

10° CONGRESSO NAZIONALE



Quello che le Linee Guida Non Dicono

Napoli, Hotel Excelsior, 14-15 aprile 2023



CARDIO RADIOLOGIA: UPDATE 2023

SCA: COMPLICANZE MECCANICHE

Dott.ssa Lucia Riegler
UOC Cardiologia/UTIC
PO Umberto Primo-Nocera Inferiore
ASL Salerno

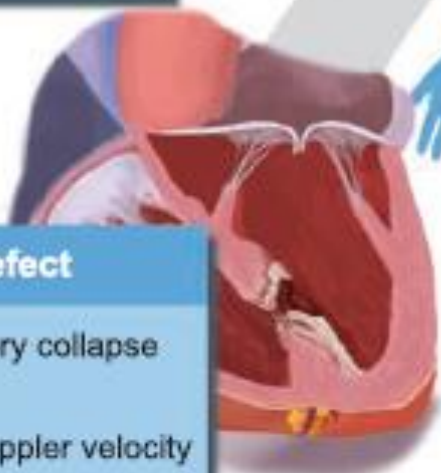
1. Papillary muscle rupture

Acute pulmonary edema;
Cardiogenic shock
Eccentric or Broad Jet of
Severe MR
Mobile Mass in LV;
prolapsing into LA



2. Ventricular septal defect

Asymptomatic to circulatory collapse
Left to right shunt
High continuous wave Doppler velocity



3. Pseudoaneurysm

Asymptomatic, chest pain, or HF
Small neck communication
To-and-fro blood flow through rupture



4. Free wall rupture

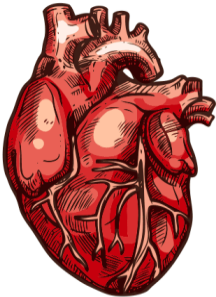
Circulatory collapse
Pericardial effusion or cardiac tamponade
Electromechanical dissociation




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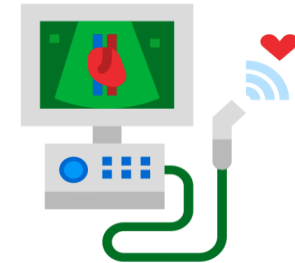


MECHANICAL COMPLICATIONS IN ACUTE MI



Less Common in the Reperfusion Era

- ✓ Need Thorough Baseline and Post Physical Examination
- ✓ Consider in Patients with New Holosystolic Murmur
 - ✓ Recurrent Chest Pain after MI
- ✓ Cardiogenic Shock or Clinical Deterioration



Acute to Subacute Mechanical Complications and Bedside Echo Findings

Acute LV/RV Dysfunction

Regional wall motion, systolic and diastolic function, chamber size and valvular hemodynamics

Many more findings but see separate upcoming infographics!

PRECOCI

Ventricular Free Wall Rupture

Large pericardial effusion or expanding pericardial effusion along areas of wall thinning

Features of tamponade

Fibrinous echodensities in pericardial space (blood)

Color Doppler to localize tear

Typically anterior infarct

Ventricular Septal Rupture

Most common locations: basal inferoseptal wall (inferior infarct) and anteroapical (anterior infarct)

Color Doppler with lower Nyquist limit to localize

Off-axis imaging may be needed

Evaluate for Pulm. HTN and LV/RV dysfunction = poor prognostic signs

Papillary Muscle Rupture and Ischemic MR

Posterior papillary muscle (inferior or lateral MI) most commonly affected

Assess severity of MR and leaflet motion (prolapse or flail?). Highly sensitive to afterload

Severe ischemic MR parameters: EROA ≥ 20 mm² and Rvol ≥ 30 mL

MR likely to be eccentric and brief in duration (⬆ LA pressure).

Typically ⬆ mitral E velocity.

Ventricular Pseudoaneurysm

Contained rupture along LV free wall; most commonly inferior and inferolateral walls

Small, narrow neck; ratio of neck diameter to max aneurysm size < 0.5

Bidirectional color and spectral doppler flow through aneurysm neck

Stasis and thrombus in pericardial space

Ventricular Aneurysm

Most frequently with anterior infarct in apical region

Acute aneurysm expands (instead of contracts) during systole

May be associated with thrombus (laminar or pedunculated)

May need contrast echo to identify

TARDIVE

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Caso clinico 1 - 24/12/2020

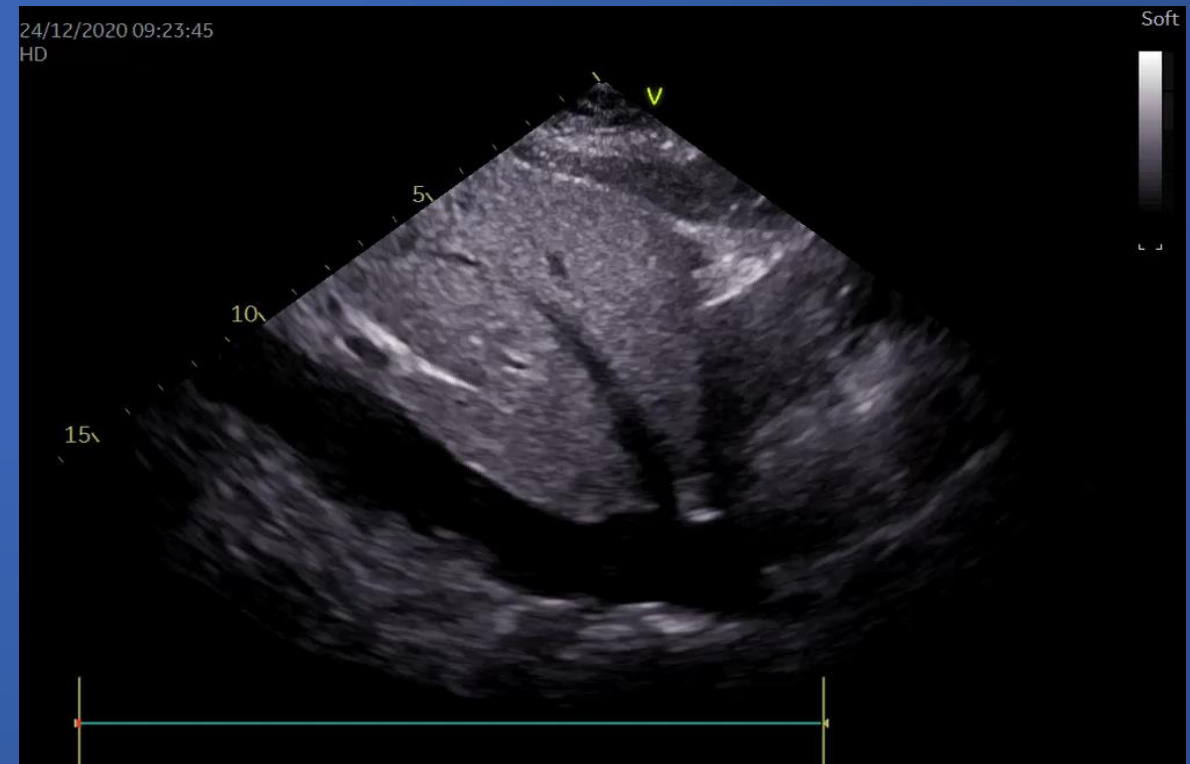
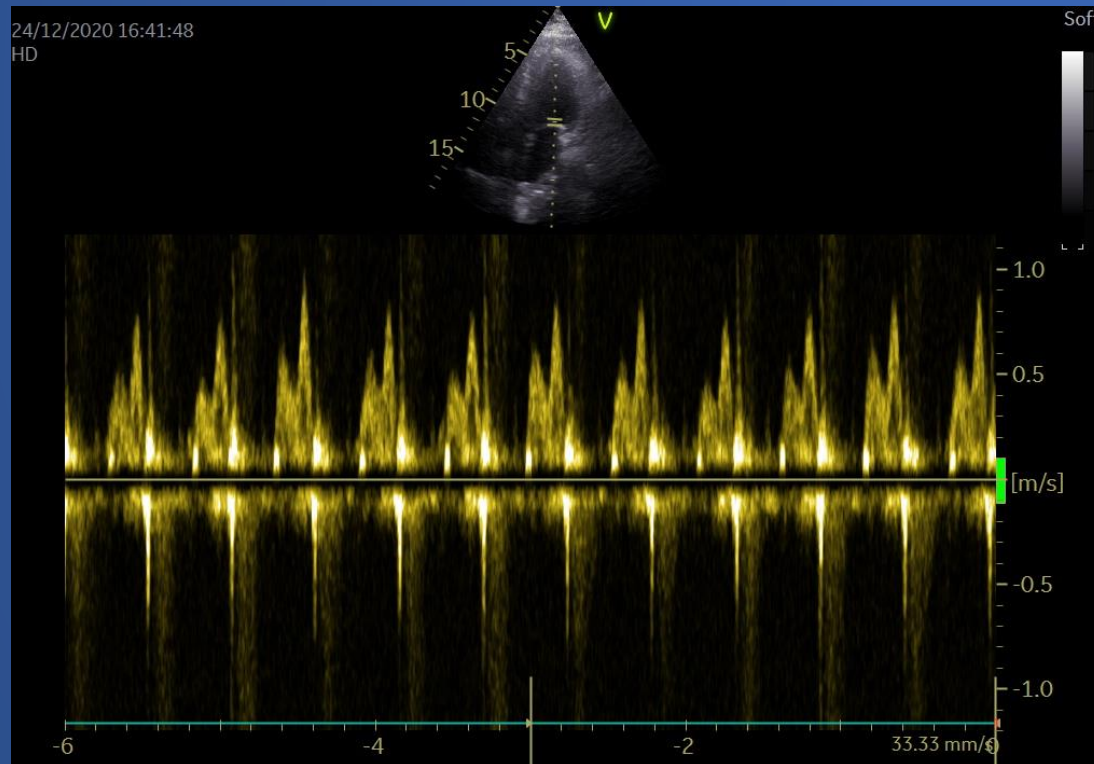
T. M.

-58 ANNI

-STEMI POSTEROLATERALE SUBACUTO

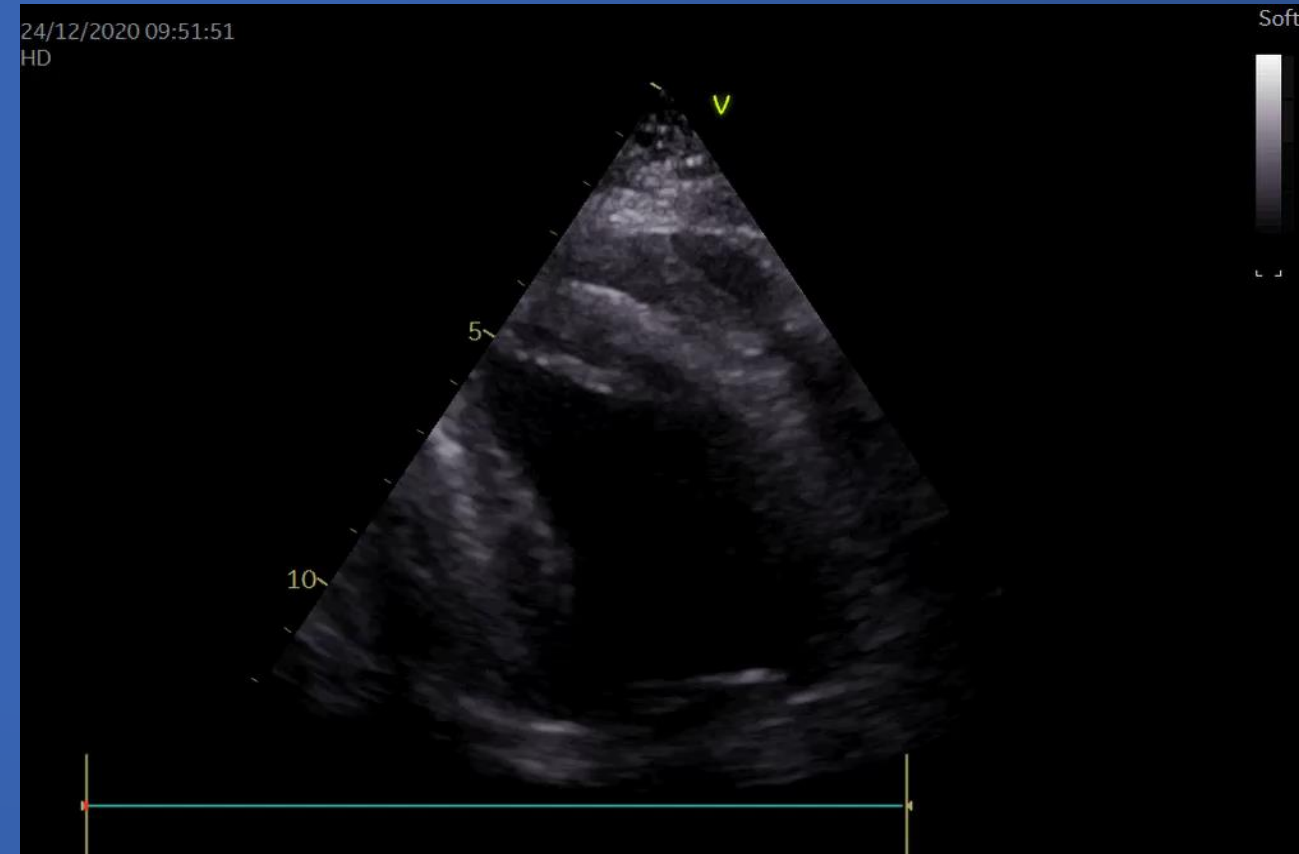
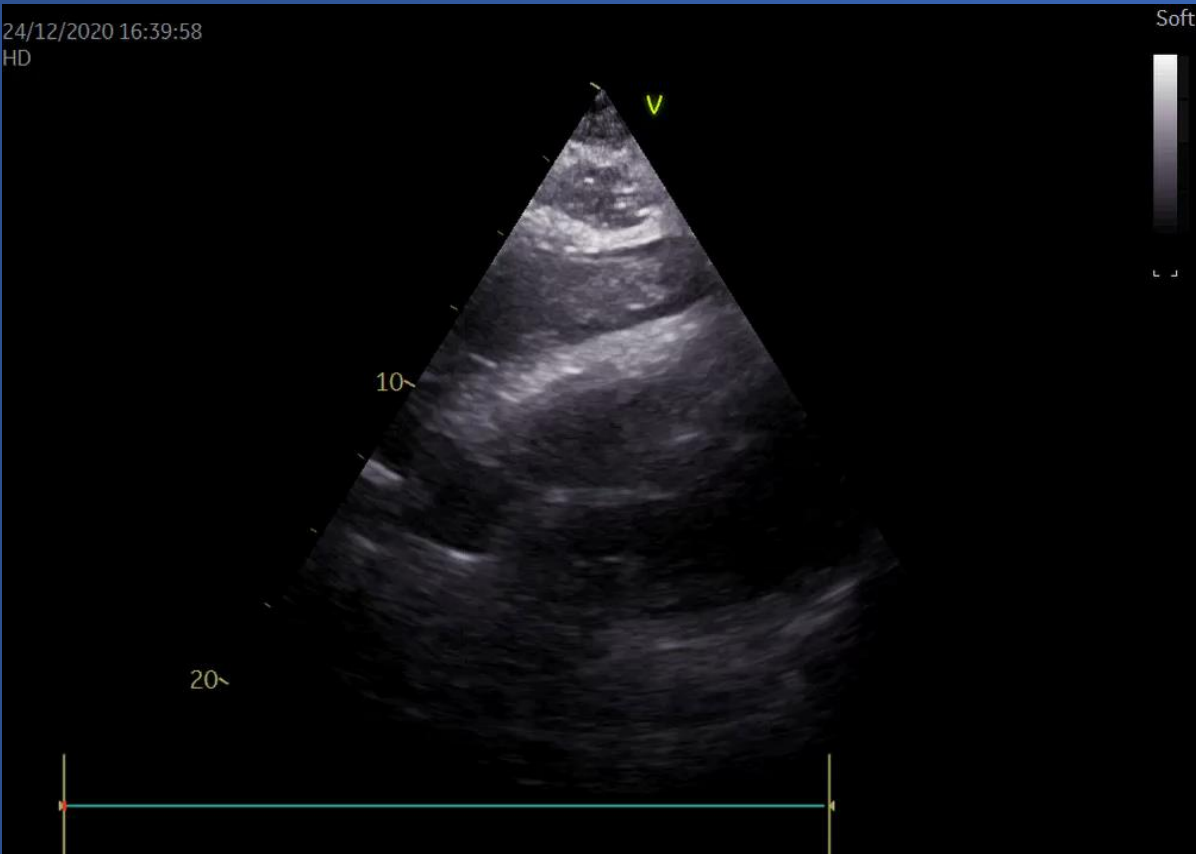
-CORONAROPATIA TRIVASALE S/P PTCA + DES SU CX OCCLUSO

-QUADRO DI SHOCK ALL'INGRESSO IN UTIC



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Caso clinico 1 - 24/12/2020

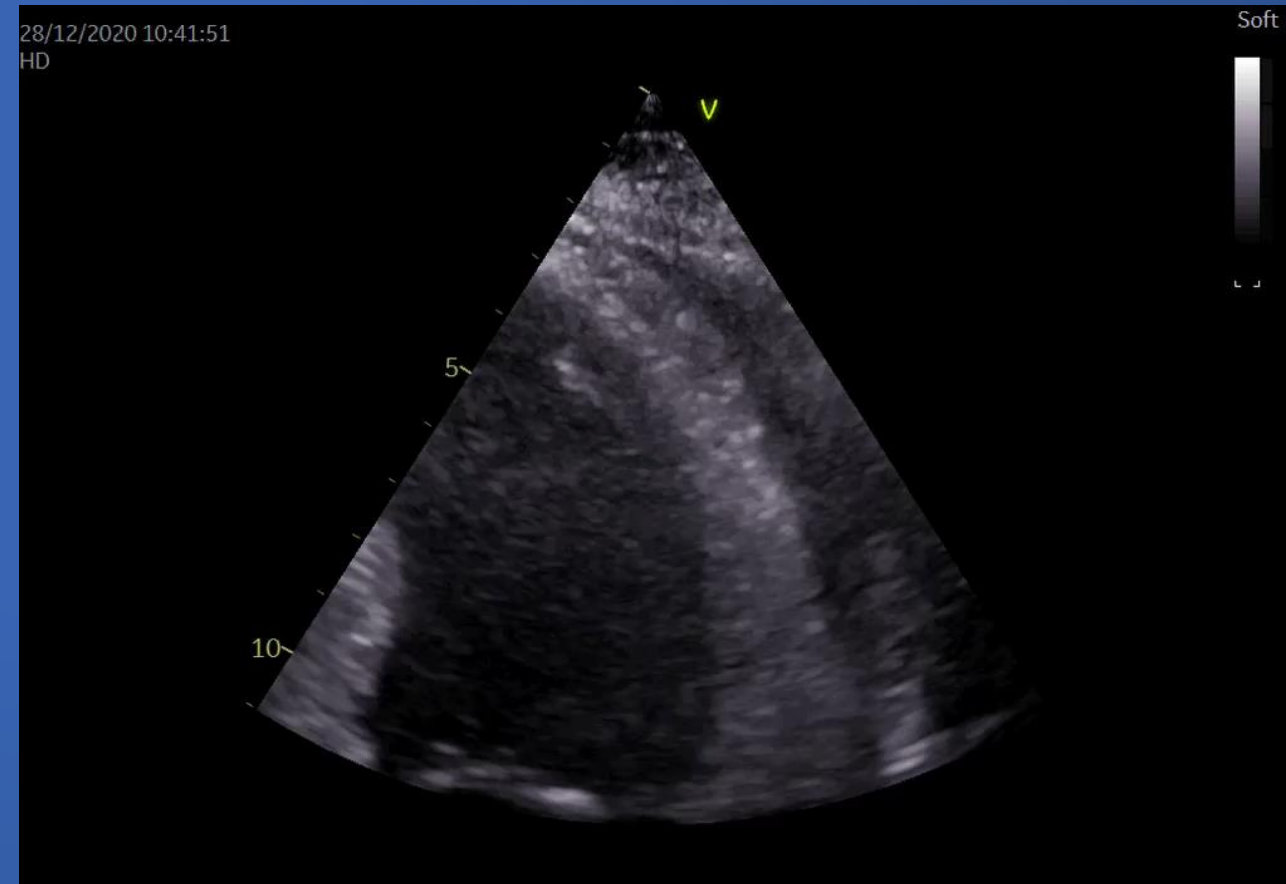
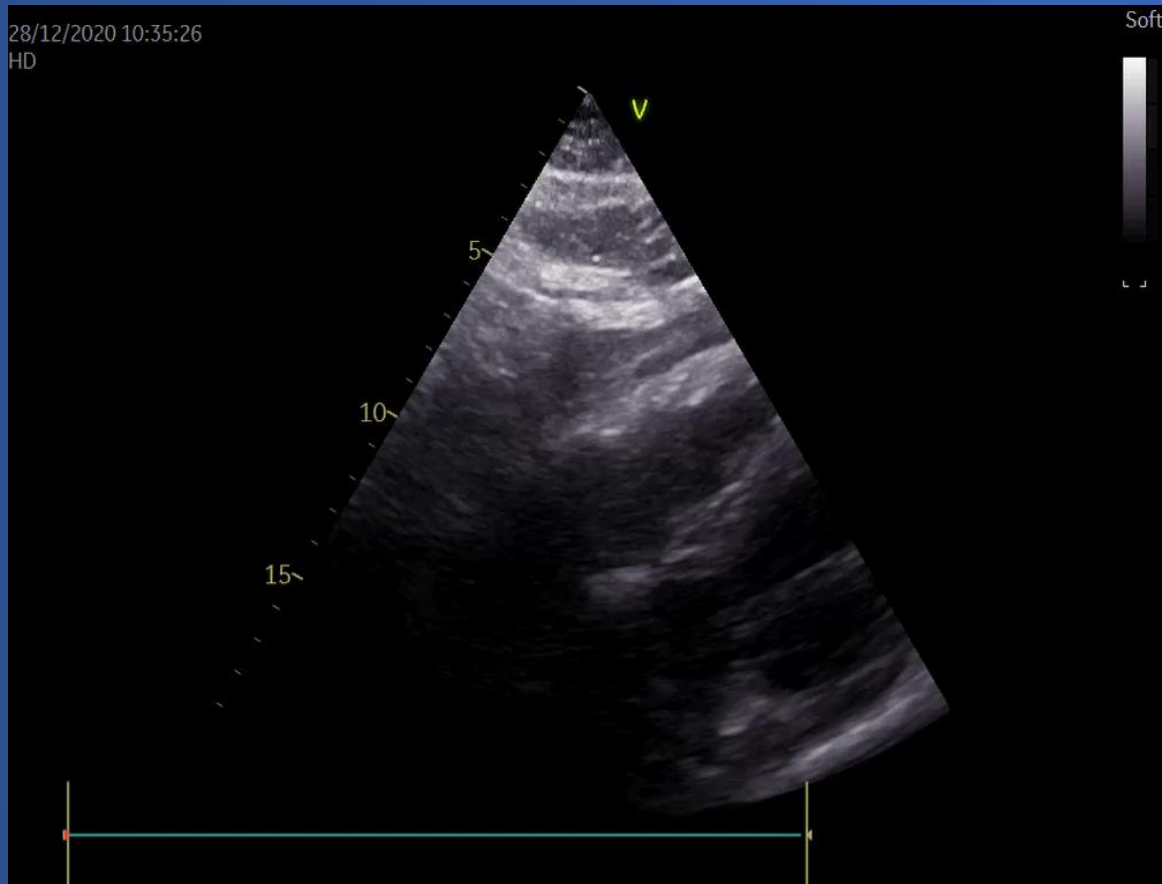


STABILIZZAZIONE DEL QUADRO CLINICO MEDIANTE INOTROPI E VASOPRESSORI

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Caso clinico 1 - 28/12/2020

CONDIZIONI CLINICHE MIGLIORATE
EMODINAMICA STABILE



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Caso clinico 1 - 28/12/2020



ESC

European Society
of Cardiology

European Heart Journal - Cardiovascular Imaging (2017) 18, 1205
doi:10.1093/ehjci/jex182

EACVI
RECOMMENDATIONS

Clinical practice of contrast echocardiography: recommendation by the European Association of Cardiovascular Imaging (EACVI) 2017

Recommendations

Contrast echocardiography should be considered when apical hypertrophy and diverticula, pseudoaneurysm, myocardial rupture, non-compaction and LV thrombi are suspected but not clearly documented or excluded on non-contrast images (Class I, Level B).

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HD

Soft



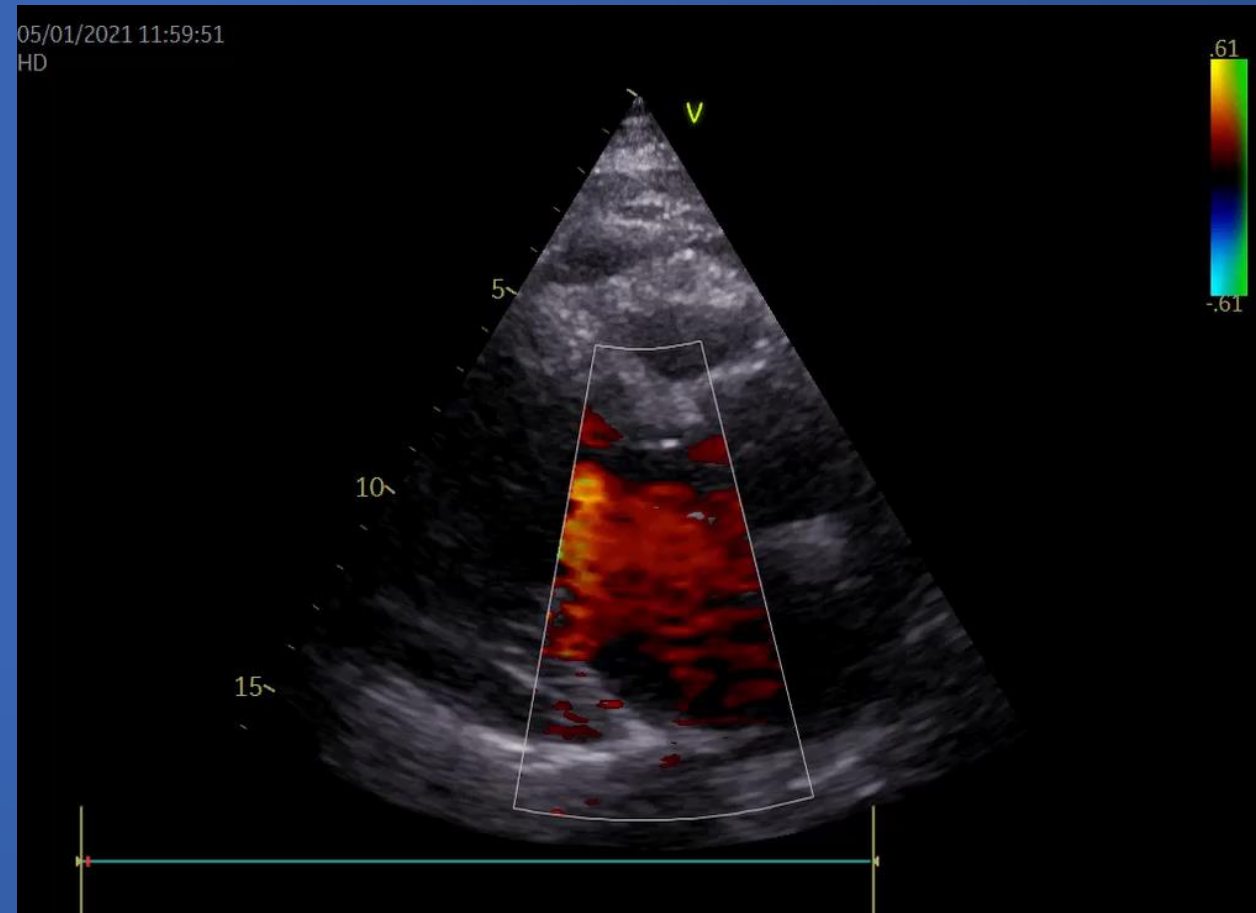
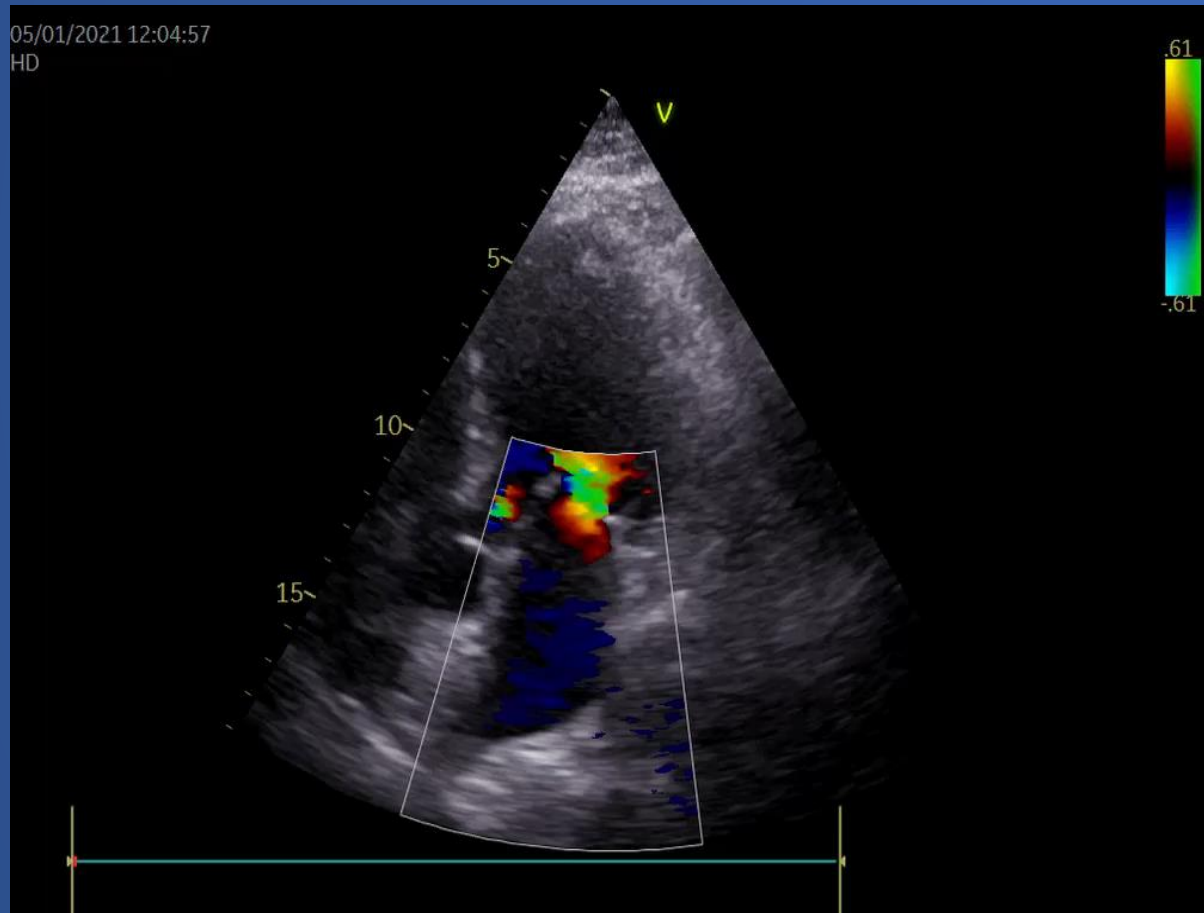
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Caso clinico 1 - 05/01/2021



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Caso clinico 1 - RMN CARDIACA



ROTTURA DELLA PARETE LIBERA VENTRICOLARE

Table 1. Summary of Major Mechanical Complications of Acute Myocardial Infarction

Complication	Presentation	Diagnosis	Management	Mortality rate (%)
Rupture of the ventricular free wall	Commonly 3–5 d after transmural infarct. Tamponade and shock	Echocardiogram shows tamponade and may visualize flow across defect in free wall.	Immediate surgical repair unless prohibitive surgical risk.	>50

- THE MOST COMMONLY REPORTED MECHANICAL COMPLICATION OF AMI, ALTHOUGH ITS TRUE INCIDENCE IS UNKNOWN;
- IT SHOULD BE SUSPECTED IN ANY PATIENT AFTER AMI, ESPECIALLY IN THE SETTING OF DELAYED OR INEFFECTIVE REPERFUSION THERAPY, WITH HEMODYNAMIC INSTABILITY, CHEST PAIN AND NAUSEA, NEW ST-SEGMENT ELEVATION UNTIL FRANK ELECTROMECHANICAL DISASSOCIATION AND CARDIAC ARREST;
- FREE WALL RUPTURE IS RAPIDLY FATAL, BUT A VARIANT OF FRANK RUPTURE CHARACTERIZED BY A FRIABLE INFARCT ZONE WITH AN OOZING BLOODY PERICARDIAL EFFUSION CAN BE PROMPTLY RECOGNIZED AND ADDRESSED TO EMERGENCY SURGICAL CORRECTION.

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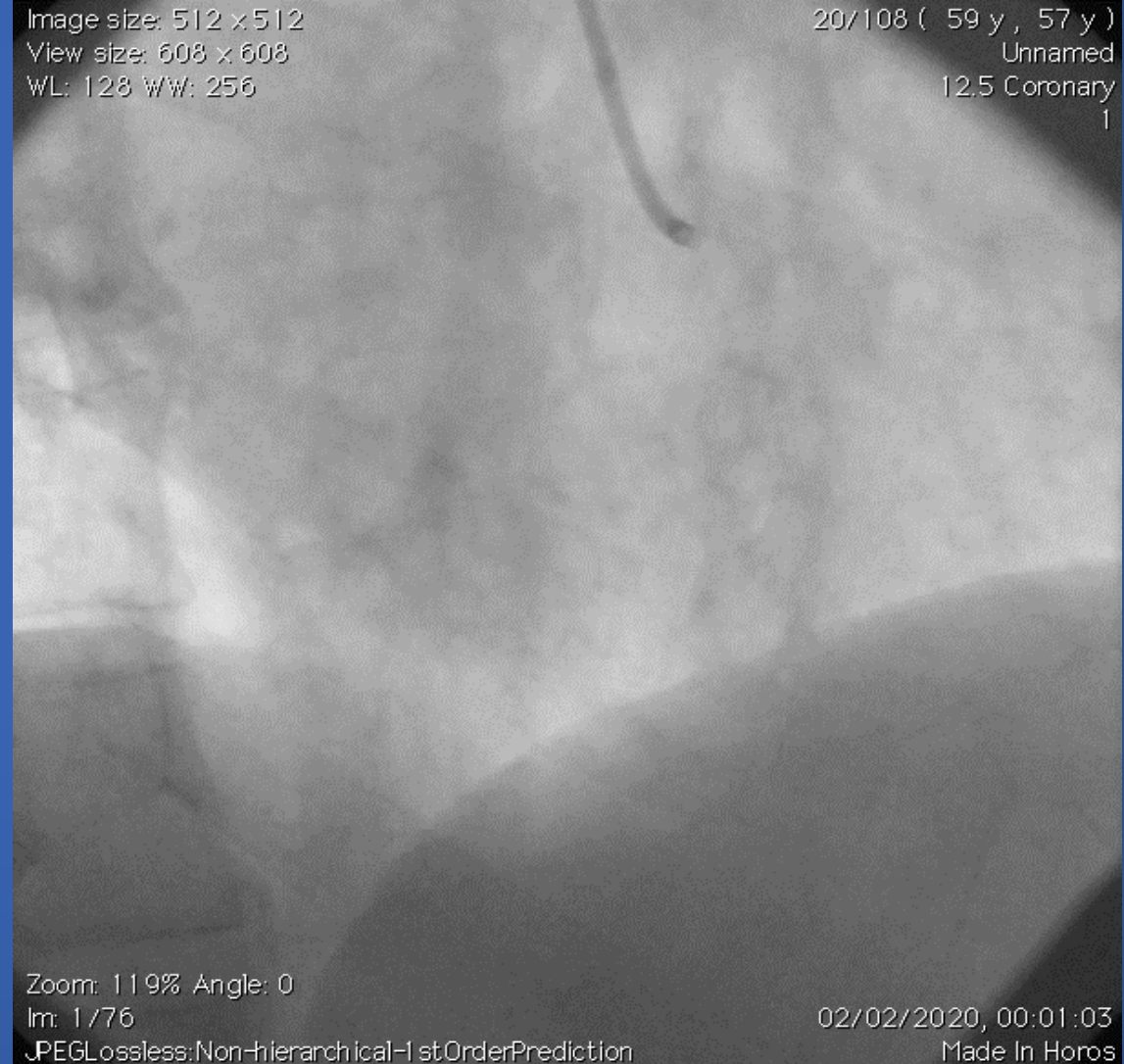
Caso clinico 2 - 02/02/2020 ore 00:00

D. A.
57 ANNI
SINCOPE
STEMI INFERIORE DA RETE IMA



CORONAROGRAFIA:

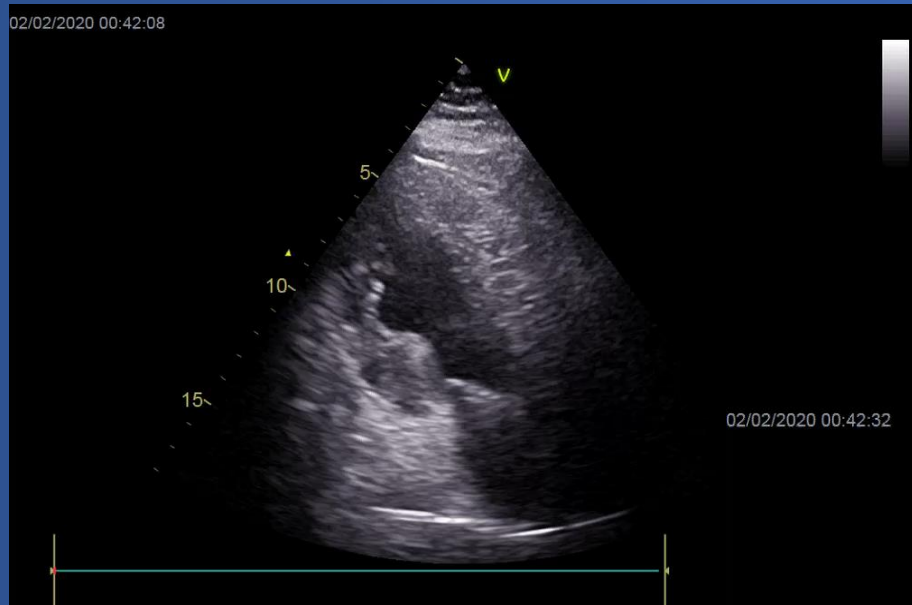
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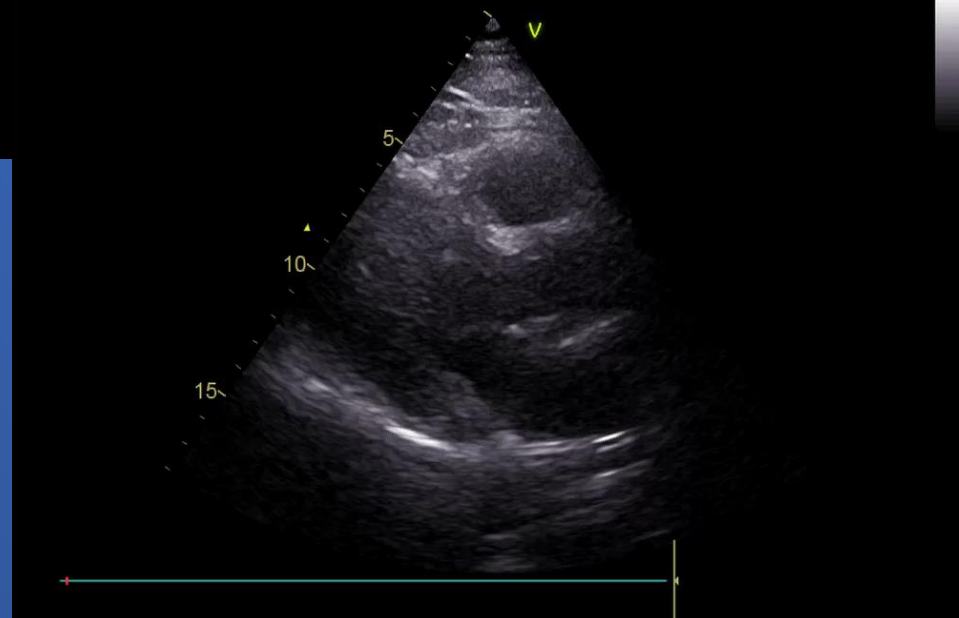
SCA: COMPLICANZE MECCANICHE

Caso clinico 2 - 02/02/2020 ore 00:42

ECOCARDIOGRAMMA IN SALA



02/02/2020 00:42:32

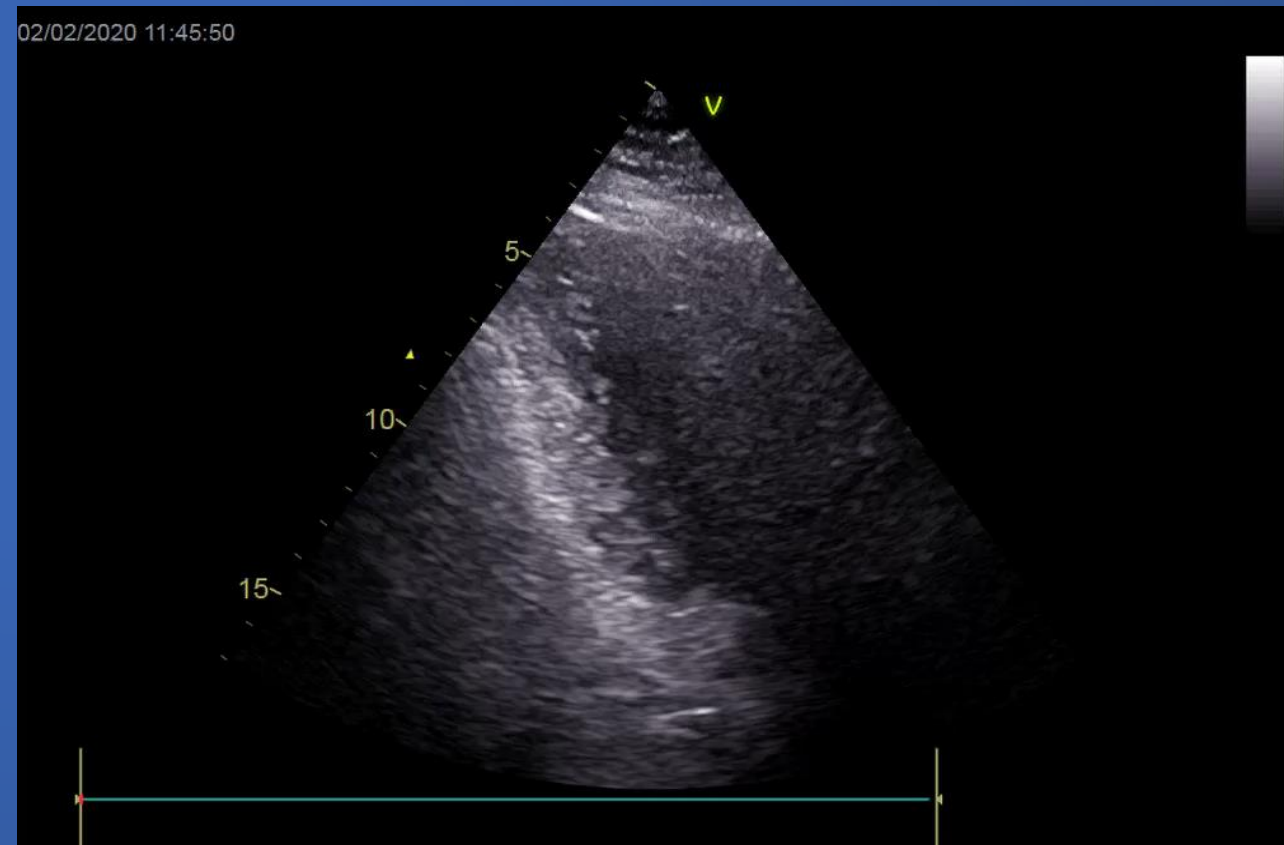
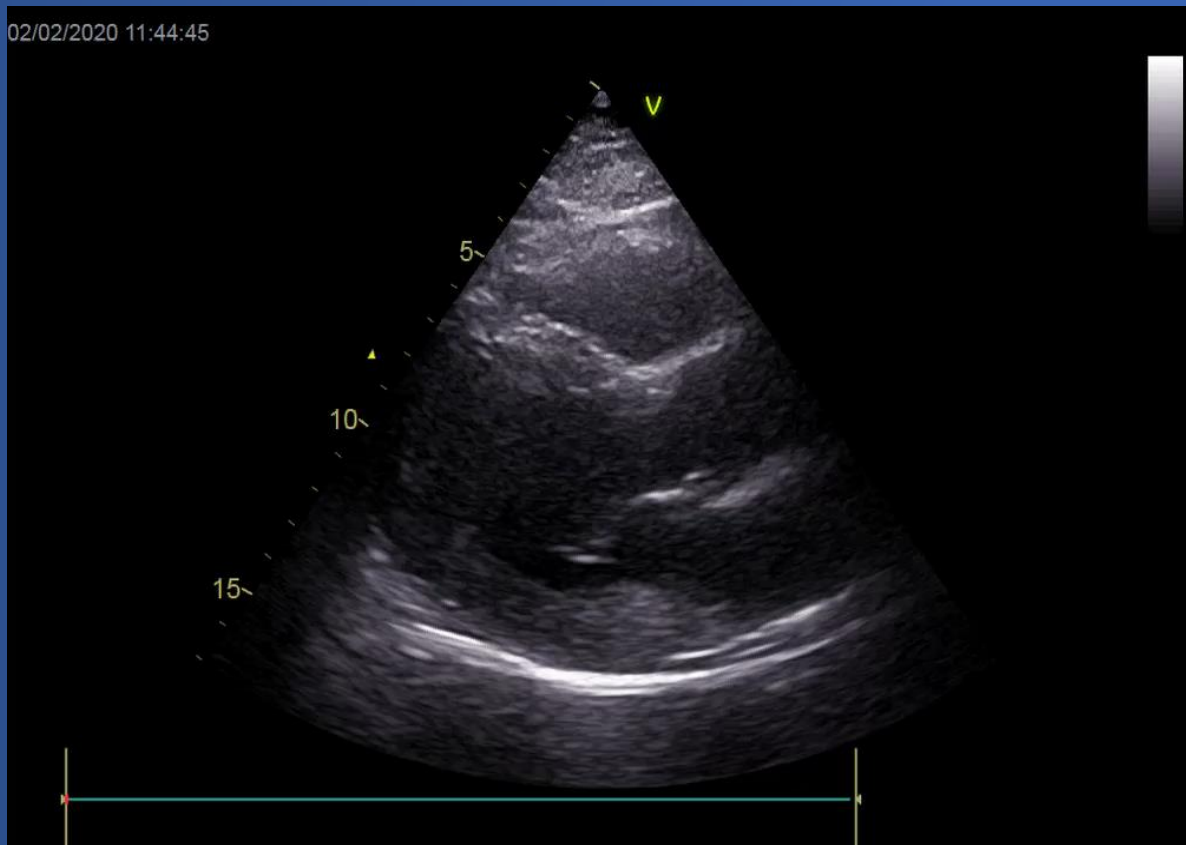


SCA: COMPLICANZE MECCANICHE

Caso clinico 2 - 02/02/2020 ore 10:45

ECOCARDIOGRAMMA IN UTIC

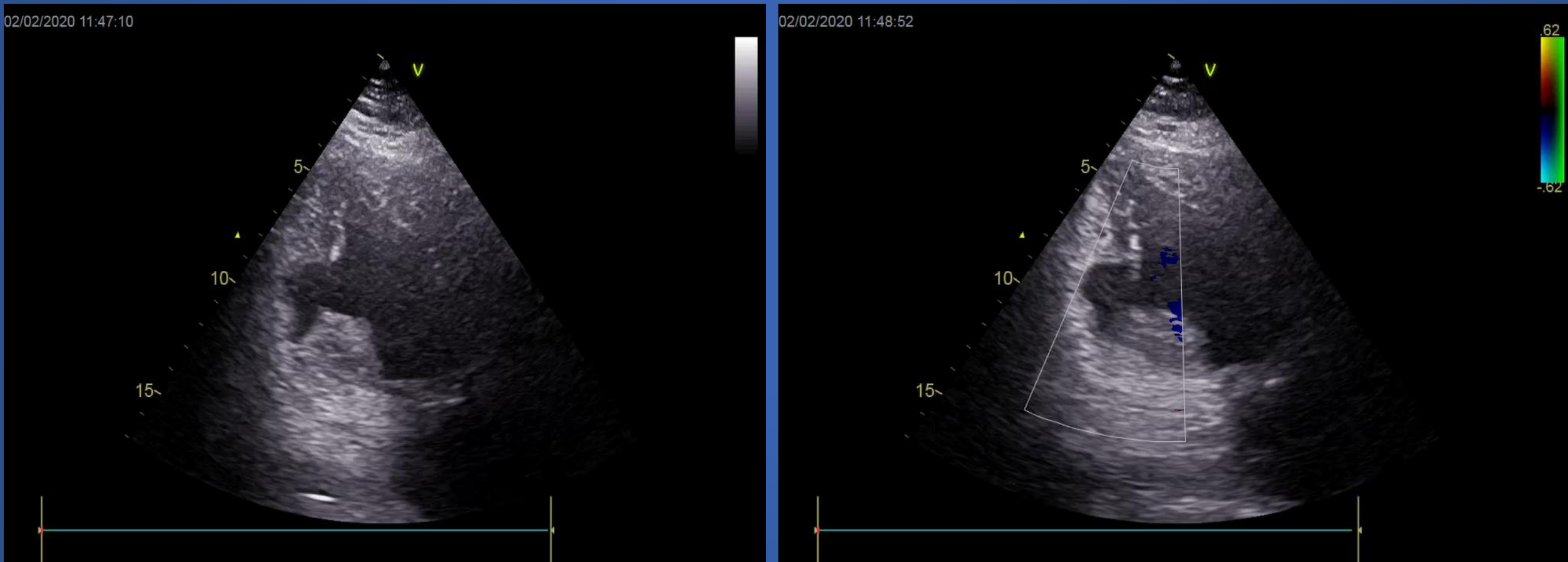
IL PAZIENTE LAMENTA DOLORE PRECORDIALE



SCA: COMPLICANZE MECCANICHE

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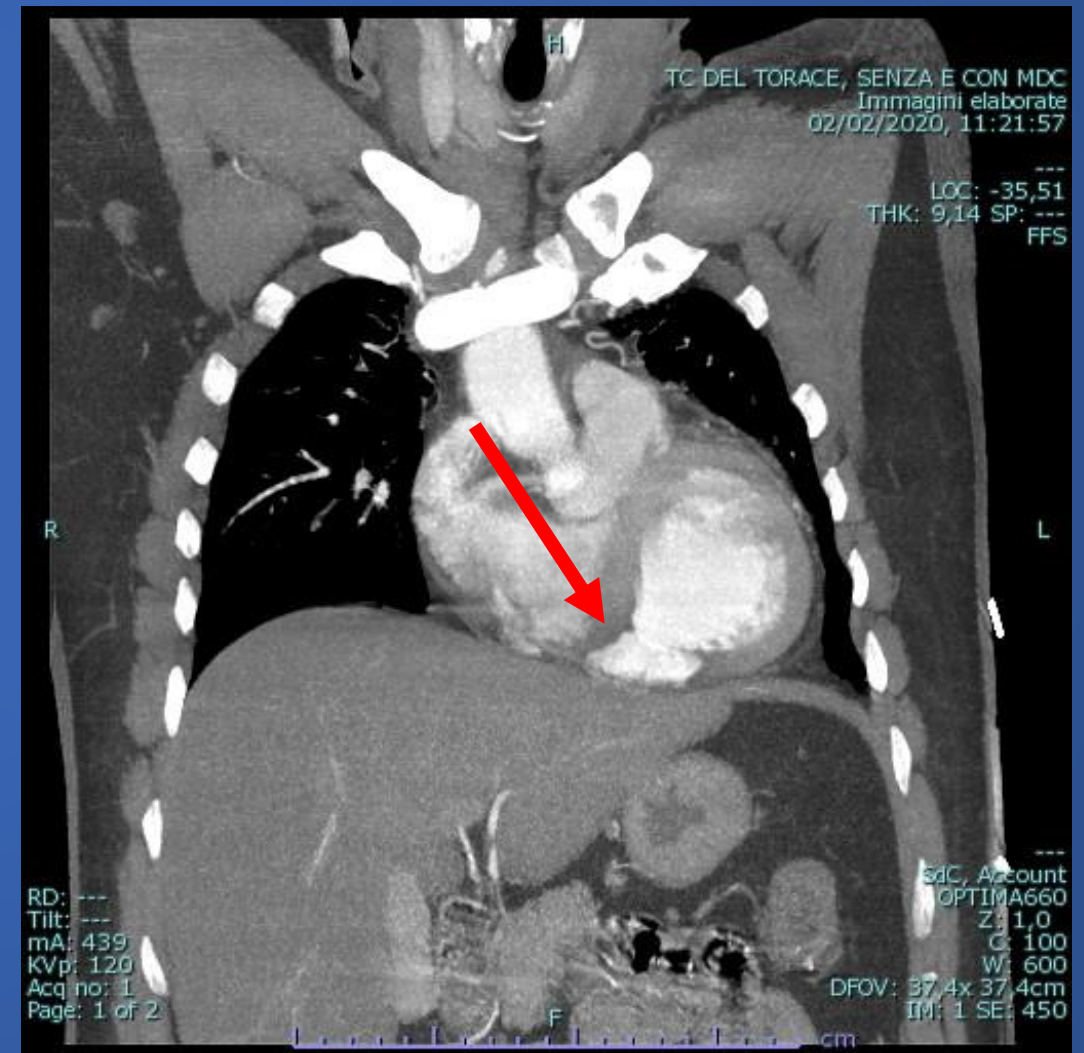
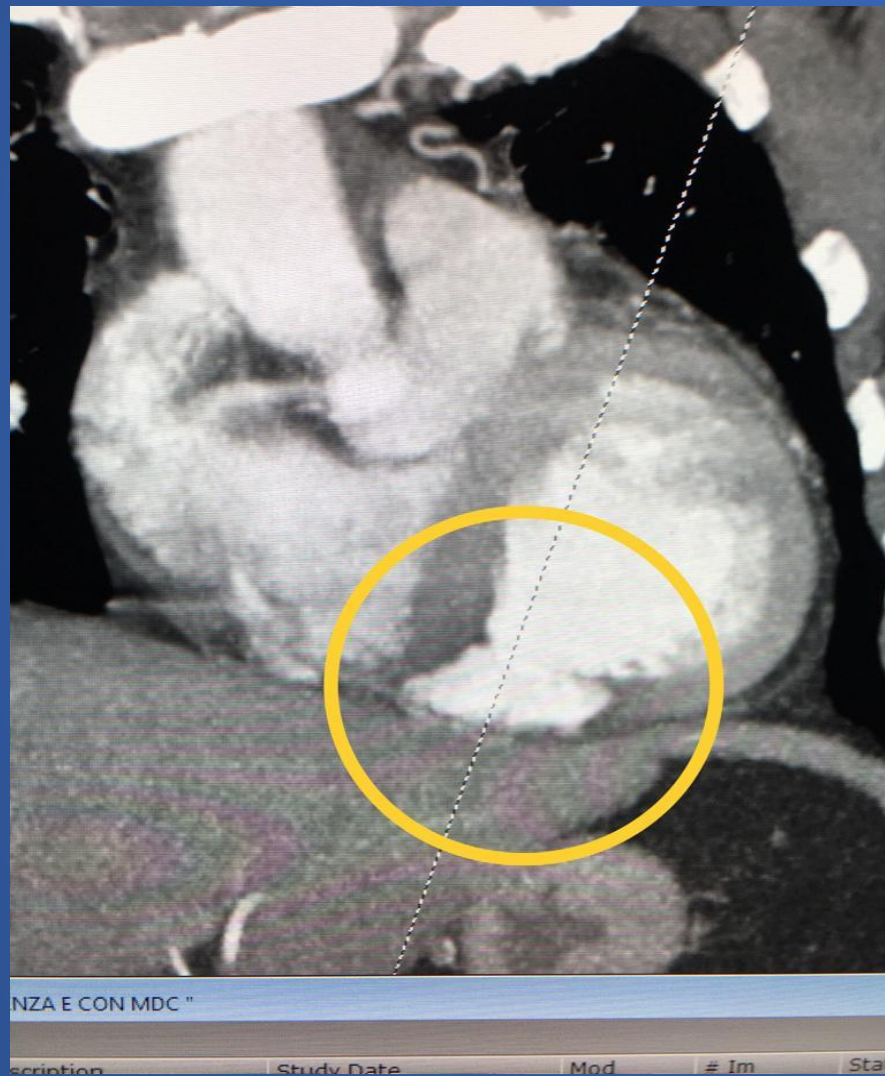
ECOCARDIOGRAMMA IN UTIC



SCA: COMPLICANZE MECCANICHE

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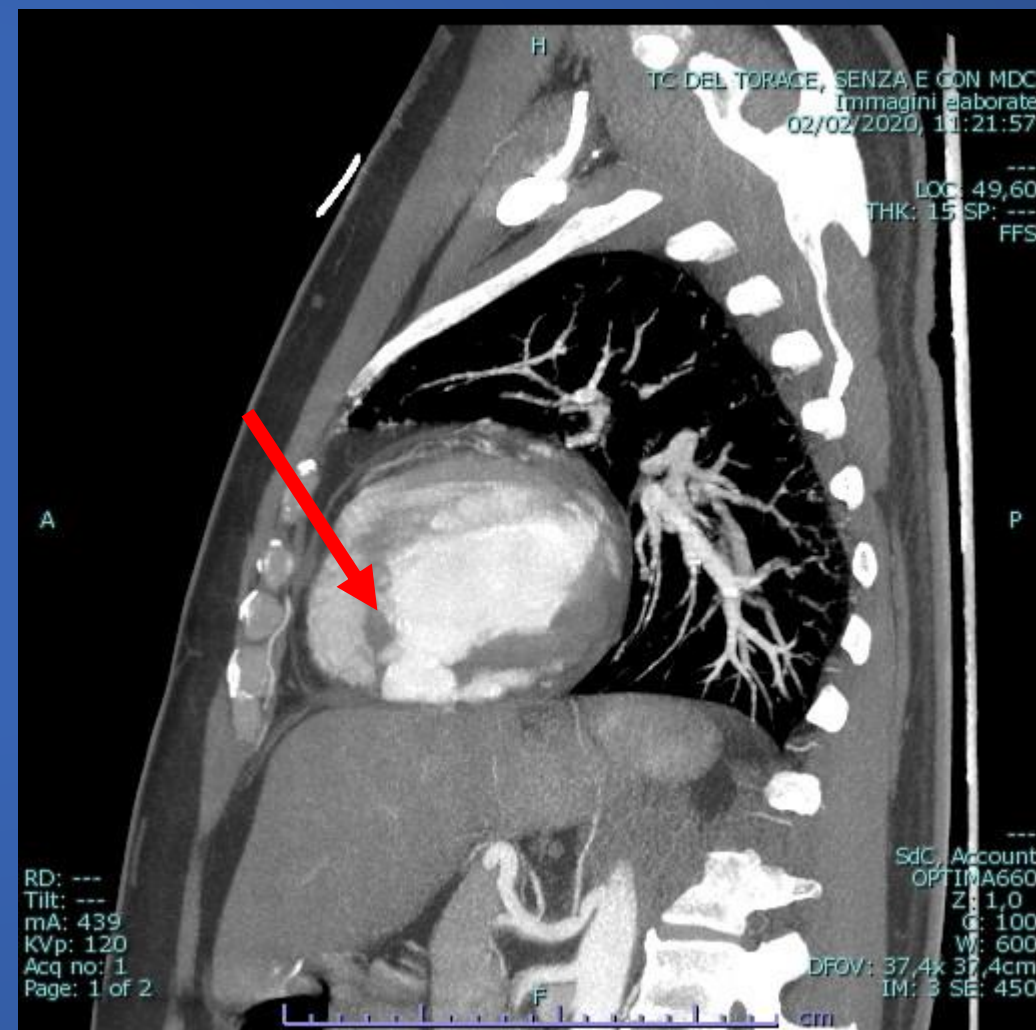
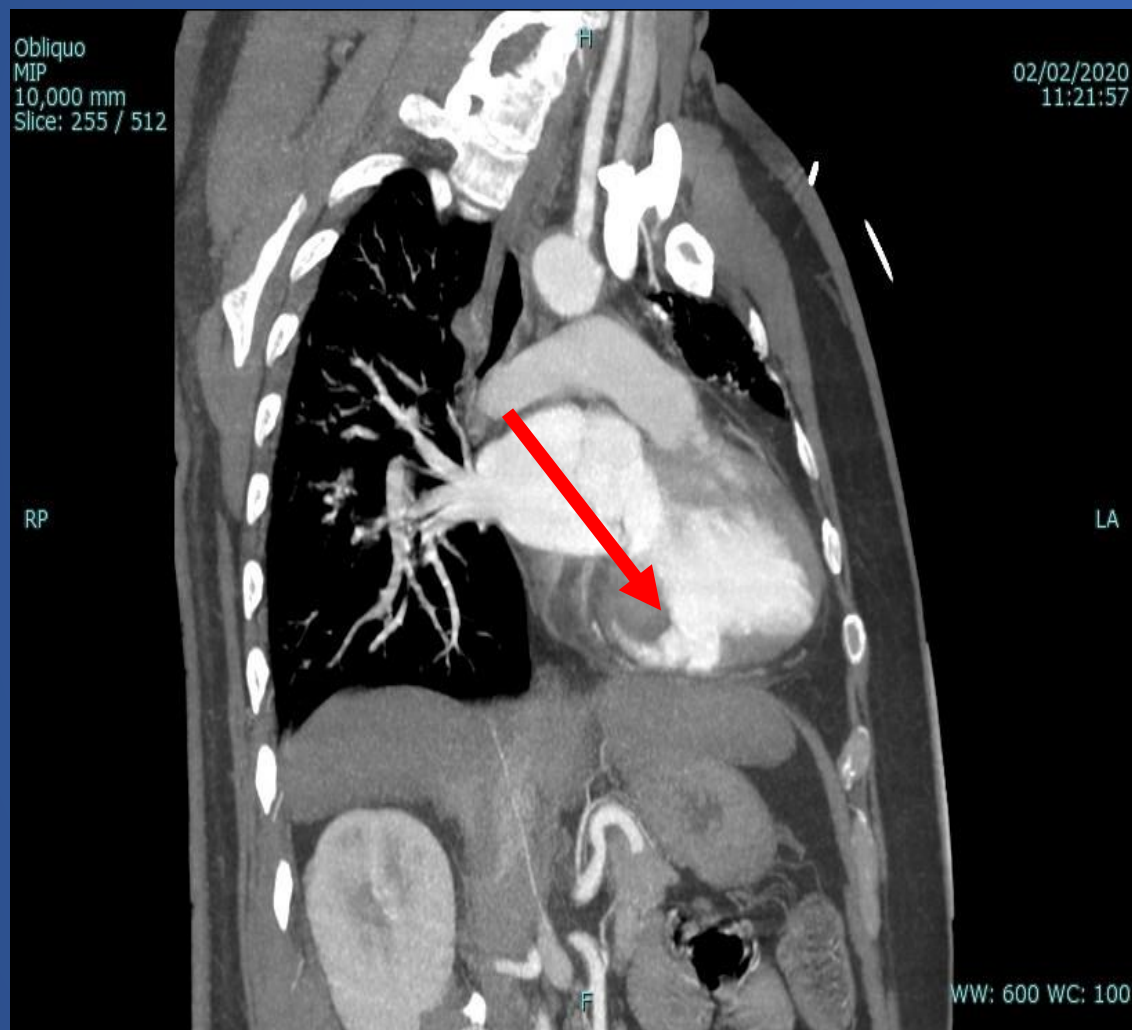
TC TORACE CON E SENZA MDC



SCA: COMPLICANZE MECCANICHE

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ECOCARDIOGRAMMA IN UTIC



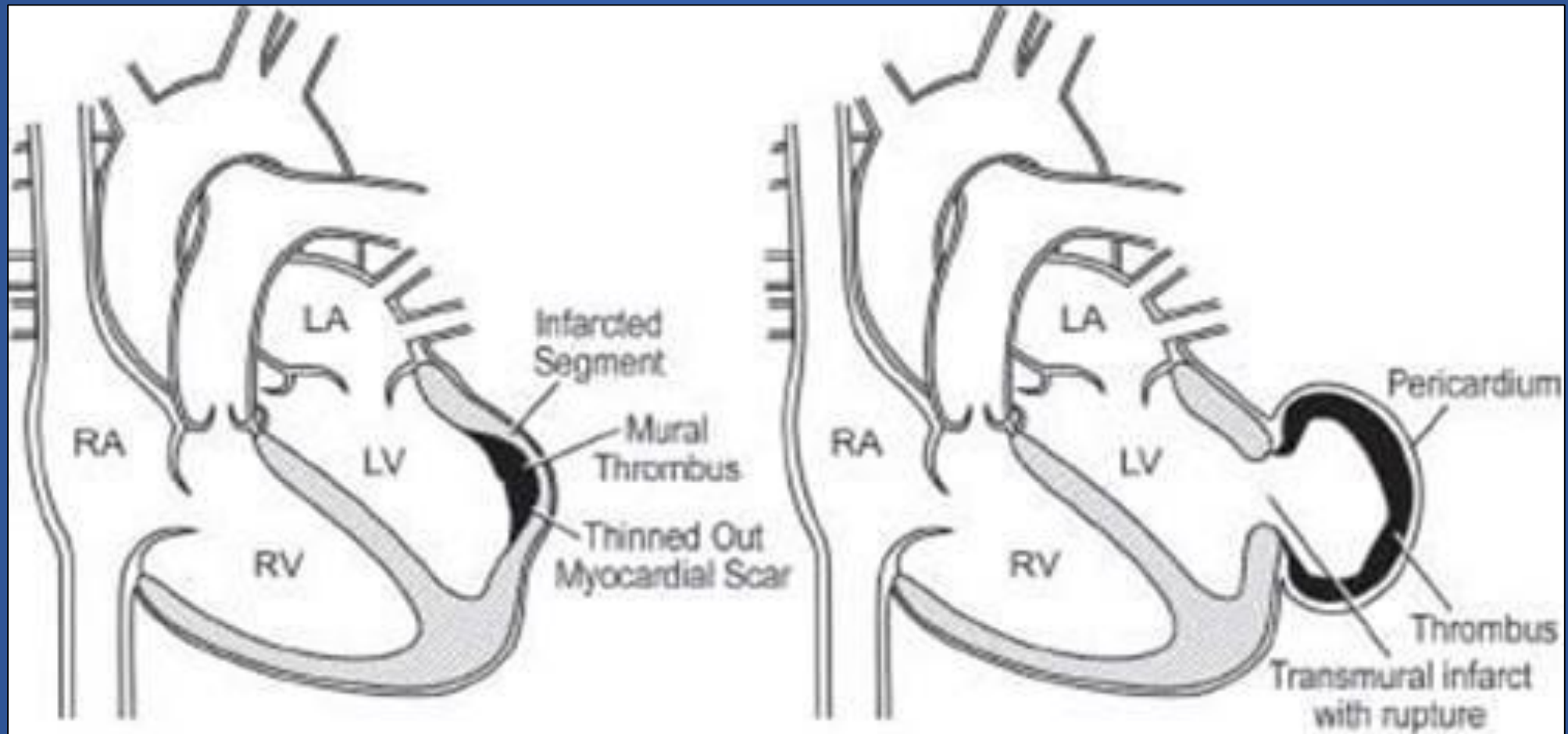
PSEUDOANEURISMA

Table 1. Summary of Major Mechanical Complications of Acute Myocardial Infarction

Complication	Presentation	Diagnosis	Management	Mortality rate (%)
Pseudoaneurysm	Weeks to years after infarct. May be asymptomatic or present with chronic heart failure.	Computerized tomography scan or echocardiogram shows large aneurysm cavity with flow from left ventricle across small neck.	Urgent surgical or percutaneous repair,* depending on symptoms.	<10

- PSEUDOANEURYSMS OF THE LV DEVELOP WHEN CARDIAC RUPTURE IS CONTAINED BY PERICARDIAL ADHESIONS;
- COMPARED WITH TRUE ANEURYSMS, PSEUDOANEURYSMS MORE OFTEN INVOLVE THE INFERIOR OR LATERAL WALL;
- PSEUDOANEURYSMS USUALLY HAVE A NARROW NECK AND LACK THE NORMAL STRUCTURAL ELEMENTS FOUND IN AN INTACT CARDIAC WALL

ANEURISMA VS PSEUDOANEURISMA



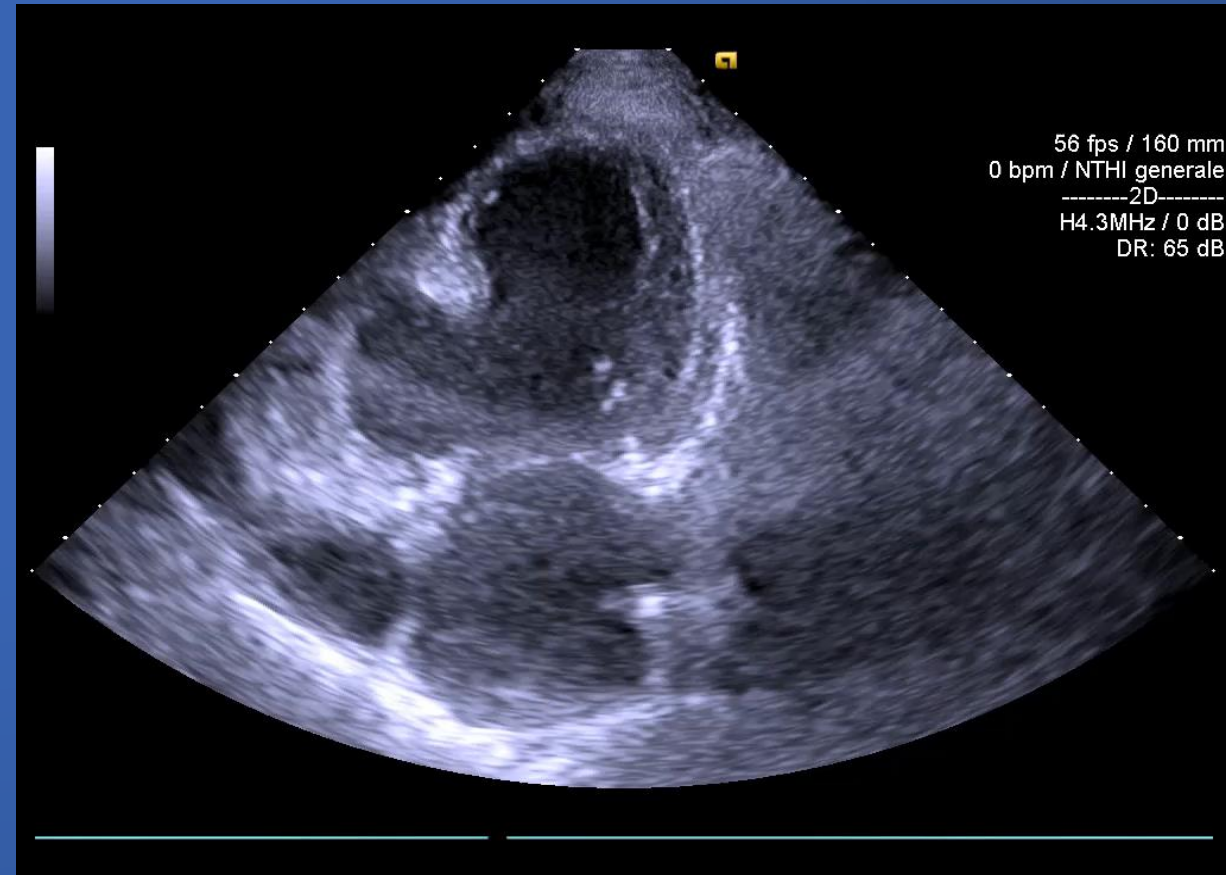
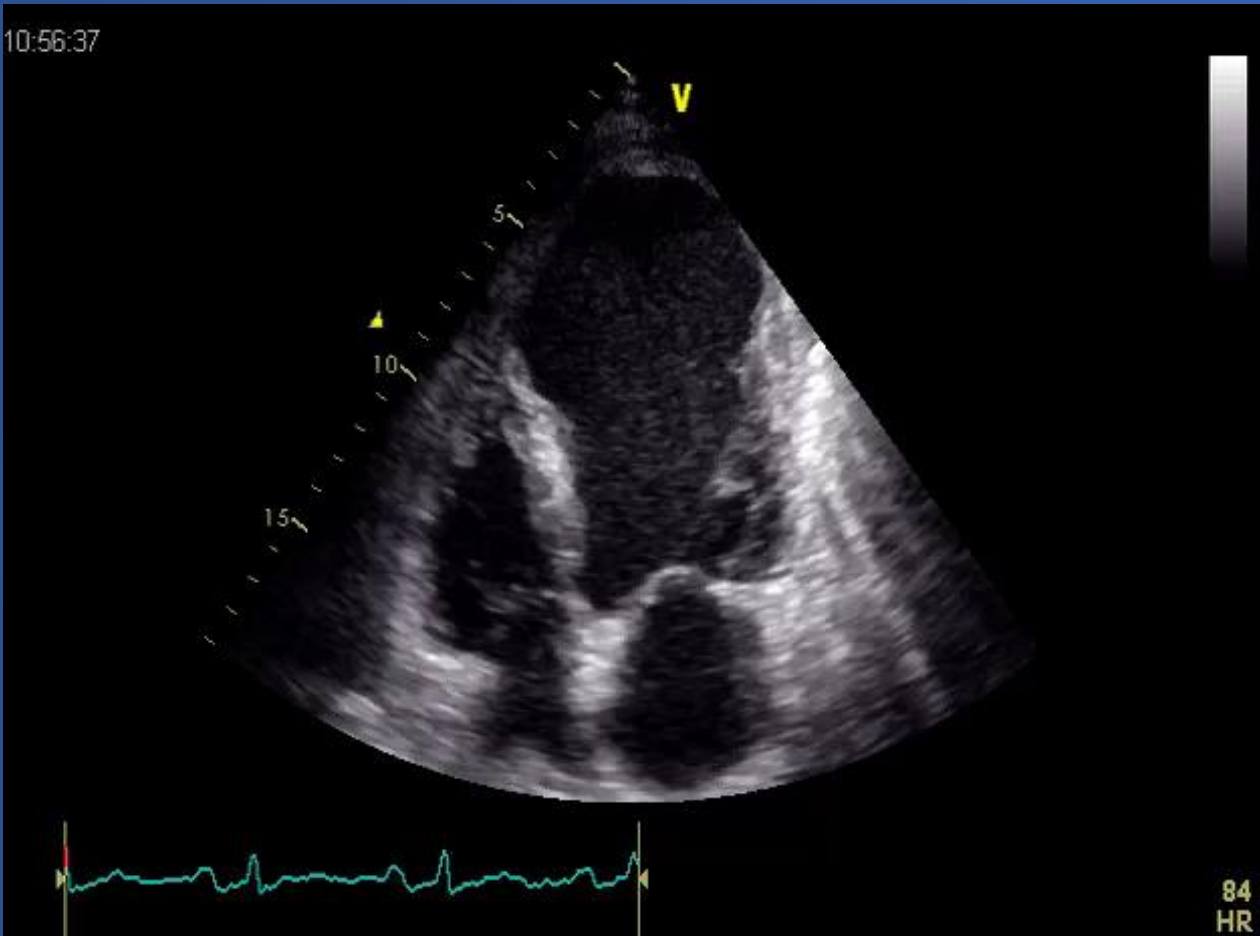
Aneurysm

1. Wide base
2. Walls composed of Myocardium
3. Low-risk of free rupture

Pseudo-Aneurysm (Contained Rupture)

1. Narrow base
2. Walls composed of thrombus & pericardium
3. High-risk of free rupture

ANEURISMA VS PSEUDOANEURISMA



CONCLUSIONI

LA DIAGNOSI DELLE COMPLICANZE MECCANICHE DELL'INFARTO
RICHIEDE UN ELEVATO SOSPETTO E SPESSO E' NECESSARIO
ASSOCIARE INDAGINI DIAGNOSTICHE DIVERSE, COME:

- CORONAROGRAFIA E VENTRICOLOGRAFIA
- ECOCARDIOGRAMMA TRANSTORACICO E TRANSESOFAGEO
- ECOCARDIOGRAMMA CON CONTRASTO
- TAC
- RISONANZA MAGNETICA