Surgery for patients with diffuse atherosclerotic disease

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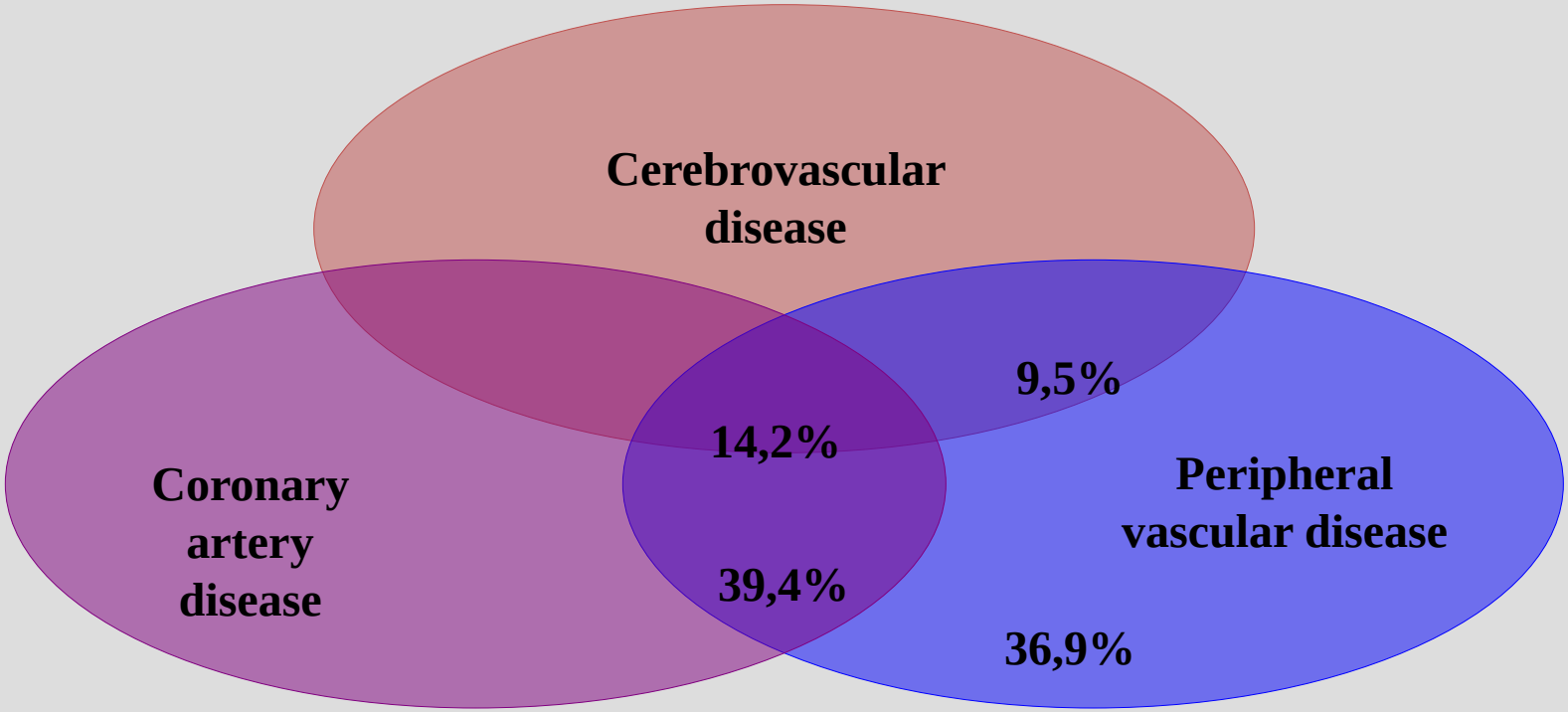
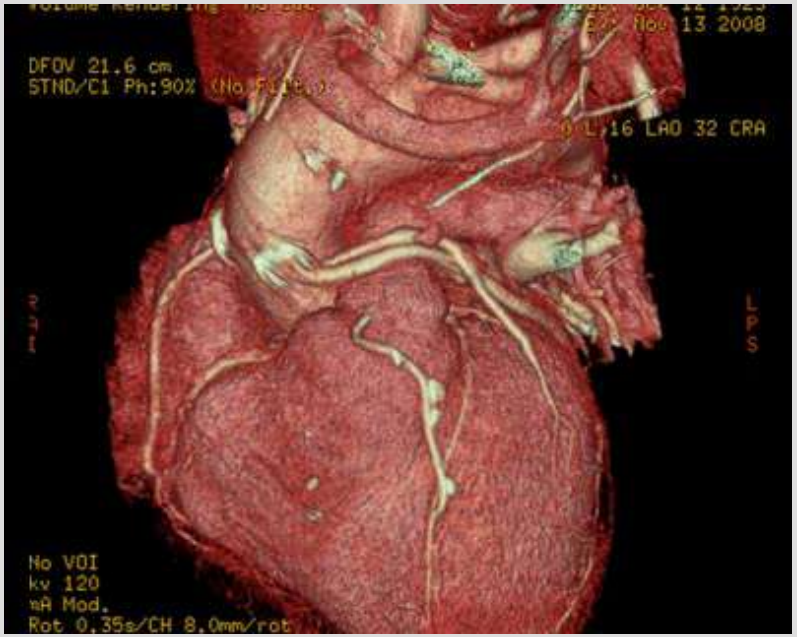
Atherosclerosis is a systemic disease



Bhatt DL, et al; for the REACH Registry Investigators. *JAMA*. 2006;295:180-189.

Cardiosurgery procedures for atherosclerotic disease



1.CABG and carotidal surgery

2.CABG and peripheral surgery

3.CABG and carotidal and peripheral surgery

4. CABG and surgery of abdominal aneurysm

5. CABG and surgery of carotidal and peripheral disease and surgery of abdominal aneurysm

Carotid disease at current cardiac surgical population

carotid stenosis > 50% - 17-22%

carotid stenosis > 80% - 6-12%

Preoperative stroke & carotid stenosis during CABG

carotid stenosis < 50% < 2%

carotid stenosis 50-80% 10%

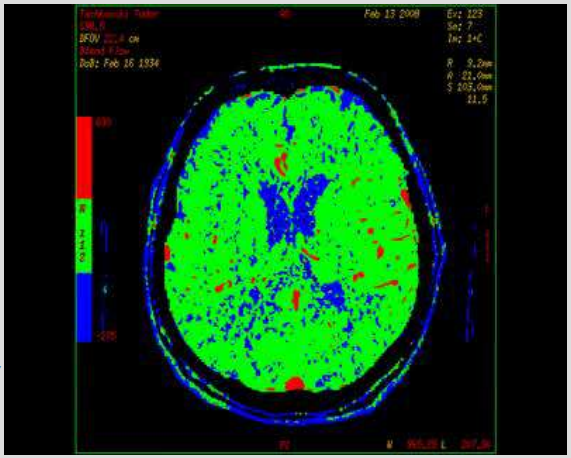
carotid stenosis > 80% 11-18.8%

Stroke and CABG

23% of patients with CABG suffer from stroke

- peri- operative mortality from stroke 1-2%

- stroke ICU - mortality after CABG- 2-3%
- patients invalidity – 2-3%
- Significantly increased cost and hospital stay – 25%
- Risk increases with age: < 50y (0.5%), > 80y (8-9%)
  - *ACC/AHA Guidelines for Coronary ;Artery Bypass GraftSurgery*
  - *JACC Vol.34,No.4, Oct.2008:1262-1347*



Surgical strategy to reduce the risk

- **Planned surgery of both carotid and coronary disease –**

  - the most common approach - to perform the operation in a staged manner ;

  - first carotid surgery followed by coronary bypass in 1-5 days

- **Stroke risk is increased when reversed-stage procedure is used in which the coronary bypass operation precedes the carotid endarterectomy by > 1 days**

- ***ACC/AHA Guidelines for Coronary ; Artery Bypass Graft Surgery***
- ***JACC Vol.34,No.4, Oct.2008:1262-1347***

Cardiovascular procedures for atherosclerotic disease

CABG and peripheral surgery

CARP trial (1999-2003) – 5859 pts

- **60% incidence of CAD in patients with PAD**
- **2% - 10 years limb loss**
- **12% -10 years need for revascularization**

Ness J and all,J.Am.Geriatr.Soc.2009;47:1255-1256

Cardiovascular procedures for atherosclerotic disease

CABG and peripheral surgery

- **PAD is a mortality marker for patients with advanced atherosclerosis in the coronary and cerebral arteries**
- **PAD is often underestimated**
  - **Diagnosis**
  - **Pre-operative evaluation**
  - **Anesthesiology**
  - **Postoperative patients approach**

– **Results with high morbidity and mortality**

Cardiovascular procedures for atherosclerotic disease

CABG and Abdominal aneurysm

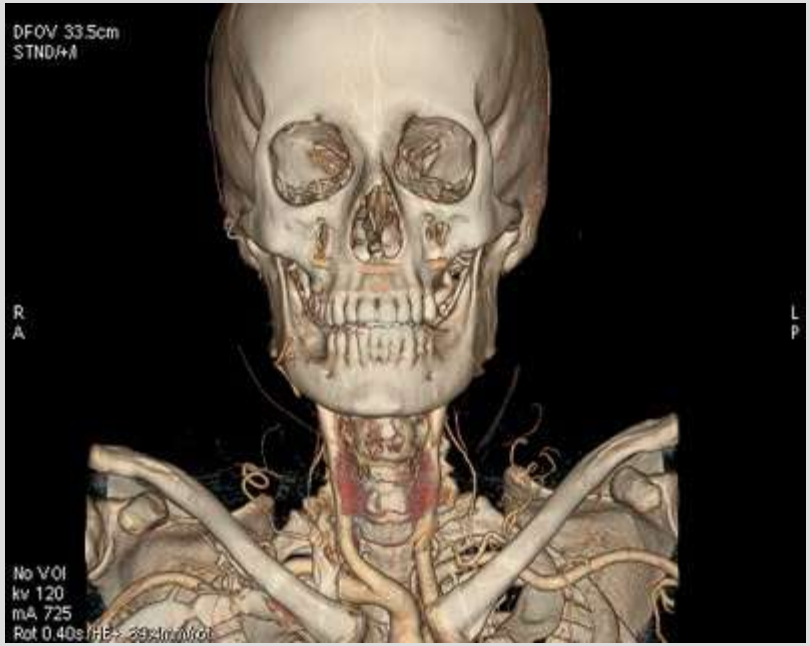
The inability to predict which patients are most likely to rupture their AAAs combined with the increased morbidity associated with the concomitant procedure has led some surgeons to advocate a staged repair with interprocedural intervals of 7 to 14 days

Wolff T, Baykut D, Zerkowski HR, et al. Combined abdominal aortic aneurysm repair and coronary artery bypass: presentation of 13 cases and review of the literature. Ann Vasc Surg 2006;20:23-29.

Cardiovascular procedures for atherosclerotic disease -our strategies

Early diagnostic

- **echocardiography; Doppler**
- **angiography**
- **64 MSCT**



Cardiovascular procedures for atherosclerotic disease -our strategies

1.Asymptomatic CAD and carotidal disease
2. Symptomatic CAD and carotidal disease
3. Peripheral artery disease and asymptomatic CAD
4. Gangrene and CAD
5.Carotidal +peripheral + CAD
6. Abdominal aneurysm + carotidal + peripheral + CAD

- First step - carotidal surgery

↓↑

- Second step- peripheral surgery

↓↑

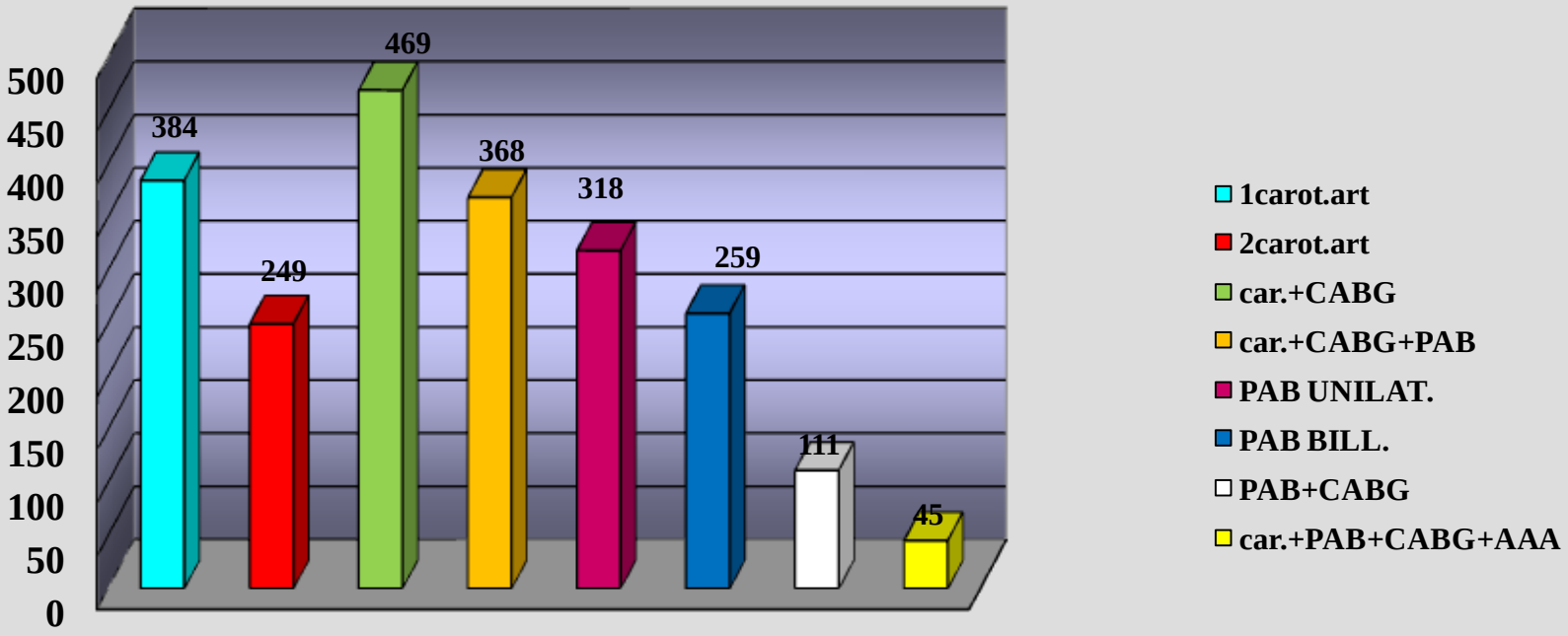
- Third step – CABG

↓↑

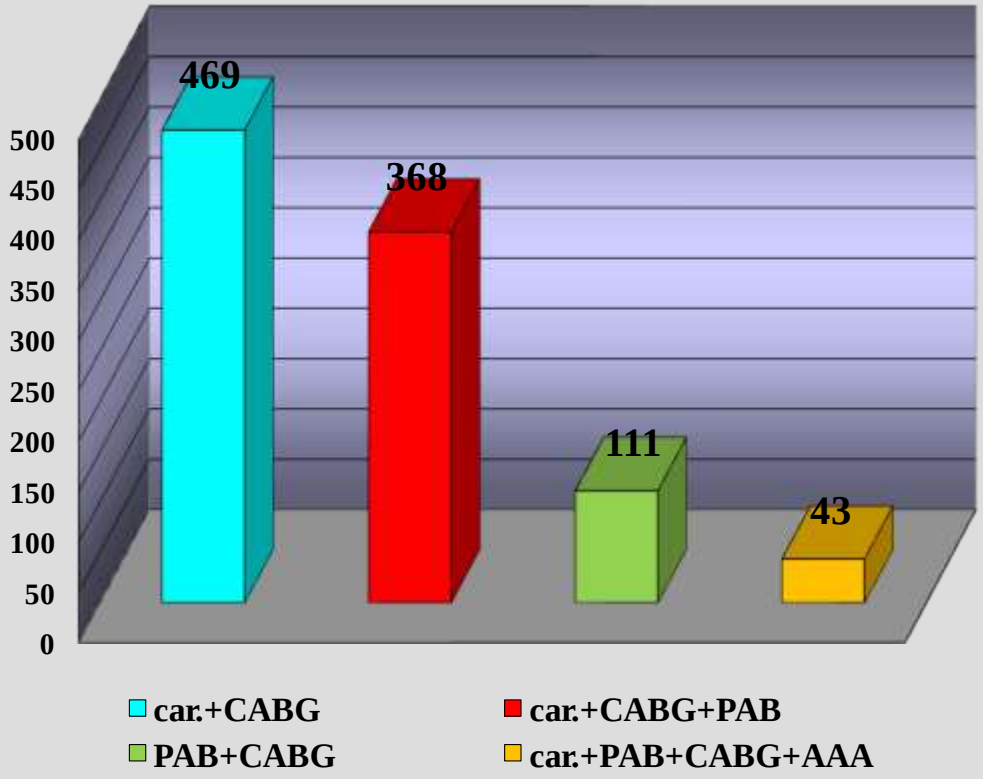
- Fourth step- abdominal aneurysm surgery

Four years experience

Vascular surgery N= 2203 (19,1%) pts.



Vascular surgery and CABG
N= 991 (14,9%) pts. –(total No CABG =6625)



Cardiovascular procedures for atherosclerotic disease

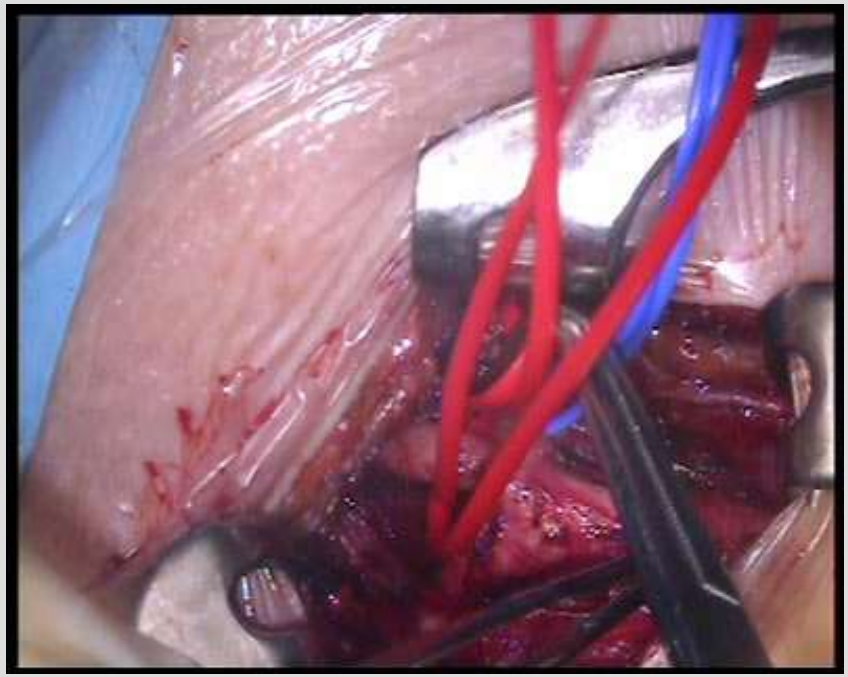
Carotidal surgery and CABG N = 469 pts

N= 469pts x= 64,5 ±8,7y
1st step carotidal surg.
2nd step CABG
10pts simultaneous surg. – CABG + carotidal surg.
98 done in awake settings (regional block)

Complications:
2 pts postop. stroke – immediate reop. (1 survived; 1 died)
3pts pulm. edema – (1 survived ; 2 died – CAD +severe valve stenosis)
3 pts acute coronary syndrome – urgent CABG
Mortality rate 0.9% (3pts)

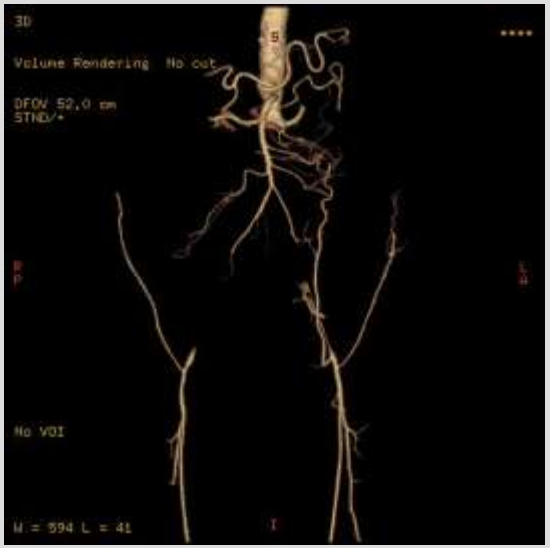
Cardiovascular procedures for atherosclerotic disease

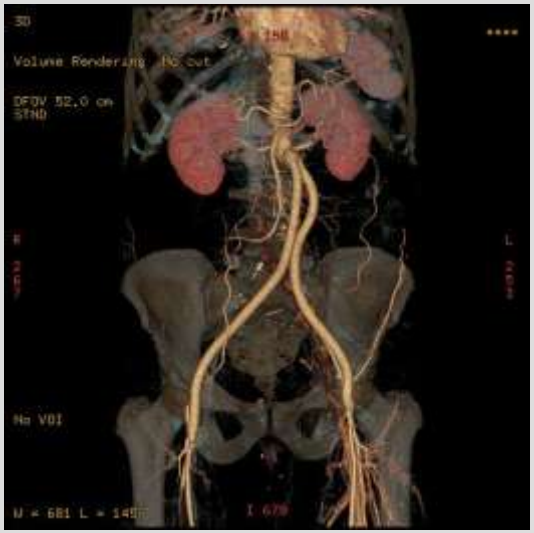
Carotidal surgery and CABG N = 469 pts



Carotidal surgery, CABG and peripheral vascular surgery
N = 368 pts

64 MSCT preop





64 MSCT post op.

N= 368pts x= 67± 9,5 y
First step carotidal surg.
Second step peripheral surg.
Third step CABG
Complications – acute cor. Sy. - 4
Pulm. edema 2
Amputation 6 – patients with Fontane IV pre-operativelly
Mortality rate 0

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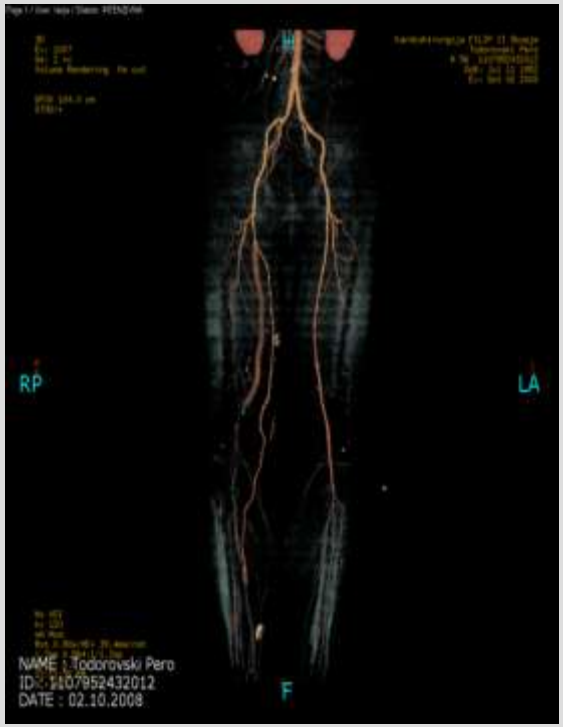
Peripheral by-pass and CABG No- 111 pts

Pre-op . 64MSCT

Surgery



Post-op . 64 MSCT

X= 67±9,8 y

1st step- peripheral by-pass

2nd step - CABG

Awake-spinal anesthesia L2/3-L3/4

Complications
Pulmonary edema – 3 (2surv. 1died- severe aortic stenosis and CAD)
Mortality rate 0,9% (1 pat)

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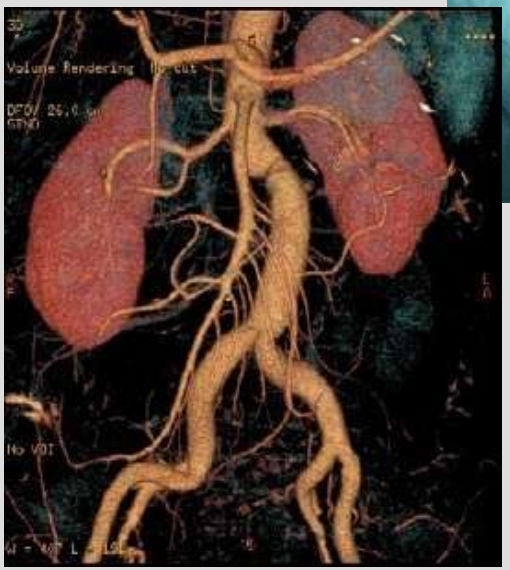
CABG and abdominal aneurysm N= 115 pts

Pre op 64
MSCT scan

X= 69±7,6 y
1st step- depends of clinical expression

CABG first in pts with significant LMN, or unstable angina



Post op 64
MSCT scan

Complications :

Mesenterial ischemia with colonostoma (1 pts)
Deep wound infection due to ruptured abdominal aneurysm 2 pts

Mortality rate 1,7% (2pts)

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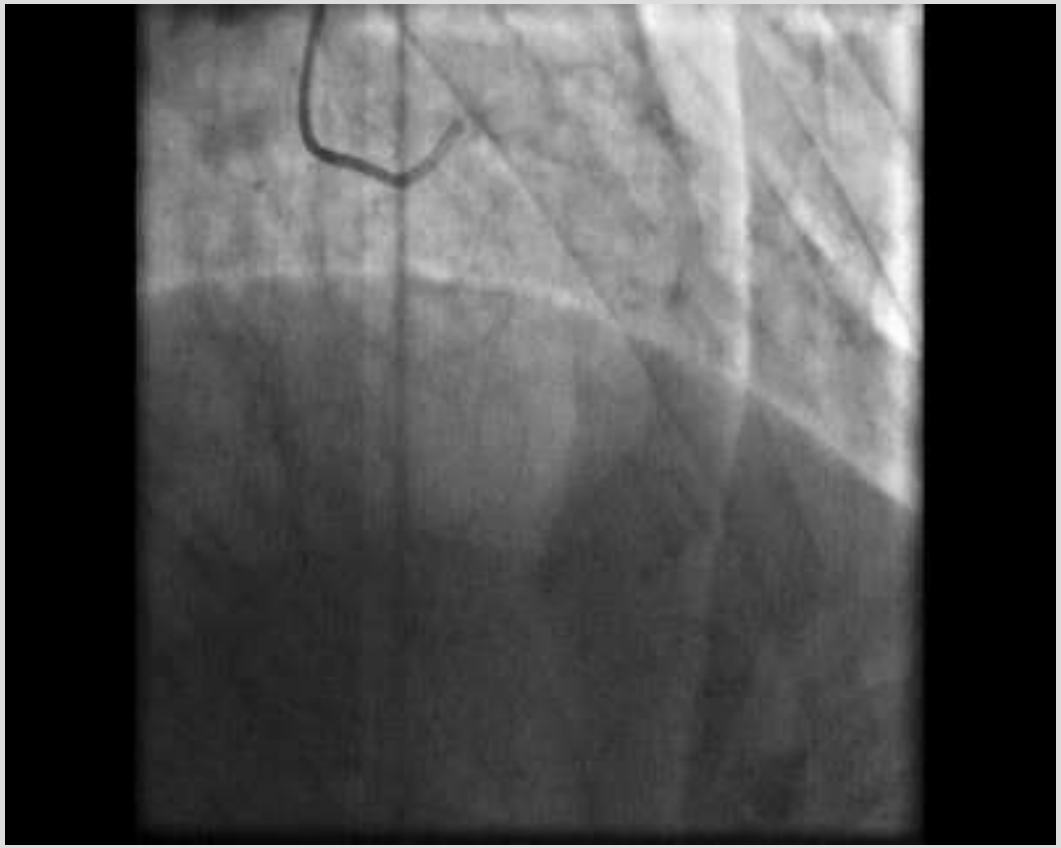
CABG and abdominal aneurysm N= 115 pts.



6 hours after surgery

X= 67±9,8 y

Surgical steps:

1. **CABG**
2. **abdominal aneurysm**

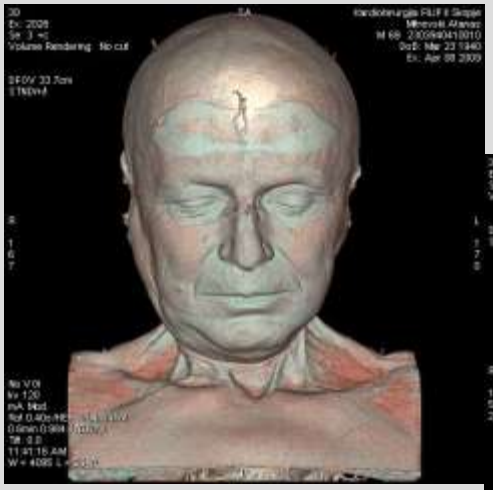
6 pts done simultaneously CABG – OPCAB + infrarnal aneurysmectomy

No complications

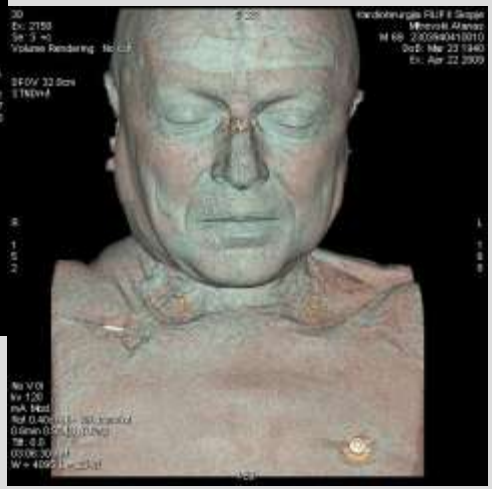
Mortality rate 0%

Cardiovascular procedures for atherosclerotic disease

Car. + CABG +PAB + abdominal aortic procedures N=43pts.



64 MSKT pre-op.



64 MSKT post op.

64 MSKT pre-op.

64 MSKT post-op.

X= 67±9,8 y

Surgical steps:

1. **1st carotidal surgery**
2. **2nd peripheral surgery**
3. **3rd CABG**
4. **4th abdominal aneurysm**

No complications
Mortality rate 0%

Filip Vtori

Cardiovascular procedures for atherosclerotic disease

Case report – KS 67 year old patient accepted for CABG surgery –single vessel disease. Pre-operative evaluation (64 MSCT scan) –diffuse atherosclerotic disease

Pre- op

Strtategy for tratment

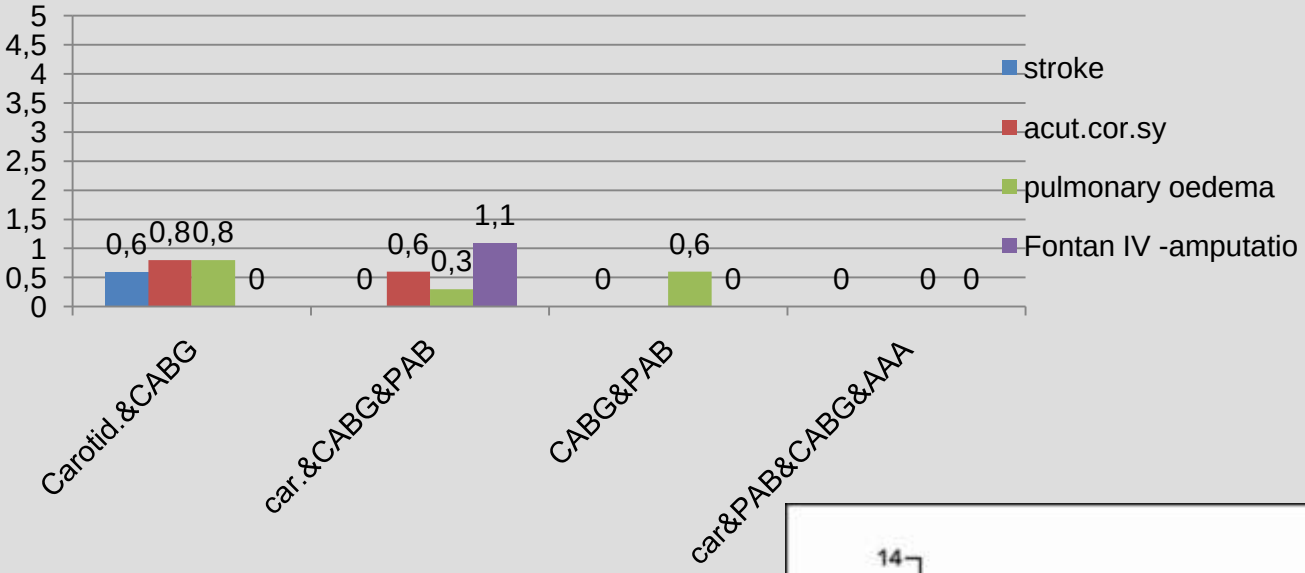
1st step
Carotidal surgery

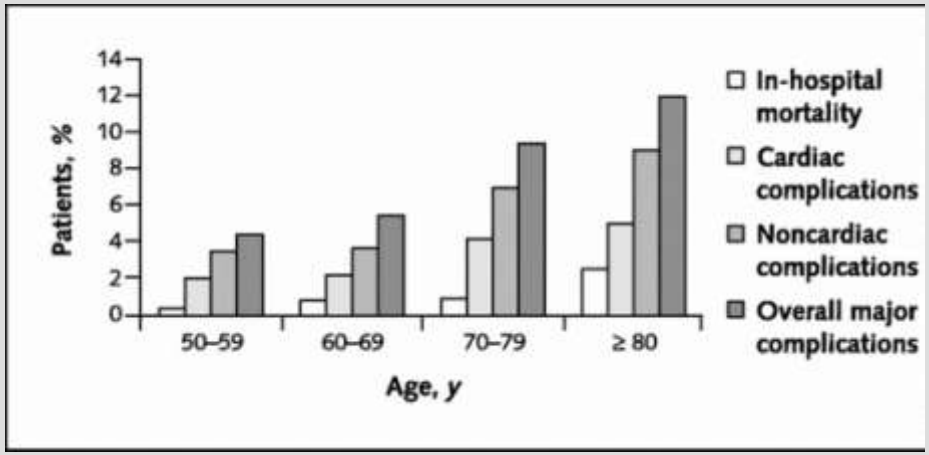
2nd step
CABG-LIMA-Ria
OPCAB

3rd step
Peripheral vasc. surgery

Post-op

Complications- our experiences





Polanczyk, C. A. et. al. Ann Intern Med 2009;134:637-643

Annals of Internal Medicine

Cardiovascular procedures for atherosclerotic disease

Conclusion:

-These severely ill, high-risk patients require careful surgical planning.

-Staged procedures are associated with less morbidity and mortality than synchronous procedures

-The incidence of postoperative stroke is substantially reduced when cardiopulmonary bypass is performed as a second procedure in patients with present carotidal disease and peripheral vascular disease.

-Planned by-pass surgery is safe in patients with peripheral vascular disease, with good results.

-Patients with stable or asymptomatic AAA and CAD requiring open repair may be managed with a staged approach with CABG and AAA repair within two weeks to minimize rupture risk.

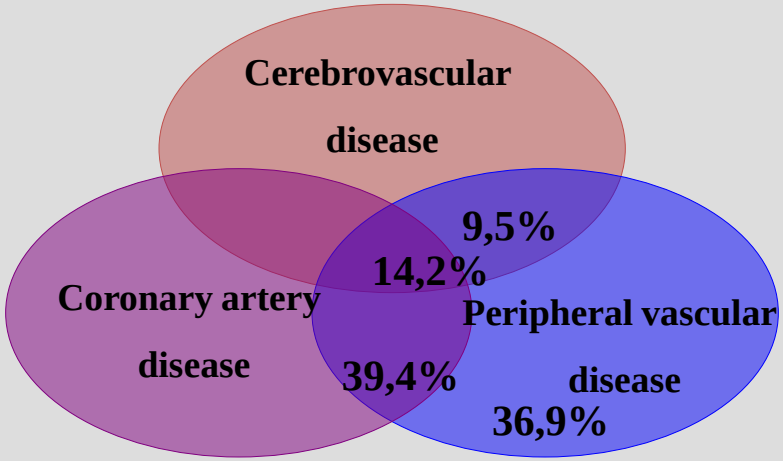
Cardiovascular procedures for atherosclerotic disease

Conclusion:

Our experience showed that performed operative procedures on patients with advanced atherosclerotic disease in cardiovascular centers gives better result than in vascular departments.

It is probably due to experience in complete patient evaluation in pre-operative, as well as intra-operative strategy and postoperative treatment

Atherosclerosis is a systemic disease



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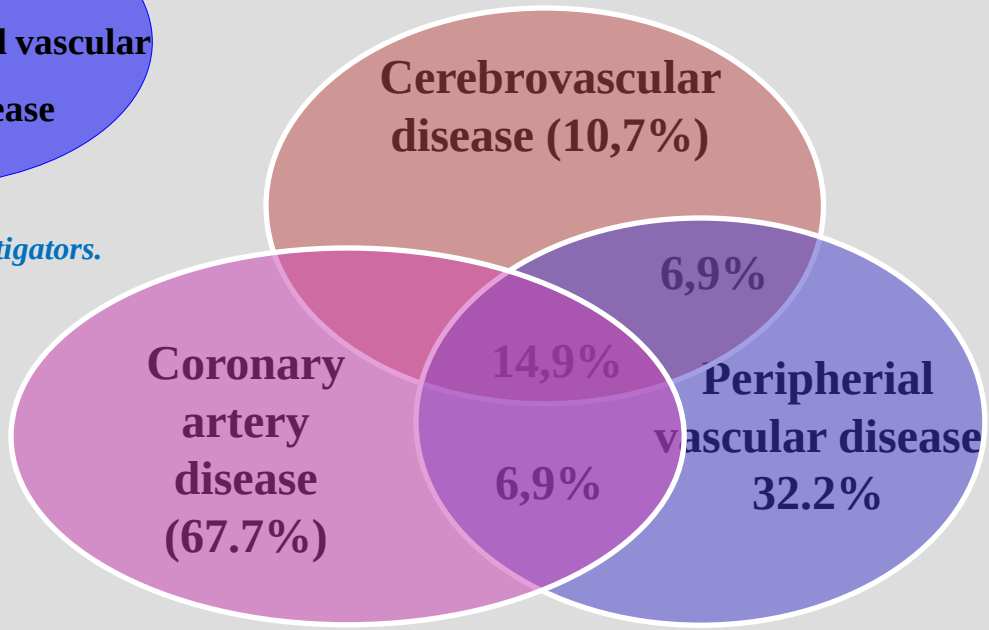

Our results 2000-2012