

# EUROVALVE

CROWNE PLAZA LINATE



**MILAN**  
**SEPTEMBER**  
**21 & 22, 2023**



## **COURSE DIRECTORS**

Patrizio Lancellotti, Belgium  
Khalil Fattouch, Italy  
Gilbert Habib, France  
José Luis Zamorano, Spain  
Philippe Pibarot, Canada  
Mani Vannan, USA  
Jeroen Bax, The Netherlands

## **LOCAL HOST**

Eustachio Agricola, Italy

**EUROVALVE**

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Nightmare in valvular heart disease

A patient with cancer and endocarditis

Tommaso Viva, MD

IRCCS Galeazzi – Sant' Ambrogio Hospital, Milan (Italy)

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## FACULTY DISCLOSURE

I have no financial relationships to disclose

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Clinical case #1

76 yo man

**CV risk factors:** current smoker

Known for:

- Permanent AF from 2012
- **Amyloidosis ATTR wild-type** (from 2019) under treatment with Tafamidis
- Previous surgical intervention for lumbar spinal stenosis (2020)

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Clinical case #1

In 04/23 admitted to ED for **fever** («?urosepsis»), treated with Ciprofloxacin 500 mg for 7 days.

In 05/23 new admission to ED for **fever + respiratory distress**:

- Blood cultures: **E. Faecalis** + (2 sets)
- TTE + TOE: **vegetations** on the aortic valve (right and left cusps) with severe AR
- PET: captating **lesion in the colon** (cecum)



**Conservative treatment:** ampicillin i.v. + Linezolid po

Recommendations	Class <sup>b</sup>	Level <sup>c</sup>
<b>(i) Heart failure</b>		
<u>Urgent<sup>d</sup> surgery</u> is recommended in aortic or mitral NVE or PVE with severe acute regurgitation or obstruction causing <u>symptoms of HF</u> or echocardiographic signs of poor haemodynamic tolerance. <a href="#">5,420–422,429</a>	<b>I</b>	<b>B</b>

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN

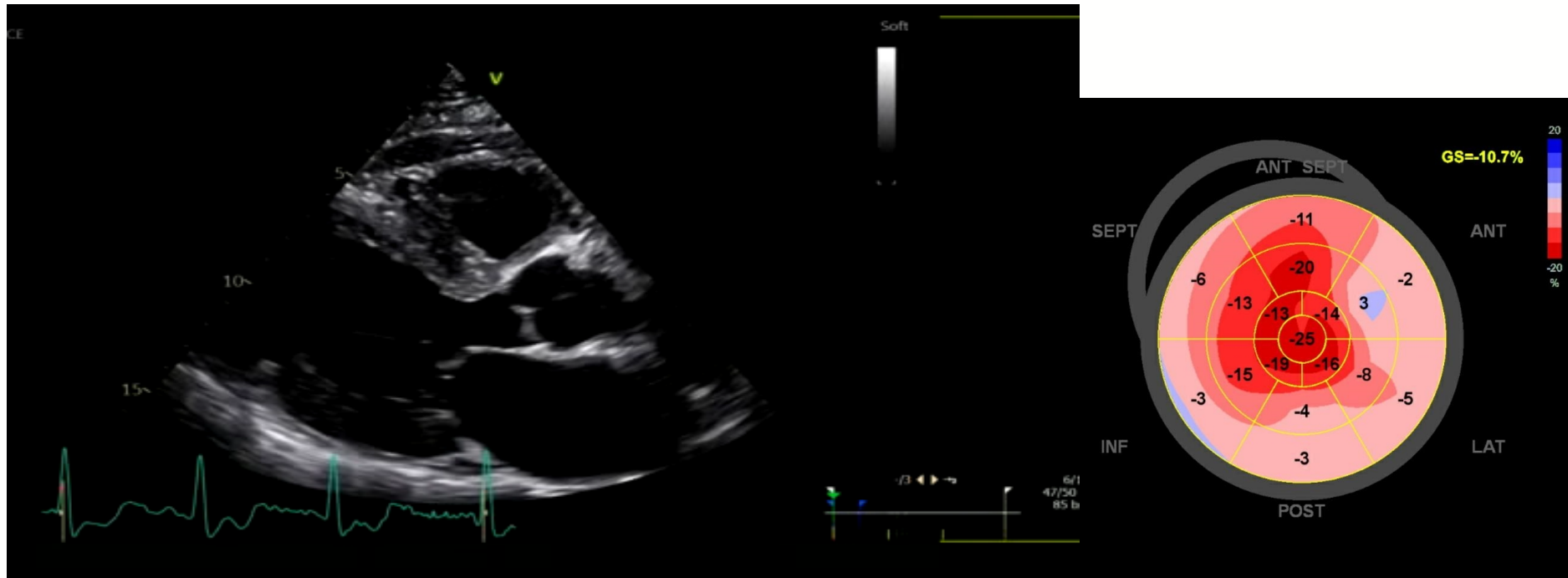


SEPTEMBER  
21 & 22, 2023



## Three weeks later....

The patient was still complaining **dyspnoea for mild effort**



# EUROVALVE

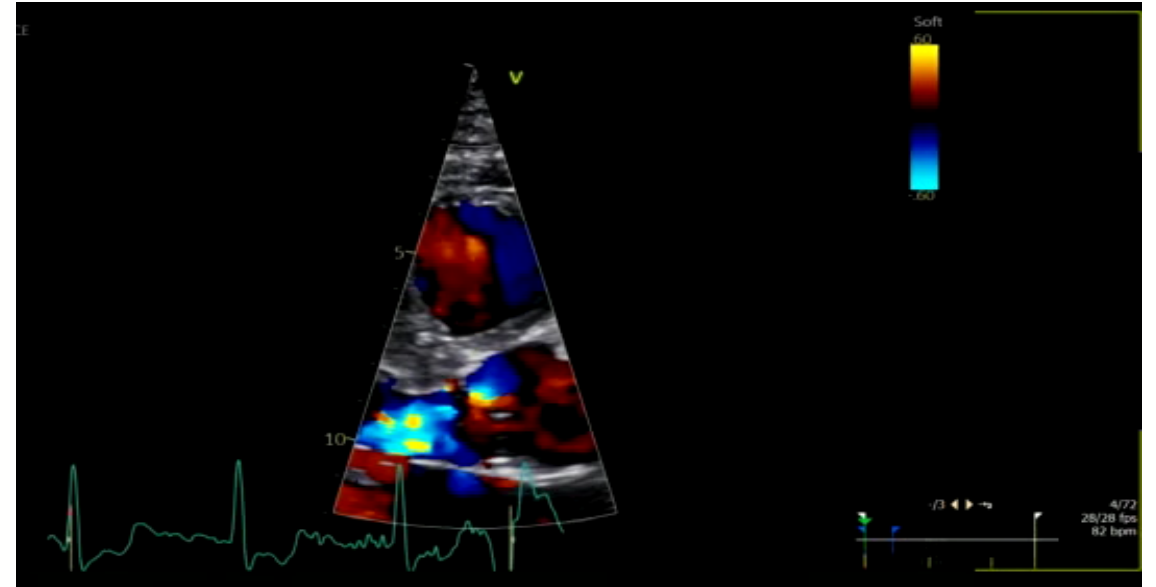
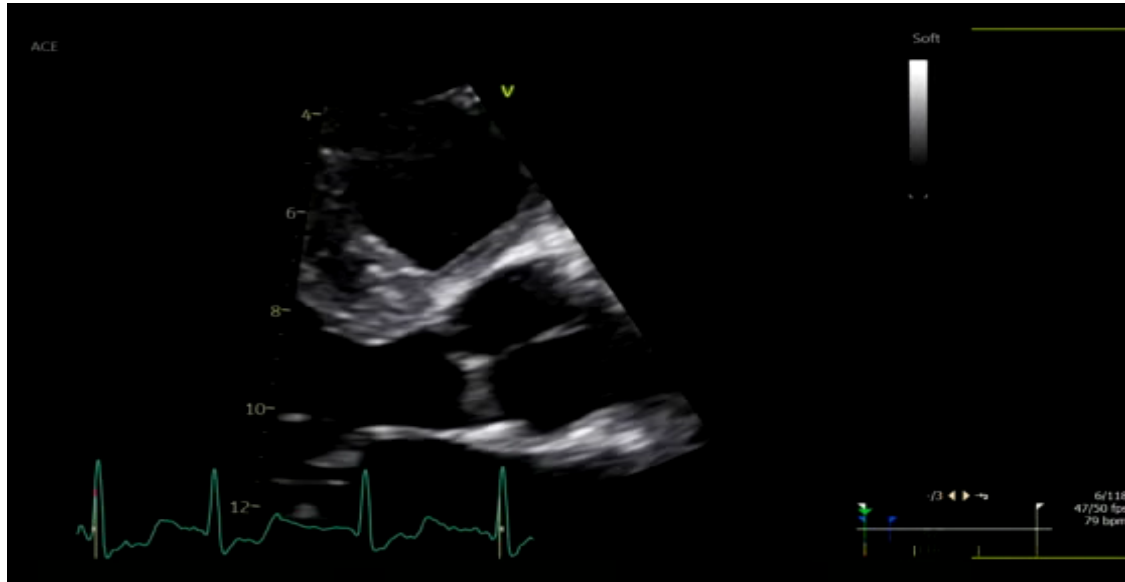
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## TTE Echo at admission



# EUROVALVE

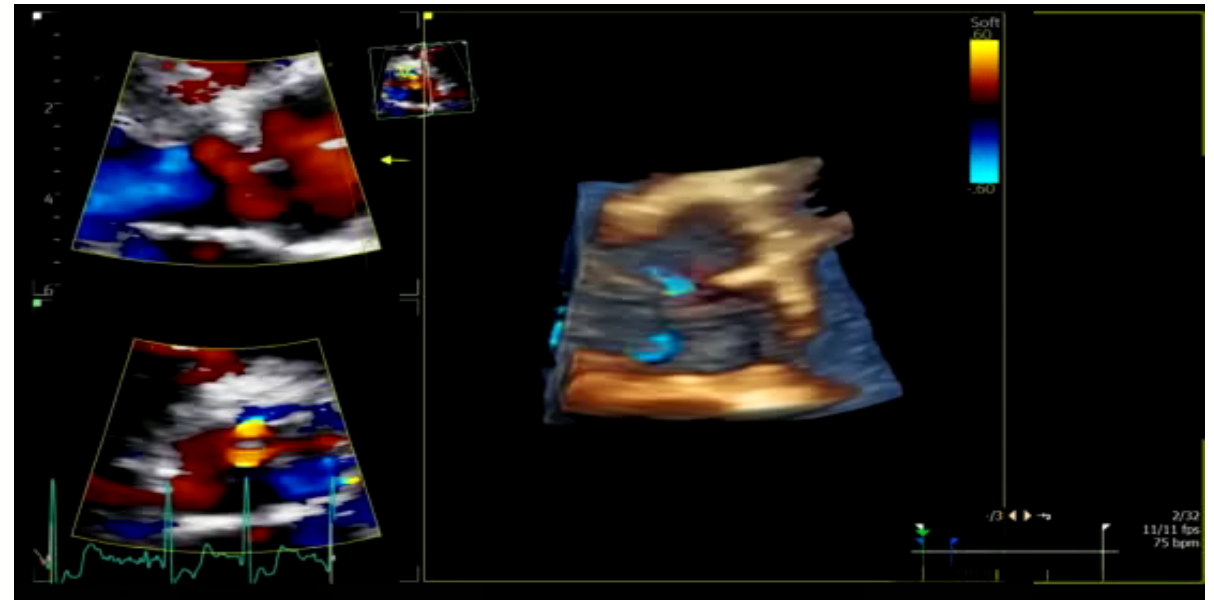
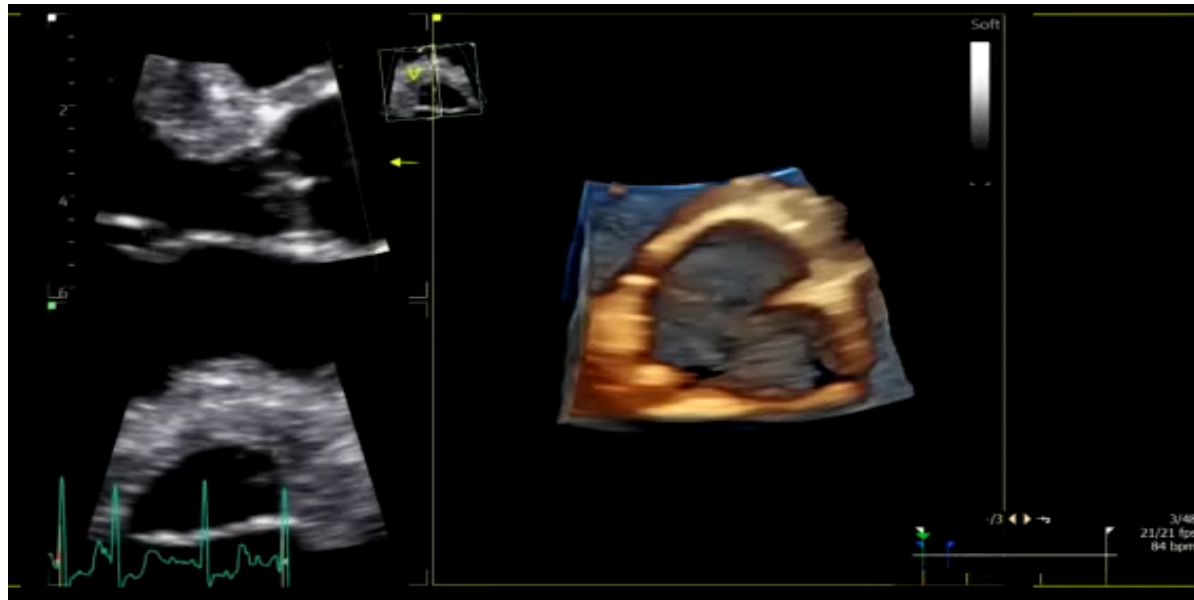
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## 3D TTE Echo at admission





# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Pre-operative assessment



Right ischaemic frontal lesion (embolization?)



Blood cultures (under antibiotic treatment): negative

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Colonscopy



Polipectomy (adenoma)

# EUROVALVE

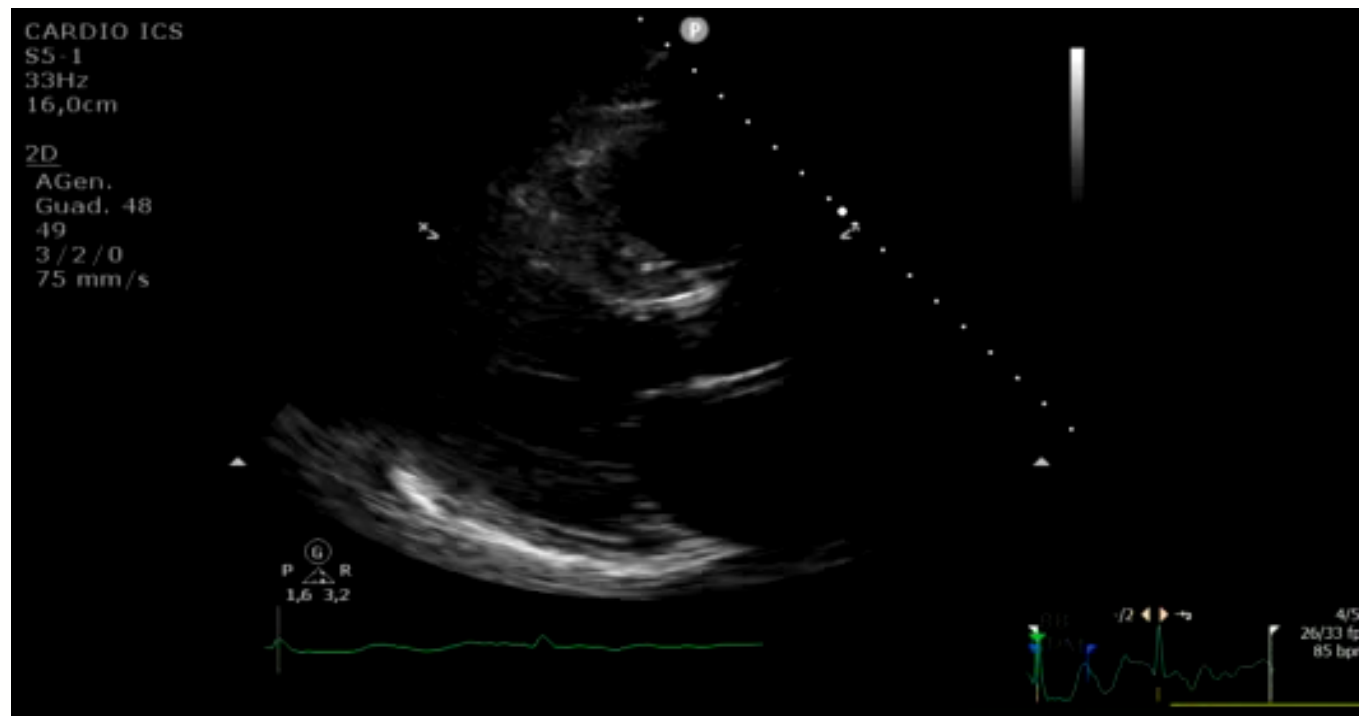
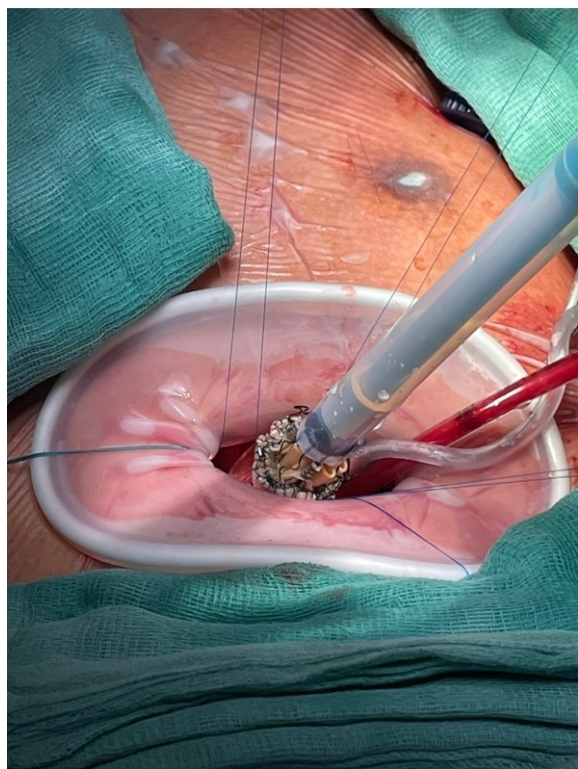
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Surgical AVR + LAA closure (right minithoracotomy)



# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## EURO-ENDO registry

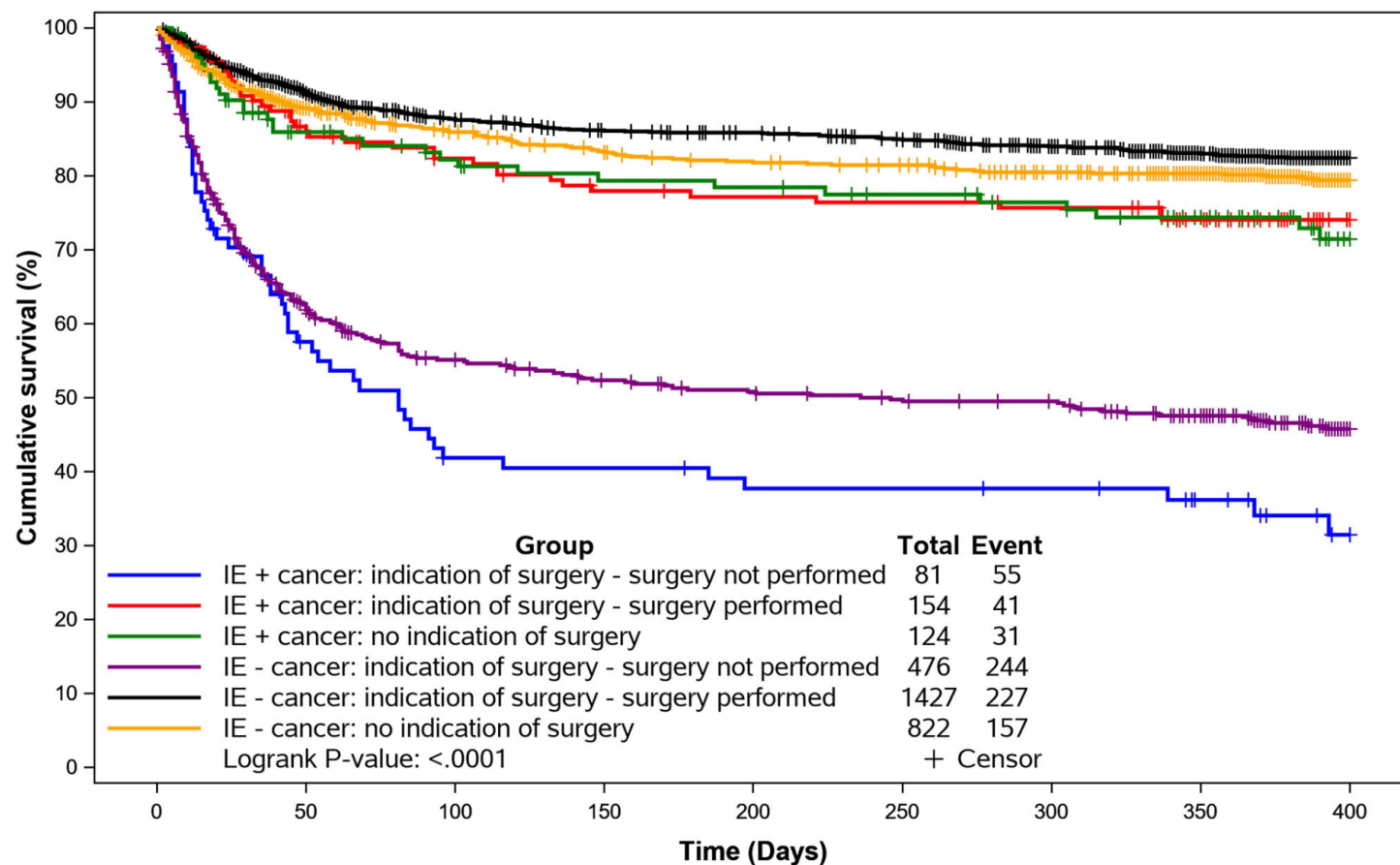
- 3085 patients (multicenter European study)
- 359 (11.6%) IE + cancer

### IE + cancer vs IE – cancer:

- Same theoretical indication for surgery
- IE + cancer: less performed surgery



**Worse prognosis if no surgery**



# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Cancer: a predisposing factor for IE?

### Minor criteria

- (i) Predisposing conditions (i.e. predisposing heart condition at high or intermediate risk of IE or PWIDs)<sup>a</sup>
- (ii) Fever defined as temperature >38°C
- (iii) Embolic vascular dissemination (including those asymptomatic detected by imaging only):
  - Major systemic and pulmonary emboli/infarcts and abscesses.
  - Haematogenous osteoarticular septic complications (i.e. spondylodiscitis).
  - Mycotic aneurysms.
  - Intracranial ischaemic/haemorrhagic lesions.
  - Conjunctival haemorrhages.
  - Janeway's lesions.
- (IV) Immunological phenomena:
  - Glomerulonephritis.
  - Osler nodes and Roth spots.
  - Rheumatoid factor.
- (V) Microbiological evidence:
  - Positive blood culture but does not meet a major criterion as noted above.
  - Serological evidence of active infection with organism consistent with IE.

**Table 8 Cardiac and non-cardiac risk factors**

### Cardiac risk factors

- Previous infective endocarditis
- Valvular heart disease
- Prosthetic heart valve
- Central venous or arterial catheter
- Transvenous cardiac implantable electronic device
- Congenital heart disease

### Non-cardiac risk factors

- Central venous catheter
- People who inject drugs
- Immunosuppression
- Recent dental or surgical procedures
- Recent hospitalization
- Haemodialysis

+

Focus of  
hematogenous  
bacterial spread



## IE: a clinical marker for occult cancer?

**Table 2** Standardized Incidence Ratios for Main Cancer Subgroups among Patients with Endocarditis

Cancer Subgroup	All Years		Within First 3 Months		3 Months to 5 Years		After More than 5 Years	
	Cancers Observed/ Expected	Standardized Incidence Ratio (95% CI)	Cancers Observed/ Expected	Standardized Incidence Ratio (95% CI)	Cancers Observed/ Expected	Standardized Incidence Ratio (95% CI)	Cancers Observed/ Expected	Standardized Incidence Ratio (95% CI)
All cancer	997/620	1.61 (1.51-1.71)	188/23	8.03 (6.92-9.26)	425/280	1.52 (1.38-1.67)	384/316	1.21 (1.10-1.34)
Tobacco-related cancers	291/167	1.74 (1.54-1.95)	65/7	9.82 (7.58-12.52)	121/78	1.56 (1.29-1.86)	105/83	1.26 (1.03-1.53)
Alcohol-related cancers	253/142	1.78 (1.56-2.01)	48/5	8.83 (6.51-11.70)	118/65	1.82 (1.51-2.18)	87/72	1.20 (0.96-1.49)
Immune-related cancers	59/30	1.99 (1.52-2.57)	12/1	11.75 (6.06-20.52)	21/13	1.64 (1.02-2.51)	26/16	1.65 (1.08-2.41)
Hematological cancers	49/25	1.95 (1.44-2.57)	23/1	24.43 (15.48-36.66)	17/11	1.51 (0.88-2.42)	9/13	0.69 (0.32-1.32)

CI = confidence interval; ICD-10 = International Classification of Diseases, 10<sup>th</sup> Revision.

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Clinical case #2

48 yo woman

No CV risk factors

**Comorbidities:** ulcerative colitis (2008), spondiloarthritis with sternocostal joints involvement (tp: Infliximab)

### Recent medical history:

In 03/23 admission to ED for **dyspnoea and palpitations:**

- AF treated by electrical cardioversion
- TTE: **moderate-to-severe MR for «anterior leaflet prolapse» + moderate AR**
- TOE: severe MR «for cordal rupture», **no vegetations/thrombotic lesions**



Transferred to our Centre for MVR ± AVR

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Blood tests at admission

- WBC 9920/ $\mu$ L
- Hb 11.7 g/dL
- **Plt 502000/ $\mu$ L**
- Creatinine 0.76 mg/dL
- **CRP 7.24 mg/dL**
- Tn HS I 12.31 pg/mL
- **Fibrinogen 728 mg/dL**
- D-dimer 337.0  $\mu$ g/L
- INR 2.0



# EUROVALVE

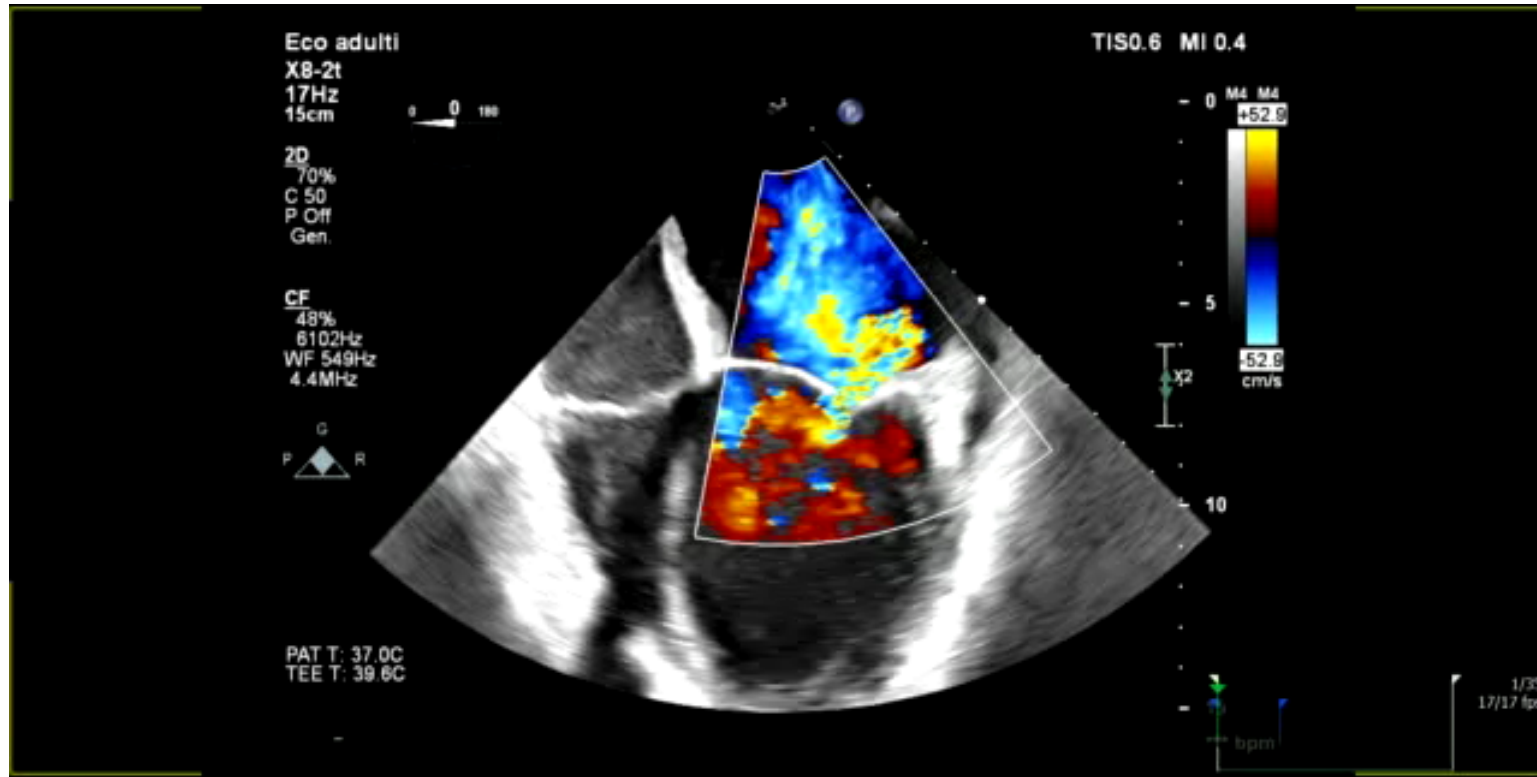
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE



# EUROVALVE

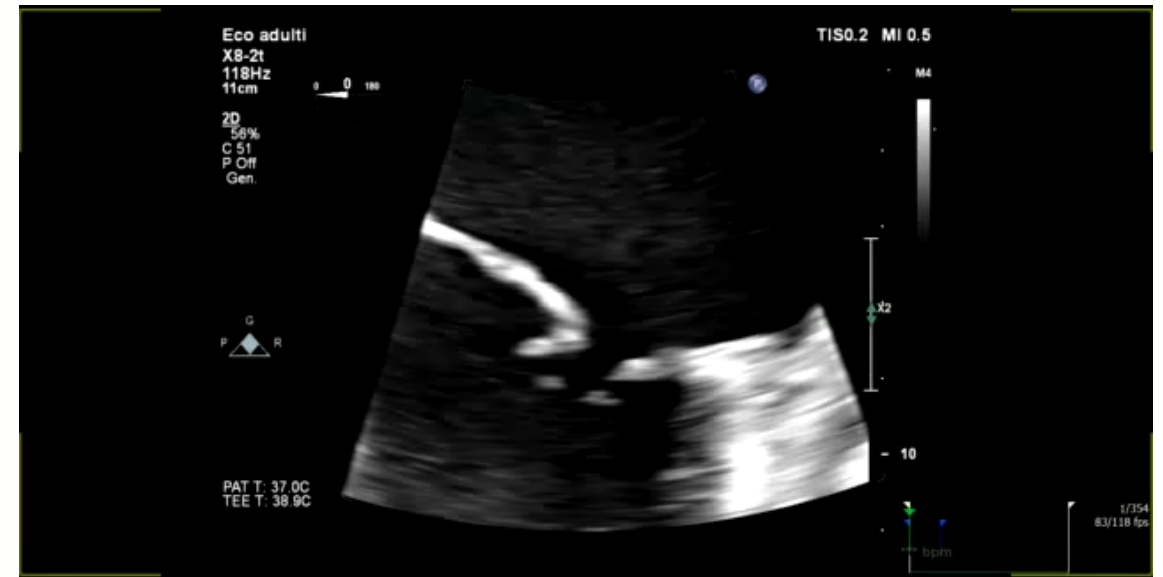
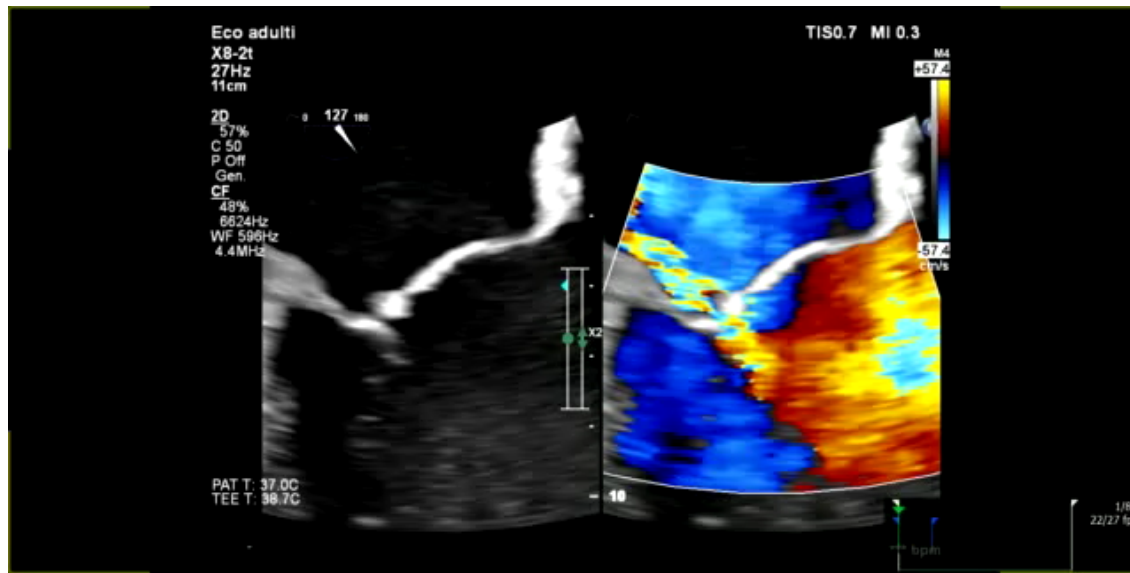
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE



**Perforation + Anterior (A3) and posterior (P1) leaflet vegetations**

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE



# EUROVALVE

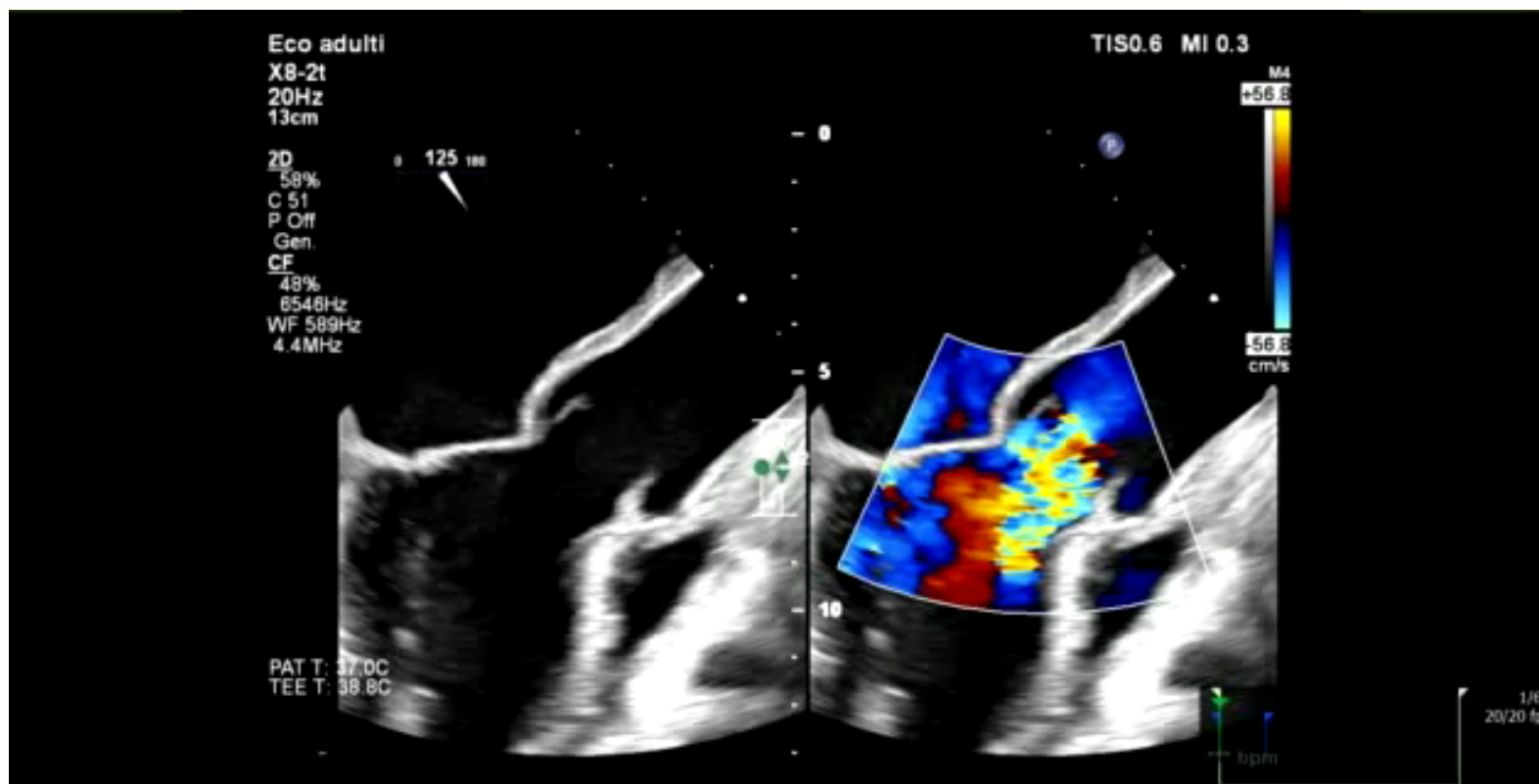
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE



# EUROVALVE

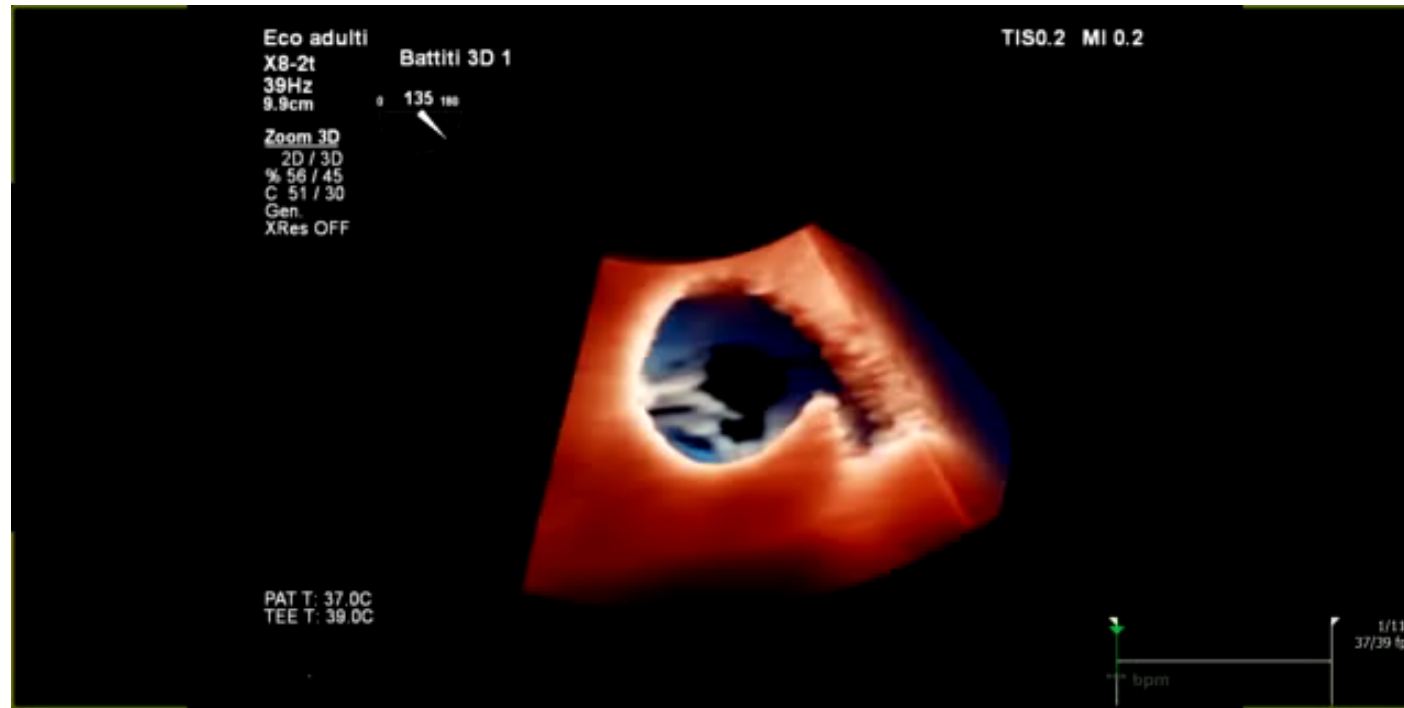
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE



Perforation of the left aortic cusp

# EUROVALVE

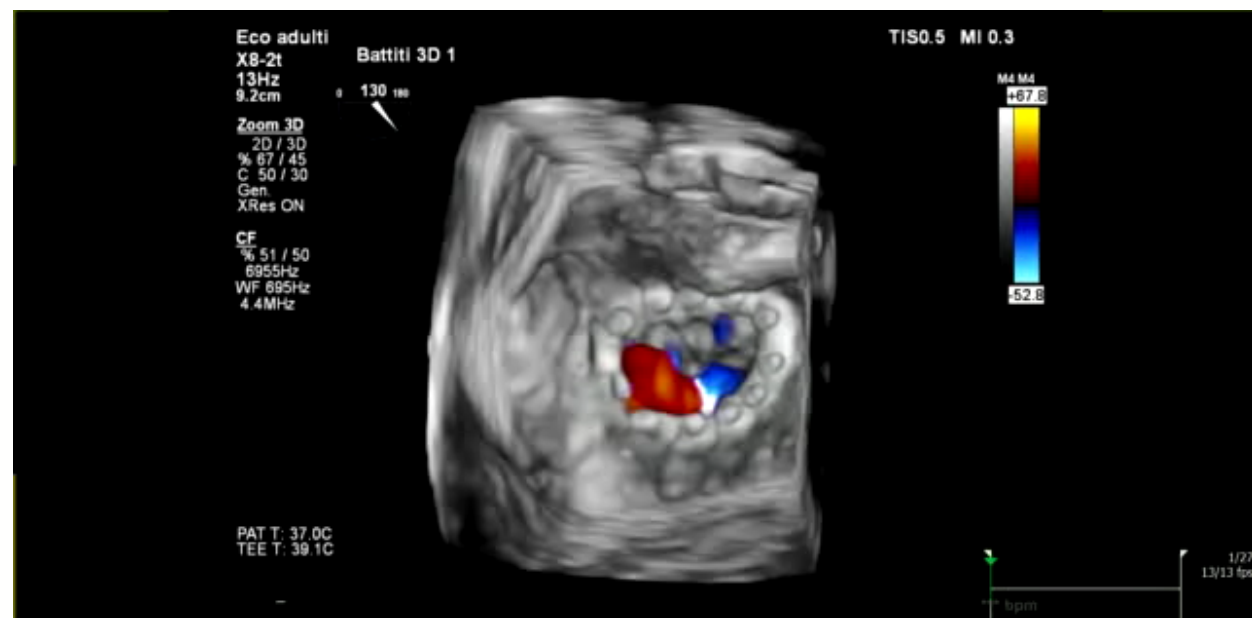
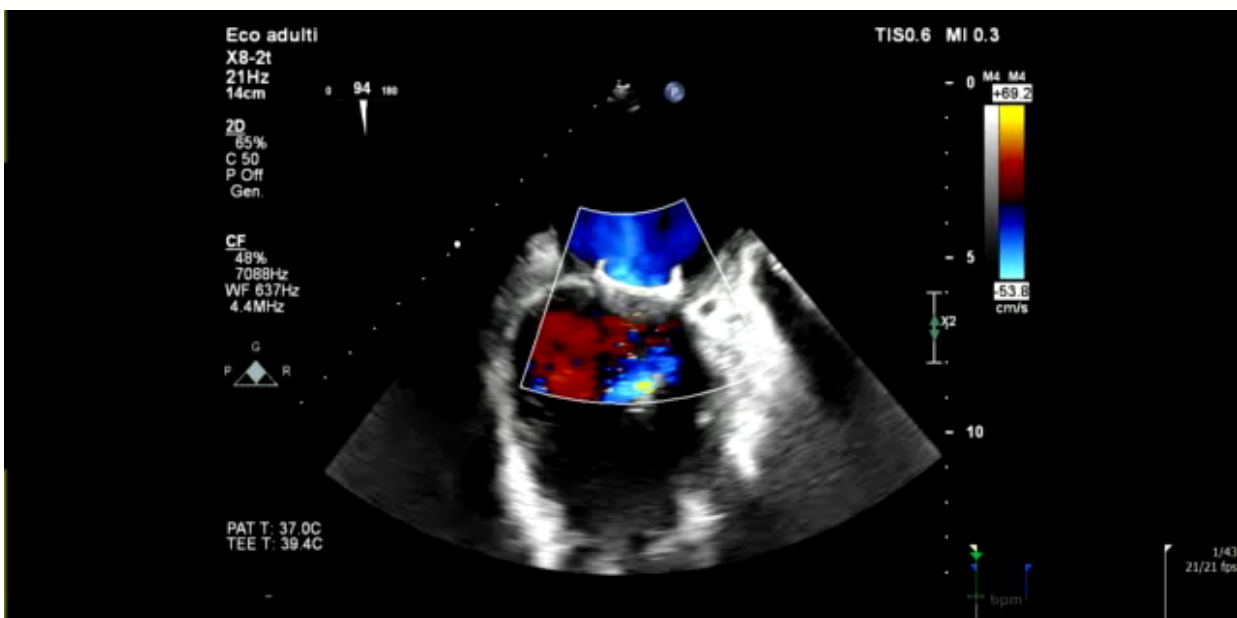
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE: mitral valve repair + AVR



# EUROVALVE

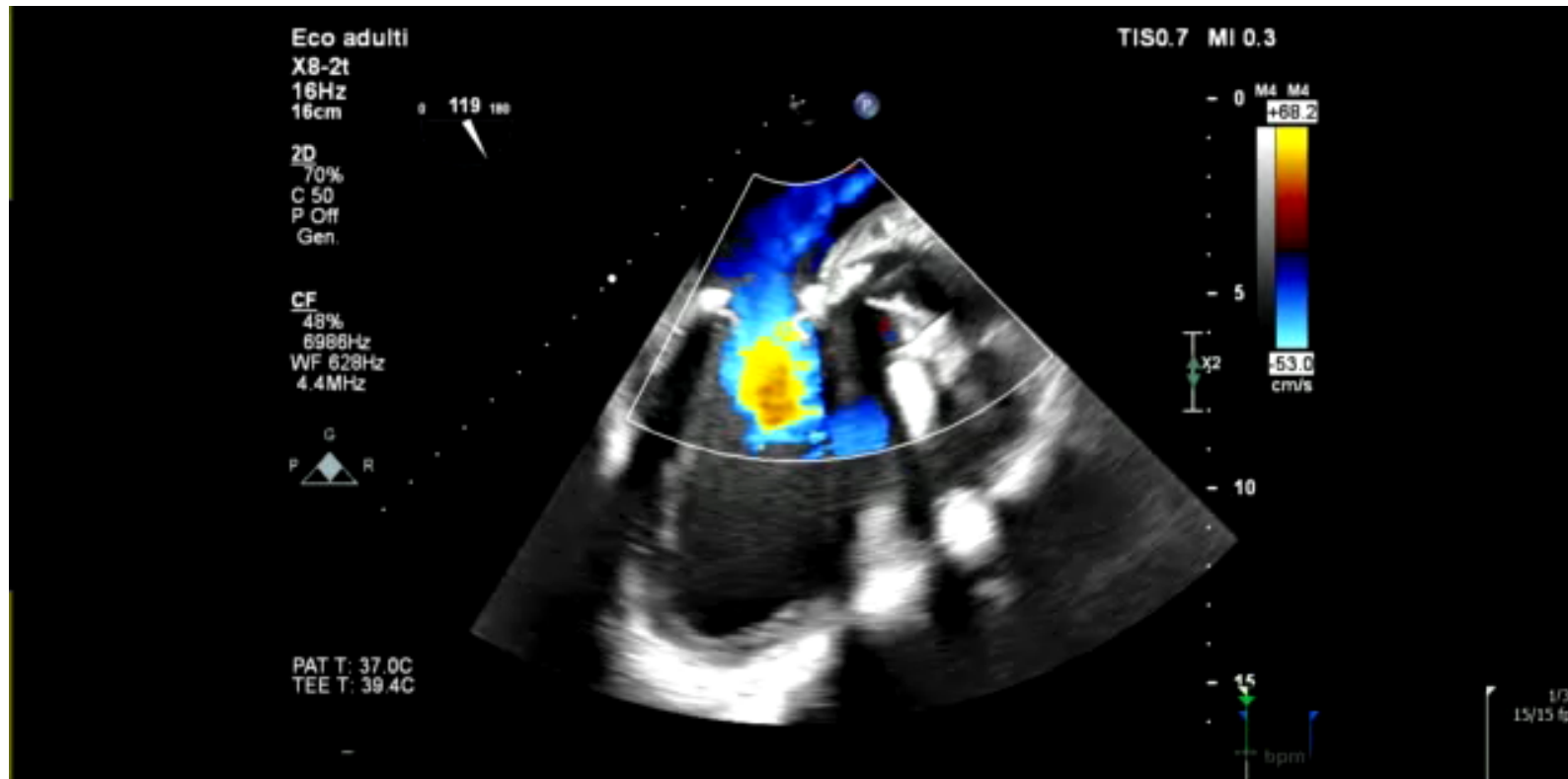
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Intraoperative TOE: double-valve replacement



# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Post-operative management

How to proceed?





# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Post-operative management

- Start antibiotic therapy: Daptomicin 500 mg i.v. + Ceftriaxone 2 g/day i.v.
- Blood cultures (3 sets): negative.
- Urine culture: negative.
- Valve culture: negative.
- Whole body CT

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Whole-body CT



Right renal hypodensity (embolization?)



Pelvic mass (uterine neoplasm?)

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



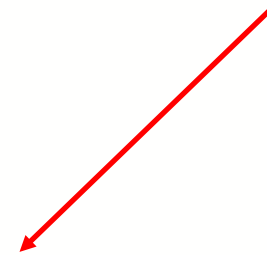
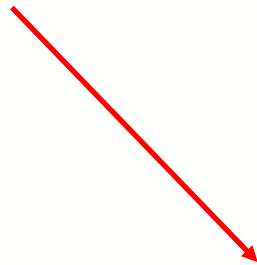
SEPTEMBER  
21 & 22, 2023



Background of **auto-inflammatory diseases**



Pelvic mass strongly suspected for **malignancy**



**Non-bacterial thrombotic endocarditis  
(NBTE)**

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## After the cardiac rehabilitation program..

New admission in ED for fever (39°) and fatigue.

Blood tests at admission:

- **CRP 13.6 mg/dL**
- Procalcitonin 0.01 ng/mL
- Hb 9.3 g/dL

Blood culture and tests for legionella, mycoplasma, bartonella, brucella, fungi: negative.

# EUROVALVE

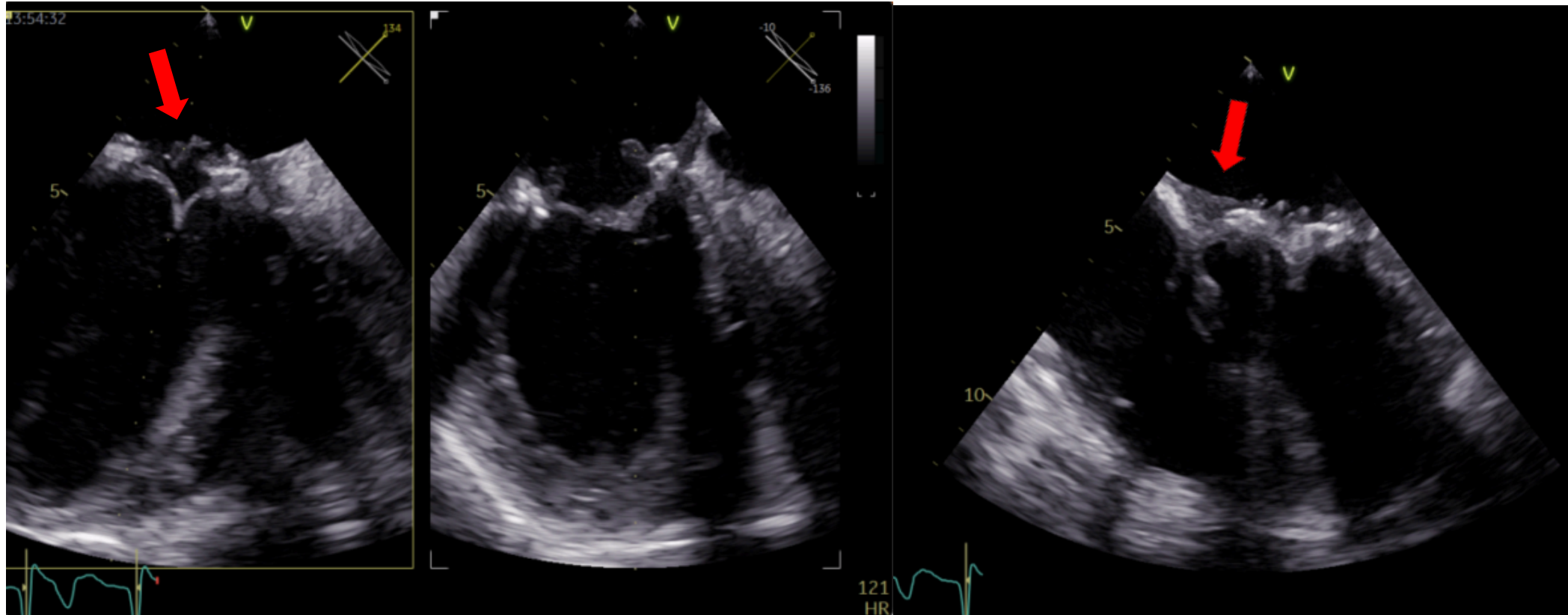
CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## TOE



# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## PET

- **Homogeneous hypercaptation** on aortic and mitral valve and on pericardium
- Marked **hypercaptation in the pelvic mass**

# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



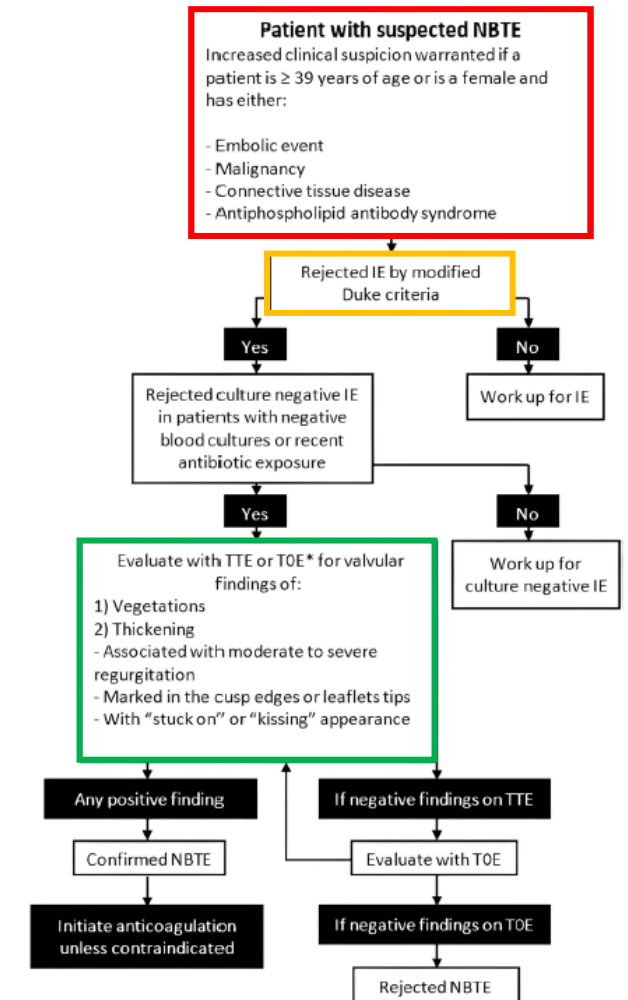
## Management

- **Switch from VKA to LMWH** --> complete resolution of the thrombotic lesions  
(during the switch episode of left superior arm hypoesthesia + diplopia -> negative CT head)
- Surgical treatment of pelvic mass: **isterectomy + bilateral annessiectomy**



## Proposed Mayo-Clinic diagnostic work-up for NBTE

- 1) Clinical suspicion: age  $\geq$  39 yo, female, clinical history
- 2) Reject IE by Modified Duke Criteria
- 3) Evaluate the valve: vegetations or thickening!





# EUROVALVE

CROWNE PLAZA LINATE  
MILAN



SEPTEMBER  
21 & 22, 2023



## Take home messages

- Cancer is a frequent finding in patients with IE (approximately 10% of pts)
- Cancer is a non cardiac-risk factor for IE
- IE is an important clinical marker for cancer
- Patients with cancer + IE have worse prognosis if surgery is not performed  
(but these pts have more comorbidities and higher surgical risk)
- Do not forget non-infective etiology!