



**Stefano Pelenghi** – L'imaging in vista di reintervento sulle coronarie: un valido aiuto per il CCH.



Azienda Ospedaliera  
**Ospedale Niguarda Ca' Granda**

**Titolo:** L'imaging in vista di reintervento sulle coronarie: un valido aiuto per il CCH

**Data:** Milano 15-17 ottobre 2012

**Autore:** Stefano Pelenghi

**Evento:** Ecocch 2012



# Reintervento è più complicato

**Le difficoltà tecniche che il chirurgo deve:      riconoscere e  
risolvere sono:**

## **Risternotomia**

**Graft safeni o arteriosi pervi o stenotici**

**Aterosclerosi aortica**

**Coronaropatia nativa diffusa**

**Rintracciare spot coronarico disponibile**

**Carenza di condotti**



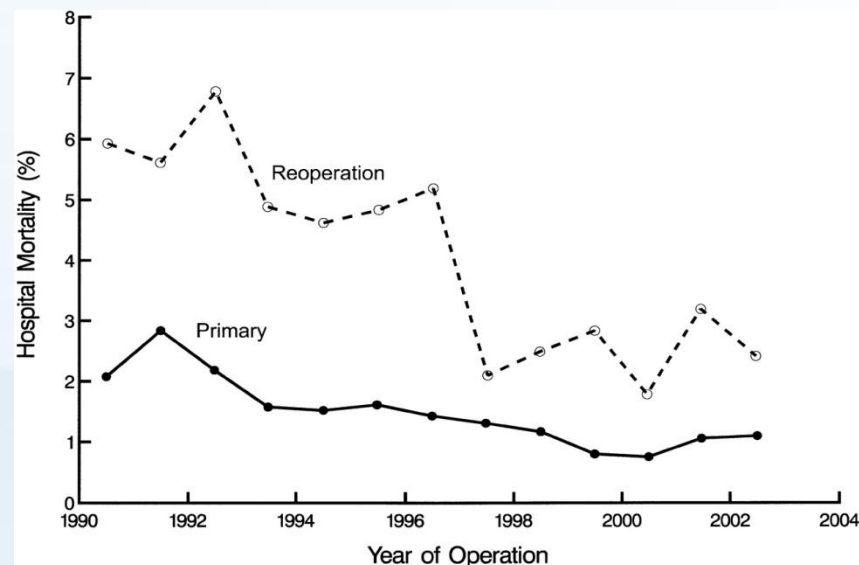
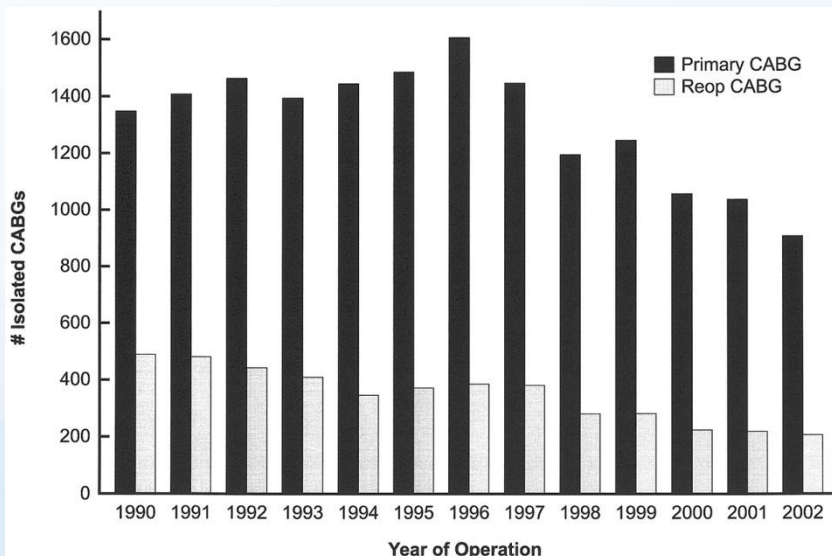
# Is Reoperation Still a Risk Factor in Coronary Artery Bypass Surgery?

Joseph F. Sabik III, MD, Eugene H. Blackstone, MD, Penny L. Houghtaling, MS, Peter A. Walts, MD, and Bruce W. Lytle, MD

Departments of Thoracic and Cardiovascular Surgery and Quantitative Health Sciences, The Cleveland Clinic Foundation, Cleveland, Ohio



Cleveland Clinic



**1990-2003                      21568 BPAC**

4518 REDO		n°	Mortalità H
Primo	REDO	3919	4.3%
Secondo	REDO	552	5.1%
Terzo	REDO	43	6.4%
Quarto	REDO	3	6.4%
Quinto	REDO	1	6.4%



## IMA periop più comune causa morte H

- **Protezione miocardica inefficace**
- Embolia gassosa e solida
- Perfusione ematica durante clampaggio da amisx pervia
- Lesione graft
- Ipoperfusione con nuovi graft
- Competizione-furto tra graft nuovi e vecchi
- Errori tecnici

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### Prevenire !

- Rivedere coronarografia pre primo intervento
- Condotti a disposizione  
AMI angiografia o Doppler  
Radiale Doppler Allen test  
Gastroepiploica TAC-Angiografia



## IMA periop più comune causa morte H

### Protezione

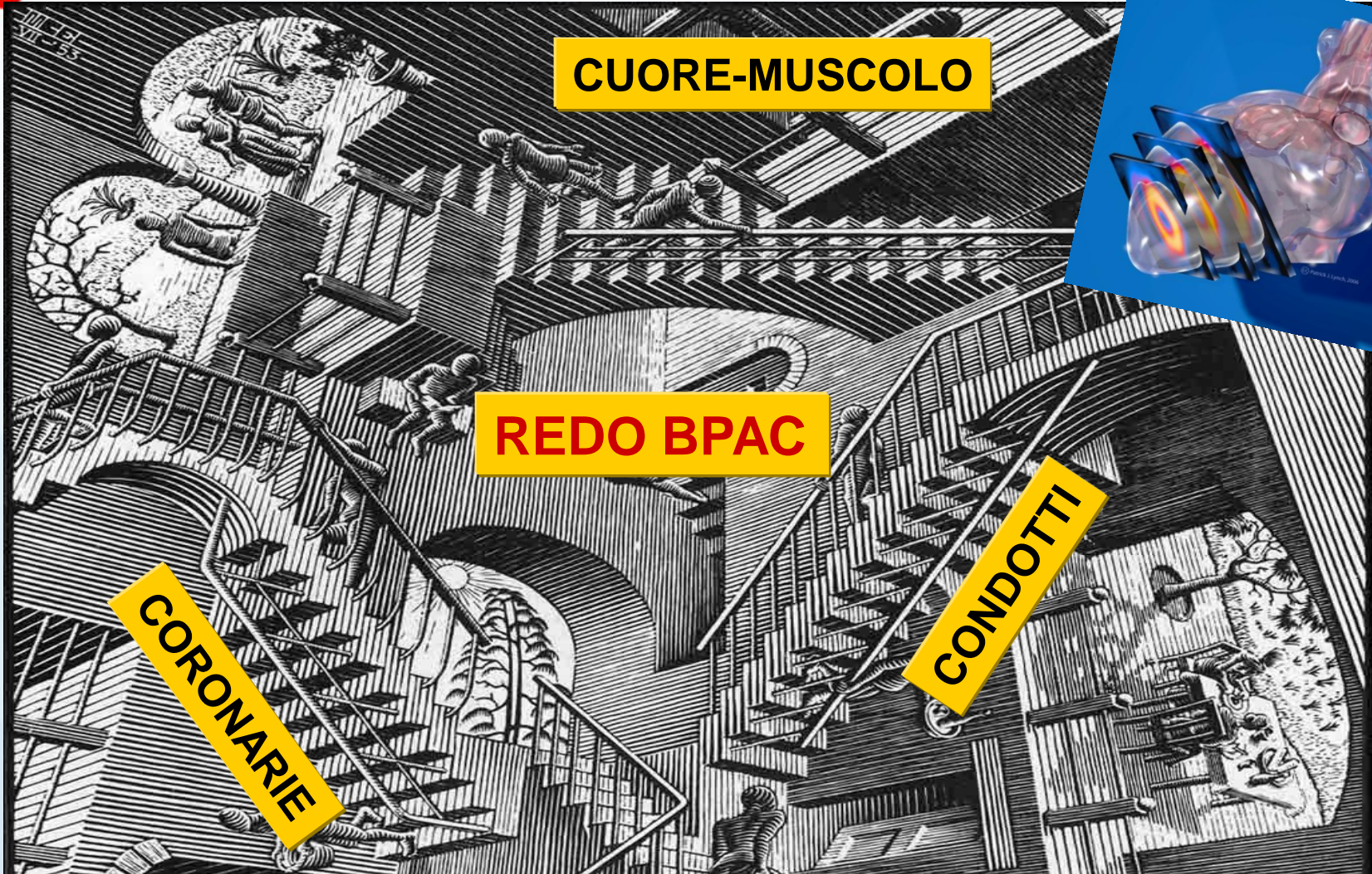
- Embolia gassosa e solida
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- Competizione-furto tra
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tà H

4.3%  
5.1%  
6.4%  
6.4%  
6.4%

## DOBBIAMO CONSIDERARE.....



**CUORE-MUSCOLO**

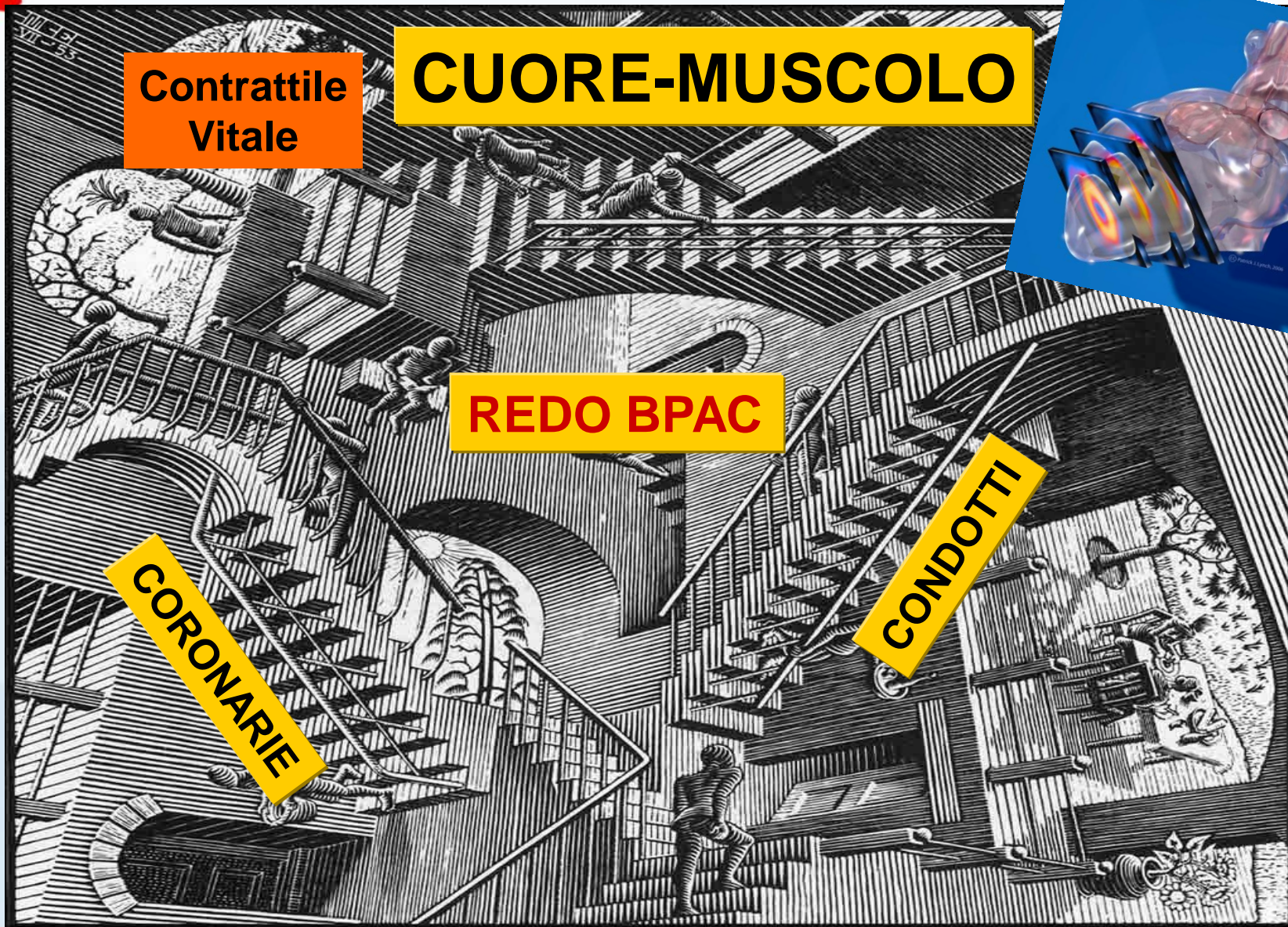
**REDO BPAC**

**CORONARIE**

**CONDOTTI**



**matchup between the patient's graftable arteries and some viable myocardium such that grafting those arteries will provide some long-term benefits.**



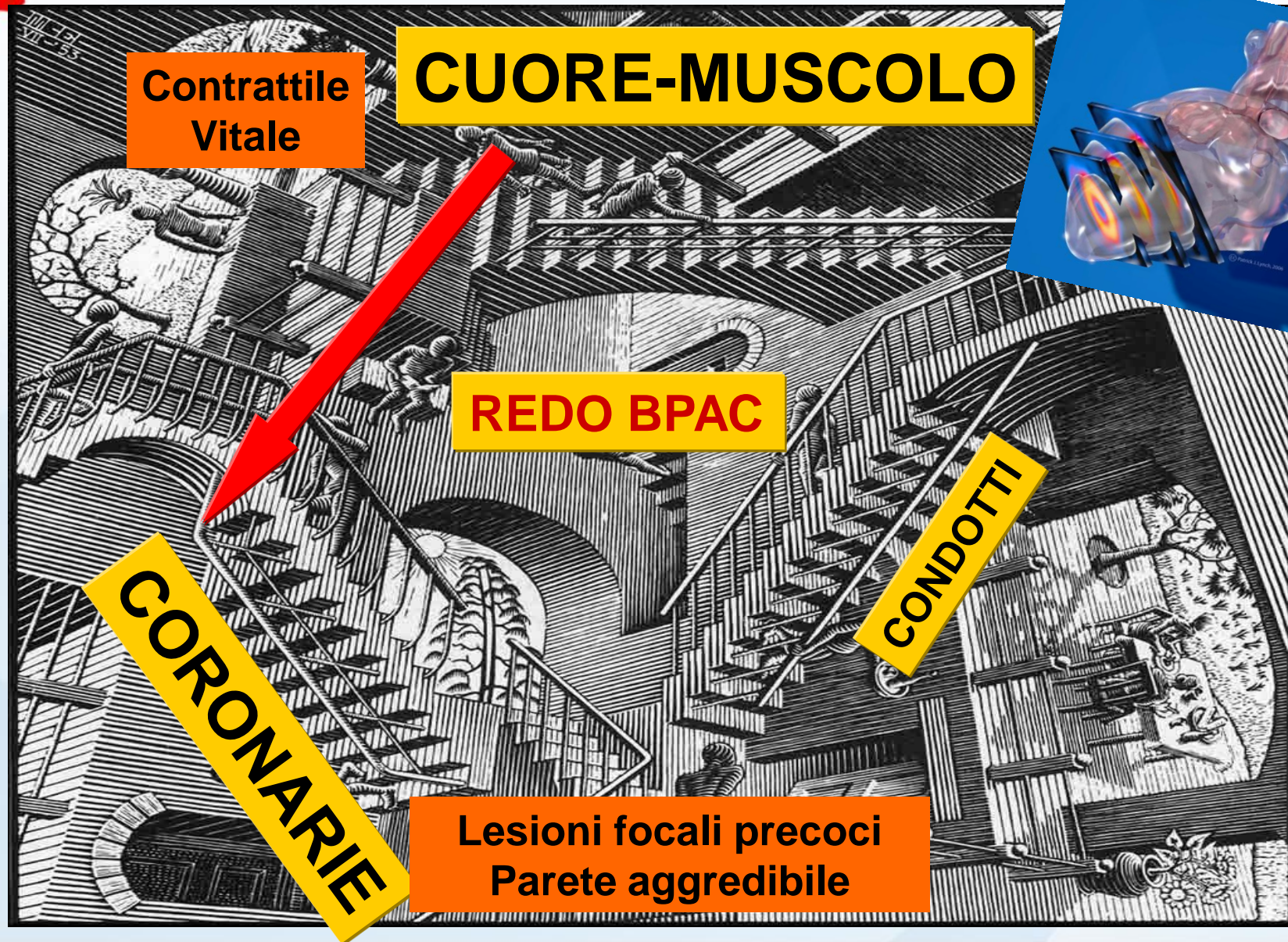
**Contrattile  
Vitale**

**CUORE-MUSCOLO**

**REDO BPAC**

**CORONARIE**

**CONDOTTI**



**CUORE-MUSCOLO**

**Contrattile Vitale**

**REDO BPAC**

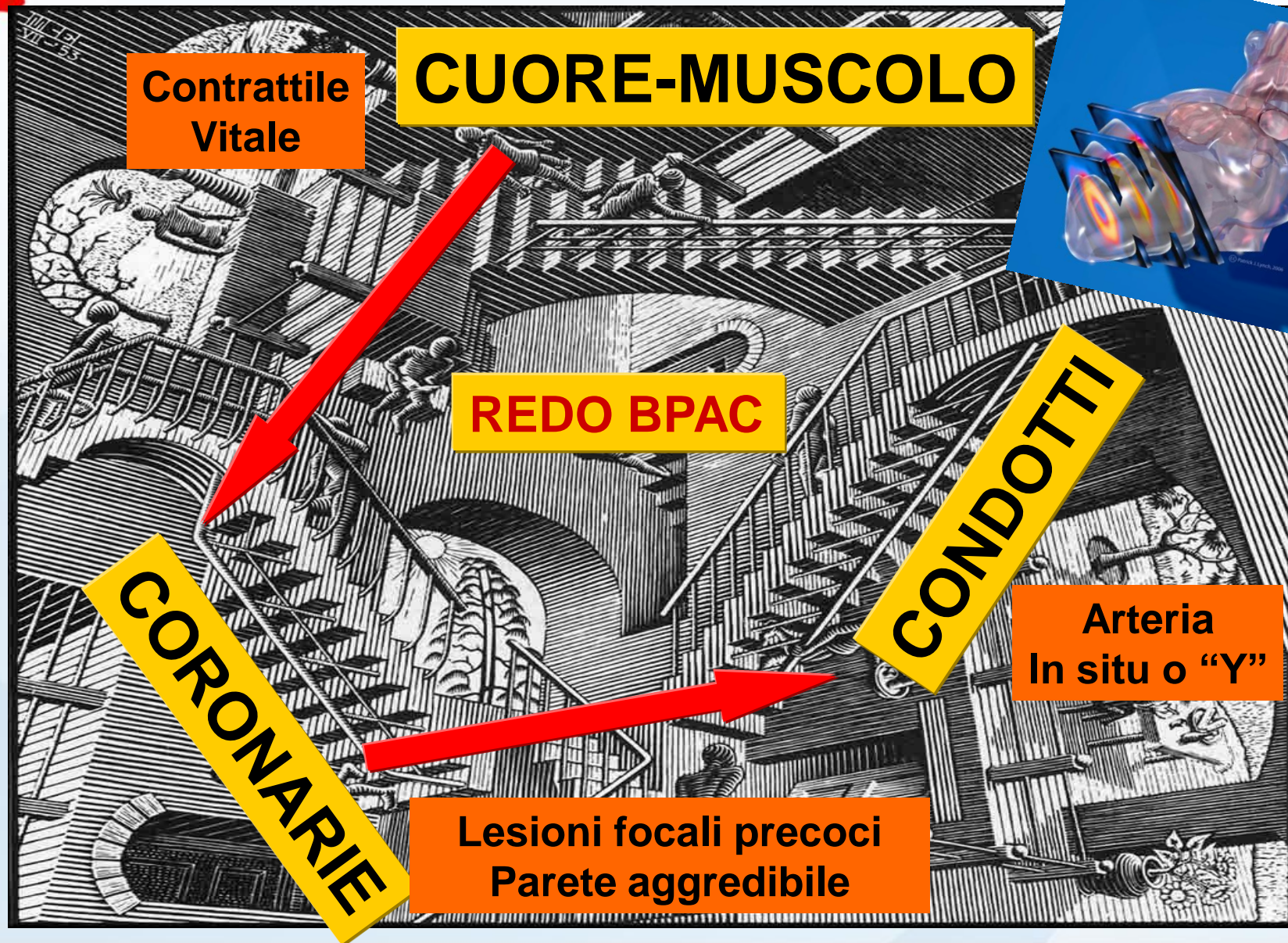
**CONDOTTI**

**CORONARIE**

**Lesioni focali precoci  
Parete aggredibile**







**CUORE-MUSCOLO**

**Contrattile Vitale**

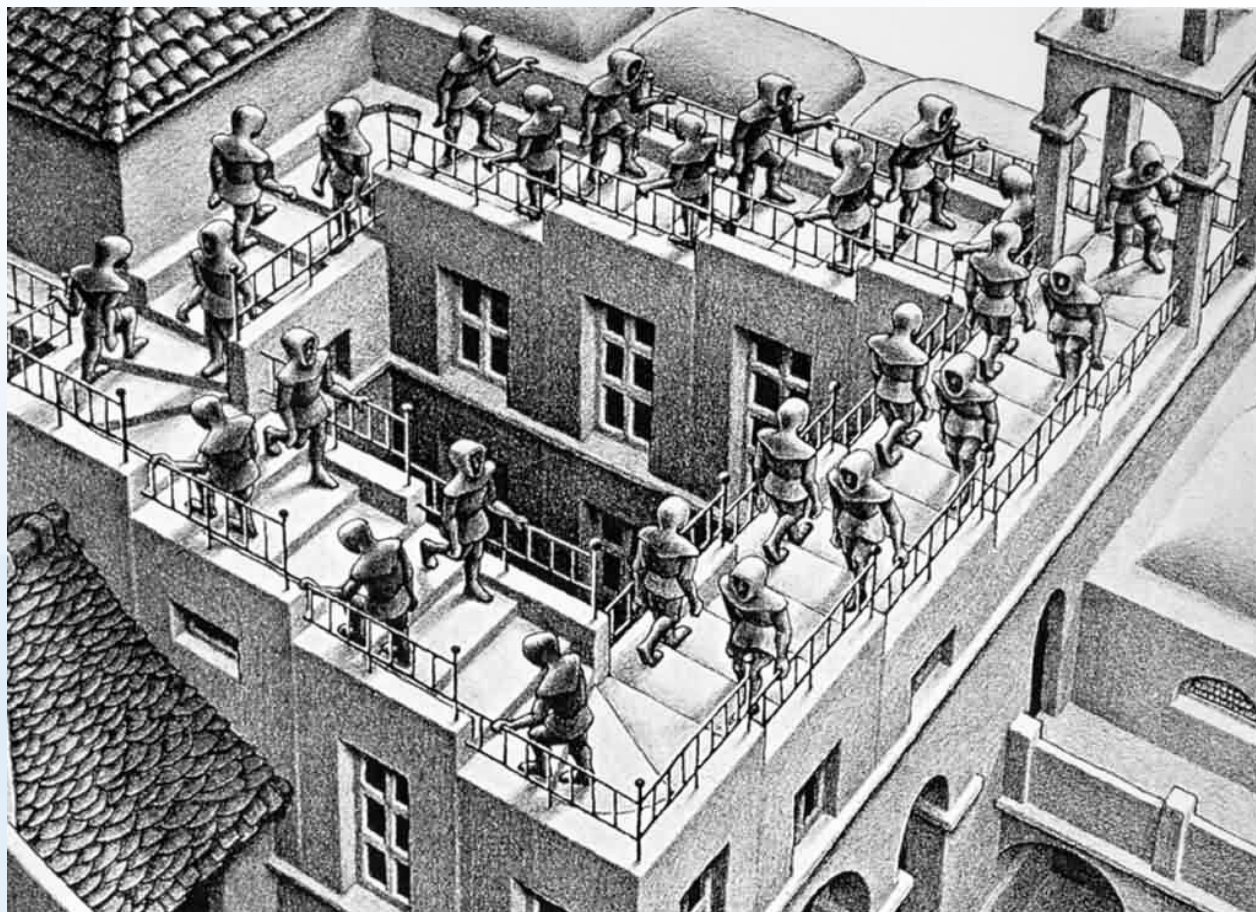
**REDO BPAC**

**CONDOTTI**

**Arteria In situ o "Y"**

**CORONARIE**

**Lesioni focali precoci Parete aggredibile**



## **PAZIENTE nella sua GLOBALITA' !**

**Severità comorbidità: rene, fegato polmone, diabete...**

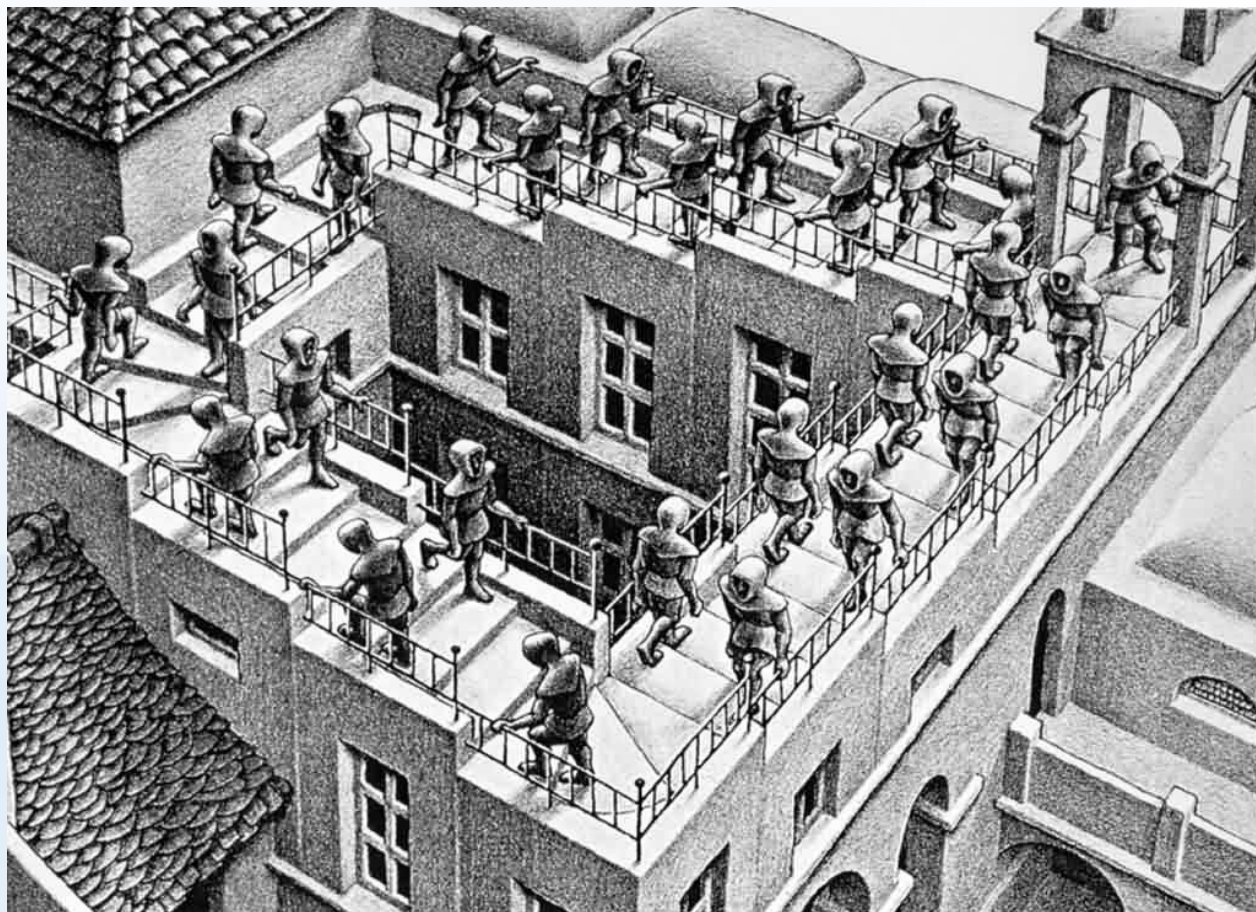
**Stato neurologico**

**Sintomi**



**RMN  
TAC  
Ecocg Sforzo**

**PaceMaker  
Calustrofobia  
Funzionalità Renale  
Frequenza Cardiaca  
Terapia medica**



**PAZIENTE nella sua GLOBALITA' !**

**Severità comorbidità: rene, fegato polmone, diabete...**

**Stato neurologico**

**Sintomi**





# REFERTO PRECEDENTE INTERVENTO !

**Valutazione:** cuore  
aorta  
coronarie  
condotti  
torace

**VALUTAZIONE CHIUSURA :** decorso amix?  
decorso vgs?  
mammarie integre?  
pericardio chiuso?

**Collegi che hanno già operato il Pz.....**

**Soluzione di continuo....fragilità tessuti...interrotta mammaria dx in chiusura...**



- **Stato by-pass pregressi: VGS su Ao non sempre visualizzabili (non significa che siano occlusi): valutare lavaggio su coronaria nativa !**
- **Aortocoronarografia: calcificazioni Ao? graft prossimali ?**
- **Mammarie utilizzabili (accesso radiale dx ?)**
- **Calcificazioni coronariche**
- **Spot disponibili?**
- **Circoli collaterali**
- **Rivascolarizzazione possibile: completa ?  
efficace ?**



## Ecocardiogramma

- **Valvole**
  - **Ao:** cardioplegia anterograda bulbo ao?  
cardioplegia retrograda seno coronarico?
  - **M:** eventuale procedura off-pump ?.....PAPs?
- **Aorta ascendente**

Cinetica  
Spessori  
Volumi



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**Cinetica  
Spessori  
Volumi**





**Contrattile  
Vitale**

**CUORE-MUSCOLO**

**Determinante fondamentale per risultato**



**REDO BPAC**

**CORONARIE**

**CONDOTTI**



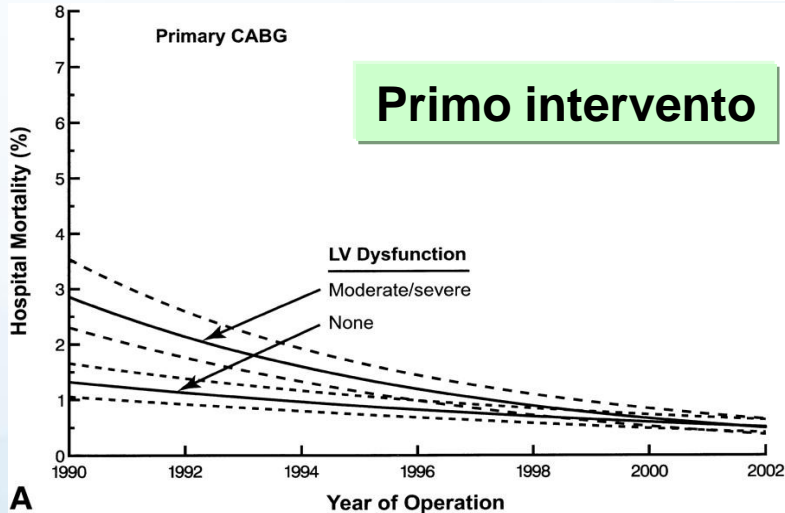
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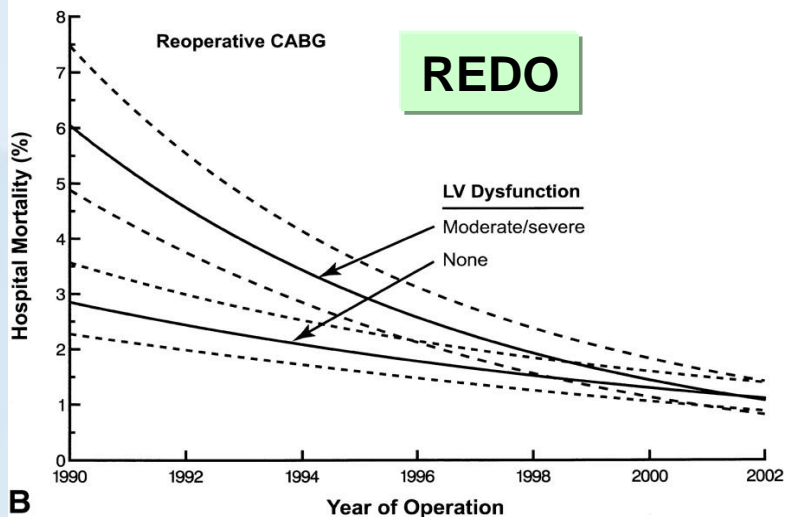


Cleveland Clinic



65 qq, IMA progresso, vasculopatia periferica, BPCO, AMISx secondo funzione VSx

REDO e disfunzione VSx



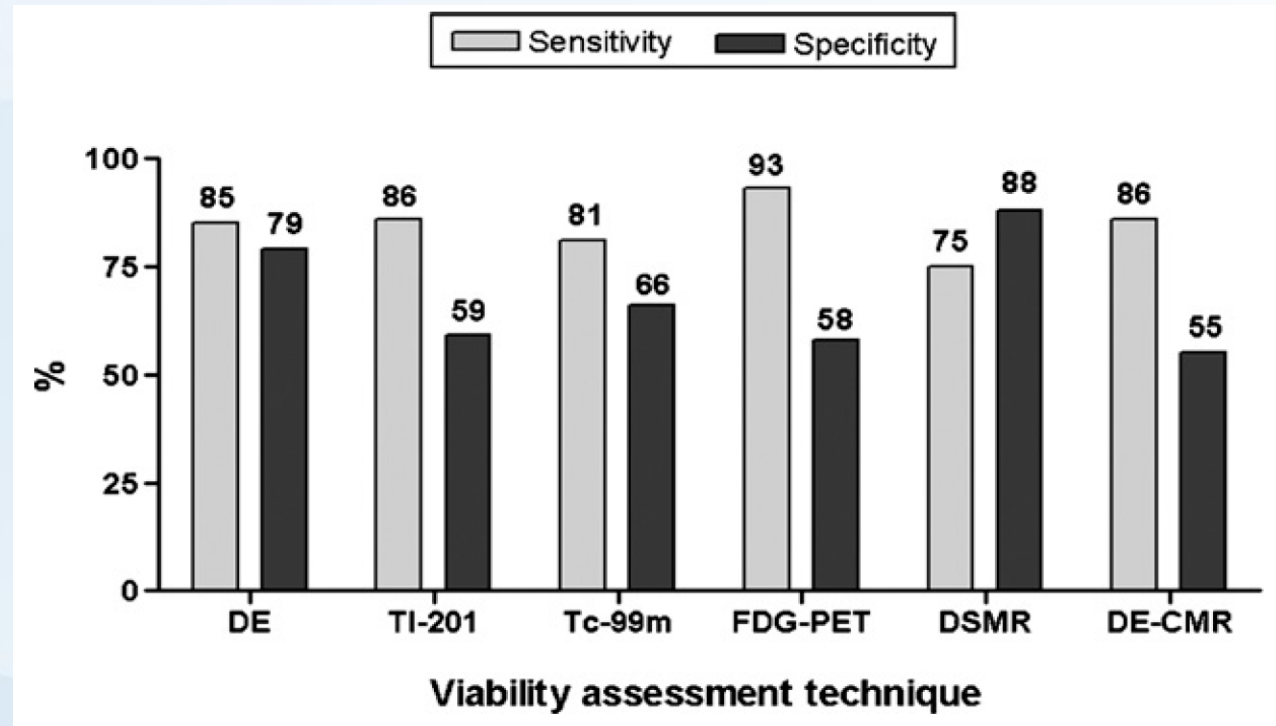
Stesso pz per REDO

**Contrattile...  
ECCO !**



# Muscolo contrattile o vitale !

- Contrattile: Ecocog
- Vitale:



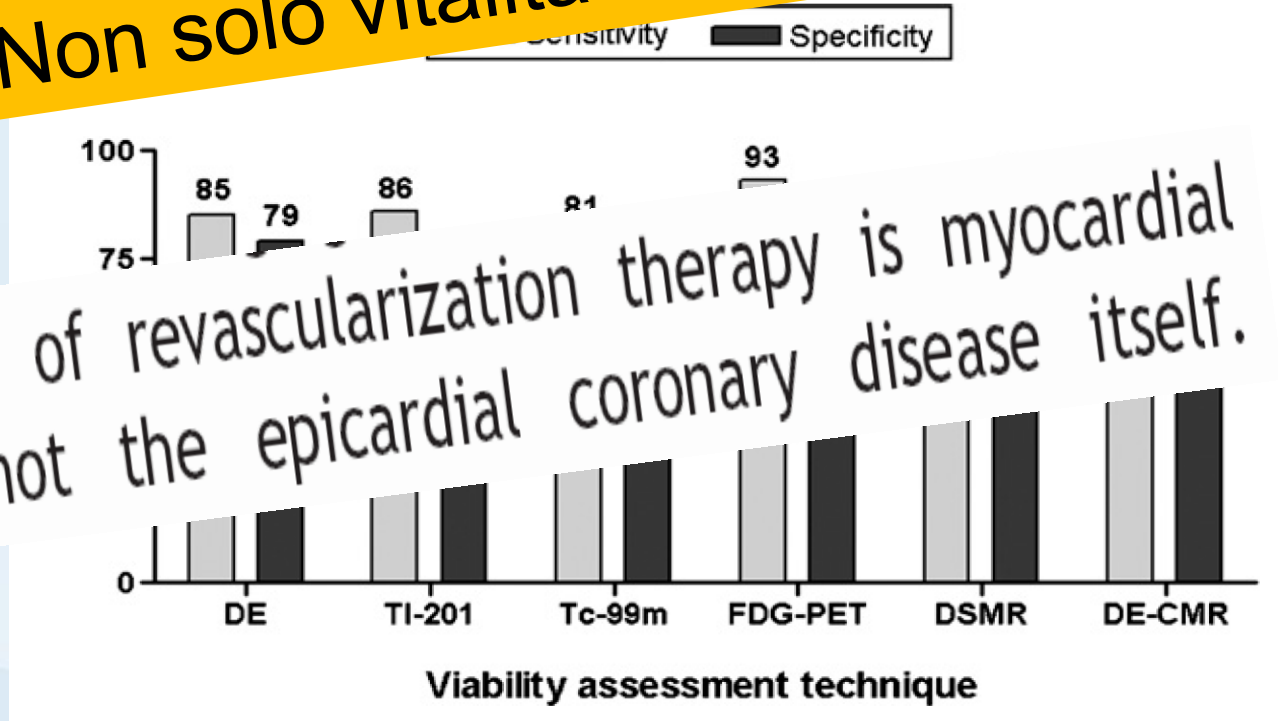
*Tomlinson DR et al. Assessment of myocardial viability: Comparison fo Echocardiography versus Cardiac Magnetic Resonance Imaging in the current era. Heart,Lung and Circulation 2008;17:173-185*



# Muscolo contrattile o vitale !

- Contrattile: Ecocog
- Vitale:

**Non solo vitalità o contrattilità**



The target of revascularization therapy is myocardial ischaemia, not the epicardial coronary disease itself.

Tomlinson DR et al. Assessment of myocardial viability: Comparison fo Echocardiography versus Cardiac Magnetic Resonance Imaging in the current era. *Heart,Lung and Circulation* 2008;17:173-185



# Frequency of Stress Testing to Document Ischemia Prior to Elective PCI

Non ripetiamo gli stessi errori



## Results

**In the United States, 44.5% (n=10 629) of patients underwent stress testing within the 90 days prior to elective PCI.**

## Conclusion

**The majority of Medicare patients with stable coronary artery disease do not have documentation of ischemia by noninvasive testing prior to elective PCI.**

The target of revascularization therapy is myocardial ischaemia, not the epicardial coronary disease itself.

<http://jama.ama-assn.org/cgi/content/full/300/15/1765>

*JAMA*. 2008;300(15):1765-1773 (doi:10.1001/jama.300.15.1765) Grace A. Lin; R. Adams Dudley; F. L. Lucas; et al.



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**NON solo ischemia SI o NO**

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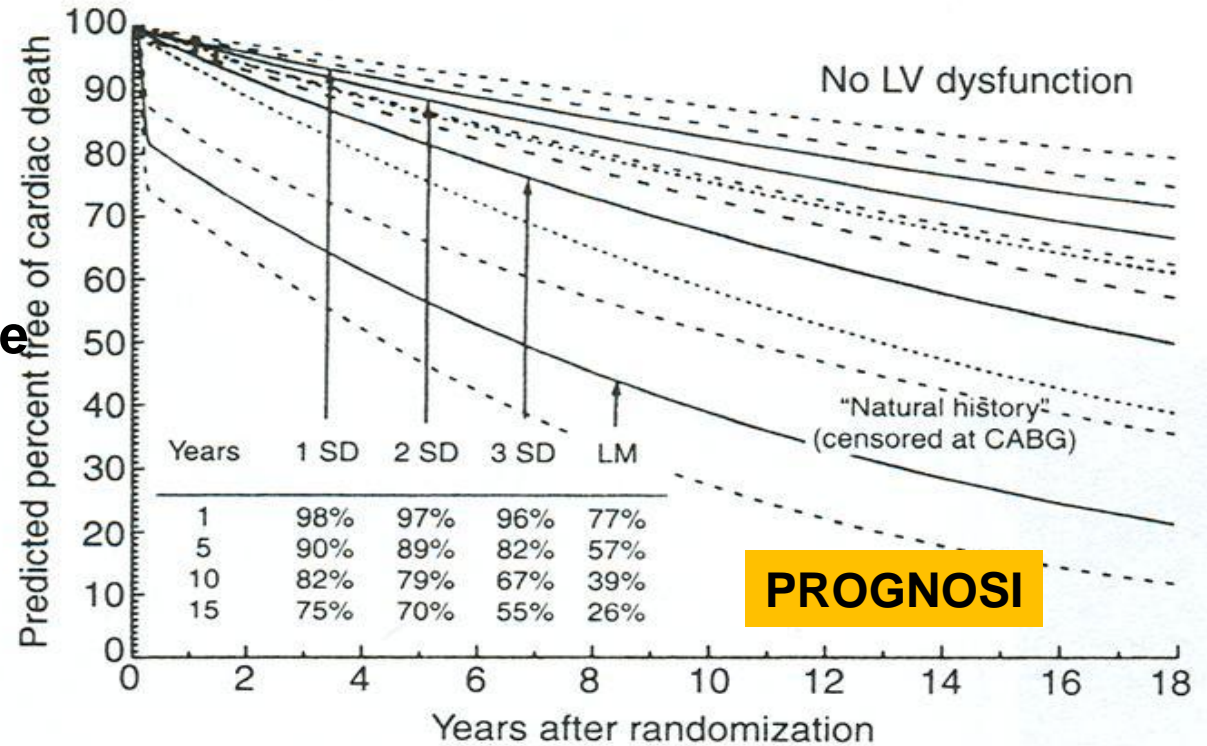
*JAMA. 2008;300(15):1765-1773 (doi:10.1001/jama.300.15.1765)* Grace A. Lin; R. Adams Dudley; F. L. Lucas; et al.



Stenosi

Ischemia

Rivascolarizzazione



Prognosi dipende da estensione aree ischemiche

Copie LH, et al: Lancet 2006; 367:69 ACC/AHA Joint Task Force on CABG JACC-Circulation 1991

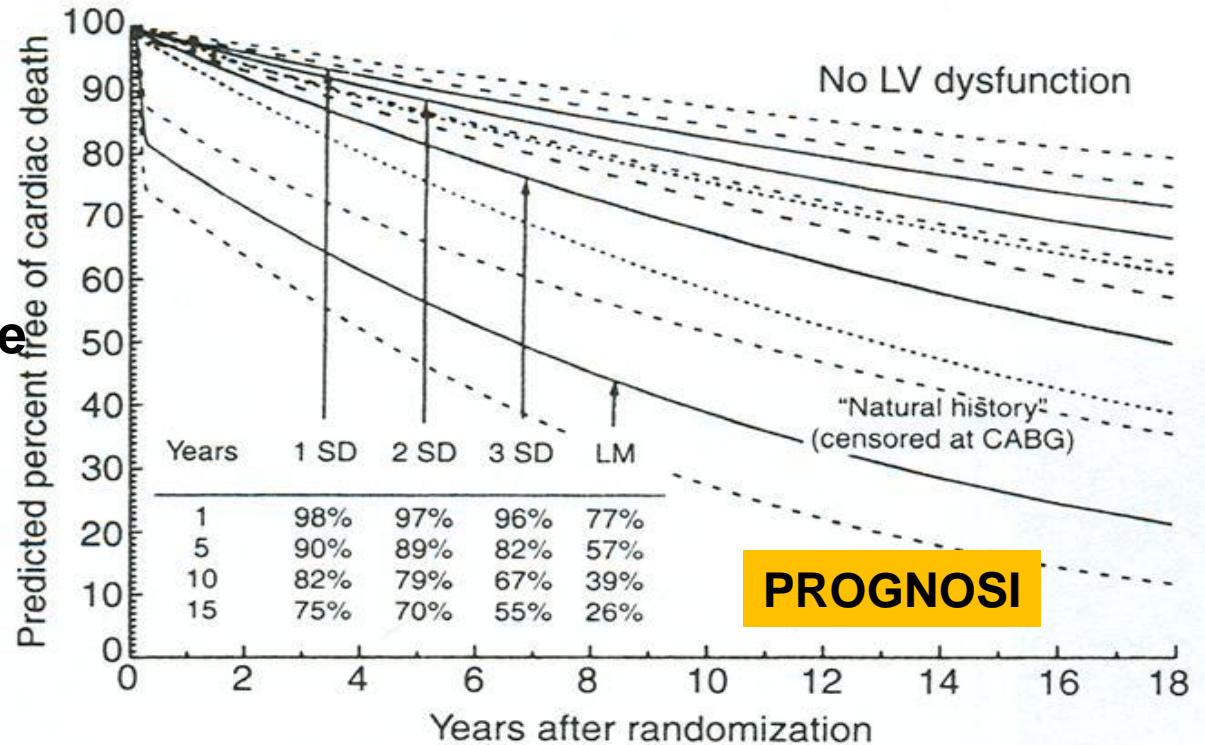




Stenosi

Ischemia

Rivascolarizzazione



**PROGNOSI**

Prognosi dipende da estensione aree ischemiche

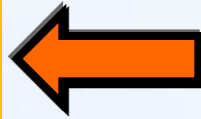
.....ischemia...vitalità.....estensione ischemia....

Copie LH, et al: Lancet 2006; 367:69 ACC/AHA Joint Task Force on CABG JACC-Circulation 1991



# Cardiochirurgo ed Ecostress

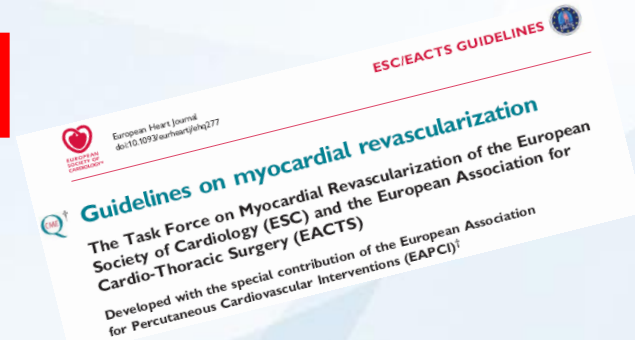
Ischemia  
Miocardio vitale



Invasività inferiore dell'angiografia  
Più attendibile di TDS  
Ok per Pz non abili a TDS



**IDENTIFICA TERRITORI SPECIFICI**



	Asymptomatic (screening)	Symptomatic Pretest likelihood <sup>b</sup> of obstructive disease			Prognostic value of positive result <sup>a</sup>	Prognostic value of negative result <sup>a</sup>	References
		Low	Intermediate	High			
<b>Anatomical test</b>							
Invasive angiography	III A	III A	IIb A	I A	I A	I A	[12]
MDCT angiography	III B <sup>c</sup>	IIb B	IIa B	III B	IIb B	IIa B	[17–20]
MRA angiography	III B	III B	III B	III B	III B	III B	[21]
<b>Functional test</b>							
Stress echo	III A	III A	I A	III A <sup>d</sup>	I A	I A	[12]
Nuclear imaging	III A	III A	I A	III A <sup>d</sup>	I A	I A	[12]
Stress MRI	III B	III C	IIa B	III B <sup>d</sup>	IIa B	IIa B	[12, 23–25]
PET perfusion	III B	III C	IIa B	III B <sup>d</sup>	IIa B	IIa B	[26]

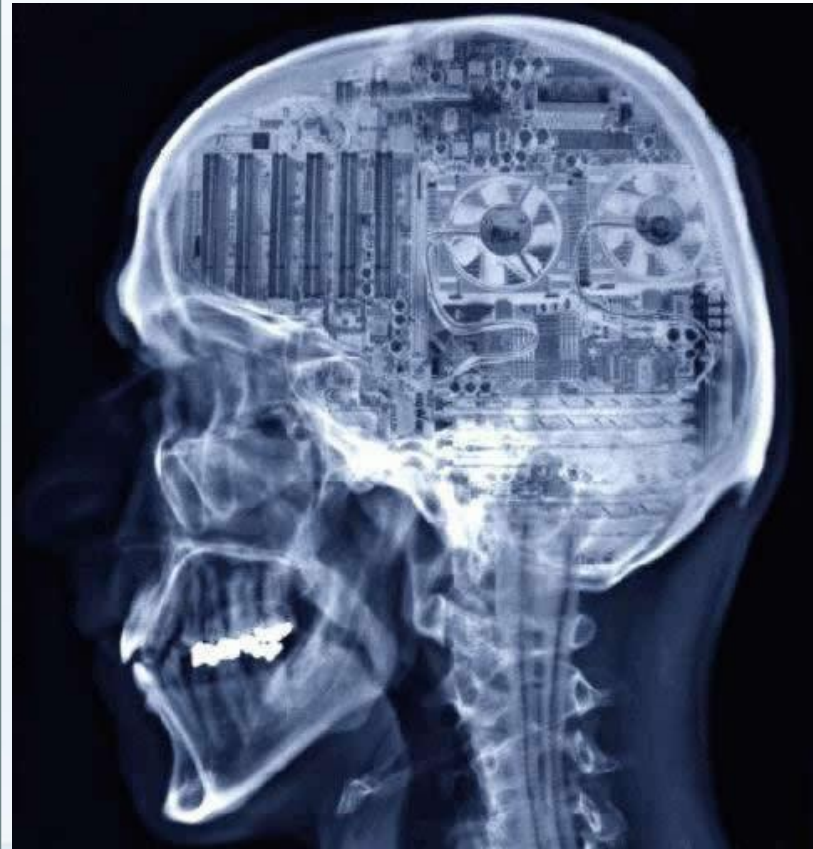


## ISCHEMIA - VITALITA'

**IDENTIFICA TERRITORI SPECIFICI**

Quali bypass fare

Quali bypass non fare





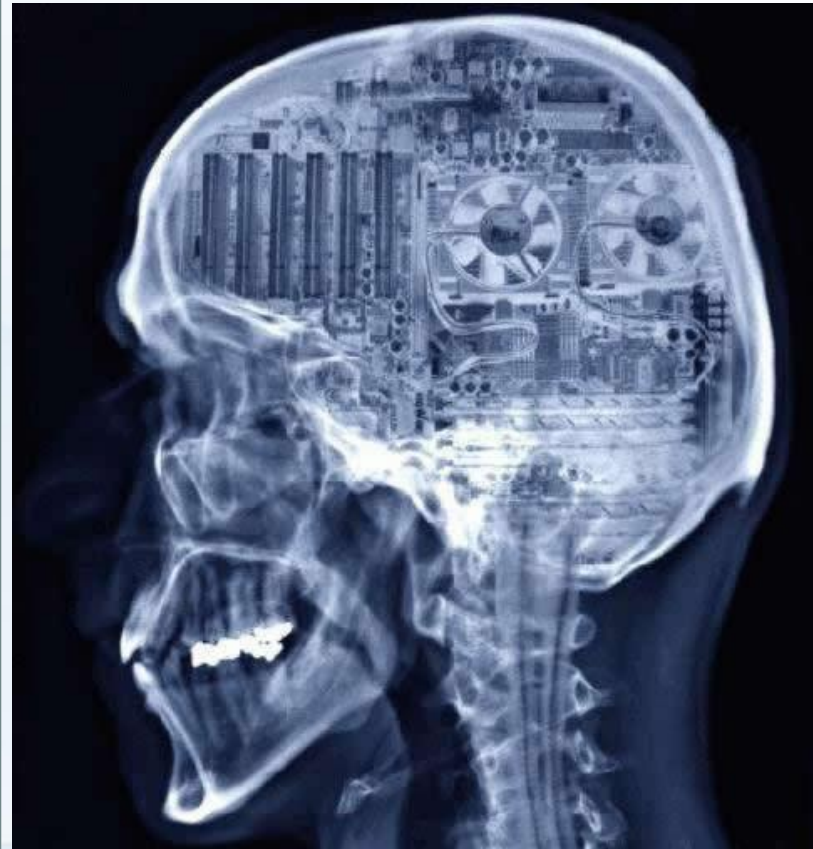
**ISCHEMIA - VITALITA'**

**IDENTIFICA TERRITORI SPECIFICI**

**Quali bypass fare**

**Quali bypass non fare**

**SE OPERARE O NO !**



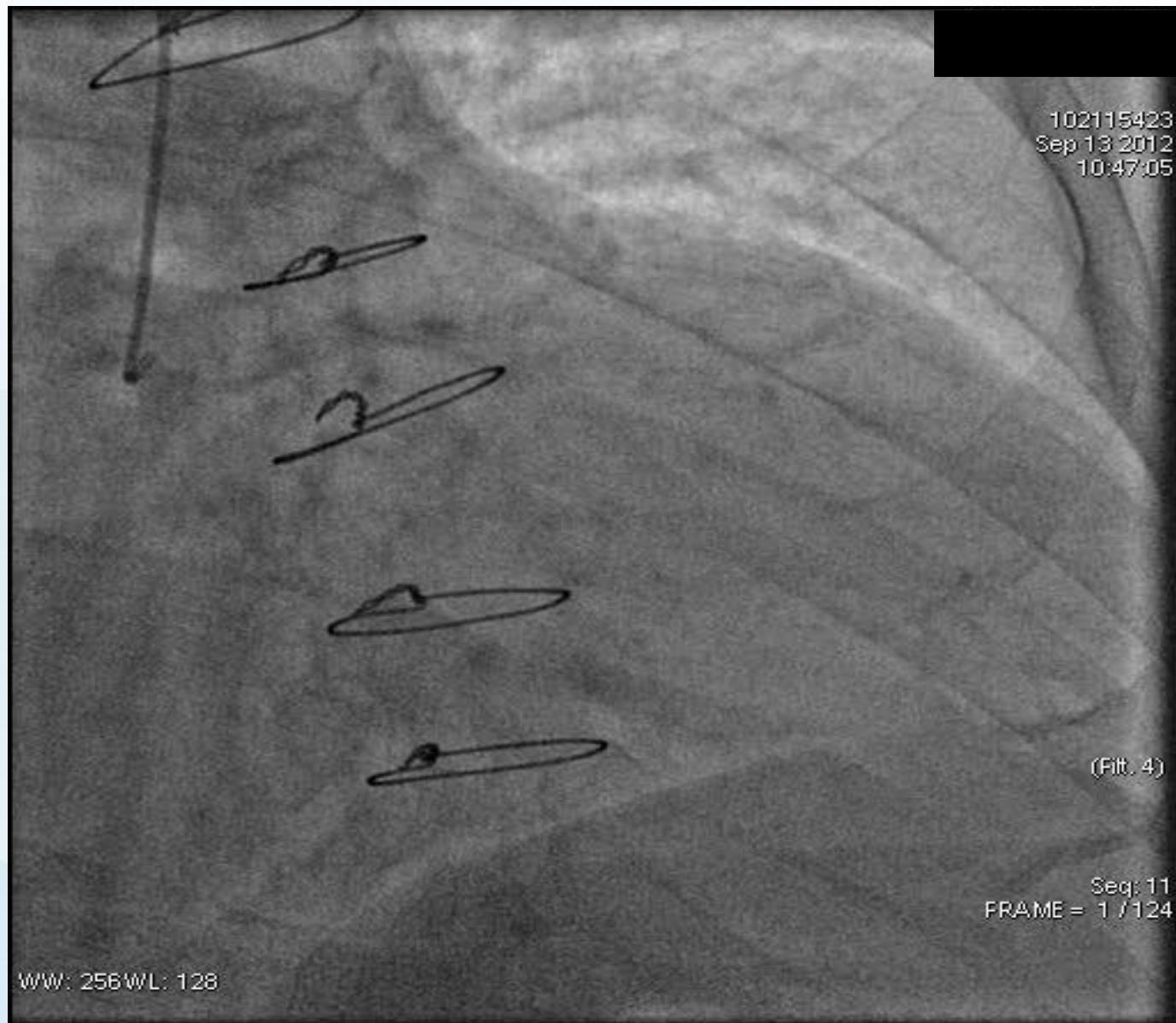


- 72 aa
- 1996 ACC IMA ant ed inf per  
IVA 100%  
CDx 100%  
  
BPAC x 2: Ao=>IVA  
Ao=>CDx con ampia TEA
- 2012 maggio e agosto SCC,  
FE 23%,  
Coronarografia.  
NO safene

16 aa

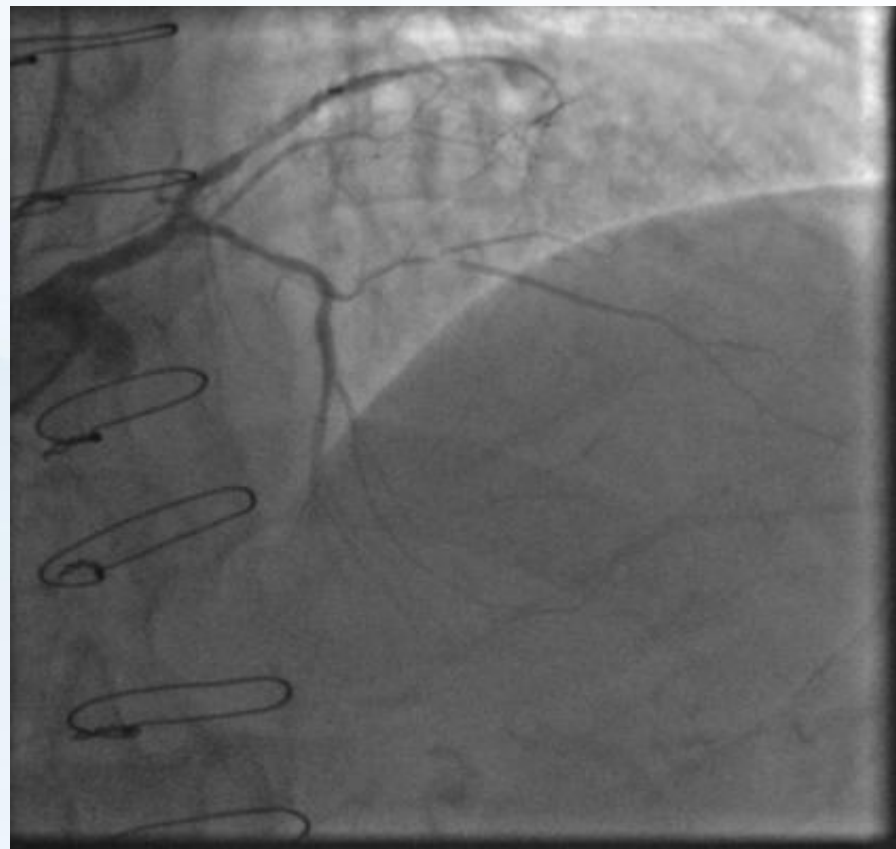
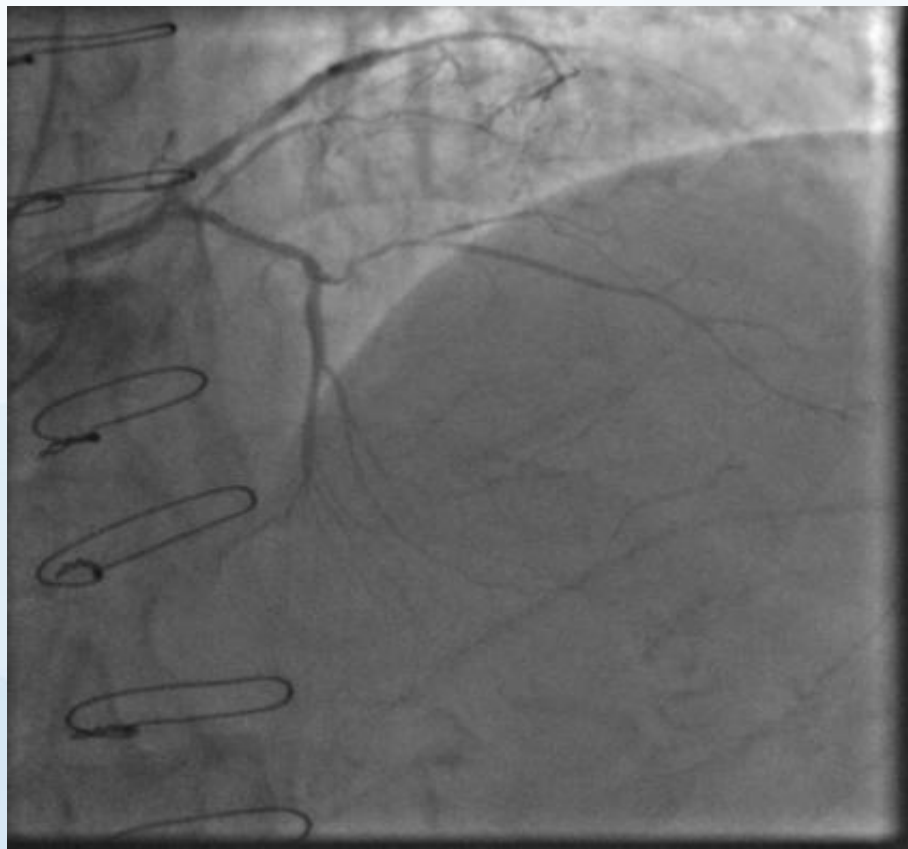


# Ao => CDx



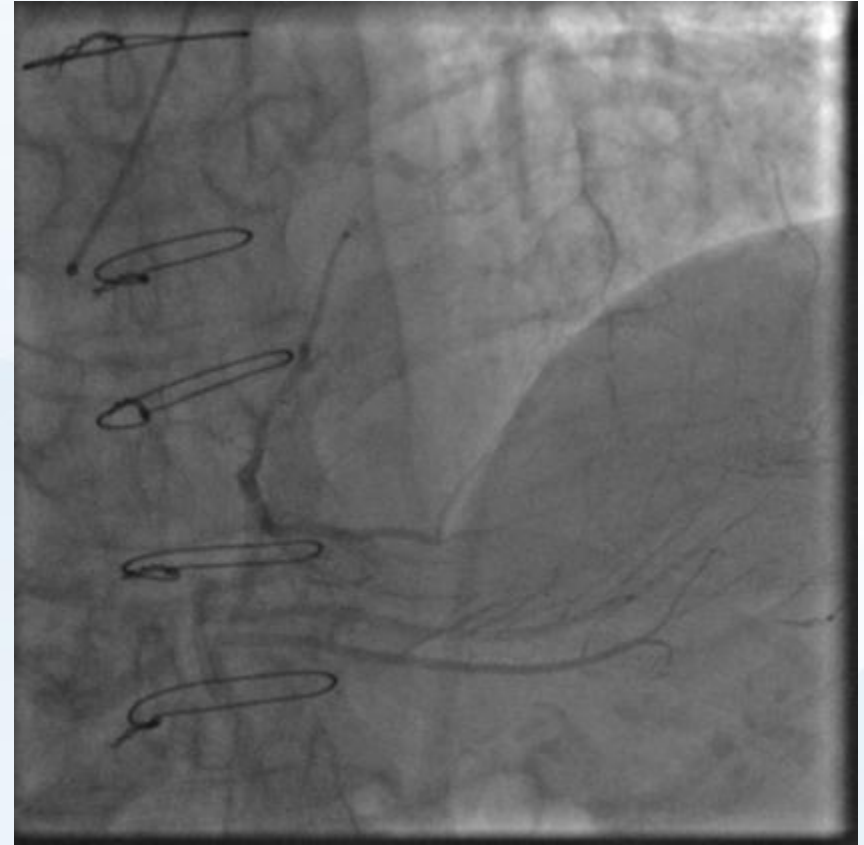


# IVA ?

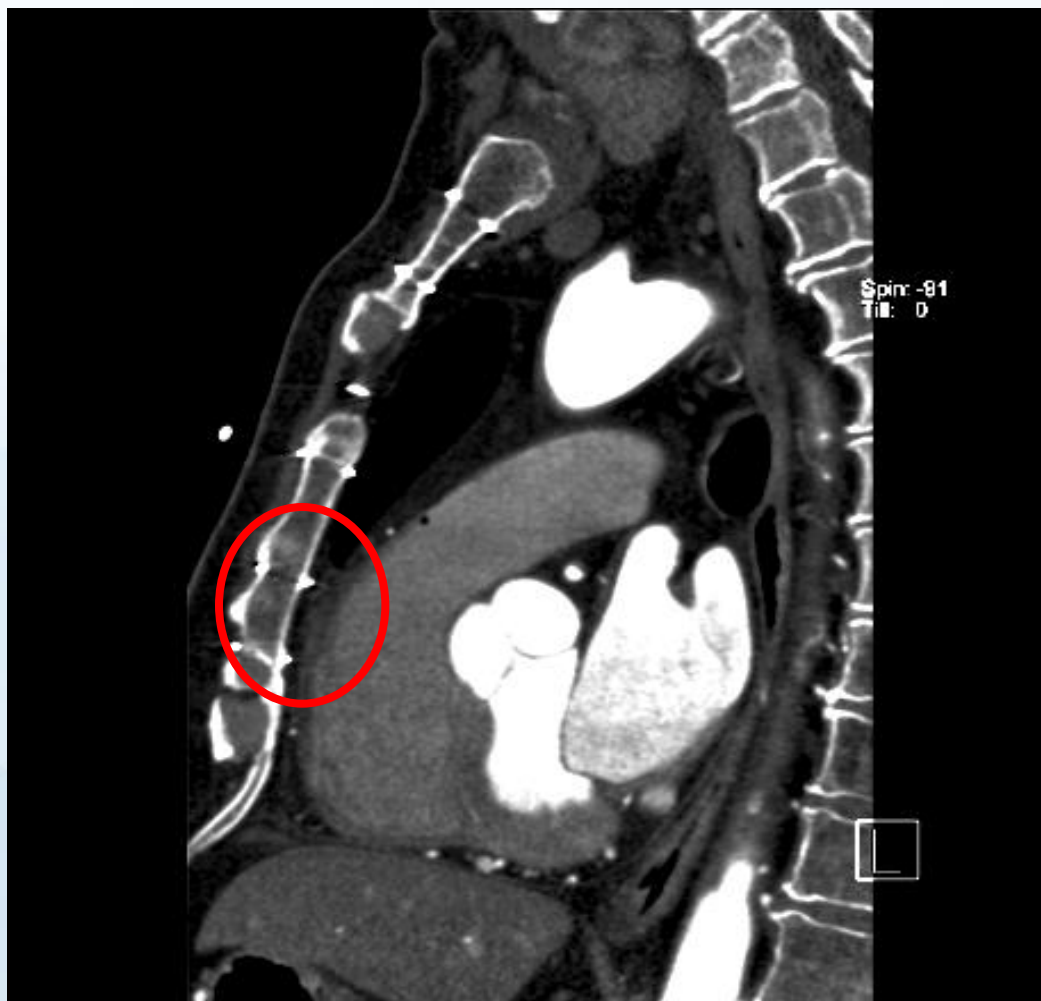


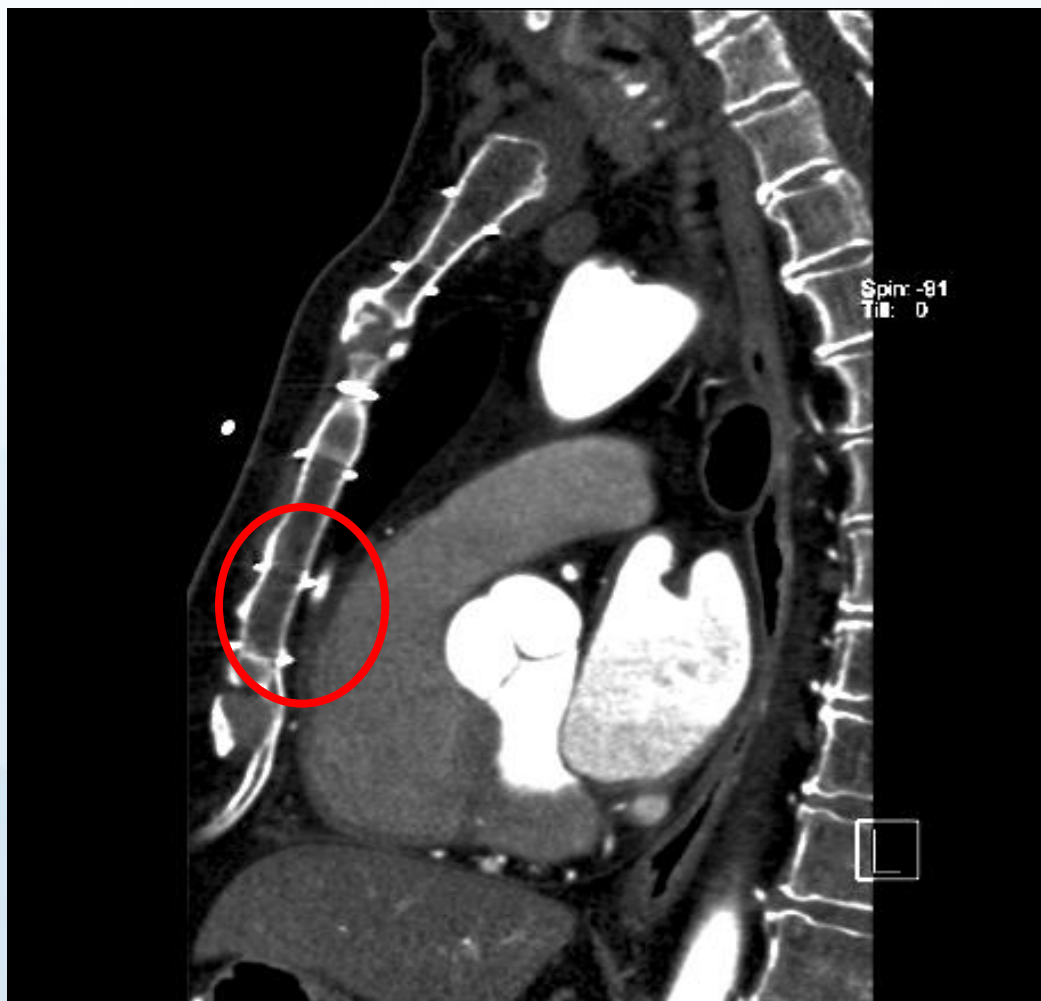


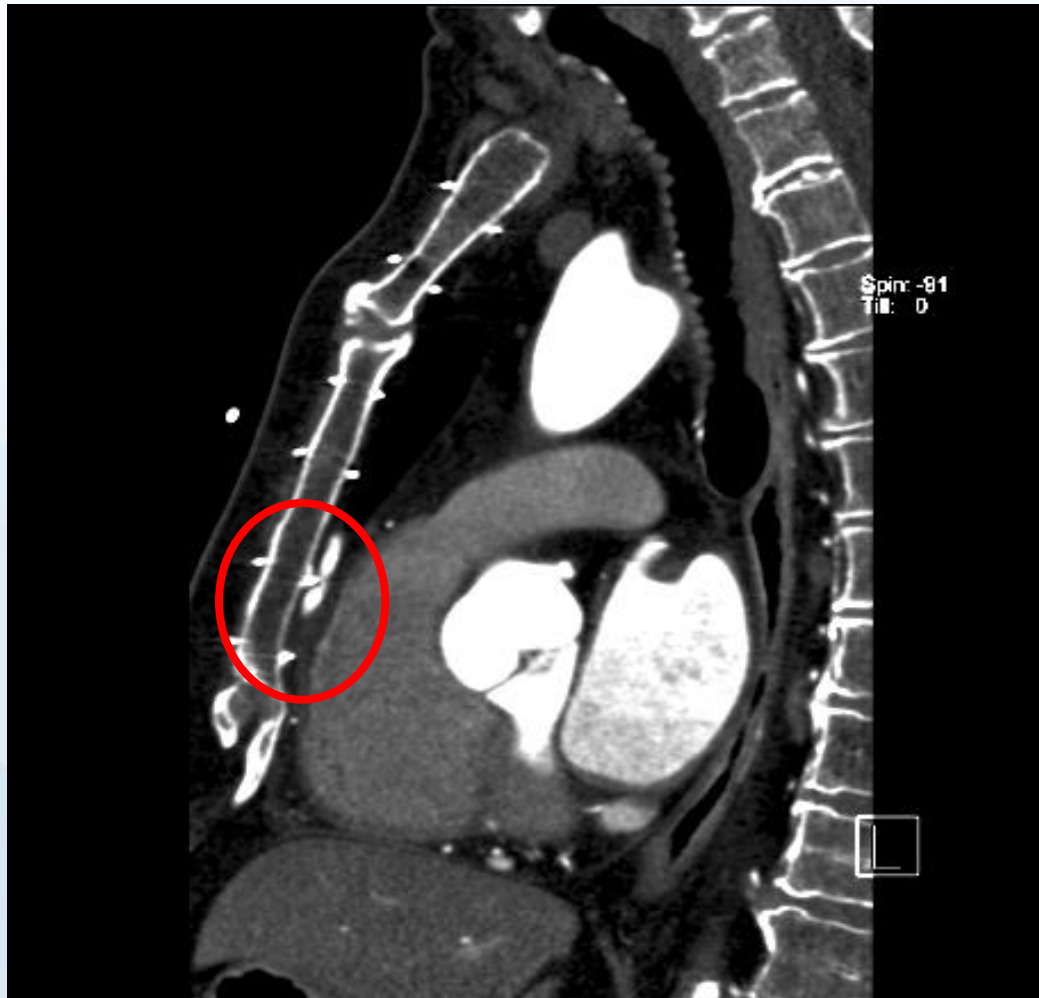
# IVA ?

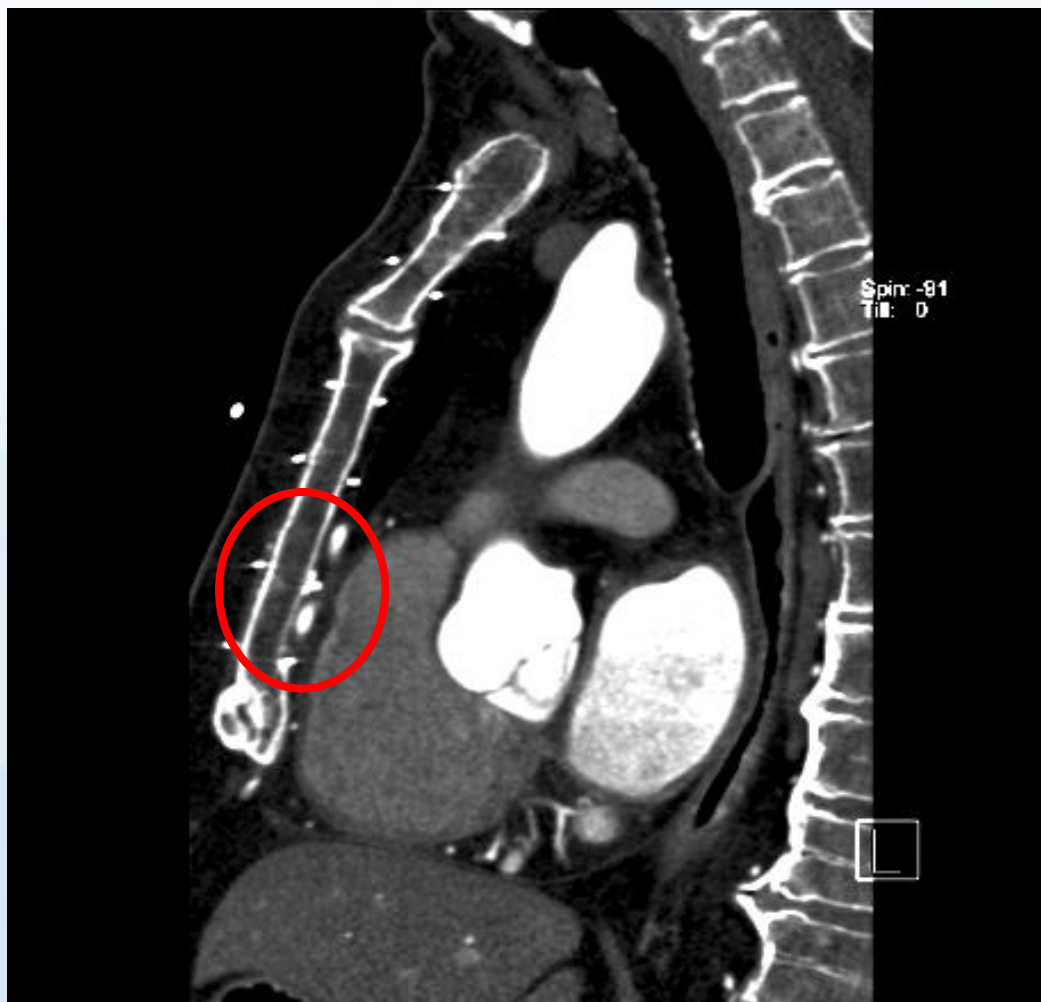






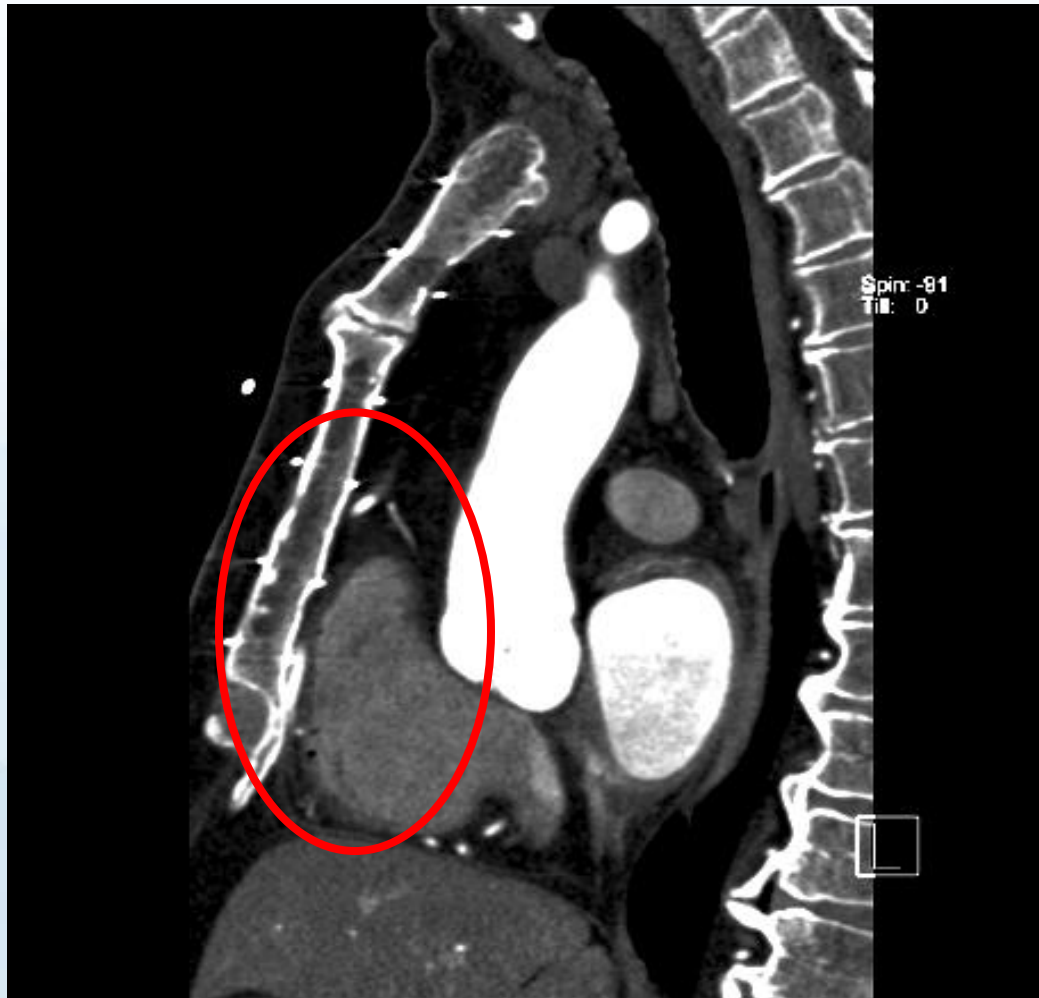














Ao=>IVA

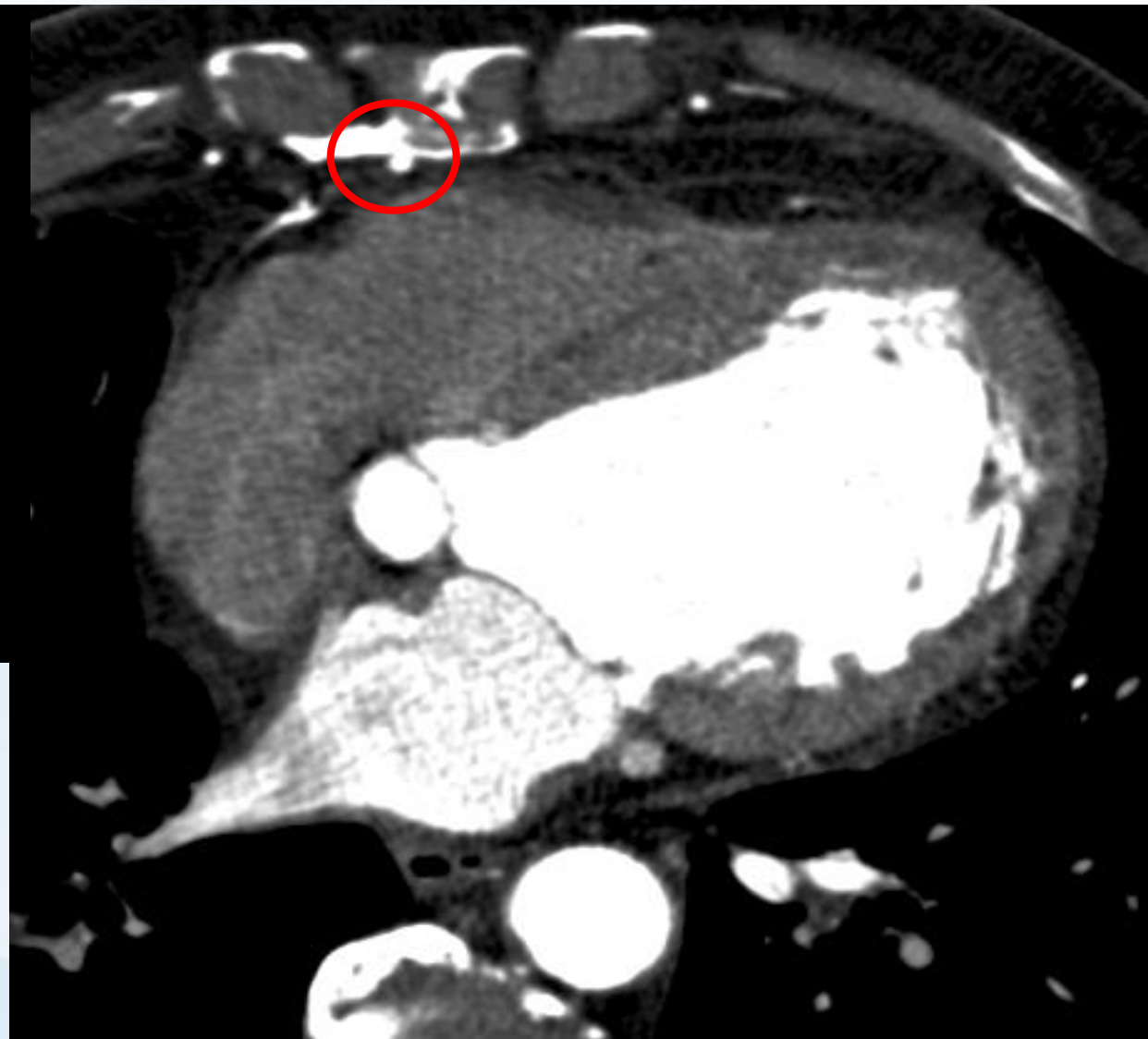
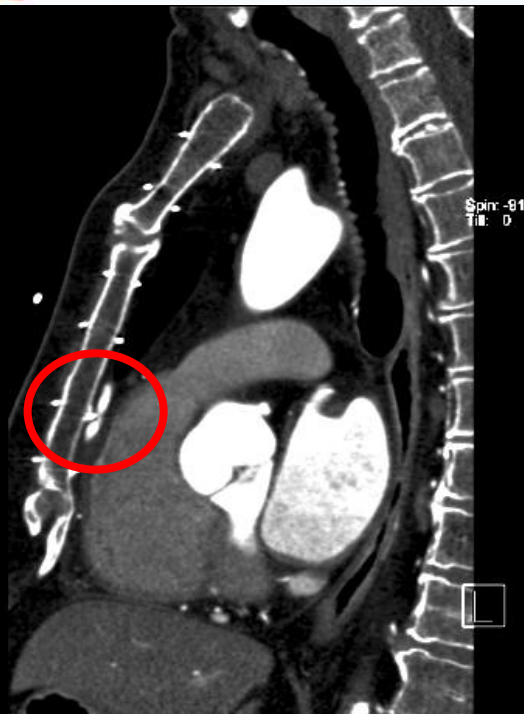


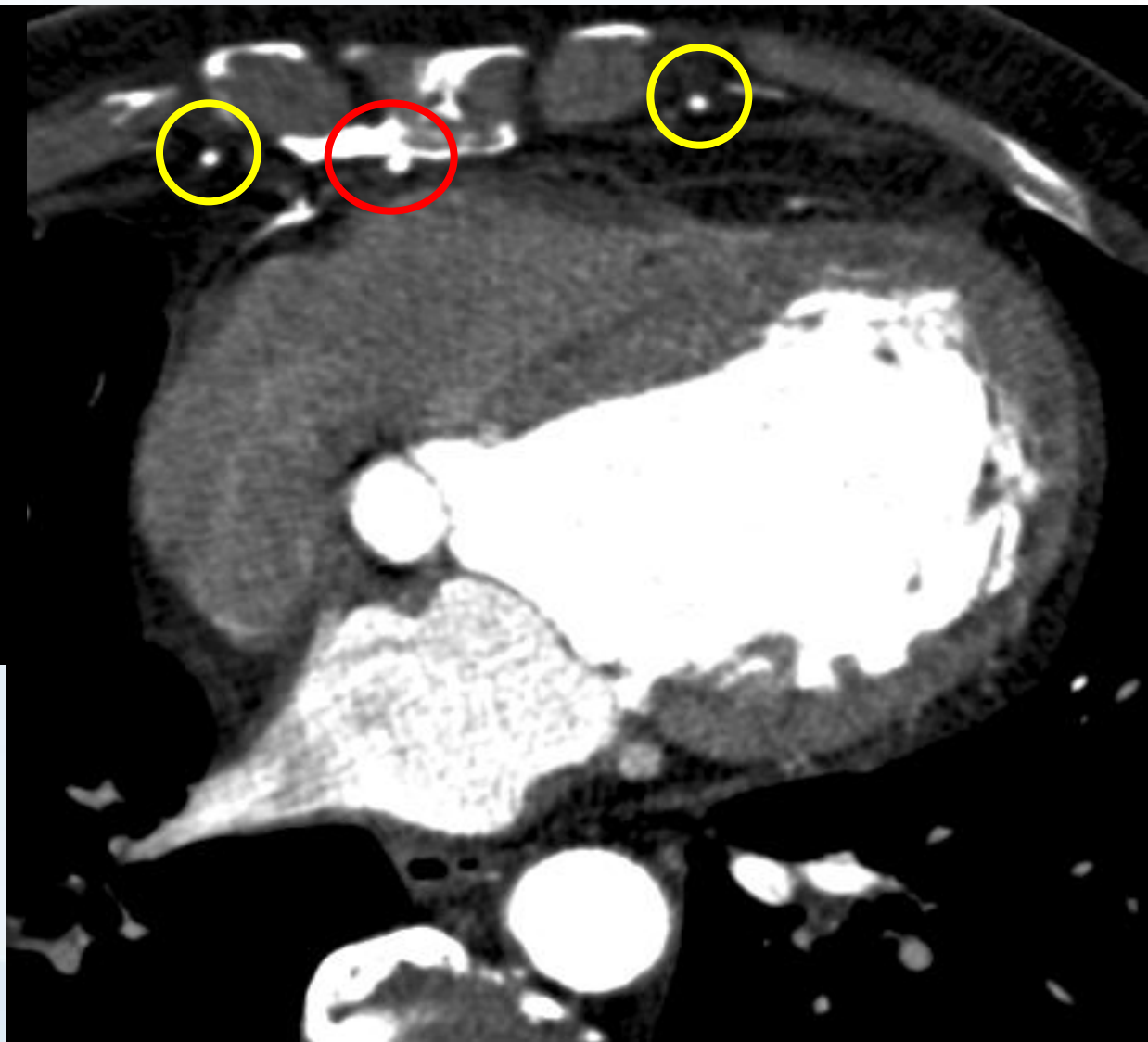
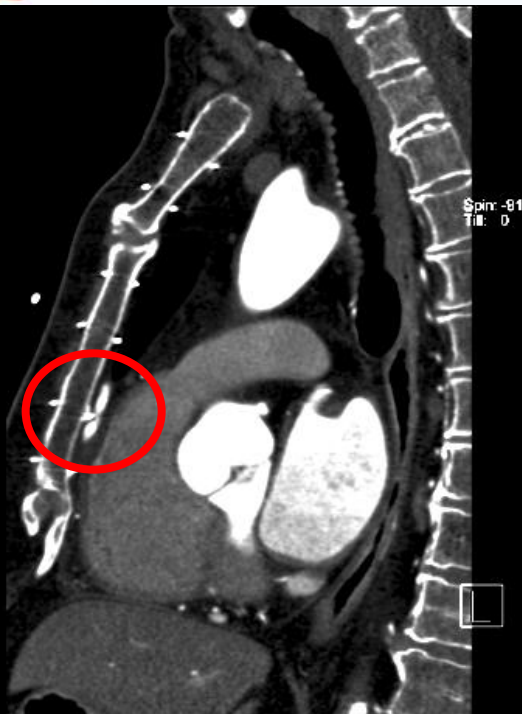


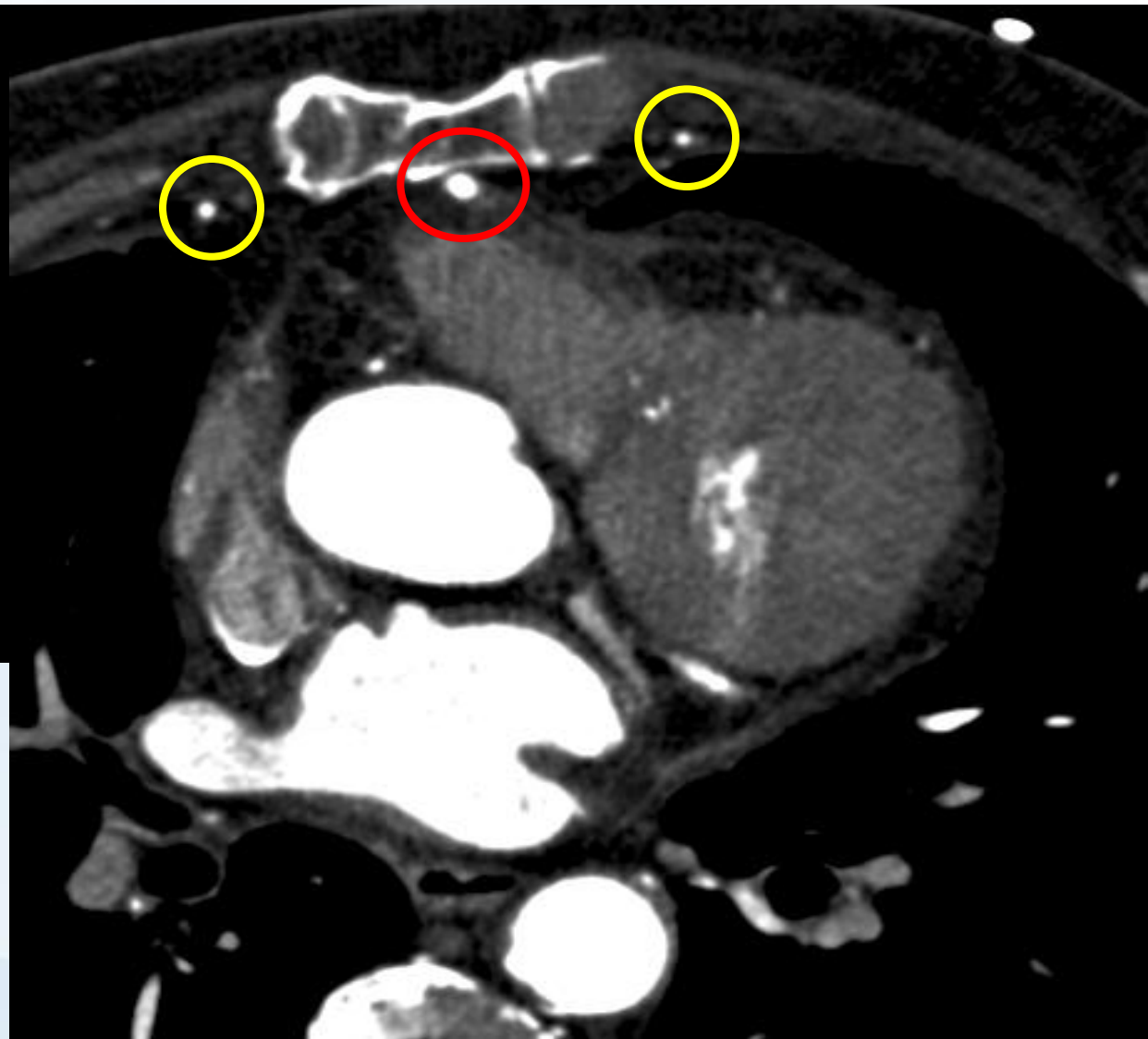
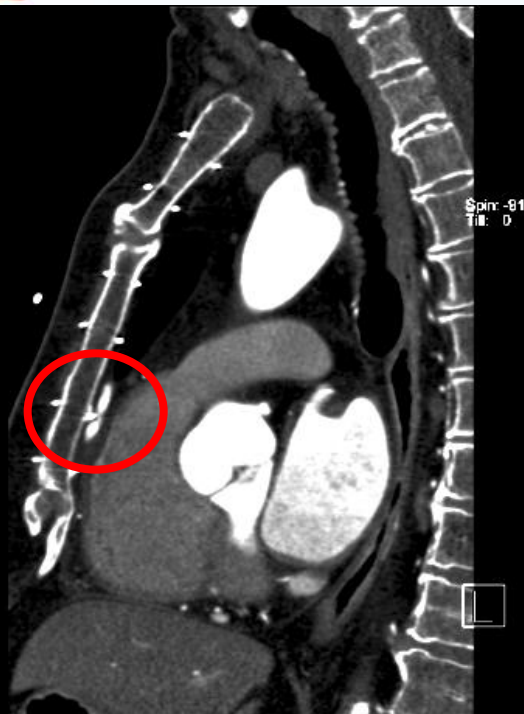


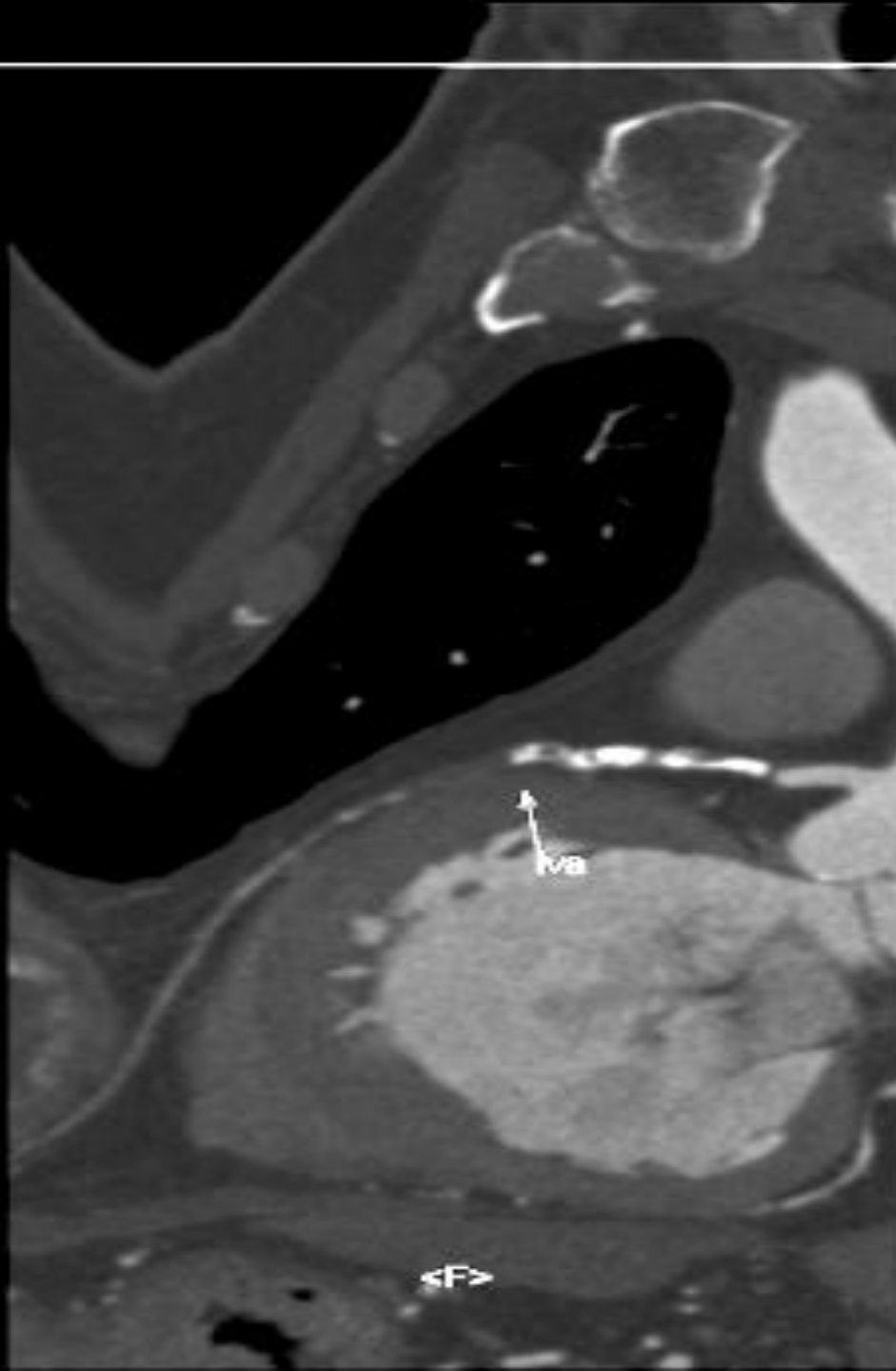
**Ao=>IVA**











IVA prox

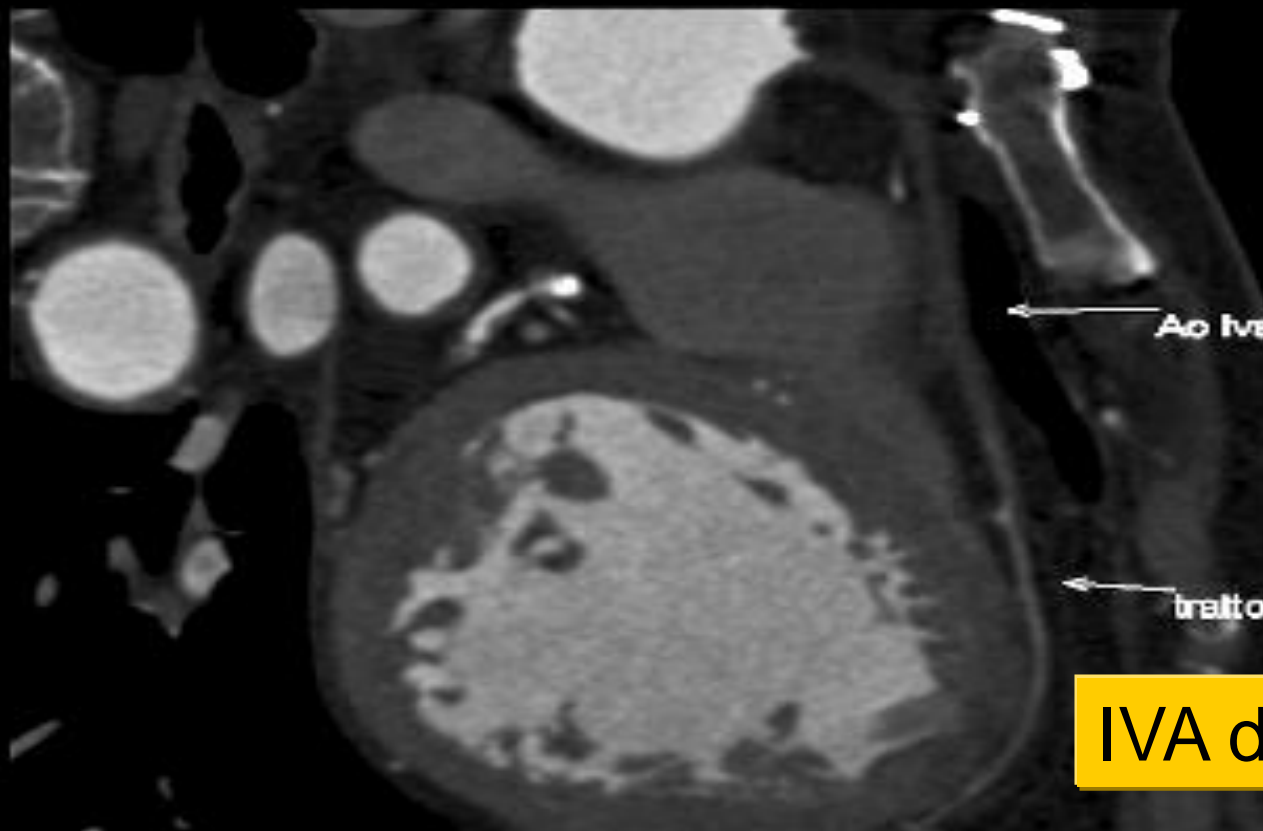
Age:72, M  
Se:7  
2012/09/17 11:05 AM  
Kern:B30f  
49 bpm, 65 x D, 82



%R-R : 65



TP65PC1167  
120 kV  
772 mA  
Tilt:0.00  
No: 4



Ao Iva

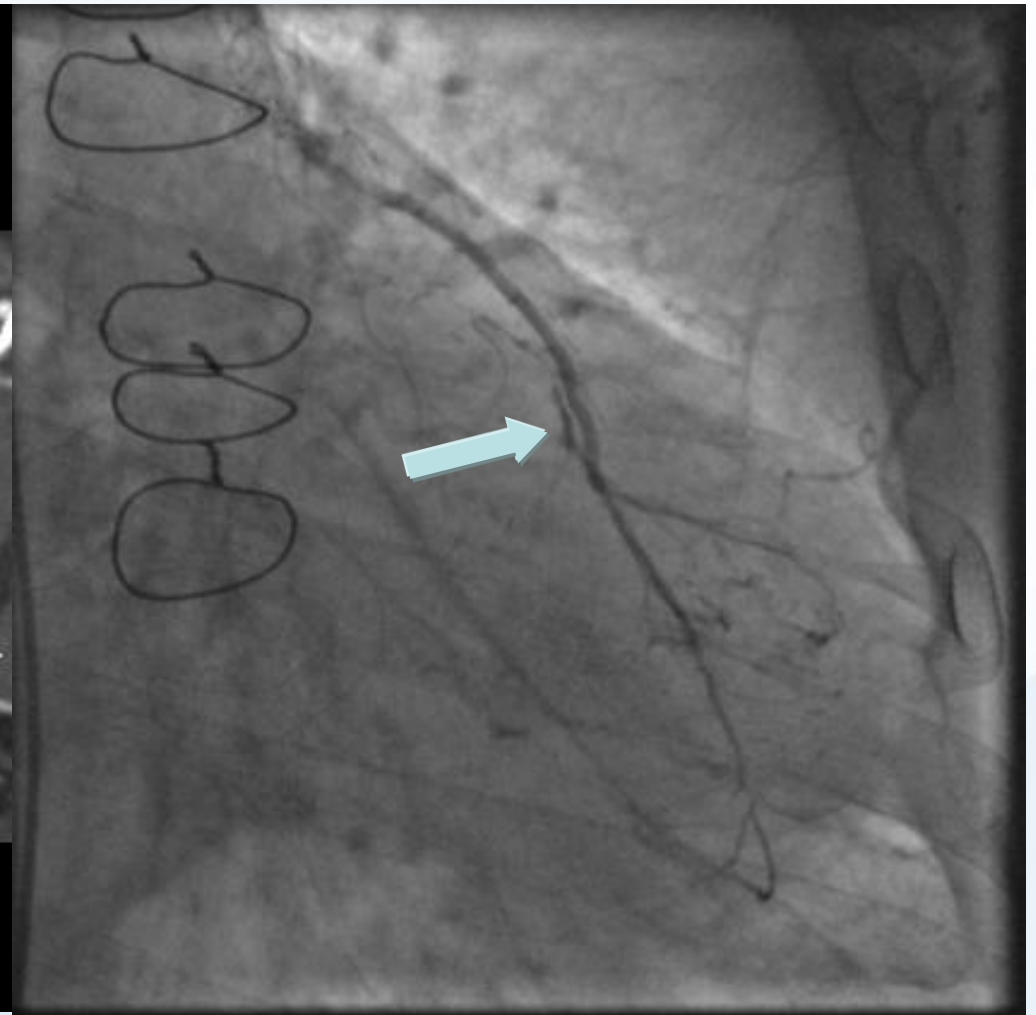
<A>

tratto post anastomosi

IVA distale



# AMISx=>IVA off-CEC

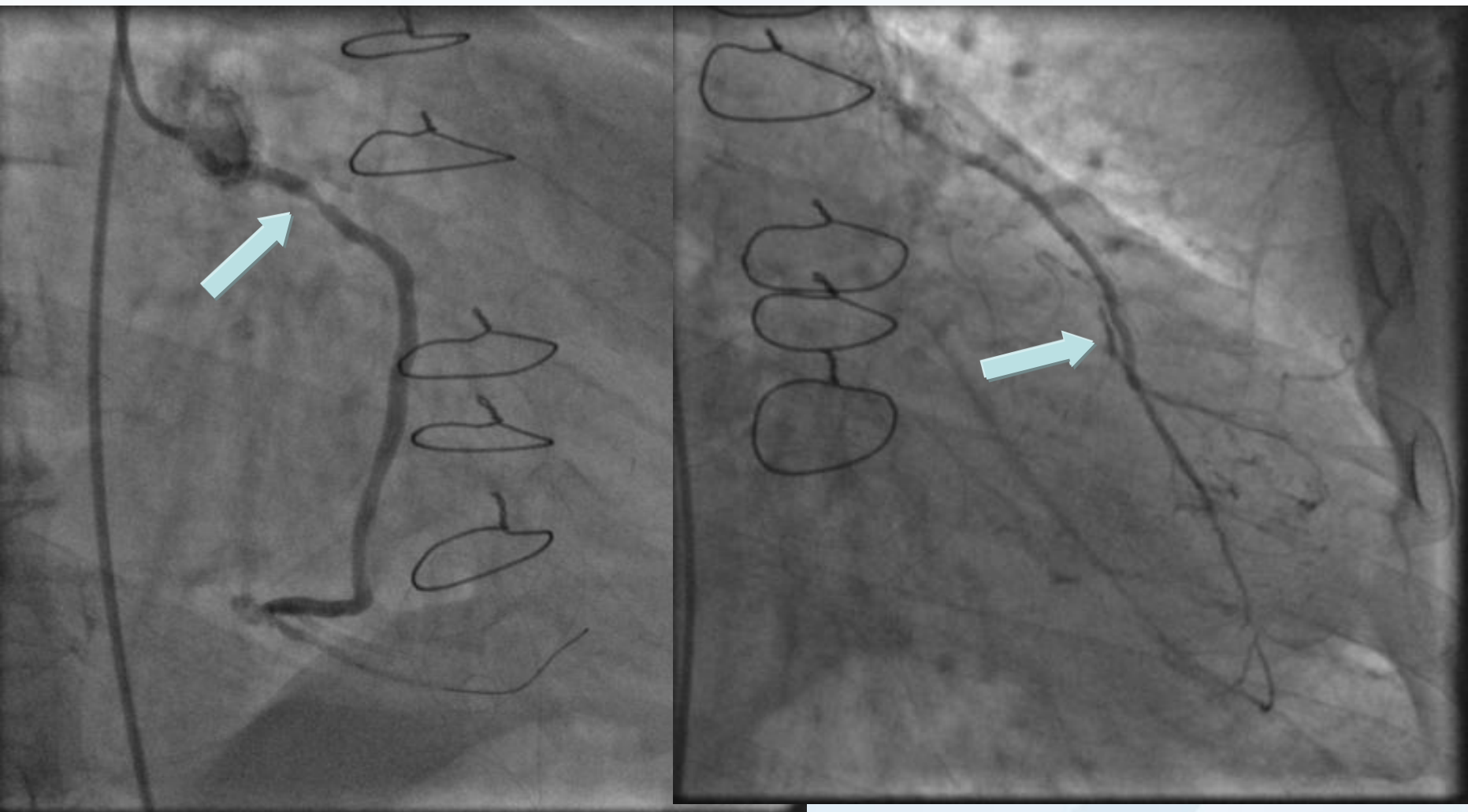






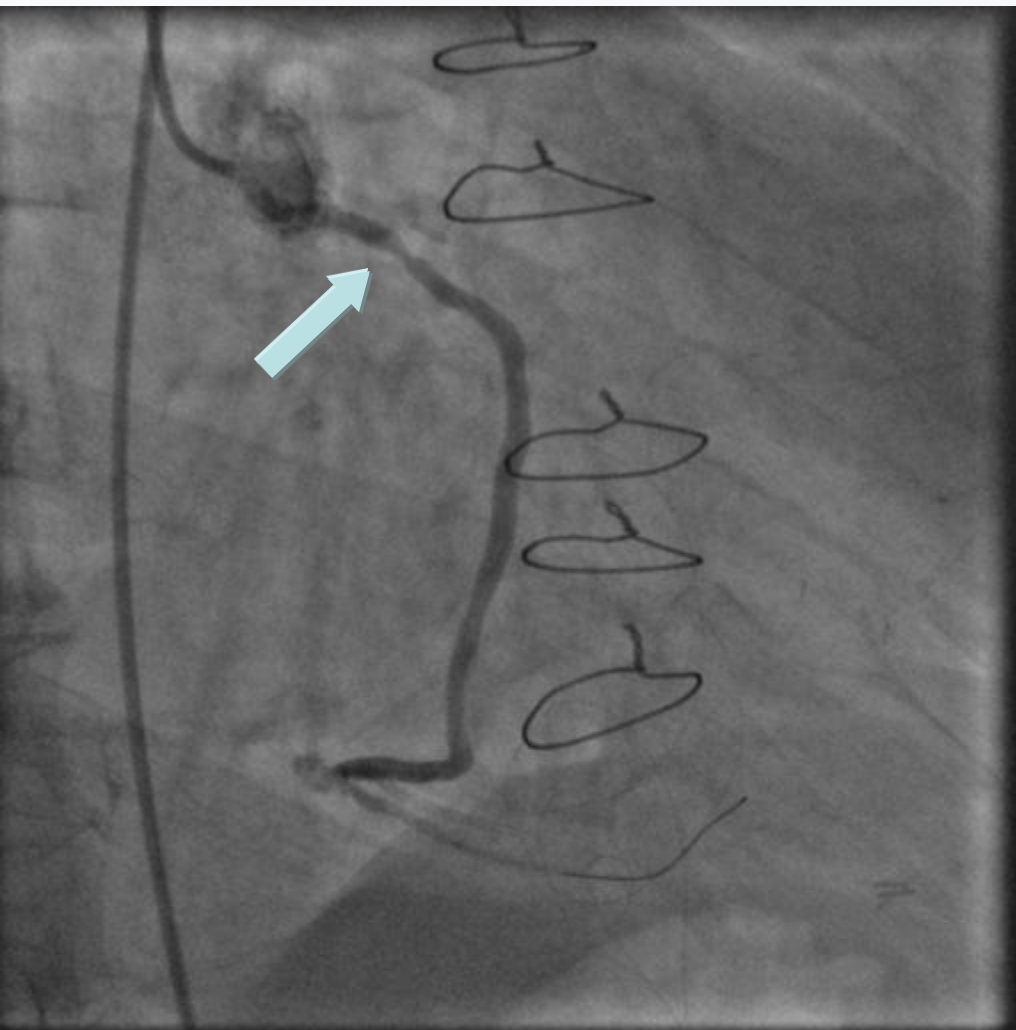
VGS x CDx stenotica

AMISx=>IVA off-CEC

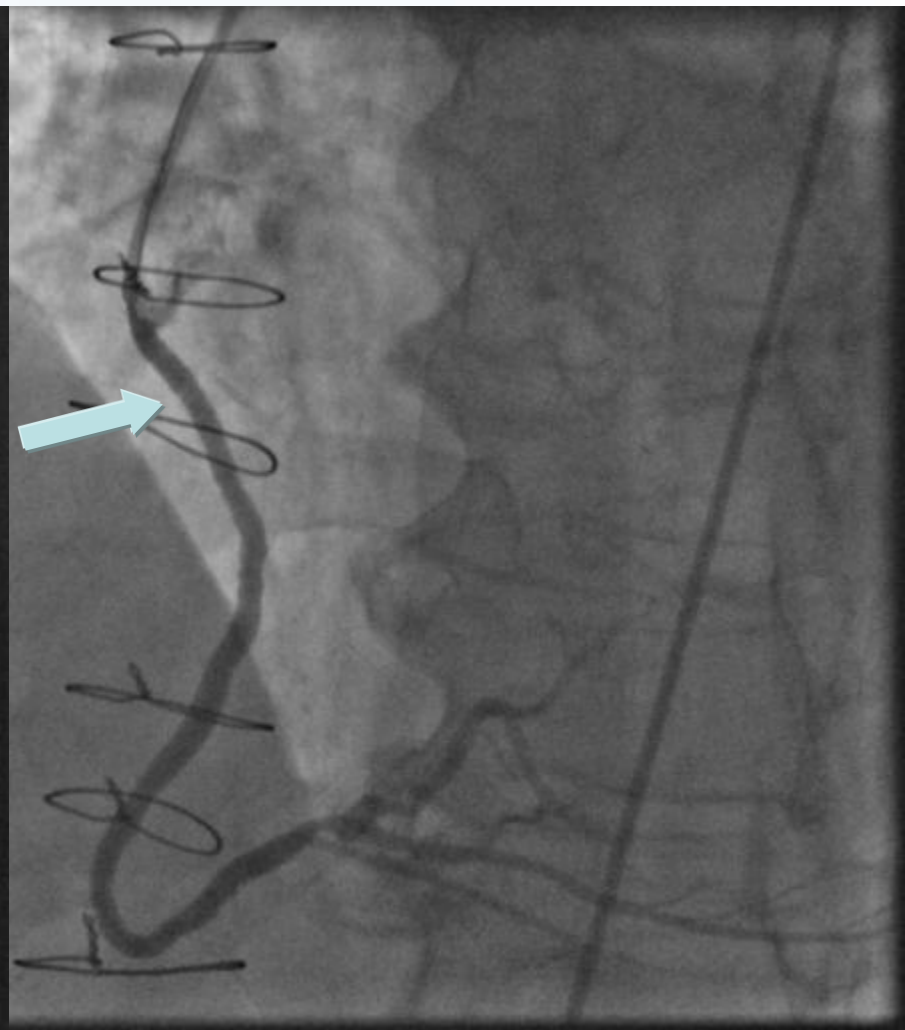




## VGS x CDx stenotica



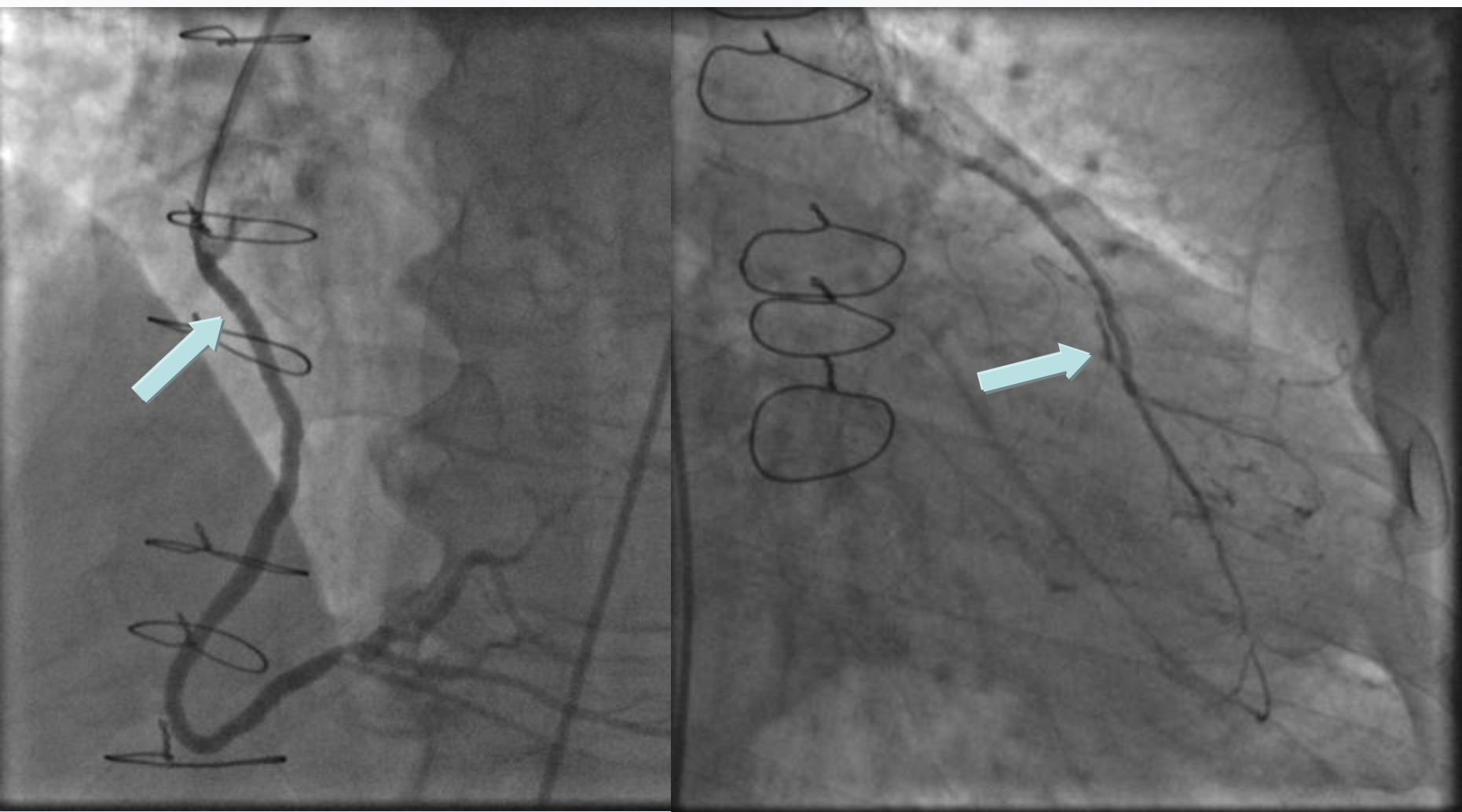
## CDx post-stent





## VGS x CDx stenotica

AMISx=>IVA off-CEC





## Coronarografia ed ECOCG

Se dubbi su vitalità



Eco Stress



## Coronarografia ed ECOCG

**Se dubbi su vitalità**



Eco Stress

**Se intervento**





## Coronarografia ed ECOCG

Se dubbi su vitalità



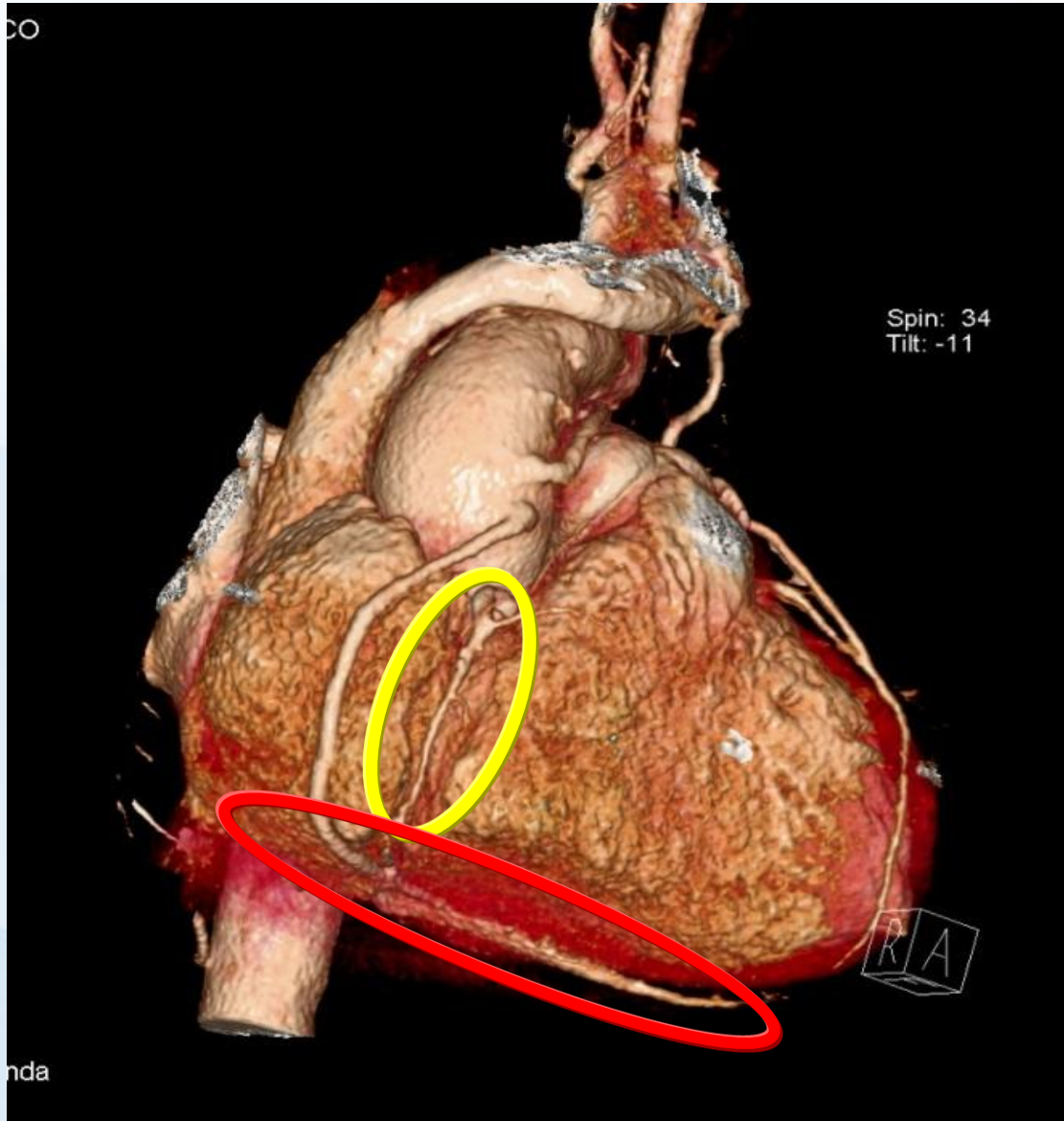
Eco Stress

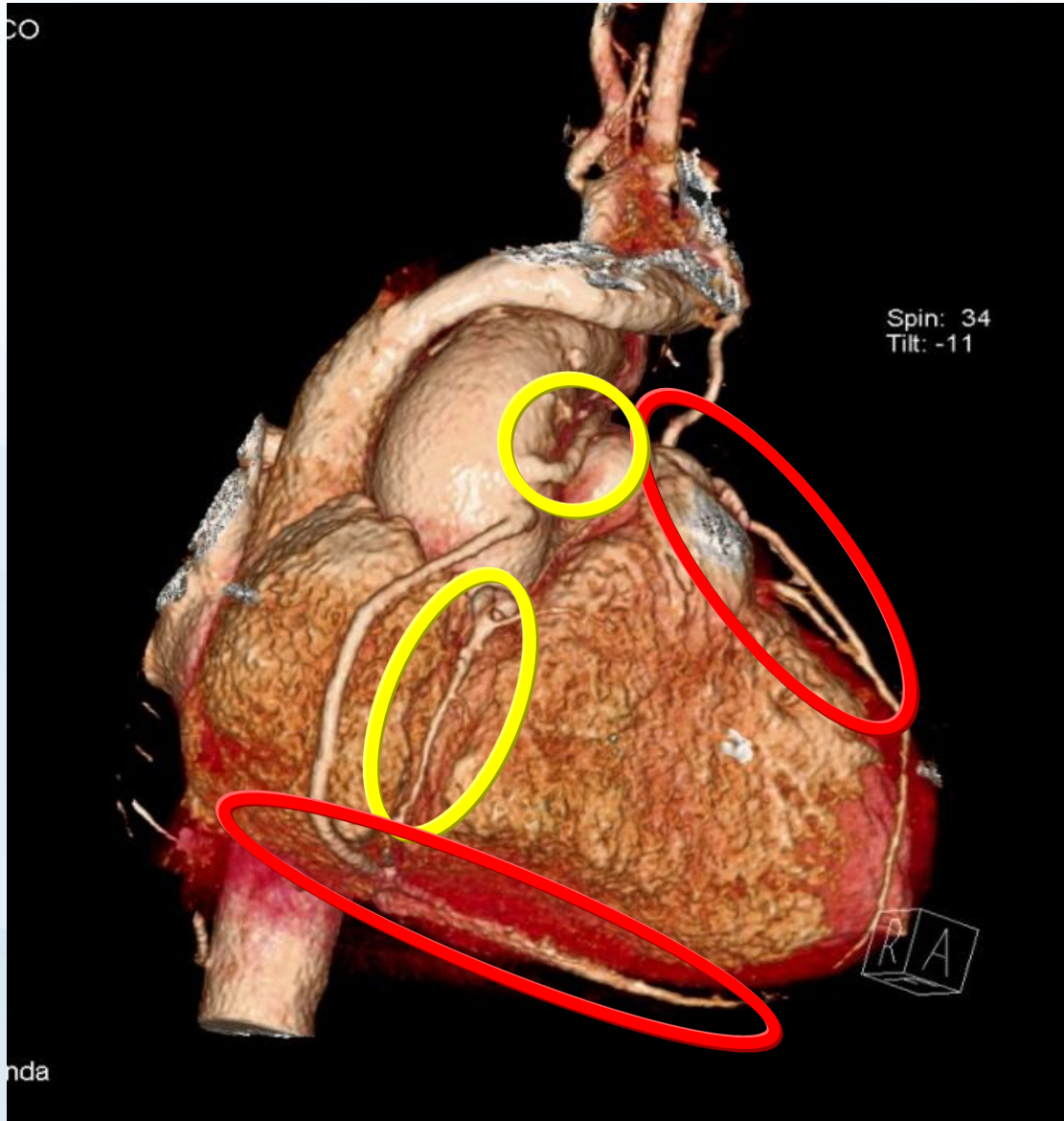
Se intervento



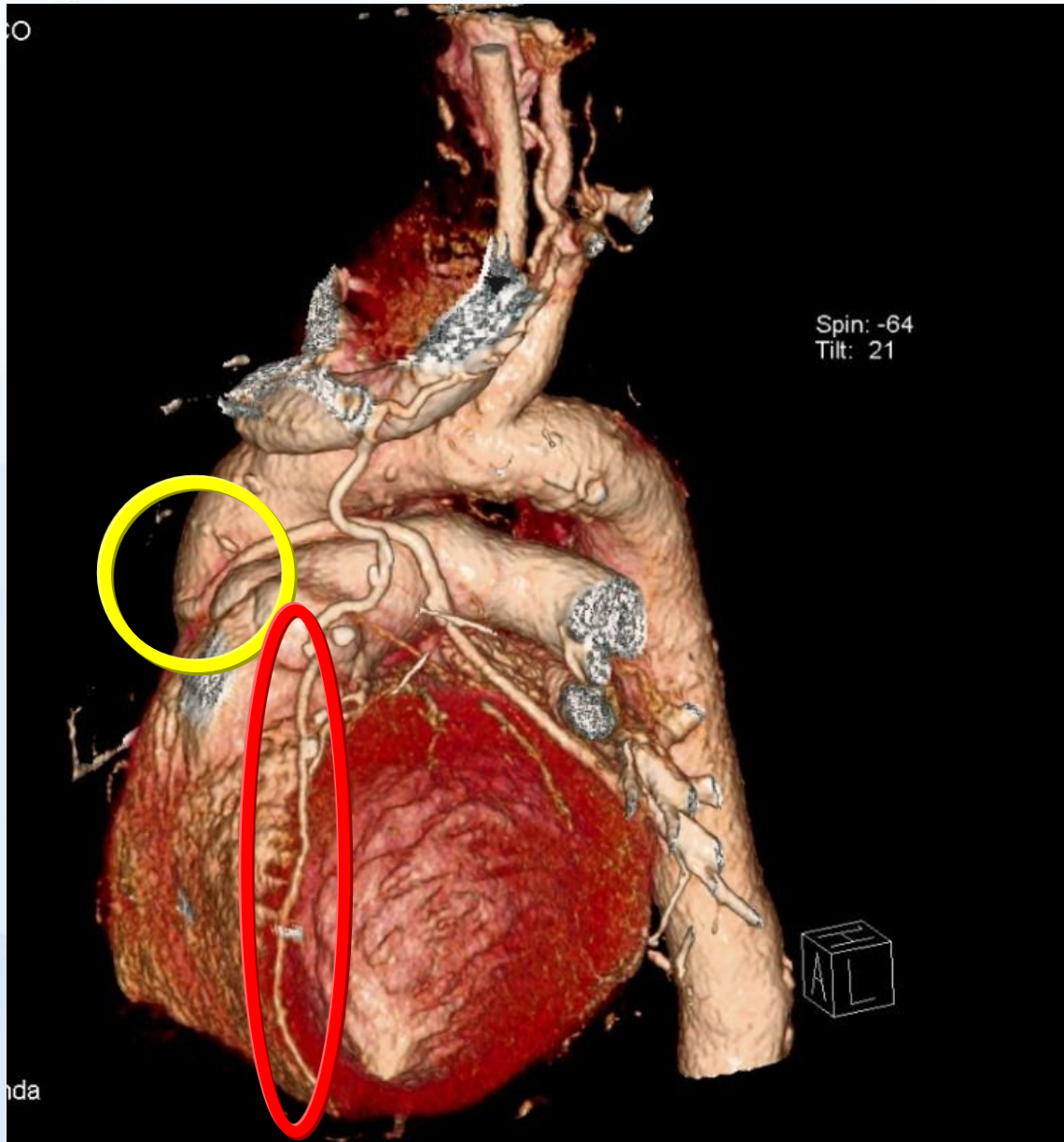
**TAC Torace: IABP  
A/R  
TOTAL BODY !**

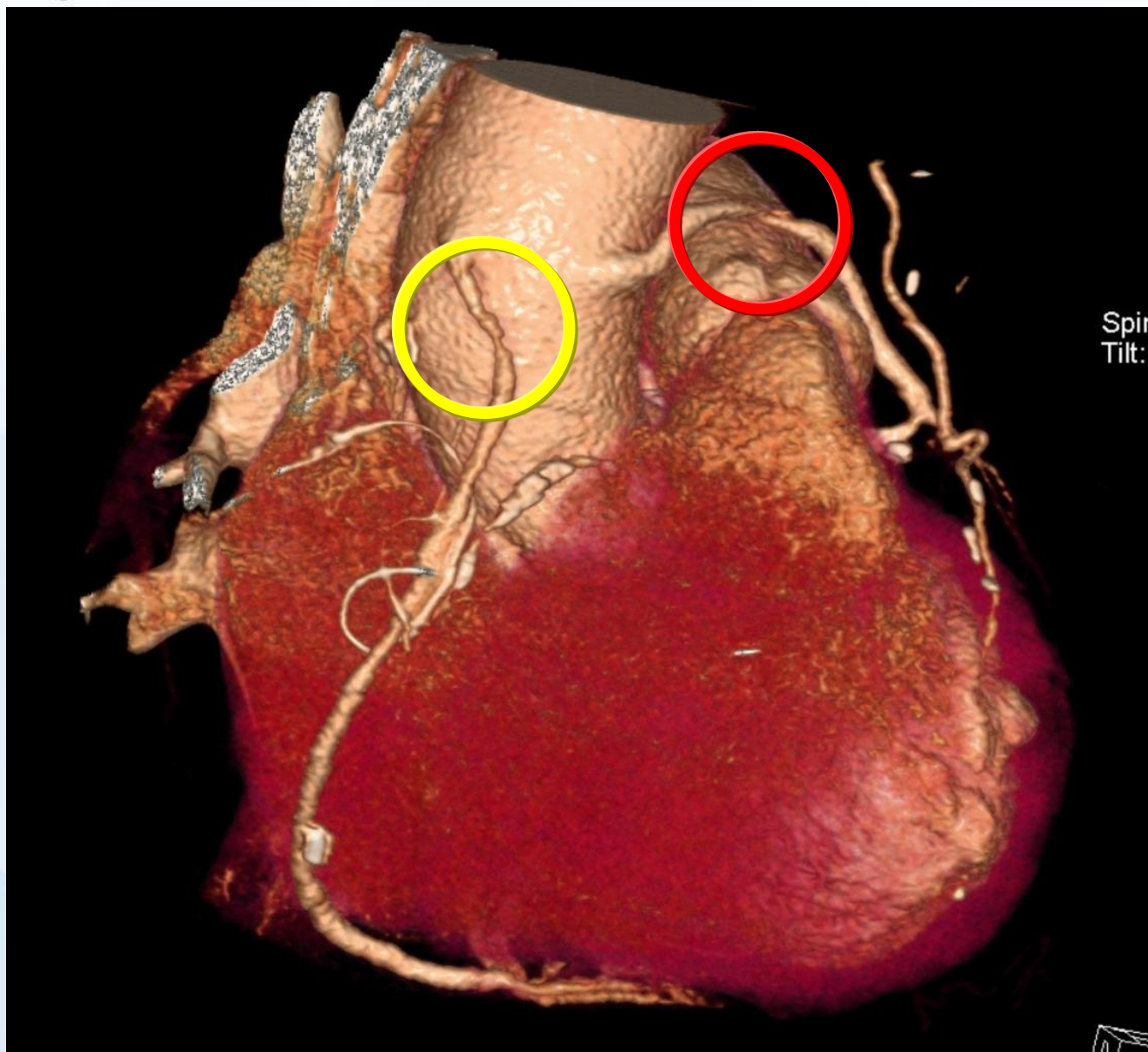
Grazie Dr.ssa Diana Artioli



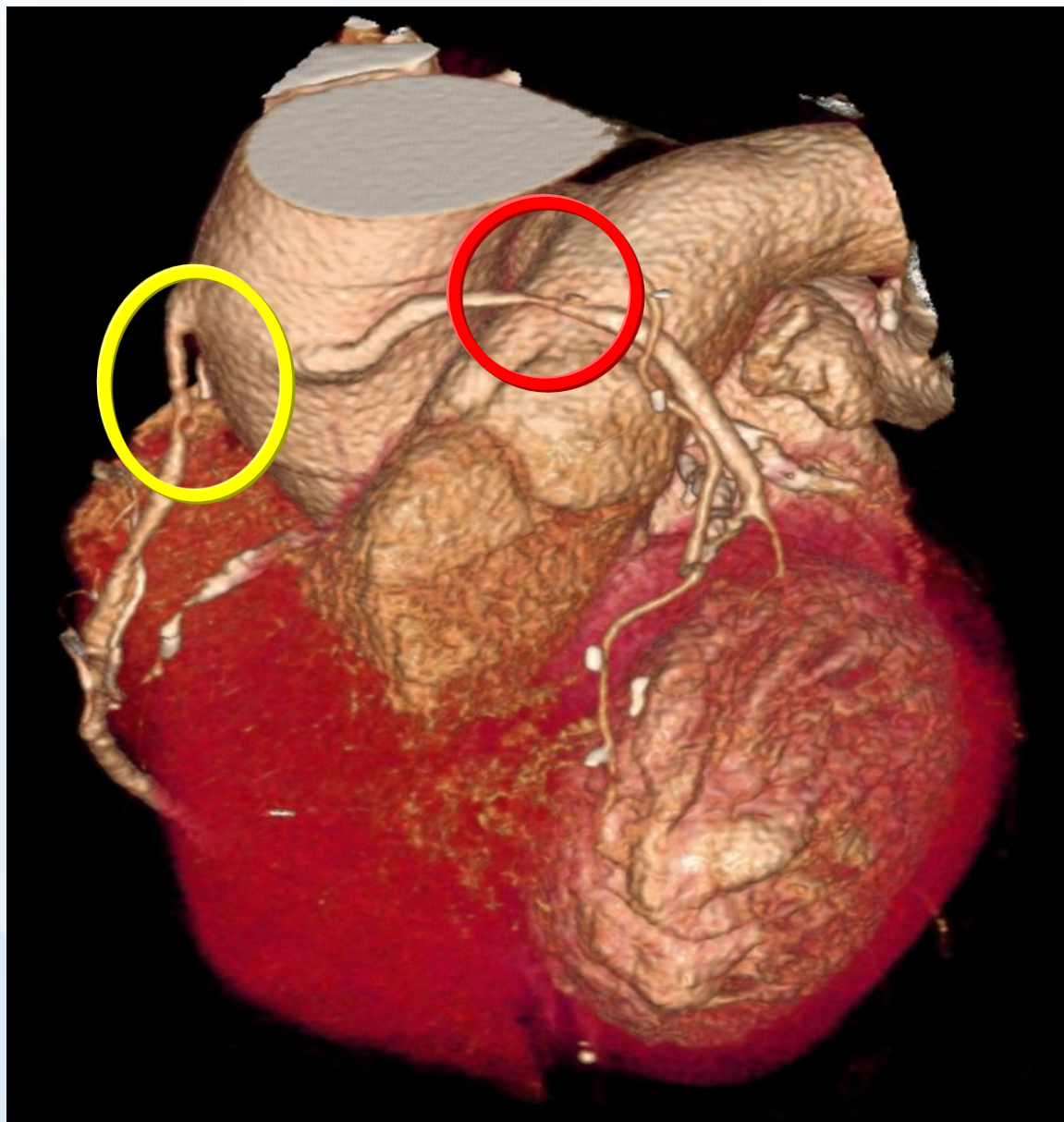








Spin  
Tilt:





## Coronarografia ed ECOCG

Se dubbi su vitalità

Se no dubbi su vitalità



Eco Stress

Se intervento



**TAC Torace: IABP  
A/R  
TOTAL BODY !**



## Coronarografia ed ECOCG

Se dubbi su vitalità

Se no dubbi su vitalità



Eco Stress

Se intervento

Se intervento



**TAC Torace: IABP  
A/R  
TOTAL BODY !**



## Coronarografia ed ECOCG

Se dubbi su vitalità

Se no dubbi su vitalità



Eco Stress

Se intervento

Se intervento



**TAC Torace: IABP  
A/R  
TOTAL BODY !**



**GRAZIE**

**Titolo: L'imaging in vista di reintervento sulle coronarie: un valido aiuto per il CCH**

**Autore: Stefano Pelenghi**

**Data: Milano 15-17 ottobre 2012**

**Evento: Ecocch 2012**



FONDAZIONE CENTRO CARDIOLOGIA  
E CARDIOCHIRURGIA A. DE GASPERIS

Niguarda Ca' Granda



Dipartimento Cardiologico A. De Gasperis  
Azienda Ospedaliera Niguarda Ca' Granda

FONDAZIONE

DIPARTIMENTO CARDIOLOGICO

AREA MEDICI

AREA PAZIENTI

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