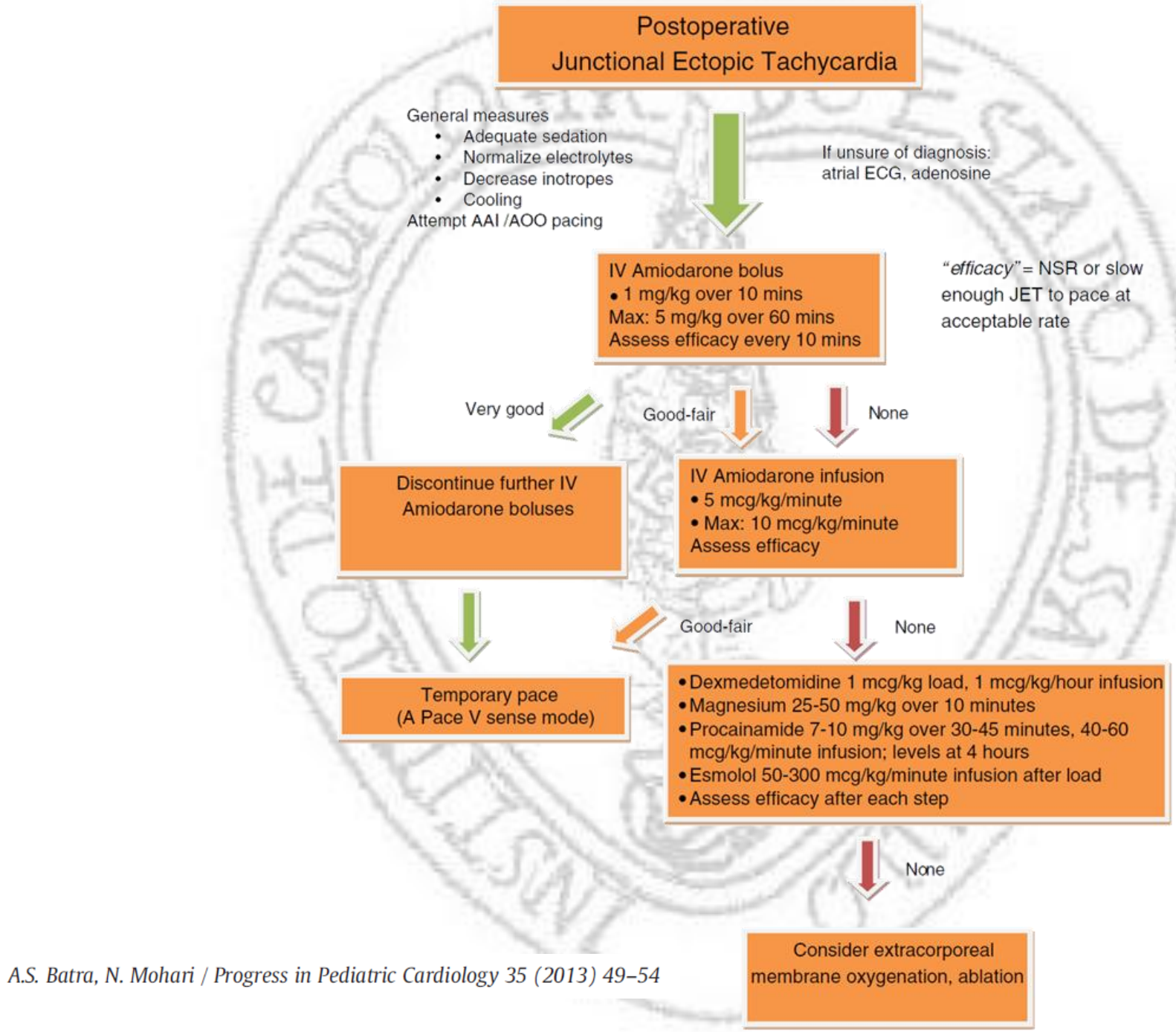
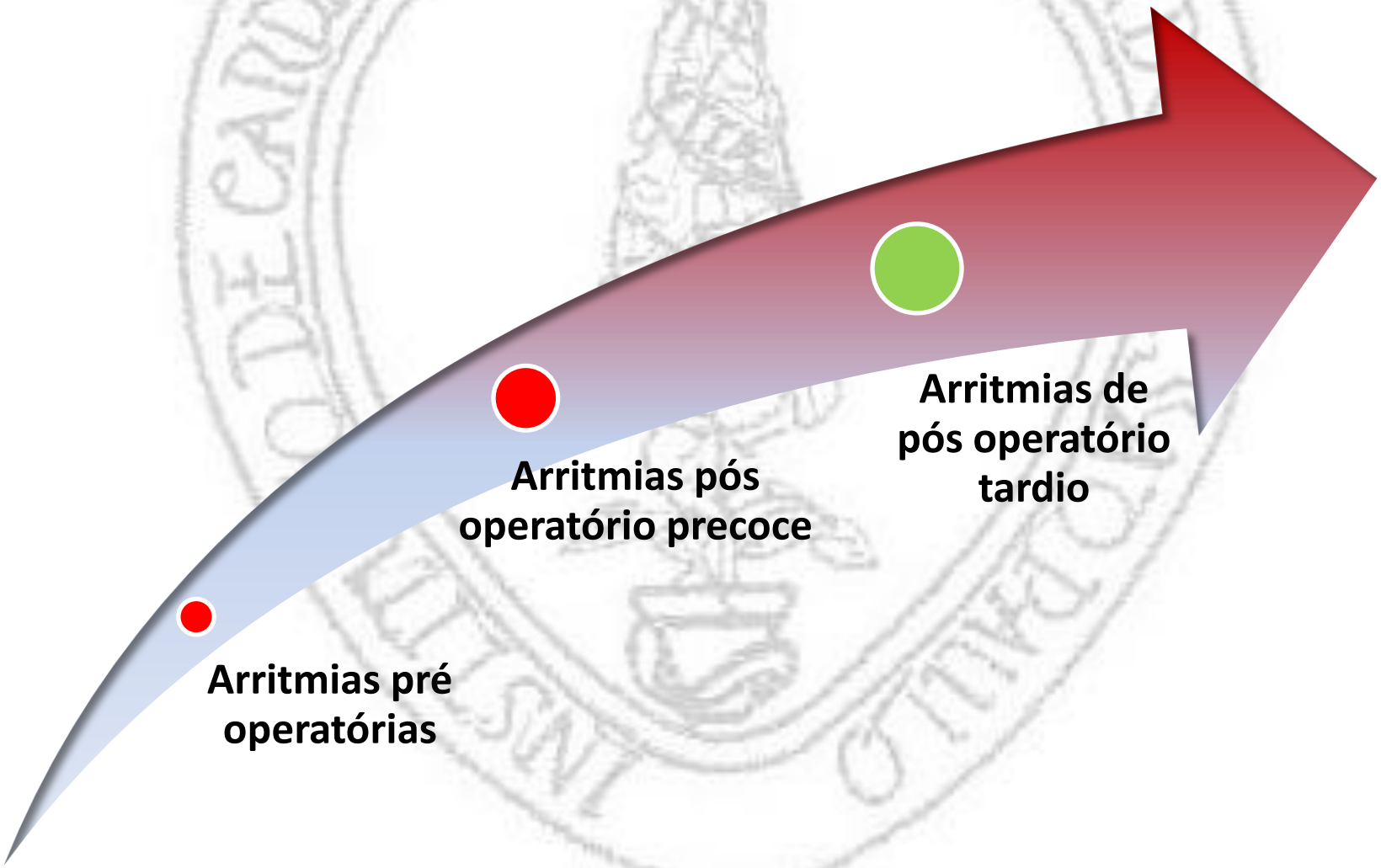
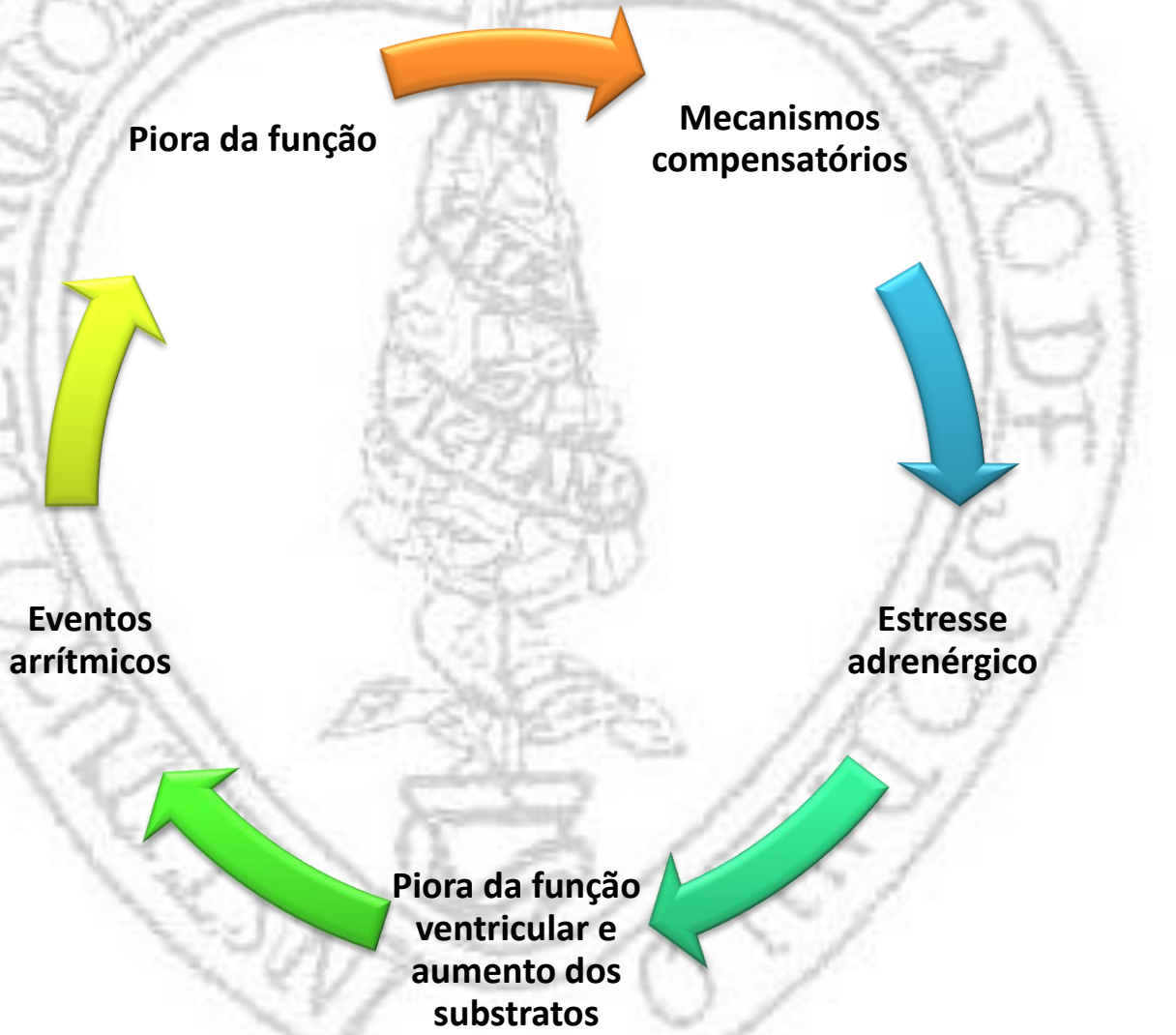
PH080A
P?

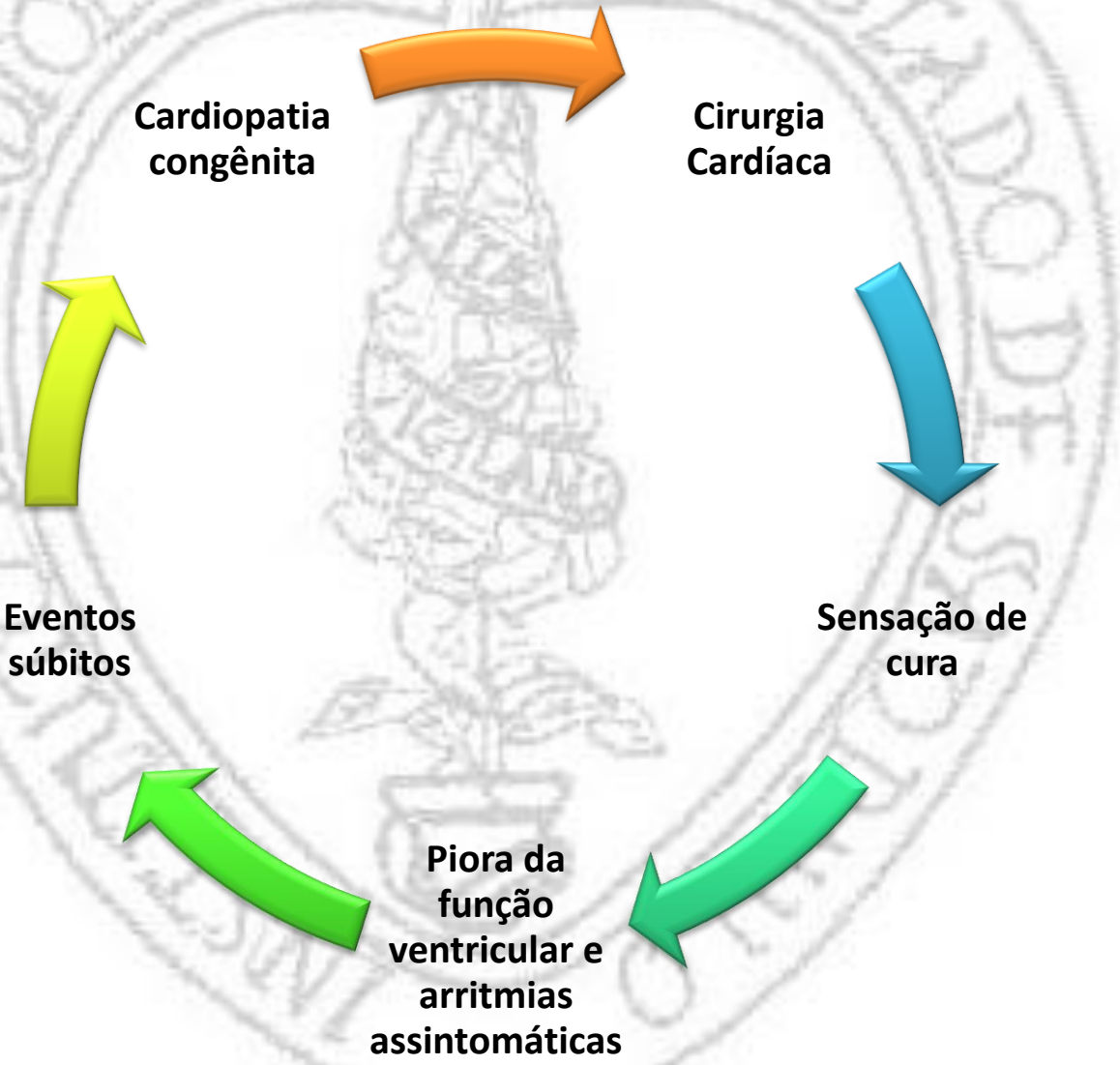


A.S. Batra, N. Mohari / Progress in Pediatric Cardiology 35 (2013) 49–54

Identificação dos eventos arrítmicos




Piora da função
Mecanismos compensatórios
Estresse adrenérgico
Piora da função ventricular e aumento dos substratos
Eventos arrítmicos


Cardiopatia congênita
Cirurgia Cardíaca
Sensação de cura
Piora da função ventricular e arritmias assintomáticas
Eventos súbitos

Changes in Hospitalization Patterns Among Patients With Congenital Heart Disease During the Transition From Adolescence to Adulthood

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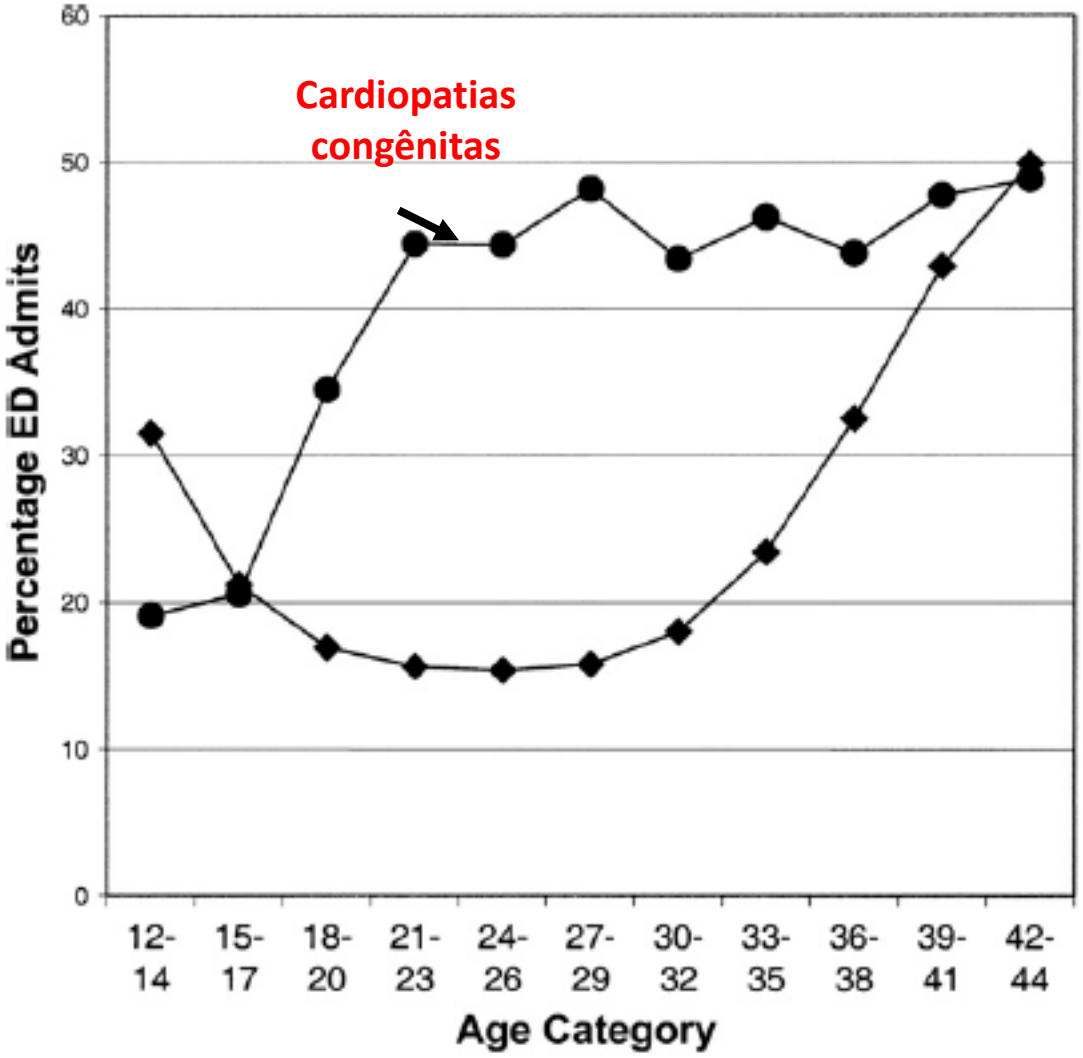
Instituto Dante Pazzanese de Cardiologia

Hospital do Coração
HCor
Associação do Sanatório Sírio



(J Am Coll Cardiol 2007;49:875–82)

Changes in Hospitalization Patterns Among Patients With Congenital Heart Disease During the Transition From Adolescence to Adulthood

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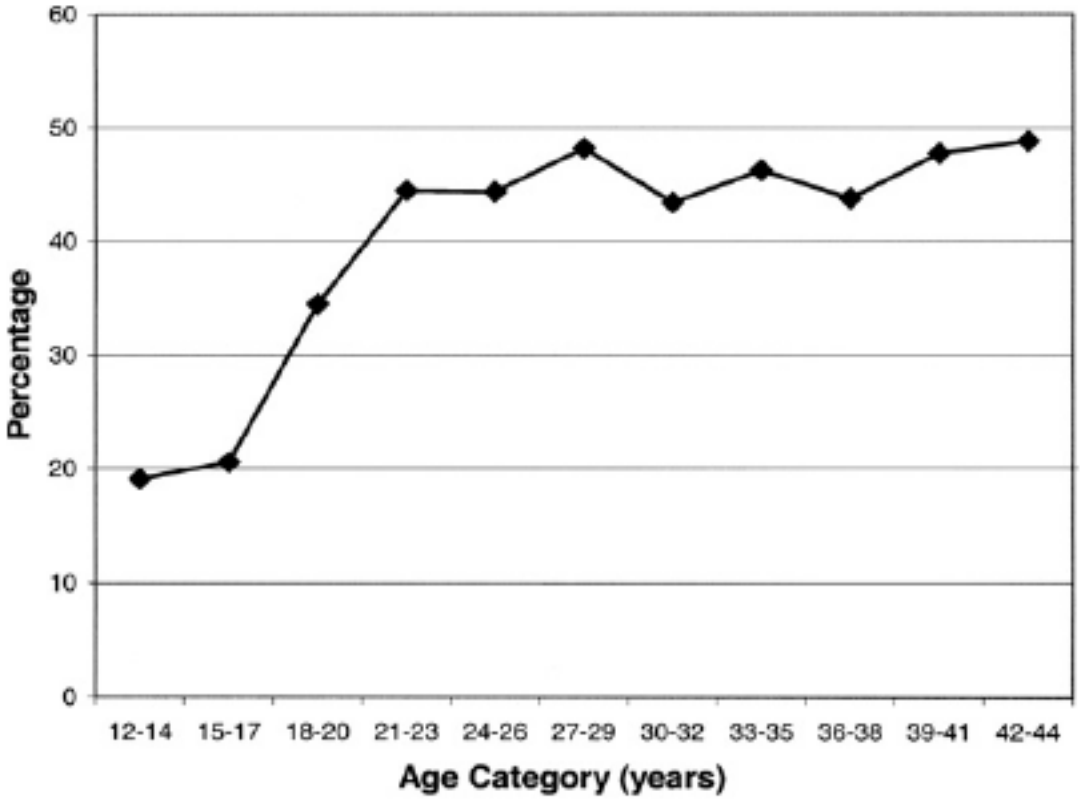
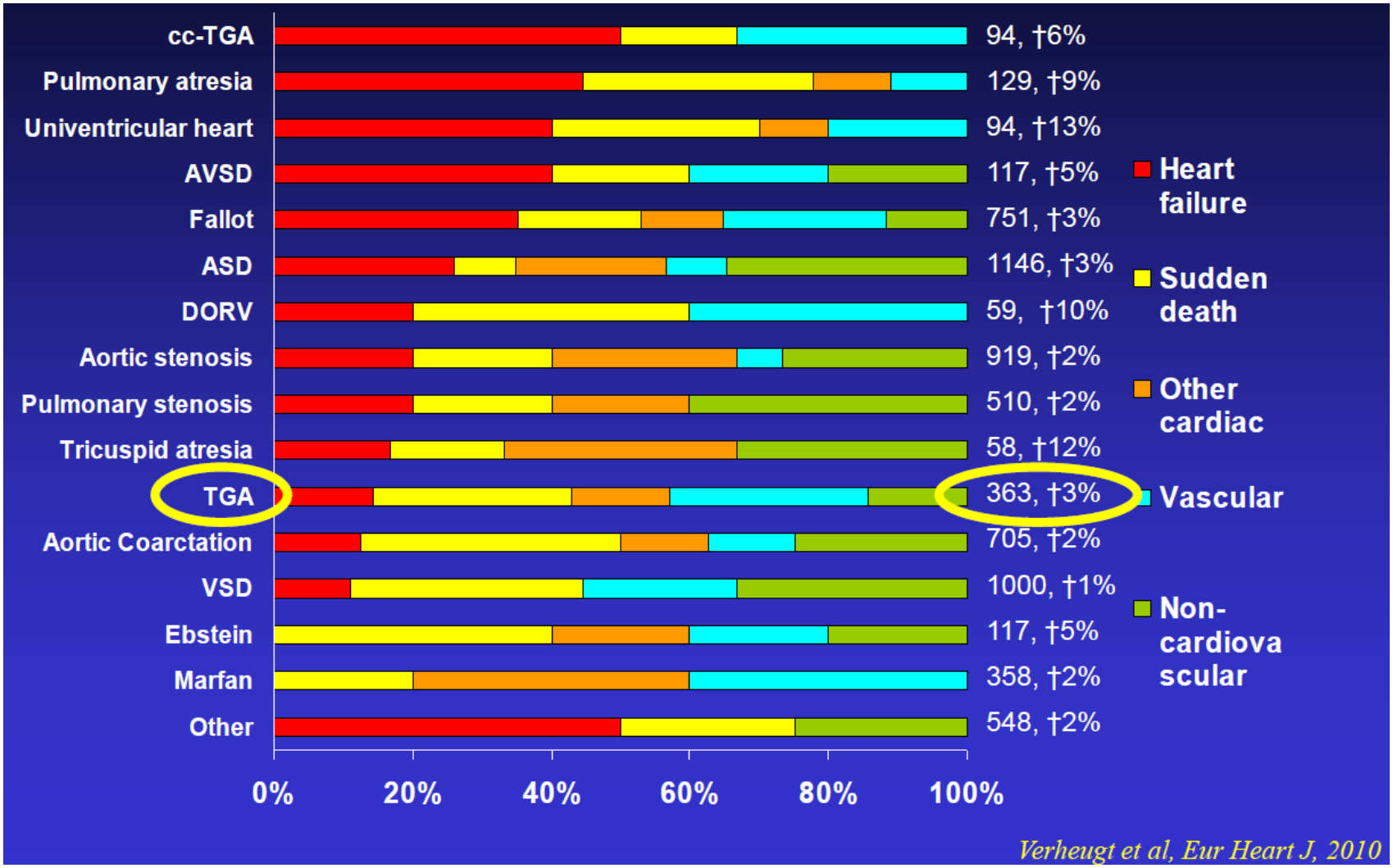


Porcentagem das admissões no PS entre 2000 e 2003 na Califórnia

(J Am Coll Cardiol 2007;49:875–82)

Causas de morte nas cardiopatias congênitas



Verheugt et al, Eur Heart J, 2010

The spectrum of adult congenital heart disease in Europe: morbidity and mortality in a 5 year follow-up period

The Euro Heart Survey on adult congenital heart disease

Table 2 History of morbidity and functional status at baseline

	Endocarditis	CVA/TIA	MI/CABG/PTCA	Supraventricular arrhythmias	Ventricular arrhythmias	NYHA I	NYHA II	NYHA III/IV
ASD II	0 (3/879)	4 (36/876)	2 (16/880)	28 (243/861)	2 (16/861)	59 (504/825)	30 (257)	11 (91)
VSD	7 (44/621)	2 (14/622)	1 (5/626)	9 (56/617)	3 (18/617)	76 (472/619)	19 (118)	4 (29)
Tetralogy of Fallot	4 (33/810)	4 (32/807)	1 (5/806)	20 (159/796)	14 (115/796)	69 (551/793)	24 (189)	6 (53)
CoA	2 (11/547)	1 (6/545)	1 (4/546)	4 (21/547)	2 (9/547)	81 (441/543)	15 (84)	3 (18)
Transposition	1 (4/361)	6 (20/359)	0 (1/360)	26 (95/362)	2 (7/362)	67 (244/362)	27 (96)	6 (22)
Marfan syndrome	2 (5/284)	1 (4/285)	1 (2/286)	8 (23/281)	2 (6/281)	79 (223/282)	19 (54)	2 (5)
Fontan circulation	2 (3/198)	12 (23/198)	0 (0/198)	45 (90/198)	0 (0/198)	40 (78/193)	51 (98)	9 (17)
Cyanotic defect	6 (22/386)	10 (37/384)	0 (1/385)	16 (58/374)	6 (22/374)	12 (45/172)	44 (172)	44 (170)
Overall	3 (125/4086)	4 (172/4076)	1 (34/4088)	18 (745/4036)	5 (193/4036)	63 (2558/4031)	26 (1068)	10 (405)

All values are percentage followed by a fraction with frequency in the numerator and the number of patients with sufficient data to evaluate the item (k/n) in the denominator. In the last two columns only the numerators are given, as the rows of the last three columns sum to 100%.

CVA, cerebrovascular accident; TIA, transient ischaemic attack; MI, myocardial infarction; CABG, coronary artery bypass graft; PTCA, percutaneous transluminal coronary angioplasty; NYHA, New York Heart Association functional class.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2005) **26**, 2325–2333
doi:10.1093/eurheartj/ehi396

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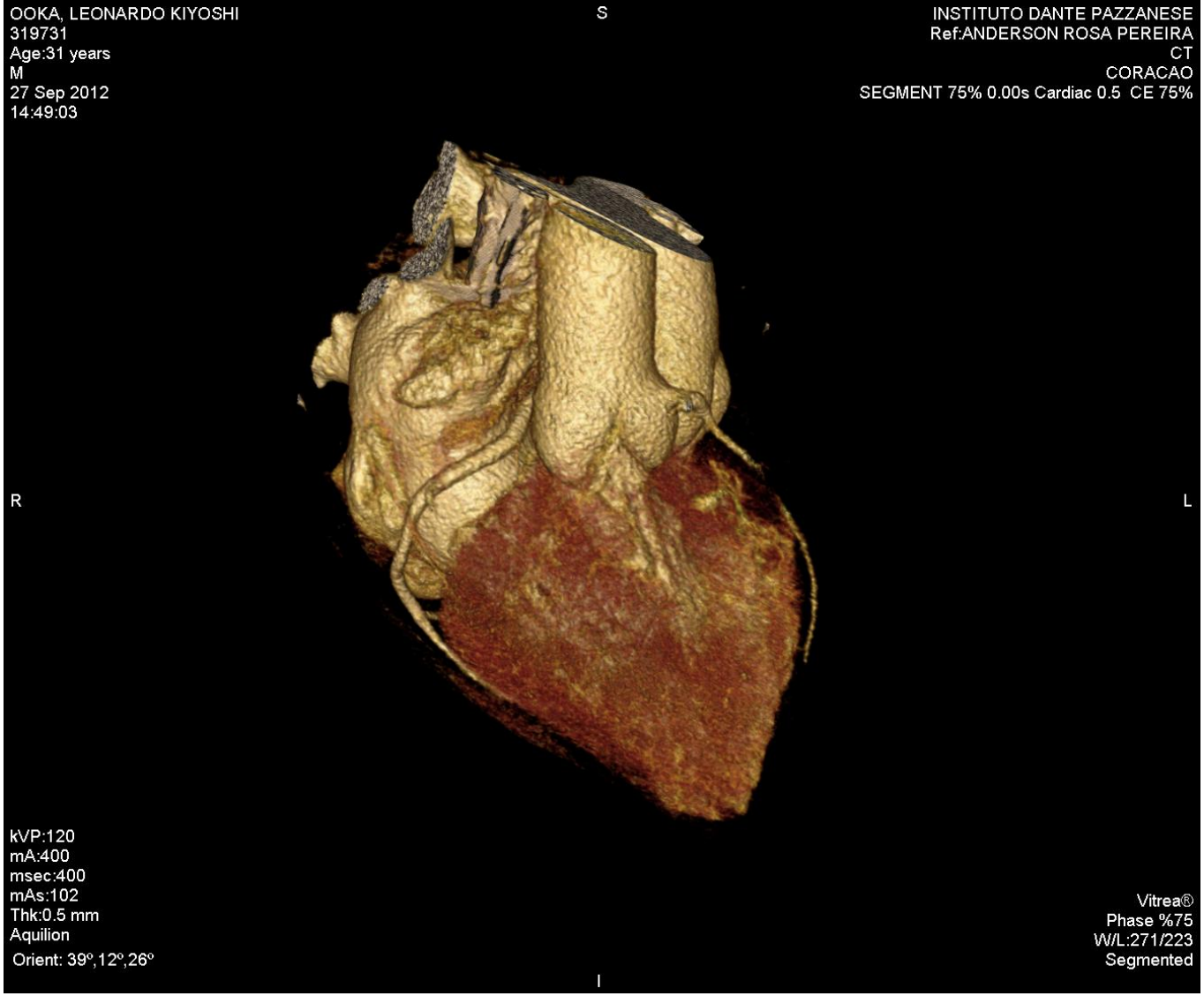

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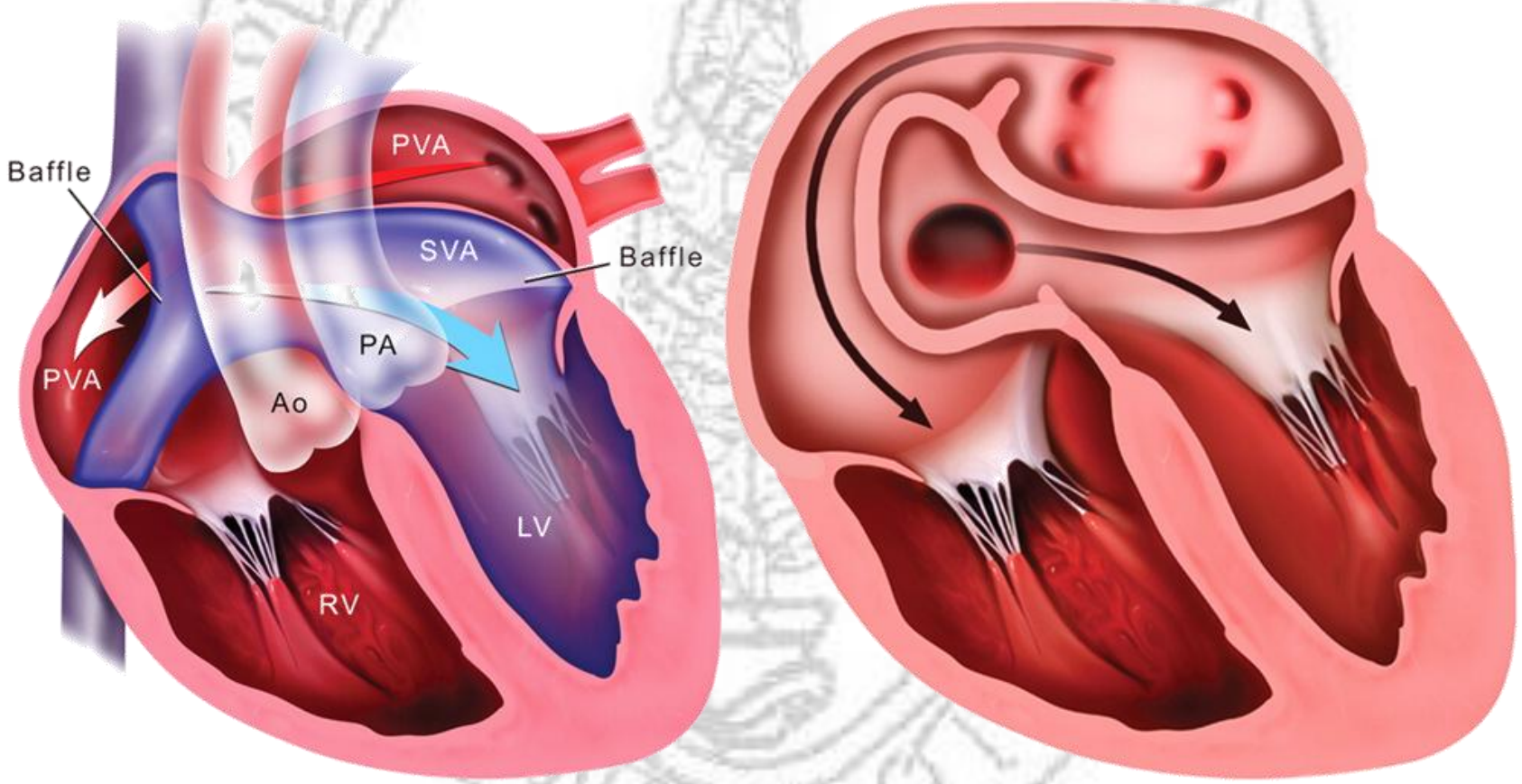
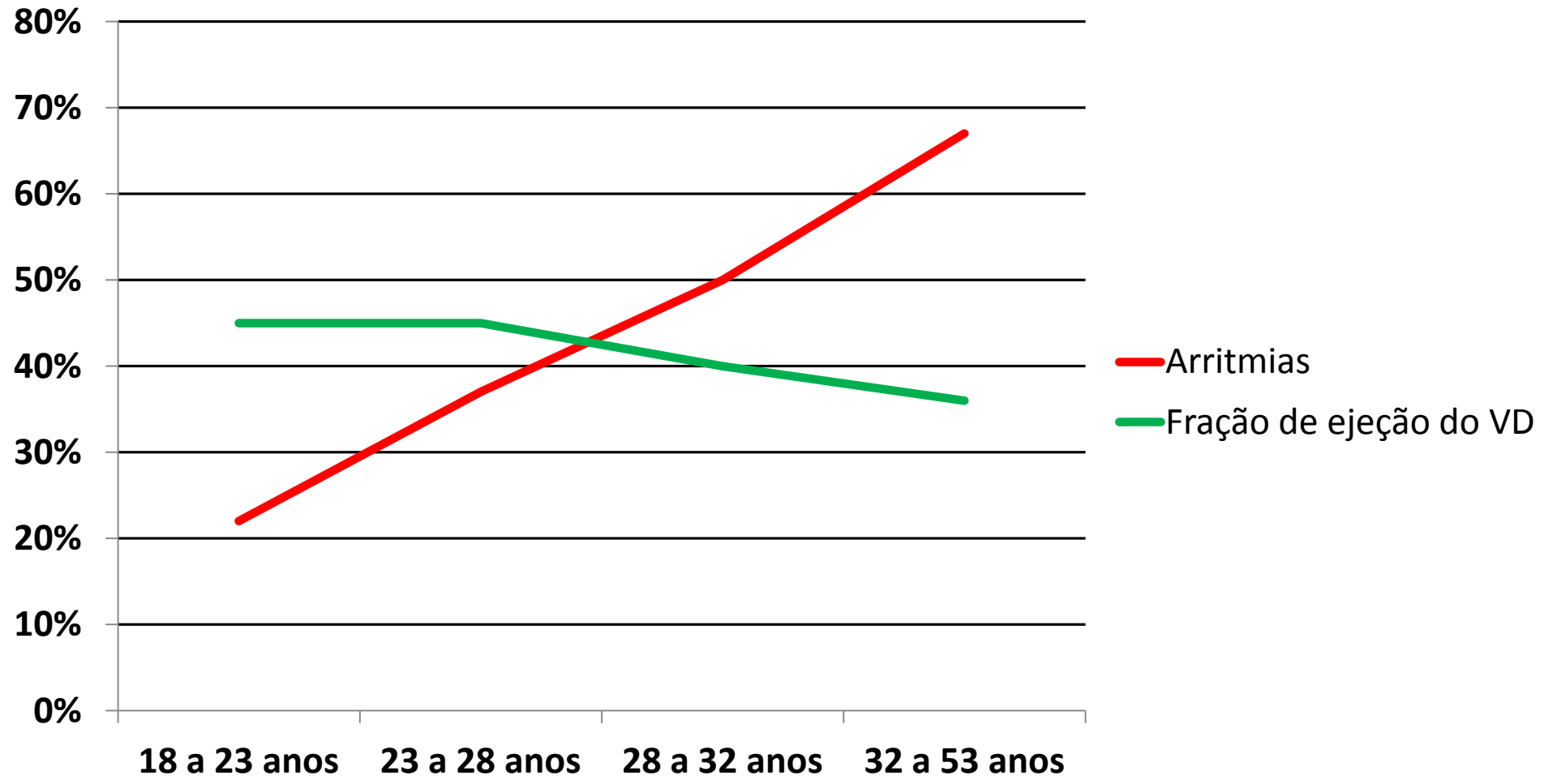
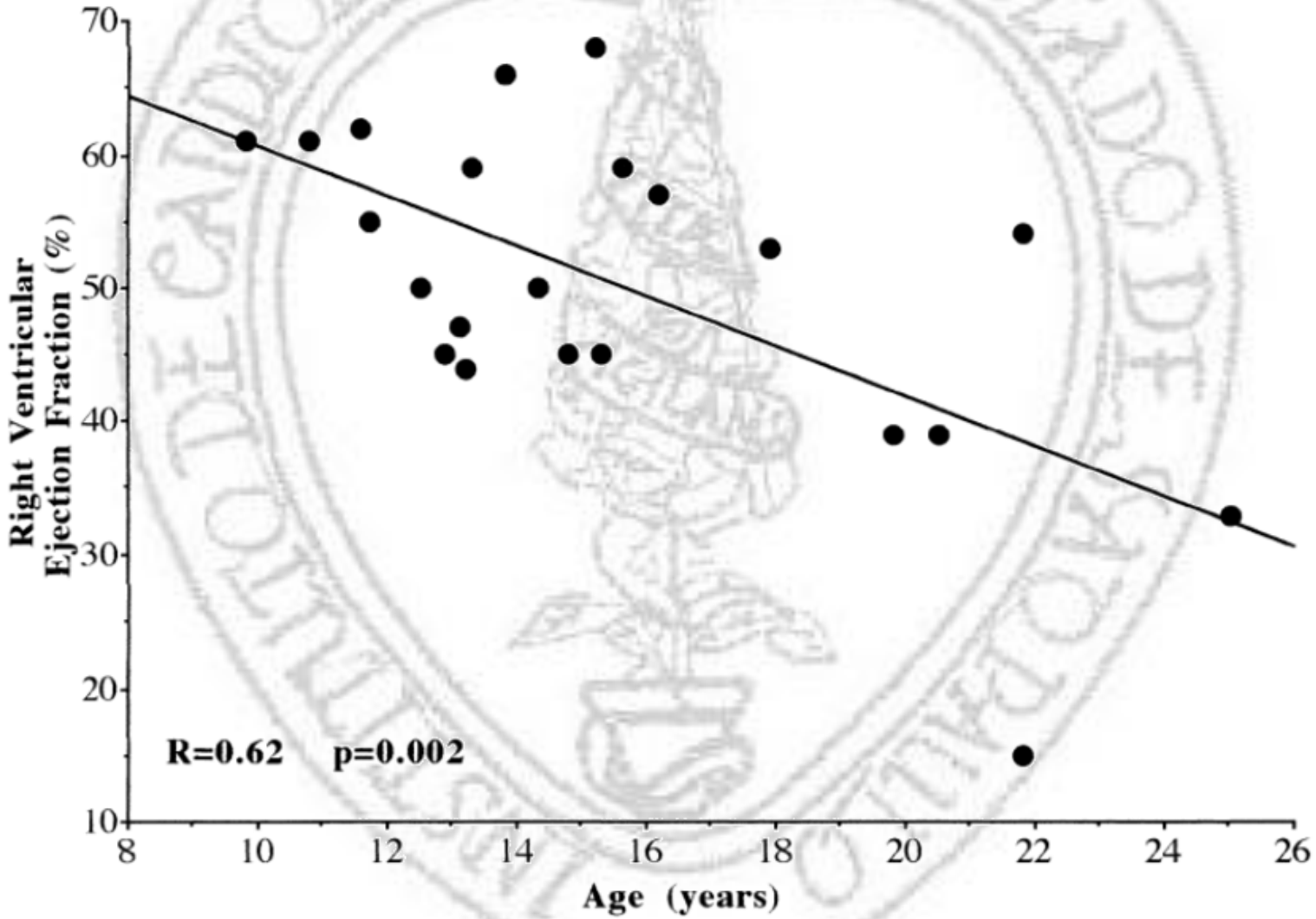

Baffle
PVA
SVA
Baffle
PA
PVA
Ao
LV
RV

European Heart Journal (2009) **30**, 1873–1879

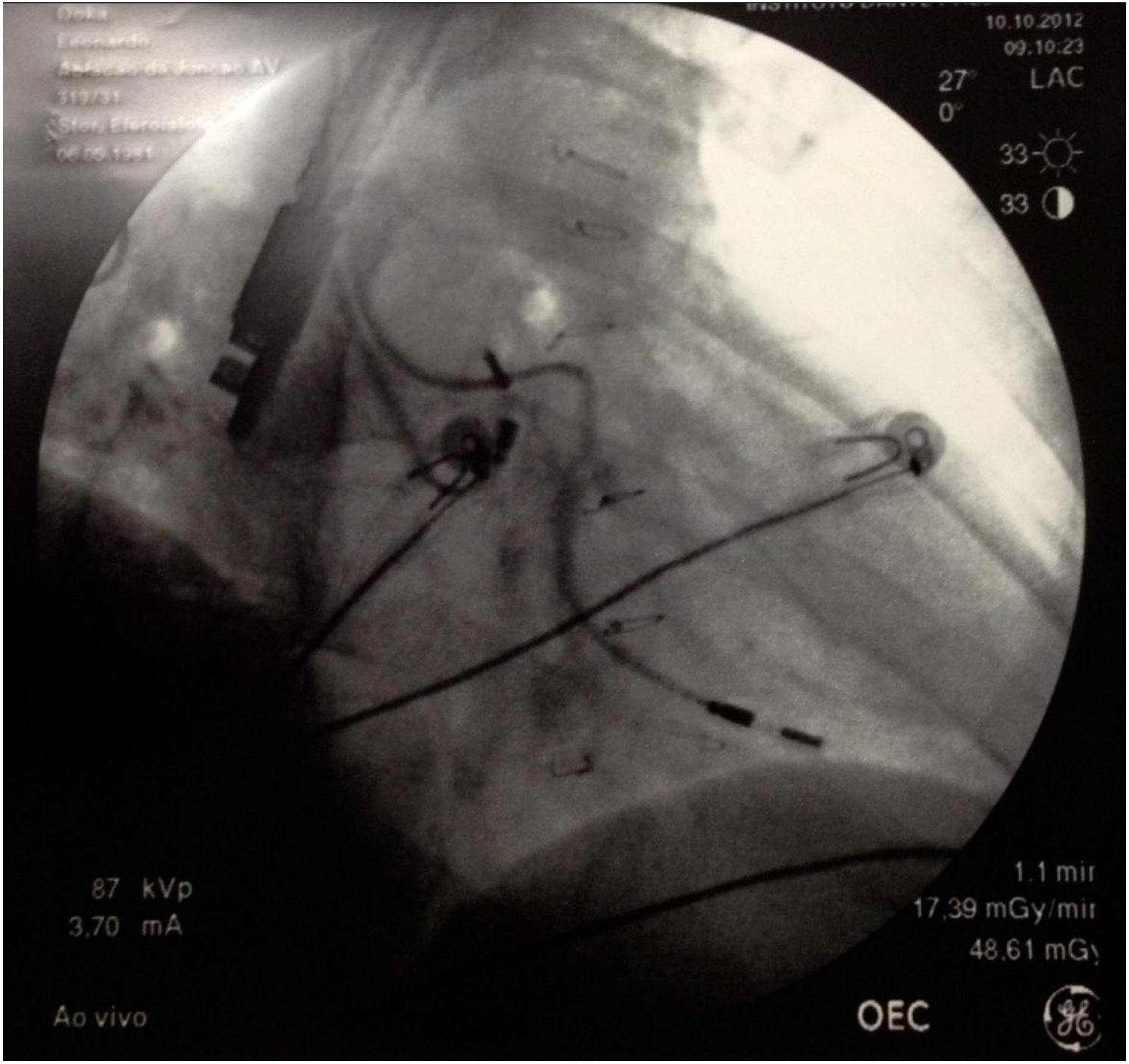
CLINICAL RESEARCH

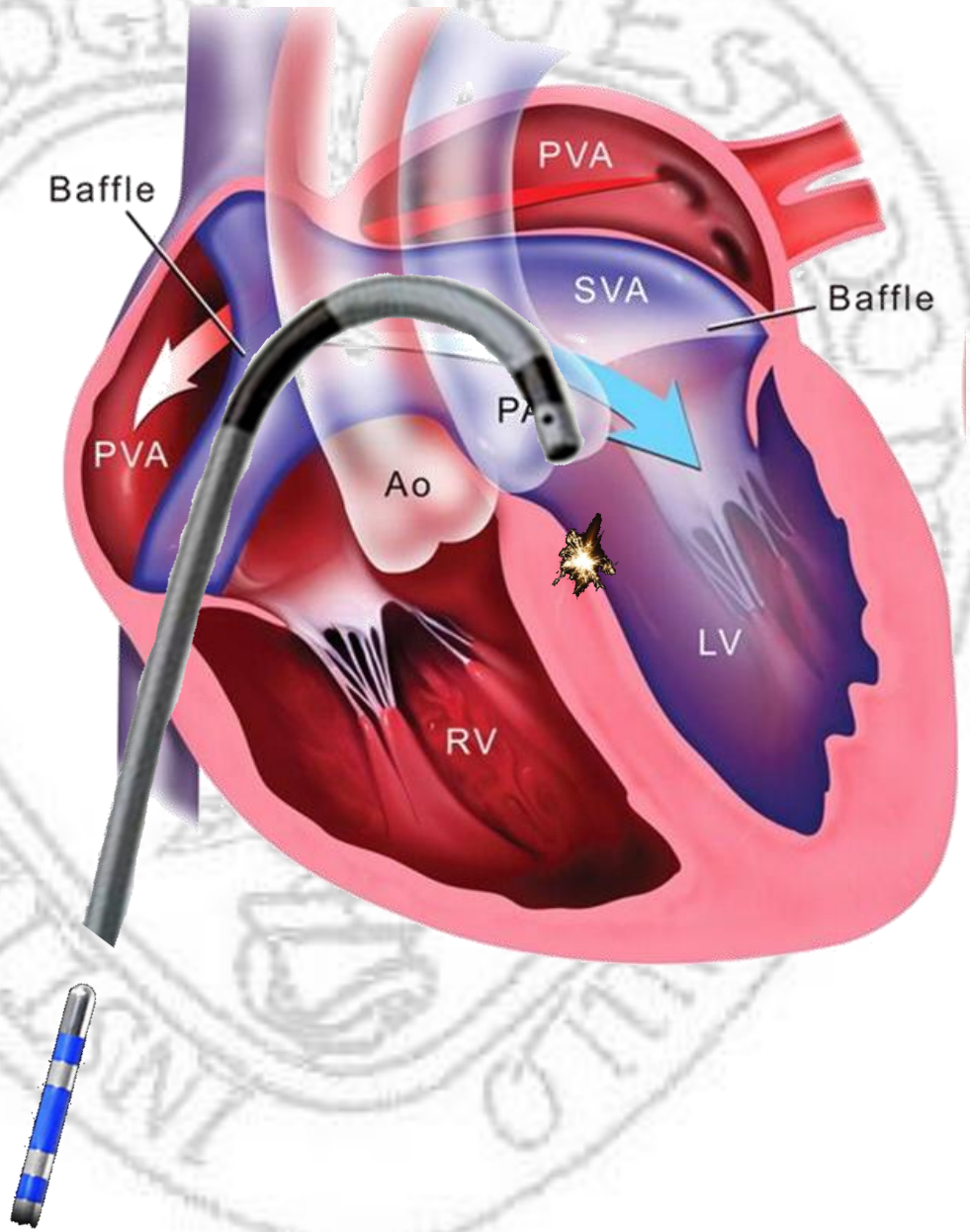


Perda da Função Ventrículo sistêmico (VD) Senning/ Mustard



Milane et al JACC 2000


10.10.2012
09:10:23
27°
LAC
0°
33
33
87 kVp
3,70 mA
1,1 mir
17,39 mGy/mir
48,61 mGy
Ao vivo
OEC


Baffle
PVA
SVA
Baffle
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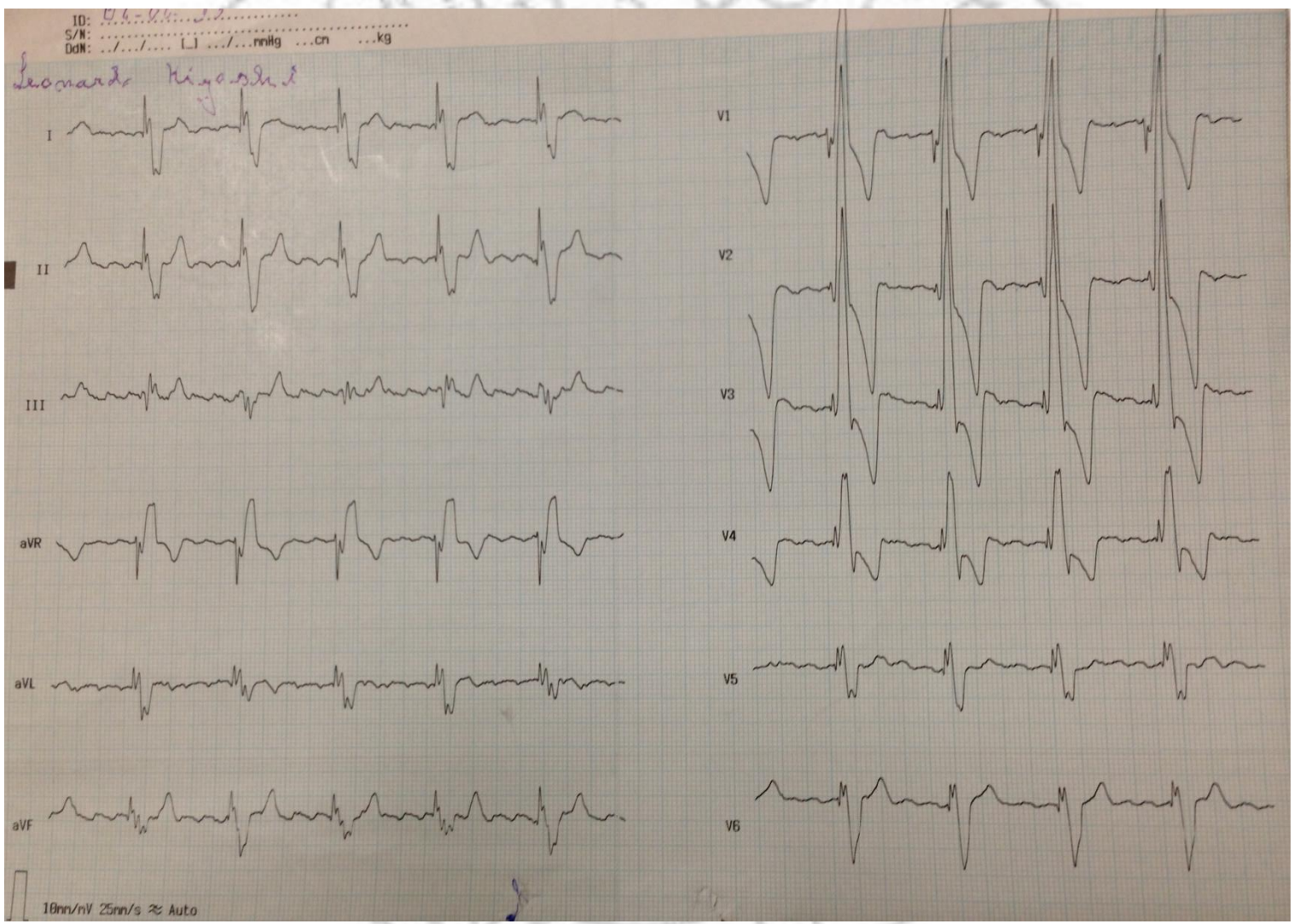
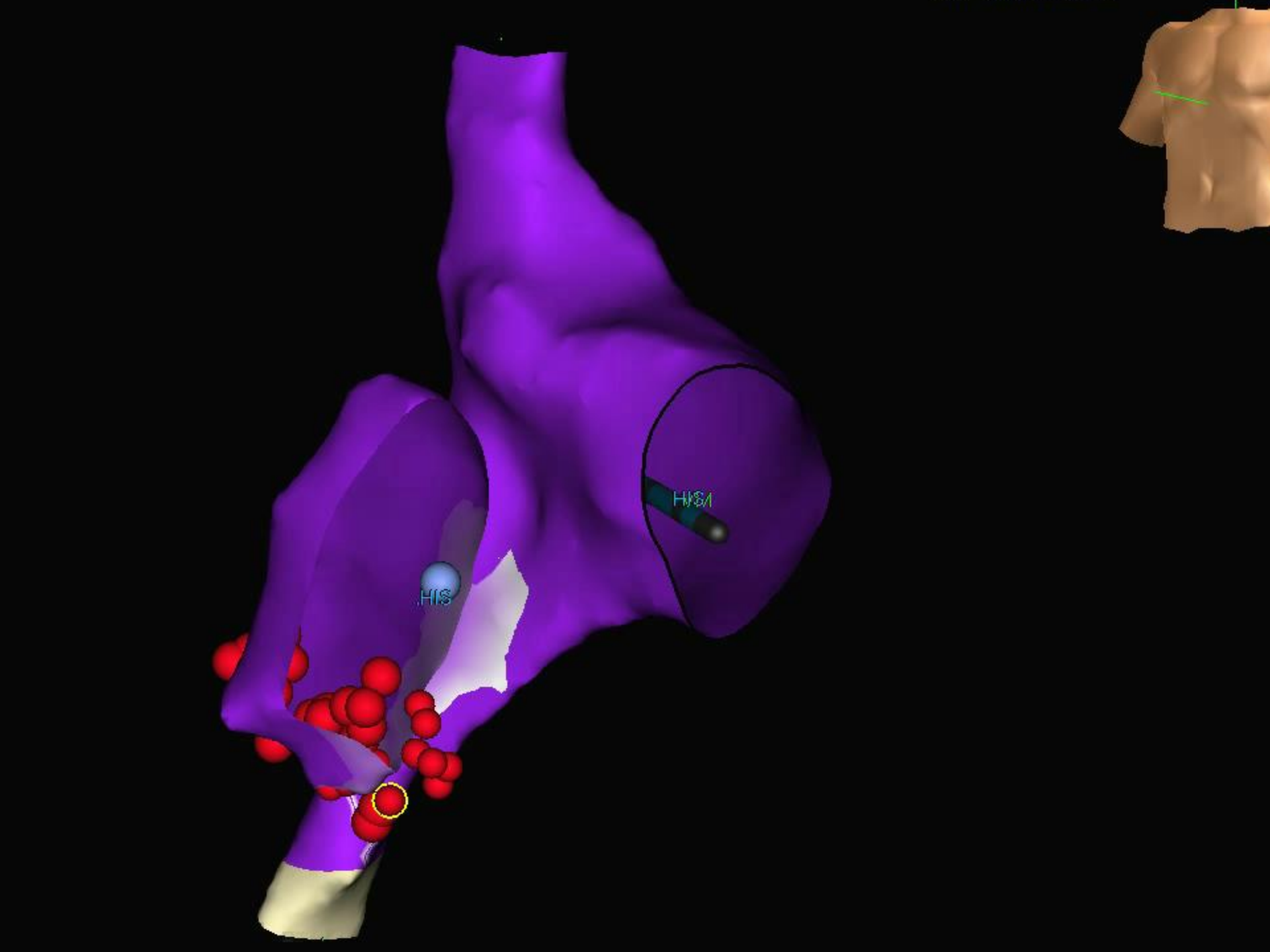
RV


ID:
S/N:
DdN: ../.../.... [_] .../...mmHg ...cm ...kg
Leonardo Nigoski
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
10mm/mV 25mm/s ≈ Auto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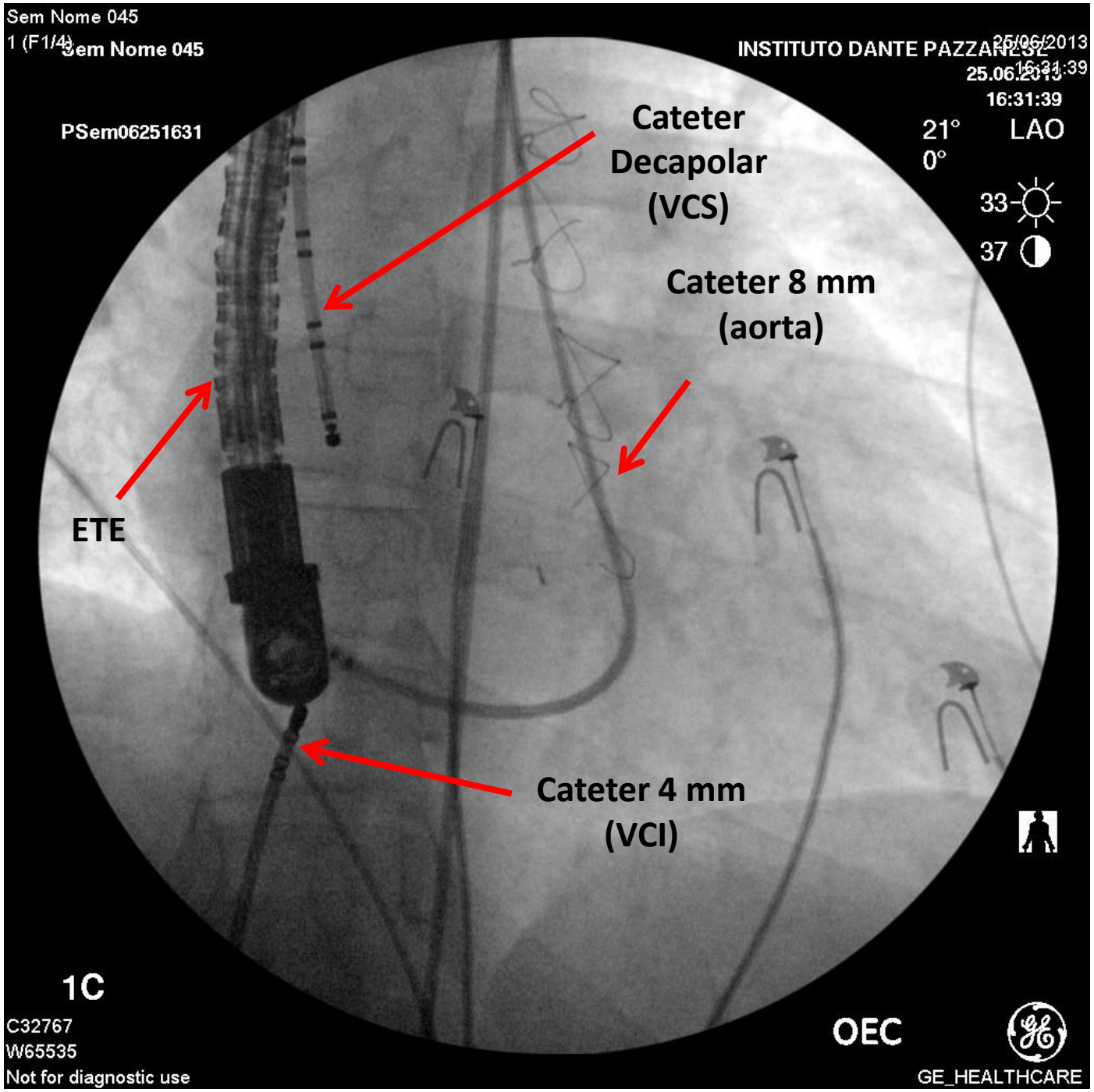
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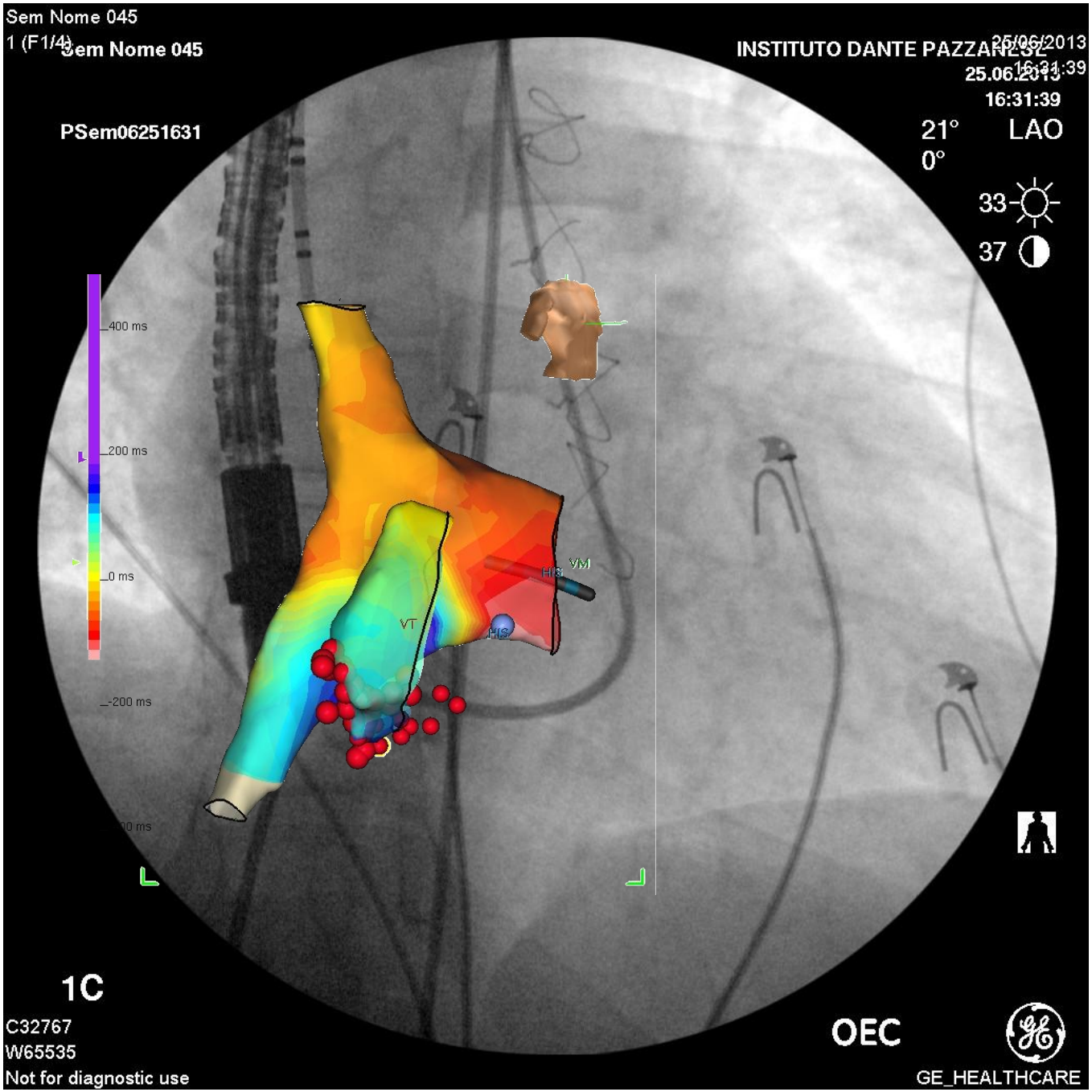
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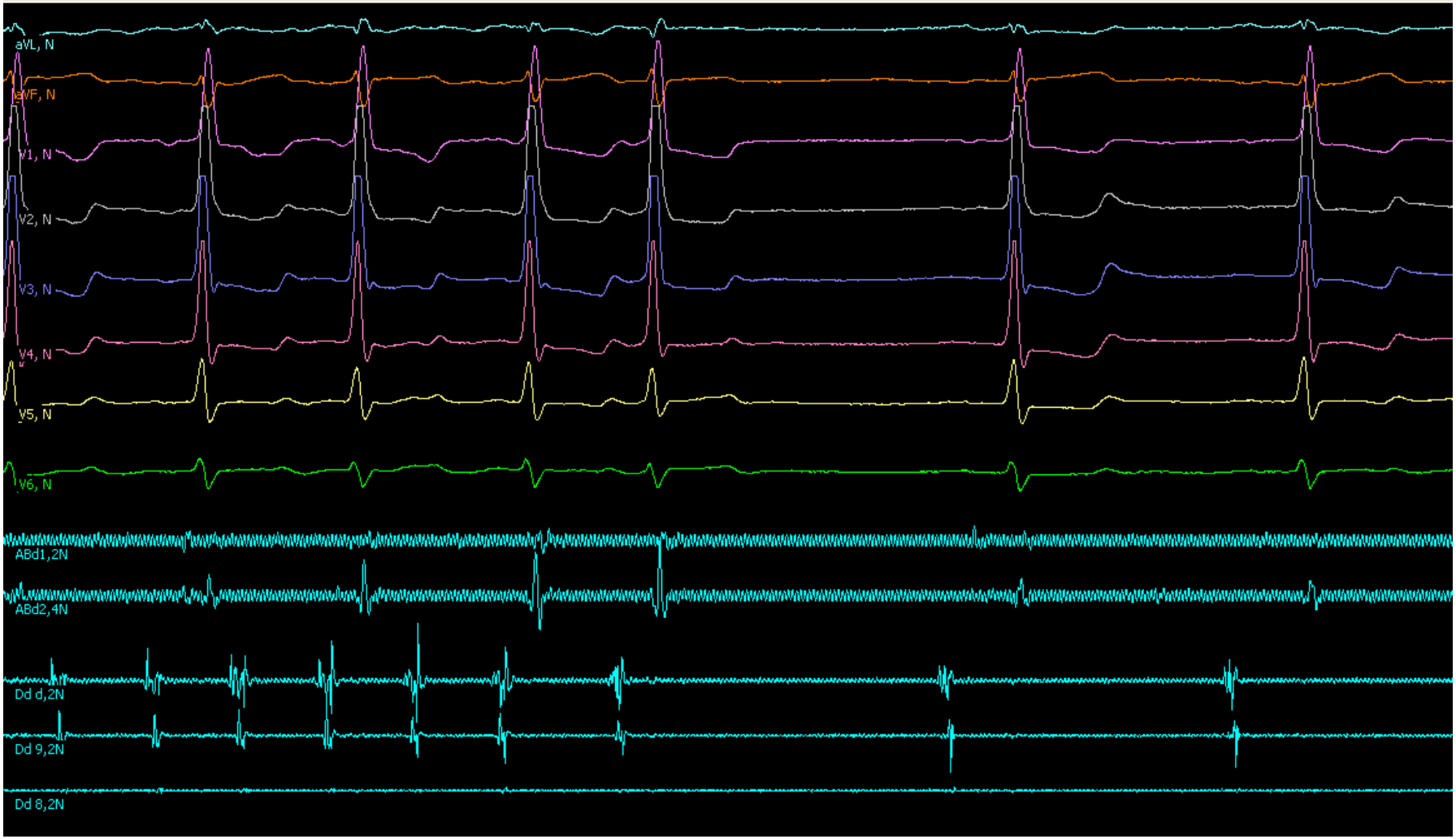
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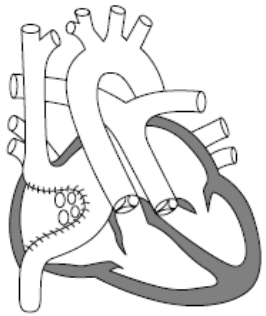
aVF, N
V1, N
V2, N
V3, N
V4, N
V5, N
V6, N
ABd1,2N
ABd2,4N
Dd d,2N
Dd 9,2N
Dd 8,2N

ARRHYTHMIAS IN ADULTS WITH CONGENITAL HEART DISEASE

John K Triedman

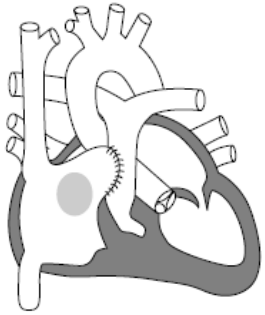
Heart 2002;**87**:383–389

Mustard and Senning procedures



Patients born with transposition of the great vessels in the 1970s through the early 1990s were palliated by the construction of intra-atrial baffles using either synthetic material (the Mustard procedure) or by folding and augmentation of the atrial wall (the Senning procedure). Both redirect caval and pulmonary venous blood to correct cyanosis, utilising the right ventricle as the systemic ventricle. These operations have largely been abandoned in favour of the arterial switch procedure.

Fontan procedures



Many congenital heart defects have in common anatomical features that preclude surgical septation of the ventricles resulting in univentricular physiology. The common end point of staged surgical palliation is the Fontan procedure, which utilises the single ventricle as the systemic ventricle and sends blood directly from the systemic veins to the pulmonary arteries. Several approaches to this have been used; currently, an anastomosis between the superior vena cava and pulmonary artery is created, with an intercaval connection effected by tube graft or intra-atrial baffle.

Repaired Tetralogy of Fallot (TOF)

The prevalence of TOF, its potential for survival through childhood without operation, and the early date at which reparative surgery became available have resulted in large group of patients with relatively homogenous clinical experience. Repair involves closure of the ventricular septal defect (VSD) and relief of right ventricular obstruction, often requiring both ventriculotomy and atriotomy.

Figure 1 Congenital heart malformations commonly associated with arrhythmia.

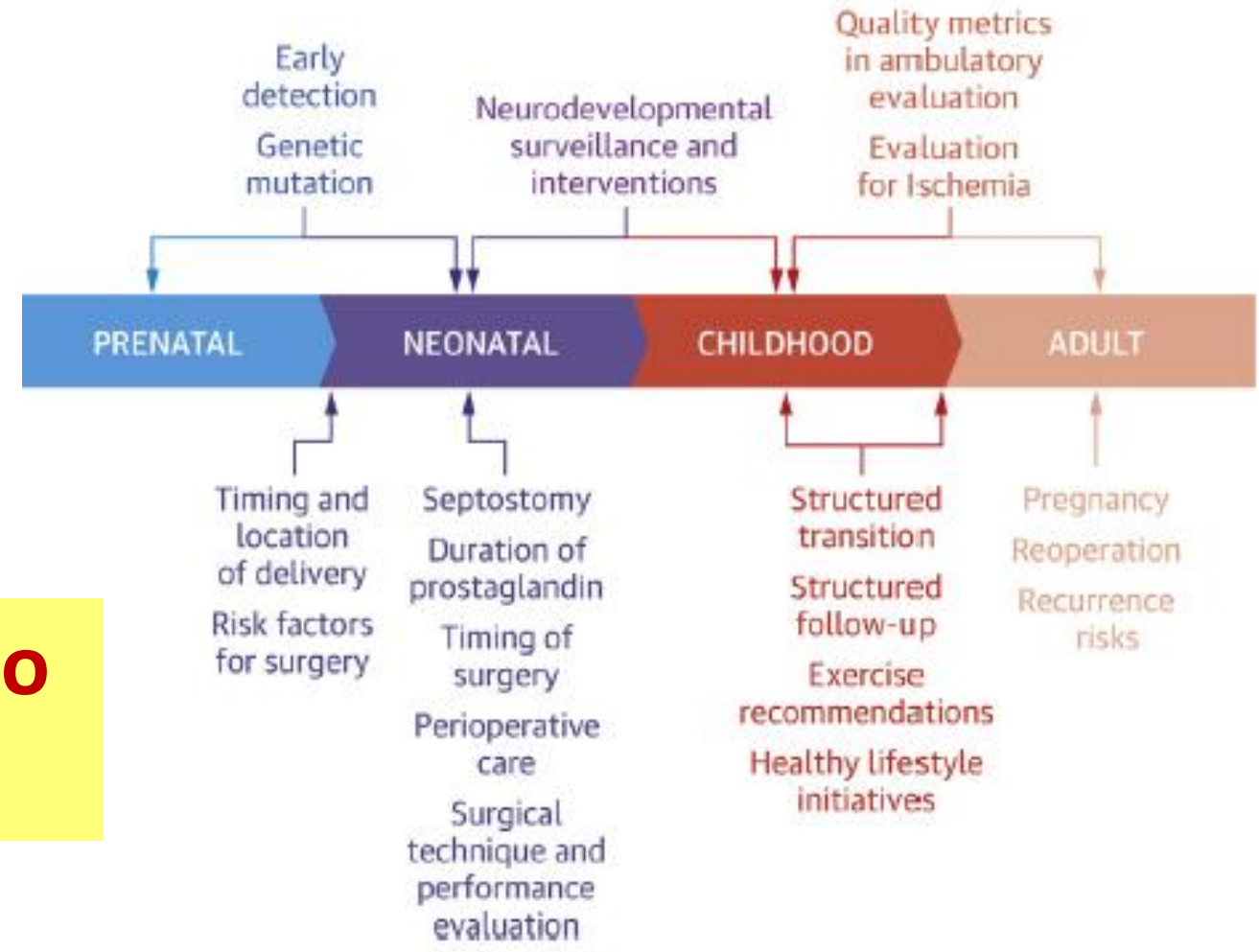
D-Transposition of the Great Arteries

The Current Era of the Arterial Switch Operation

Juan Villafañe, MD,* M. Regina Lantin-Hermoso, MD,† Ami B. Bhatt, MD,‡ James S. Tweddell, MD,§ Tal Geva, MD,‖ Meena Nathan, MD,¶ Martin J. Elliott, MD,# Victoria L. Vetter, MD, MPH,** Stephen M. Paridon, MD,†† Lazaros Kochilas, MD, MSCR,‡‡ Kathy J. Jenkins, MD, MPH,§§ Robert H. Beekman III, MD,‖‖ Gil Wernovsky, MD,¶¶ Jeffrey A. Towbin, MD,## on behalf of the American College of Cardiology's Adult Congenital and Pediatric Cardiology Council

PO tardio

Rastreamento ativo



JACC VOL. 64, NO. 5, 2014
AUGUST 5, 2014:498–511

D-Transposition of the Great Arteries

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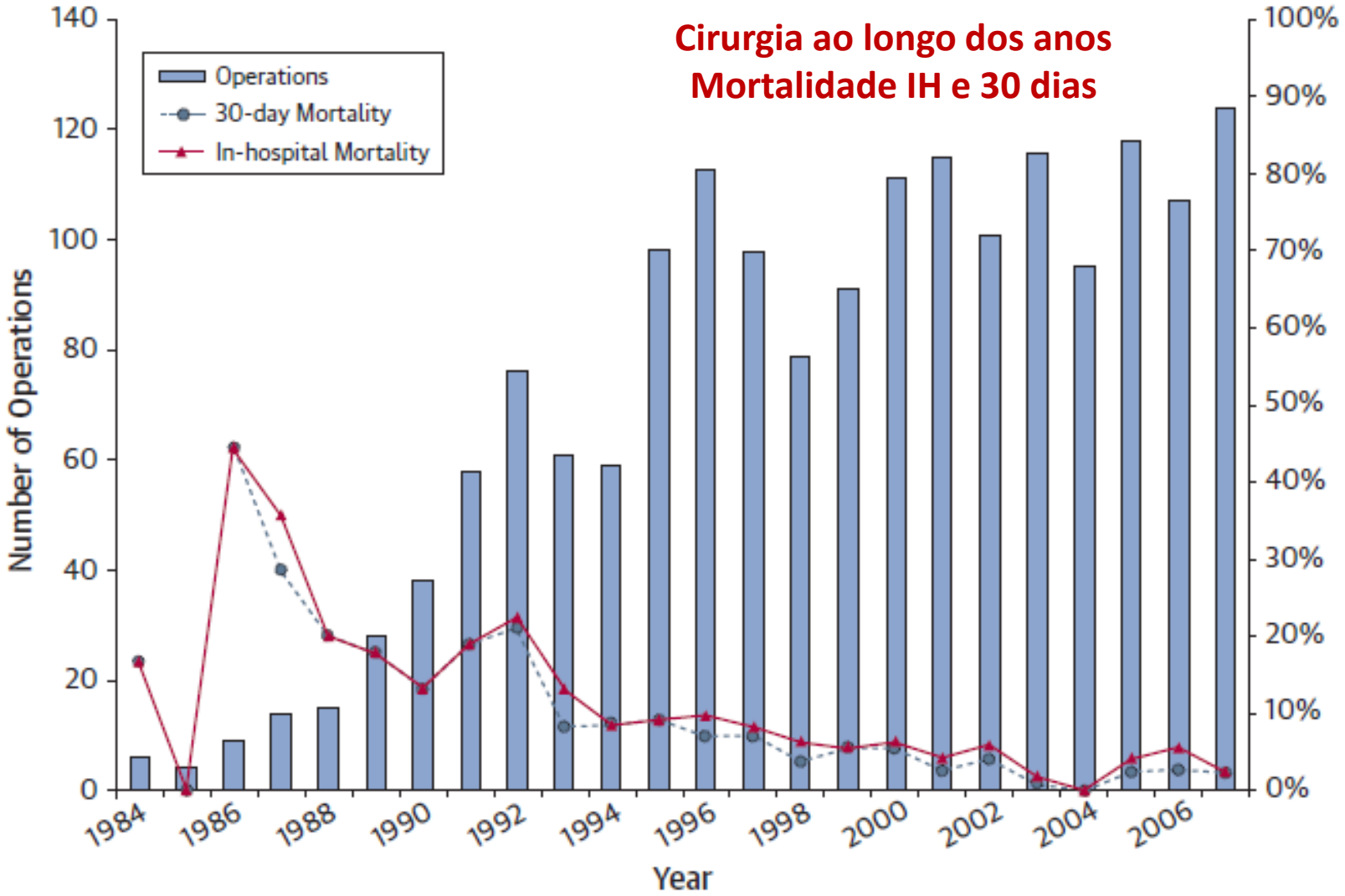
Cirurgia ao longo dos anos
Mortalidade IH e 30 dias



Cardiac Outcomes in Young Adult Survivors of the Arterial Switch Operation for Transposition of the Great Arteries

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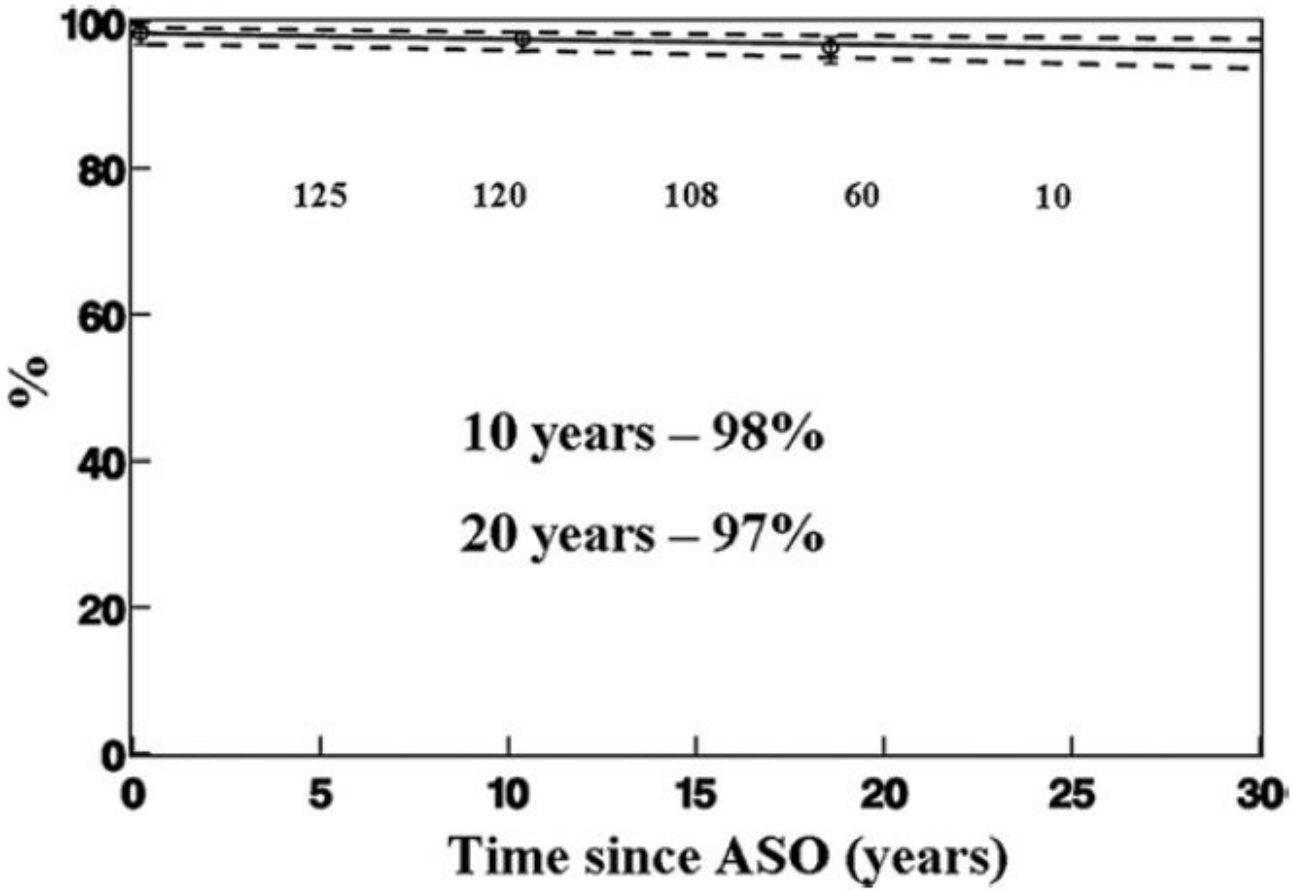
Toronto, Ontario, Canada

Sobrevivência entre 132 pacientes com Jatene operados na infância



(J Am Coll Cardiol 2010;56:58–64)

D-Transposition of the Great Arteries

The Current Era of the Arterial Switch Operation

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TABLE 3 Post-Operative Sequelae Following the Arterial Switch Operation

Long-Term Post-Operative Sequelae	Incidence
Supravalvular pulmonary stenosis*	~10%
Supravalvular aortic stenosis*	~5%
Neoaortic root dilation	Nearly universal
Neoaortic regurgitation	Most (moderate or severe in <10%)
Asymptomatic coronary occlusion	2%–7%
Sudden cardiac death	<1%
Arrhythmia	2%–10%
Aortic dissection or rupture	Unknown

*Requiring intervention. Modified with permission from Wernovsky et al. (152).

D-Transposition of the Great Arteries

The Current Era of the Arterial Switch Operation

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Circulation Journal
Official Journal of the Japanese Circulation Society
http://www.j-circ.or.jp

Coronary Artery Problems Late After Arterial Switch Operation for Transposition of the Great Arteries

Takeshi Tsuda, MD; Abdul M. Bhat, MD; Bradley W. Robinson, MD;
Jeanne M. Baffa, MD; Wolfgang Radtke, MD

(*Circ J* 2015; **79:** 2372–2379)

Table 2. Indications for Coronary Investigation

Indications	n=40	%
Investigation of abnormal hemodynamics on echocardiogram	24	60.0
Routine assessment (sports clearance)	7	17.5
Symptoms	4	10.0
Chest pain	1	
Palpitations (patient 5)	1	
Sudden death-autopsy* (patient 1)	1	
Cardiac arrest/VF* (patient 2)	1	
Unusual coronary anatomy	2	5.0
Abnormal EST or MPI (patients 4, 6)	2	5.0
ASD closure	1	2.5

ASD, atrial septal defect; VF, ventricular fibrillation. *Asymptomatic at outpatient visits. Other abbreviations as in Table 1.

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ORIGINAL ARTICLE
Cardiovascular Surgery

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Presença de alterações ECG em anormalidades de coronárias

Table 4. Test Results and Outcome of Significant Coronary Abnormalities (n=7)

Patient ID no.	ECG	Echocardiogram	EST	MPI	MRI	Outcome
1	NSR, WNL	Normal RV, LV function; Branch PA not well visualized	ND	ND	Slight narrowing of RPA; Coronary not delineated (3.25 years)	Sudden death (3.75 years)
2	NSR, WNL	Mild RV enlargement, Moderate neo-PI; Mild neo-Ao dilatation	Normal	Normal	ND	Alive
3	NSR, RBBB	Mild RV enlargement, mild branch PA stenosis, mild-moderate neo PI	Normal	Normal	Significant narrowing of LCA orifice	Alive
4	NSR, RBBB	Trivial supravalvar neo-PS	Max $\dot{V}O_2$ 65% predicted ST-T depression (7 mm) in lateral leads	Reversible perfusion defect	ND	Alive
5	NSR, 1°AVB; Isolated PVC	Mild-moderate neo-AI	Max $\dot{V}O_2$ 72% predicted isolated PVC suppressed by exercise	Normal	Mild dilatation of neo-Ao, mild biventricular dilatation, LCA not well seen	Alive
6	NSR, RVH	Mild MPA stenosis, mild neo-AI	ND	ND	ND	Lost to follow-up
7	NSR, IRBBB	Free neo-PI (s/p transannular patch augmentation of RVOT at 3 months)	ST-T depression (2 mm) in lateral leads	Normal	Moderate RV dilation, mild proximal RPA narrowing, delayed Gd enhancement of LV endocardium	Alive

(*Circ J* 2015; **79:** 2372–2379)

Myocardial Perfusion and Exercise Capacity 12 Years After Arterial Switch Surgery for D-Transposition of the Great Arteries

Table 3 Peak exercise test data

Variables	SWITCH	CON	*p* Value
Exercise time (min)	12.2 ± 1.9	14.1 ± 2.6	0.003
Peak heart rate (bpm)	188 ± 10	193 ± 10.2	0.01
% of age-predicted maximal HR obtained	94 ± 5	97 ± 5	0.007
Peak VO_2 (ml/kg/min)	37.2 ± 8.2	42.5 ± 8.9	0.006
Peak VO_2/BMI (ml/min/[kg/m^2])	87.8 ± 31.0	110.1 ± 35.9	0.003
Oxygen pulse/BSA (ml/m^2/min)	6.56 ± 1.89	8.09 ± 3.19	0.009
O_2 saturation at peak exercise	97 ± 3	97 ± 2	0.96

Note: *SWITCH* arterial switch operation, *CON* control, *bpm* beats per minute; *BSA* body surface area

Pediatr Cardiol
DOI 10.1007/s00246-011-9975-y

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Toronto, Ontario, Canada

Capacidade aeróbica pacientes com Jatene

Comparação de necessidade de reabordagem

(J Am Coll Cardiol 2010;56:58–64)

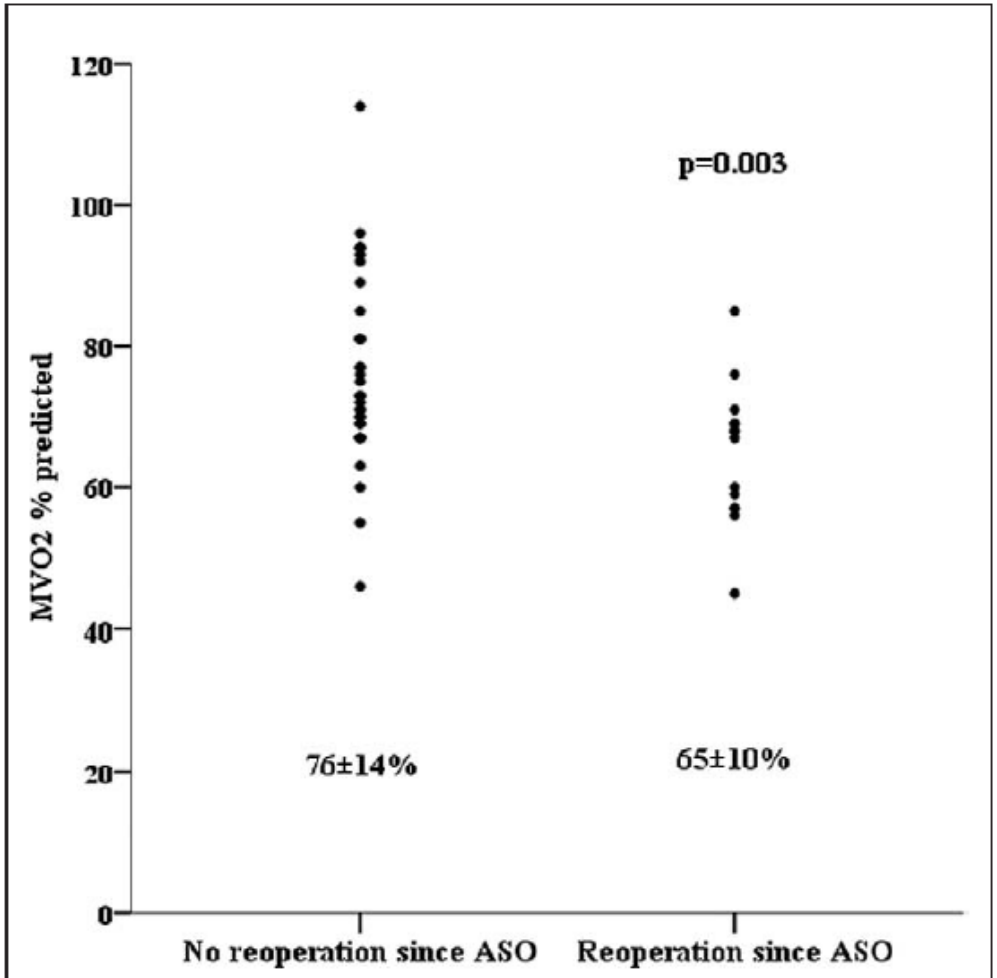

Figure 2 Oxygen Consumption in Adults With an ASO

Percentage predicted peak oxygen consumption (MVo_2) (indexed to age and sex) in patients with and without reoperation after the arterial switch operation (ASO).

Cardiac Outcomes in Young Adult Survivors of the Arterial Switch Operation for Transposition of the Great Arteries

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Toronto, Ontario, Canada

Table 3 Reinterventions in Adulthood After ASO

Sex	Anatomy	ASO	Anastomosis	Reoperation in Childhood	Reoperation in Adulthood
F	Complex	1980	RV-PA conduit	None	Pulmonary arterioplasty, sternal wire removal
F	Complex	1980	RV-PA conduit	Conduit replacement	PVR, pulmonary arterioplasty, RVOT resection
F	Complex	1981	RV-PA conduit	Pulmonary arterioplasty	Coronary artery revision, conduit replacement
M	Complex	1986	RV-PA conduit	RVOT repair, pulmonary arterioplasty	Pacemaker replacement
F	Complex	1987	Lecompte	Mitral valve repair/replacement/PM	Mitral valve replacement
M	Complex	1989	Lecompte	Pulmonary arterioplasty	Pulmonary arterioplasty
M	Simple	1990	Lecompte	None	Pacemaker implant

PM = pacemaker; PVR = pulmonary valve replacement; RVOT = right ventricular outflow tract; other abbreviations as in Table 1.

(J Am Coll Cardiol 2010;56:58–64)

Outcomes of the Arterial Switch Operation for Transposition of the Great Arteries: 25 Years of Experience

Tyson A. Fricke, BMedSc, Yves d'Udekem, MD, PhD, Malcolm Richardson, MBBS, Clarke Thuys, BAppSc, Mithilesh Dronavalli, MBBS, BMedSc, James M. Ramsay, MBBS, Gavin Wheaton, MBBS, Leeanne E. Grigg, MBBS, Christian P. Brizard, MD, and Igor E. Konstantinov, MD, PhD

Royal Children's Hospital, Melbourne; University of Melbourne, Melbourne; Murdoch Children's Research Institute, Melbourne; Royal Melbourne Hospital, Melbourne; Women's and Children's Hospital, Adelaide; and Princess Margaret Hospital, Perth, Australia

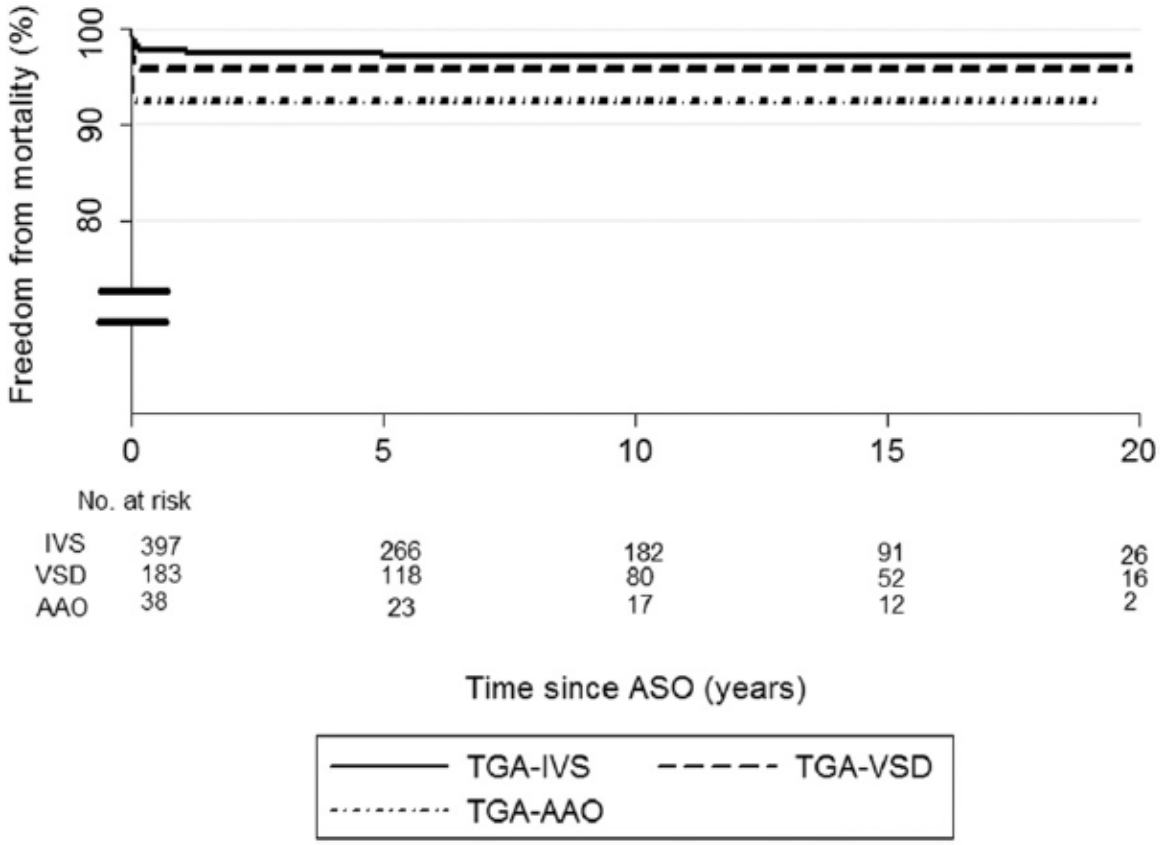

Fig 1. Freedom from mortality. (AAO = aortic arch obstruction; ASO = arterial switch operation; IVS = intact ventricular septum; TGA = transposition of the great arteries; VSD = ventricular septal defect; — = TGA-IVS; – – – = TGA-VSD; -.-.- = TGA-AAO.)

(Ann Thorac Surg 2012;94:139–45)

Pediatr Cardiol (2009) 30:166–171
DOI 10.1007/s00246-008-9291-3

ORIGINAL ARTICLE

Declining Aerobic Capacity of Patients with Arterial and Atrial Switch Procedures

Per Morten Fredriksen · Eirik Pettersen · Erik Thaulow

Table 4 Mean data from exercise tests for patients with atrial and arterial corrected transposition of the great arteries compared with healthy subjects

	Atrial	Arterial	Healthy[a]	*p*-value[b]
Percentage of healthy reference	69 ± 15.4	80 ± 16.5		0.002
VO_{2peak} (ml $kg^{-0.67}$ min^{-1})	132 ± 27.8	145 ± 32.5	182 ± 31.3[c]	0.060
VO_{2peak} (ml kg^{-1} min^{-1})	36.9 ± 8.92	43.1 ± 9.65	53.1 ± 7.82[c]	0.003
VO_{2peak} (l min^{-1})	1.776 ± 0.427	1.757 ± 0.579	2.315 ± 0.709[c]	0.859
HR_{peak} (bpm)	182 ± 9	190 ± 13	200 ± 7[c]	0.004
VE_{peak} (l min^{-1})	70.5 ± 19.0	70.6 ± 20.4	82.1 ± 23.9[c]	0.990
Respiratory exchange ratio	1.05 ± 0.07	1.01 ± 0.08	1.10 ± 0.06[c]	0.030

[a] Healthy Norwegian reference material is from Fredriksen et al. (1999) [2]. The reference results are the mean values

[b] The *p* value refers to the difference between the atrial and arterial surgery groups

[c] Significant difference between the results of the reference population and both TGA groups

Pediatr Cardiol (2009) 30:166–171
DOI 10.1007/s00246-008-9291-3

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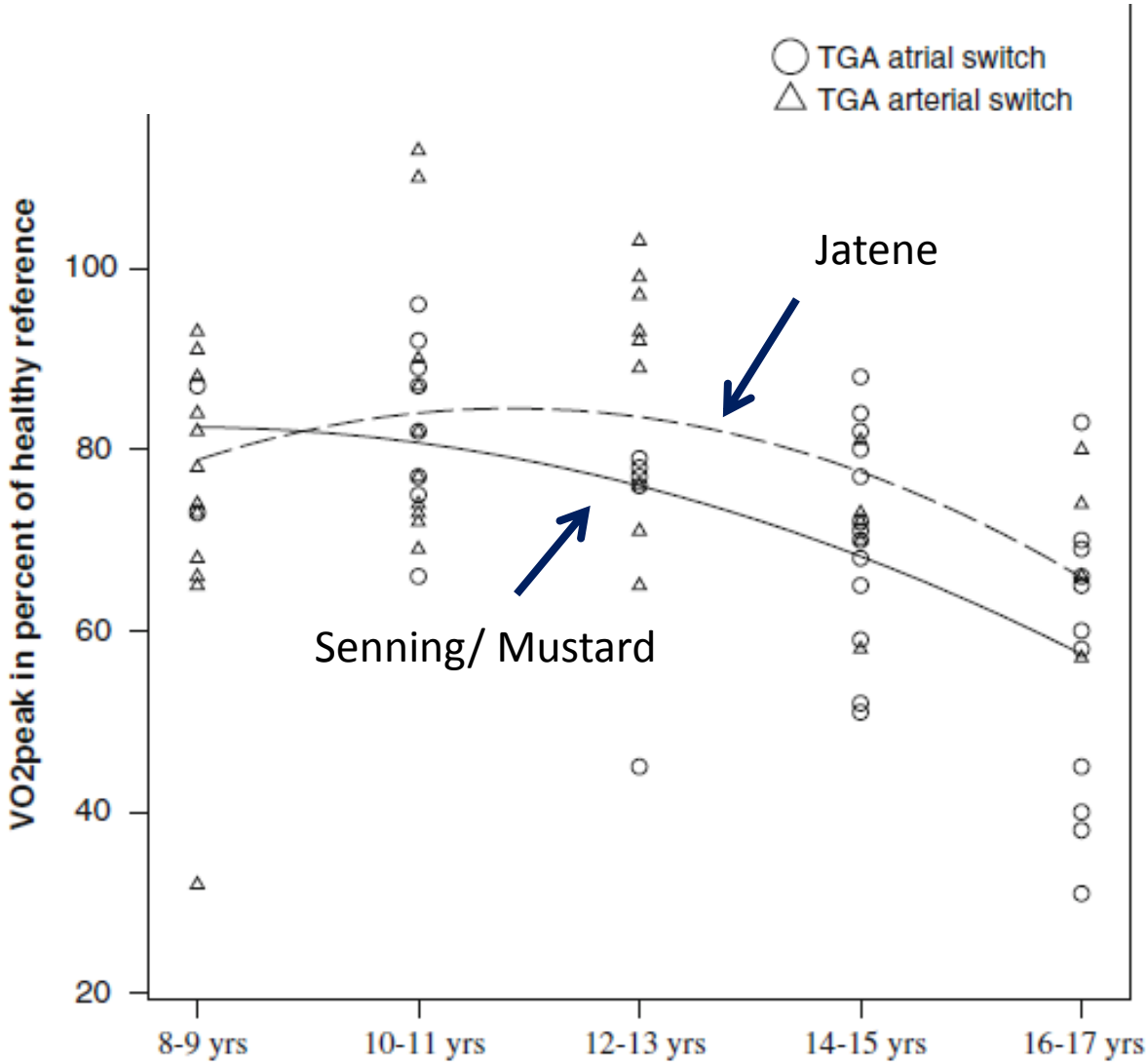
Declining Aerobic Capacity of Patients with Arterial and Atrial Switch Procedures

Per Morten Fredriksen · Eirik Pettersen · Erik Thaulow

Comparação da capacidade funcional Senning vs Jatene



Cardiovascular Outcomes After the Arterial Switch Operation for D-Transposition of the Great Arteries

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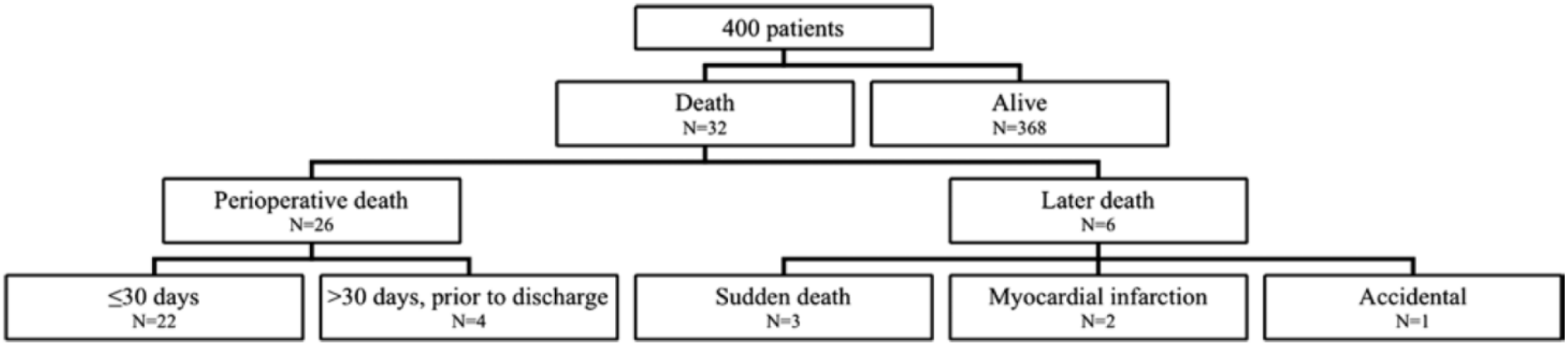

(*Circulation*. 2013;127:331–339.)

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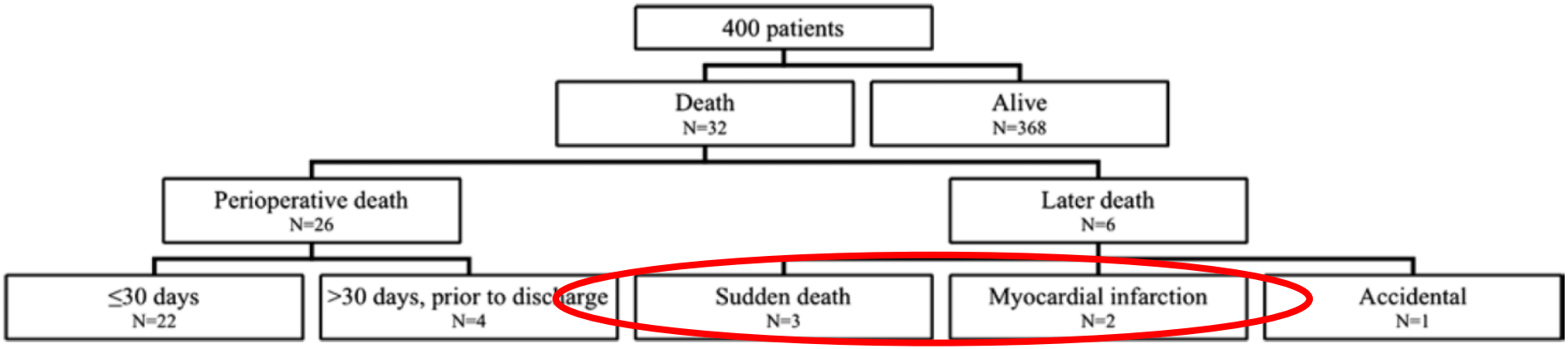

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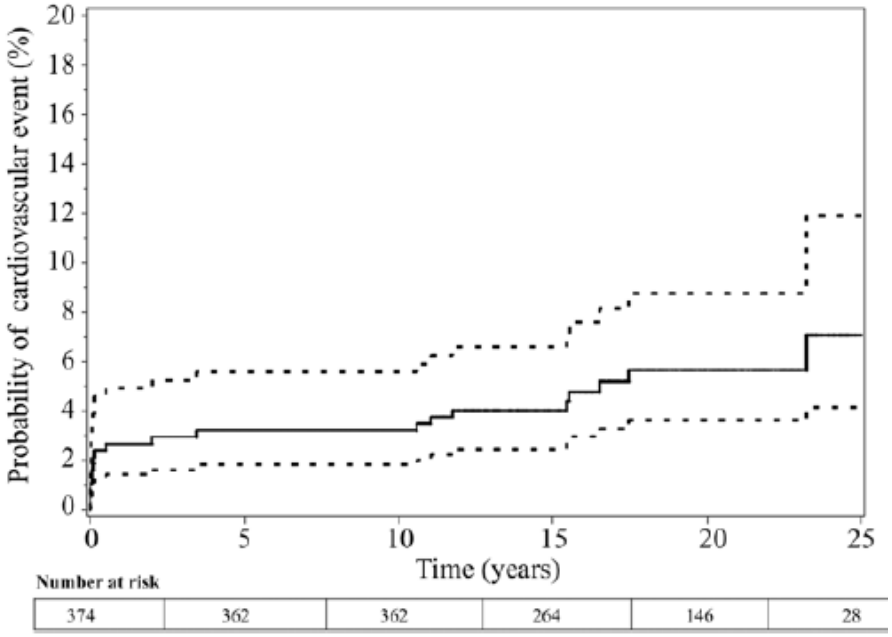
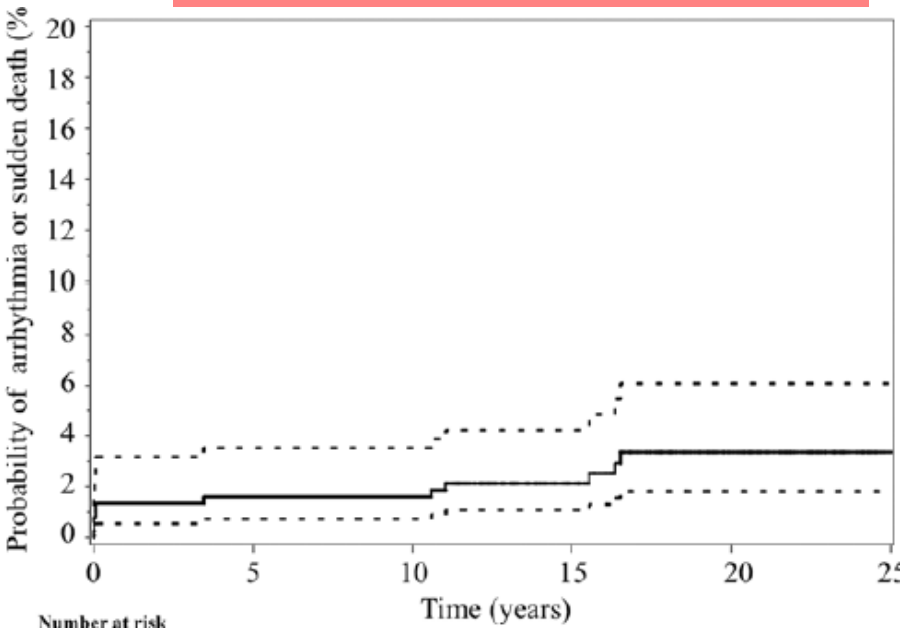
Liberdade de eventos cardiovasculares



Liberdade de Morte Súbita



(*Circulation*. 2013;127:331–339.)

Rev Esp Cardiol. 2014;67(2):114–119

Original article

Characteristics and Outcomes of Transposition of Great Arteries in the Neonatal Period

Anna Turon-Viñas,[a] Ana Riverola-de Veciana,[a,*] Julio Moreno-Hernando,[a] Joaquim Bartrons-Casas,[b] Fredy H. Prada-Martínez,[b] Javier Mayol-Gómez,[c] and José M. Caffarena-Calvar[c]

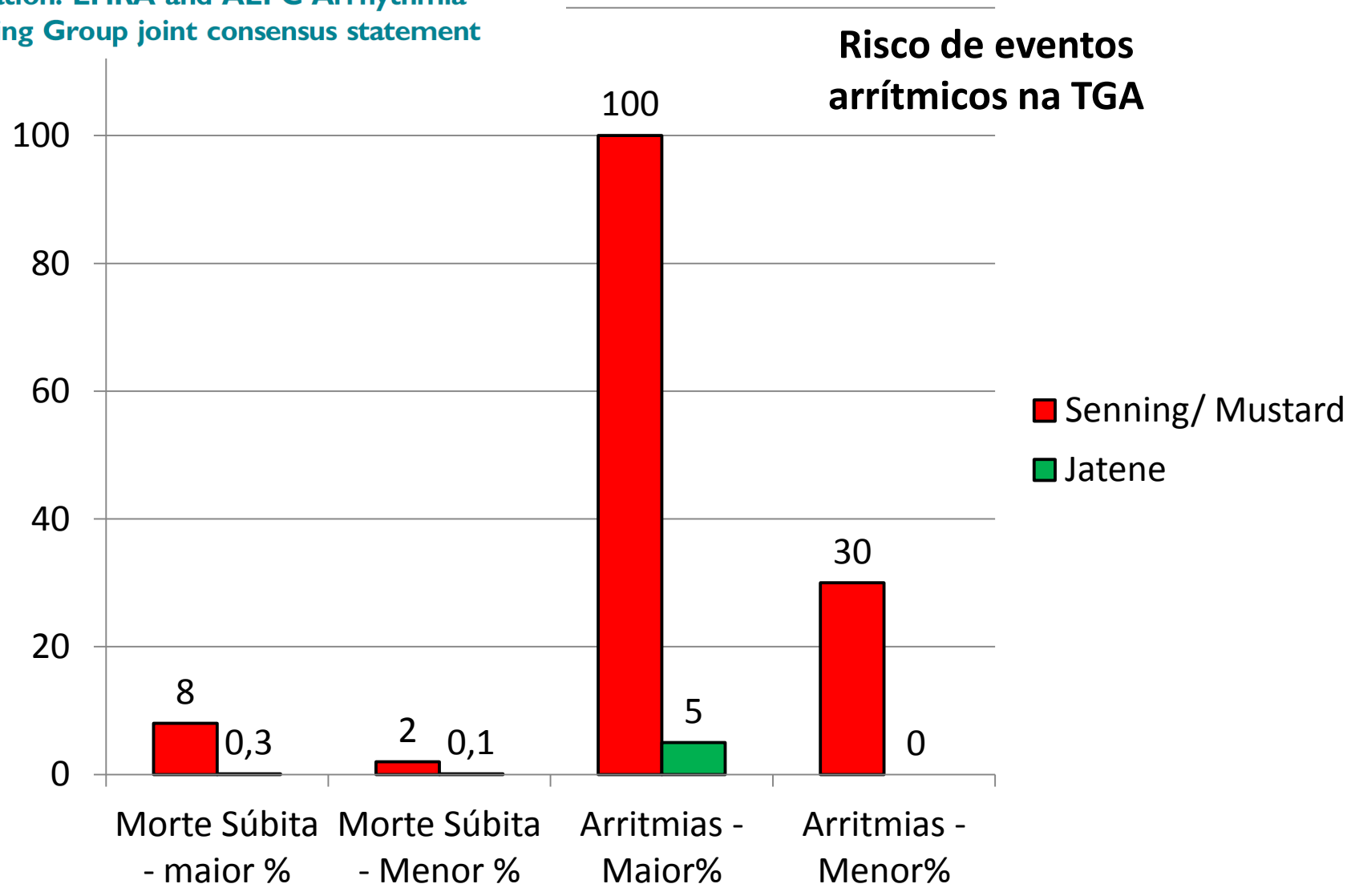
Morbidity

Laboratory tests suggested infection in 22 of 117 patients [18.8%]. Sepsis was confirmed by positive blood culture (12 of 117 [10.2%]) and urinary tract infection by positive urine culture (4 of 117 [3.4%]). Arrhythmias occurred in 22 patients during the immediate postoperative period. Two patients required pacemaker implantation and 6 needed medical treatment; the arrhythmia resolved spontaneously in the remaining patients. The most common pulmonary complication was pulmonary edema, with or without pleural effusion (20 cases [17%]). There were 9 cases of diaphragmatic paralysis.

Europace Advance Access published July 12, 2013

Europace
doi:10.1093/europace/eut082

Pharmacological and non-pharmacological therapy for arrhythmias in the pediatric population: EHRA and AEPC-Arrhythmia Working Group joint consensus statement



Busca ativa de eventos arrítmicos que possam aumentar a mortalidade!!!

Circulation Journal
Official Journal of the Japanese Circulation Society
http://www.j-circ.or.jp

Remote Monitoring Leads to Early Recognition and Treatment of Critical Arrhythmias in Adults After Atrial Switch Operation for Transposition of the Great Arteries

Bert Nagel, MD; Jan Janousek, PhD; Martin Koestenberger, PhD; Robert Maier, MD; Werner Sauseng, MD; Volker Strenger, PhD; Andreas Gamillscheg, PhD; Peter Zartner, MD

Table 1. Patient Data at Enrollment

Patient	Age (years)	Type of repair	Follow-up (years)	Device†	Indication	RVEF (%)/ TAPSE (mm)	NYHA class	Arrhythmia before implant	Anti-arrhythmic medication
1	20.2	Mustard	3.3	Cylos DR-T	SSS, AVB	≥50/16	1	None	None
2	31.8	Senning	1.5	Evia DR-T	SSS	40–49/12	2	None	None
3	31.2	Mustard	1.1	Evia DR-T	SSS, AVB	40–49/15	1	None	None
4	21.4	Senning	2.1	Evia DR-T	SSS	30–39/10	2	AFl	β-blocker
5	19.7	Senning	2.1	Evia DR-T	SSS, AVB	30–39/11	2	AFl	β-blocker
6	22.9	Senning	1.9	Evia DR-T	SSS, AVB	30–39/10	2	None	None
7	25.2	Mustard	1.9	Lumax HF-T	SSS, AVB	<30/6	3	VT	β-blocker
8	31.7	Mustard	0.3	Lumax HF-T	SSS	30–39/9	2	None	None
9	25	Mustard	1.6	Stratos LV-T‡	SSS, AVB	<30/8	3	VEB>250/h	β-blocker
10	26.7	Mustard	1.8	Stratos LV-T	SSS, AVB	<30/8	3	VEB>100/h	β-blocker
11	18.8	Mustard	3.6	Stratos LV-T	SSS	30–39/9	2	VEB>250/h	β-blocker

†All devices by Biotronic, Berlin, Germany (patients 1–6, pacemaker; 7,8, CRT-D; 9–11, CRT); ‡epicardial CRT system, all other devices were implanted transvenously.
AFl, atrial flutter; AVB, higher degree atrioventricular block; CRT, cardiac resynchronization therapy without ICD; CRT-D, cardiac resynchronization therapy with ICD; ICD, implantable cardioverter defibrillator; NYHA, New York Heart Association; RVEF, right ventricular ejection fraction; SSS, sick sinus syndrome; TAPSE, tricuspid annular plane systolic excursion; VEB, ventricular ectopic beats; VT, non-sustained ventricular tachycardia.

Implante de CDI em pacientes com TGA Profilaxia Primaria

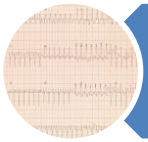
TABLE I. Key Determinants of ICD Implantation in Adult TGA Patients for Primary Prevention of SCD

Factors Favoring ICD Implantation	Factors Opposing ICD Implantation
High degree of association between systemic ventricular dysfunction and SCD	Unestablished cause of SCD: tachyarrhythmias (i.e., supraventricular or ventricular), ventricular failure, or both
Established survival benefit in non-ACHD patients with ventricular failure	Lack of evidence-based survival benefit for primary-prevention ICD placement
Limited evidence supporting survival benefit in ACHD patients who have secondary implantation indications	High frequency of inappropriate shocks
Advancing ICD technology	Device-related complications (primarily lead fracture and failure)
	Poor defibrillation thresholds for implanted devices, due to altered anatomy

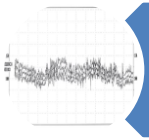
ACHD = adult congenital heart disease; ICD = implantable cardioverter-defibrillator; SCD = sudden cardiac death; TGA = transposition of the great arteries

(Tex Heart Inst J 2015;42(4):309-18)

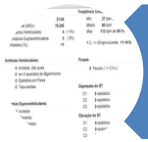
Quantos dias em média levamos para iniciar a investigação



ECG



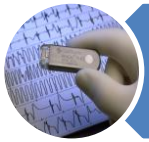
Holter



Segundo Holter e Holter 7 dias

Telemetria ambulatorial

Monitor de eventos externo



Monitor eventos implantável


9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7 8 9 10
250
(bpm)
F.C.
150
100
0
(h)
200
100
0
(bpm)
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7 8 9
N 1090 N 540 S 555 S 440 S 1200 N 565 N 655 N 945 N 540 N 695 N 715 N 600 N 485 N 405 N 500 N 435 N 410 N 520
C 1
C 2
C 3
Supra com aberrância entrada FA
16/06/2012 12:24:13 14 15 16 17 18 19 20 21 22 23

Exame Editar Traçados Análise Gravação Configurações Exibir Janela ?

Menu

Geral
Morfologias
Arritmias/ST
Histogram...
Gráficos 24h
ECG Comp...
CardioSeven

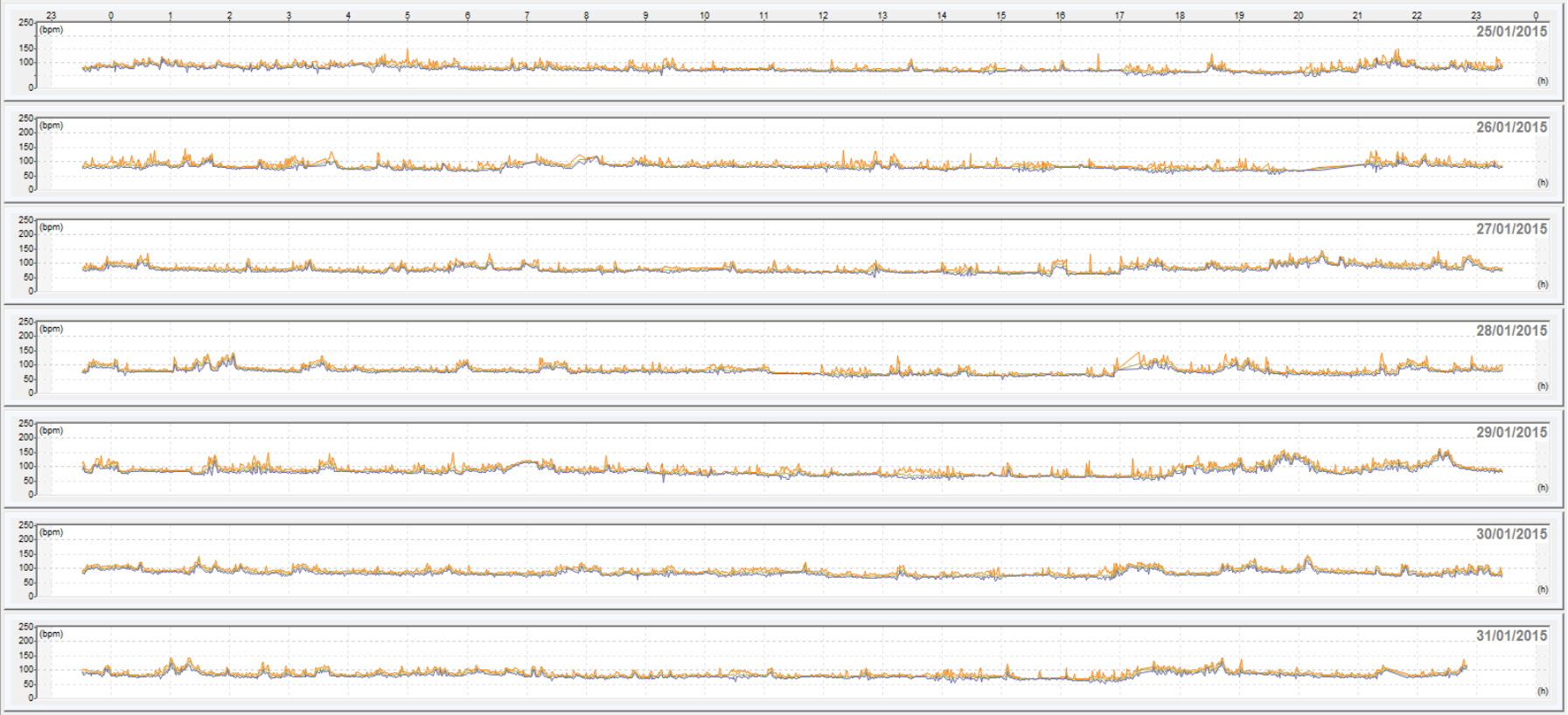
Seven 24h

Resumo 7 dias

Tabelas
VFC
Tacograma
Apneia
Fib. Atrial
MAPA
Exemplos

Gráfico F.C.

Exibir Lista de exames



Para ajuda, pressione [F1]

Resumo 7 dias

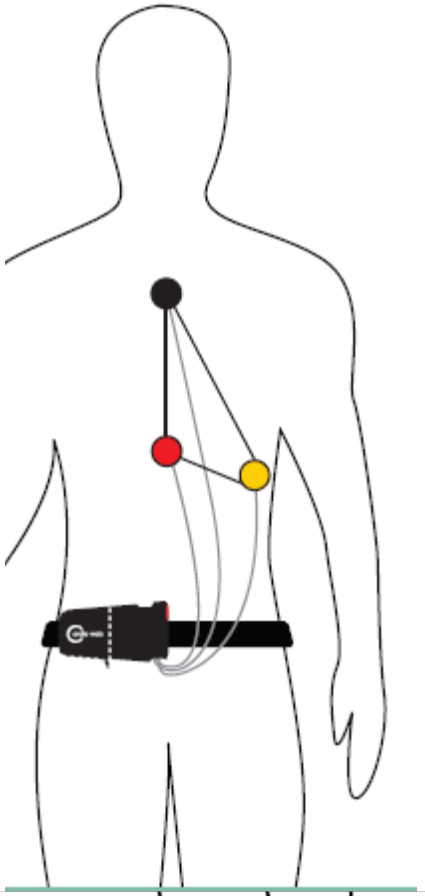
Nº do Exame	Paciente:	Código:
5859780	Data do Exame:	1J4-00017

Data	FC Mín.	FC Méd.	FC Máx.	V iso.	V par.	Total V	SV iso.	SV par.	Total SV	Pausas	> Pausa	% Artefato	> Depr. ST	Inclin. ST	Depr. Cn
25/01/2015	46	76	151	378	35	475	91	153	511	17	7,8	18 %			
26/01/2015	54	82	141	438	31	509	123	171	548	4	4,3	19 %			
27/01/2015	52	81	145	108	10	128	37	61	182	2	3,2	6 %			
28/01/2015	49	82	144	84	5	94	45	48	238	9	4,7	2 %			
29/01/2015	46	87	163	90	5	100	92	114	571	2	19,1	4 %			
30/01/2015	54	87	145	23	0	23	14	11	56	3	2,9	< 1 %			
31/01/2015	53	85	144	15	1	17	10	11	129	0		< 1 %			
Total	46	83	163	1136	87	1346	412	569	2235	37	19	7 %			

Data	Taq. V	TV maior	TV mais rápida	TV mais lenta	aq. S	TSV maior	TSV mais rápida	TSV mais lenta
25/01/2015	8	5 bat., 125 bpm 05:25:28	3 bat., 180 bpm 02:45:50	4 bat., 92 bpm 04:18:14	24	13 bat., 124 bpm 16:38:02	3 bat., 216 bpm 09:01:37	5 bat., 88 bpm 17:10:44
26/01/2015	3	3 bat., 233 bpm 21:40:02	3 bat., 233 bpm 21:40:02	3 bat., 123 bpm 04:35:40	21	8 bat., 97 bpm 17:34:13	3 bat., 250 bpm 18:38:11	4 bat., 94 bpm 15:43:03
27/01/2015	0				3	15 bat., 93 bpm 12:51:40	3 bat., 233 bpm 16:30:07	5 bat., 90 bpm 12:52:20
28/01/2015	0				17	16 bat., 91 bpm 12:29:01	4 bat., 205 bpm 22:55:55	10 bat., 90 bpm 12:37:21
29/01/2015	0				38	18 bat., 91 bpm 17:53:12	4 bat., 188 bpm 02:11:33	6 bat., 87 bpm 13:47:38
30/01/2015	0				3	14 bat., 102 bpm 16:59:40	3 bat., 159 bpm 06:01:12	14 bat., 102 bpm 16:59:40
31/01/2015	0				7	35 bat., 94 bpm 16:32:14	3 bat., 150 bpm 10:29:24	9 bat., 93 bpm 07:26:06
Total	11	5 bat., 125 bpm 05:25:28	3 bat., 233 bpm 21:40:02	4 bat., 92 bpm 04:18:14	113	35 bat., 94 bpm 16:32:14	3 bat., 250 bpm 18:38:11	6 bat., 87 bpm 13:47:38

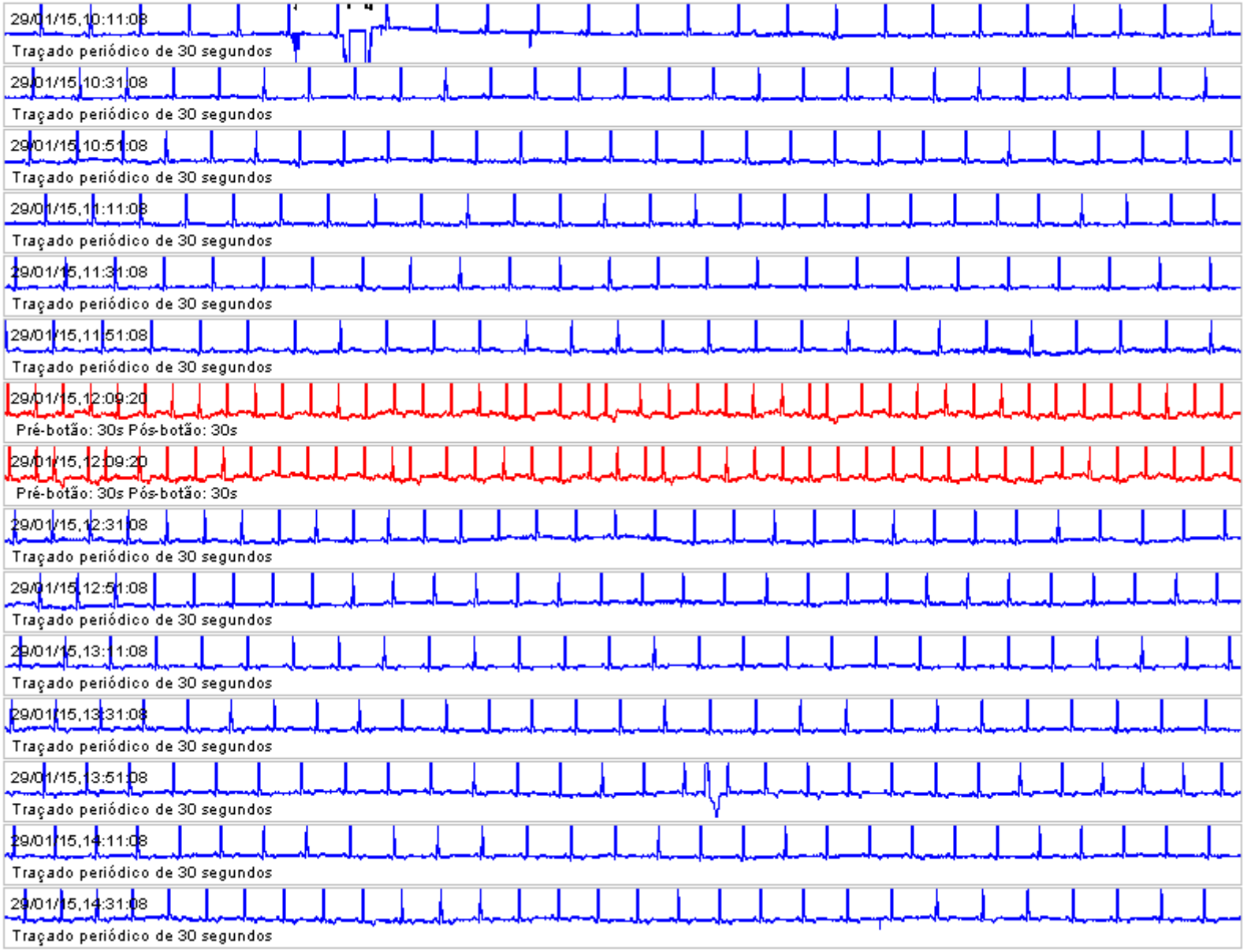
Looper com transmissão via internet

BOTÃO DE EVENTOS



VERMELHO (RA)	Apêndice Xifóde (V1-2)
AMARELO (LA)	Quinto espaço intercostal esquerdo (V5)
PRETO (RL)	Manúbrio Esternal (M)

Looper com transmissão via internet



ACIONAMENTO DO BOTÃO DE EVENTOS

REGISTROS ALEATÓRIOS COM TEMPO PROGRAMÁVEL

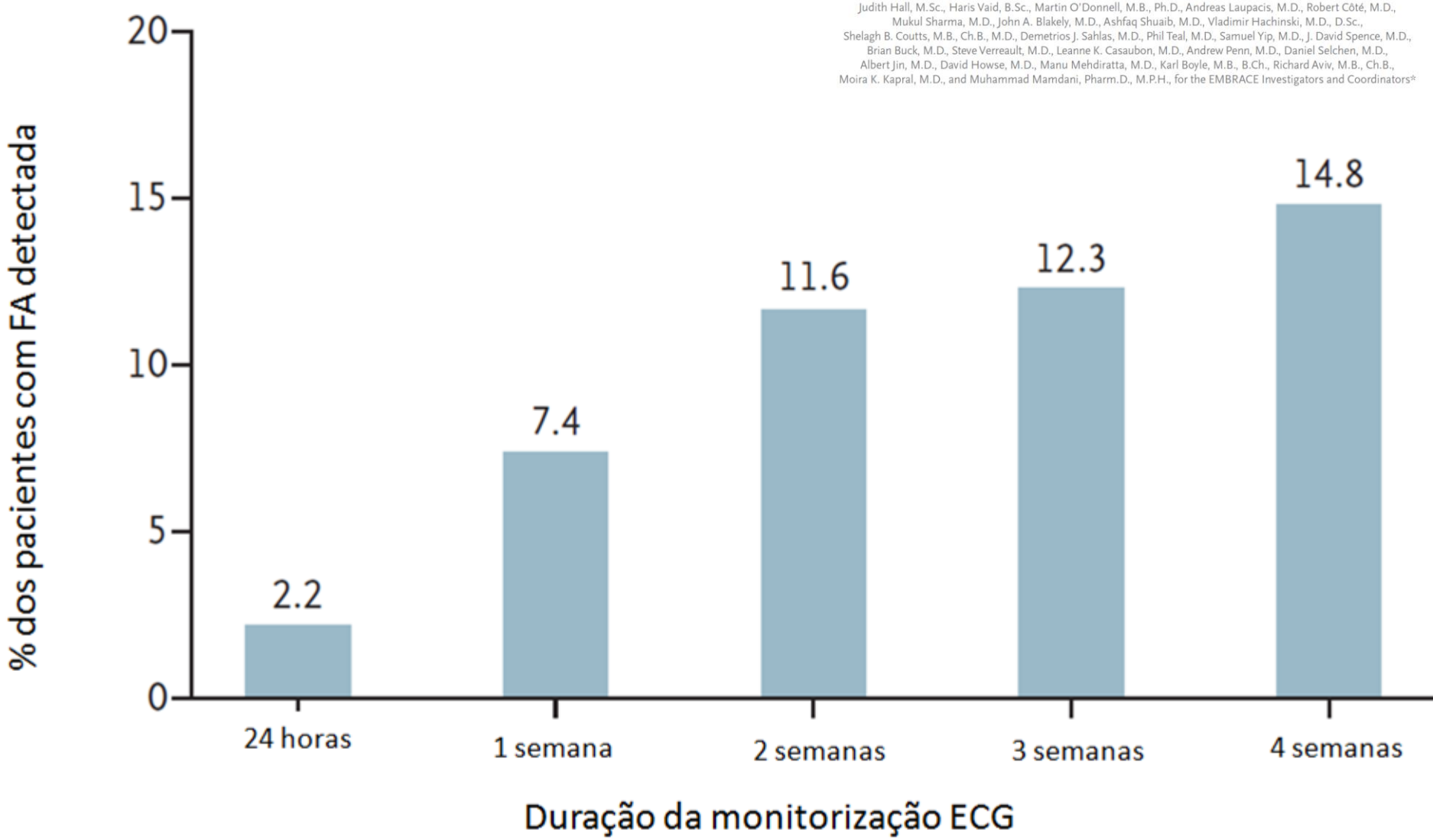
Incremento diagnóstico com o prolongamento da monitorização

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 26, 2014 VOL. 370 NO. 26

Atrial Fibrillation in Patients with Cryptogenic Stroke

David J. Gladstone, M.D., Ph.D., Melanie Spring, M.D., Paul Dorian, M.D., Val Panzov, M.D., Kevin E. Thorpe, M.Math., Judith Hall, M.Sc., Haris Vaid, B.Sc., Martin O'Donnell, M.B., Ph.D., Andreas Laupacis, M.D., Robert Côté, M.D., Mukul Sharma, M.D., John A. Blakely, M.D., Ashfaq Shuaib, M.D., Vladimir Hachinski, M.D., D.Sc., Shelagh B. Coutts, M.B., Ch.B., M.D., Demetrios J. Sahlas, M.D., Phil Teal, M.D., Samuel Yip, M.D., J. David Spence, M.D., Brian Buck, M.D., Steve Verreault, M.D., Leanne K. Casaubon, M.D., Andrew Penn, M.D., Daniel Selchen, M.D., Albert Jin, M.D., David Howse, M.D., Manu Mehdiratta, M.D., Karl Boyle, M.B., B.Ch., Richard Aviv, M.B., Ch.B., Moira K. Kapral, M.D., and Muhammad Mamdani, Pharm.D., M.P.H., for the EMBRACE Investigators and Coordinators*




Medtronic
NOT FOR HUMAN USE
REVEAL® DX
MODEL 9528
SN RAB410834H
Medtronic

Sobre o monitor implantável

Reveal

1998

Avaliação de síncope

Reveal Plus

2000

Automatização

Reveal DX

2007

Maior Bateria (3 anos) Maior capacidade de memória (50 minutos)log para taquicardia e CDI

Acesso remoto e uso em RNM

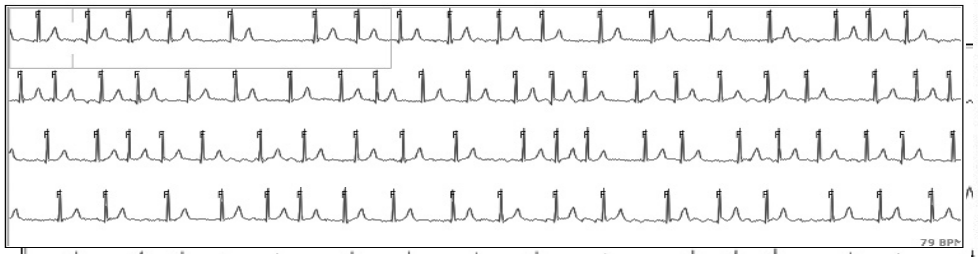
Reveal XT

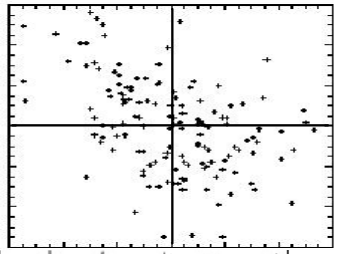
2009

Detecção de FA

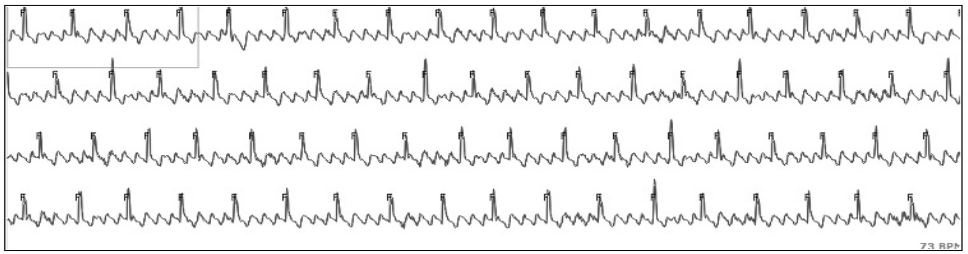
Compasso

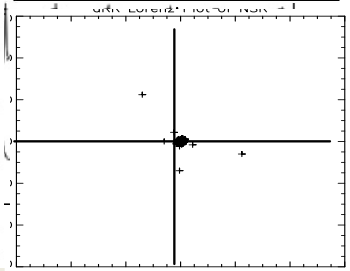
Como se apresentam os Ritmos no monitor de eventos implantável



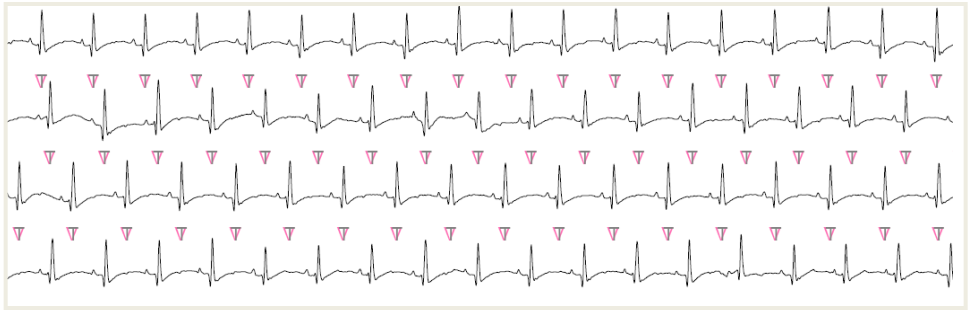


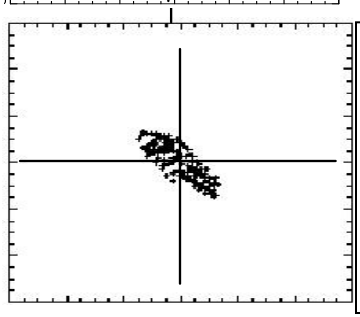
Fib Atrial





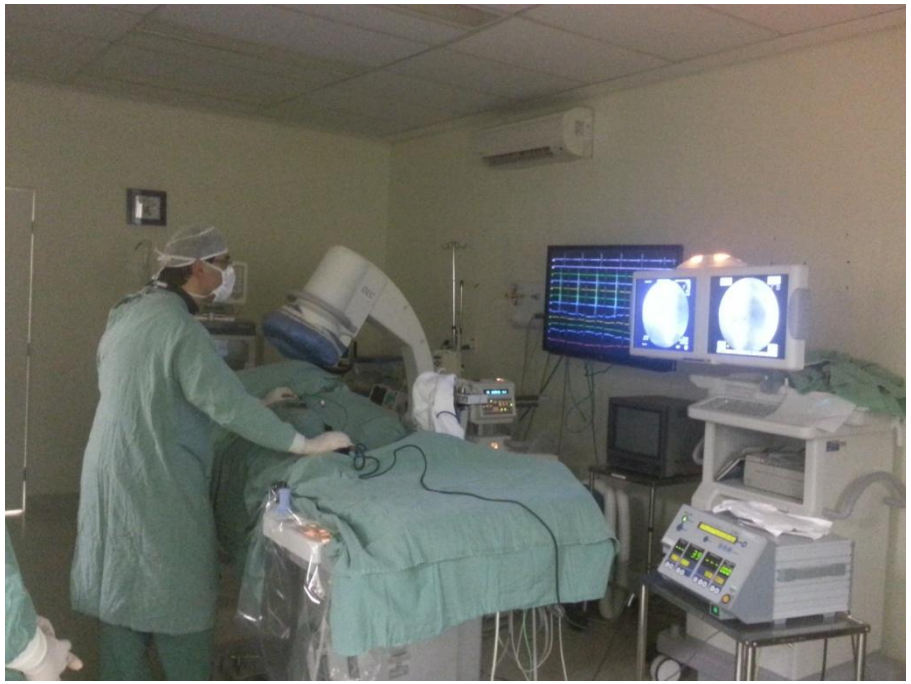
Flutter Atrial
3:1





Ritmo Sinusal

Seção Médica de Eletrofisiologia Clínica e Arritmias Cardíacas
Instituto Dante Pazzanese de Cardiologia



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Equipe de Eletrofisiologia Pediátrica

Obrigado!!!

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