

# **Sindrome Aortica Acuta**

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# Valutazione Aorta

## Imaging:

- Rx torace
- Ecografia trans-toracica, trans-esofagea
- **TC**
- PET
- RM
- Aortografia

# Tc spirale (multidetettore)

- Diffusa sul territorio
- Eseguibile anche in paziente instabile
- Rapida esecuzione
  
- Uso mezzo di contrasto (100 - 150 ml)
- Radiazioni ionizzanti

# Protocollo di Acquisizione (64 detettori)

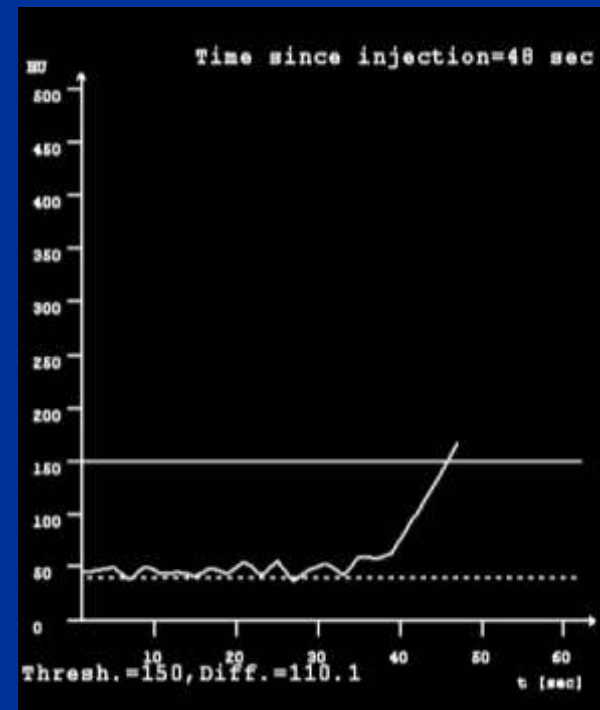
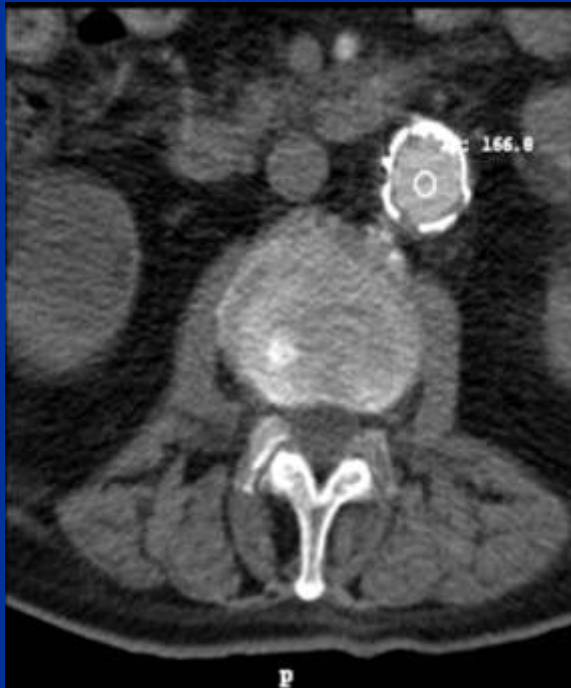
Fascio di collimazione 64 x 0.6 mm.

## Multifasico

- Senza m.d.c.
- m.d.c. - Fase arteriosa (sincronizzazione ECG)
  - Fase ritardata a circa 70 sec.

# Protocollo di acquisizione

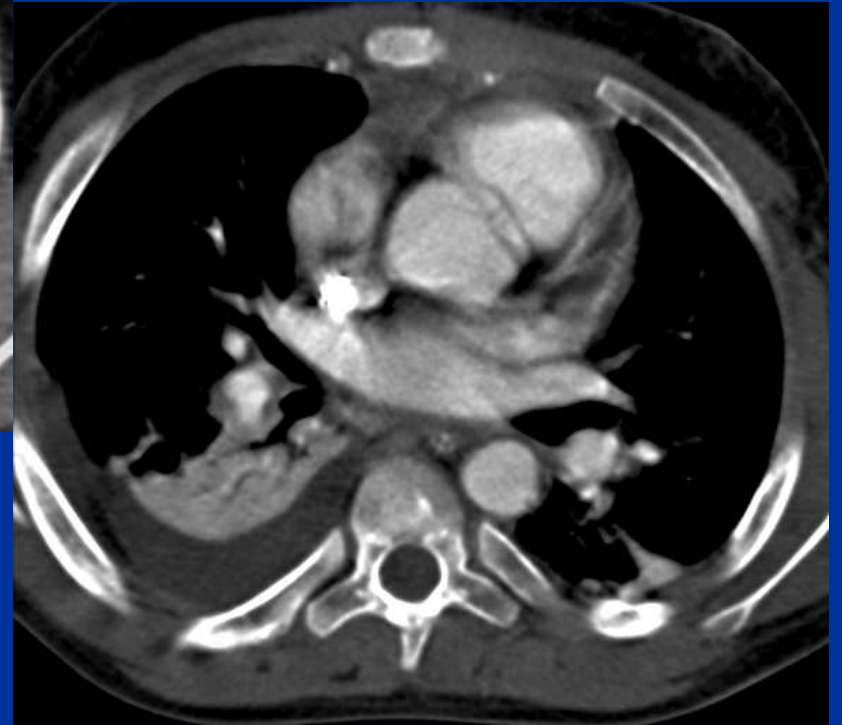
- Iniettore a doppia infusione - m.d.c.
  - soluz. fisiologica
- Bolus triggering o bolus test



# Protocollo di Acquisizione

## Sincronizzazione ECG

- Evitare artefatti da pulsazione
  - Falsa immagine di dissezione
  - Difficile valutazione regione sovraavvolare
- Valutazione contemporanea origine-arterie coronarie







# Protocollo di Acquisizione

## Sincroniz. ECG vs acquisizione standard

- Dose Rx > 2
- Tempo di apnea x 3
- Limitazione copertura anatomica
  - Torace vs addome
- Artefatti da movimento subdoli

# Post processing

- **Possibilità di ricostruzione con spessore differente**
  - 1 mm.
  - 2 mm.
  - 3 mm.
- **Multiplanarietà :MIP, MPR, volume rendering**





# Indicazioni

## Patologia Acuta

- **Dissezione aortica acuta**
- **Ematoma intramurale**
- **Ulcera penetrante aterosclerotica**

**Range di studio in Pz. acuto**

**Limite craniale vasi epiaortici**

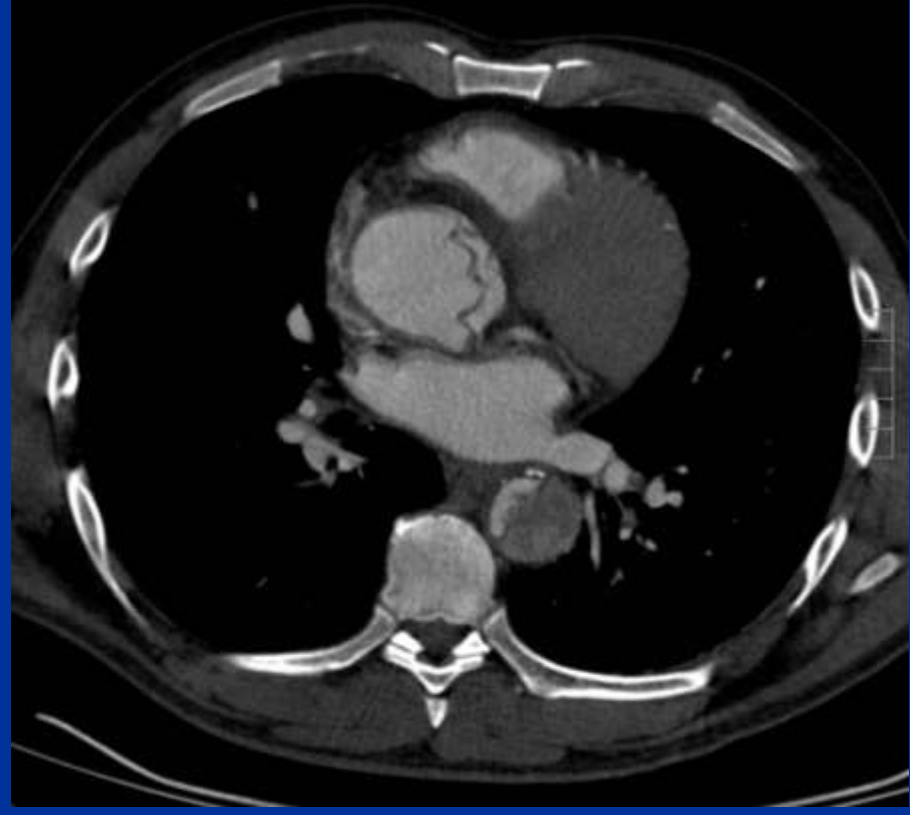
**Limite caudale a. femorali  
comuni**



# Dissezione aortica acuta

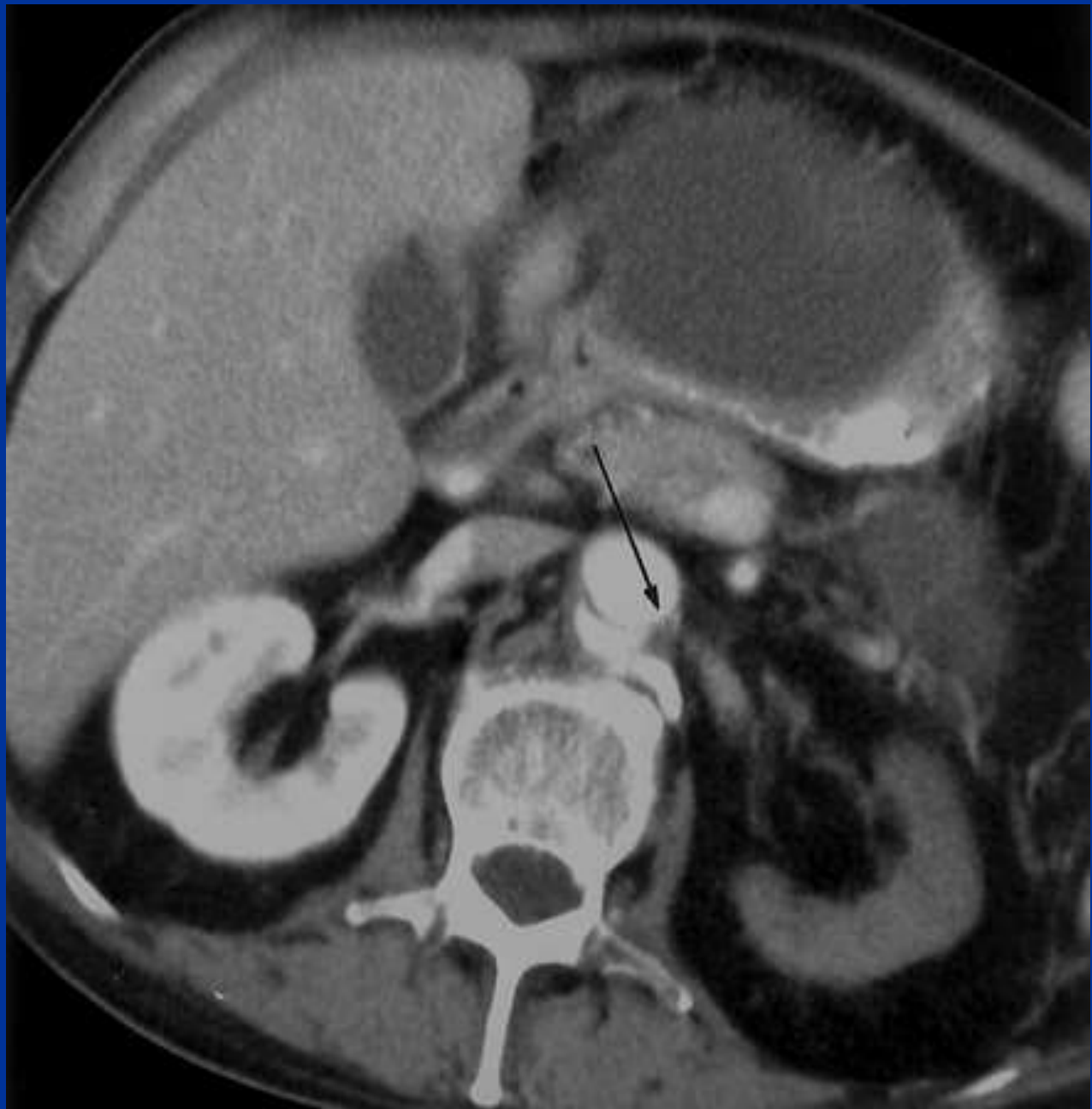
## Ruolo imaging

- **Identificazione di patologia** - lembo di dissezione  
- ematoma intramurale
- **Valutazione estensione : aorta ascendente**
- **Dimensioni e pervietà del vero e falso lume**
- **Interessamento dei vasi epiaortici e viscerali (perfusione)**
- **Interessamento piano valvolare (ecg gating)**



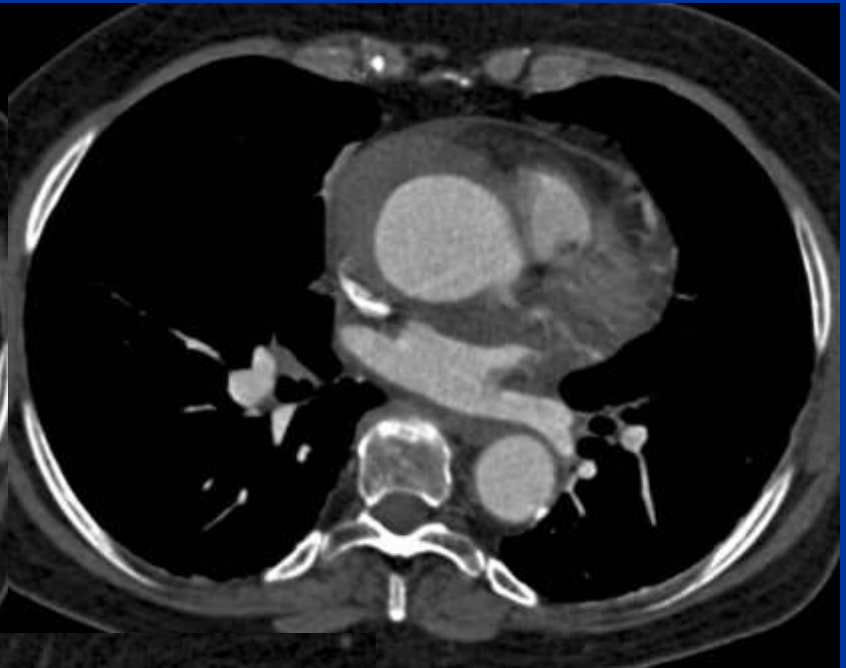
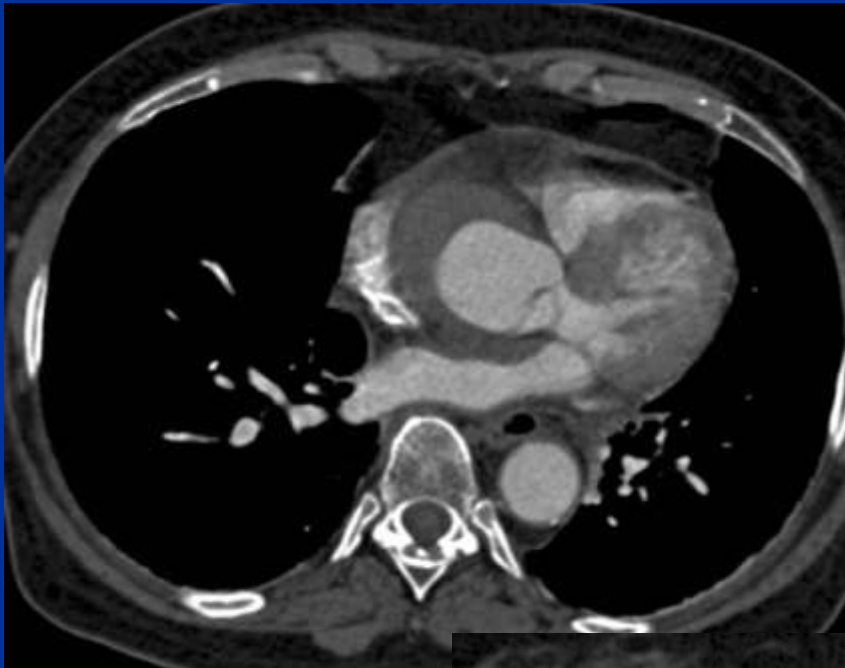


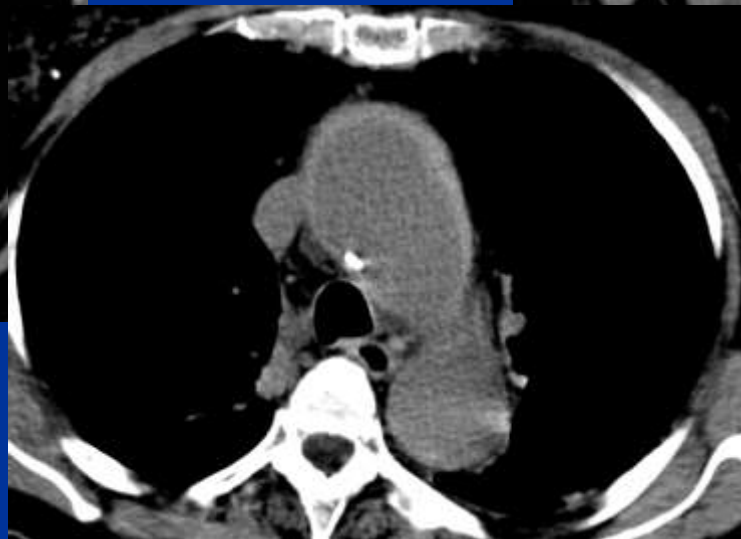




# Ematoma intramurale

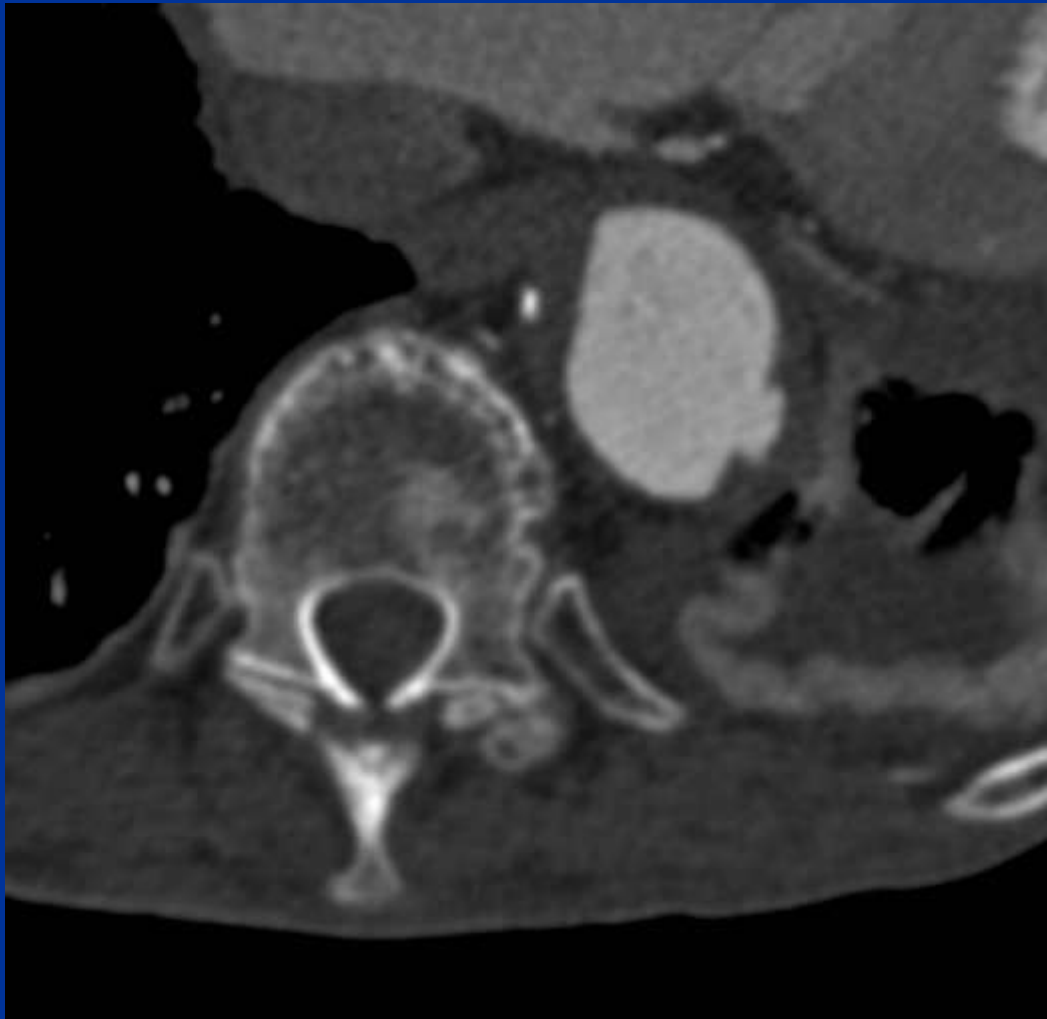
- **Fondamentale scansione basale**
- **Area iperdensa di aspetto falciforme all'interno della parete aortica (segno patognomonico)**
- **Da non confondere con trombosi parietale o placca aterosclerotica.**

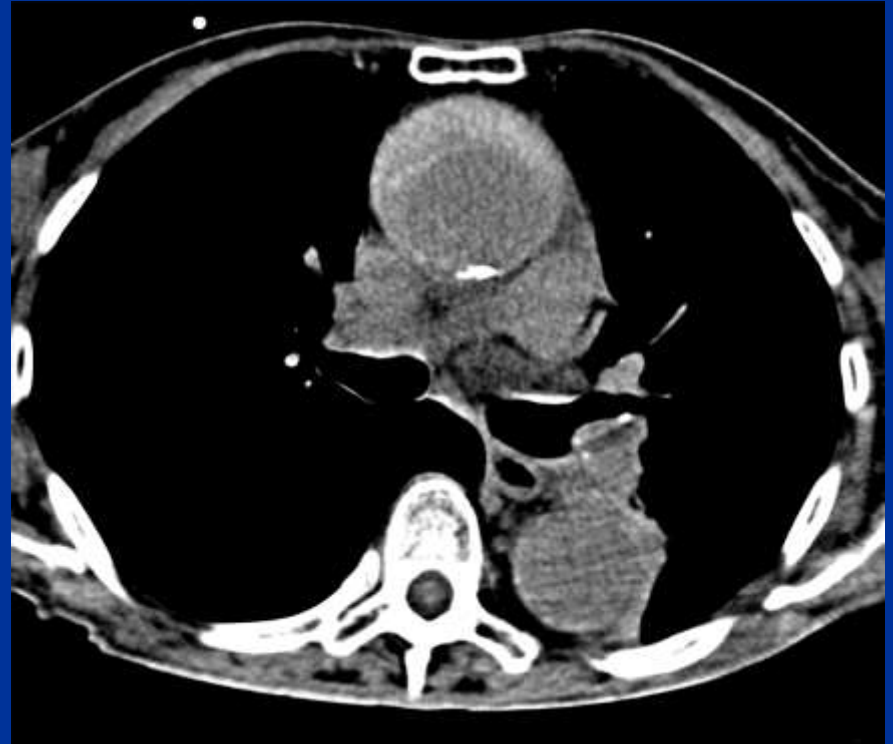
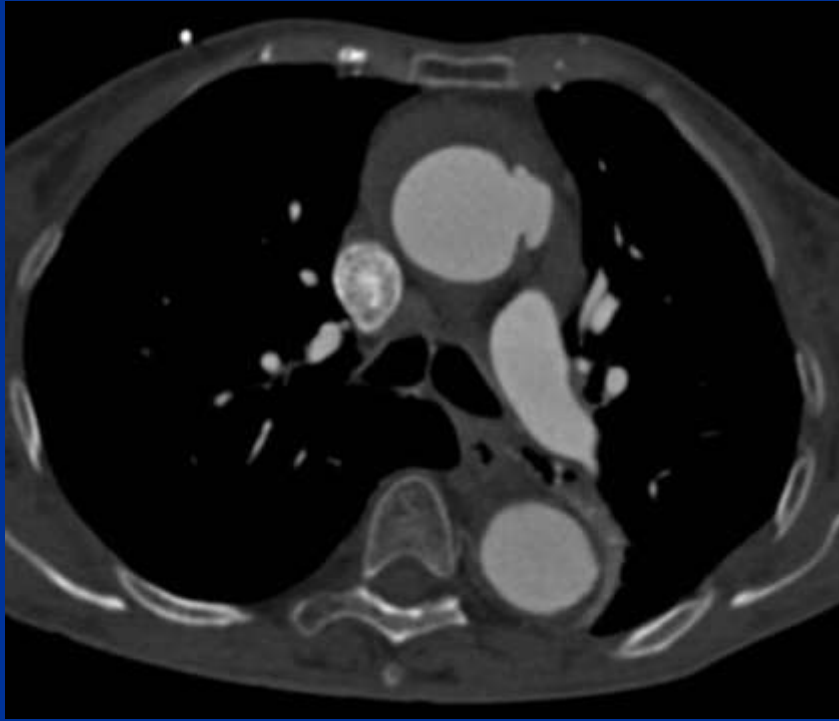




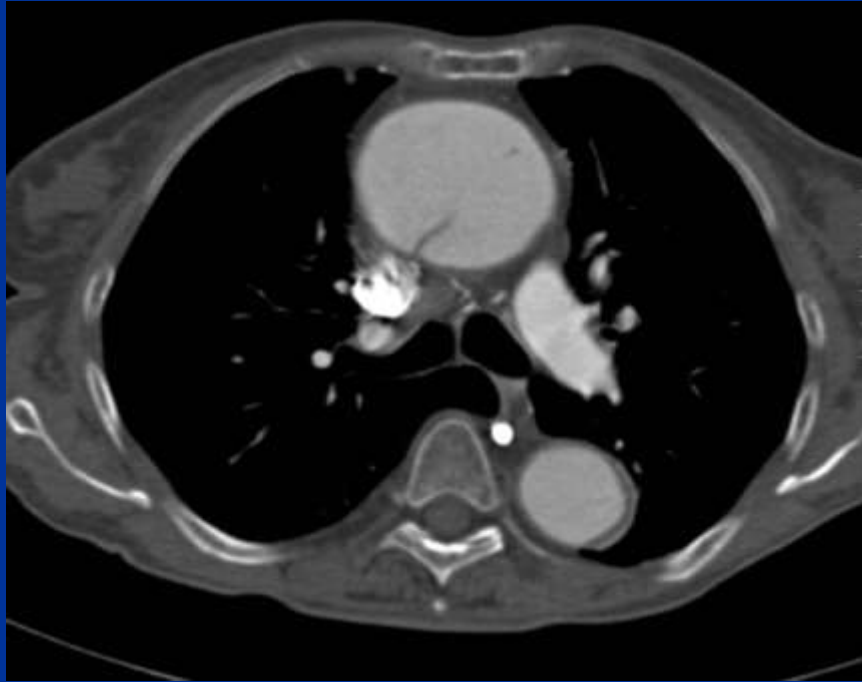
# Ulcera penetrante

- **Rottura placca ateromasica con erosione lamina elastica interna e formazione di ematoma nella tonaca media**
- **Evoluzione : ematoma intramurale, dissezione circoscritta , pseudoaneurisma sacculare**









# **AHA Science Advisory**

## **Ionizing Radiation in Cardiac Imaging**

**A Science Advisory From the American Heart Association Committee on Cardiac Imaging of the Council on Clinical Cardiology and Committee on Cardiovascular Imaging and Intervention of the Council on Cardiovascular Radiology and Intervention**

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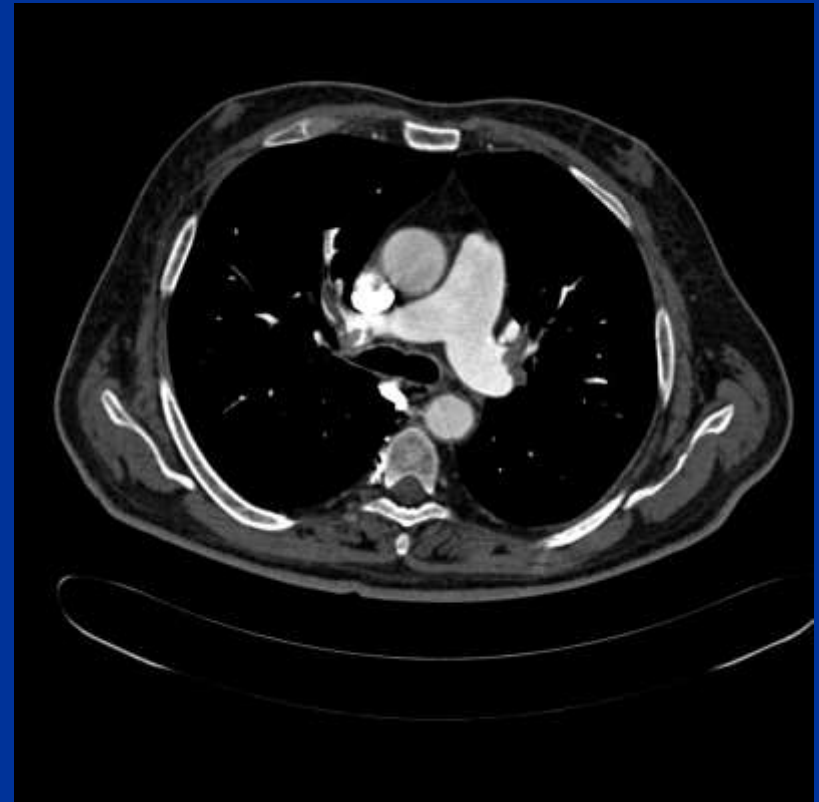
*(Circulation. 2009;119:1056-1965.)*

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**Table 1. Representative Values and Ranges of Effective Dose Estimates Reported in the Literature for Selected Radiological Studies<sup>20</sup>**

Examination	Representative Effective Dose Value (mSv)	Range of Reported Effective Dose Values (mSv)	Administered Activity (MBq)
Chest x-ray PA and lateral	0.1	0.05–0.24	NA
CT chest	7	4–18	NA
CT abdominal	8	4–25	NA
CT pelvis	6	3–10	NA
Coronary calcium CT*	3	1–12	NA
Coronary CT angiogram†	16	5–32	NA
64-Slice coronary CTA‡			
Without tube current modulation	15	12–18	NA
With tube current modulation <sup>21</sup>	9	8–18	NA
Dual-source coronary CTA‡			
With tube current modulation	13	6–17	NA
Prospectively triggered coronary CTA‡ <sup>22</sup>	3	2–4	NA
Diagnostic invasive coronary angiogram	7	2–16	NA
Percutaneous coronary intervention or radiofrequency ablation	15	7–57	NA
Myocardial perfusion study			
Sestamibi (1-day) stress/rest	9	—	1100
Thallium stress/rest	41	—	185
F-18 FDG	14	—	740
Rubidium-82	5	—	1480

# Tromboembolia polmonare



# **Tromboembolia polmonare**

**TC single row: sens. 53-91%**

**spec. 78-97 %**

**TC multidetector 4,16 row:**

**sens. 83 - 100 %**

**spec. 89 - 97%**

grazie

**Table 3. Estimated Risks of Fatal Malignancy or Death Resulting From Radiation Exposure and the Lifetime Odds of Dying as a Result of Selected Activities of Everyday Life**

Exposure	Estimated Risk of Fatal Malignancy or Lifetime Odds of Dying (per 1000 Individuals)
Effective radiation dose	
1 mSv (calcium score/lung screen)	0.05
10 mSv (coronary CTA/abdomen CT, invasive coronary angiography, radionuclide myocardial perfusion study) <sup>32</sup>	0.5
50 mSv (yearly radiation worker allowance)	2.5
100 mSv (definition of low exposure)	5
Natural fatal cancer <sup>39</sup>	212
Passive smoking <sup>33</sup>	
Low exposure	4
High exposure, married to a smoker	10
Radon in home <sup>34</sup>	
US average	3
High exposure (1% to 3%)	21
Arsenic in drinking water <sup>35,36</sup>	
2.5 $\mu\text{g/L}$ (US estimated average)	1
50 $\mu\text{g/L}$ (acceptable limit before 2006)	13
Motor vehicle accident <sup>37</sup>	11.9
Pedestrian accident <sup>37</sup>	1.6
Drowning <sup>37</sup>	0.9
Bicycling <sup>37</sup>	0.2
Lightning strike <sup>37</sup>	0.013

# Dose di Esposizione

- Radiazione di fondo annua USA 3 – 3.6 mSv
- Tc torace 4-1 mSv
- Tc torace ECG retrospettivo 9 - 12 msv
- Tc addome 5 mSV
- Studio toraco addominale 30mSV

Rx torace 0.05- 0.24 mSv