

EMERGENCIES IN CARDIOVASCULAR SURGERY –

CLINICAL JUDGMENT AND TREATMENT STRATEGY



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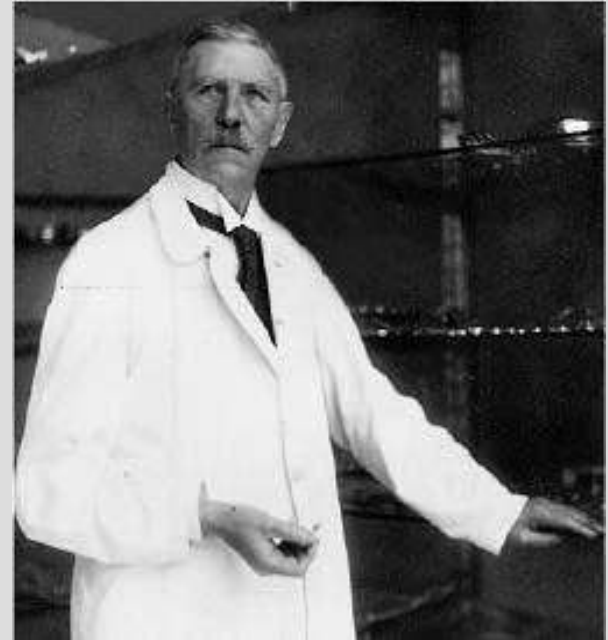
**Special hospital for surgery
“Fillip II” Skopje - Macedonia**

February, 2012

History – emergencies in cardiovascular surgery



Axel Cappelen
04.09.1895 –
Stubbing injury of the
left ventricle and LAD
(24y.old pat.)



Dr. Ludwig Rehn
07.09.1896-
Stubbing injury of the
right ventricle (22y.old pat.)



Clinical judgment and treatment strategy

1. Life-saving

- a. Identify life-threatening situation
- b. Appropriate resuscitation

2. Maintain vital status

- a. Detailed physical examination
- b. Continuous resuscitation

3. Further evaluation and management

- a. necessary further examination
- b. prepare for surgery

4. Postoperative care and outcome



Emergencies in cardiovascular surgery

1. - Acute MI

2. - Acute aortic disease

3. - Abdominal aortic disease

4. - Other (*severe aortic stenosis, acute mitral insufficiency, acute aortic insufficiency, cardiac tumors*).

5. – Acute stroke.



Guidelines for aorto-coronary bypass surgery 2011 ACCF/AHA



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Emergencies in cardiovascular surgery

Acute myocardial infarction

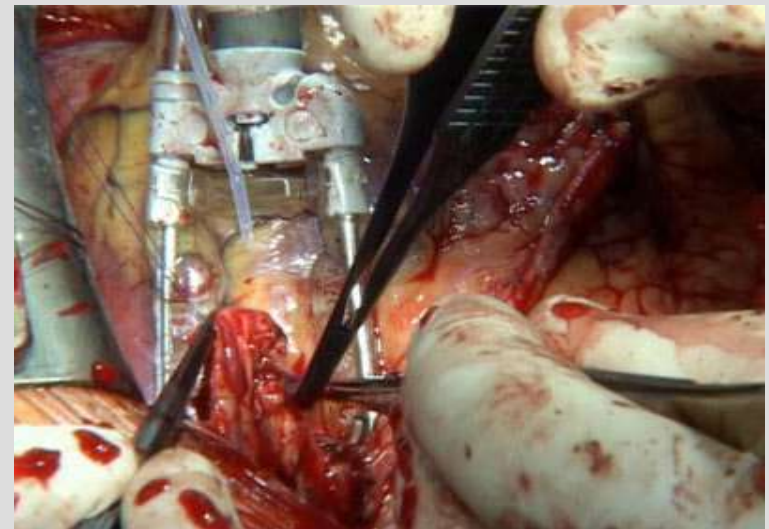
- cardiogenic shock
- low cardiac output syndrome
- PCI failure in presence of ongoing ischemia
- acute heart failure

Treatment-

- invasive monitoring,
 - IABP or catecholamines if necessary
 - urgent CABG for unstable patients
 - with troponin I positive test-
- ICU stabilisation



Invasive monitoring



surgery

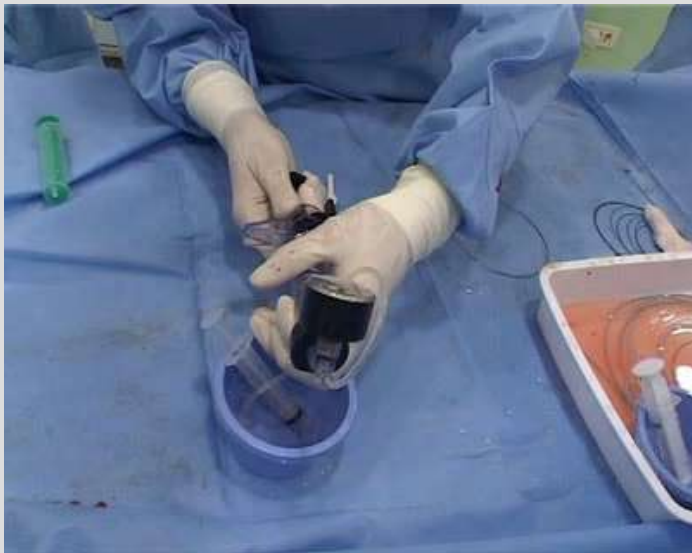


Emergencies in cardiovascular surgery

Acute myocardial infarction



IABP



Angio (PTCA or stent)

- **mechanical complications**
 - VSD
 - mitral insufficiency, chord's rupture
 - rupture of free left chamber wall
- **life threatening arrhythmia**
- **ischemic dilative cardiomyopathy**

Treatment strategy

Hemodynamic stabilization

64 MSCT

Urgent diagnostic

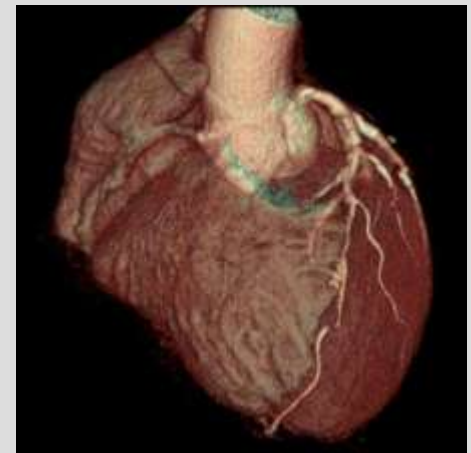
IABP

fibrinolysis

Angio (PTCA or stent)

Urgent surgery

CRRT if necessary



Emergencies in cardiovascular surgery

Acute myocardial infarction – mechanical complication

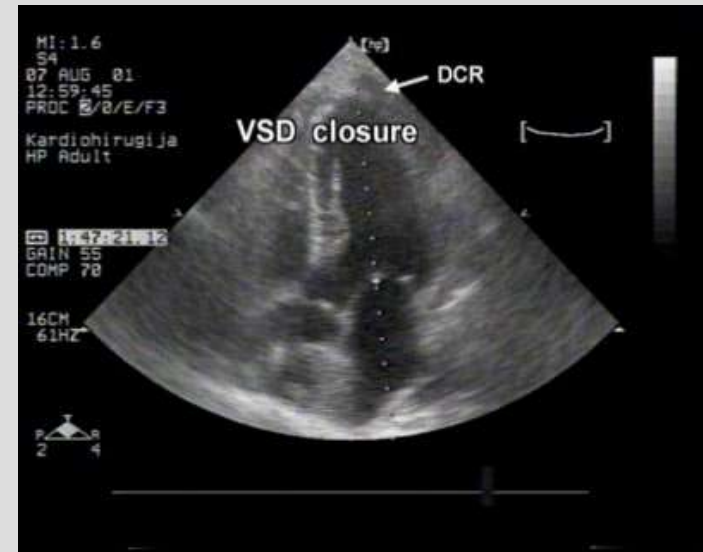


surgery

- Ischemic VSD
- Hemodynamic stabilization
- Cathecholamines if necessary
- IABP
- Operation



preoperative

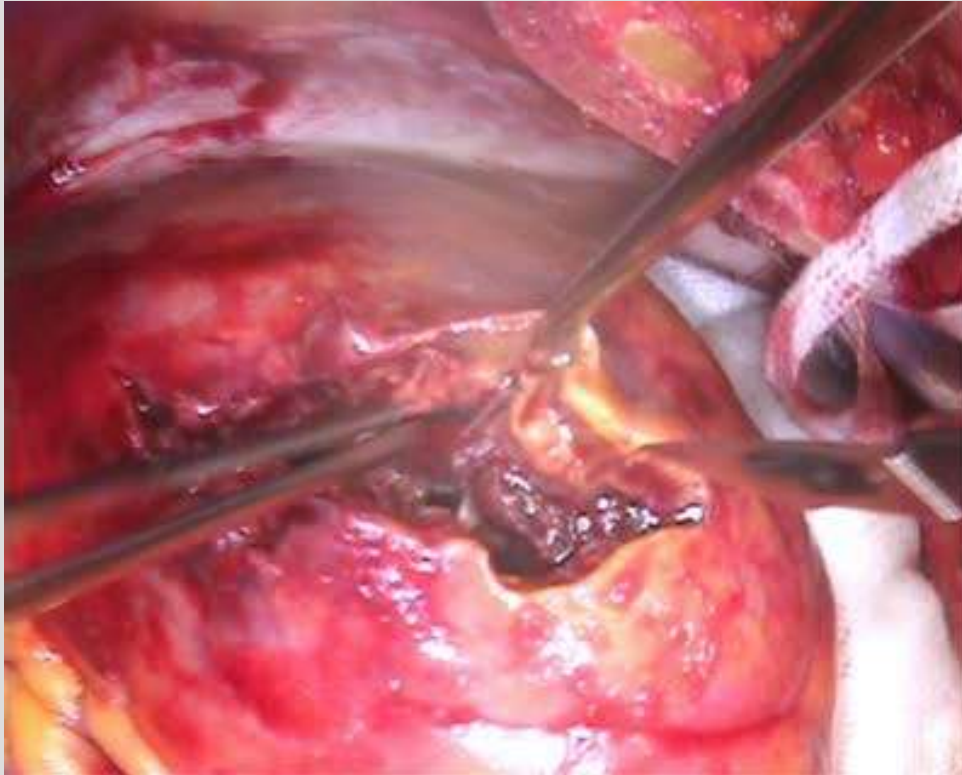


postoperative

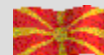


Clinical judgment and treatment strategy

Acute myocardial infarction- rupture of free wall left chamber



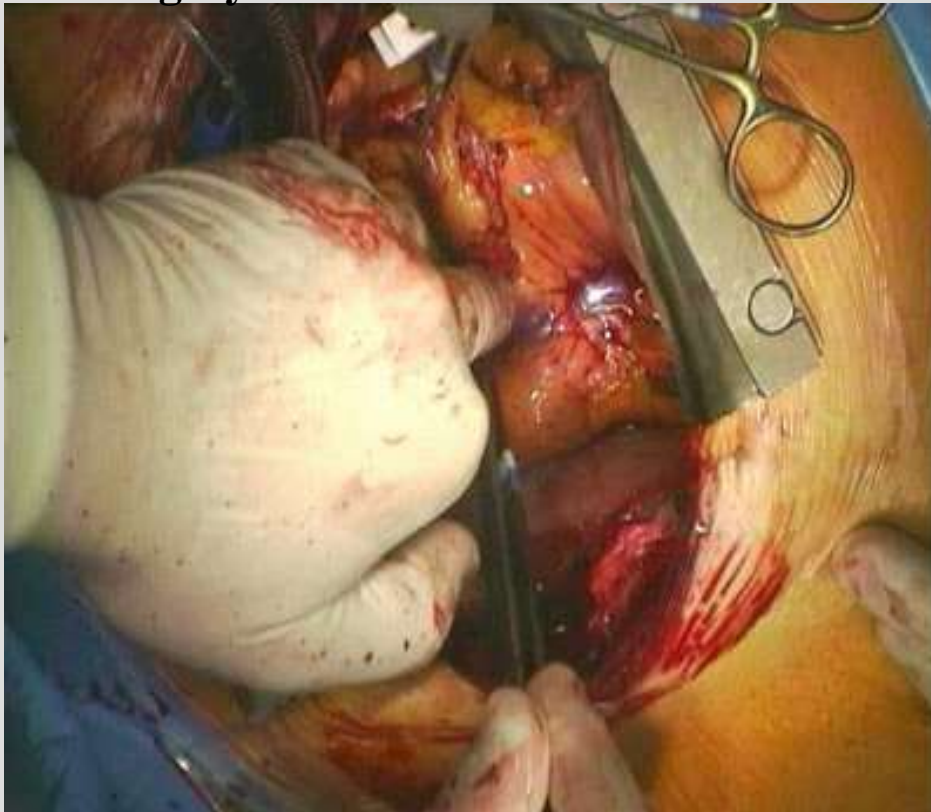
- K.A. 65y old
- 7th post infarction day, CABG surgery (CABGx3)
- 2 hours after surgery hemodynamic instability
- Cardiac arrest, severe bleeding
- CPR
- Treatment- volume replacement
- Urgent surgery, CPR
- IABP
- Long respiratory weaning (tracheostomy, gastrostomy)
- 27th postop. day tracheostomy decannulation
- 37day discharged



Emergencies in cardiovascular surgery

Acute myocardial infarction- rupture of mitral chorde

Hemodynamic stabilization
Catecholamines if necessary
IABP
Recompensation
Surgery



preoperative



postoperative



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Emergencies in cardiovascular surgery

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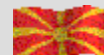
5. – Acute stroke.



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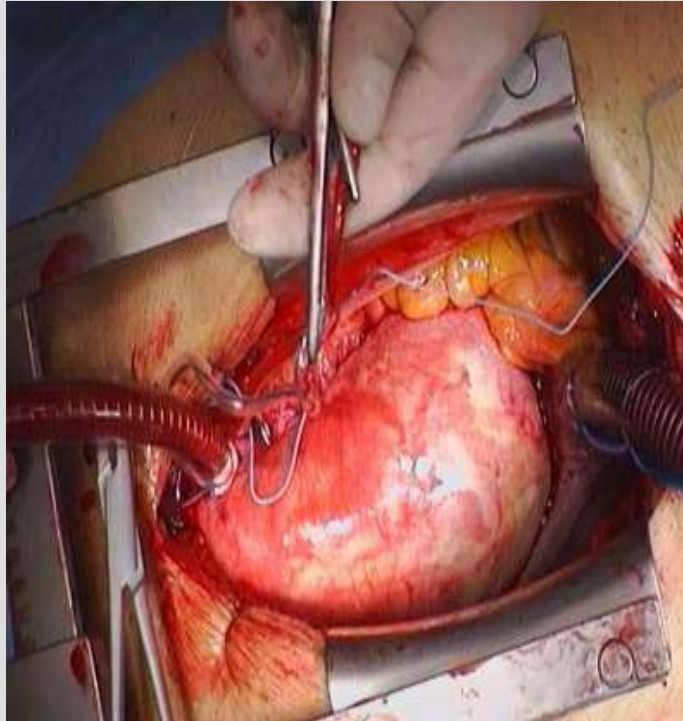
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Emergencies in cardiovascular surgery

symptomatic aortic aneurysm

- symptomatic aortic aneurysm
- acute aortic dissection
- acute aortic insufficiency
- rupture of the thoracic aneurysm
- rupture of the thoracoabdominal aneurysm



surgery



Pre-op.CT scan



Post-op.CT scan

Treatment strategy:

- invasive monitoring, biochemistry
- surgery



Emergencies in cardiovascular surgery

acute aortic dissection

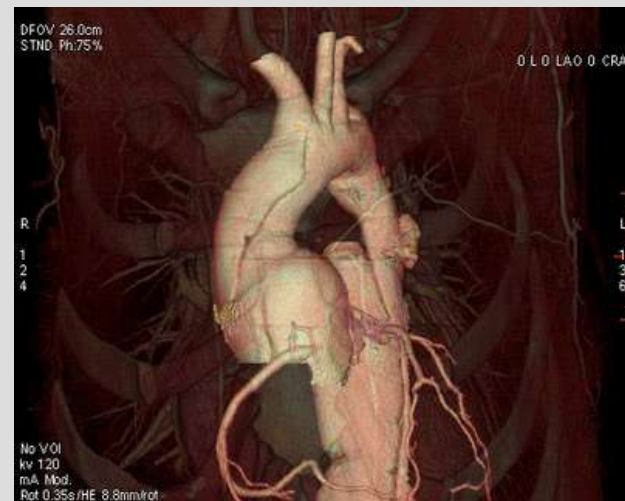


Clinical expression

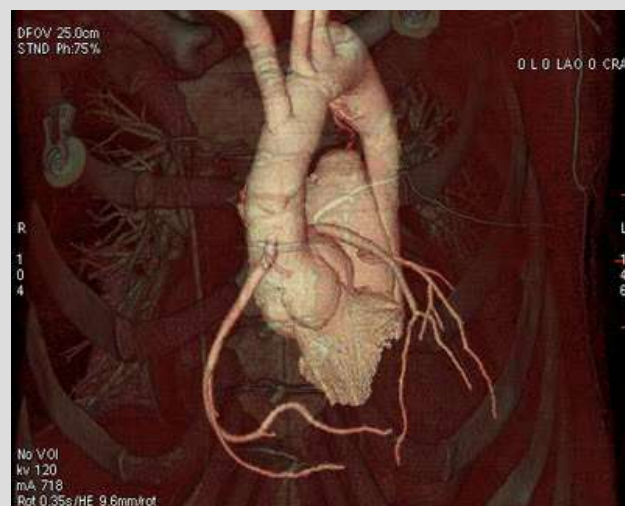
- severe chest pain
- hypotension
- Shock

-Urgent diagnostic

- Ultrasound
- 64 MSCT scan
- urgent surgery



Pre-op.



Post-op.



TEE



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Emergencies in cardiovascular surgery

acute aortic disease



Preoperative

**Enormous aortic aneurysm –
with retented rupture**

**Urgent diagnostic
Haemodynamic stability**



Clinical judgment and treatment strategy

- acute aortic insufficiency

T.J. 18y old patient

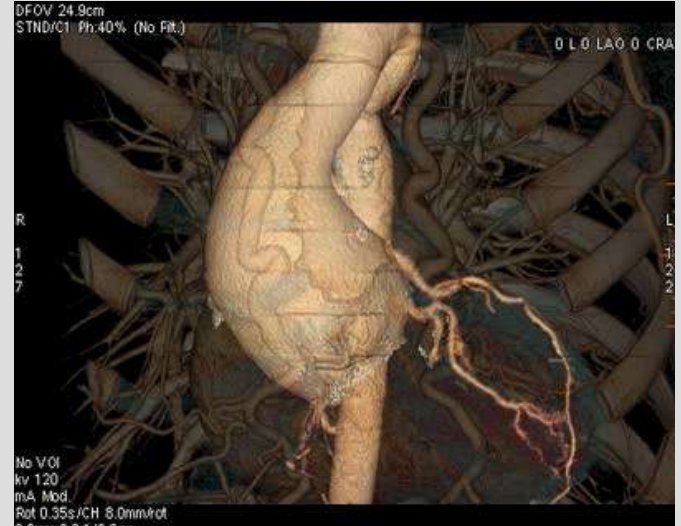
**Clinical expression- pulmonary edema
severe chest pain**

**64 MSCT-ascending aorta aneurysm with
postsblavian coarctation**



Treatment

- hemodynamic stabilization and recompensation
- surgery
- stenting of the descending aorta



Preoperative



Postoperative



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Clinical judgment and treatment strategy

rupture of the thoracic aneurysm

M.R.67y old

1st op. extra-anatomical by-pass p.p. Sy Lerishe

Clinical expression

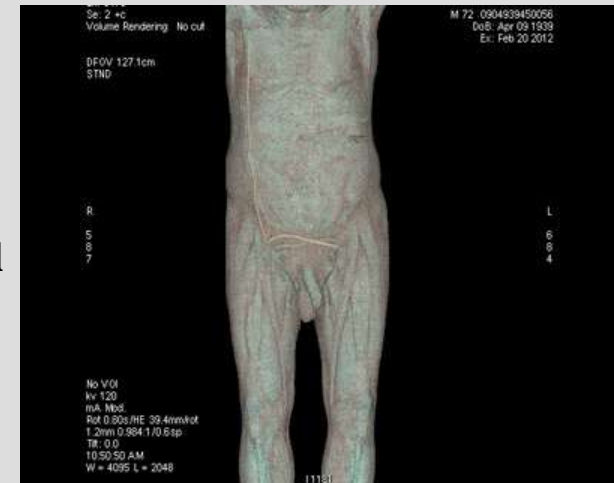
- severe chest pain
- coughing
- hypertension
- 64MSCT – ruptured thoracic aneurysm- arch dominantly



Preoperative

Surgery

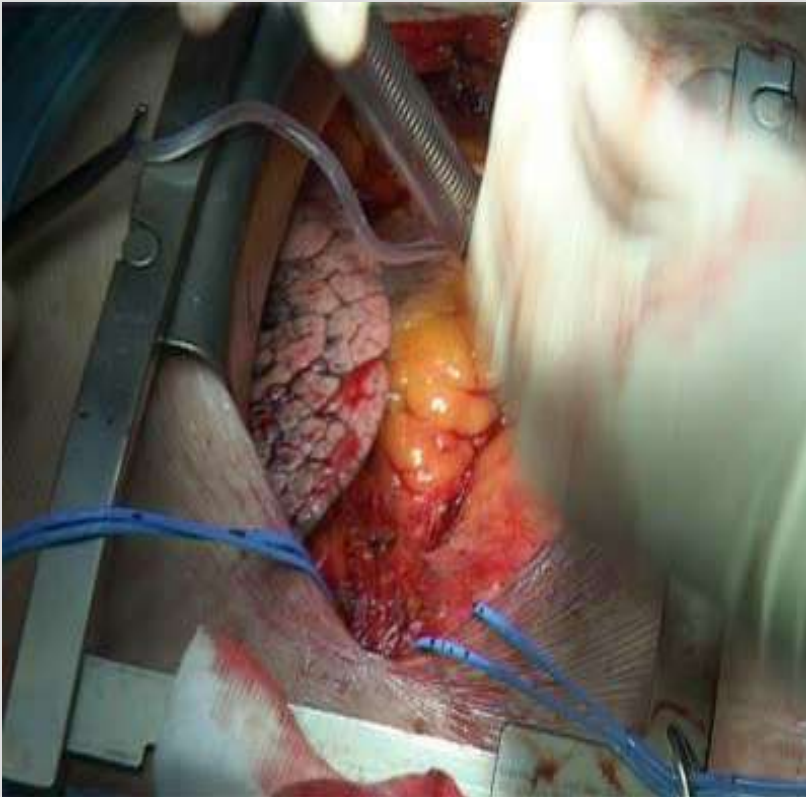
- Urgent
- Replacement of the aortic arch with cranial big vessels replacement
- Discharging -7 postop. day



Postoperative



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surgery

Clinical judgment and treatment strategy

- rupture of the thoracic aneurysm



Preoperative

K.B. 22y old. – mycotic aneurysm

Ist operation -1,5 year ago

Replacement of the aortic arch with re-implantation of the cranial vessels

IInd operation

- 6months ago
- haemathemesis,
- hemorrhagic shock
- severe upper part abdominal pain
- 64 MSCT – ruptured thoracic aneurysm
- CPR
- urgent operation
- tracheostomy,
- gastrostomy
- 39day discharged



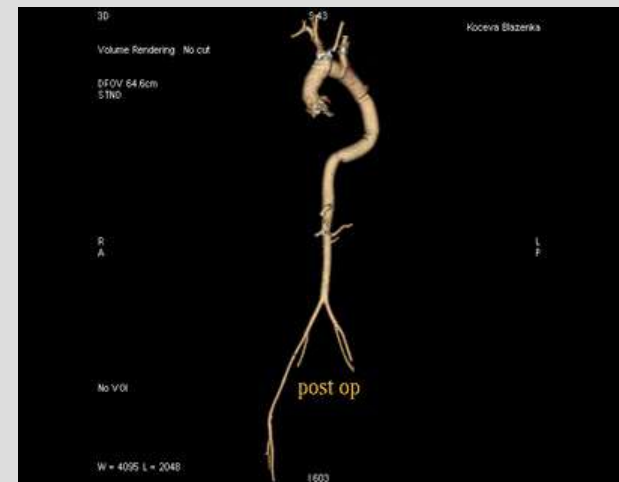
Preoperative



Preoperative

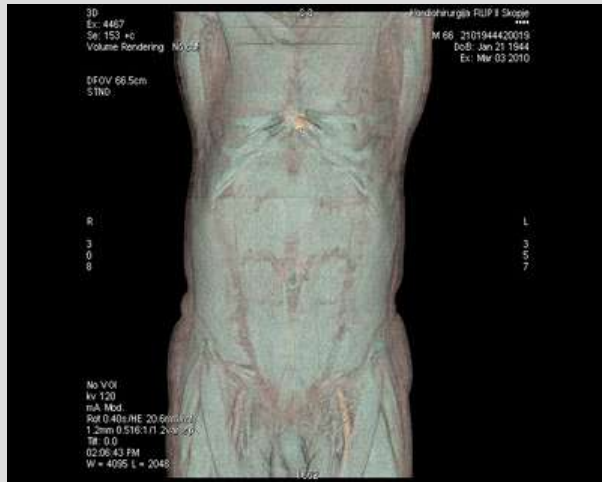


Postoperative



Clinical judgment and treatment strategy

- rupture of the thoracoabdominal aneurysm

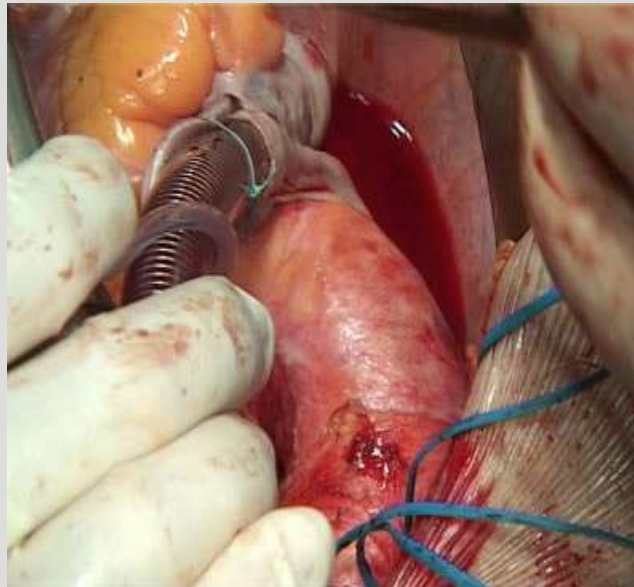


preoperative

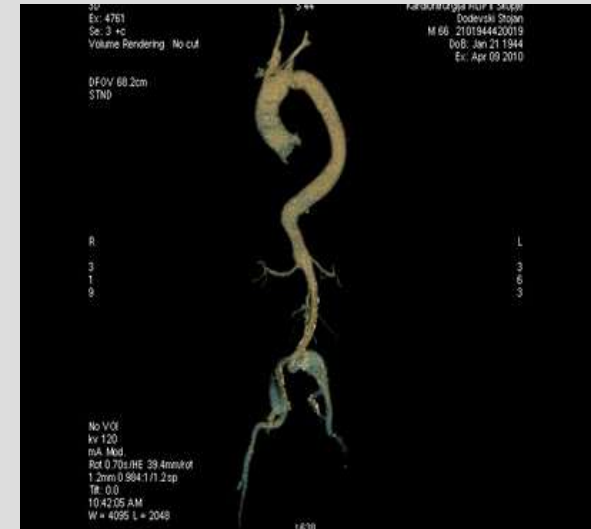


D.S.65y old
Severe chest pain
Hemodynamic instability
Haemoptisys

Surgery trough median sternotomy



Hemodynamic stabilization
Urgent surgery



postoperative



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Clinical judgement and treatment strategy

Off-pump surgery for thoracoabdominal aneurysm

64 MSKT pre-op. 22.09.2008god.

S.N. 49 god. haemorrhagic shock and rupture of the abdominal part of the thoracoabdominal aneurysm- preop. Hb -5,6

One month ago – laparotomy and exploration of the abdominal aorta ; with initial wound infection



preoperative



64 MSKT post-operative 27.09.2008

6 months hospitalization

Secondary wound healing; Normal quality of life



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Emergencies in cardiovascular surgery

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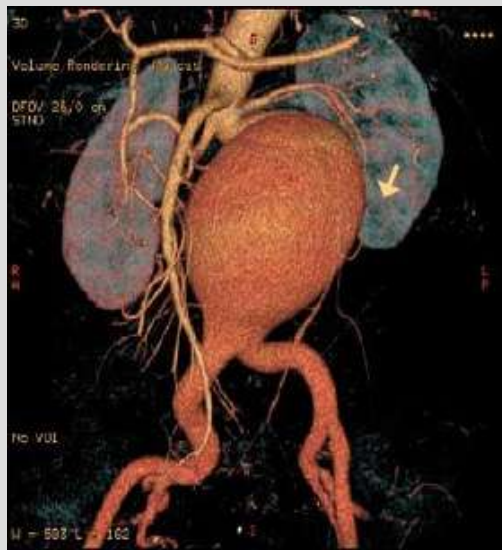
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Clinical judgment and treatment strategy retented rupture of the abdominal aneurysm



preoperative



S.A 62y.old
Severe abdominal pain, cold legs,
Hb reduction

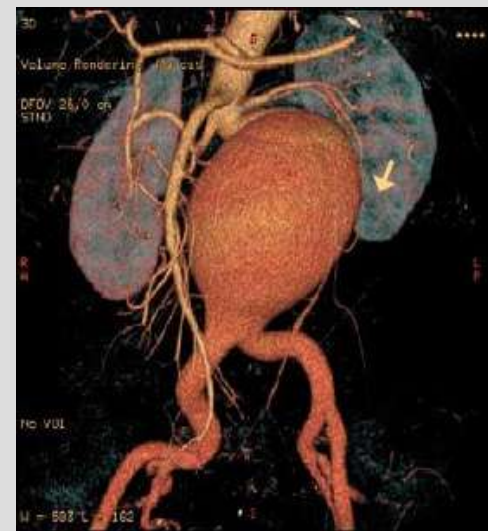


surgery

Treatment
Volume resuscitation
Urgent surgery



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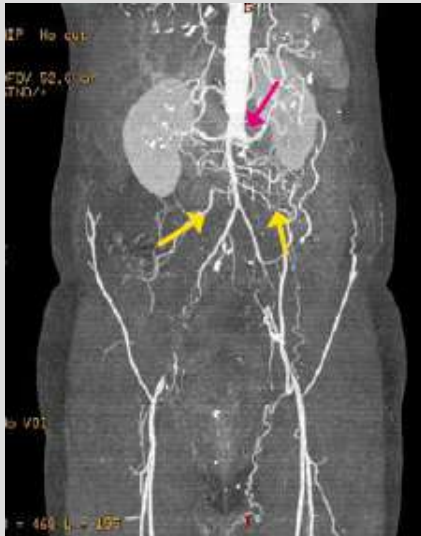
preoperative



postoperative

Diseases of the abdominal aorta -Syndrome

Lerische



A.B 61 yrs

Claudications in the inferior extremities

Acute occlusion of distal abdominal aorta



angiogram



3 D version



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64 MSCT of distal part of the abdominal aorta

Emergencies in cardiovascular surgery

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Emergencies in cardiovascular surgery

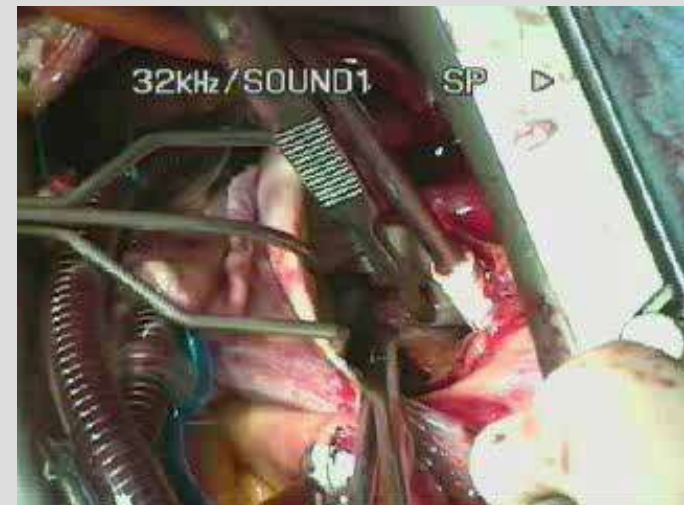
Other

TEE

- severe aortic stenosis
- acute mitral insufficiency,
- acute aortic insufficiency
- tumor

Treatment strategy

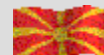
Invasive lines ,
catecholamines,
ICU stabilization
appropriate operation



surgery

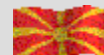


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Emergencies in cardiovascular surgery

1. - Acute MI
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Clinical judgment and treatment strategy

acute carotid occlusion

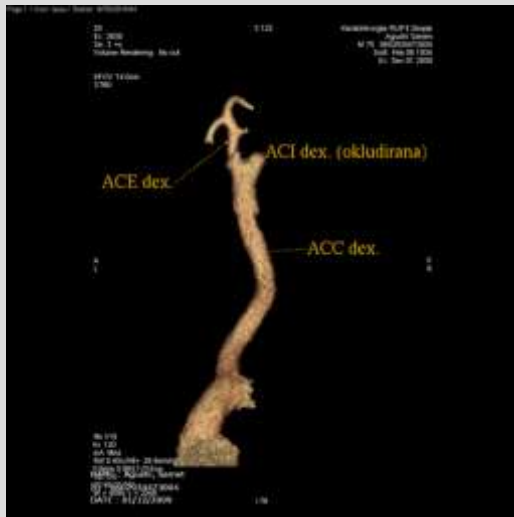
S.A.56y.old.

coma - acute occlusion of right carotid artery

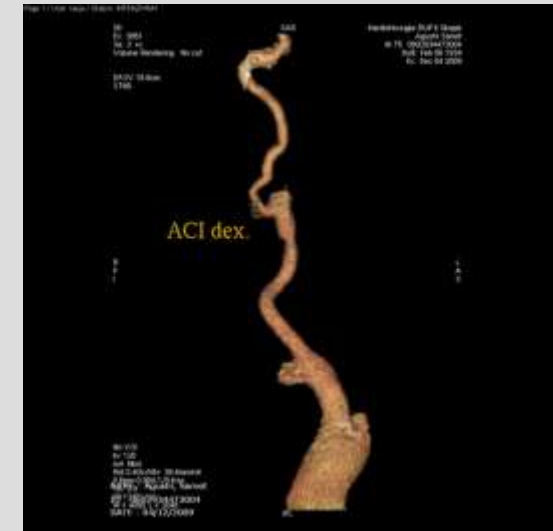
6h later urgent surgery

12h after surgery awake with slight left sided haemiparesis

Postoperative MSCT



Preoperative MSCT



24 hours after surgery



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Clinical judgment and treatment strategy

-aneurysm of the carotid artery

T.V 63 y.

**15 years treated as an
enlargement of the thyroid gland**



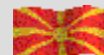
preoperative



surgery



postoperative



ICU facilities for long treatment patients

Percutaneous tracheostomy

Percutaneous gastrostomy

Continuous reno-renal replacement



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Results I N= 10.023 open heart surgeries

829 (45%) coronary artery disease

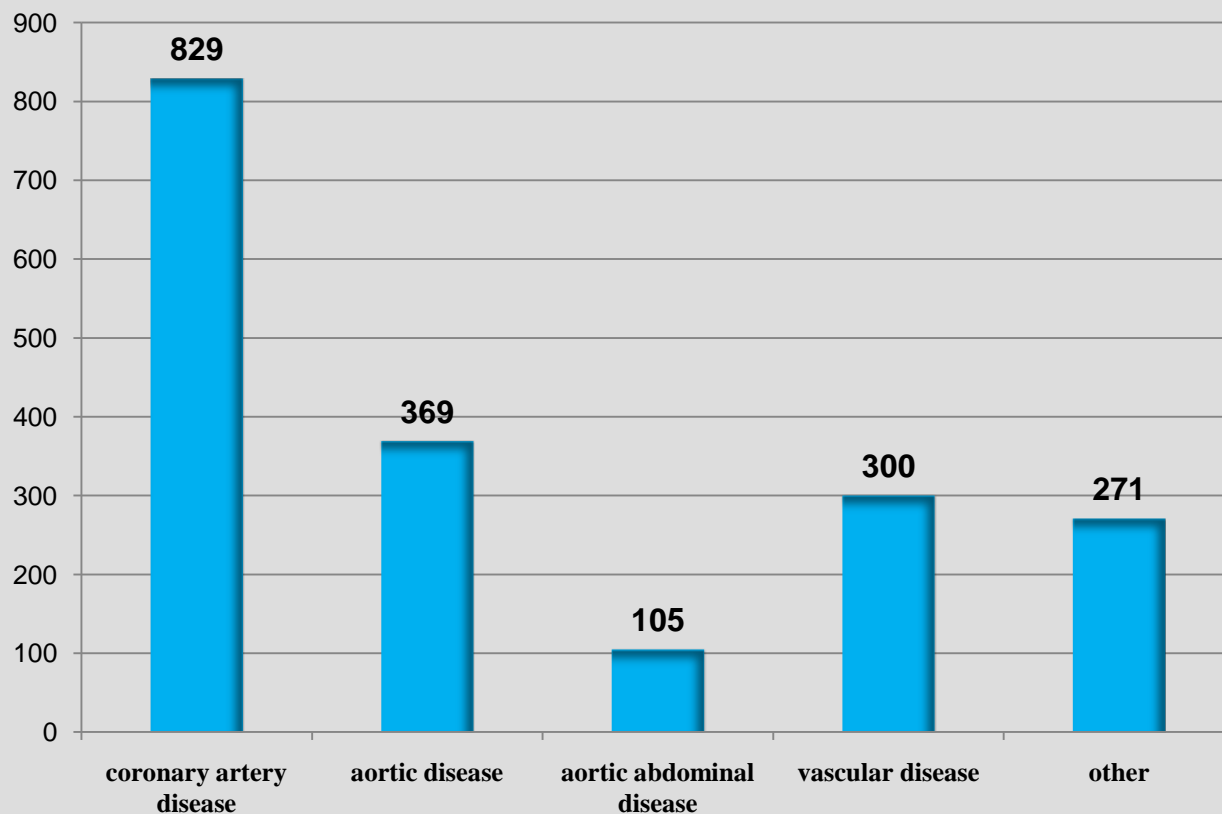
369 (20%) aortic disease

105 (6%) aortic abdominal disease

300 (17%) vascular disease

271 (14%) other

N = 1823 (18%)



Results II -surgery data N=369 pts with aortic disease

Type of surgery	Aortic dissection N = 218 pts	Aortic aneurysm N = 95 pts
Tirone David	38	34
Suspension of the aortic annulus	64	27
Reinforcement of the free margine of the semilunar leaflet	15	10
Replacement of the aortic valve	34	17
Reimplantation of the main vessels of the head	67	7



Results III N=1823 pts with urgent surgery

Table 3

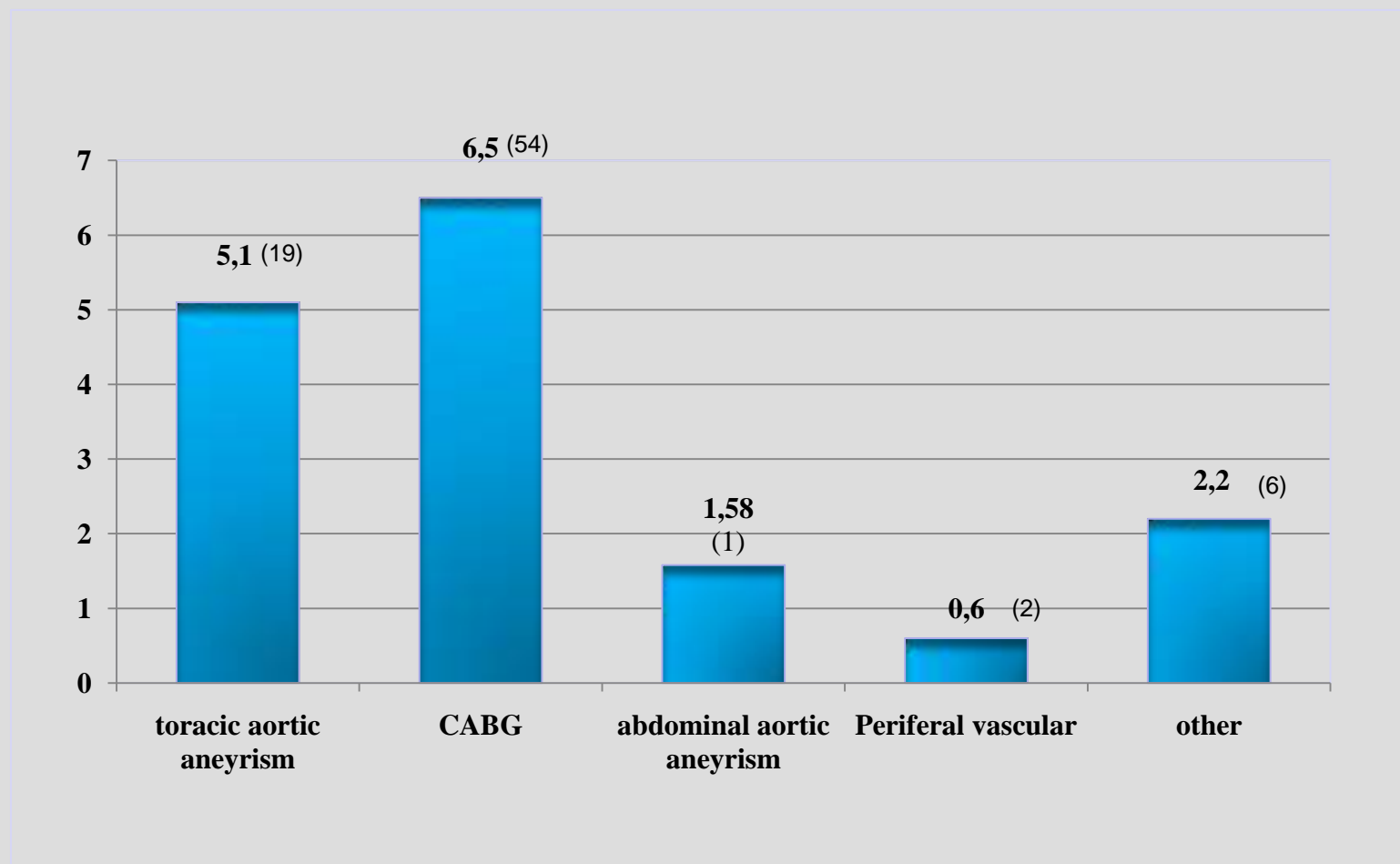
Postoperative results*	
No. of patients	1823
Hospital mortality	82 (4,50%)
Ventilation time (hours)	26 ± 37 (range 7–168)
Pre-operative IABP	543 (29,69%)
Total bleeding (mL)	1340 ± 903
Re-exploration for bleeding	7
Miocardial infarction	1
Postoperative LVEF (%)	34.4 ± 8.5
Low cardiac output	50 (2,7%)
Transitory acute renal failure	15 (0,82%)
Sternal infection	9 (0,5%)
Intensive care unit stay (days)	24.4 ± 6.4 (range 3–45)
Hospital stay (days)	28 ± 6.7 (range 8–34)

* Data are presented as mean ± SD or N (%)

IABP: Intra-Aortic Balloon Pump; CK-MB: LVEF: Left Ventricular Ejection Fraction.



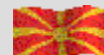
Results IV: Mortality rates in the different groups



Conclusion:

Strategy for emergencies in cardiovascular surgery

- Well trained ICU staff
 - On time CT scan
 - On time angiography
 - Organised transfusiology
 - Well planned surgical strategy
-
- From door to surgery: 30min.
 - From door to ICU: 10 min.





I PORED OPERACIJE
PACIJENT U IDE DOBRO

1988

Prof dr.sc. Ino Husedžinović, dr.med.



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