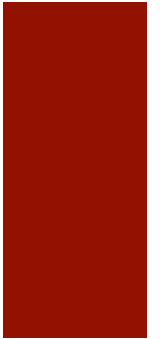




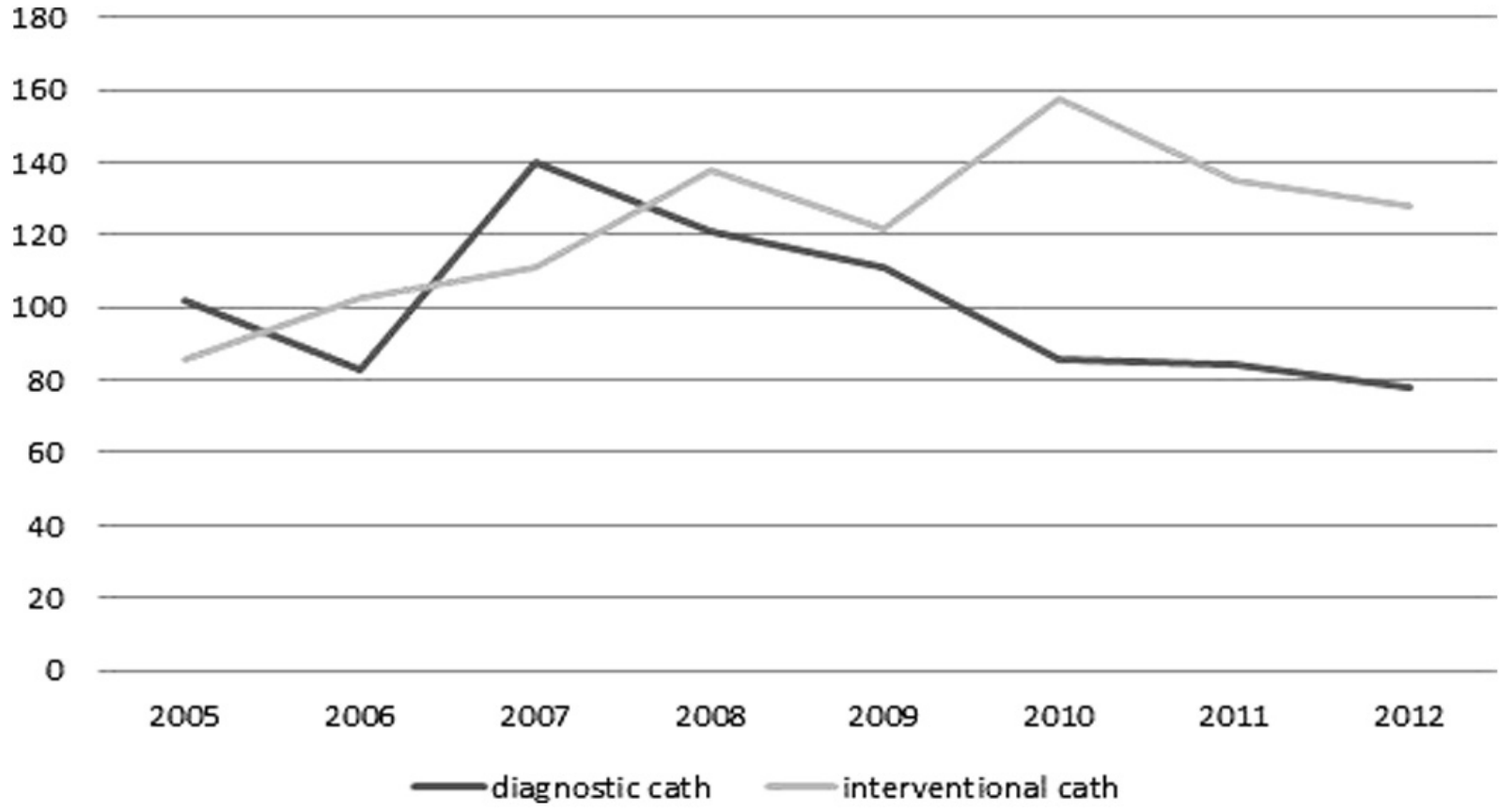
# Ruolo *dell'imaging* nelle procedure interventistiche in giovani adulti con patologia congenita.



Giuliano Giusti  
PSD  
11 marzo 2017



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B. Kelly Han MDa, 2013



<b>Interventional</b>	11
<b>Diagnostic</b>	80
-Evaluate arch anatomy	20%
-Define coronary anatomy	5%
-Define pulmonary artery anatomy	26,5%
-Evaluate ventricular function	6,5%
-Confirm diagnosis	8,7%
-Evaluate right sided hemodynamics	11%
-Evaluate PVR	21%

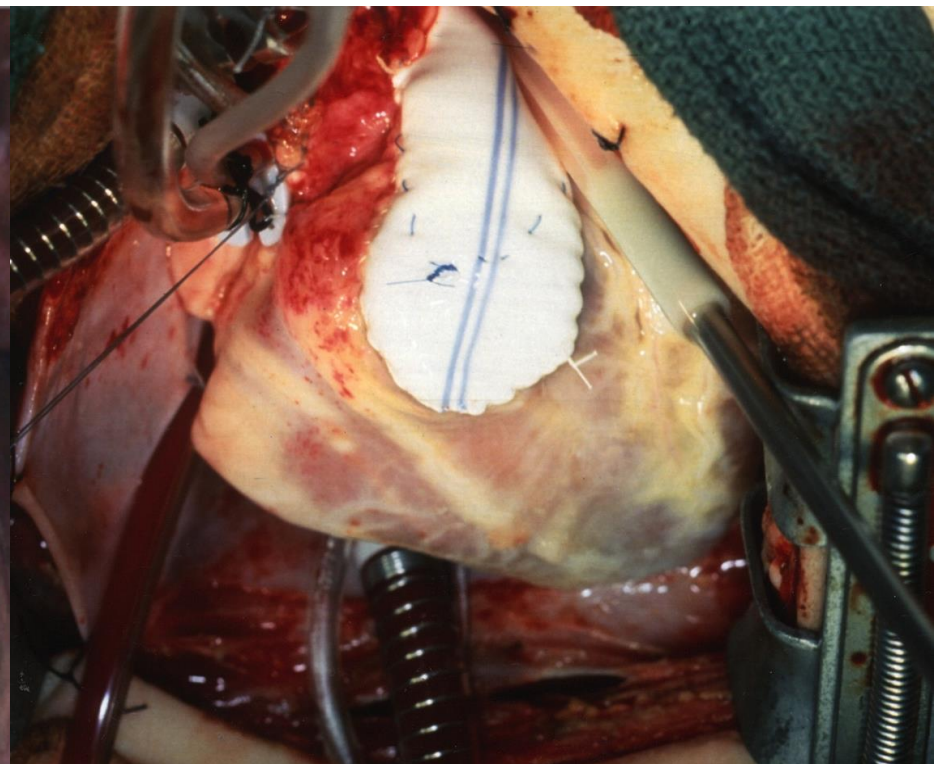
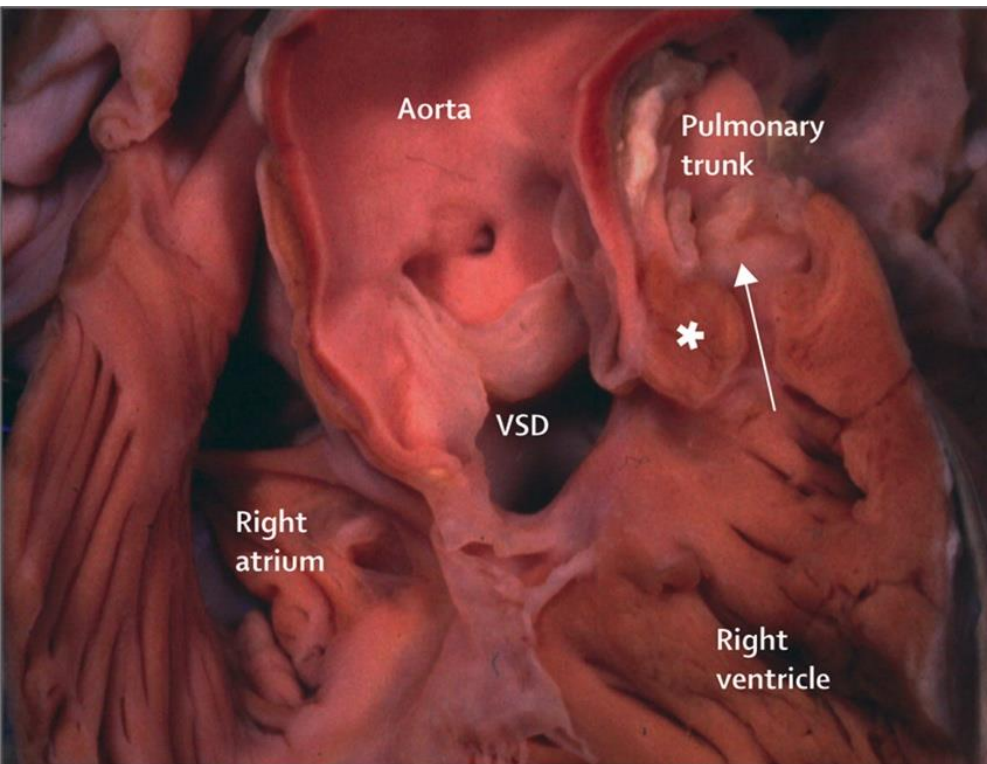


**Table 1** Comparison of available imaging modalities for assessment of different conditions

	Echo	CMR	CT	Catheterization
Aortic arch	++	+++	+++	+++
Pulmonary arteries	++	+++	+++	+++
Pulmonary veins	++	+++	++	+++
		Precise anatomical information + flow measurements		Wedge pressure
AV valves	+++	+	(+)	+
				Pressure gradients
Semilunar valves	+++	++	+	+
		Quantification of regurgitation		Pressure gradients
Complex CHD	++	+++	++	++
		Precise anatomical information + flow measurements		Pulmonary arterial pressure
Coronary arteries	+	++	+++	+++
	Only proximal segments			Gold standard
Tissue characterization (tumours and cardiomyopathies)	+	+++	+	(+)
Ventricular function	++	+++	(+)	++
			ECG-gated CT	
Flow measurements	+	+++	-	-
Shunt quantification	+	+++	-	+++

# Tetralogia di Fallot

Status post chirurgico.





## **Pulmonary Valve Replacement After Operative Repair of Tetralogy of Fallot**

Meta-Analysis and Meta-Regression of 3,118 Patients  
From 48 Studies

- 1) RV experiences improvement of its volumes and function;
- 2) LV experiences improvement of its function;
- 3) QRS duration decreases;
- 4) Symptoms improve.



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# Tetralogia di Fallot

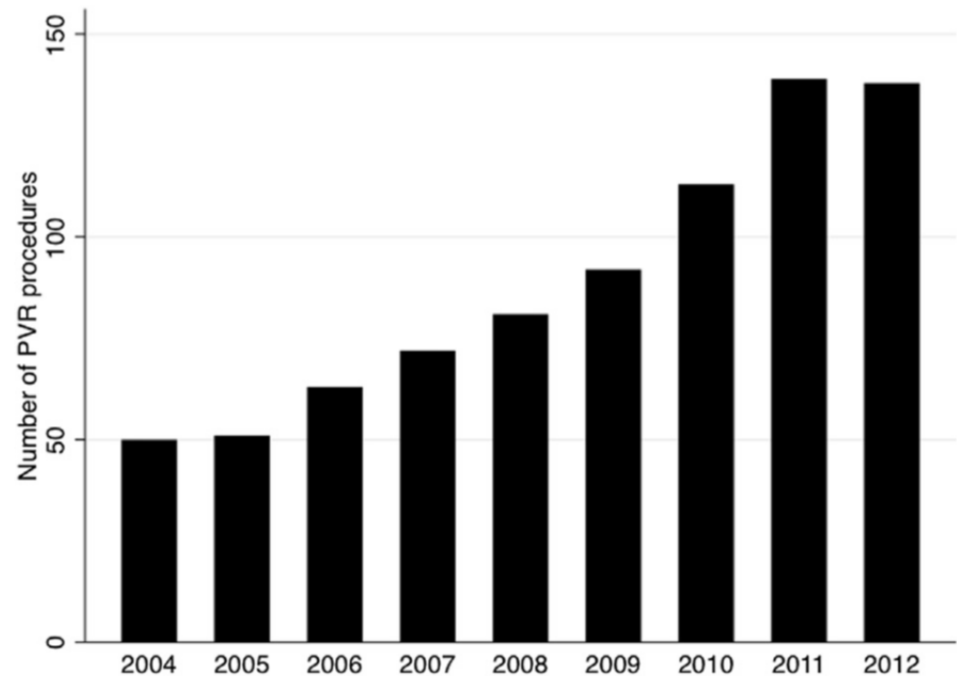
*“Approximately 50% of patients who survived TOF repair undergo reoperation within 30 years; PVR is the most common reoperation”*

*Geva, 2011*

## Trends in Pulmonary Valve Replacement in Children and Adults With Tetralogy of Fallot



Michael L. O'Byrne, MD, MSCE<sup>a,b,c,\*</sup>, Andrew C. Glatz, MD, MSCE<sup>a,b,c</sup>,  
Laura Mercer-Rosa, MD, MSCE<sup>a,b,c</sup>, Matthew J. Gillespie, MD<sup>a,b</sup>, Yoav Dori, MD, PhD<sup>a,b</sup>,  
Elizabeth Goldmuntz, MD<sup>a,b</sup>, Steven Kawut, MD, MS<sup>c,d</sup>, and Jonathan J. Rome, MD<sup>a,b</sup>







- 1- Indicazione per la sostituzione valvolare polmonare
- 2- Selezione dei pazienti per procedura percutanea.
- 3- *Modeling* virtuale



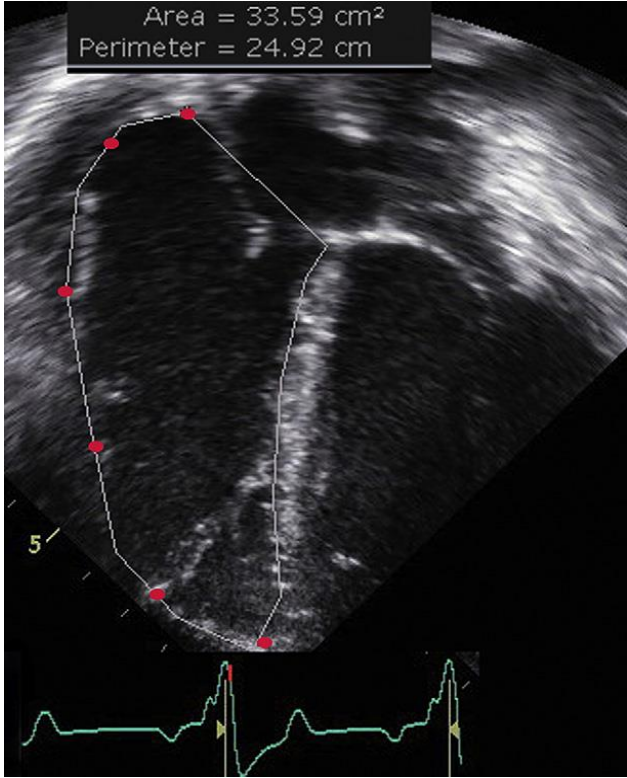
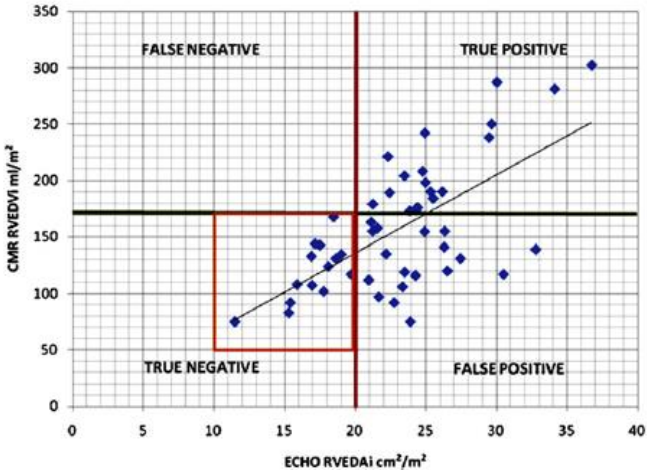
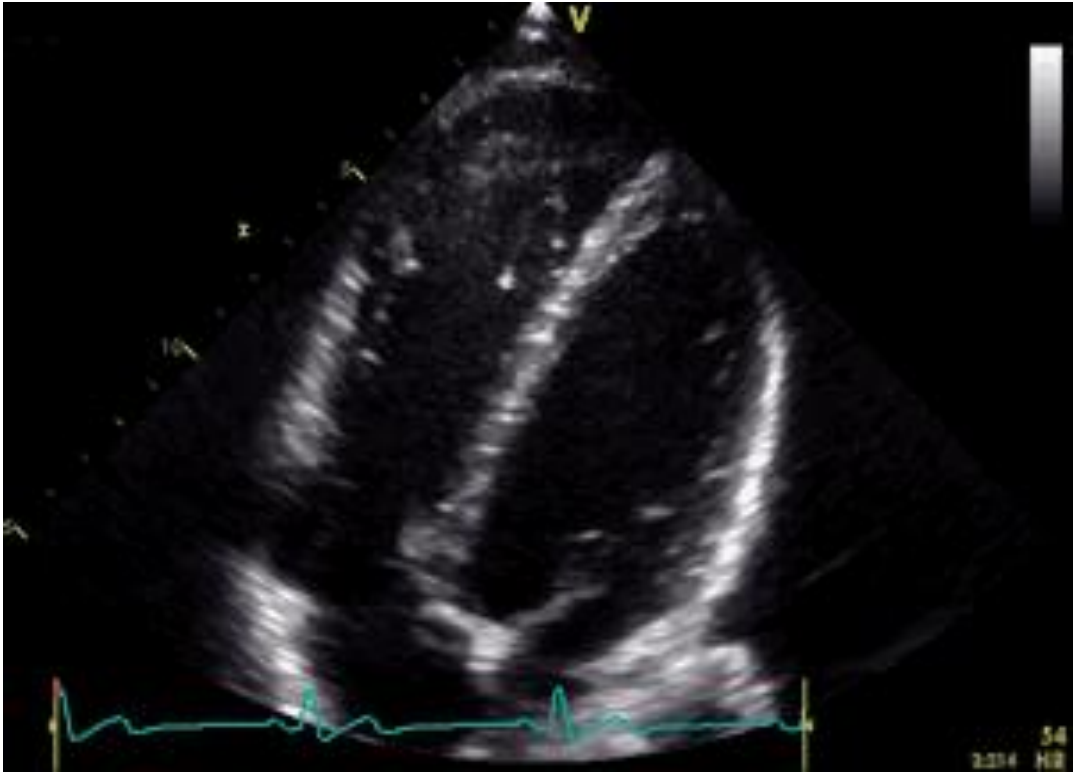
## Pazienti sintomatici per:

1. Tachicardia ventricolare sostenute.
2. Ridotta capacità all'esercizio.
3. Scompenso ventricolare destro.

*“are we operating too late?”*

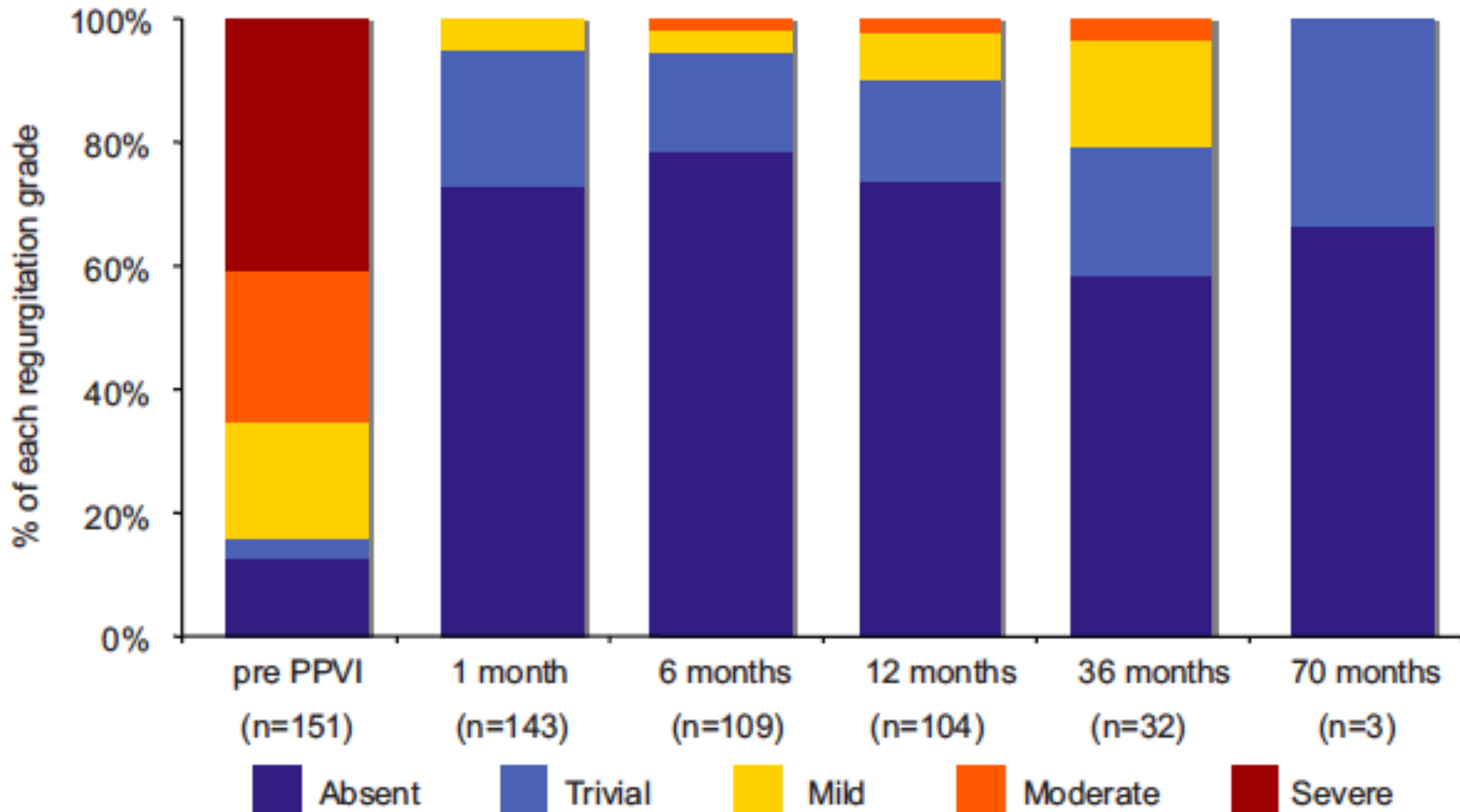


Criteria	AHA [13]		ESC [11]
RVEDVi	≥Moderate	→	>160 mL/m <sup>2</sup>
RVESVi	Not specified		Not specified
RV function	≥Moderate RV dysfunction	→	Progressive RV dysfunction
RVOT obstruction <sup>a</sup>	PIG ≥50 mm Hg or RV/LV pressure ratio ≥0.7		PIG ≥80 mm Hg (4.3 m/s)
PR <sup>a</sup>	Severe		Severe
TR	≥Moderate		≥Moderate
QRS duration	Not specified		>180 msec
Arrhythmia	Symptomatic or sustained AT or VT		Sustained AT or VT
Exercise cardiopulmonary function	Not specified		Objective decrease
Other considerations	Significant residual VSD or AR		Not specified

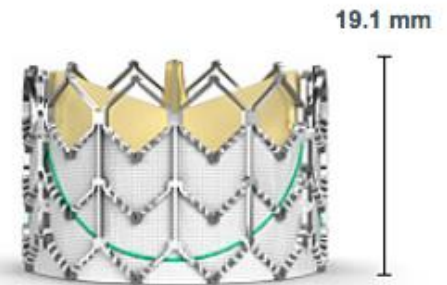


Mohammed H, 2012.

# Sostituzione valvolare polmonare percutanea.



Circulation. 2008;117:1964-1972.



Circulation. 2011;123:2607-2652.)

# **Pianificazione pre operatoria.**

- 1- Dimensioni e distensibilità del RVOT/arteria polmonare.
- 2- Morfologia del RVOT/Arteria polmonare
- 3- Posizione delle arterie coronarie.

## **Dimensioni del RVOT/arteria polmonare.**



### **Melody Valve**

Diametro RVOTI 14mm a 22mm

### **Sapien Edwards**

Device 23

Diametro RVOT 18 a 22mm

Device 26

Diametro RVOT 21 a 25mm

Device 29

Diametro RVOT > 25mm

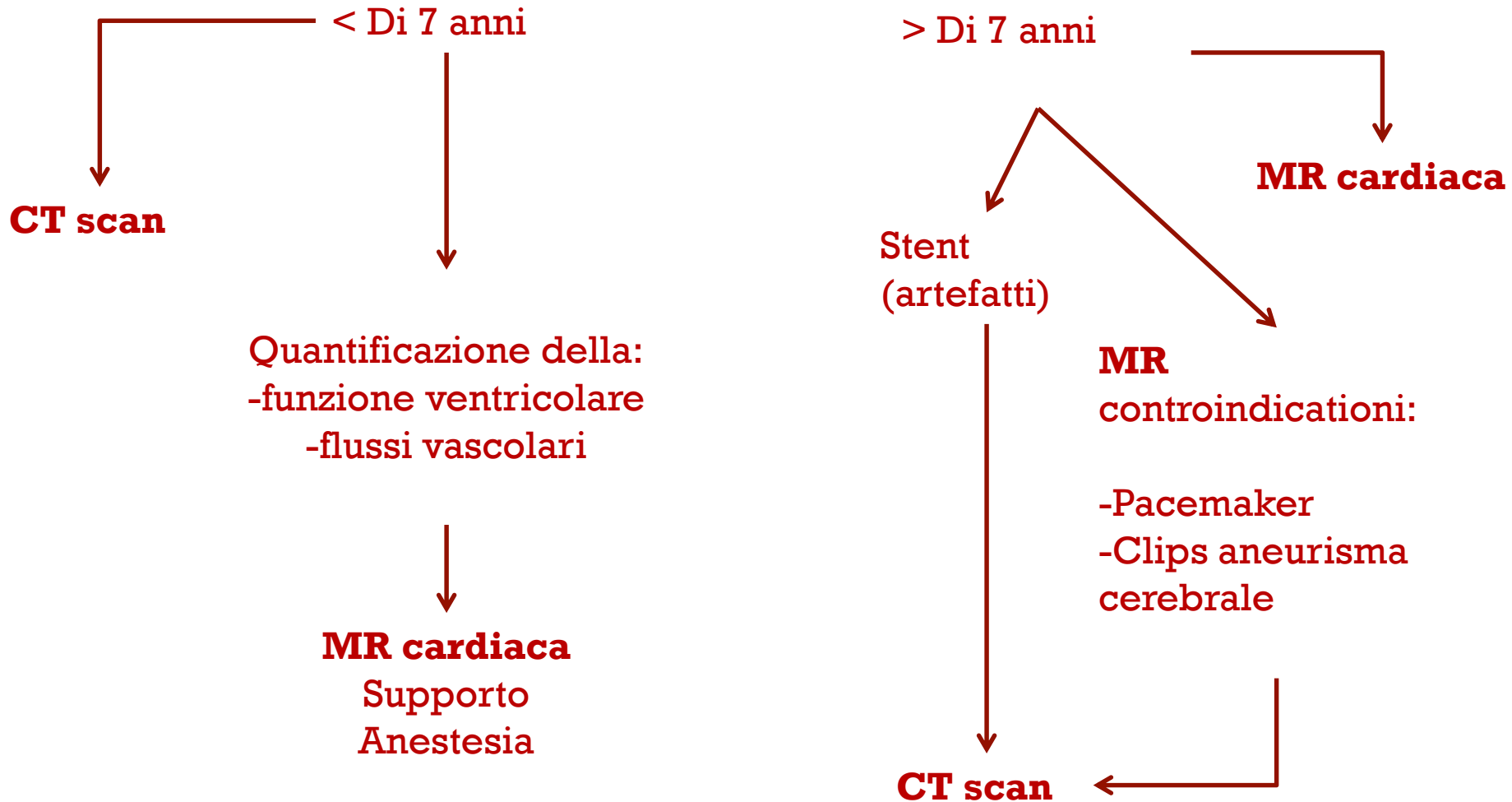




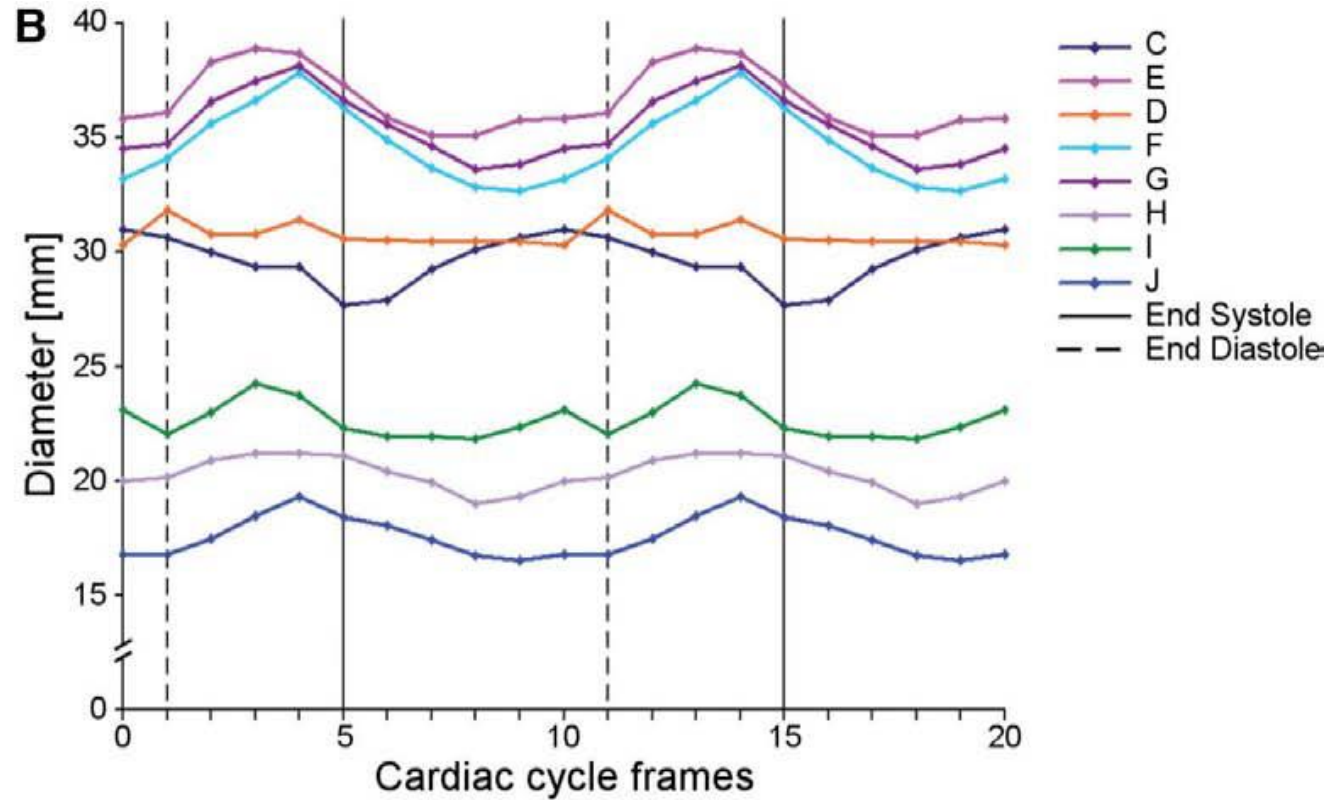
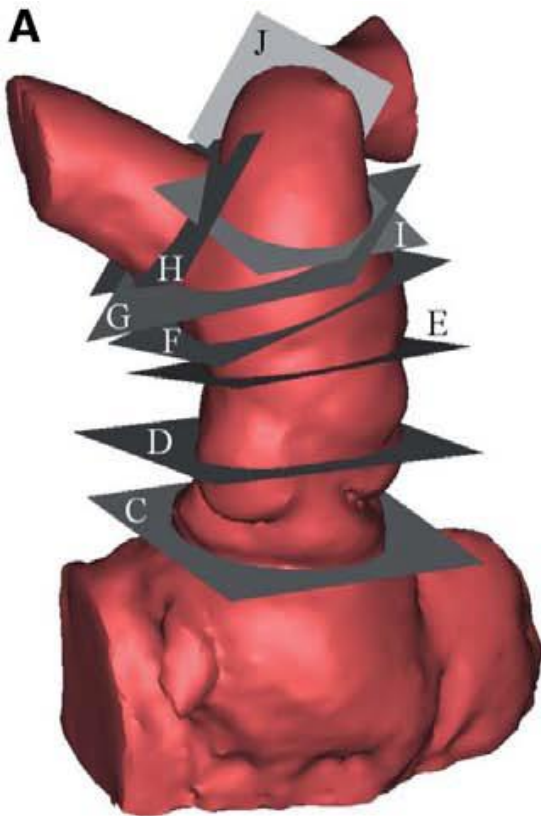
	<b>Risonanza Magnetica</b>	<b>Angio TAC</b>
Risoluzione spaziale	++	+++
Risoluzione temporale	+++	+
Valutazione coronarie	+ / +++	+++
Velocita' di esecuzione	+	+++
Danno biologico	+	++ / +++



## MR Cardiaca VS TAC torace



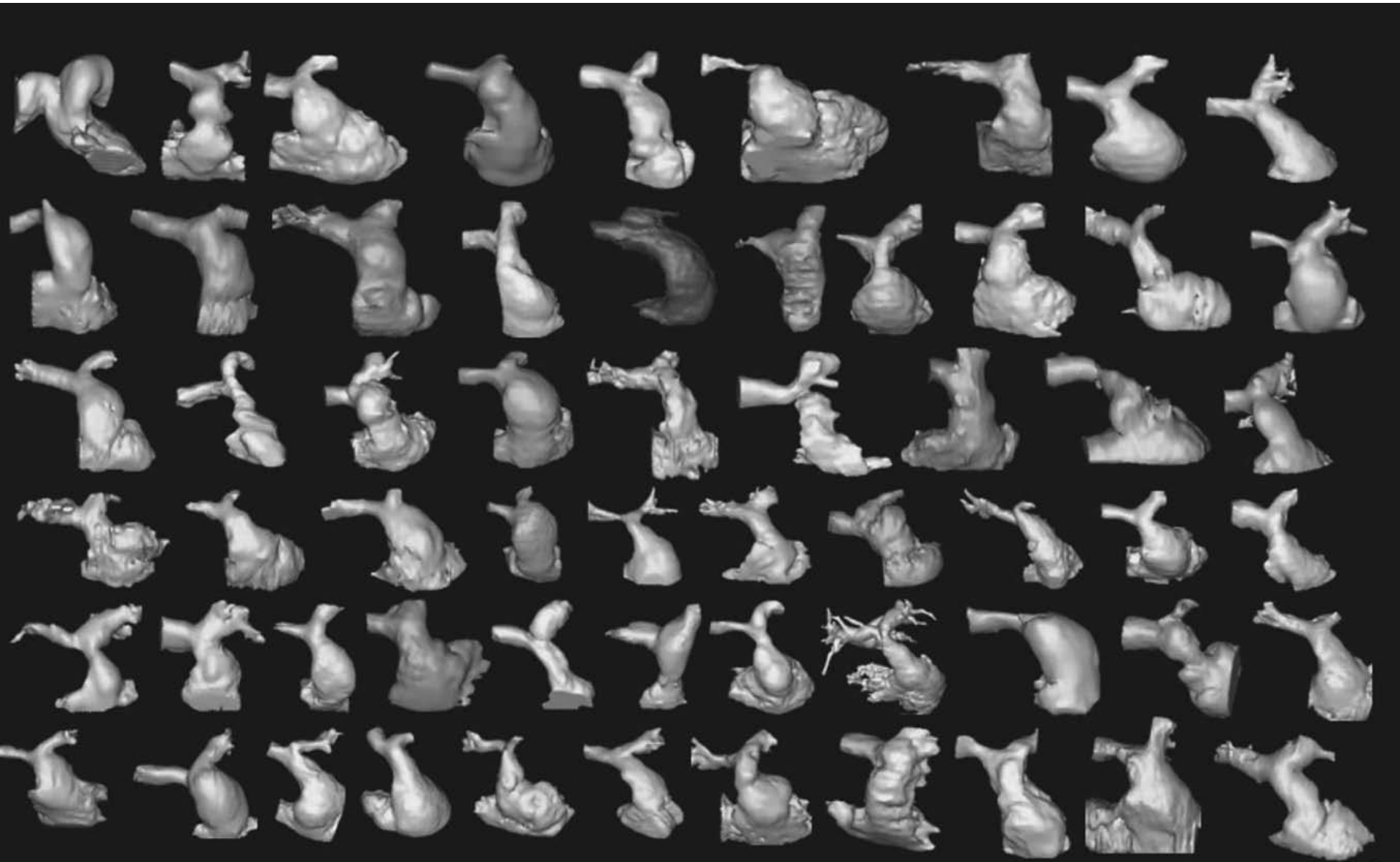
## Distensibilità del RVOT/arteria polmonare.



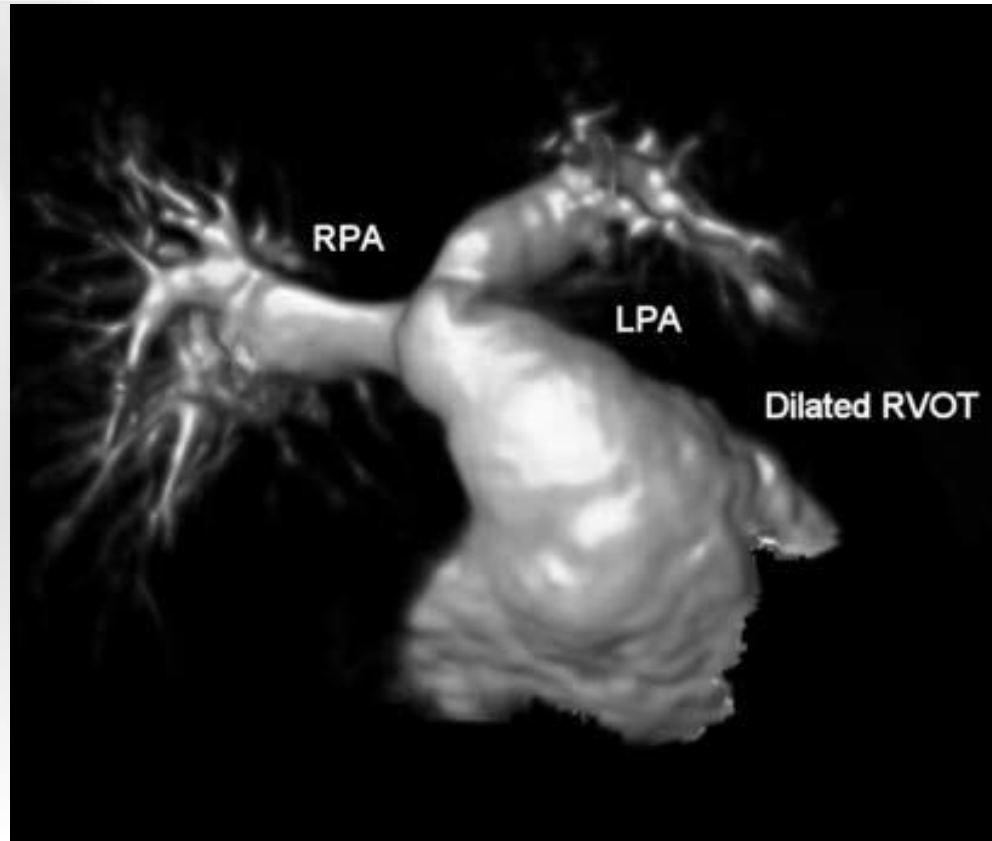
Alta  
distensibilità  
Mobilità



Bassa  
distensibilità  
stabilità



## Morfologia del RVOT/arteria polmonare.



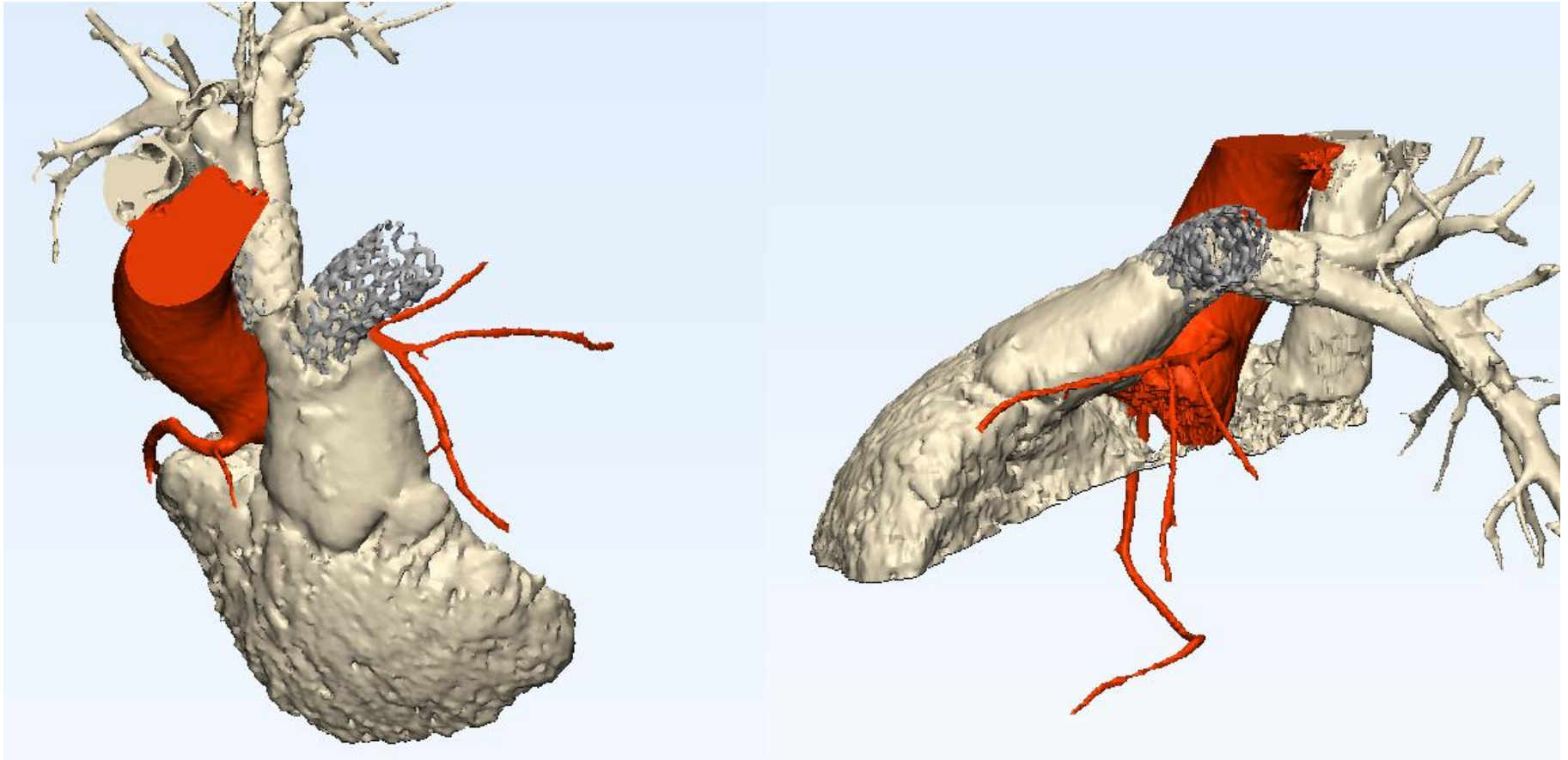
# Posizione delle coronarie.

## Rischio:

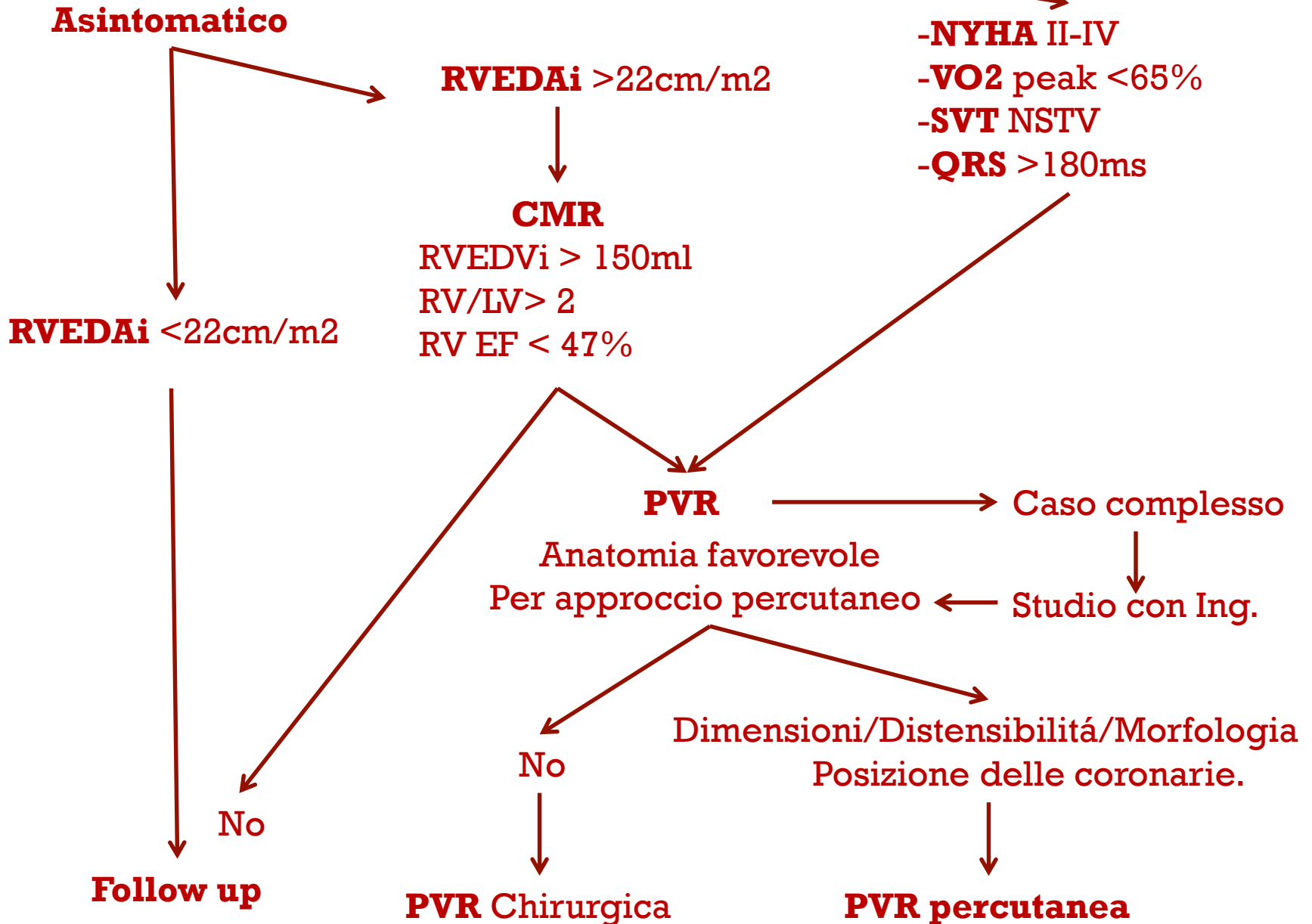
Compressione  
coronarica

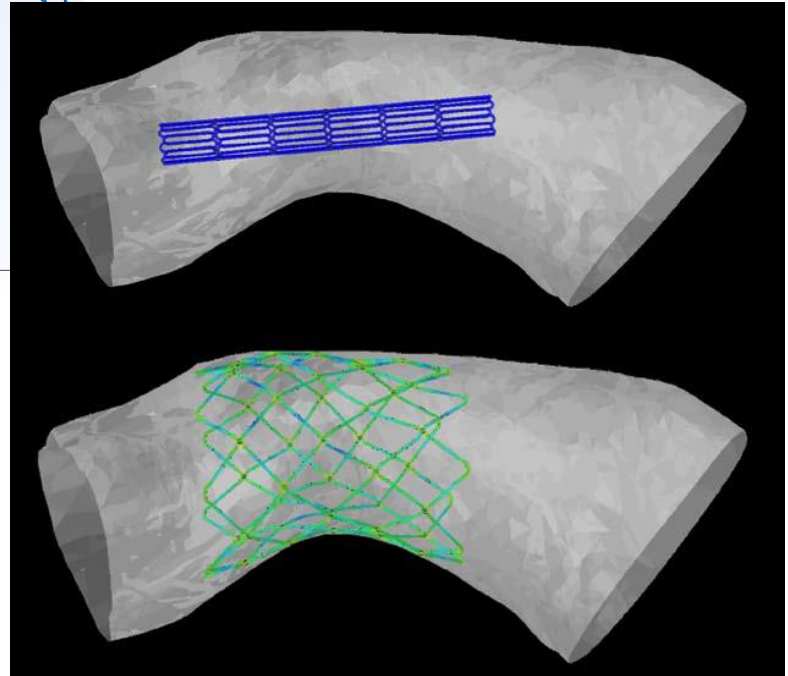
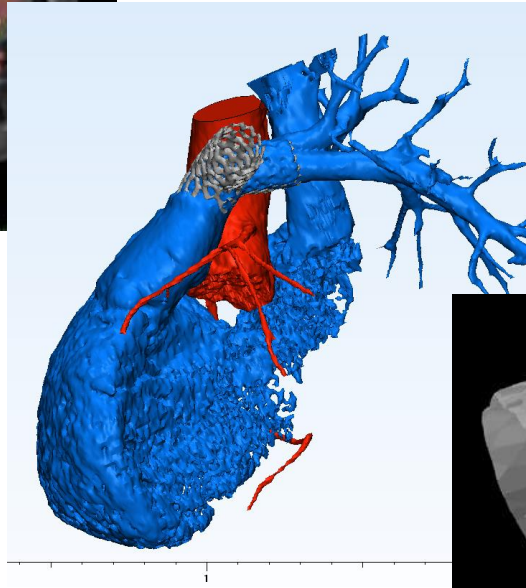
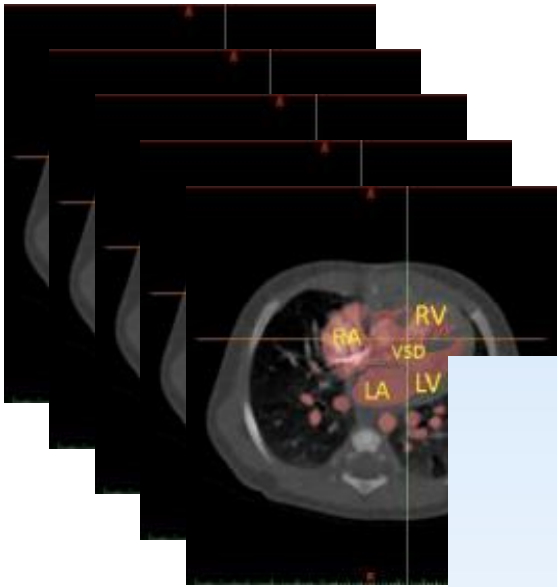
## Ruolo CT/RM:

Warning

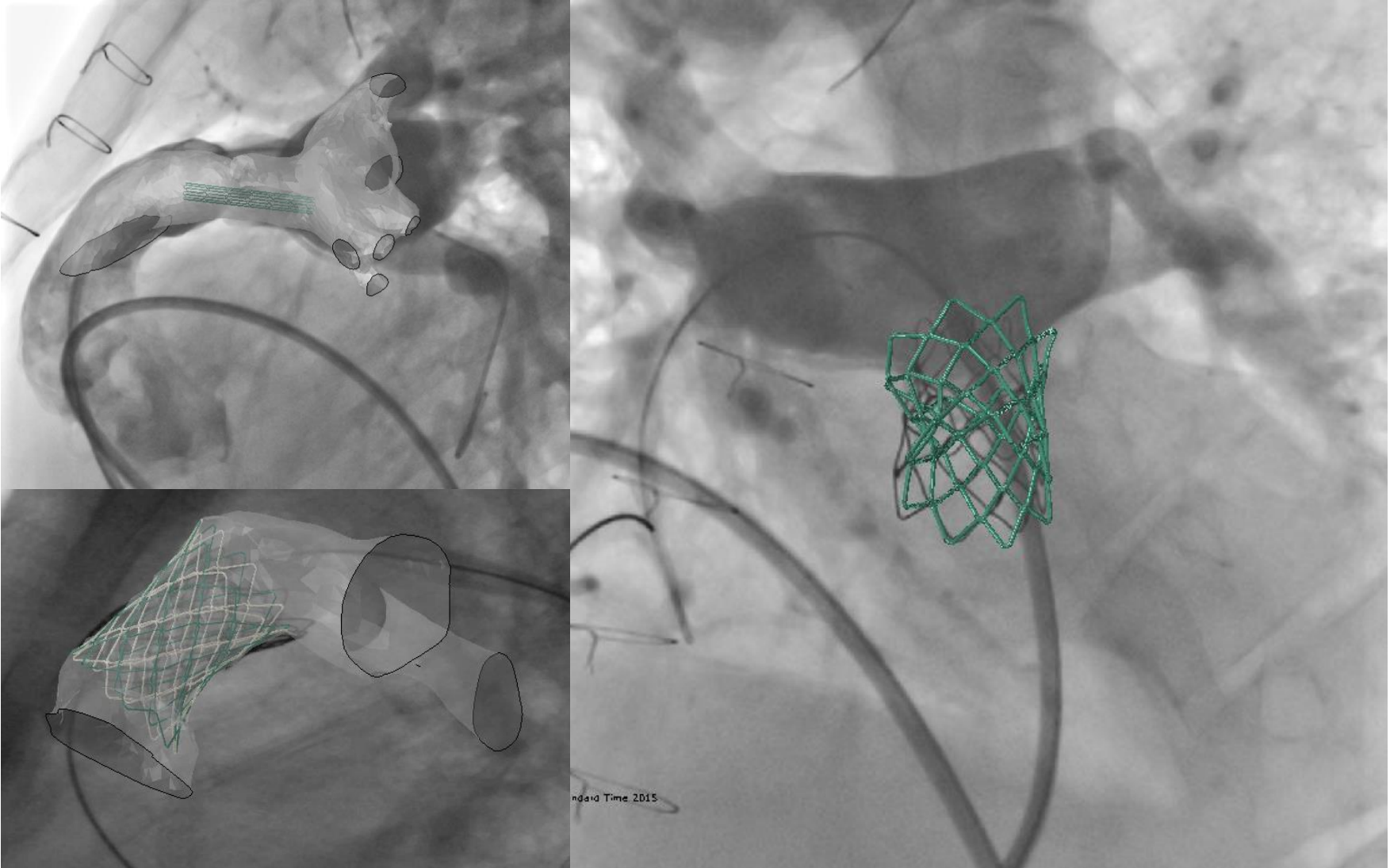


# ToF s/p correzione e RP mod-severo

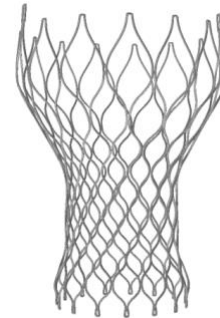
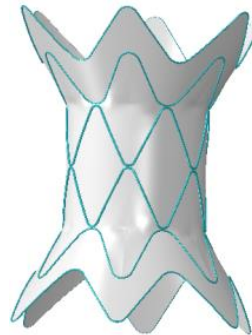
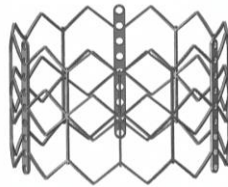
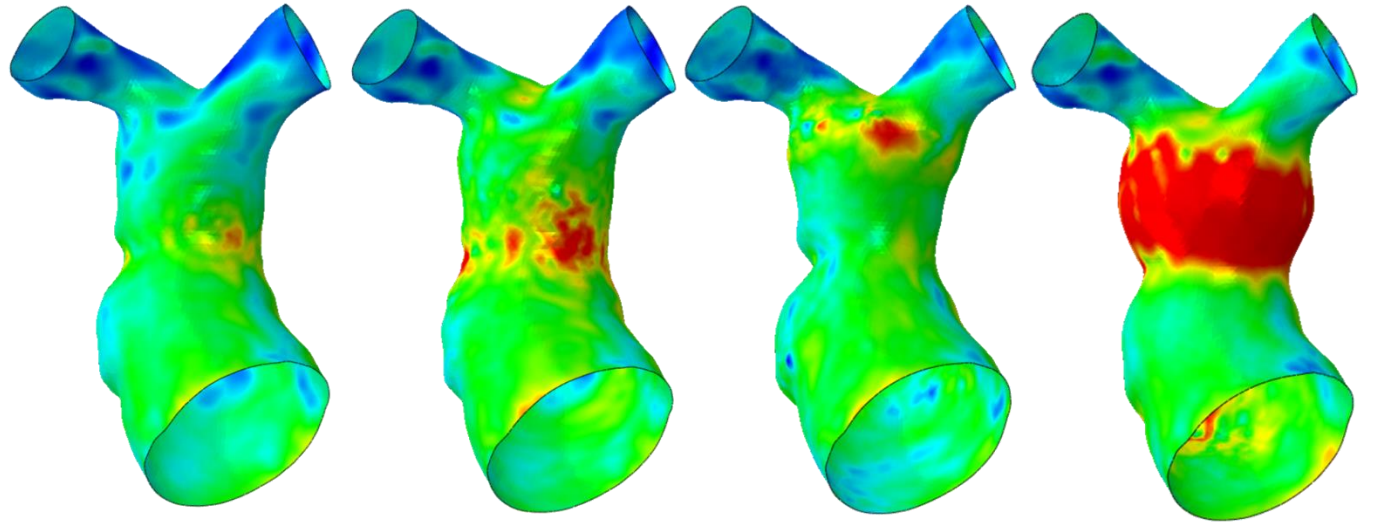




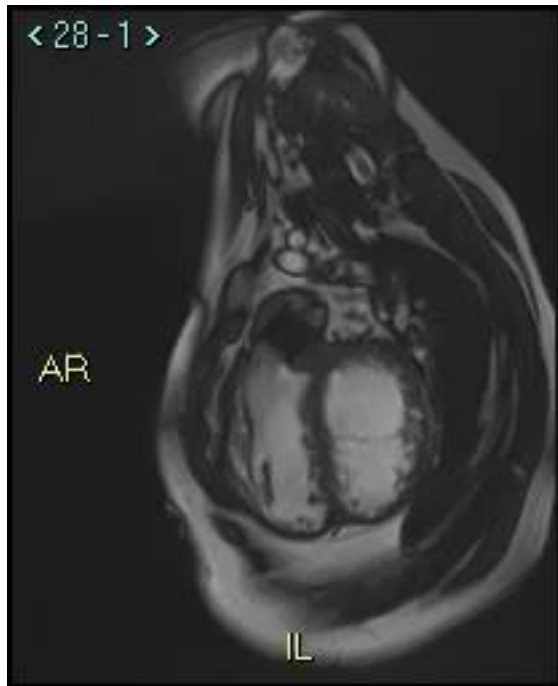




Cortesia Ing. S. Schievano, Ing C. Capelli.



Cortesia Ing. G. Bosi



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