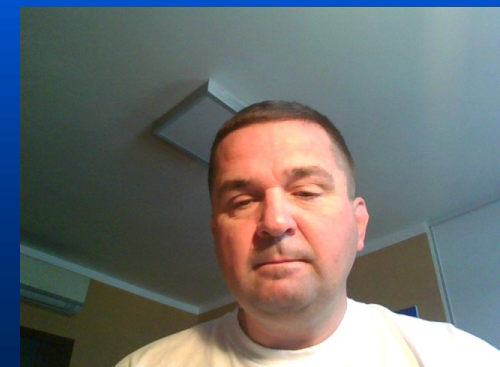
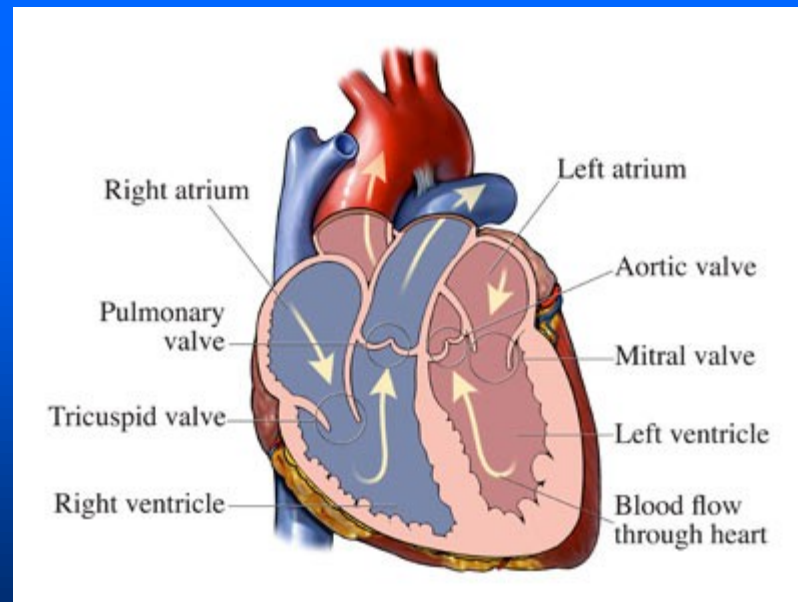
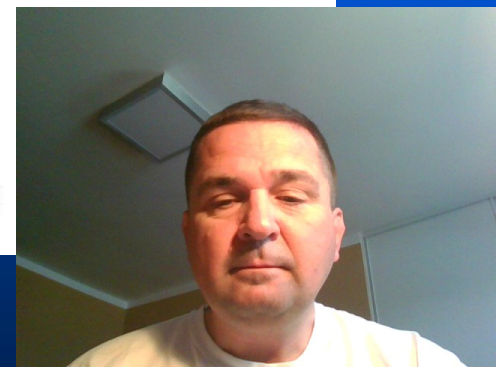
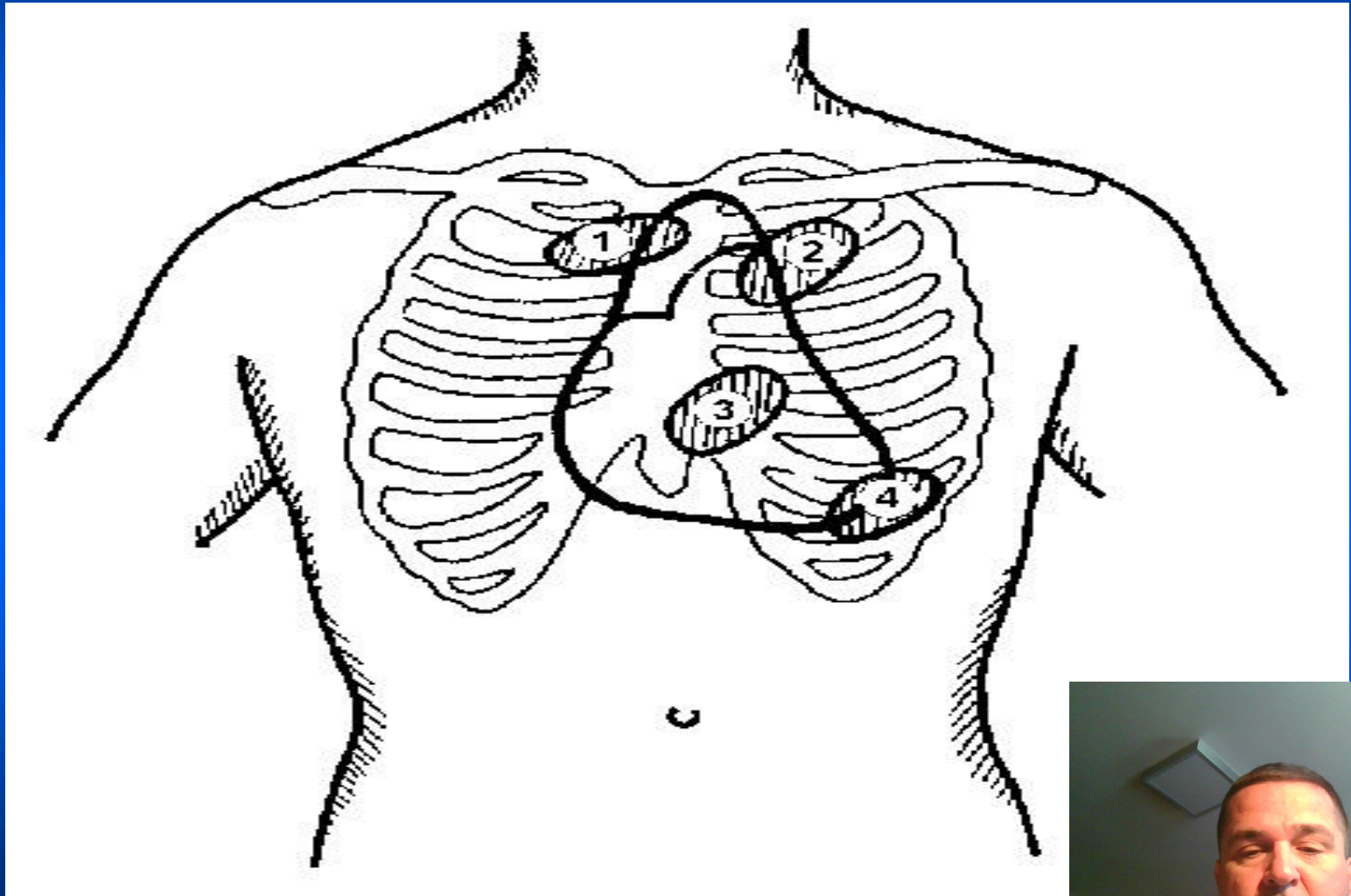


## Valvular diseases

Lubomír Křivan M.D.

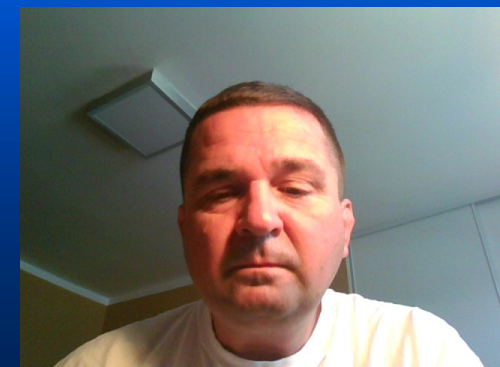
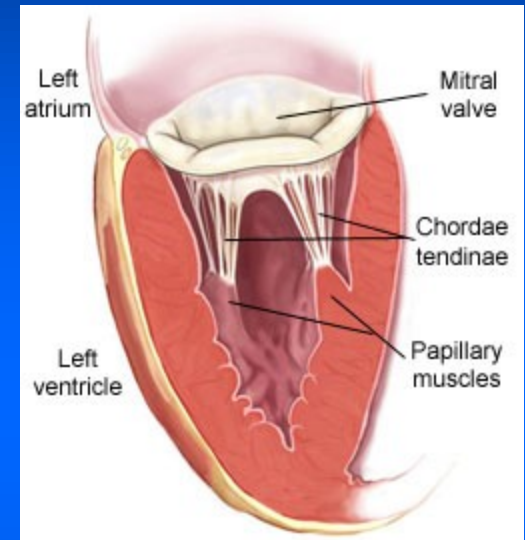


# Auscultation of the valves

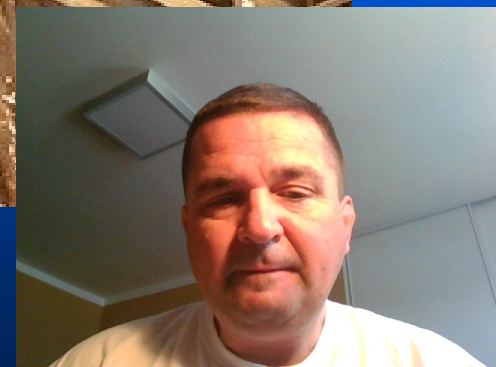


# Operation of valvular disease – 30% of cardiosurgery procedures

- **Primary valvular disease**
  - Rheumatic fever – sterile inflammation
  - Infectious endocarditis
  - SLE
  - CAD ( dysfunction, rupture pap. muscle)
  - Degenerative valvular dysfunction
- **Secondary valvular diseases**
  - Remodelation of the heart (CAD, DCMP...)



## Endocarditis in SLE (Liebmann – Sacks)

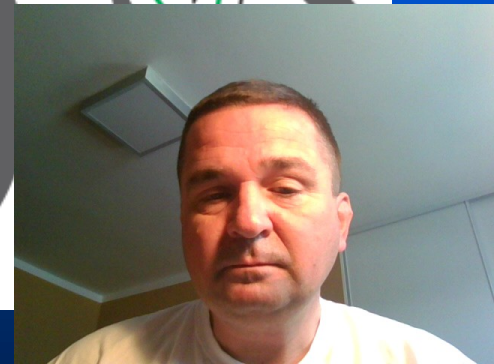
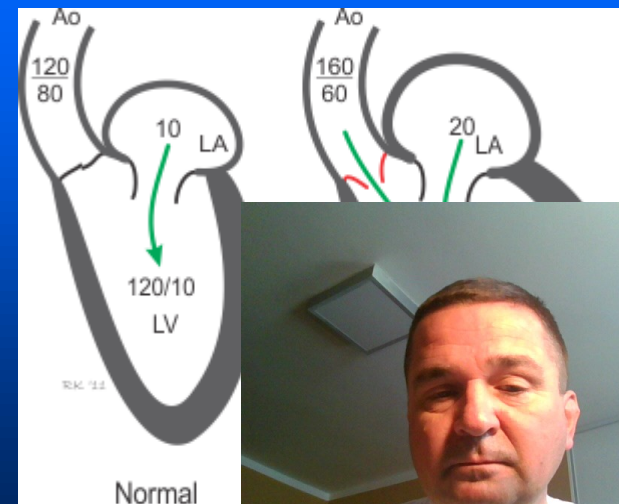
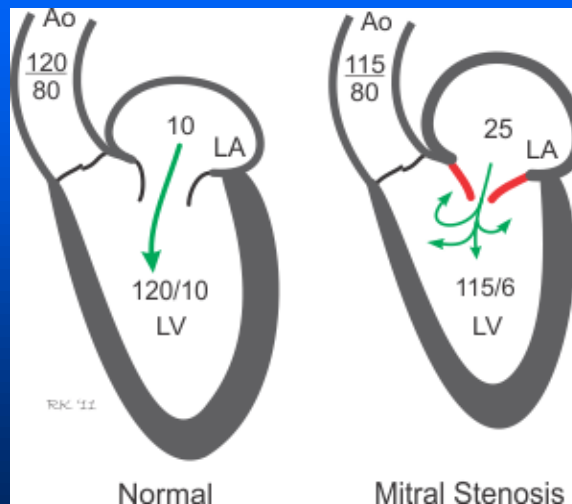


# Type of valvular damage

## 1. STENOSIS

## 2. REGURGITATION

## 3. COMBINATION



# Diagnosis

- History + physical exam.
- ECHO ( TTE + TEE )
- Heart invasive cathetrisation

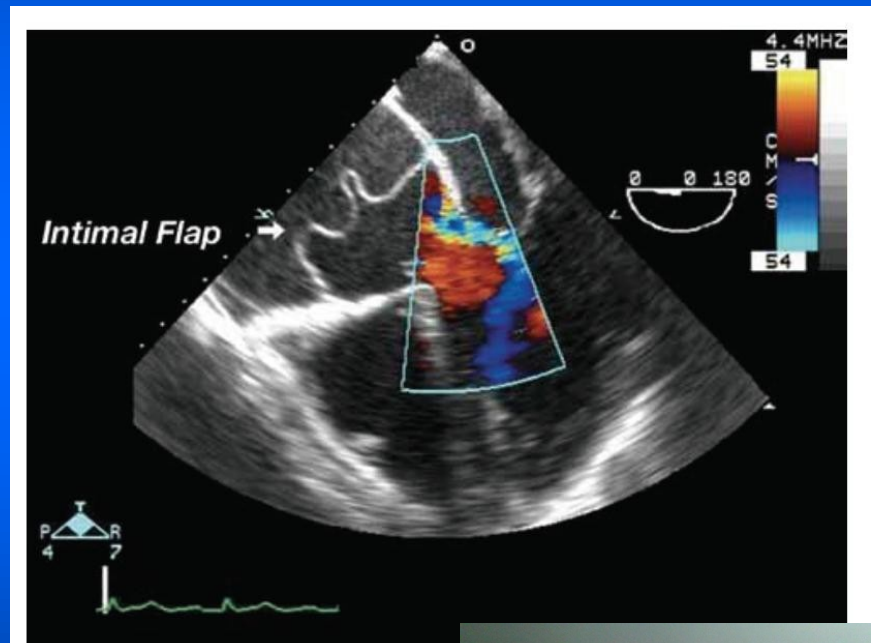


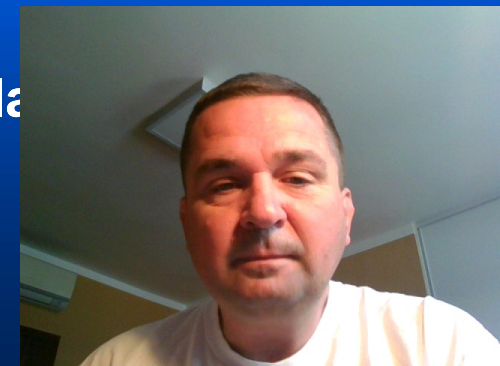
FIGURE 3: Transesophageal echocardiogram (zooming on the aortic valve), showing acute aortic regurgitation. Color Doppler shows severe aortic regurgitation.





# Therapy

- symptomatic regimen treatment
- pharmacotherapy
- Surgery - IMPORTANT TIMING
- **Too early** – increased risk of dying due to long term complications
- **Too late** – risk of irreversible changes (remodella

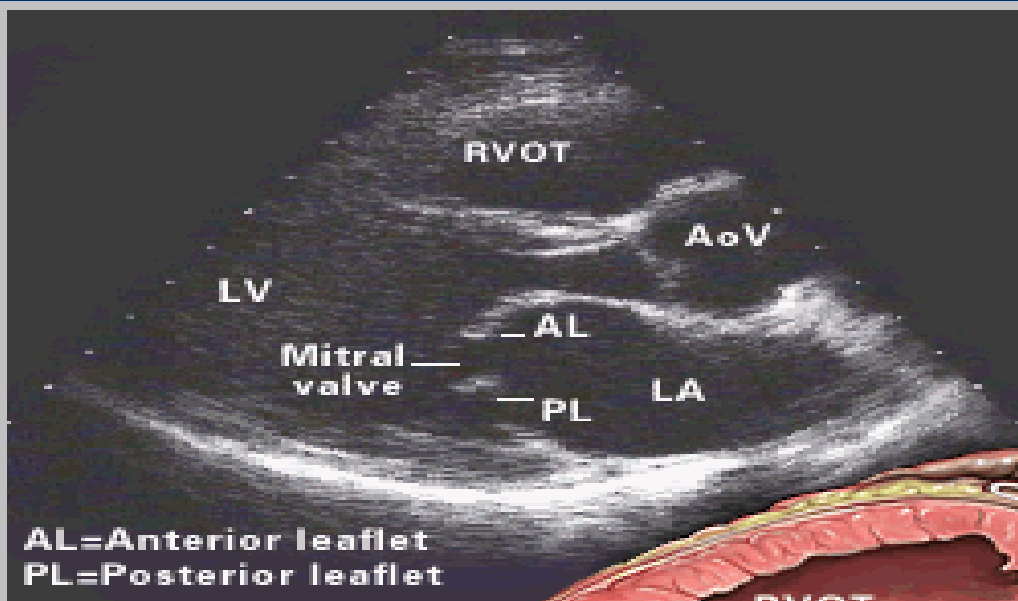


## Mitral stenosis

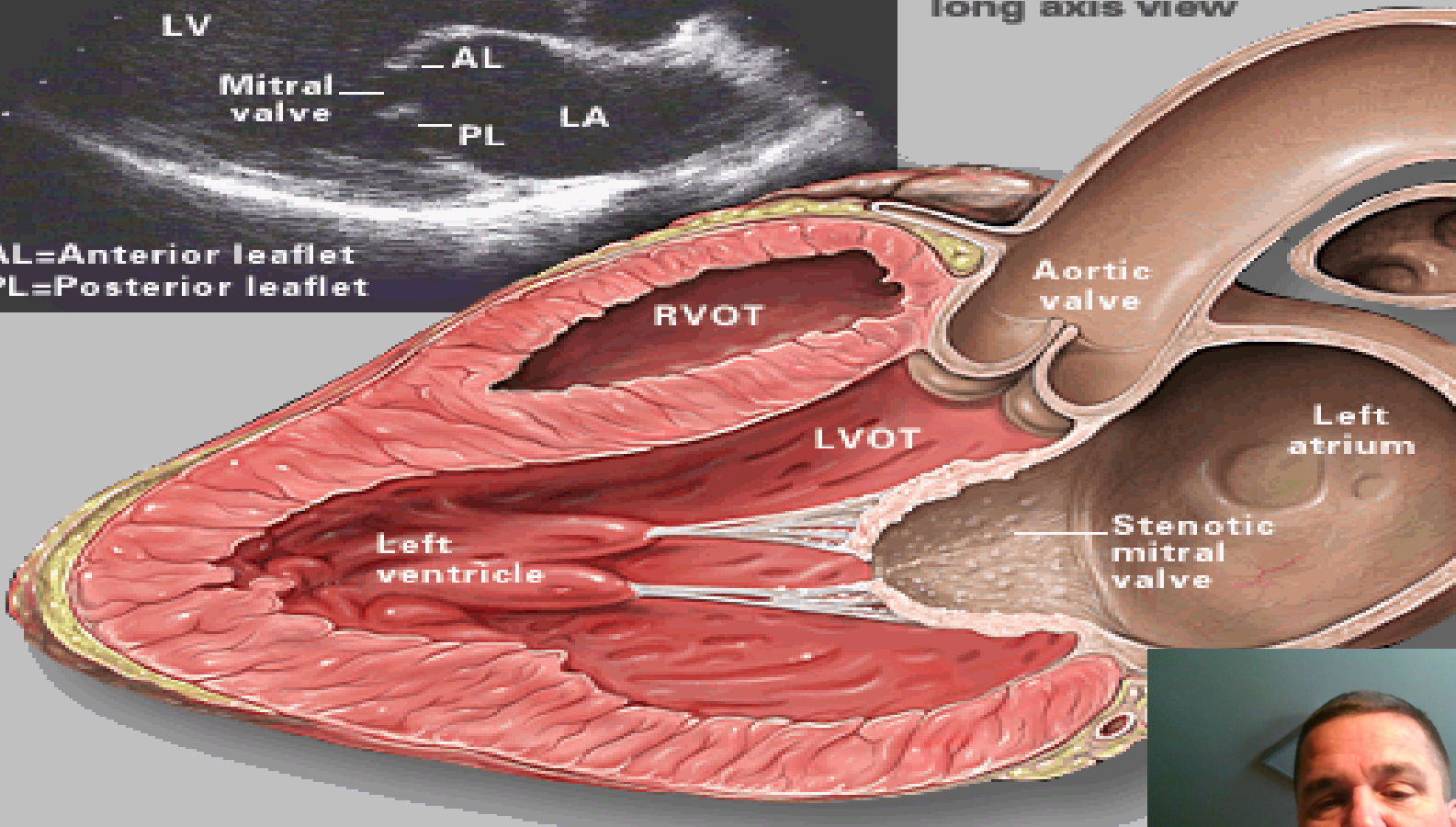
- **dyspnea NYHA I.-IV. ( cough )**
- **facies mitralis + lip cyanosis**
- **opening snap + diastolic murmur**
- **HF of right ventricle**
- **X ray**
- **ECHO – dilatation of LA**







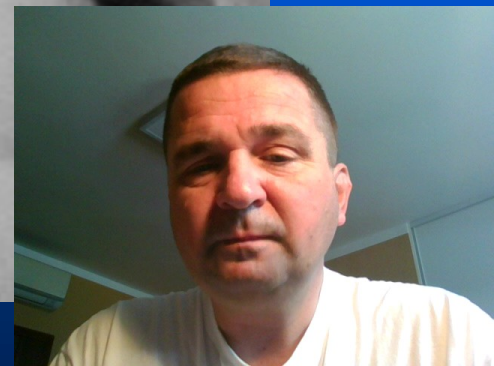
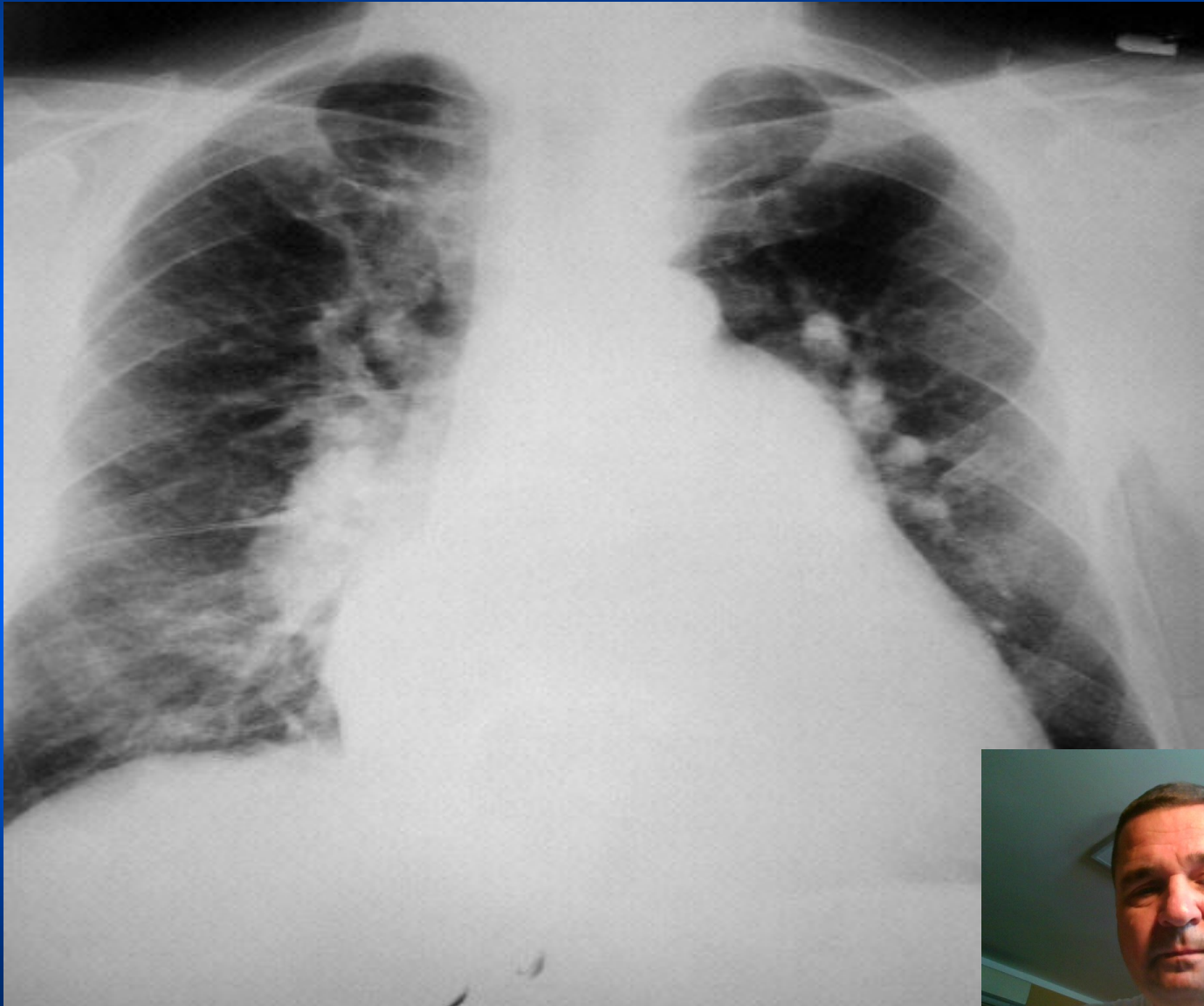
Left parasternal long axis view



# Mi stenosis

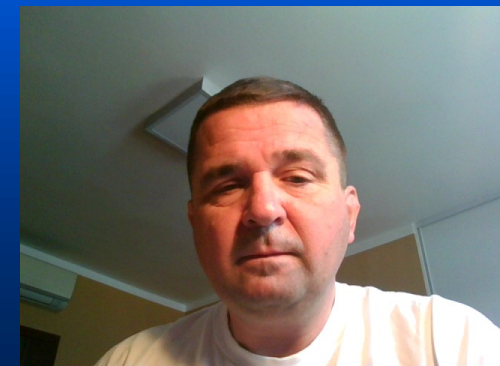


# Mi stenosis



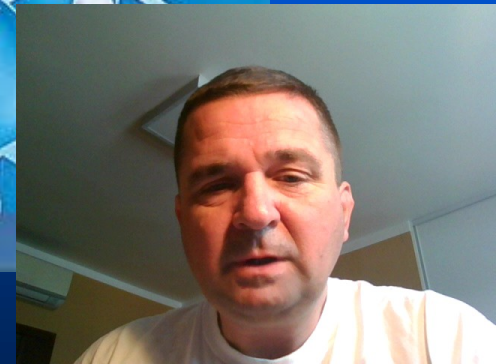
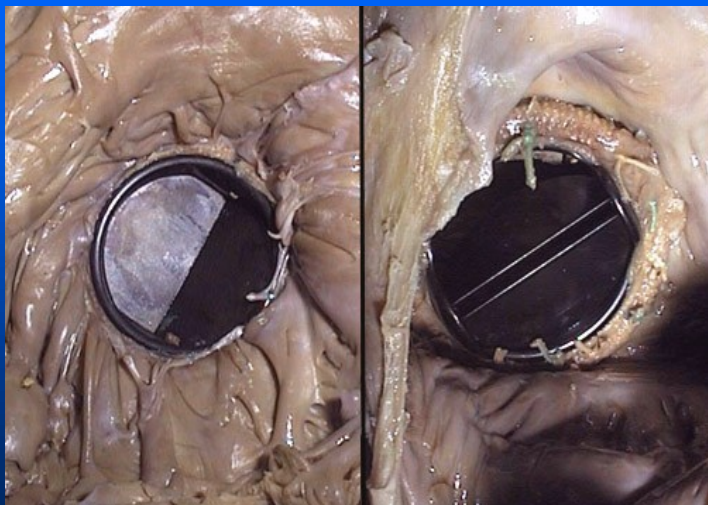
## Mitral stenosis

- **MV area  $< 0,5- 1,0/m^2$  (normal 4-6 )**
- **Med. pressure gradient  $> 8$  mmHg.**
- **NYHA II - III**
- **recurrent systemic embolisations**
- **pulmonary hypertension**



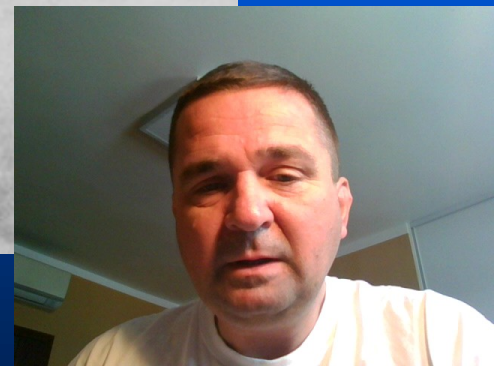
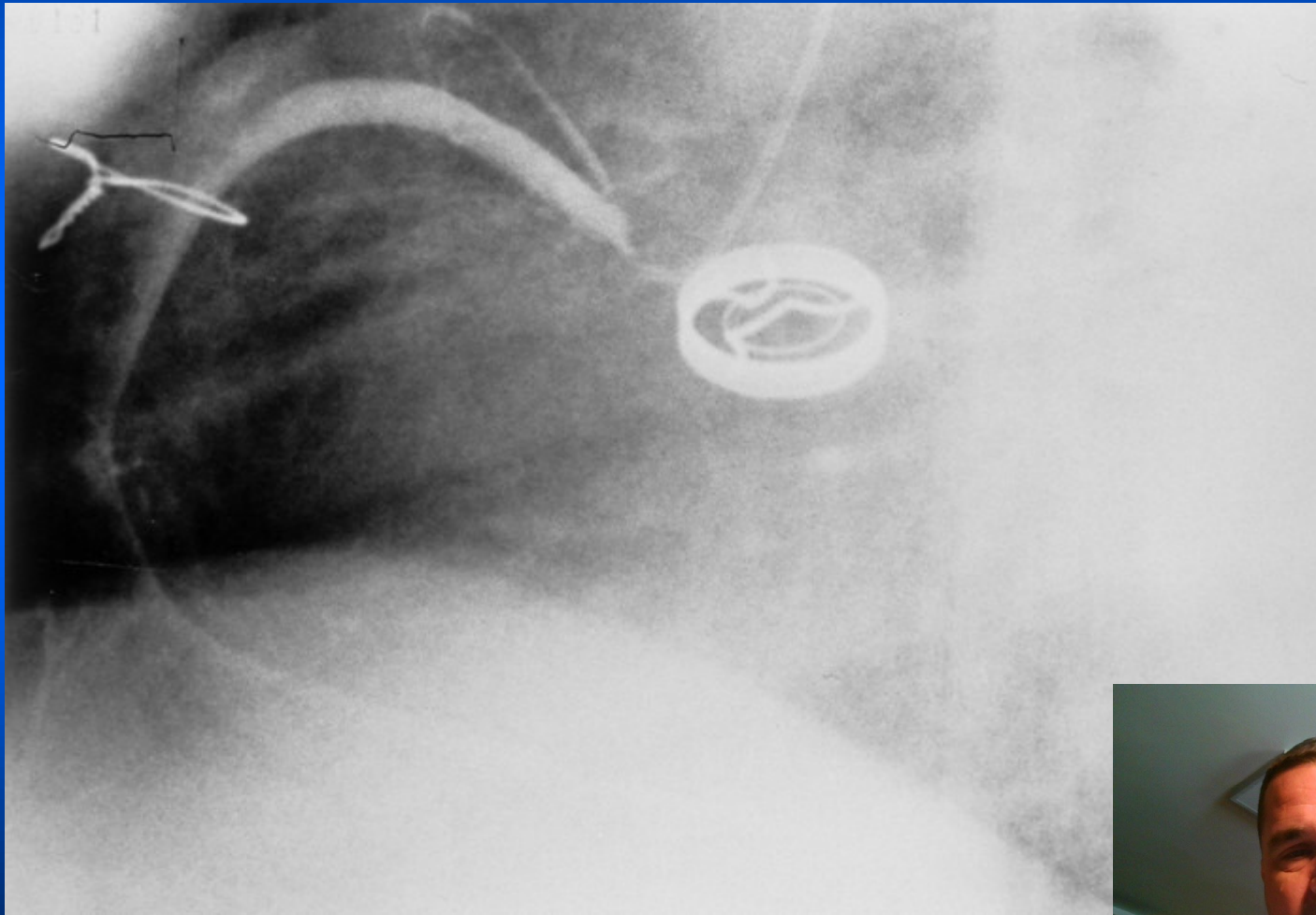
# Treatment of mitral stenosis

- balloon valvuloplasty
- mitral comisurotomy
- MVR – mitral valve replacement





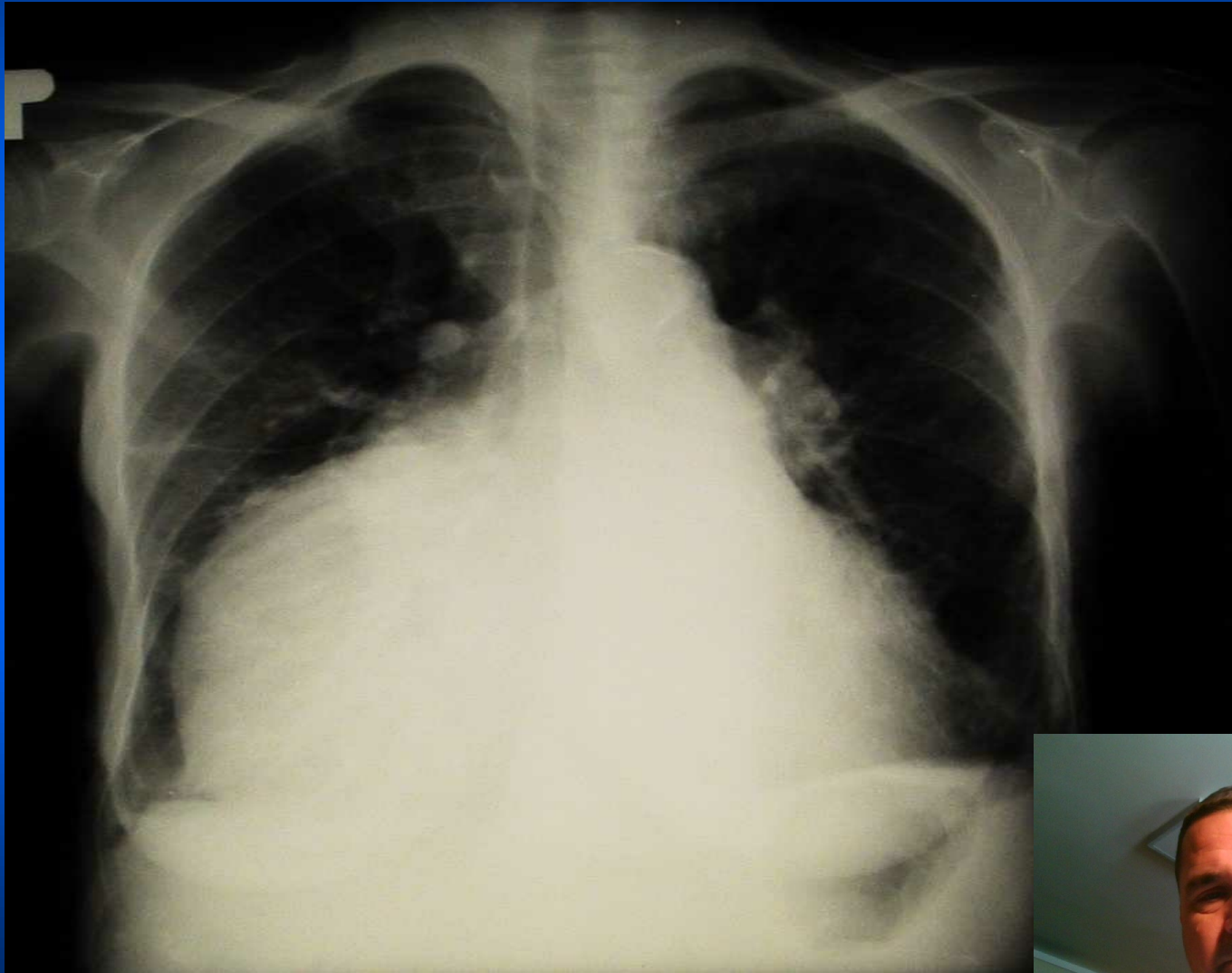
## X ray of the valve





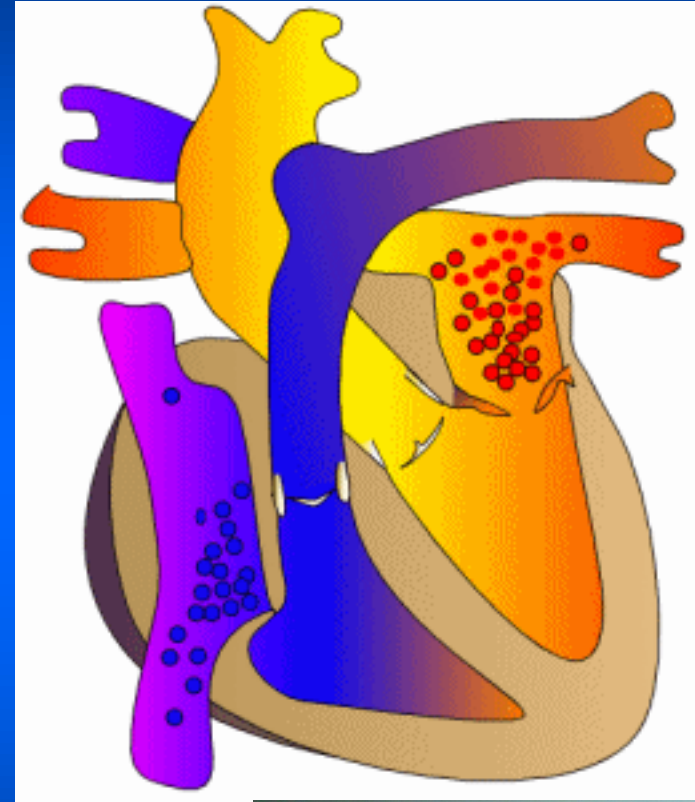


## Mi stenosis – bad timing



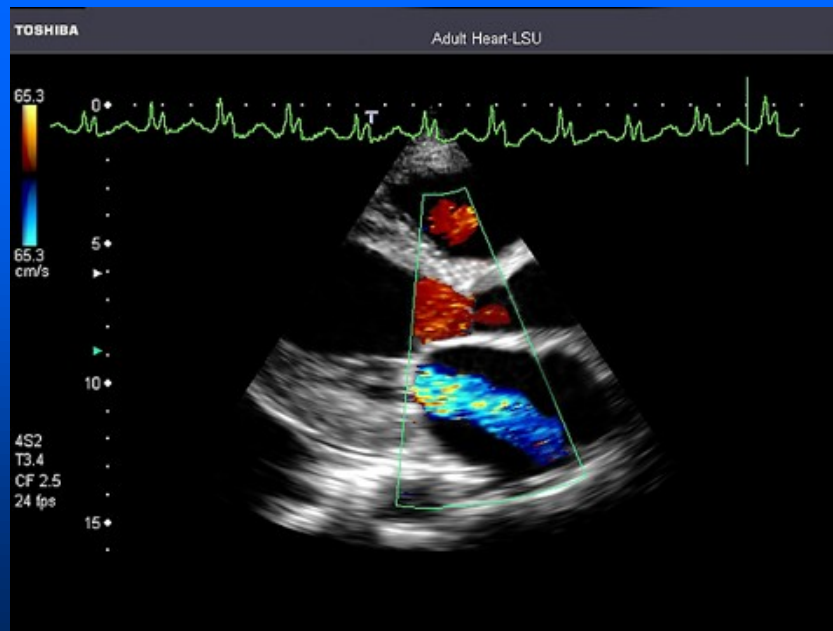
# Mitral regurgitation

- 2<sup>nd</sup> most common valv. disease
- Acute – papillary muscle / tendon rupture
- Chronic
  - Primary - degeneration
  - Secondary – dilatation of LV
- Dyspnea, systolic murmur
- ECG - Atrial fibrillation
- ECHO + X ray – dilatation of the LA, LV



# Mitral regurgitation

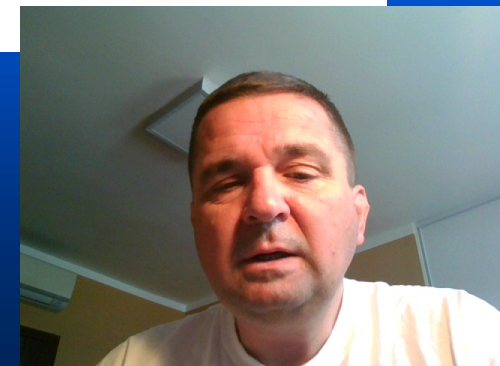
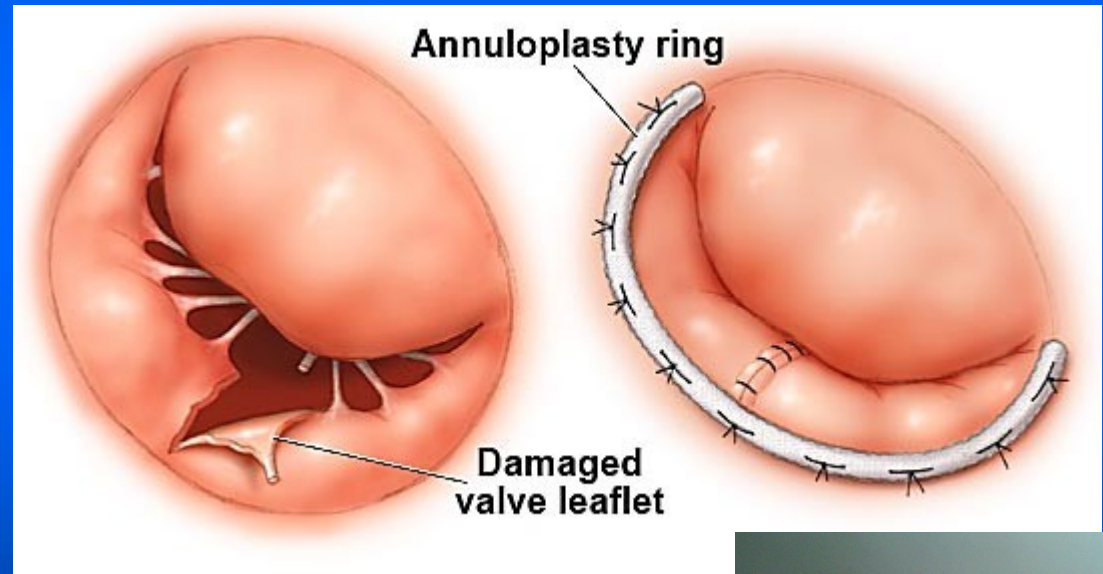
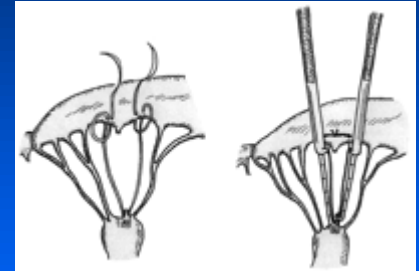
- endsystolic diameter of LV > 45mm
- enlargement of LA > 50mm
- regurgitation fraction > 50% SV
- LVEF  $\leq$  60%





# Treatment of mitral regurgitation

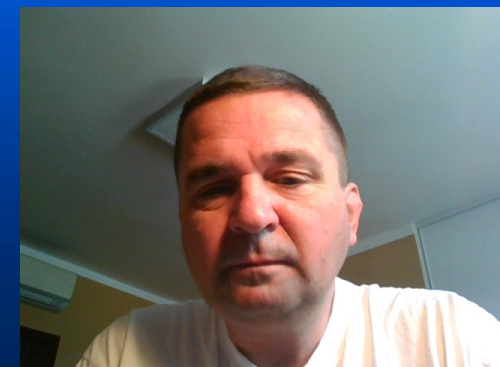
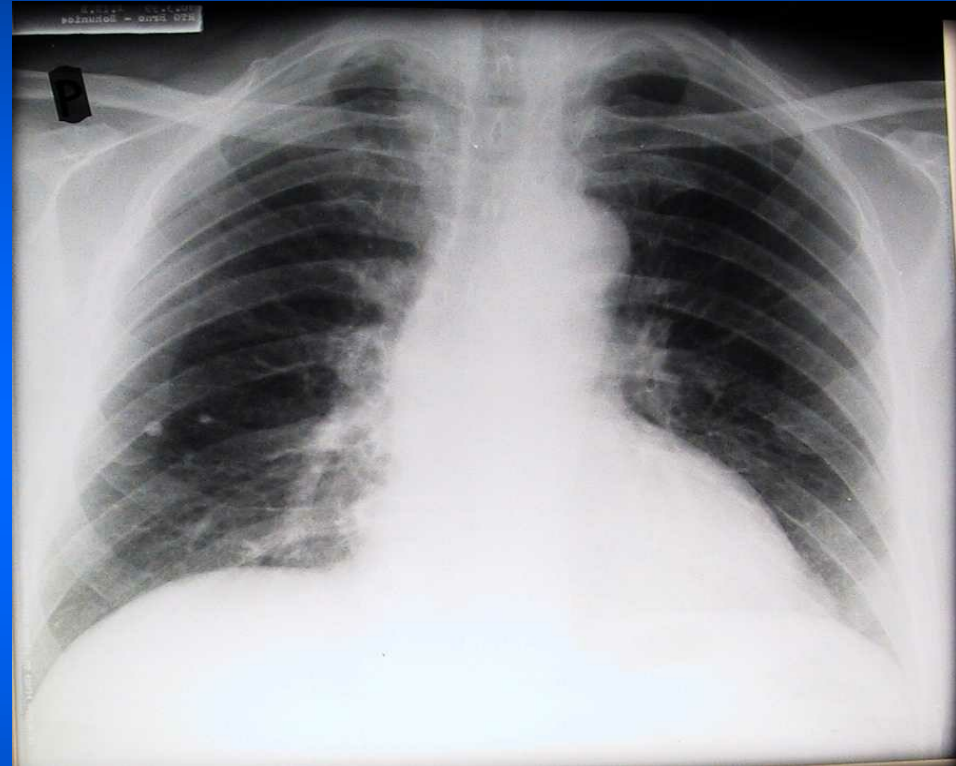
- Vasodilatation, diuretics, ACEI
- MVP
- Edge to edge percutaneous (Mitraclip)
- **MVR**



# Aortic stenosis

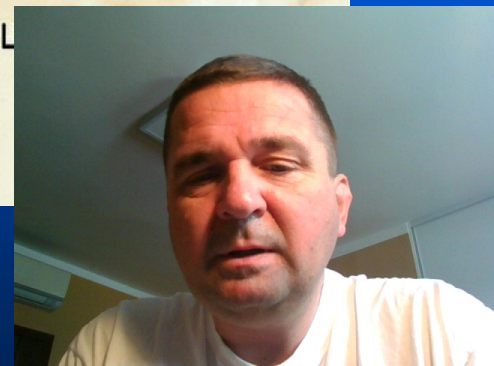
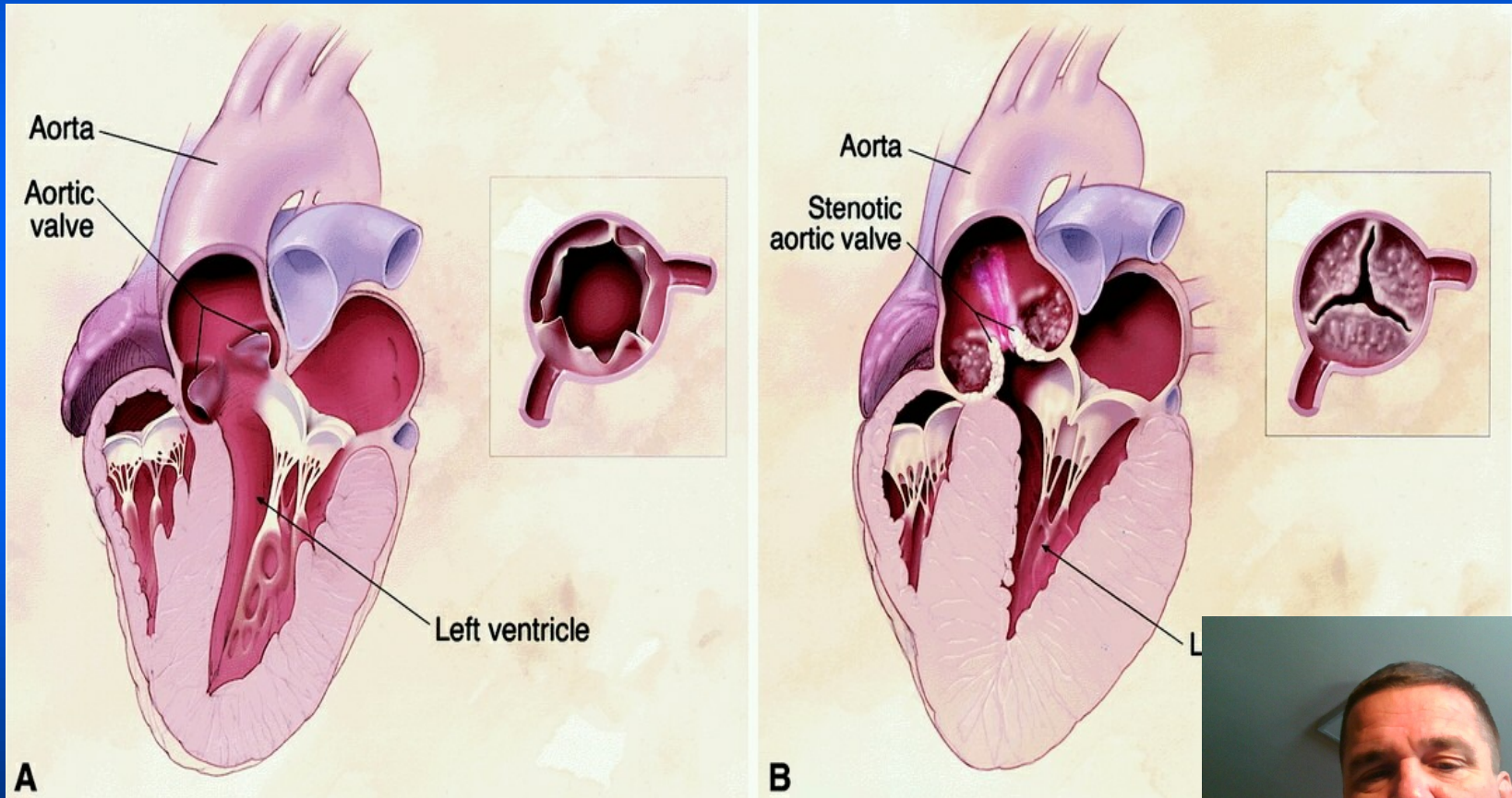
Most common valvular disease

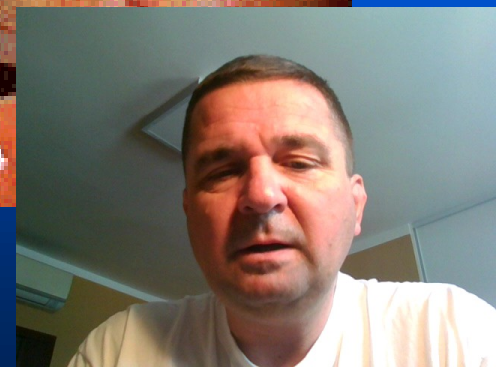
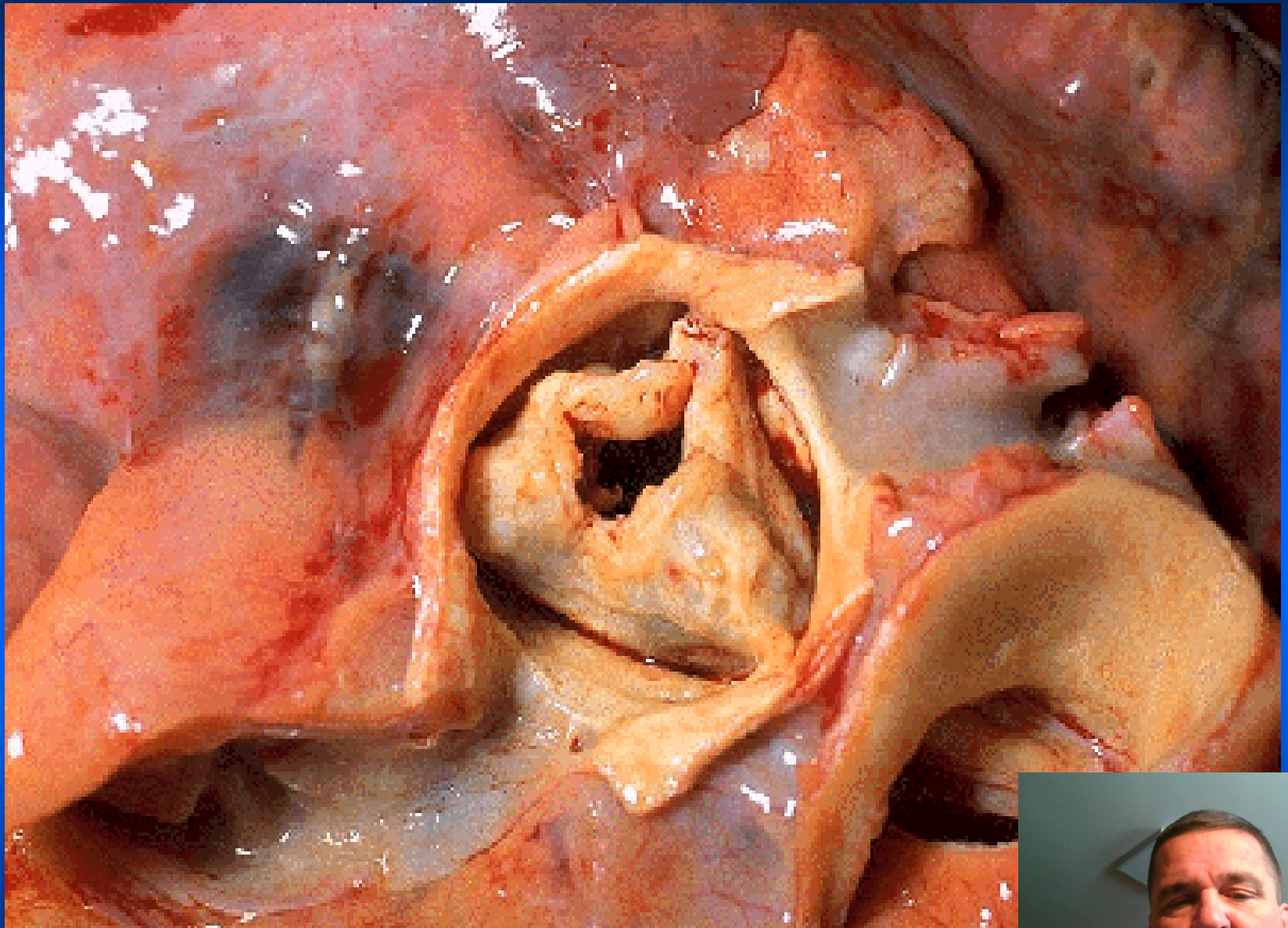
- Chest pain
- Dyspnea
- Syncope (after exercise)
- systolic murmur
- ECG hypertrophy
- X ray „aortic shape“





# Aortic stenosis

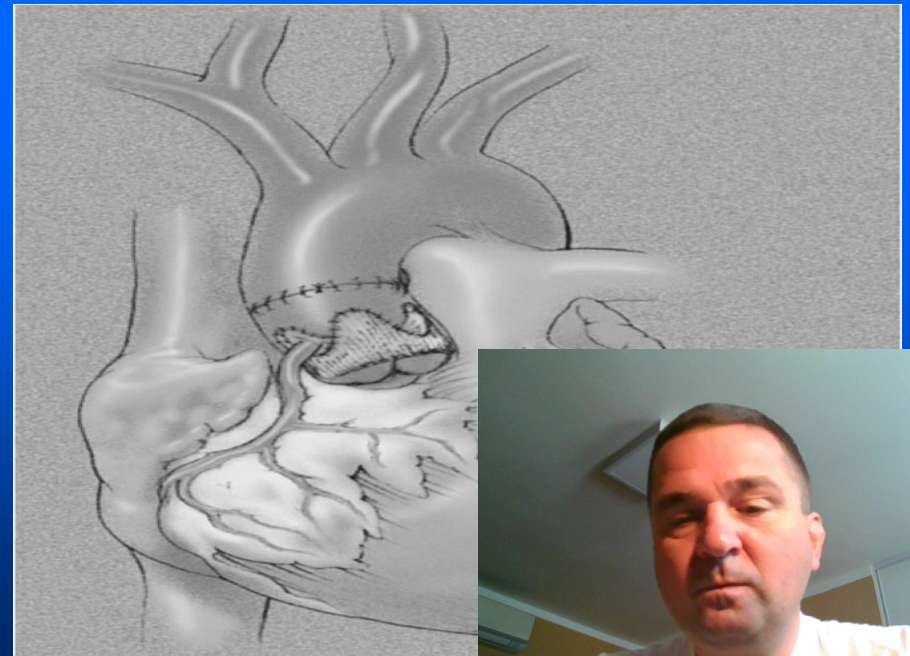




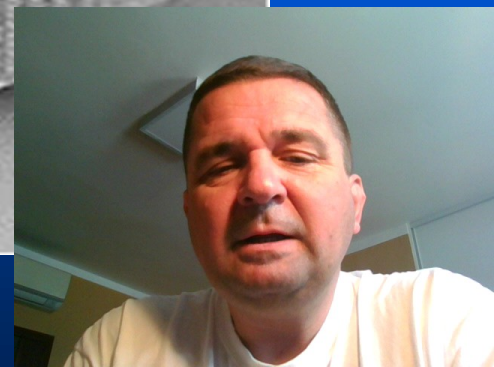
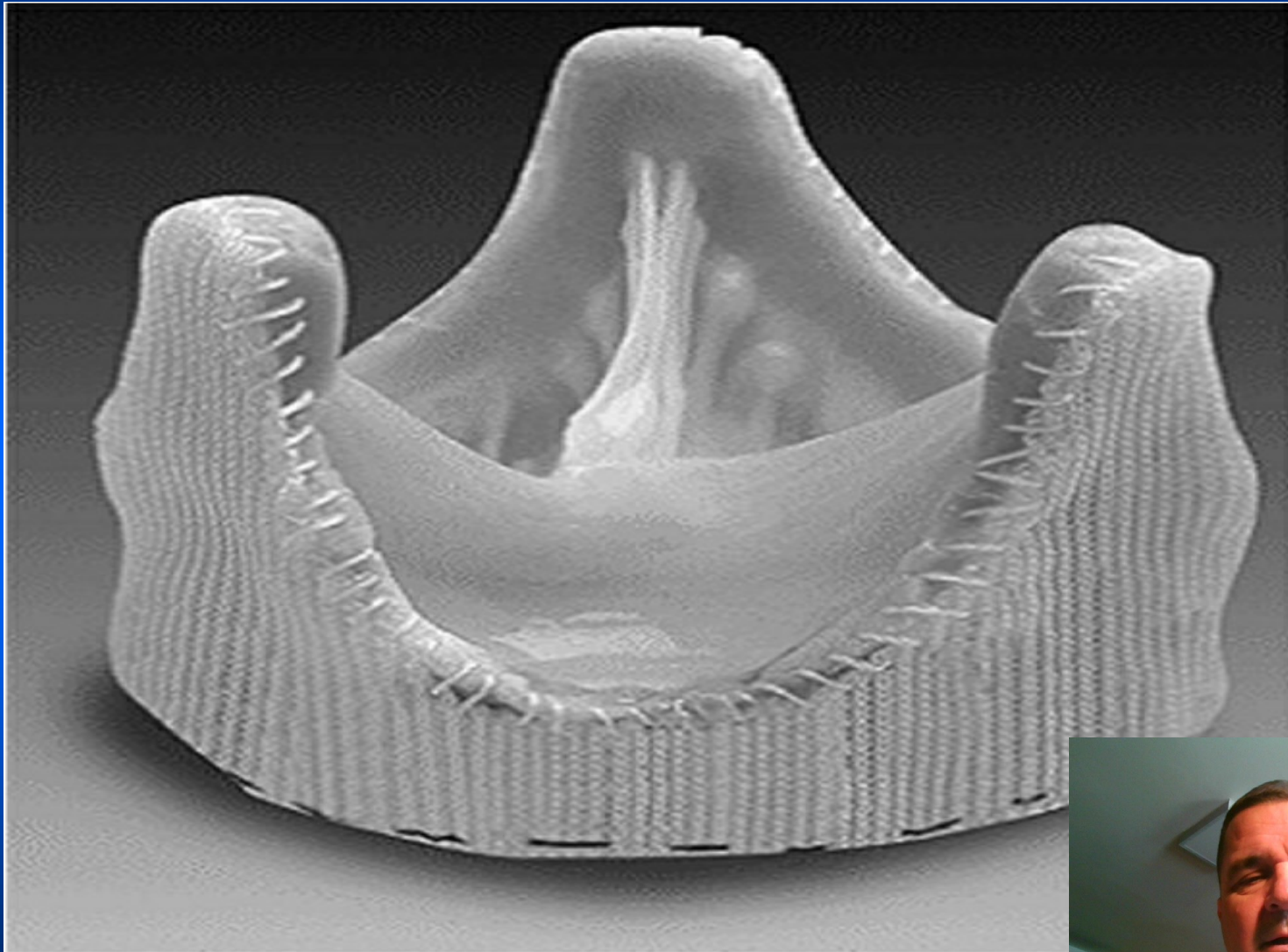
# Aortic stenosis

- symptoms
- $AVA < 0,5\text{cm}^2/\text{m}^2$
- Mean systolic gradient  $> 40$  mmHg
- worsening of LV function

**Therapy: AVR**

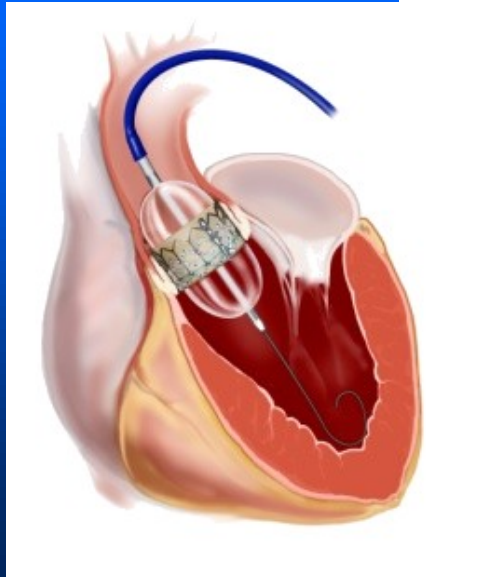
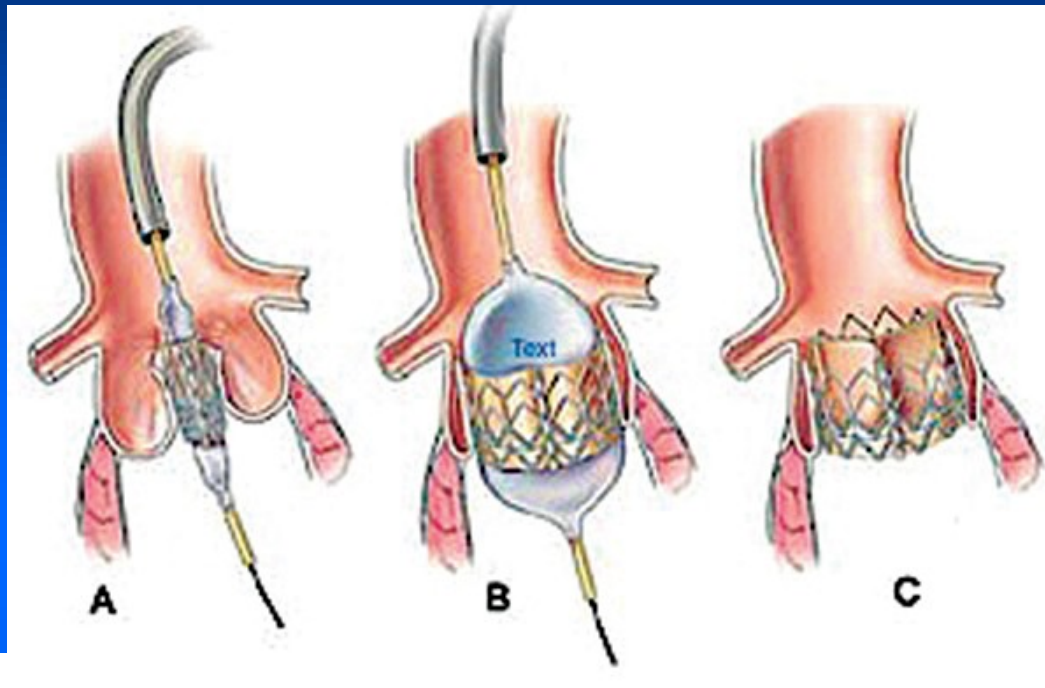


# Bioprosthesis of Ao valve

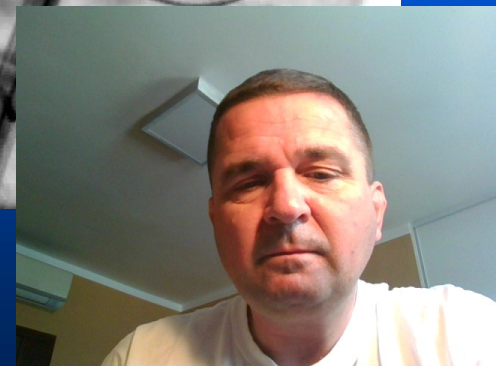
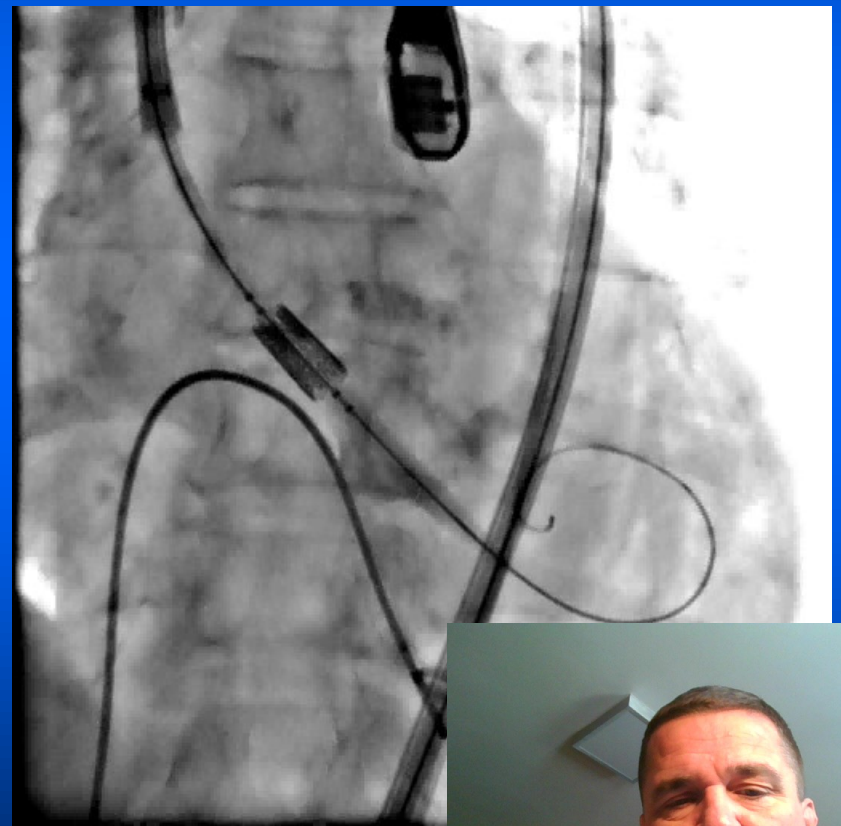
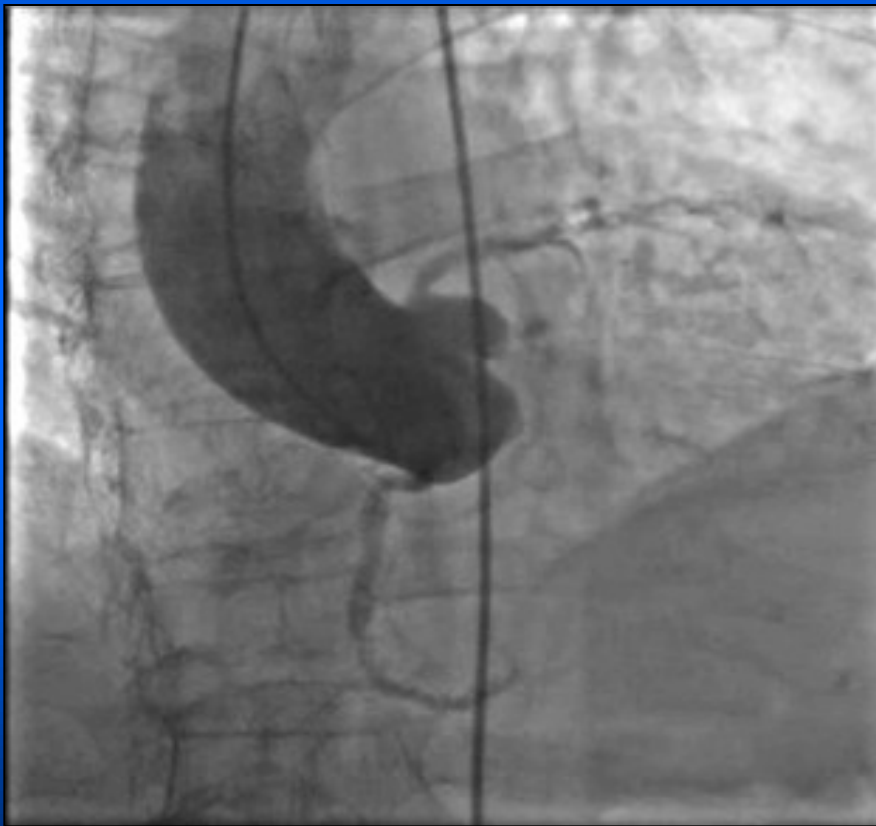




# TAVI



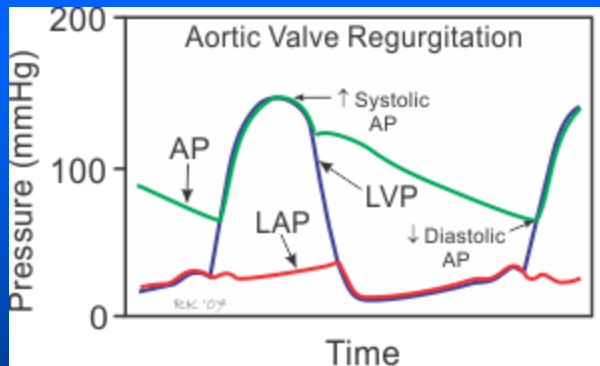
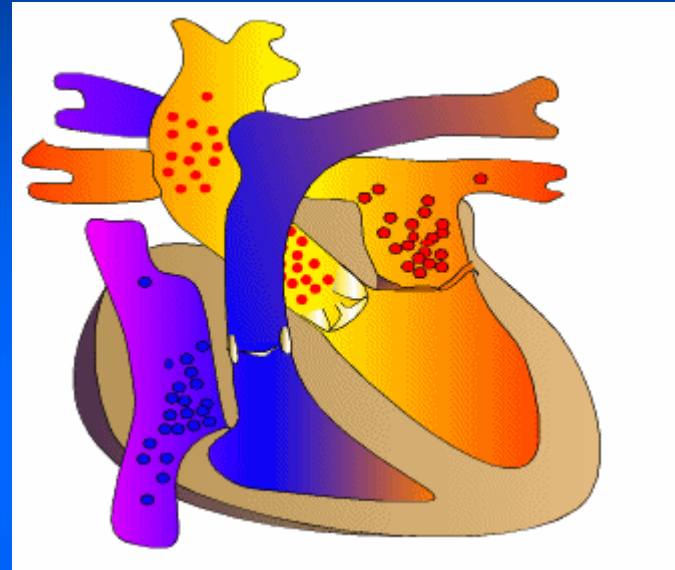
# Aortic valve





# Aortic regurgitation

- Dyspnea + chest pain
- diastolic murmur
- systolic-diastolic difference
- ECG LV overload
- X ray + ECHO - dilatation, LVH

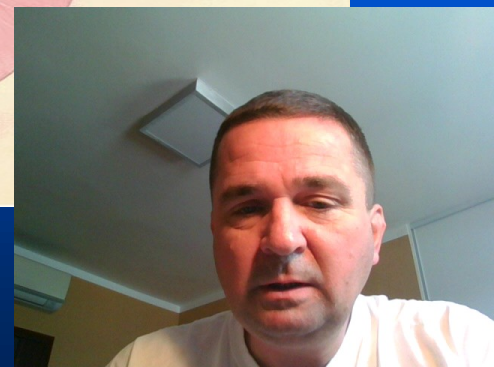
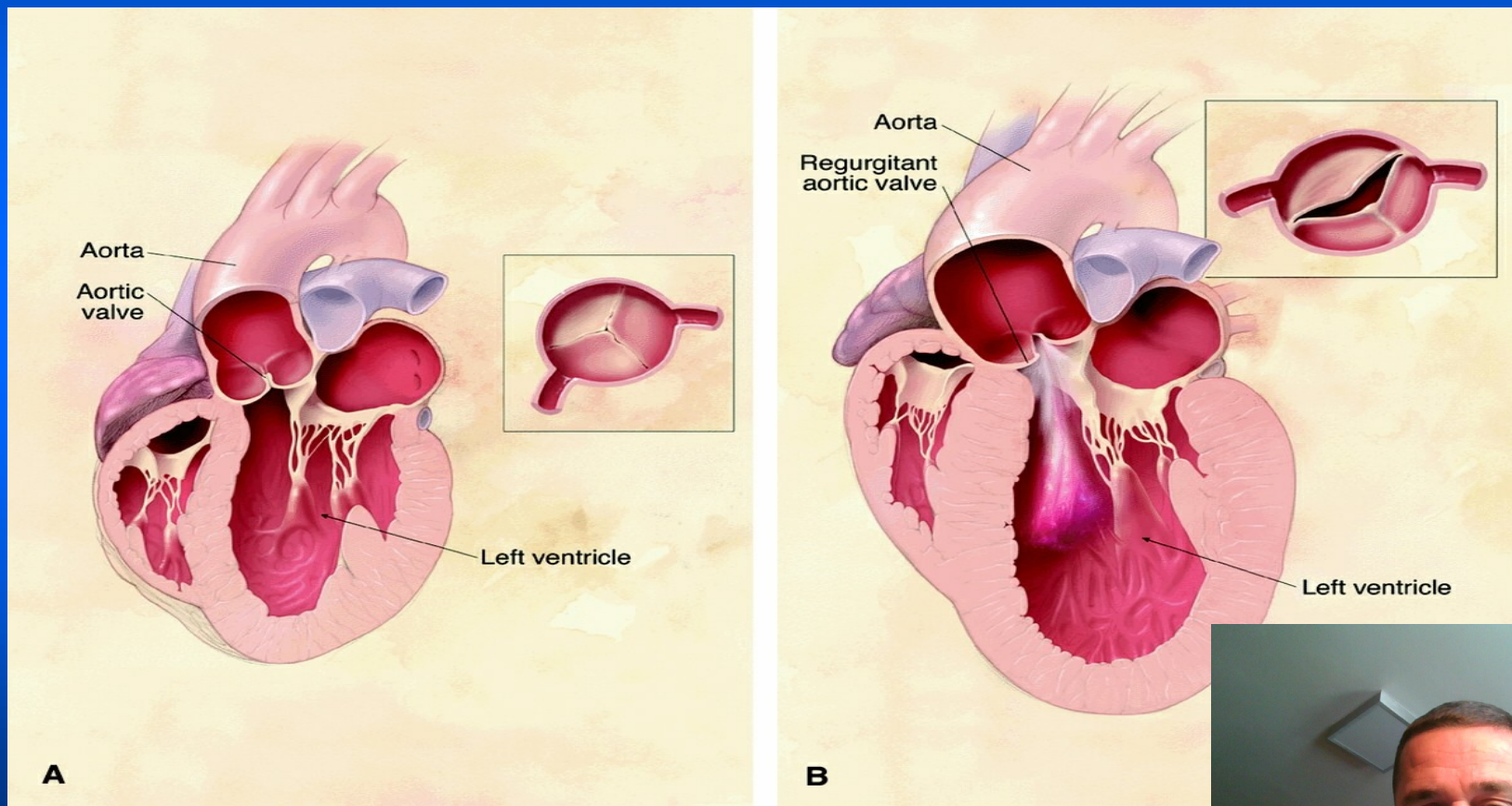


During ventricular relaxation, blood flows backwards from aorta into the ventricle. Aortic systolic pressure increases, aortic diastolic pressure decreases, and pulse pressure increases; LAP increase.

Abbreviations: LAP, left atrial pressure; LVP, left ventricular pressure; AP, aortic pressure.



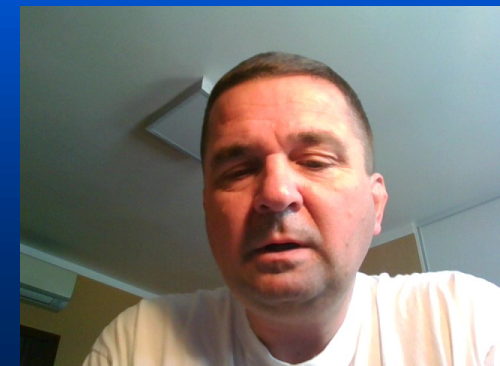
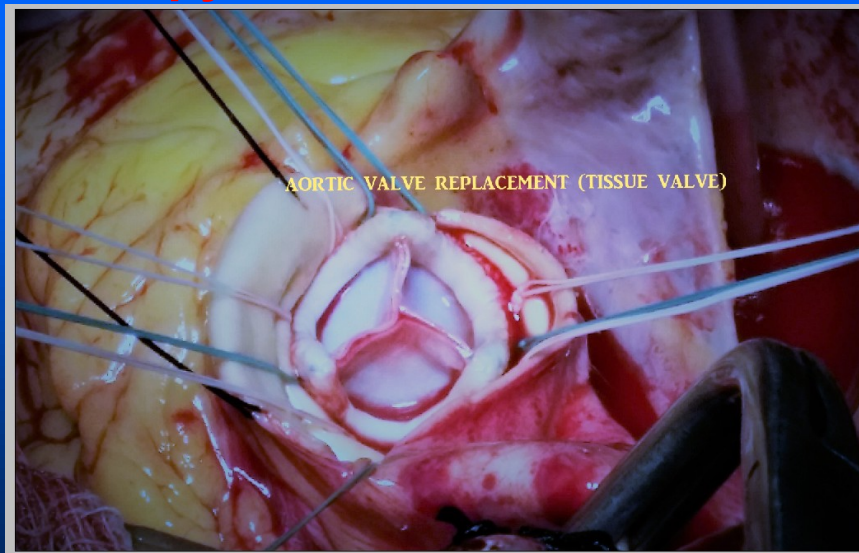
# Aortic regurgitation



# Aortic regurgitation

- Endsystolic diameter  $> 50\text{mm}$
- regurgitation fraction  $> 50\%$  SV
- S-D amplitude  $> 100\text{ mmHg}$
- Increased enddiast. P. in LV
- symptoms ( dyspnea, syncope, chest pain )

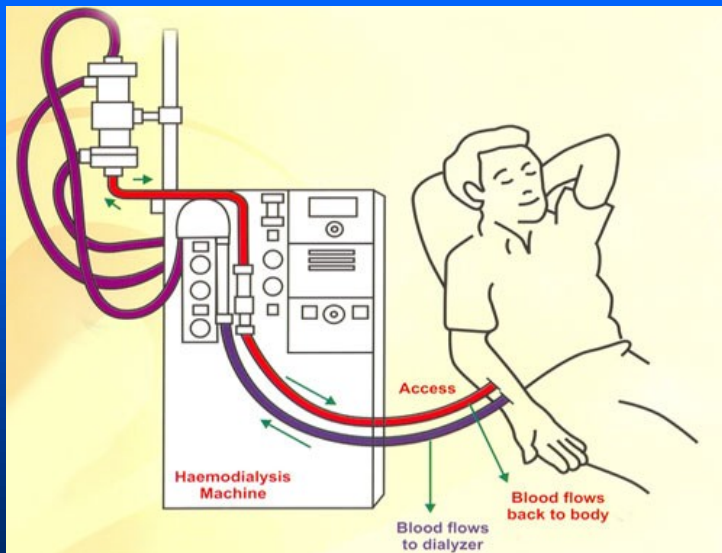
## Therapy - AVR



# Rare inquired valv. diseases

- Tricuspidal and pulmonary stenosis
- Tricuspidal and pulmonary regurgitation

( mostly secondary )





## After valve replacement !

- **Anticoagulation:** Vitamin K inhibitors
- INR Mi valve **3,0**
- INR Ao valve **2,5**



- **Direct thrombin inhibitors** - Rivaroxaban, Dabigatran ...**not recommended !!**



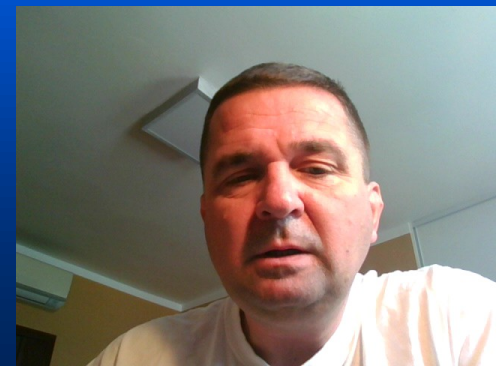
# Prophylaxis of infective endocarditis

- **ATB prophylaxis:** Respiratory tract + oral cavity
  - Mechanical prosthetic valve
  - Prior infective endocarditis
  - Congenital heart disease (cyanotic shunts, defects, art. materials)
- **AMOXICILIN** 2g p.o. 30min before procedure (Clindamycin, Vancomycin)





## Septic hematomas in IE





**IE with emboli and  
gangraena**





