



Харківський національний університет
імені В.Н. Каразіна

Radiofrequency ablation as an effective treatment method of resistant atrial fibrillation. Clinical case.

Speaker:
**Yasser Shima, 5th
year student**

**V.N. Karazin Kharkiv
National University**

School of Medicine

**Department of
Internal Medicine**

Scientific advisers:
**Litvin A.S., assistant
professor**
**Aydinova E.A.,
assistant professor**

**Head of Department
professor**
Yabluchansky M.I.



The top of the slide features a red horizontal band. On the left, a medical device with a circular scale and numbers (80, 100, 120, 140) is partially visible. On the right, a large white cross is centered within the red band. The word "Introduction" is written in white, bold, sans-serif font across the middle of the red band.

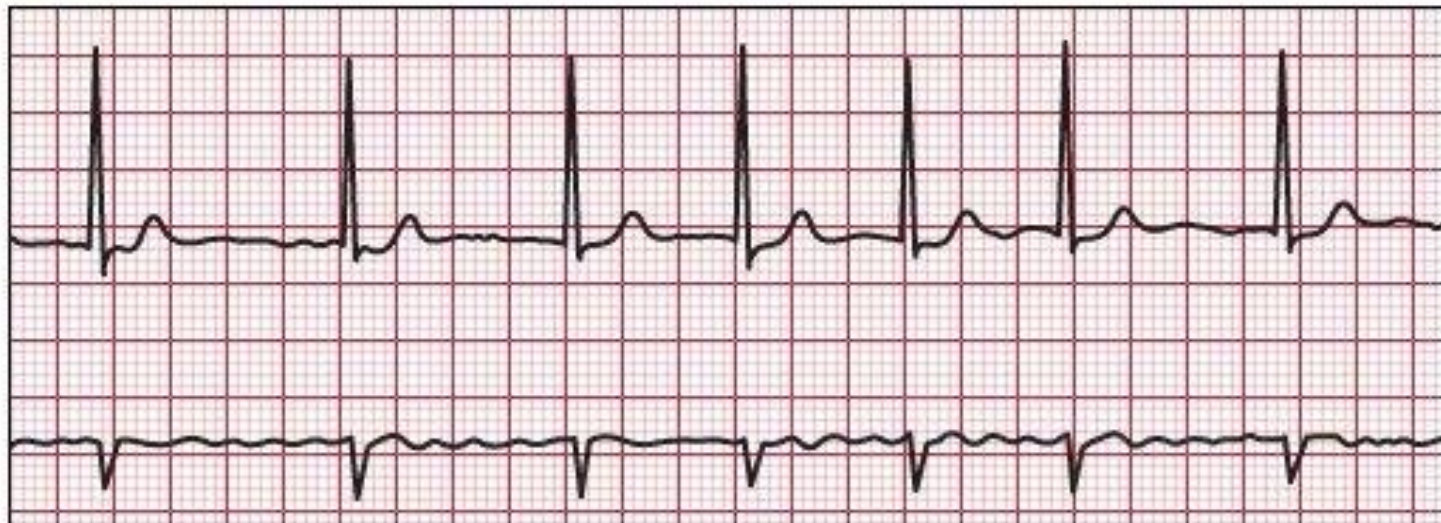
Introduction

- Atrial fibrillation (AF) is the most common type of arrhythmias.
- The incidence of AF ranges between 0.21 and 0.41 per 1,000 person/years.
- AF is frequently associated with cardiac diseases (coronary artery disease, valvular heart disease, cardiomyopathy), comorbidities and an increased risk of heart failure, dementia, stroke and sudden cardiac death.

Atrial fibrillation



- AF is a chaotic, irregular atrial rhythm at 300-600bpm. Hence AV node responds intermittently with an irregular ventricular rhythm.



Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
A: 350-650 bpm V: Slow to rapid	Irregular	Fibrillatory (fine to course)	N/A	<.12

Types of atrial fibrillation



- **Paroxysmal:**

- ✓ Starts and stops spontaneously
- ✓ Variable durations (48 hours – 7 days)

- **Persistent:**

- ✓ Starts spontaneously, duration > 7 days
- ✓ Stops only with electrical or medical cardioversion

- **Permanent:**

- ✓ Present all the time
- ✓ Restoring sinus rhythm is not possible

Causes of AF



- Hypertension
- Atherosclerosis (IHD, MI)
- Alcohol, nicotine, drugs
- Endocrine disorders (hyperthyroidism)
- Valvular diseases (mitral valve stenosis)
- Cardiomyopathies
- Pericarditis



Medication of AF



- **The main goals are rate control and anticoagulation.**

These goals are reached with:

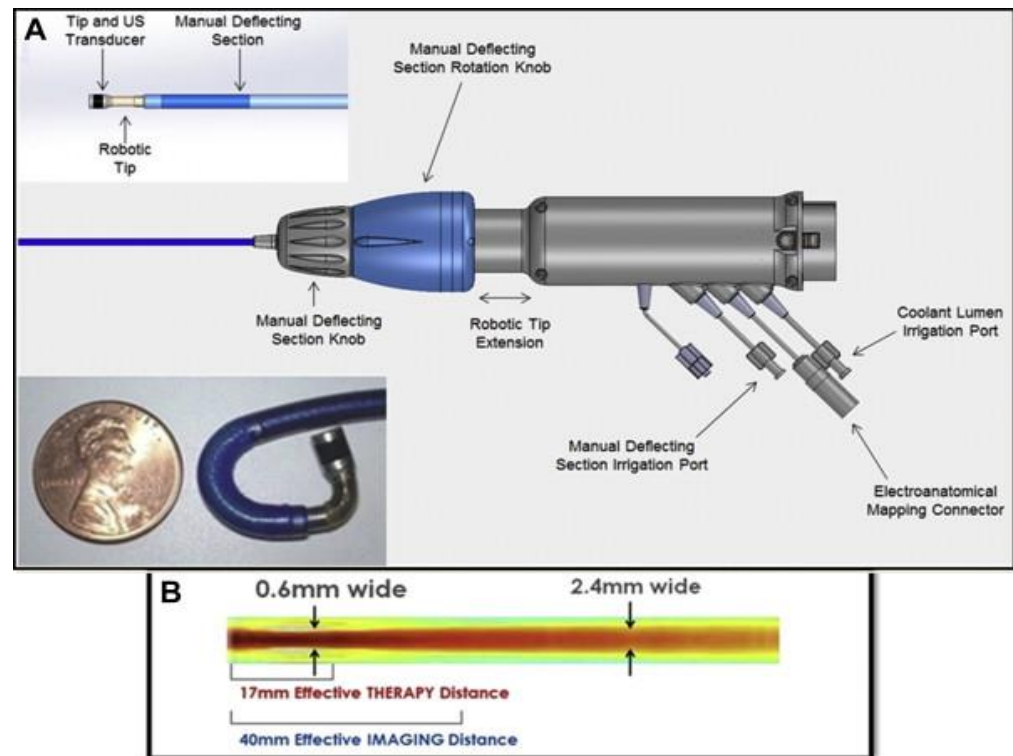
- **3rd class antiarrhythmic drugs**
- **Anticoagulants**
- **Medication of underlying pathology**



Cardiac ablation



- **Cardiac ablation** is a procedure that uses high energy to scar tissues of the heart sending abnormal electrical impulses.
- It is a common surgical intervention used to treat AF in cases where cardioversion failed.



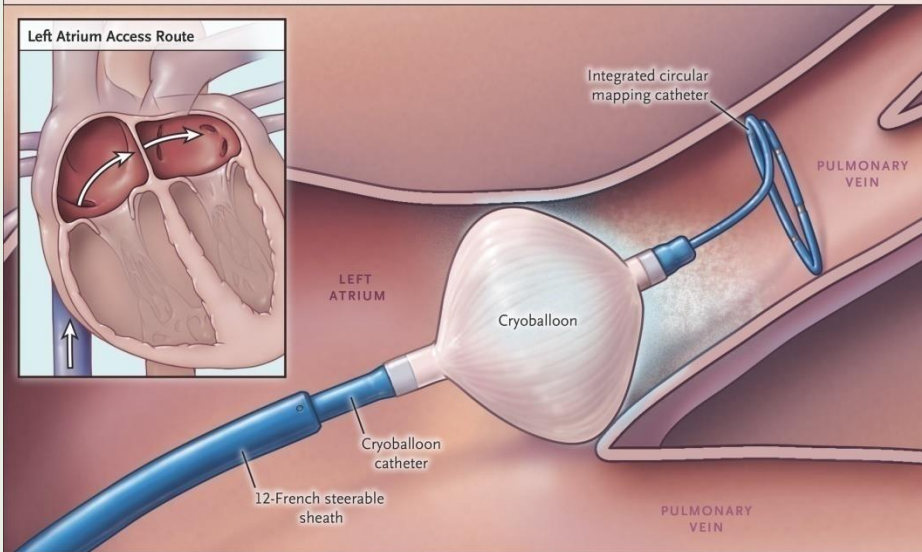
Types of cardiac ablation



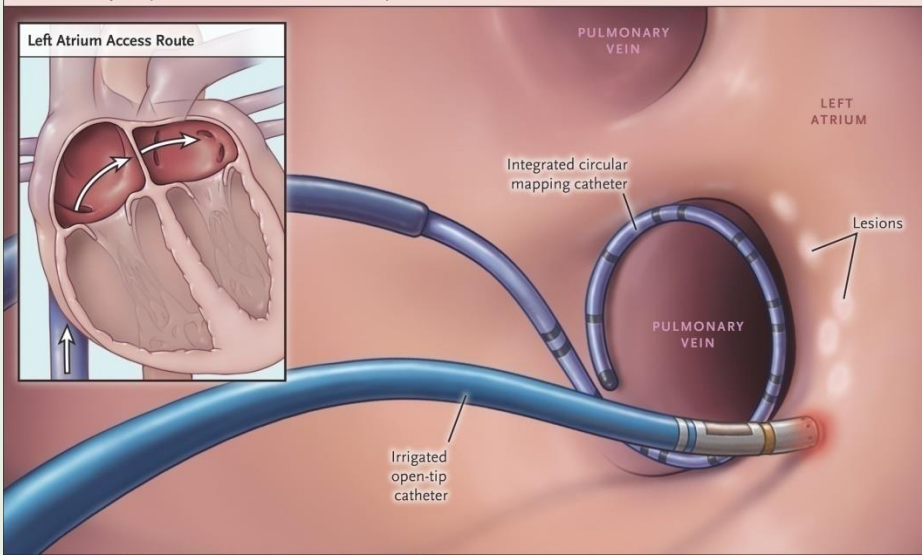
1. Catheter radiofrequency ablation

2. Catheter cryoablation

A Cryoballoon Ablation of Pulmonary Vein



B Radiofrequency Current Ablation of Pulmonary Vein

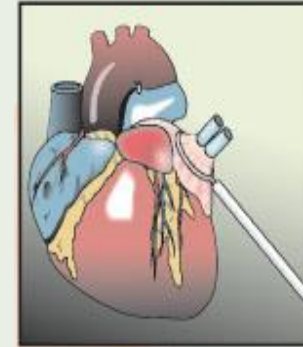


Types of cardiac ablation

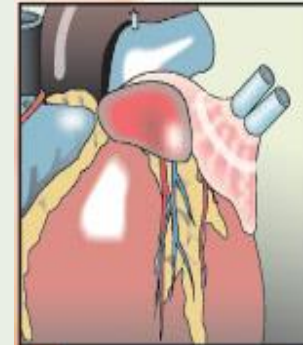


3. Surgical ablation (Mini Maze)

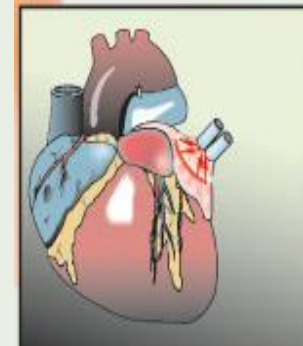
According to a recent study, minimally invasive surgical ablation (mini maze) was more effective than catheter ablation in treating AF patients who had previously failed a catheter ablation or who had an enlarged left atrium.



1. In Mini-Maze surgery, doctors use a very precise ablation instrument that fits around the top of the atrium and destroys a small amount of tissue in the area near where irregular impulses start.



2. The damaged tissue can no longer conduct electrical signals, thereby interrupting the transmission of impulses.



3. With the abnormal signals unable to cross the zone of defense, the atria resumes beating normally.

Our patient



- Name: D. I. V.
- Sex: Male
- Age: 68 y.o.
- Location: Zaporizhia
- Occupation: Retired
- Name of referral institution: Zaporizhia City Clinical Hospital #10
- Date of admission: 28.11.17
- Patient was treated as inpatient.



Chief complains



- **Palpitation**, accompanied with **dizziness**
- General **weakness**
- **Dyspnea** on physical exertion
- **Substernal pain**, provoked by the heavy physical exertion



Anamnesis morbi



- The patient had a long history of **essential arterial hypertension (stage II, grade 1)**, coronary artery disease (**stable angina, class 1**) and **paroxysmal AF**, which relieved with medications.
- Suffered an **anterior ST-elevation myocardial infarction (STEMI)** on 20.02.16.
- After that the frequency of AF-attacks has increased, effectiveness of medication has significantly decreased, paroxysmal AF turned to **persistent AF**.
- Several attempts of unsuccessful cardioversion were performed in 2017.
- Due to ineffectiveness of medication and cardioversion the patient was directed to Institute of General and Emergency Surgery NAMS of Ukraine, Kharkiv, for routine ablation.

Anamnesis vitae



- Denies malaria, tuberculosis, diabetes mellitus, dermatovenereologic diseases, HIV-infection and viral hepatitis.
- Denies allergic reactions to drugs.
- Denies smoking, alcohol intake and drug addiction.
- Parents have no history of cardiovascular diseases.
- Remaining anamnesis vitae is unremarkable.

Status Praesence

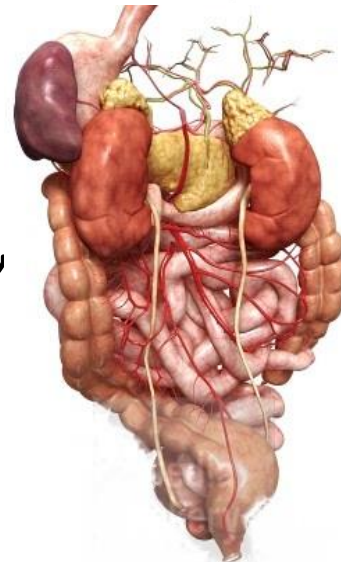
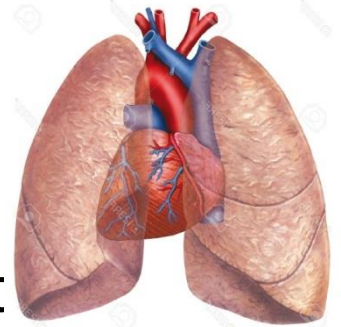


- Condition is satisfactory, clear consciousness, active and emotionally stable.
- Hypersthenic type of body constitution (BMI = 29.1 kg/m²)
- Skin and visible mucous membranes are pale pink and clean.
- No signs of edema.
- Musculoskeletal system examination is unremarkable.

Status Praesence



- **Respiratory System:** Percussion – resonant sound over the lung fields; auscultation – vesicular breathing. BR = 16/min.
- **Cardiovascular system:** Heart borders extended to the left on 2,0 cm of medioclavicular line, heart sounds are muffled. Rhythm regular. BP = 135/85 mm Hg. Ps = HR = 54 bpm.
- **Gastrointestinal system:** Abdomen is symmetric, soft and painless in palpation. Liver is at the rib cage edge.
- **Urinary system:** Kidneys are not palpable. CVAT sign is negative on both sides.



Plan of survey



- **CBC**
- **Urinalysis**
- **Biochemical panel (bilirubin, ALT, AST, creatinine, urea, electrolytes)**
- **Lipidogram**
- **Thyroid hormones**
- **Coagulogram**
- **Blood group, Rh-factor**
- **Chest X-ray**
- **ECG**
- **Echocardiography**



Laboratory investigations



- **CBC (28.11.17)** - all parameters are in normal range.
- **Urinalysis (28.11.17)** - all parameters are in normal range.
- **Biochemical blood test (29.11.17)** - all parameters are in normal range.
- **Electrolyte panel, Lipidogram, Coagulogram, Thyroid hormones (29.11.17)** - all parameters are in normal range.
- **Blood group and Rh-factor – O(I) Rh+**



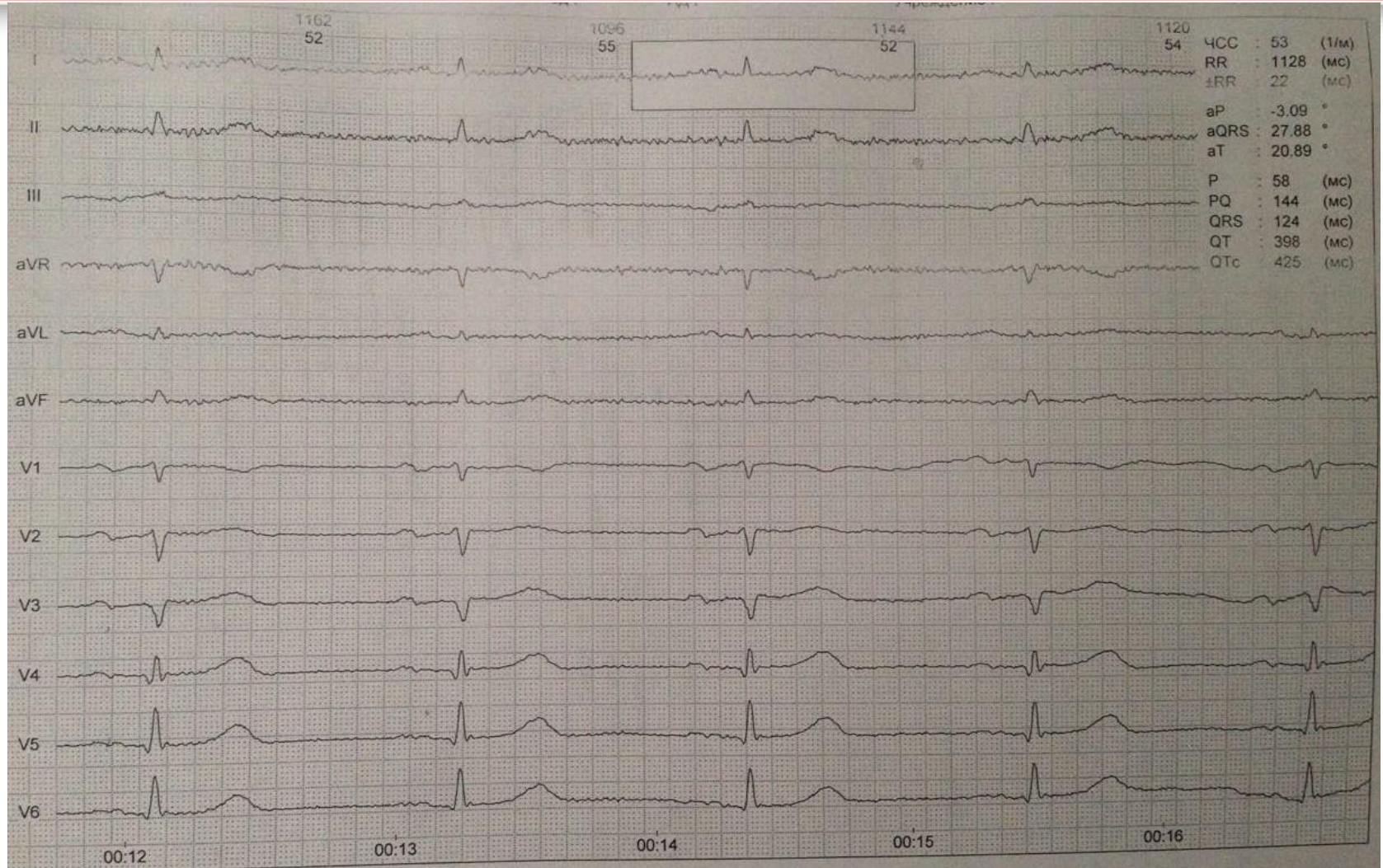
Instrumental investigations



- **Chest X-ray (28.11.17)**
Conclusion: Mild cardiomegaly.
- **Echocardiography (29.11.17)**
Conclusion: Moderate dilation of both atriums. Mild LV hypertrophy. Mitral ring calcification. Aortic sclerosis. EF = 75%



ECG (28.11.17)



Conclusion: Regular rhythm. Bradycardia (53 bpm). Postinfarction cardiosclerosis.

Diagnosis



- **IHD. Postinfarction (anterior STEMI of LV, 20.02.16) cardiosclerosis. Stable angina, class I.**
- **Persistent atrial fibrillation.**
- **Essential hypertension, stage III, grade 1, hypertensive heart, high risk.**
- **Chronic heart failure, NYHA class II A, stage 3, with preserved EF.**



Treatment plan in the hospital



- **Cordarone (Amiodarone)** 200 mg 2 times per day.
- **Pradaxa (Dabigatran)** 110 mg 2 times per day.
- **Hartil (Ramipril)** 5 mg 1 time per day.
- **Cardiket Retard (Isosorbide Dinitrate)** 60 mg 1 time per day.
- **Livostor (Atorvastatin)** 20 mg 1 time per day.
- **Hypothiazid (Hydrochlorothiazide)** 25 mg 1 time per day.

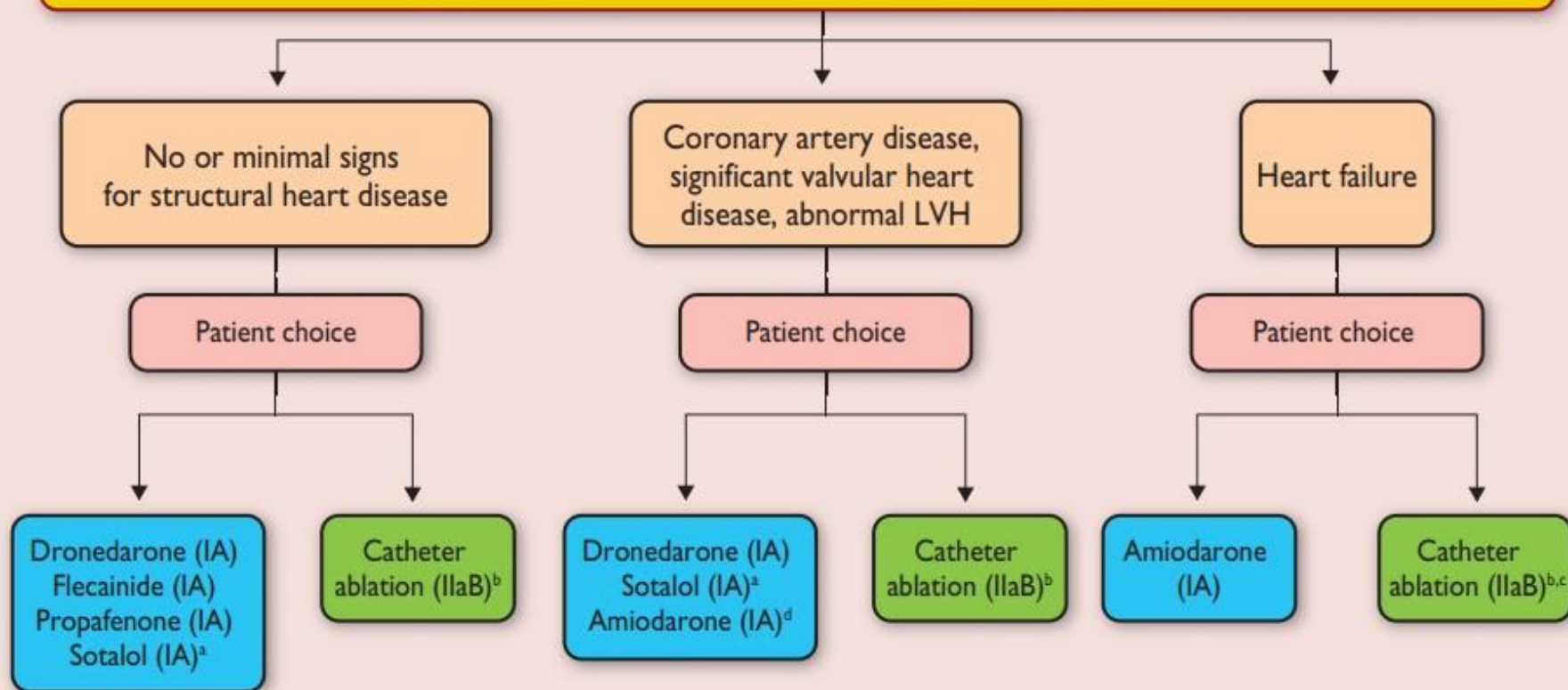
2016 ESC Guidelines



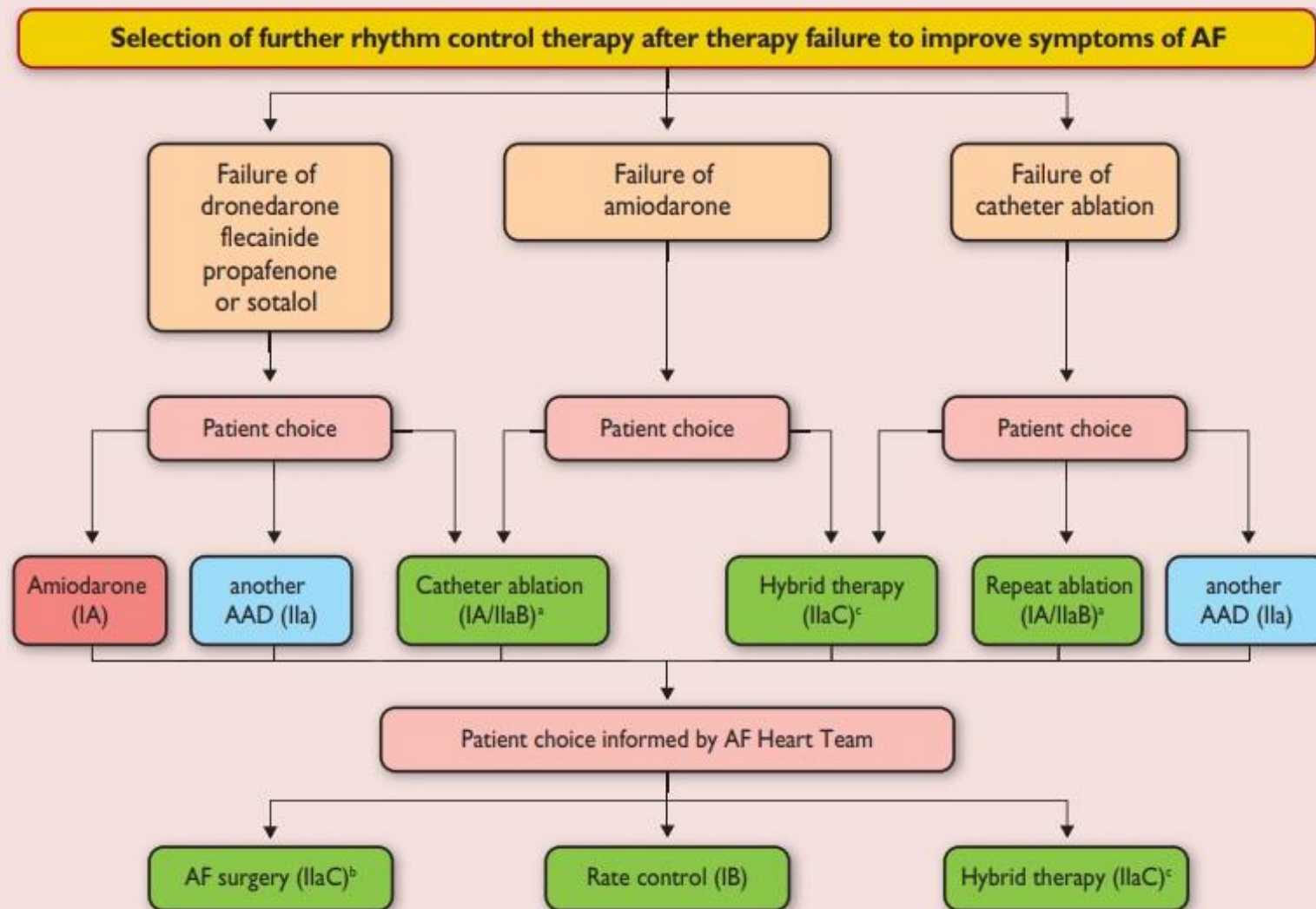
ESC

European Society
of Cardiology

Initiation of long term rhythm control therapy to improve symptoms in AF



2016 ESC Guidelines



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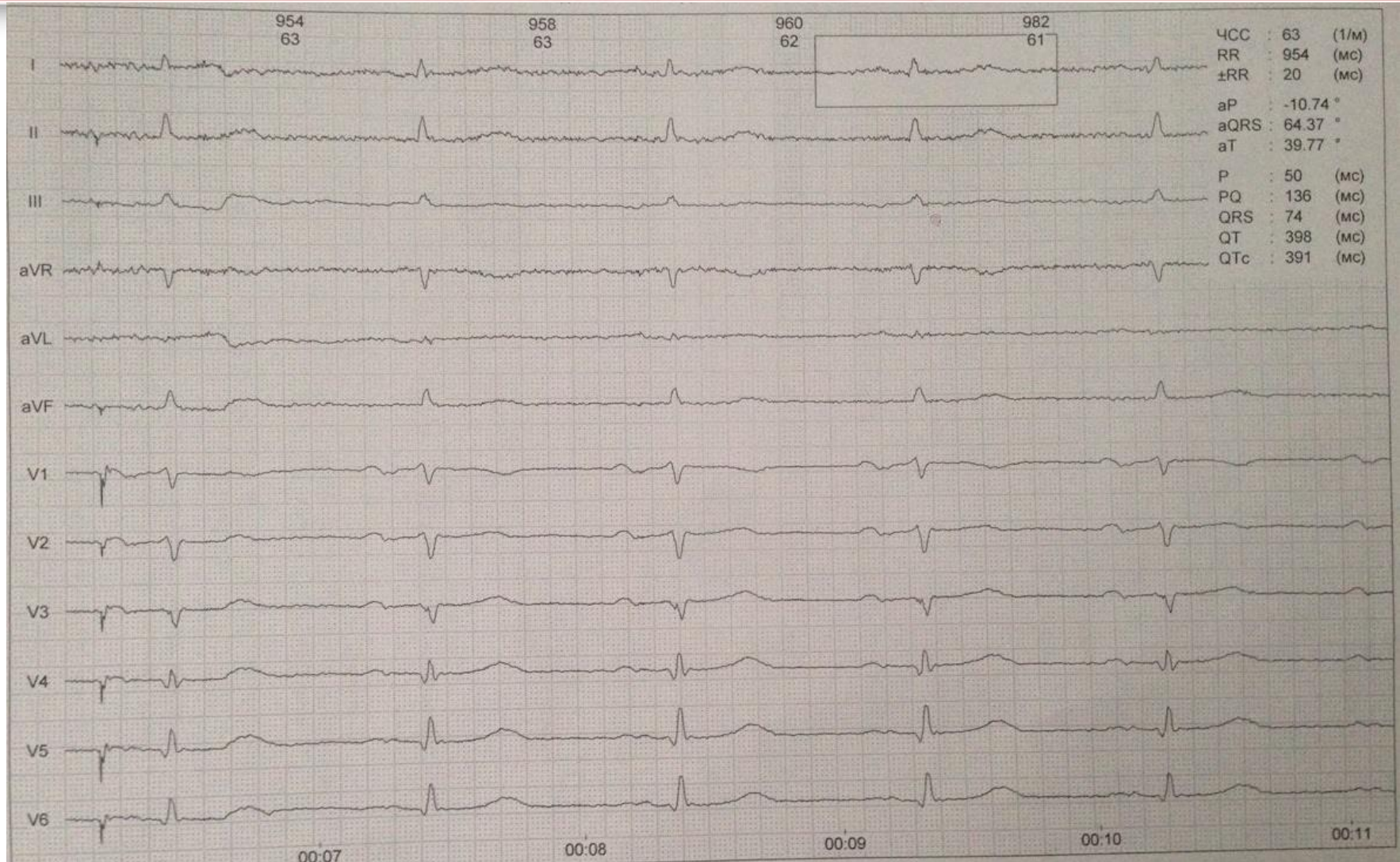
Operative report



- **30.11.17, 15:15-20:15, Intracardiac electrophysiology study (EPS), pulmonary veins isolation with radiofrequency ablation (RFA).**
- **30.11.17, 21:30, Postoperative epicrisis.**

The patient was transferred to the ward in stable condition. Receives inpatient treatment.

Post-operative ECG (31.11.17)



Conclusion: Regular rhythm. Postinfarction cardiosclerosis.

Recommendations



- **Pradaxa (Dabigatran)** 110 mg 2 times per day, 3 months, under the regular control of coagulogram.
- **Hartil (Ramipril)** 5 mg 1 time per day continuously.
- **Bisoprolol** 2,5 mg 1 time per day 1 week with further increase of the dose, continuously.
- **Cardiket Retard (Isosorbide Dinitrate)** 60 mg 1 time per day continuously.
- **Livostor (Atorvastatin)** 20 mg 1 time per day continuously, under the regular control of lipidogram.
- **Propafenone (Propafenonum)** 150 mg – in case of AF paroxysm.
- **Observation** in 3 months, then every 6 months for 2 years.

Prognosis



IHD:

- Prognosis for life - **favorable**
- Prognosis for recovery – **unfavorable**

AF:

- Prognosis for life – **favorable**
- Prognosis for recovery – **favorable**





Conclusion



- AF is one of the most common types of heart rhythm disorders with strong correlation with increased mortality and quality of life worsening.
- Correct and timely treatment leads to significant decrease in complications frequency and improves patient's prognosis.
- The catheter ablation (including RFA) is a modern, effective and safe method of treatment in case of resistant AF.





Thank you!



**KEEP
CALM
AND LOVE
INTERNAL
MEDICINE**