Gender differences in aortic dissection

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Background

Aortic dissection- Natural history well known

Much insight gained into different patterns of disease

Gender differences in CV disease known- ACS, abdominal aortic aneurysm

Scarce data on gender differences in aortic dissection

Czerny ATS 2009
Eggebrecht 2009
Nienaber Circulation 2004

Acute coronary syndromes

NSTEMI- women less cardiac marker abnormalities, older, less smokers

less likely to have ECG performed within 10 min of hospital presentation

less likely to receive care from a cardiologist

women less likely to undergo PCI, more likely to undergo stress testing

less likely to receive evidence based medication

Blomkalns JACC 2007

Abdominal aortic aneurysms

AAA- more common in men

Outcome in women worse

Faster rate of growth and higher likelihood of rupture

Likelihood of referral and of repair is less

Scott BJS 2002
Wilson JVS 2003
Brown Ann Surg 1999
Semmens BJS 2000

Gender differences in AAD

male gender confers survival benefit

female gender as risk factor for mortality

women older at time of dissection

distribution of type A and type B similar

delay to diagnosis in women

differences in clinical presentation

Mehta Circulation 2002
Nienaber Circulation 2004

Gender differences in AAD

diagnostic strategies similar

women more likely to undergo conservative management

if surgical treatment, no differences according to strategy

mortality after surgical treatment in women higher

Mehta Circulation 2002
Nienaber Circulation 2004

Gender differences in MS

natural history of aortic root growth

women 5mm smaller age adjusted aortic root size at baseline

aortic growth rate in men 0.42mm/a and in women 0.38mm/a

subset of fast growers (15% men, 11% women) significant higher risk of type A AAD (25%)

Meijboom Am J Cardiol 2005

Gender- pregnancy

hormonal and anatomic changes lead to altered hemodynamics

increased shear stress, changes in collagen structure

association of pregnancy and AAD

treshold of 4cm at the level of the root

no association in a population based study in Vienna (0.05 per 100000 person years)

Lind J Obstet Gynecol Reproduc Biol 2001
Meijbom EHJ 2005
Sodeck, Czerny EJCTS 2011

Gender differences- TEVAR

1996-2009

227 patients (female 28%, median age 67a)

aneurysms - 46% Type B dissections – 30% PAU - 24%

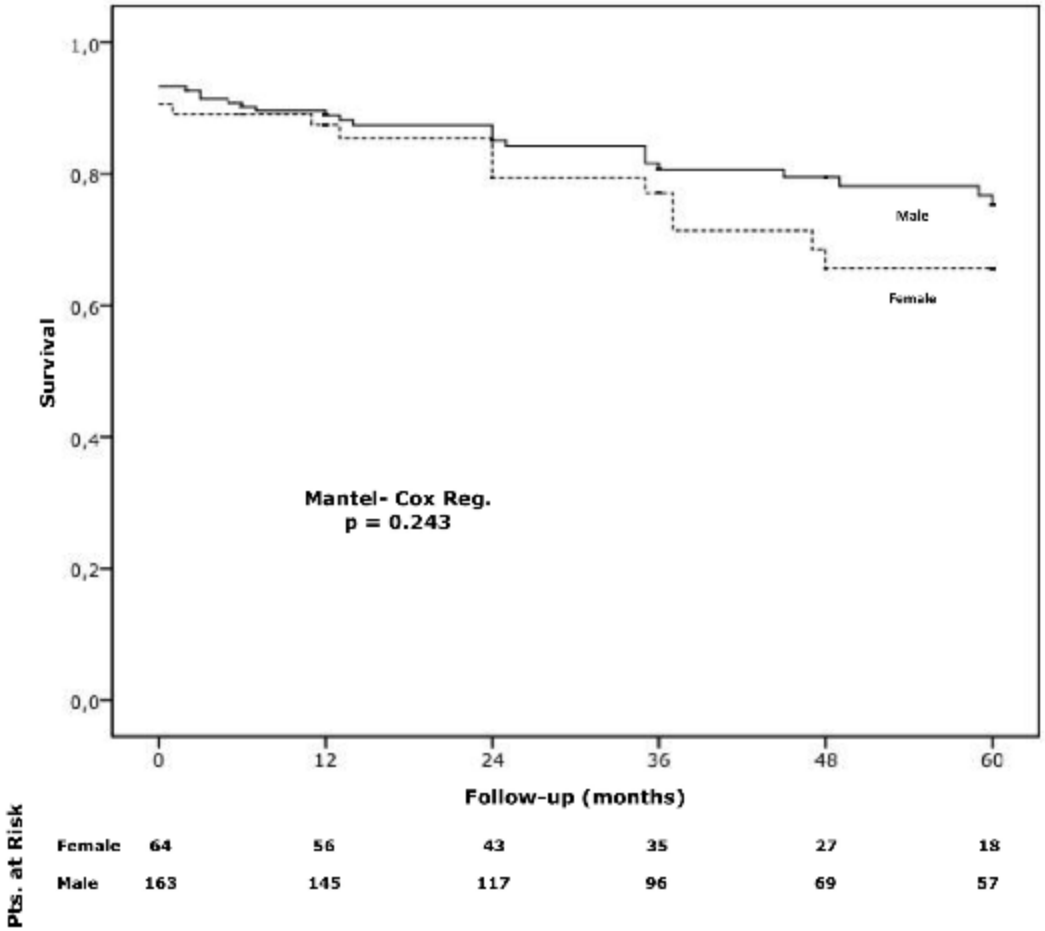
EuroSCORE stratification

Results

variable value	female (n = 64)	male (n = 163)	p-
age	69 (61-75)	66 (56-74)	0.076
COPD (%)	34	34	0.950
coronary artery disease (%)	17	26	0.140
extracardiac arteriopathy (%)	58	77	0.016
unsuitable for open surgery (%)	63	53	0.019
logistic EuroSCORE	18 (13-35)	15 (8-31)	0.066
endoleaks (%)	22	14	0.170
aortic-related death (%)	5	2	0.420

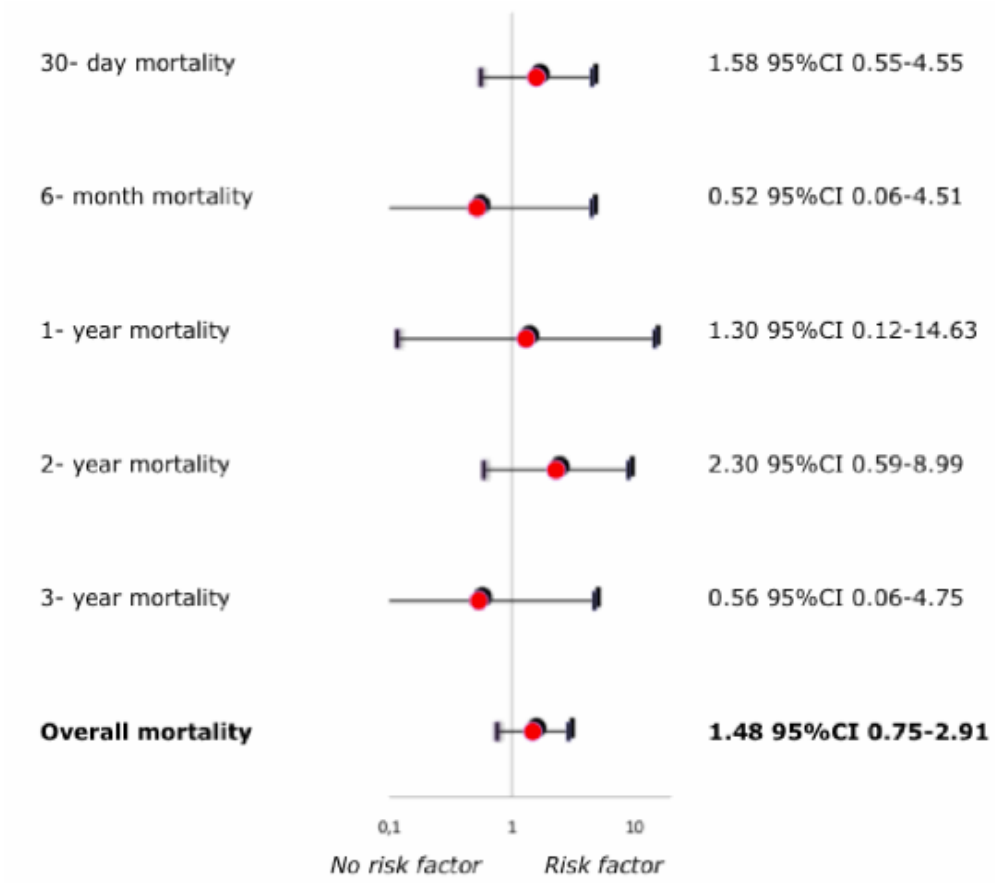
Czerny EJCTS 2011

Results



Czerny EJCTS 2011

Results



Czerny EJCTS 2011

Results

adjusted risk for mortality	OR	95% CI	p-value
female gender			
age (in quartiles)	3.74	1.62-8.65	0.002
male gender			
suitable for open repair	0.22	0.078-0.64	0.005
gender independent			
COPD	4.31	1.01-16.88	0.036

Czerny EJCTS 2011

Conclusions- women and TEVAR

different sex- different risk factors

pregnancy no risk factor

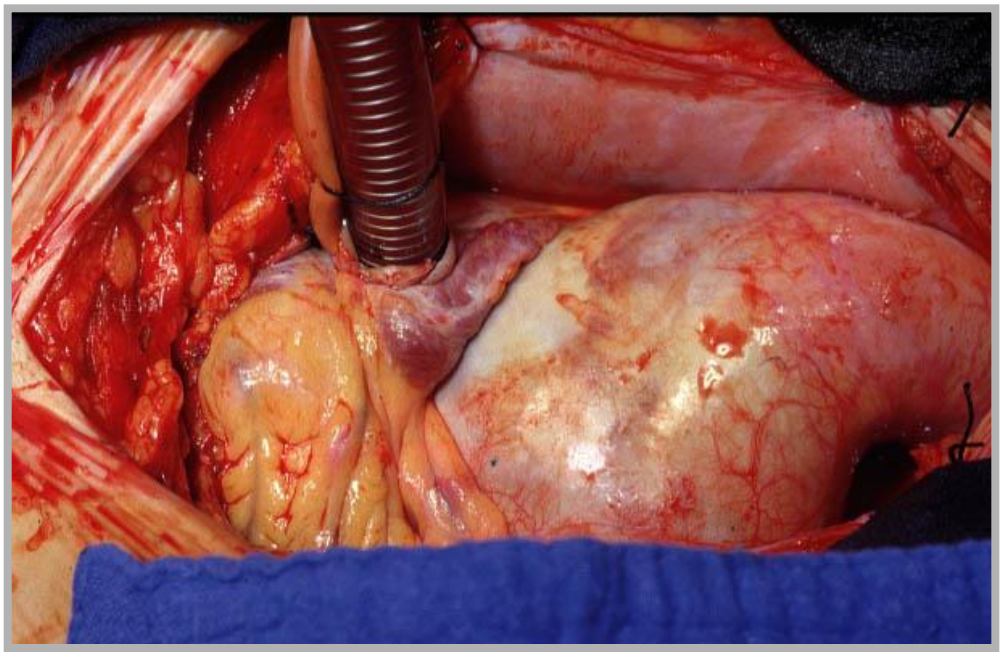
females- advanced age, increased mortality

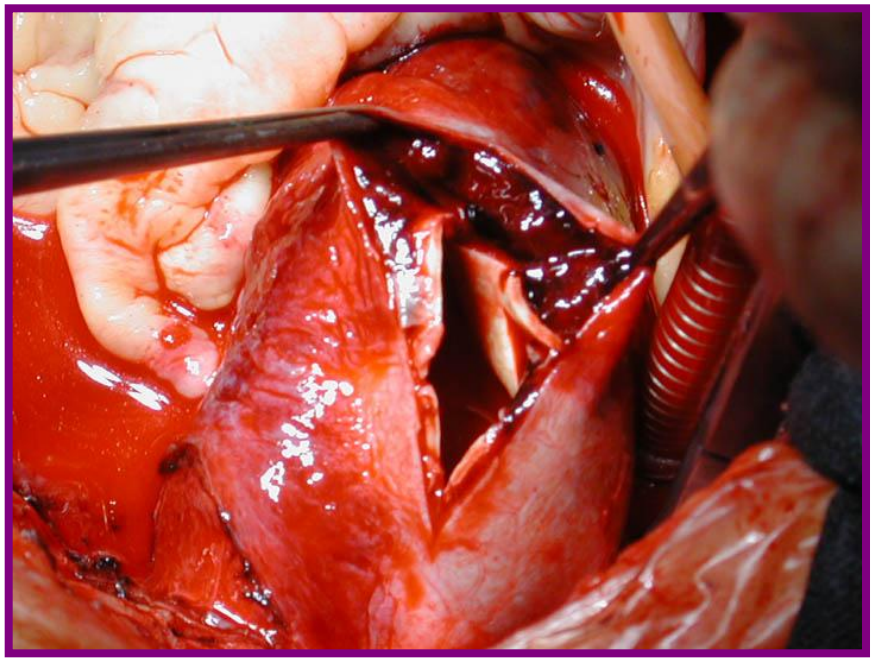
males- suitability for conventional repair, improved outcome

gender independent- COPD

better understanding of individual risk – better outcome

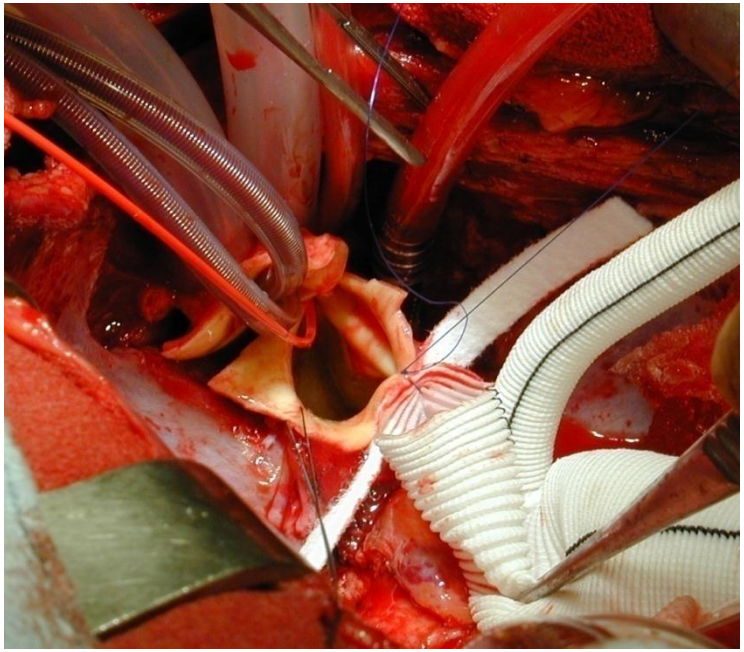
Proximal thoracic aortic surgery

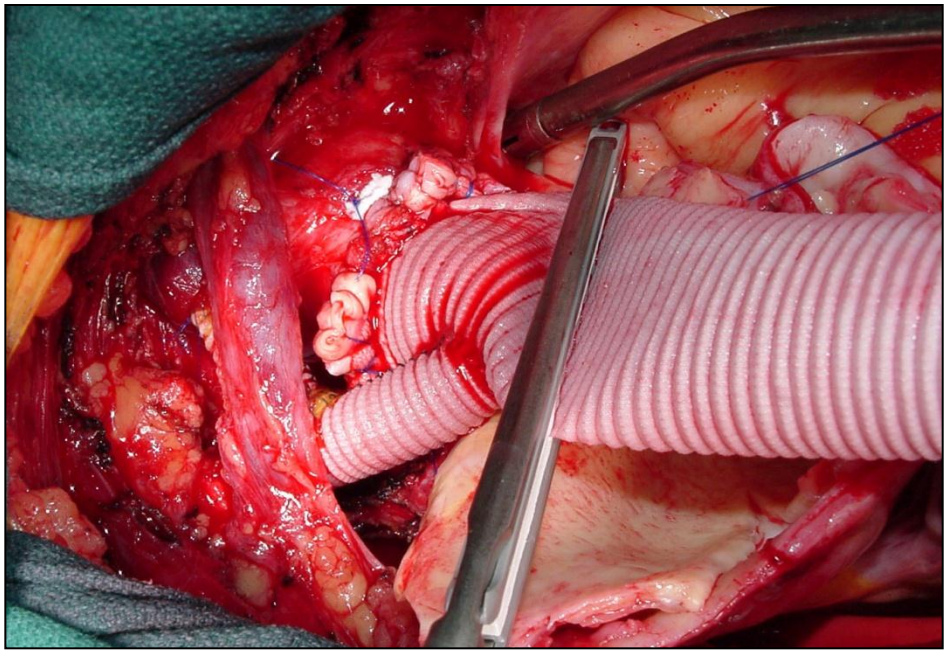




Age, gender & outcome

To determine incidence and risk factors for mortality and neurologic injury in patients undergoing surgical repair with HCA in acute and chronic thoracic aortic pathology stratified to age gender.





Demographics- acute type A dissection

Variable	<75a	>75a	p
Age, mean (±SD)	58 (10)	78 (2)	0.000
Log EuroSCORE (±SD)	28 (18)	62 (19)	0.000
Preop neurologic injury (%)	12	18	0.779
COPD (%)	9	32	0.000
Redo surgery (%)	9	18	0.207

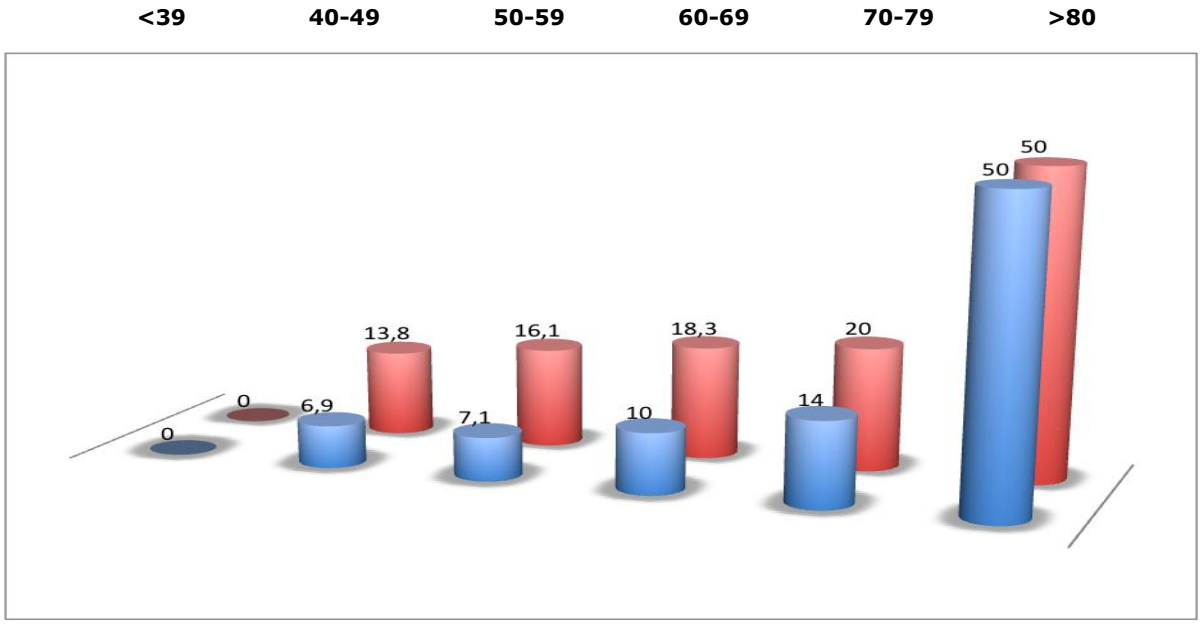
Czerny Circulation 2011

Demographics- chronic ascending aneuryms

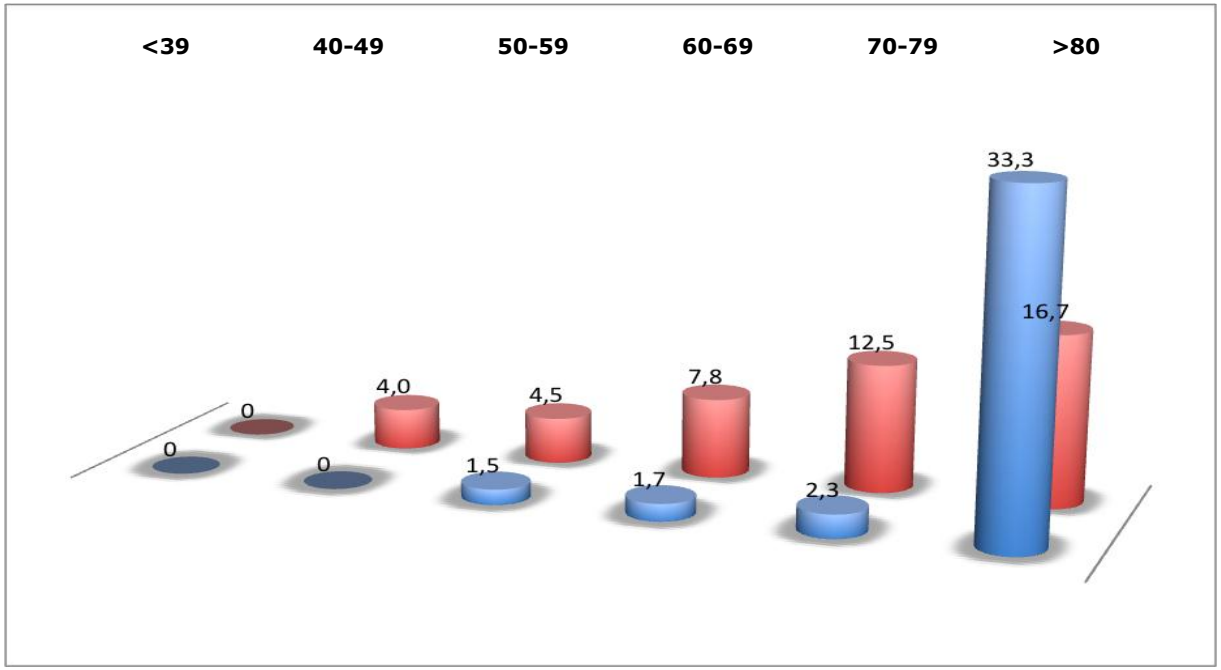
Variable	<75a	>75a	p
Age, mean (±SD)	61 (10)	78 (2)	0.000
Log EuroSCORE (±SD)	15 (12)	28 (17)	0.000
Preop neurologic injury (%)	6	1	0.698
COPD (%)	13	13	0.800
Redo surgery (%)	10	11	0.770

Czerny Circulation 2011

Mortality and neurology- acute type A dissection



Mortality and neurology- aneurysms



Results- Regression mortality

Variable	OR	CI	p
Age ≥ 75a	1.096	0.314-3.825	0.886
Duration of surgery	1.009	1.005-1.012	0.000
HCA duration	1.016	1.001-1.031	0.037
Logistic EuroSCORE	1.035	1.010-1.060	0.005
Indication	0.505	0.154-1.653	0.259
Urgency	1.610	0.466-5.565	0.452
Female gender	1.460	0.550-3.840	0.450

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Results- Regression neurologic injury

Variable	OR	CI	p
Age ≥ 75a	1.019	0.307-3.383	0.976
Duration of surgery	1.003	1.999-1.007	0.095
HCA duration	1.014	1.002-1.027	0.027
Logistic EuroSCORE	1.028	1.005-1.052	0.019
Indication	0.421	0.130-1.369	0.150
Urgency	0.642	0.192-2.150	0.472
Female gender	0.770	0.390-1.500	0.440

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Demographics- acute type A dissection

Variable	men	women	p
Log EuroSCORE (±SD)	32 (21)	33 (19)	0.165
Preop neurologic injury (%)	15	11	0.779
Renal failure (%)	3.5	1.5	0.387
Redo surgery (%)	11.3	7.7	0.620

Results- Regression mortality- type A

Variable	OR	CI	p
Female gender	0.133	0.345-5.321	0.310
COPD	2.699	1.549-6.389	0.003
HCA duration	2.035	1.621-7.601	0.001
Logistic EuroSCORE	1.674	1.354-4.639	0.005

Results- Regression neurologic injury- type A

Variable	OR	CI	p
Female gender	0.056	0.039-1.500	3.303
COPD	0.688	0.523-7.565	0.313
HCA duration	1.213	1.621-7.601	0.001
Logistic EuroSCORE	1.674	1.134-9.981	0.029

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Conclusions

Age not associated with prohibitive risk

Acute or chronic proximal aortic pathology

female gender- no risk factor for mortality in acute type A disscetion

Classical risk factors remain decisive