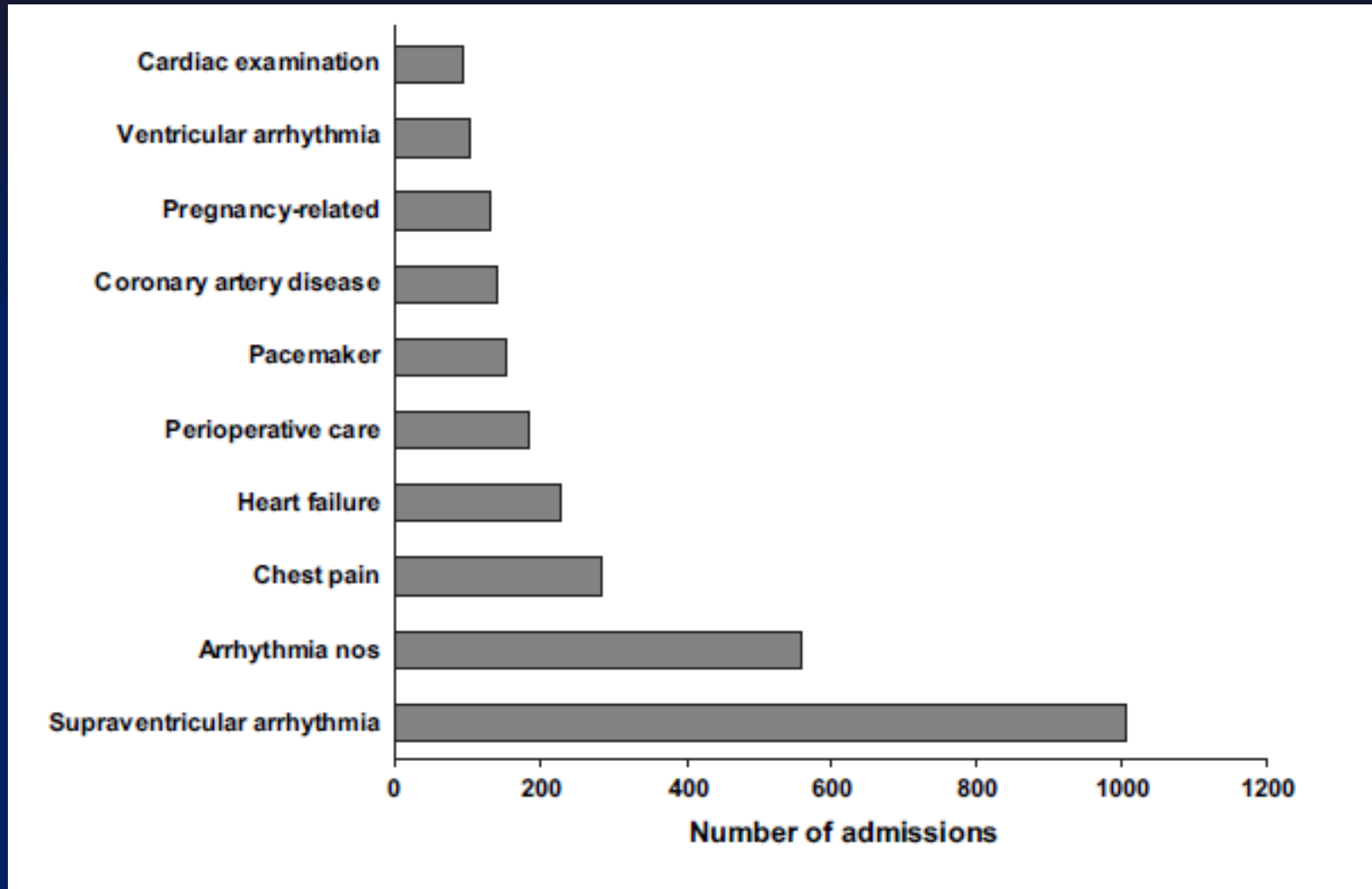


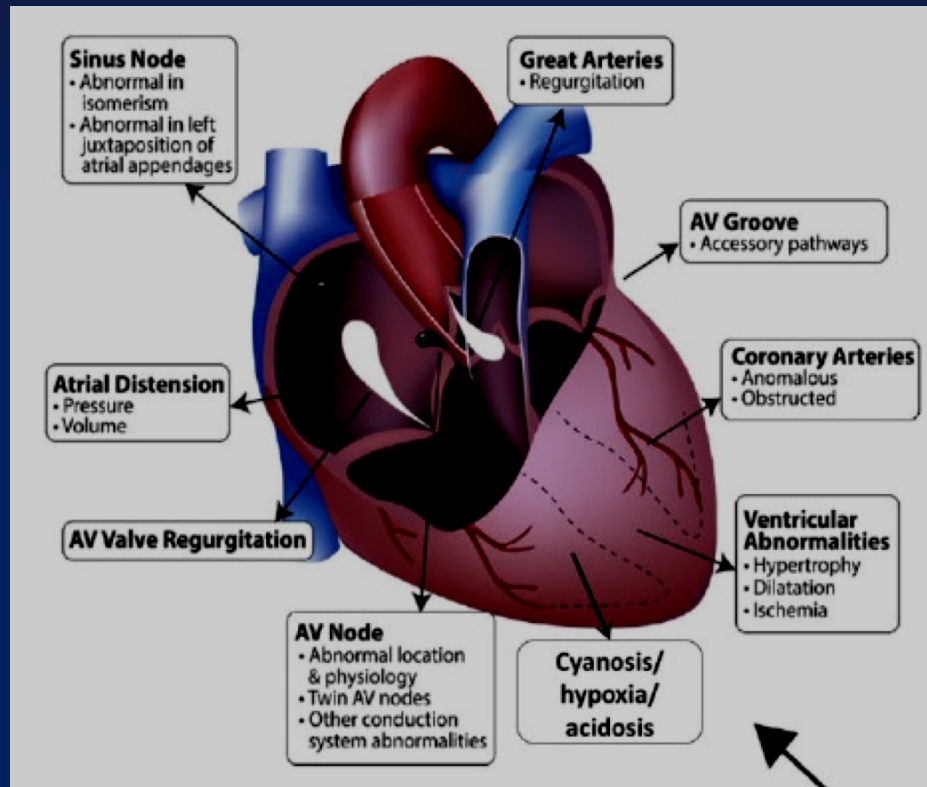
# URGENZE ARITMICHE NEL GUCH

Elisabetta Mariucci  
Cardiologia pediatrica - Bologna

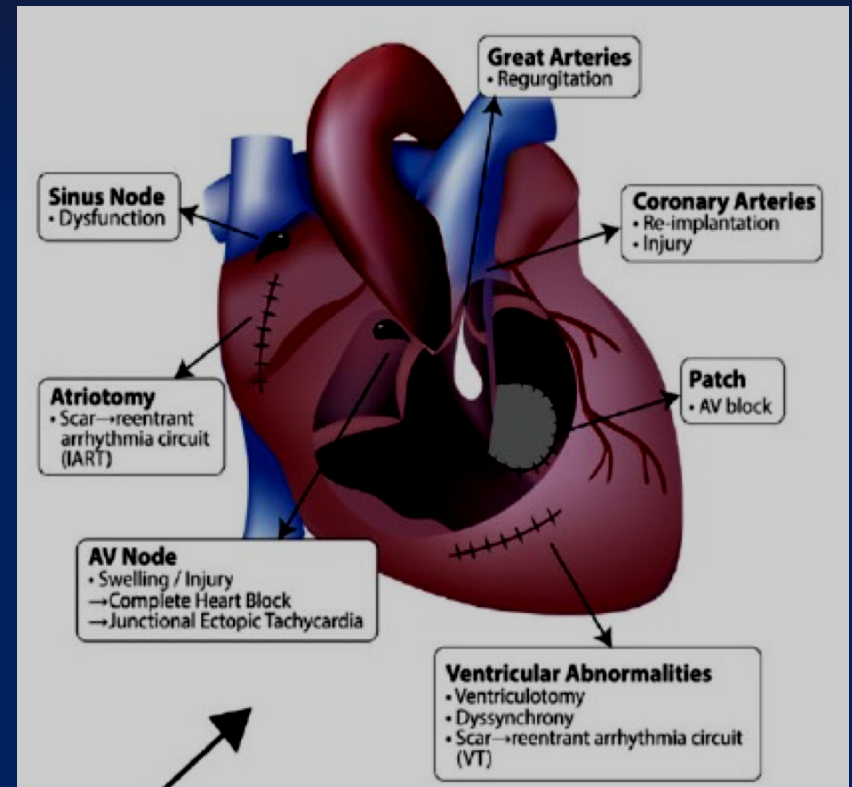
# CAUSE DI RICOVERO OSPEDALIERO



# ARITMIE NEI GUCH



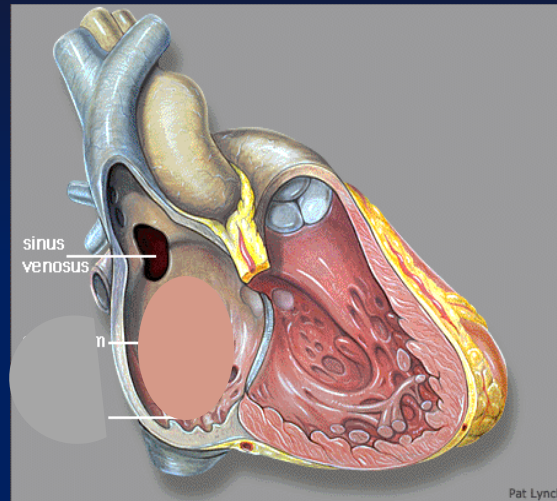
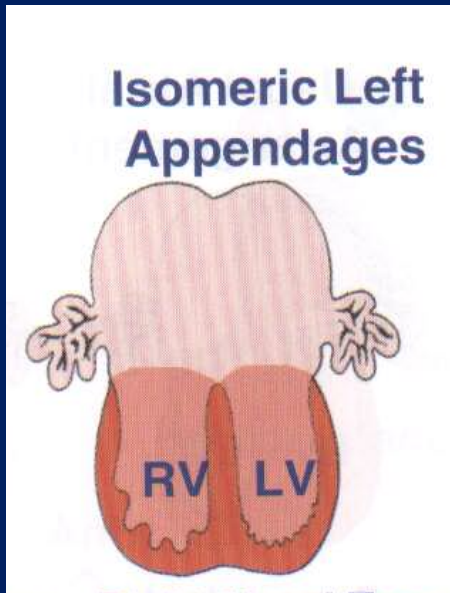
*Storia naturale*



*Post-operatorie*

# ARITMIE CONGENITE

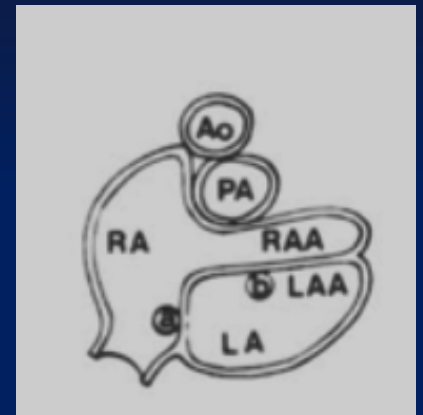
## *Isomerismo sn*



*Difetto  
interatriale  
tipo seno venoso*

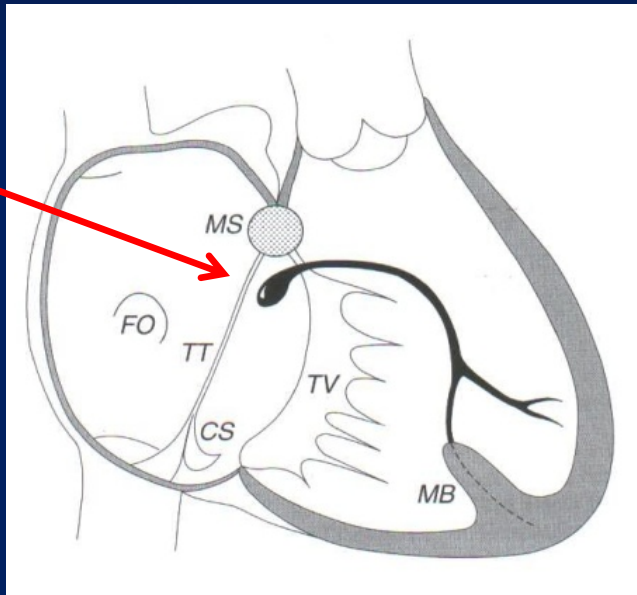
*Disfunzione sinusale*

## *Giustapposizione sn*



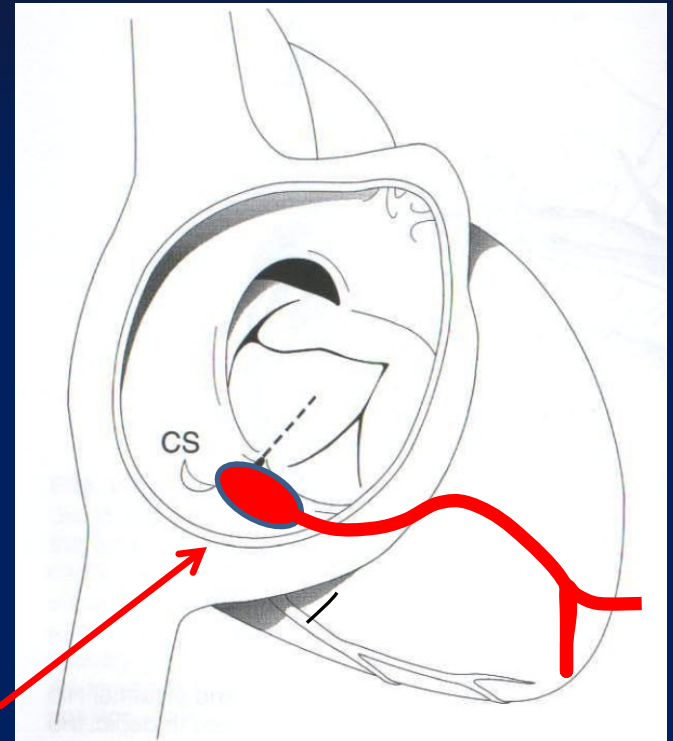
# ARITMIE CONGENITE

*Normale*



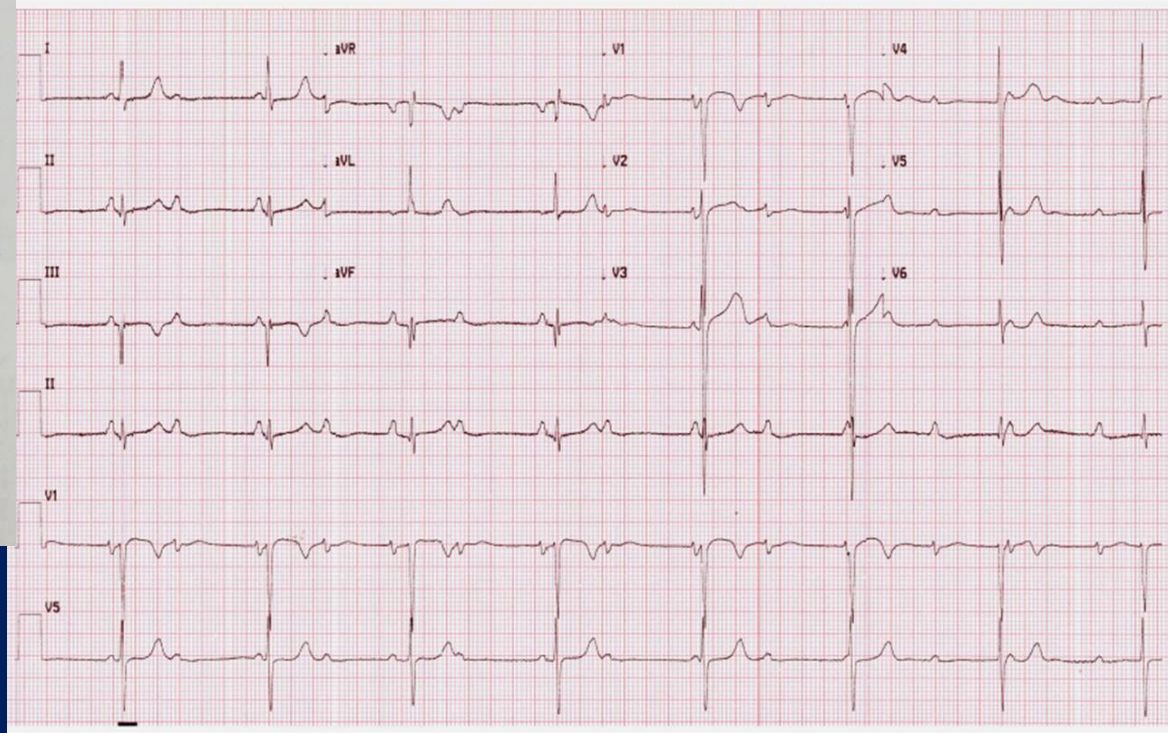
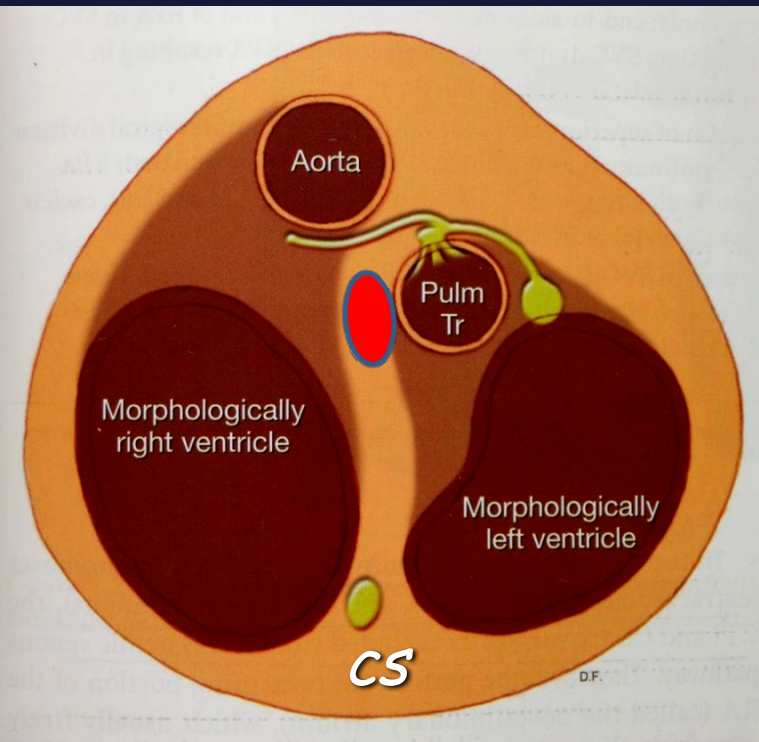
*Nodo AV*

*Canale AV*



*Blocco atrioventricolare*

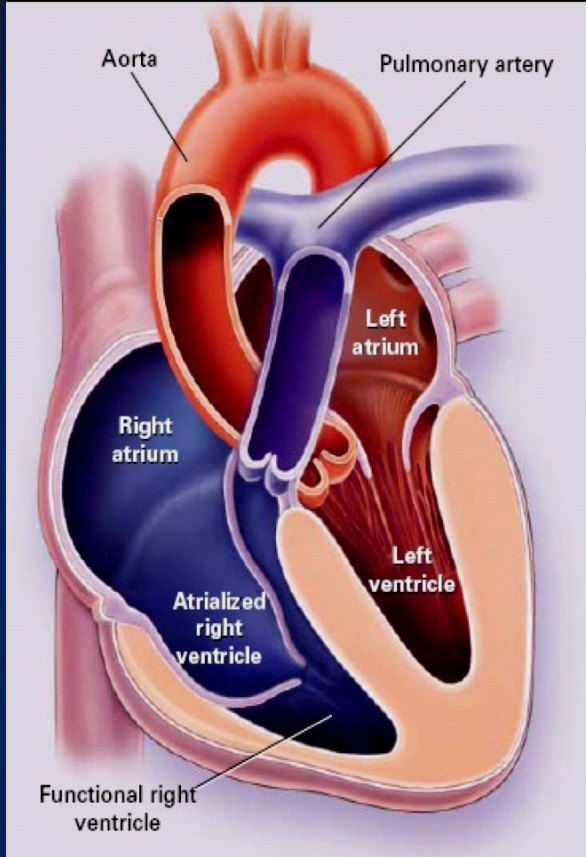
# ARITMIE CONGENITE



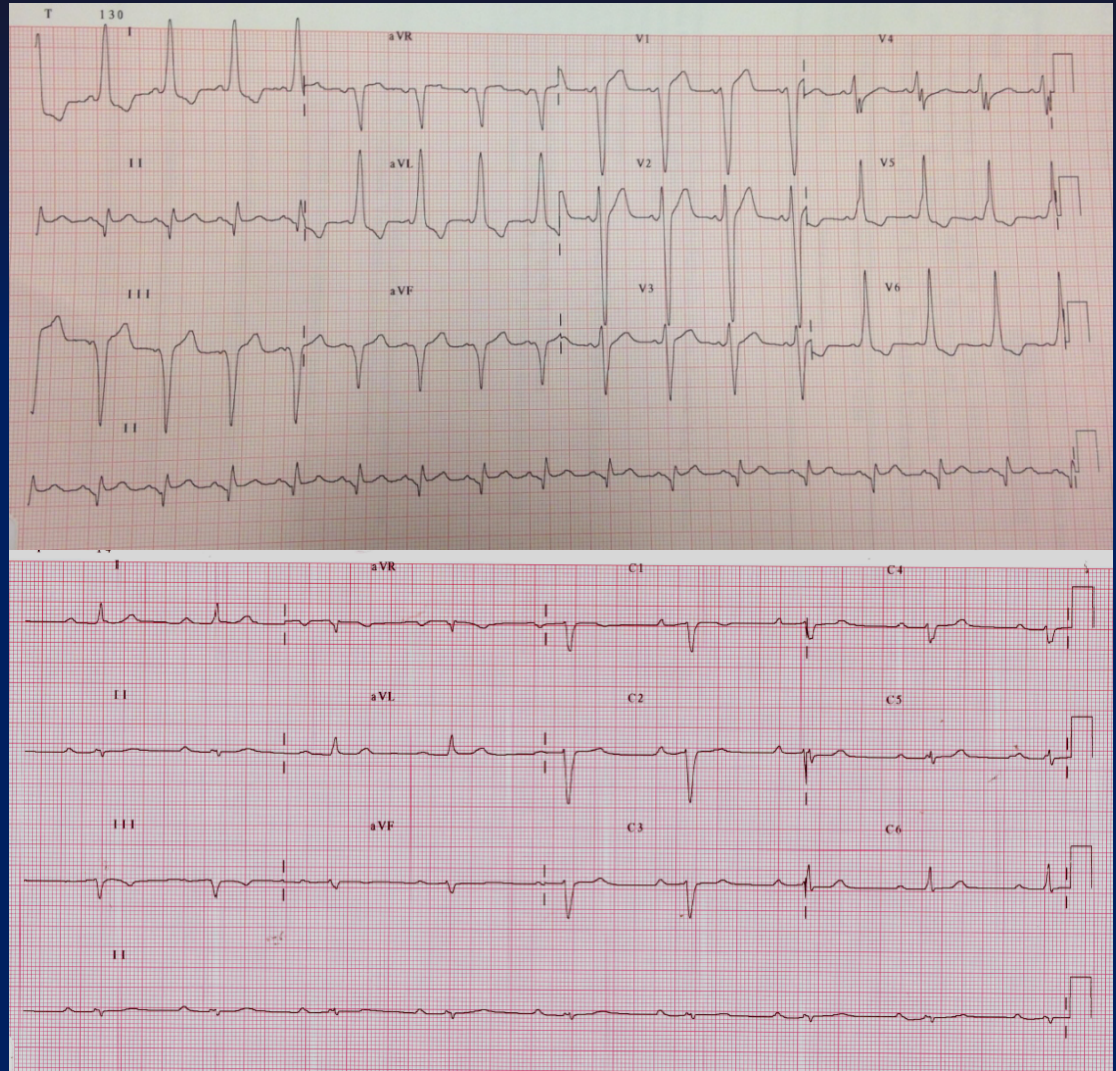
*L-TGV*

*Blocco atrioventricolare e vie accessorie*

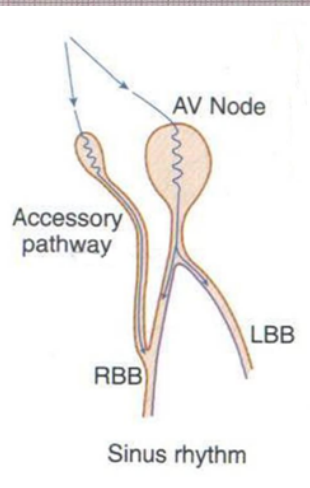
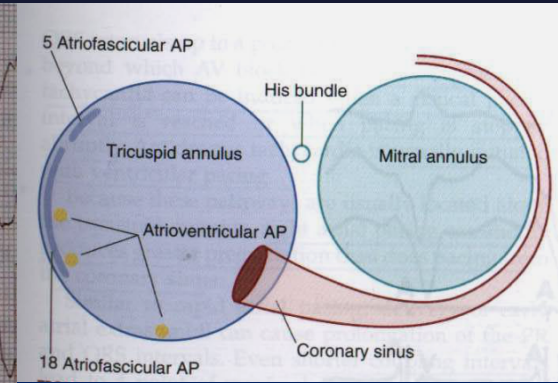
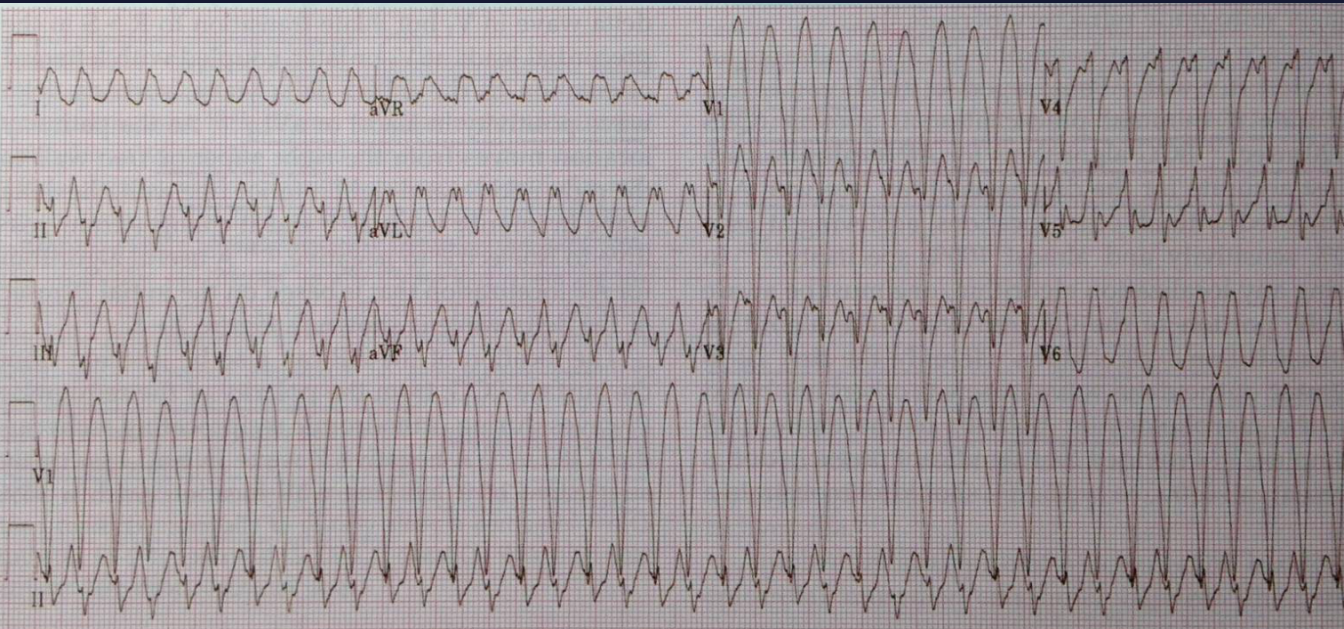
# ARITMIE CONGENITE



*Ebstein*



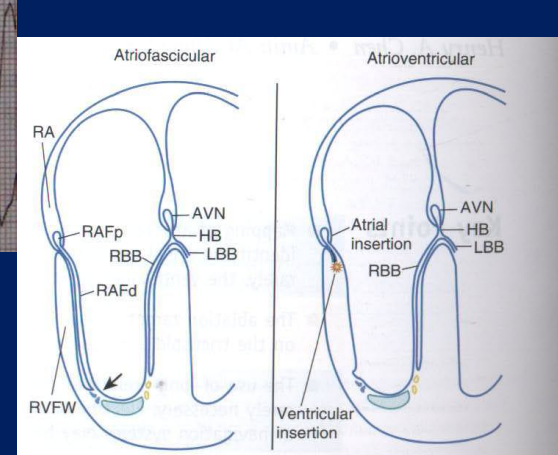
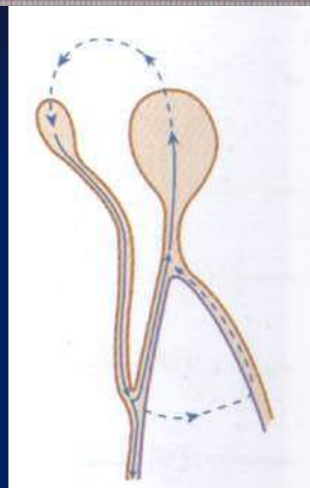
# ARITMIE CONGENITE



Exclusive anterograde conduction



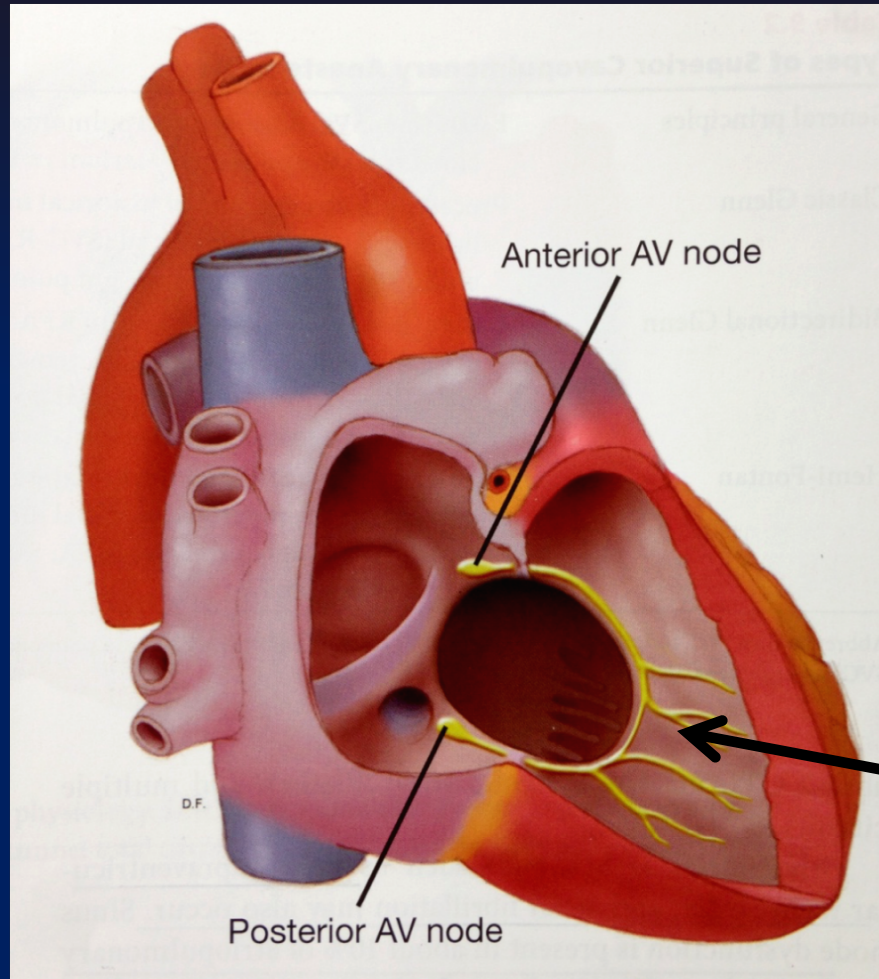
Exclusive antidromic tachycardia



*Ebstein - vie accessorie*



# ARITMIE CONGENITE

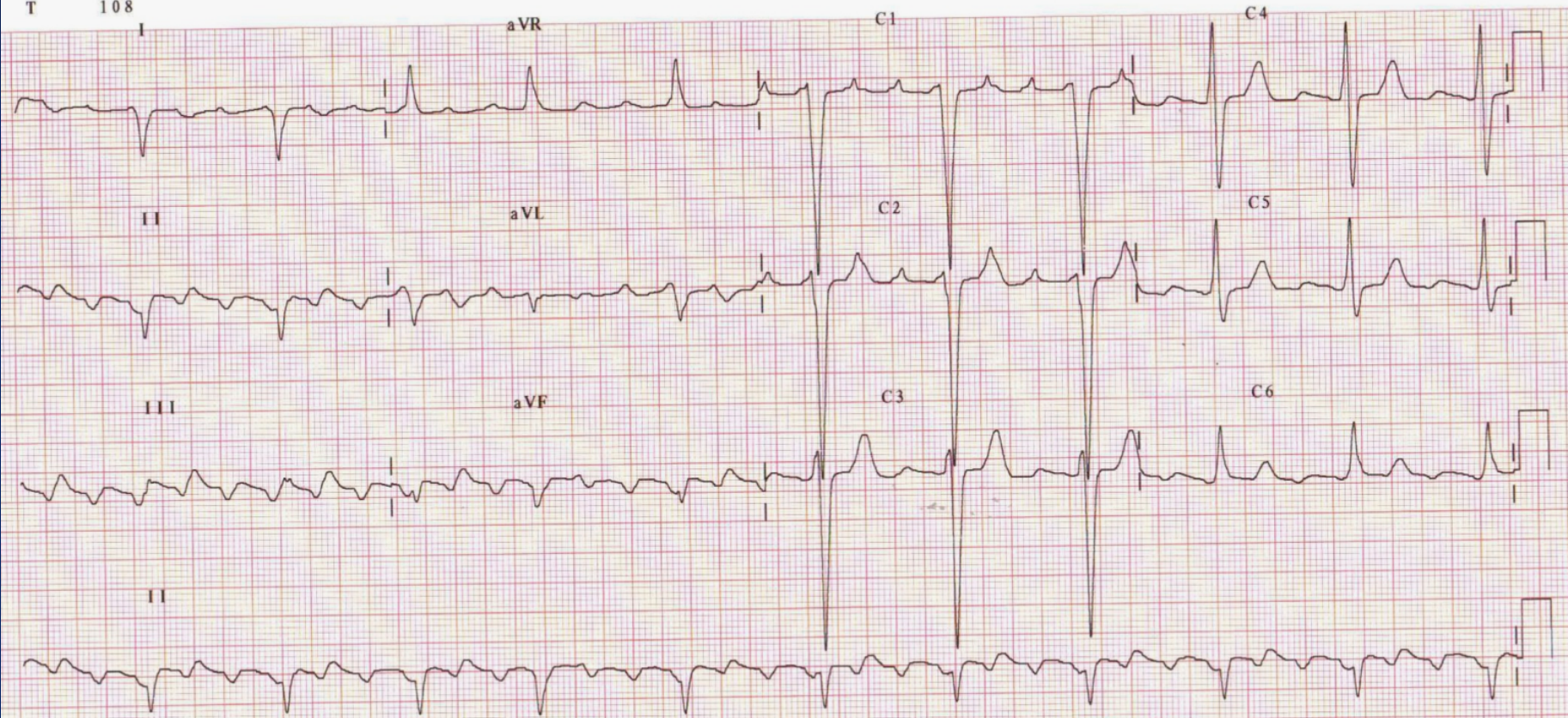


*Twin AV nodes*

*B.M.♂ 74 anni,  
destrocardia, cuore univentricolare con stenosi polmonare*

Freq. 66  
PR 357  
QRSD 134  
QT 456  
QTc 478

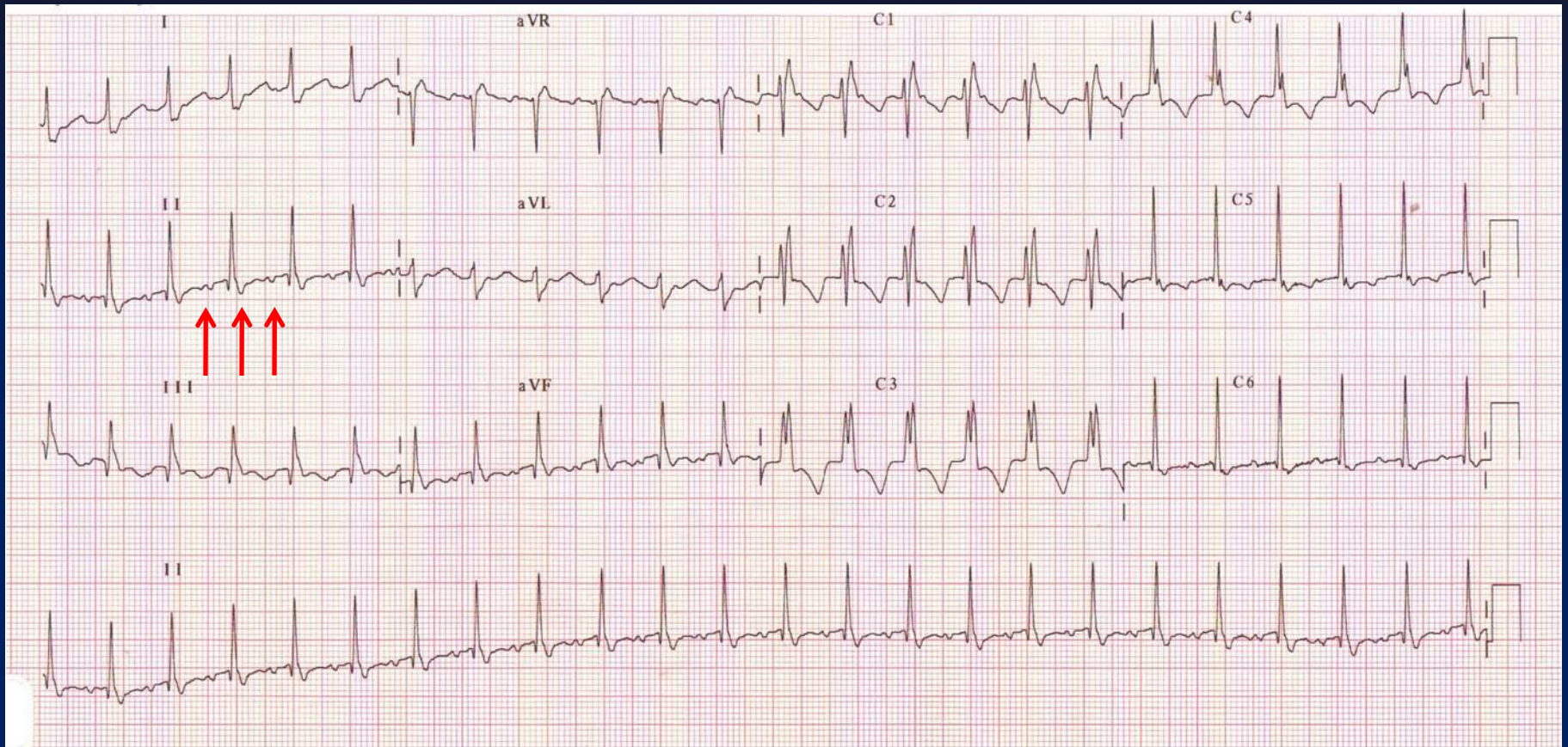
--Asse--  
P 93  
QRS 167  
T 108



# *ARITMIE POST-OPERATORIE*

- Intra-atrial reentrant tachycardia (IART)
- Fibrillazione atriale (AF)
- Tachicardia atriale focale (FAT)
- Disfunzione sinusale (SND)
- Blocco AV
- Tachicardia ventricolare (VT)
- Fibrillazione ventricolare (VF)

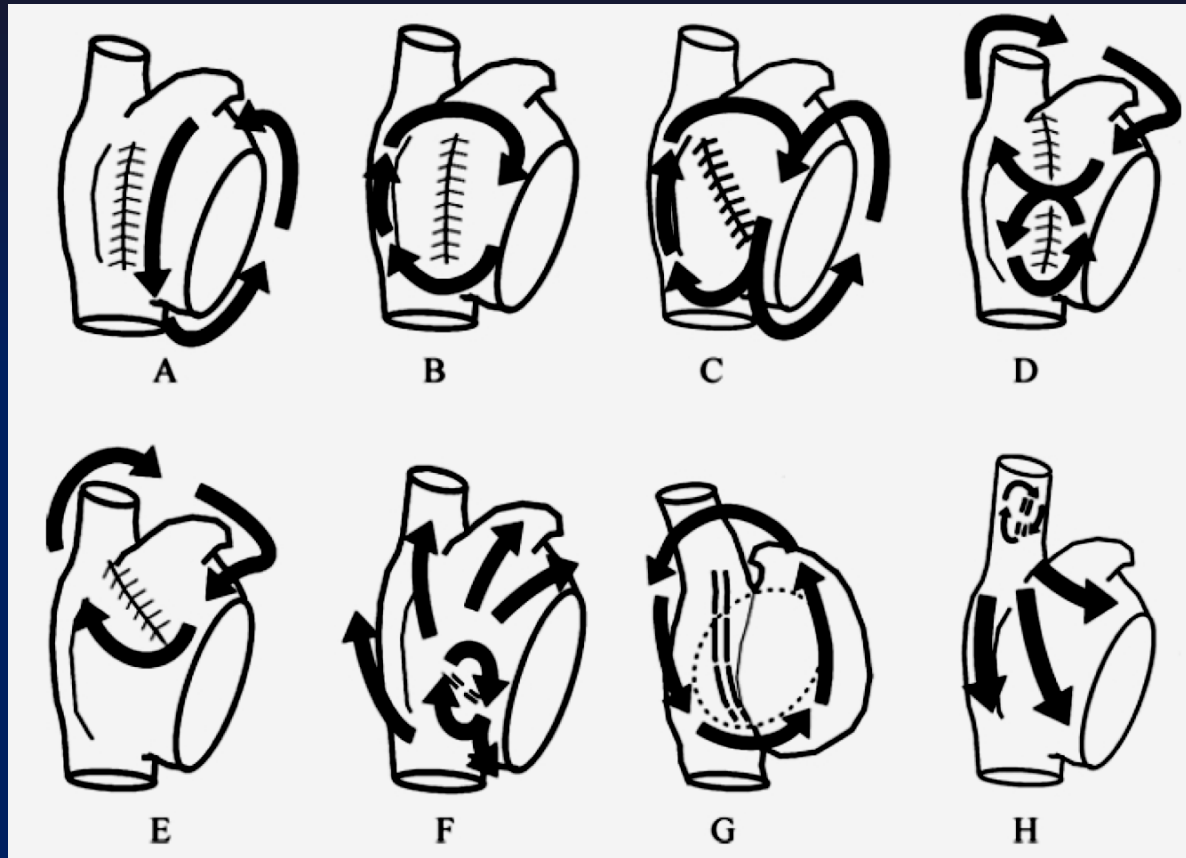
# ARITMIE POST-OPERATORIE



**IART**

**F.R. ♀ 18 anni, chiusura DIV**

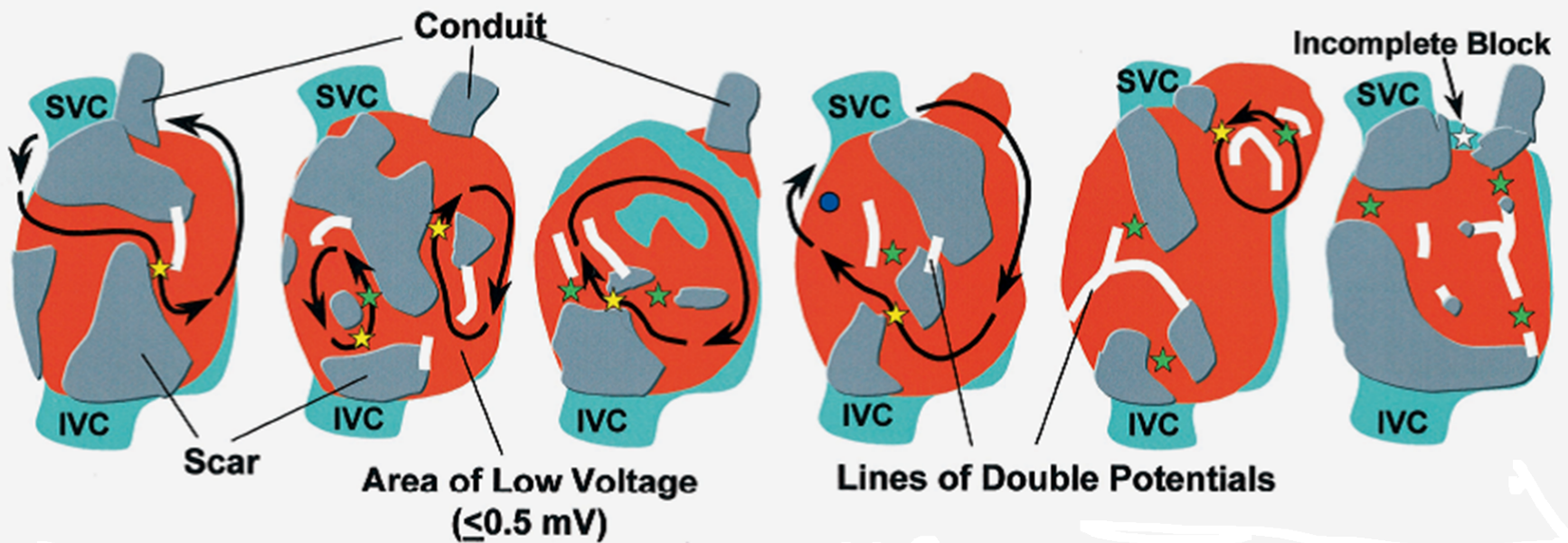
# ARITMIE POST-OPERATORIE



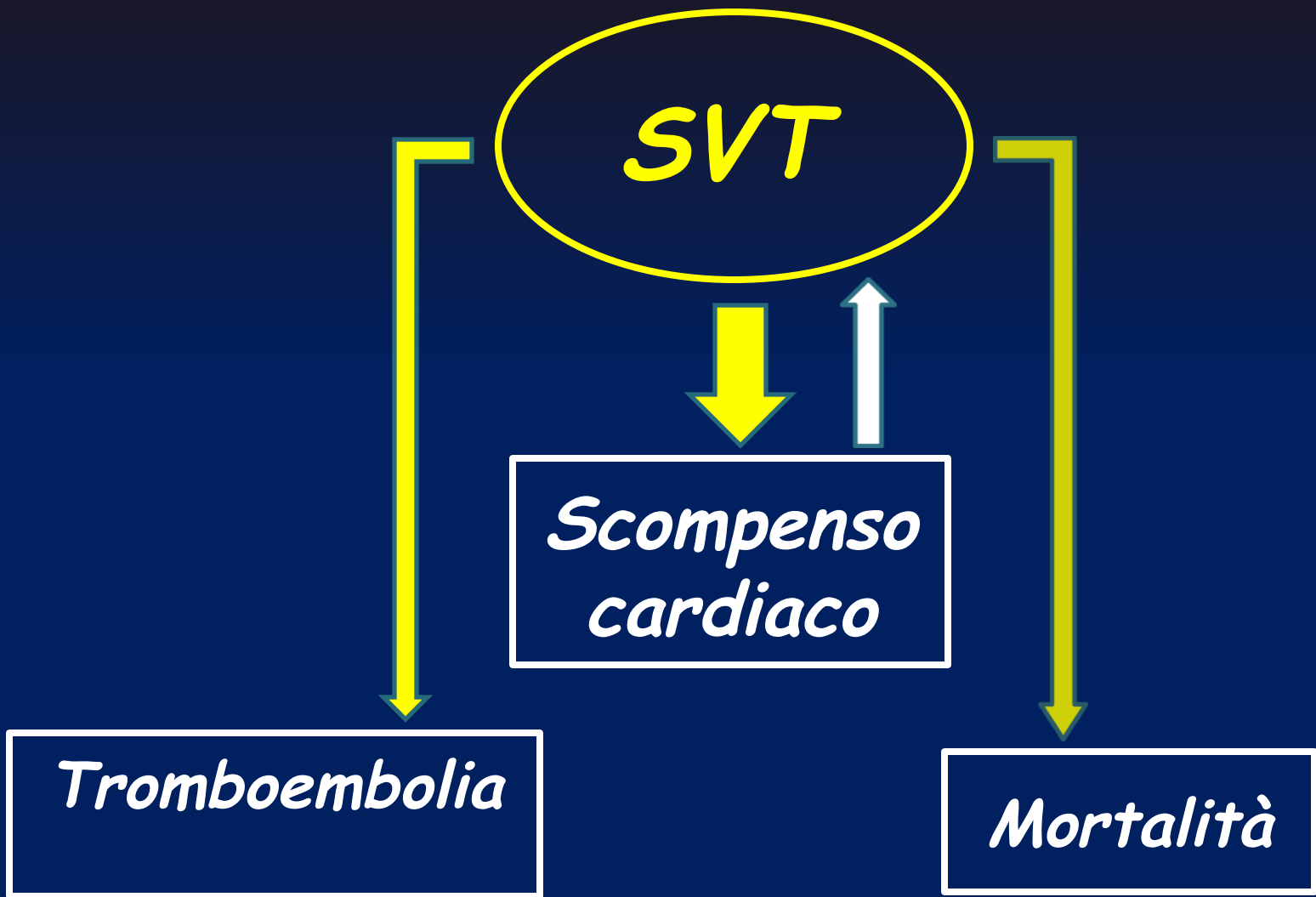
**IART**

Shah D, Jais P, Haissaguerre M. 2002

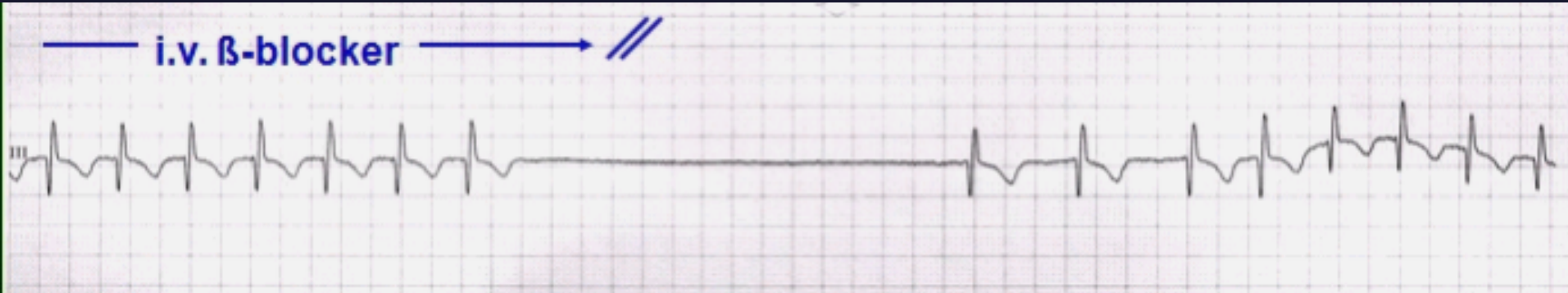
# Circuiti multipli



*Fontan*



# TERAPIA FARMACOLOGICA



- < efficacia
- Frequenti effetti avversi
  - Disfunzione ventricolo sistemico
  - Disfunzione NSA e NAV
  - Proaritmia
  - Disfunzione tiroidea



# ABLAZIONE TRANSCATETERE



- Potenzialmente "curativa"
- Bassi rischi procedurali
- Diagnosi esatta
- Accessi limitati
- Circuiti multipli
- < % successo
- > % recidiva

# TERAPIA ACUTA SVT

## ➤ Paziente instabile

- Cardioversione elettrica

## ➤ Paziente stabile

- AVRT orto -AVNRT
  - Manovre vagali - Adenosina
  - Beta-bloccanti o calcio-antagonisti
- AVRT anti
  - IC
  - Amiodarone (Sotalolo)

# TERAPIA ACUTA SVT

## ➤ Paziente stabile

- IART/AF
  - Se durata > 48 ore o CHD m o s -> TEE x trombi
  - Se elettrodo A -> Overdrive pacing
  - FARMACI:
    - Amiodarone ev.
    - IC x CHD semplici
    - Ibutilide x ev (1-2 mg in 10 minuti)
    - Sotalolo x os (2 mg/Kg)

# Rhythm control in adults with CHD and IART or atrial fibrillation

- Identify and treat precipitating factors
- Consider catheter ablation

Simple CHD

Moderate CHD

Complex CHD

- Systemic ventricular hypertrophy or
- Systemic or subpulmonary ventricular dysfunction?

No

Yes

- Flecainide\*
- Propafenone\*
- Sotalol<sup>†</sup>

- Amiodarone<sup>‡</sup>
- Dofetilide<sup>¶</sup>

- Systemic or subpulmonary ventricular dysfunction?

No

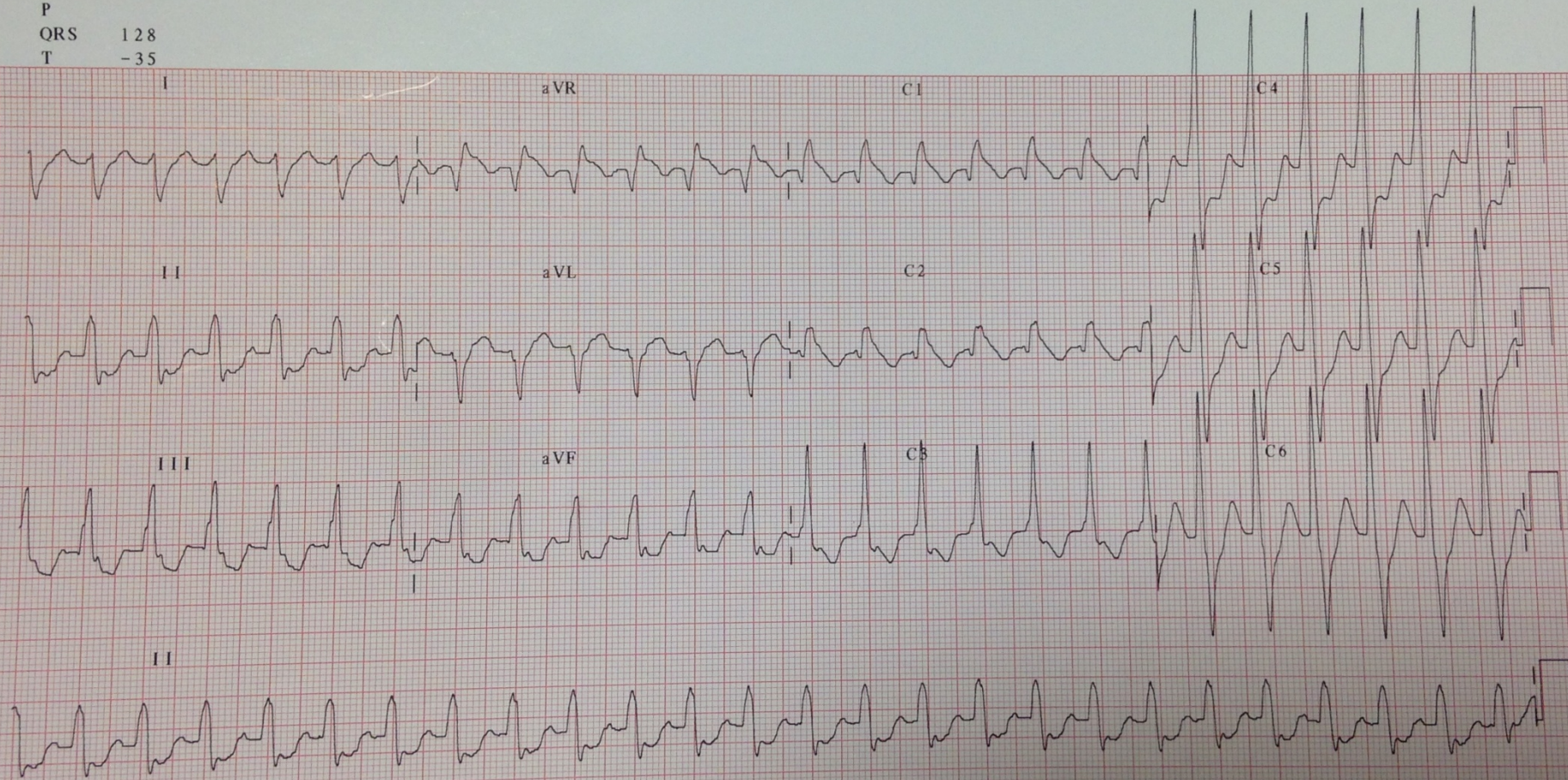
Yes

- Amiodarone<sup>‡</sup>
- Dofetilide<sup>¶</sup>
- Sotalol<sup>†</sup>

- Amiodarone<sup>‡</sup>
- Dofetilide<sup>¶</sup>

# Caso 1 URGENZA TACHI: SVT

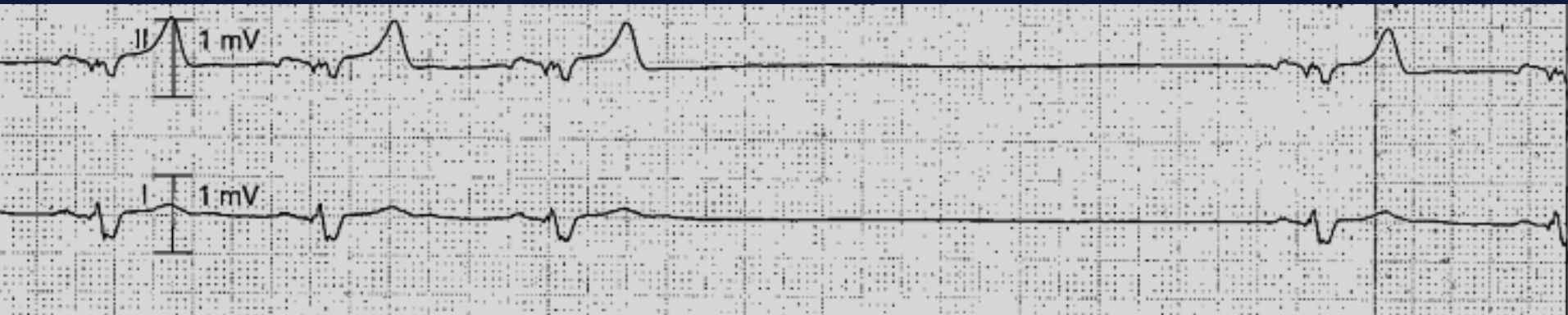
--Asse--  
P  
QRS 128  
T -35



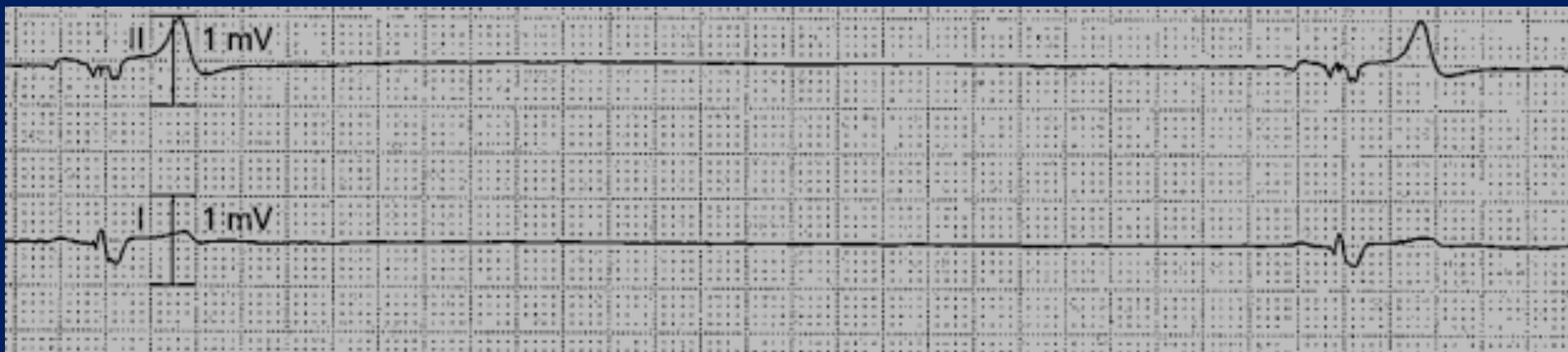
*50 anni, recente intervento correttivo di DIA e piccolo DIV*

# Caso 1 URGENZA TACHI: SVT

*Ore 10:45 asistolia di 3,8 sec.*



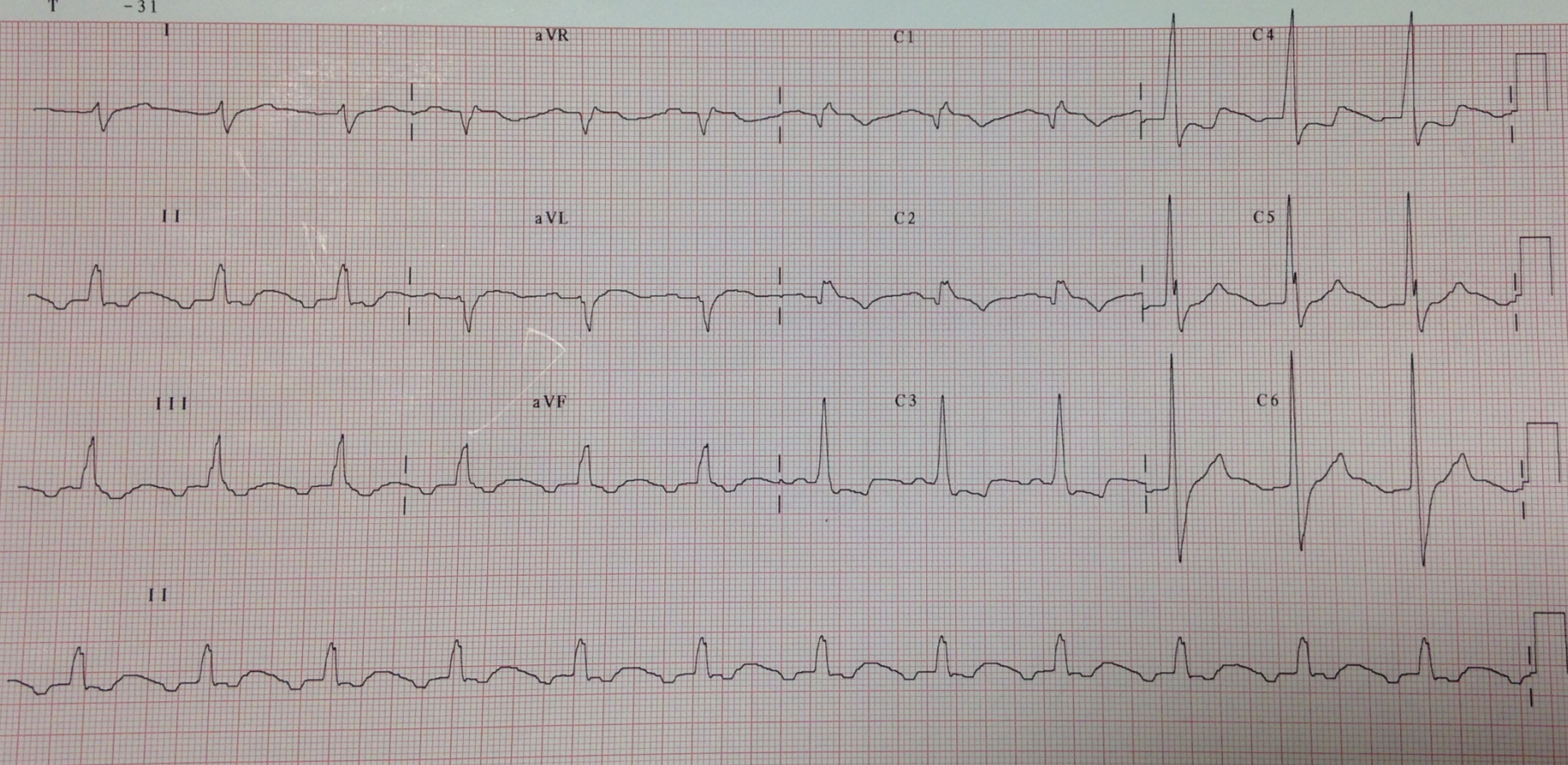
*Ore 11:32: asistolia di 5,6 sec.*



*Dopo cardioversione elettrica*

# Caso 1 URGENZA TACHI: SVT

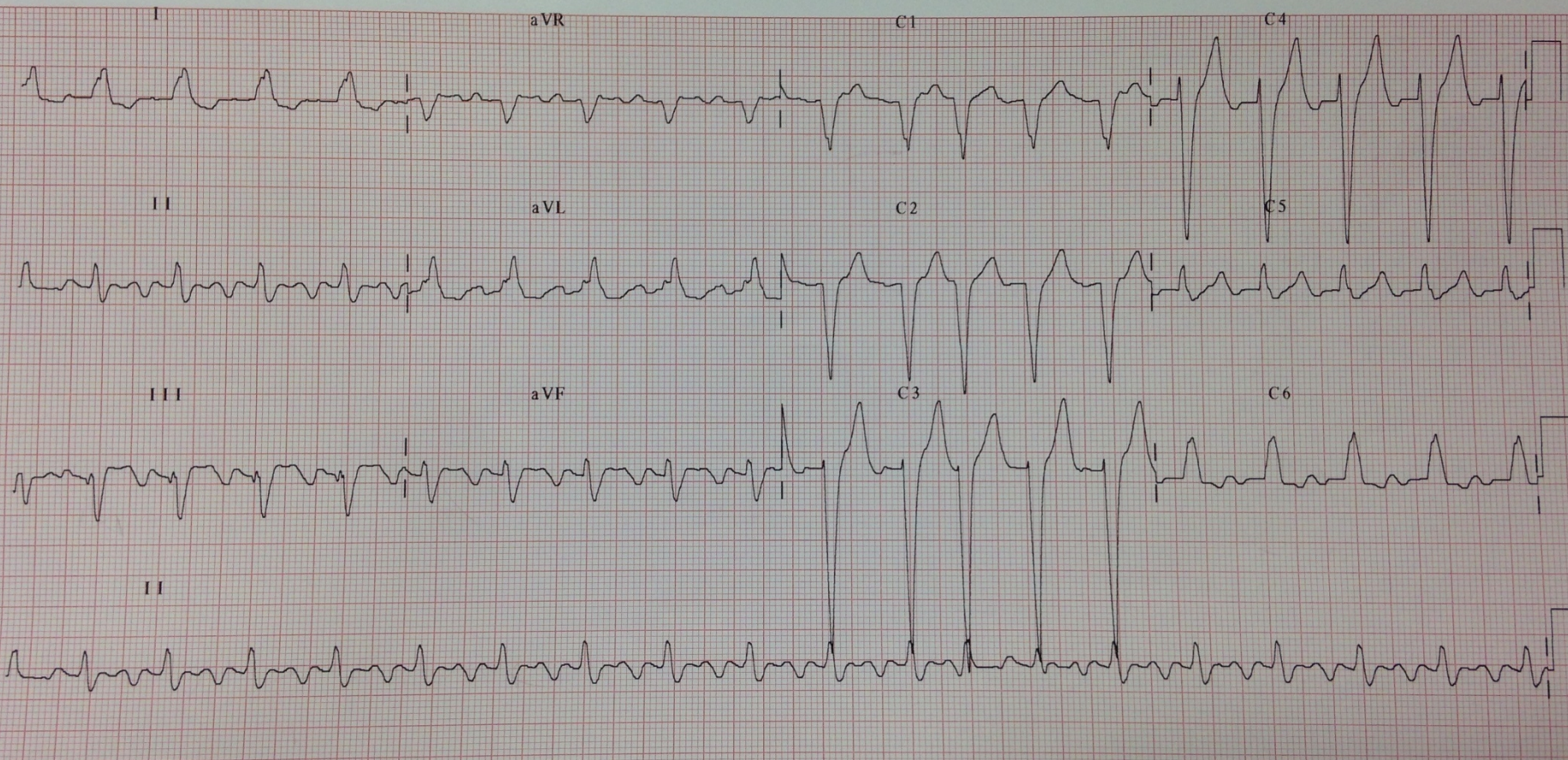
QRS 108  
T -31



*Dopo 48 ore dalla cardioversione*

# Caso 2 URGENZA TACHI: SVT

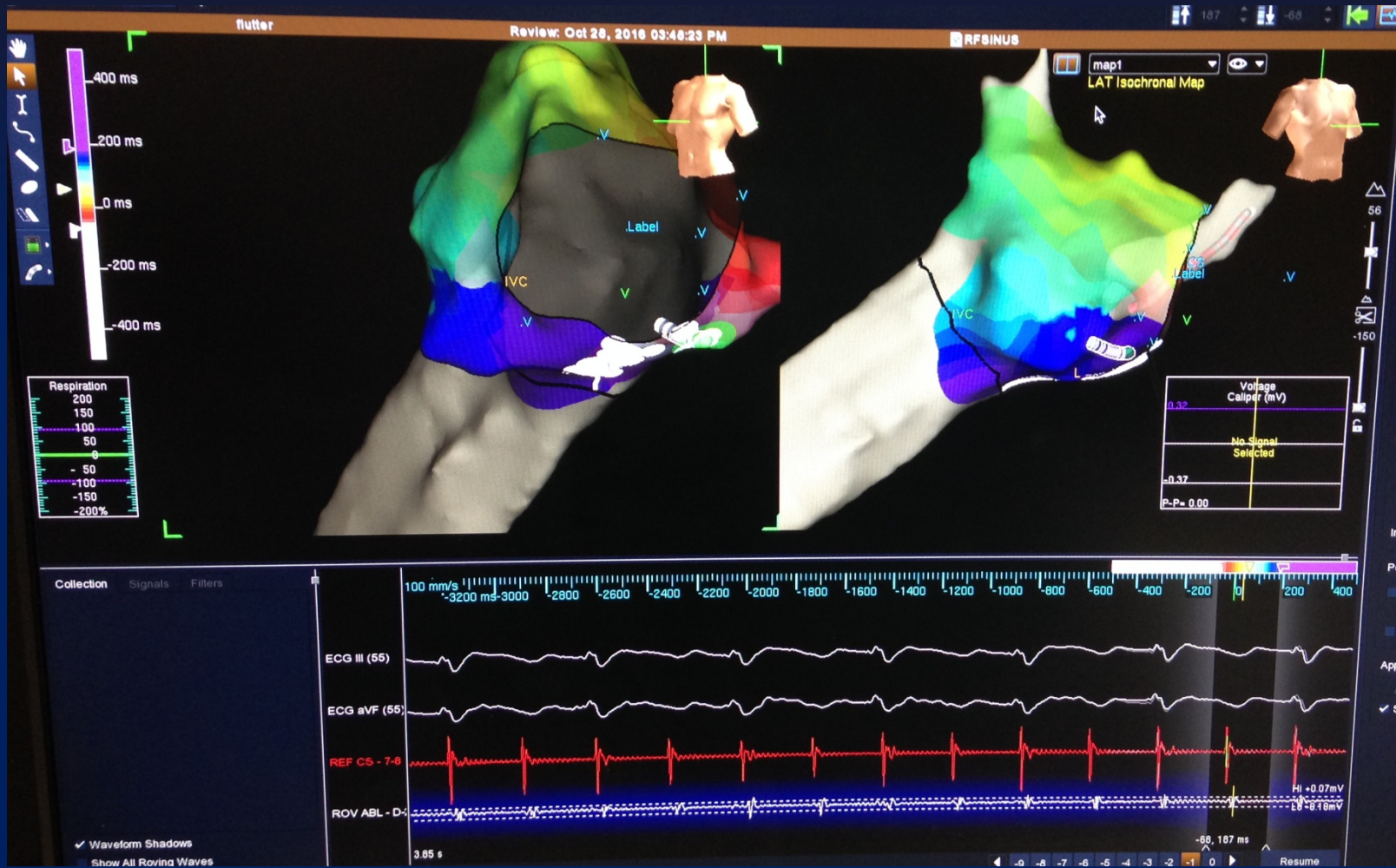
P 88  
QRS -22  
T 106



*69 anni, progresso intervento correttivo di DIA seno venoso*



# Caso 2 URGENZA TACHI: SVT



69 anni, ablazione

# TERAPIA ACUTA VT

## ➤ Paziente instabile

- DC shock o Defibrillazione

## ➤ Paziente stabile

- Amiodarone
- Lidocaina

# *TERAPIA CRONICA VT*

- Sotalolo
- Amiodarone
- Amiodarone + beta-bloccante

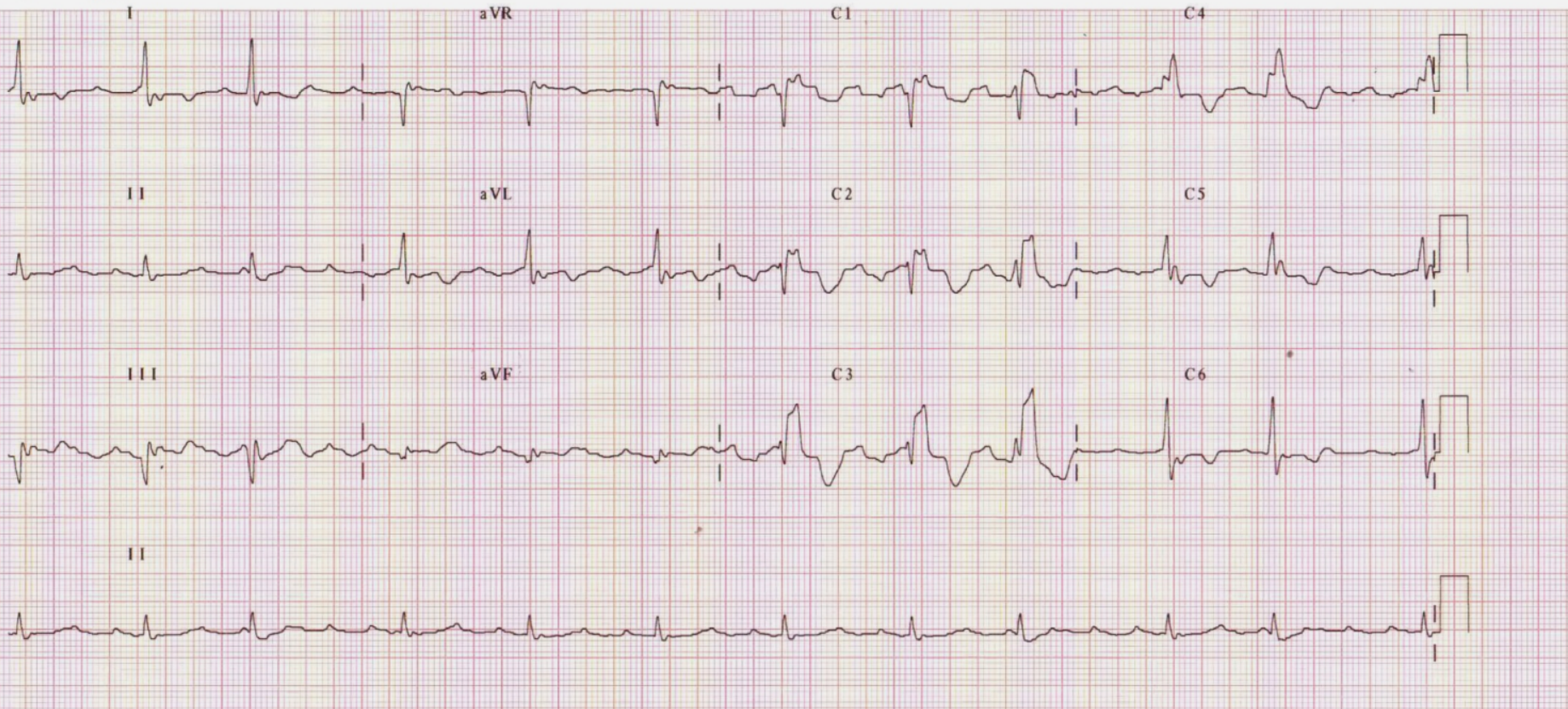
# **Caso 3 URGENZA TACHI: VT**



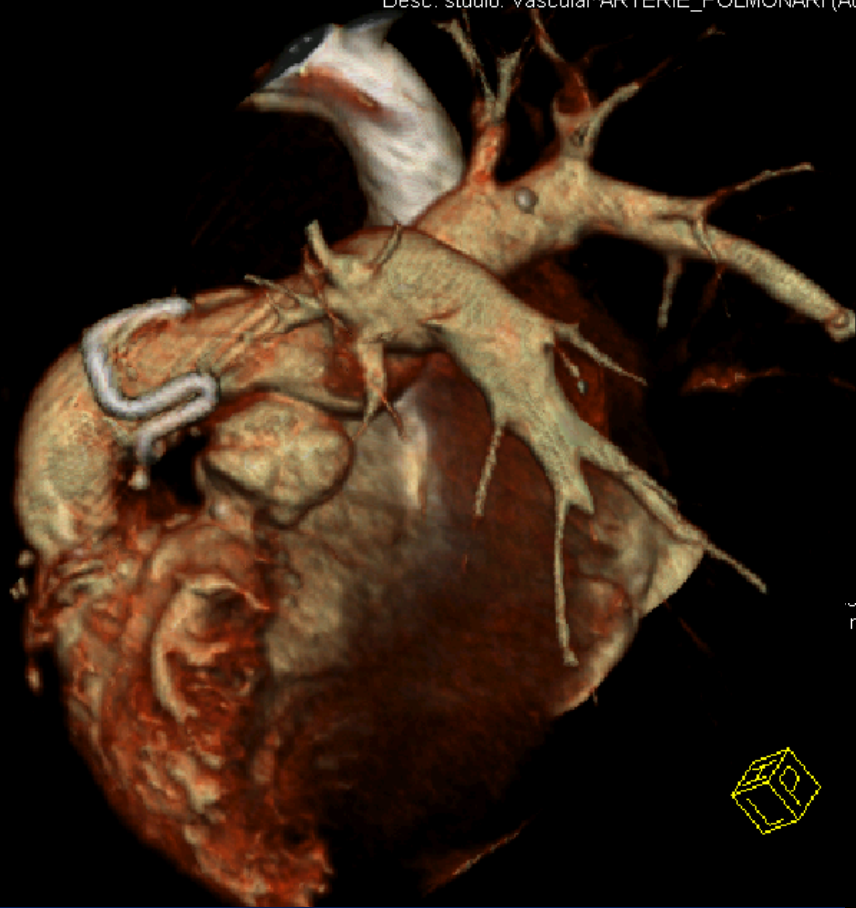
***BF, 50 aa, TdF, S/P Hancock***

# Caso 3 URGENZA TACHI: VT

--Asse--  
P Ind.  
QRS -39  
T 108



*BF, 50 aa, TdF, S/P Hancock*



rich.5857640



P

A

*BF, 50 aa, TdF,  
S/P Hancock*



# Caso 4 URGENZA TACHI: VT

TR Tetralogia di Fallot, 68 anni

- 1992: TV sostenuta sincopale -> lidocaina, diagnosi di TdF, dimesso in terapia con flecainide
- TV sostenute flecainide, amiodarone, mexiletina... 2004 ICD
- 2004 x frequenti shock ICD (in amio) ablazione di TV monomorfa
- 2005: TIA -> ticlopidina
- 2006: ablazione di TV monomorfa -> flecainide
- 2006: scompenso cardiaco e severa disfunzione vdx -> consigliata valutazione cardiocirurgica...
- **2007: intervento correttivo !!!** Amio x 6 mesi

# Impianto ICD

Secondary prevention		
I	B	ICD therapy is indicated in adults with CHD who are survivors of cardiac arrest due to ventricular fibrillation or haemodynamically unstable VT after evaluation to define the cause of the event and exclude any completely reversible aetiology
I	B	ICD therapy is indicated in adults with CHD and spontaneous sustained VT who have undergone haemodynamic and electrophysiologic evaluation.
	C	Catheter ablation or surgery may offer a reasonable alternative or adjunct to ICD therapy in carefully selected patients

Primary prevention		
I	B	ICD therapy is indicated in adults with CHD and a systemic left ventricular ejection fraction $\leq 35\%$ , biventricular physiology, and NYHA Class II or III symptoms
Ila	B	ICD therapy is reasonable in selected adults with tetralogy of Fallot and multiple risk factors for sudden cardiac death such as left ventricular systolic or diastolic dysfunction, non-sustained VT, QRS duration $\geq 180$ ms, extensive right ventricular scarring, or inducible sustained VT at electrophysiologic study



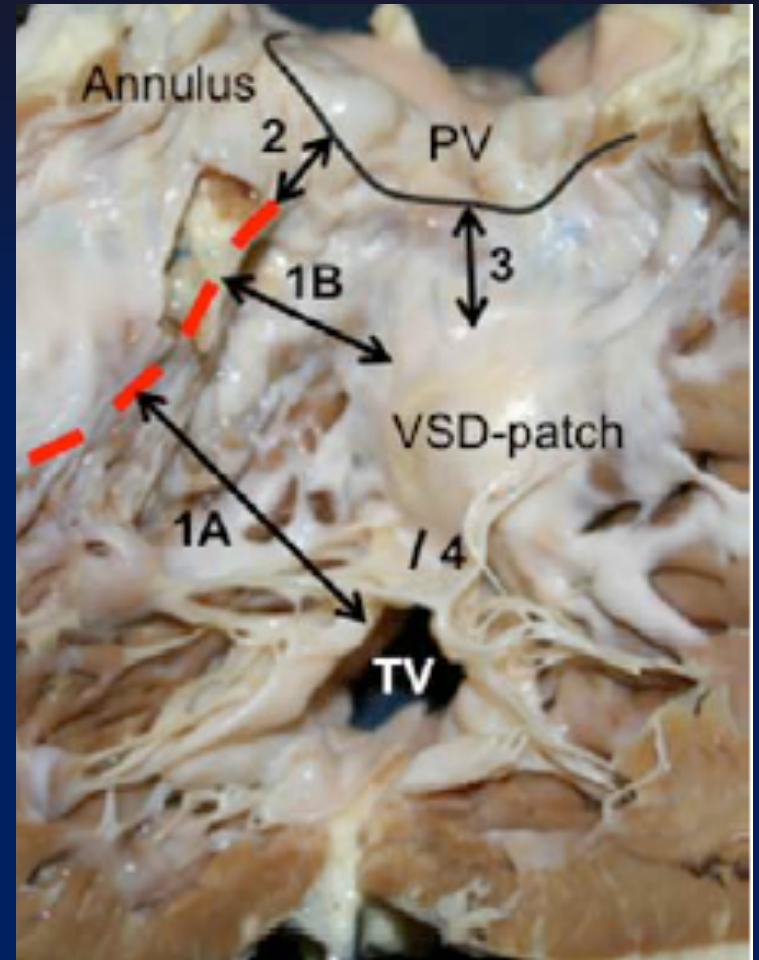
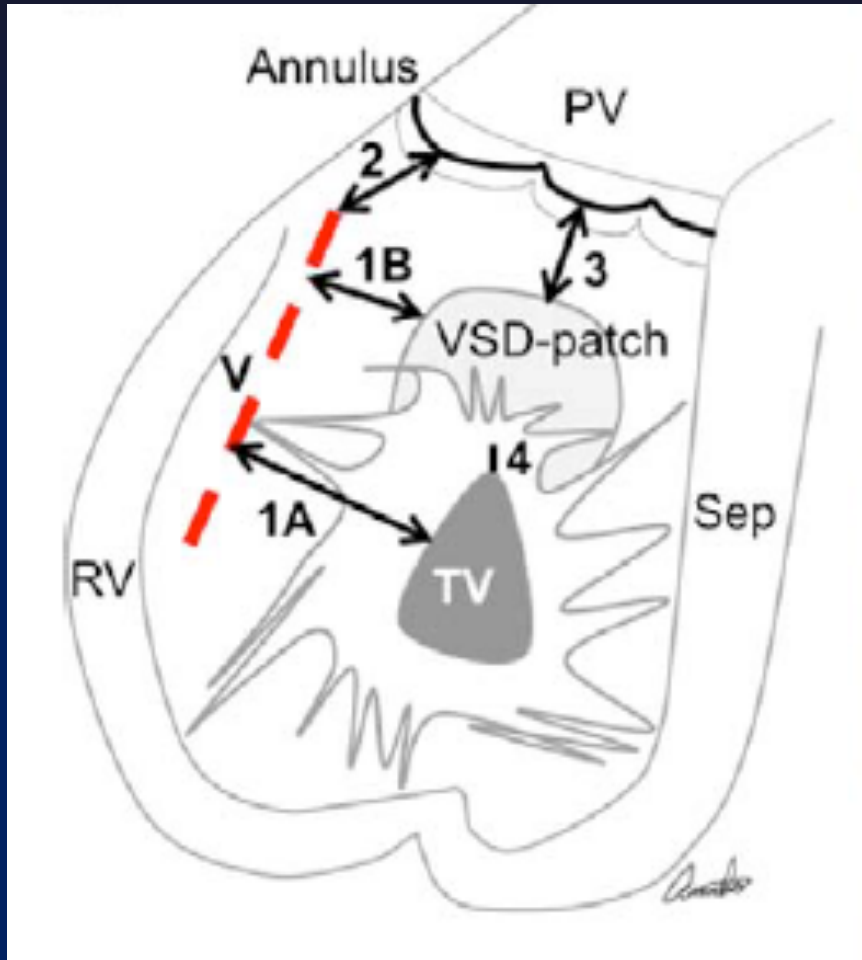
# Timing PVR e VT nei Fallot

## Preoperative thresholds for mid-to-late haemodynamic and clinical outcomes after pulmonary valve replacement in tetralogy of Fallot

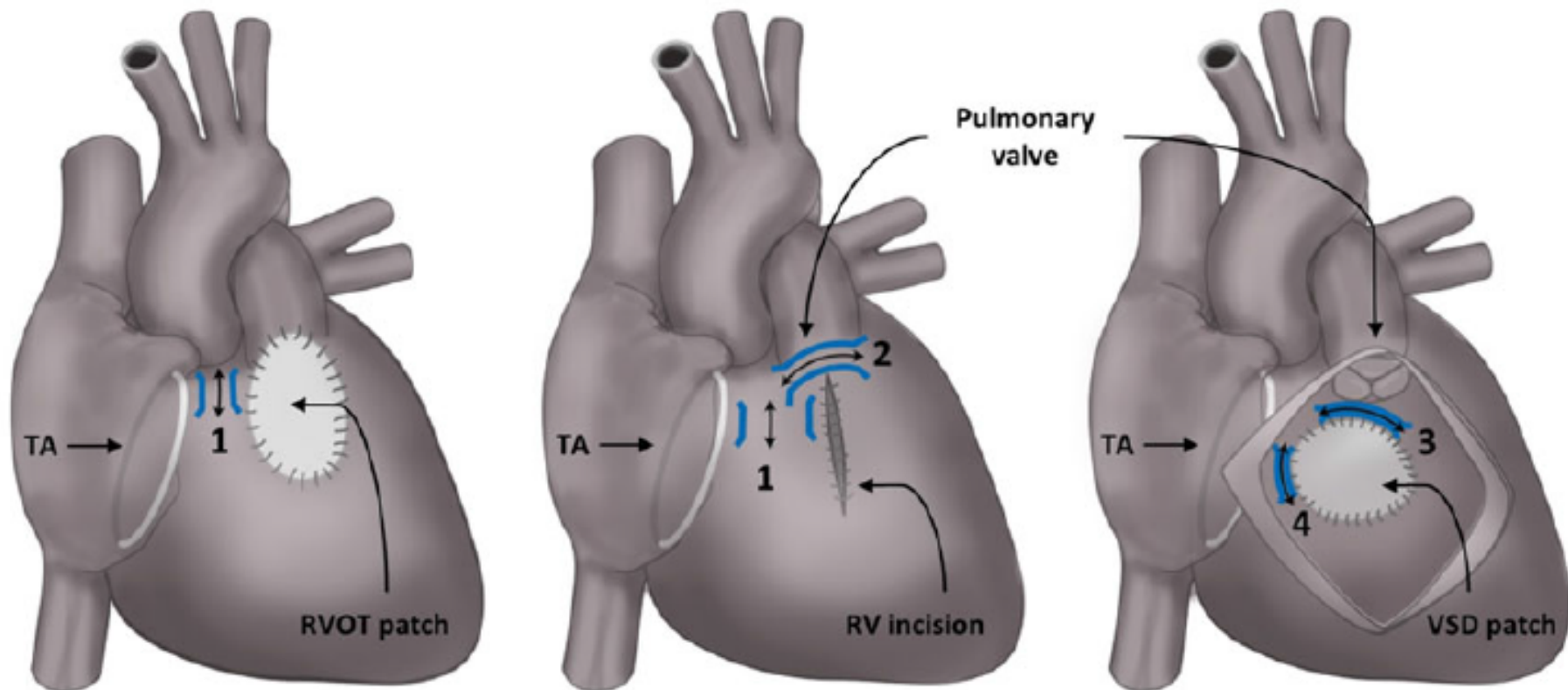
Jouke P. Bokma<sup>1,2\*</sup>, Michiel M. Winter<sup>1</sup>, Thomas Oosterhof<sup>1</sup>, Hubert W. Vliegen<sup>3</sup>, Arie P. van Dijk<sup>4</sup>, Mark G. Hazekamp<sup>5,6</sup>, Dave R. Koolbergen<sup>5,6</sup>, Maarten Groenink<sup>1</sup>, Barbara J. Mulder<sup>1,2</sup>, and Berto J. Bouma<sup>1,2</sup>

Timing ottimale PVR x rev. remodeling RV è  $ESV < 80 \text{ mL/m}^2$   
RV  $ESV > 95 \text{ mL/m}^2$  -> no rev. remodeling ed eventi avversi

# Substrato anatomico VT

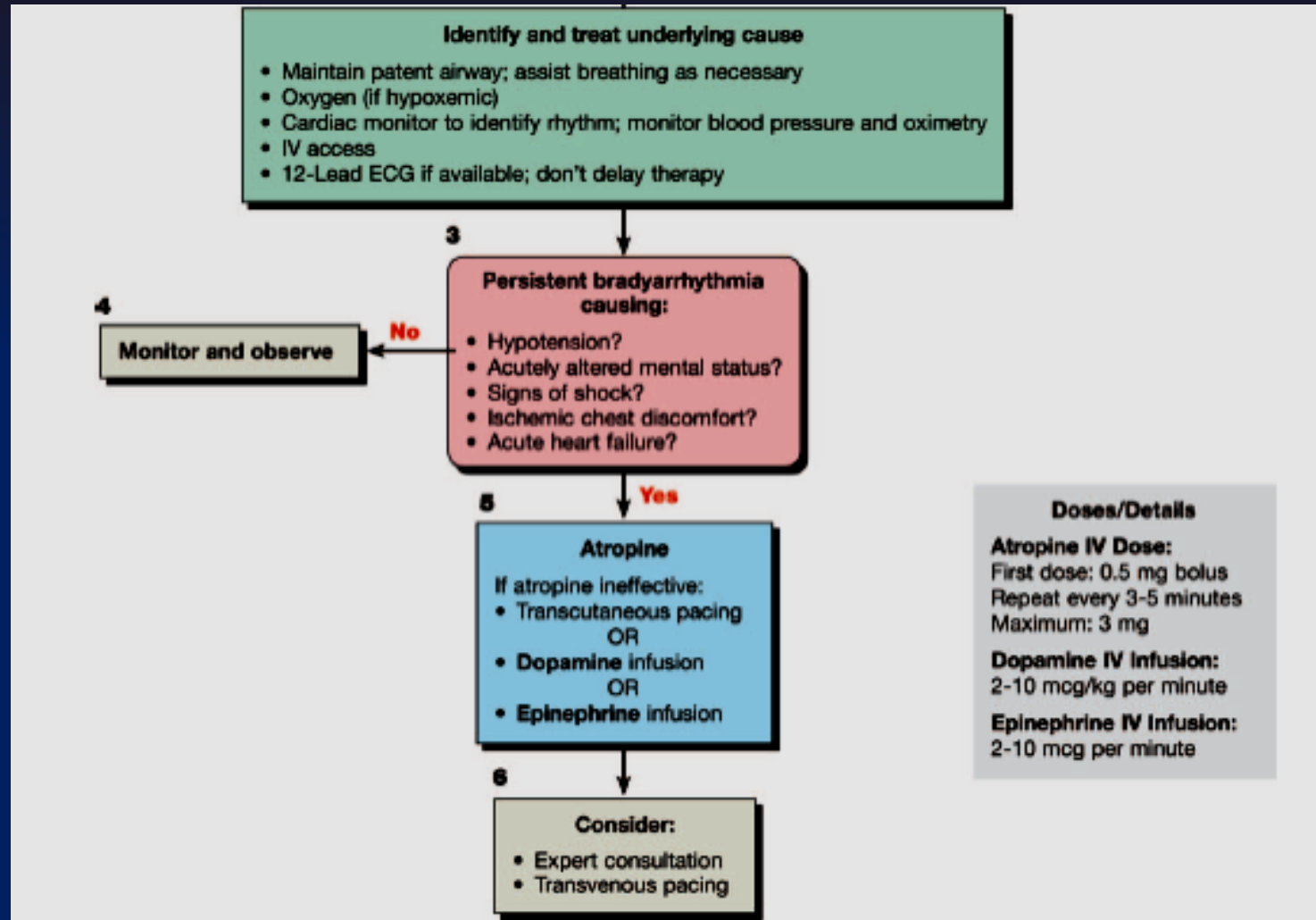


# Ablazione di VT

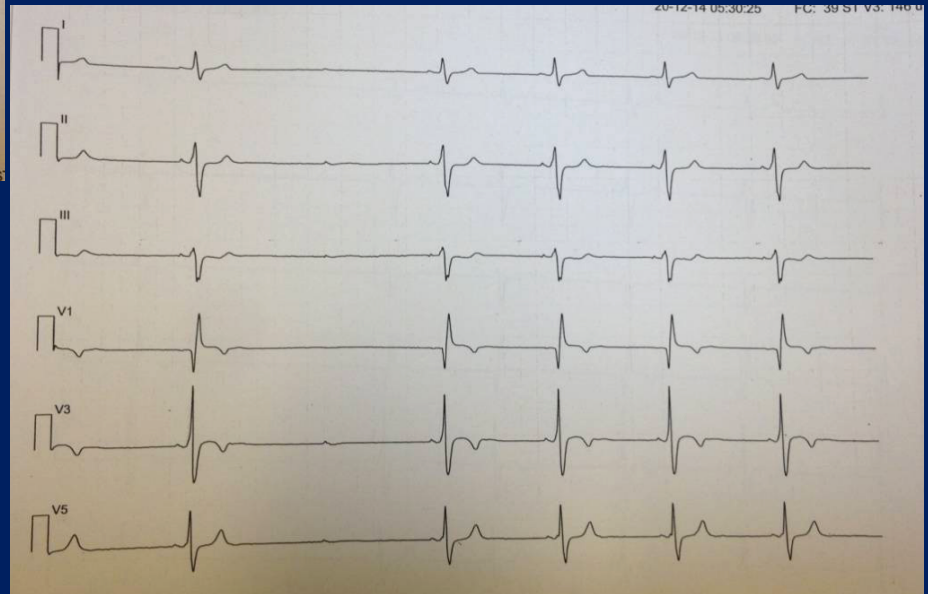
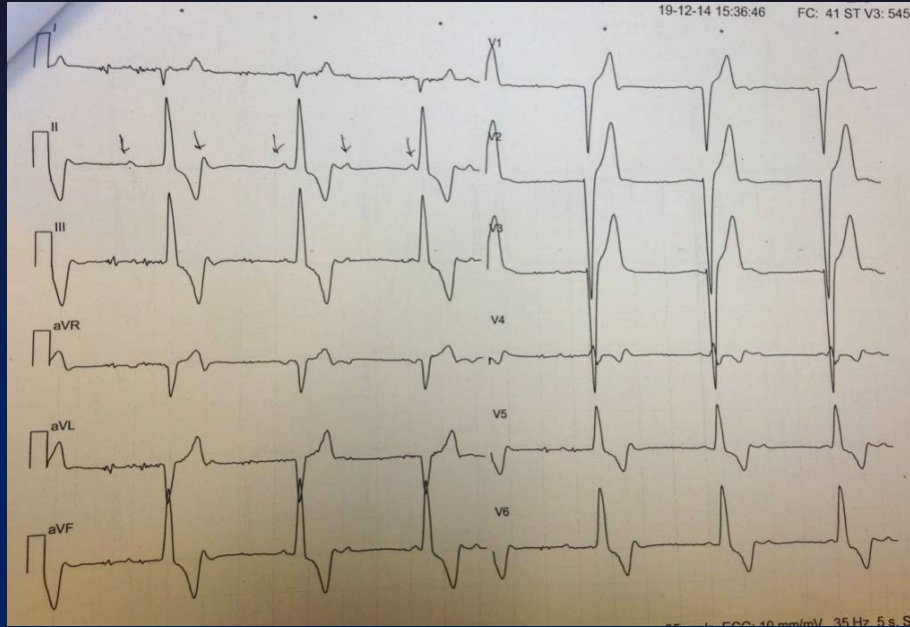


In rTOF, slow conducting AI are the dominant substrate for VT and can be identified by EAM via a single venous access allowing individualized risk stratification and tailored treatment.

# GESTIONE ACUTA URGENZA BRADI

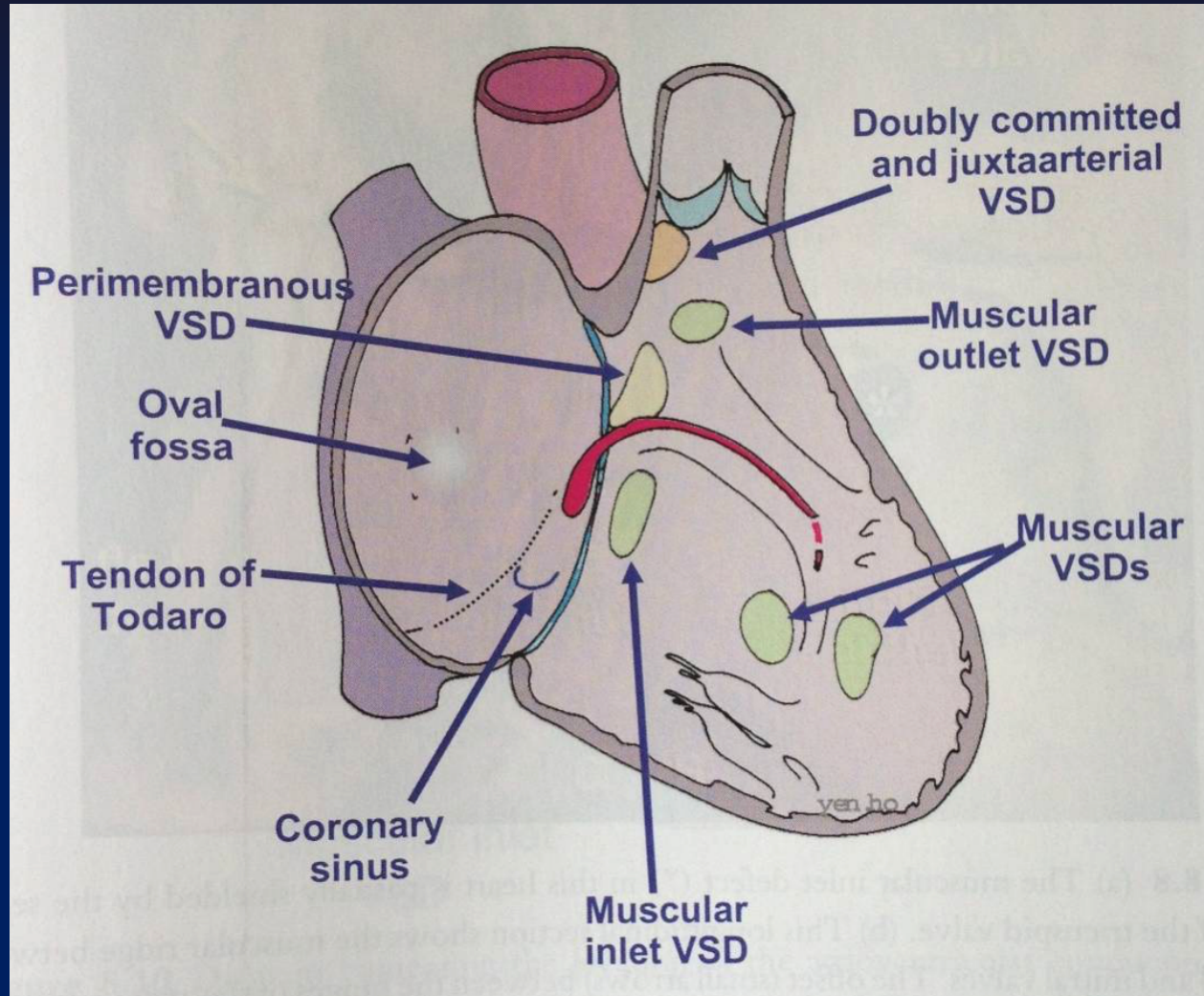


# Caso 5 URGENZA BRADI: BLOCCO AV

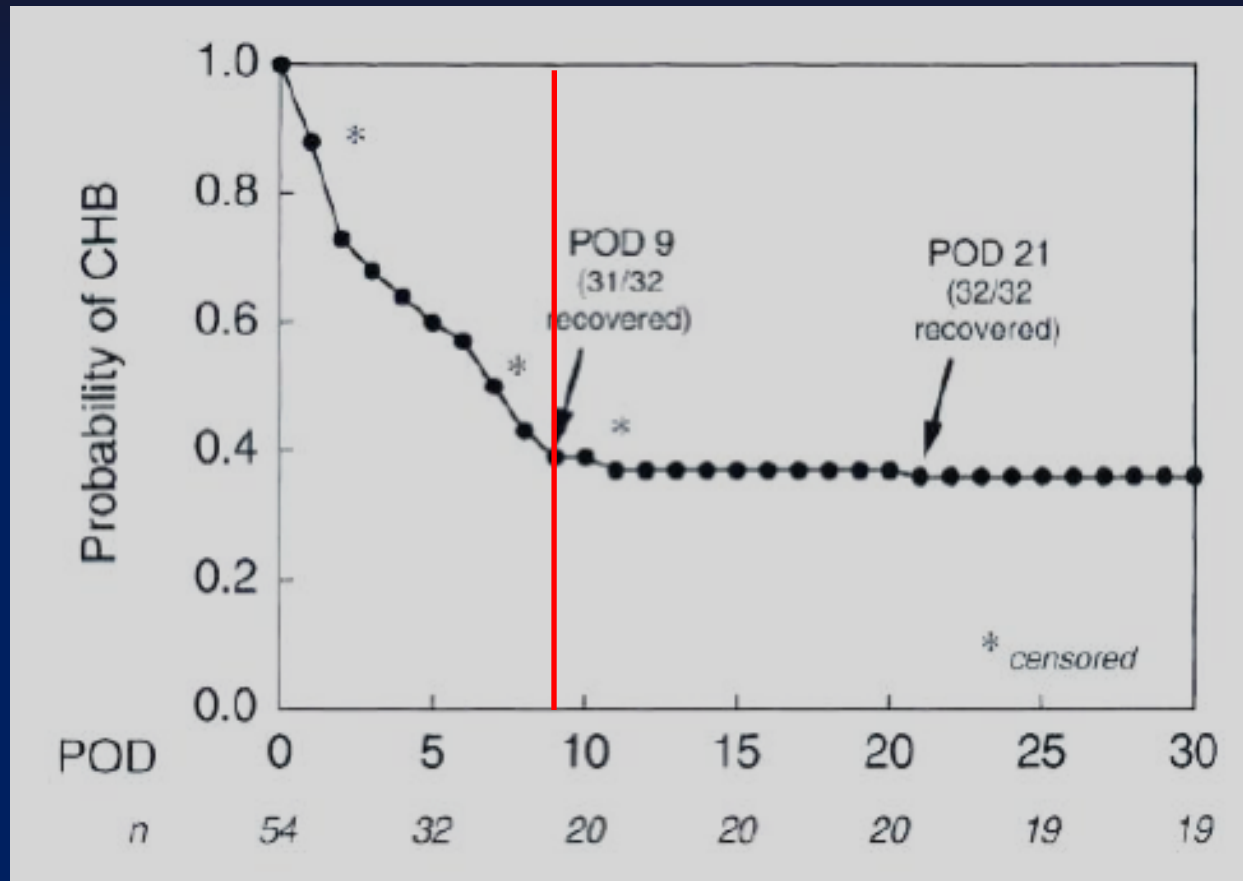


*19 anni, DIV operato*

# BLOCCO AV



# BLOCCO AV POSTOPERATORIO



# INDICAZIONI PACING

SND



Sintomi

Pause > 3 sec.

FC diurna sin o giunz < 40 BPM

IART

Perdita sincronismo AV

BAV



Sintomi

Scappamento a QRS largo

Disfunzione ventricolare

QT lungo, aritmie V

FC media diurna < 50 BPM

Pause > 3 RR

Postop > 10 gg

Postop + bifascicolare

Perdita sincronismo AV



# INDICAZIONI PACING

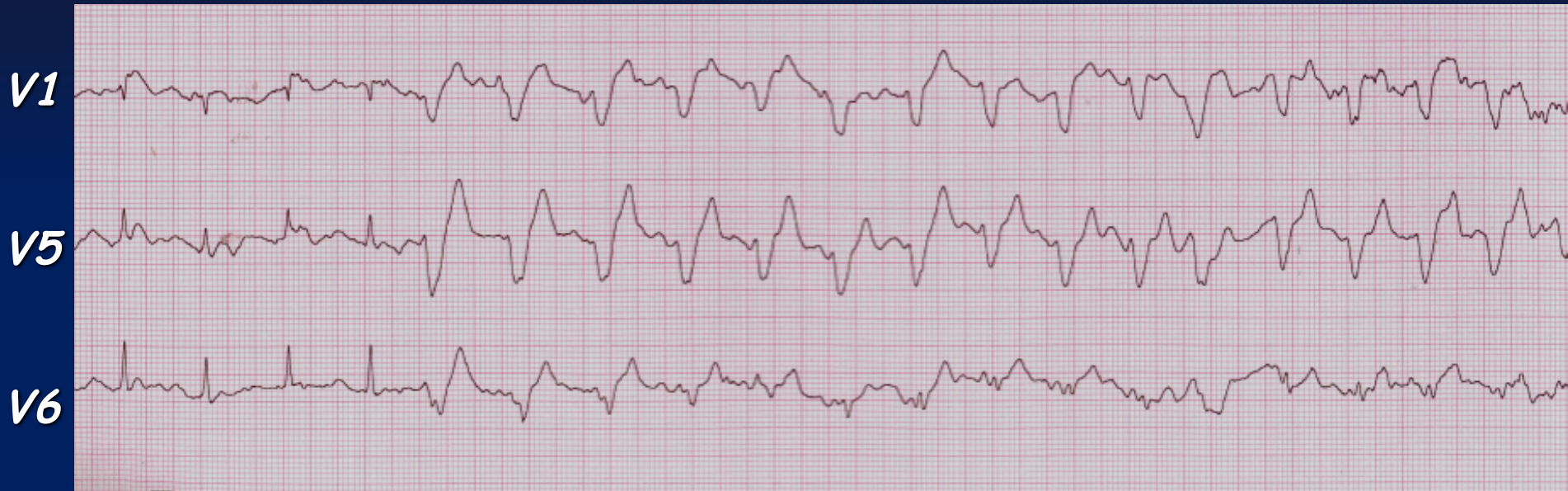
Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
<p><b>1) Congenital AV block.</b> Pacing is indicated in high degree and complete AV block in symptomatic patients and in asymptomatic patients with any of the following risk conditions: ventricular dysfunction, prolonged QTc interval, complex ventricular ectopy, wide QRS escape rhythm, ventricular rate &lt;50 b.p.m., ventricular pauses &gt;three-fold the cycle length of the underlying rhythm.</p>	I	C
<p><b>3) Postoperative AV block in congenital heart disease.</b> Permanent pacing is indicated for postoperative advanced second degree or complete AV block persisting &gt;10 days.</p>	I	B
<p><b>4) Postoperative AV block in congenital heart disease.</b> Permanent pacing should be considered for persistent, asymptomatic post-surgical bifascicular block (with or without PR prolongation) associated with transient, complete AV block.</p>	IIa	C

# INDICAZIONI PACING

<p><b>5) Sinus node disease.</b> Permanent pacing is indicated for symptomatic sinus node disease, including brady-tachy syndrome, when a correlation between symptoms and bradycardia is judged to be established.</p>	<b>I</b>	<b>C</b>
<p><b>6) Sinus node disease.</b> Permanent pacing may be useful for asymptomatic resting heart rate &lt;40 b.p.m. or ventricular pauses lasting &gt;3 sec.</p>	<b>IIb</b>	<b>C</b>

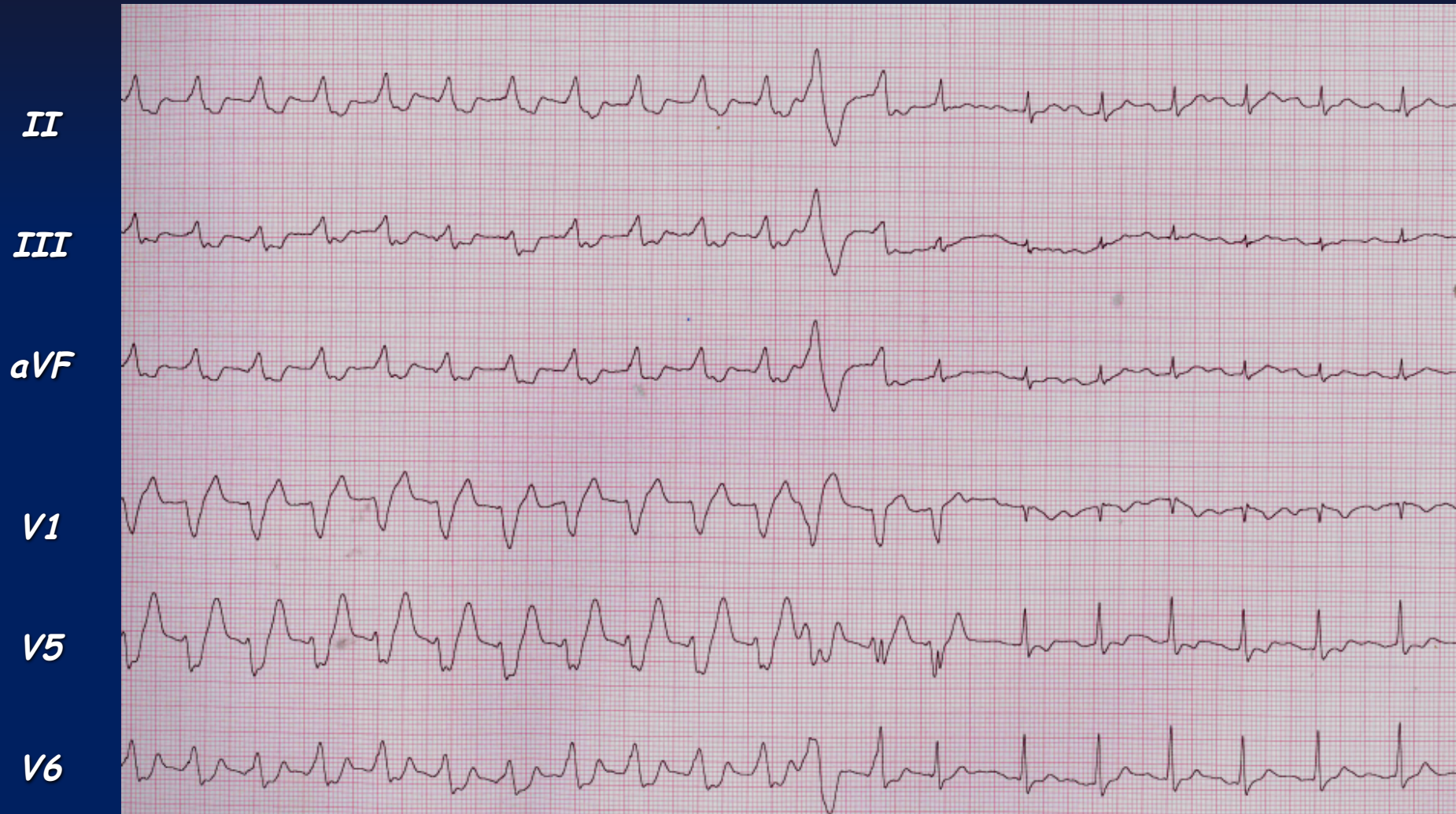


# *Caso 3 URGENZA TACHI: SVT*

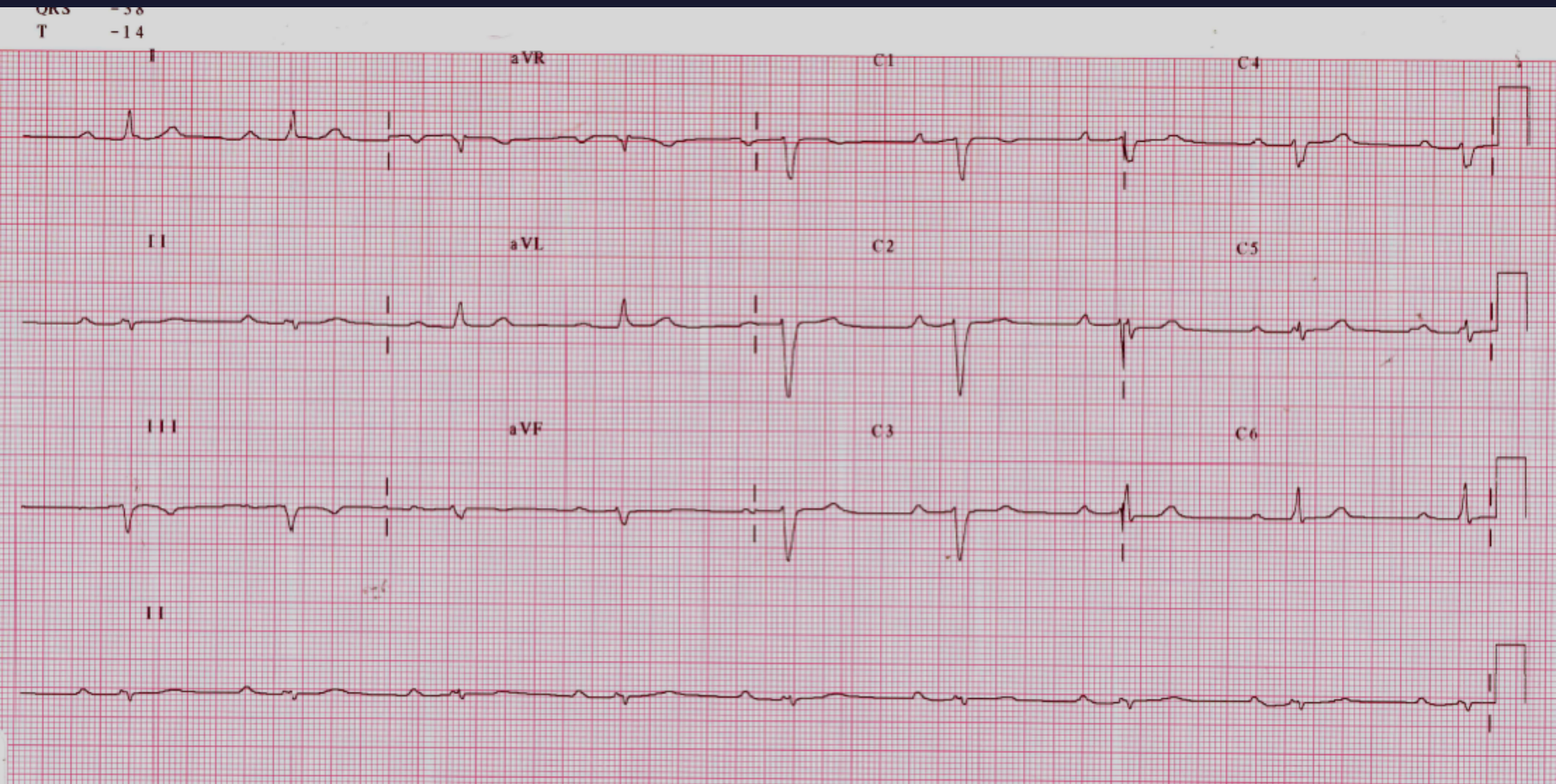


*G.J. 45 aa,  
Ebstein, IT severa, DIA chiuso con Amplatzer  
Durante prova da sforzo...*

*G.J. 45 aa,  
Ebstein, IT severa, DIA chiuso con Amplatzer  
Durante prova da sforzo...*

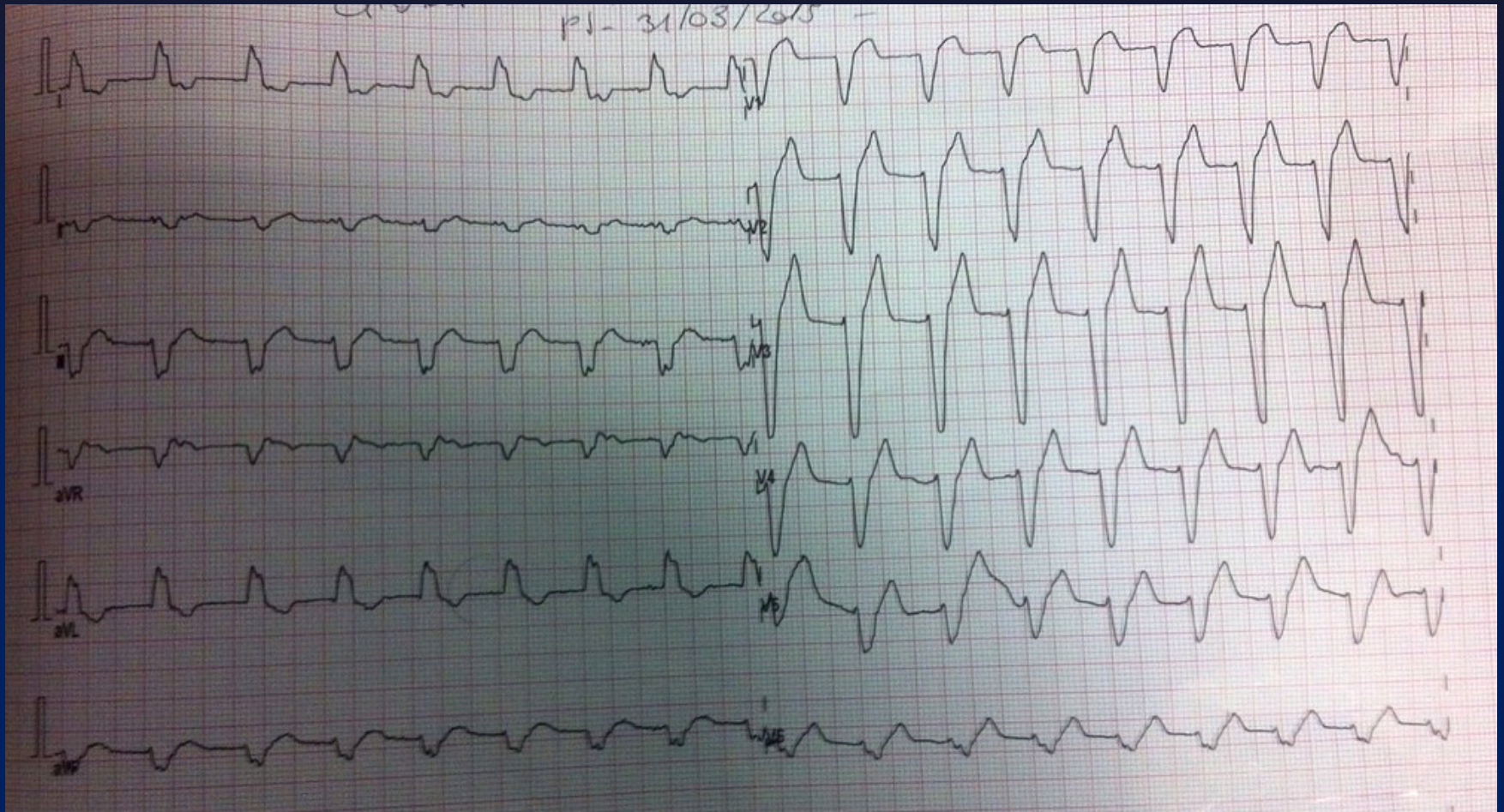


# Caso 3 URGENZA TACHI: SVT

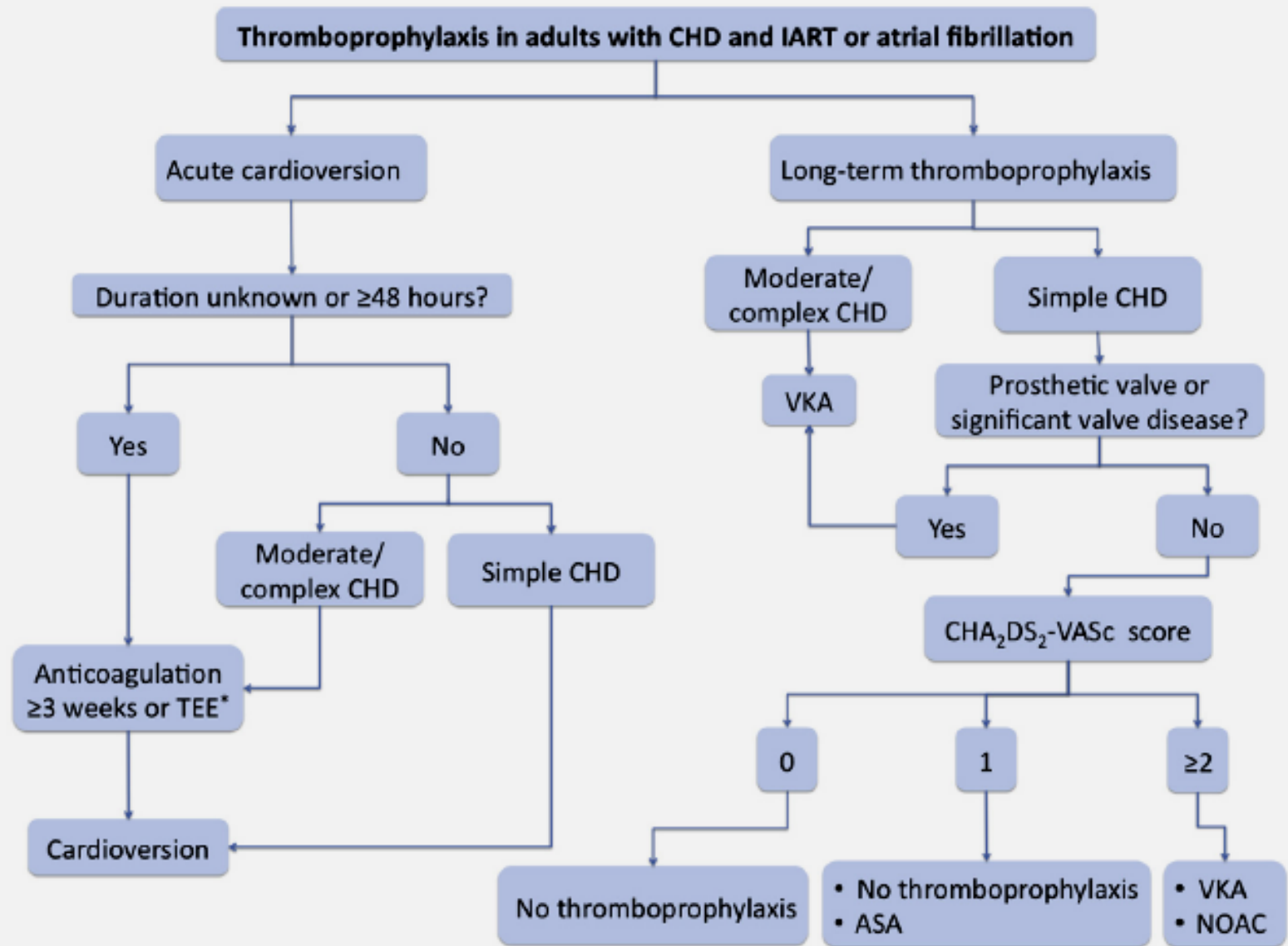


*G.J. 45 aa, Ebstein, IT severa, Amplatzer ASD Occluder*

# Caso 3 URGENZA TACHI: SVT

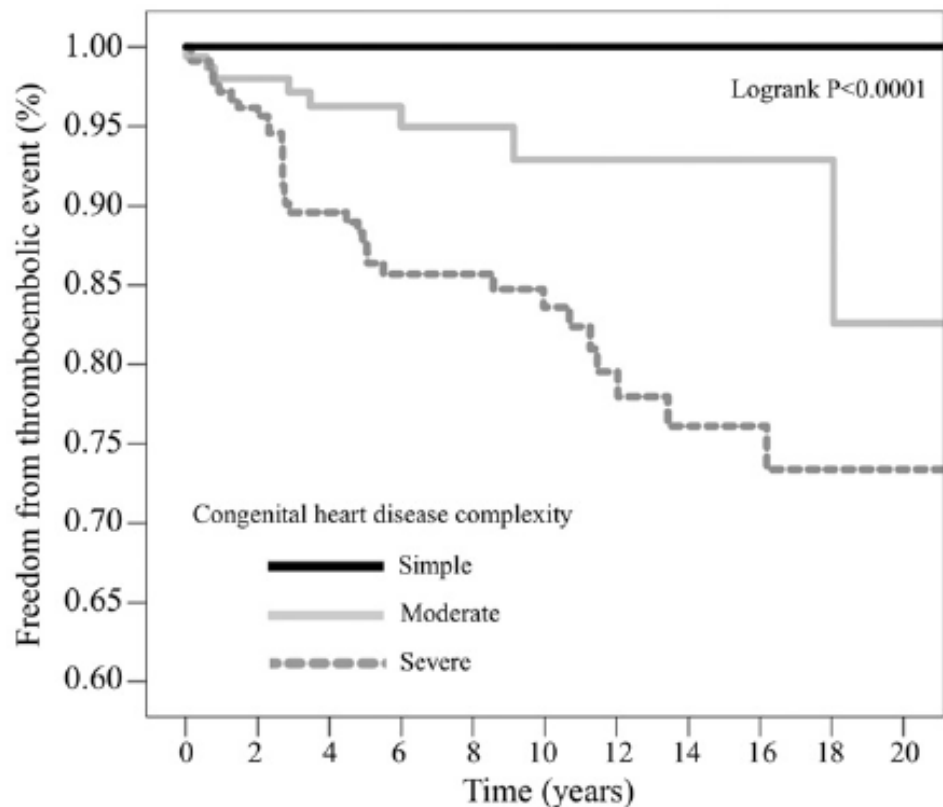


*G.J. 45 aa, Ebstein, nella notte in reparto...*





Incidenza di tromboembolia 0% x semplici,  
0.93% x moderate e 1.95%/anno x severe



Number at risk

Simple	89	47	31	14	10	4
Moderate	166	103	52	27	14	7
Severe	227	154	94	51	28	8

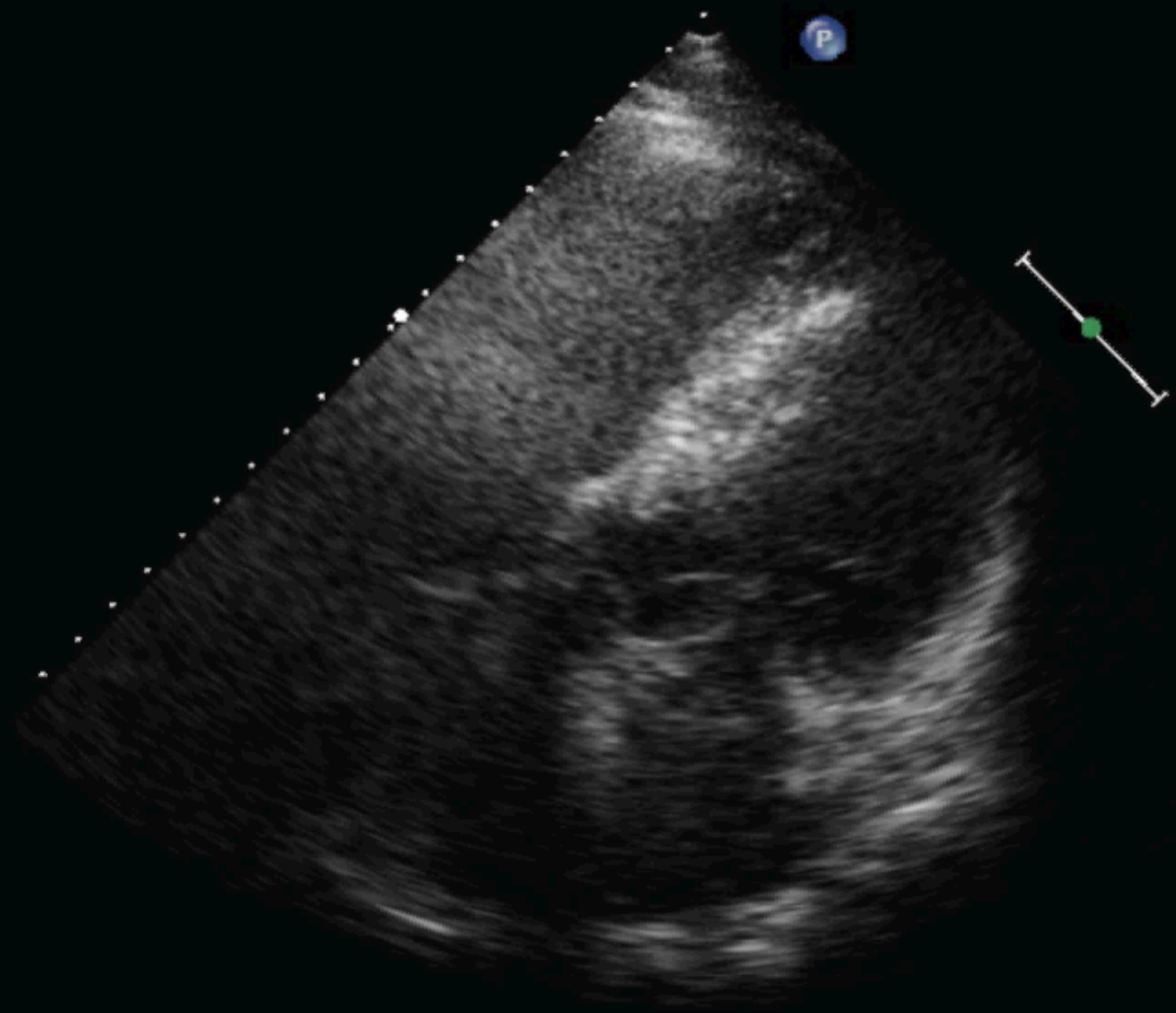
# PVR nei Fallot

**Table 15** Indications for intervention after repair of tetralogy of Fallot

Indications	Class <sup>a</sup>	Level <sup>b</sup>
Aortic valve replacement should be performed in patients with severe AR with symptoms or signs of LV dysfunction	I	C
PVRep should be performed in symptomatic patients with severe PR and/or stenosis (RV systolic pressure >60 mmHg, TR velocity >3.5 m/s)	I	C
PVRep should be considered in asymptomatic patients with severe PR and/or PS when at least one of the following criteria is present: <ul style="list-style-type: none"> <li>• Decrease in objective exercise capacity</li> <li>• Progressive RV dilation</li> <li>• Progressive RV systolic dysfunction</li> <li>• Progressive TR (at least moderate)</li> <li>• RVOTO with RV systolic pressure &gt;80 mmHg (TR velocity &gt;4.3 m/s)</li> <li>• Sustained atrial/ventricular arrhythmias</li> </ul>	IIa	C

FR 42Hz  
20cm

2D  
56%  
C 60  
P Bassa  
AGen



JPEG

