CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 23-25 2014

MARRIOTT RIVE GAUCHE & CONFERENCE CENTER PARIS, FRANCE

100% endo: how can I achieve this?

- M. Lachat, FECTS, FEBVS
- &
- Vascular Specialists UHZ

Disclosures

- University Hospital Employee
- Advisory Board: JOTEC
- Consultant: Gore, Medtronic Academia
- Research grant: Philips

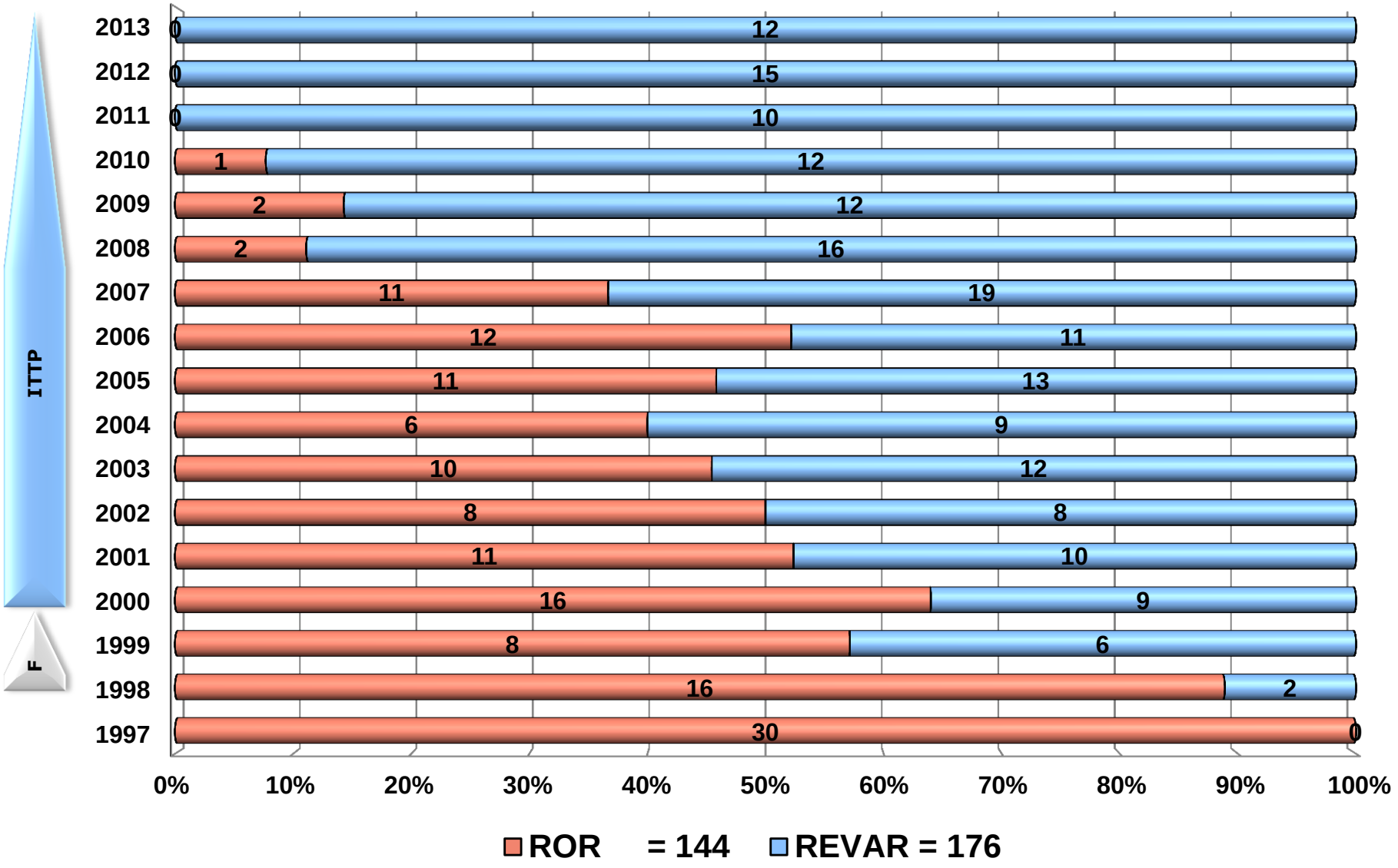
rAAA debate

RCT

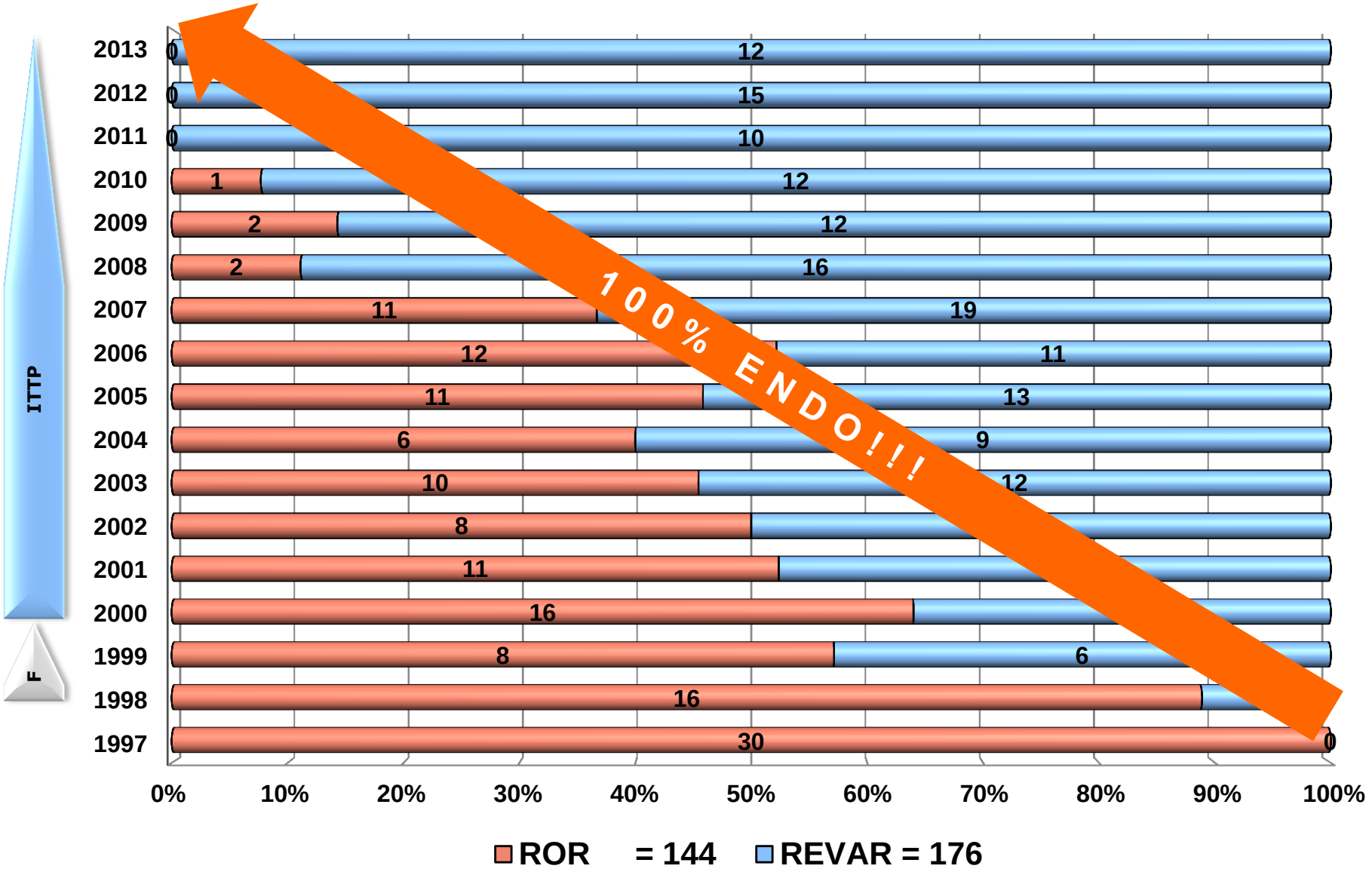
Real Life

100% endo?

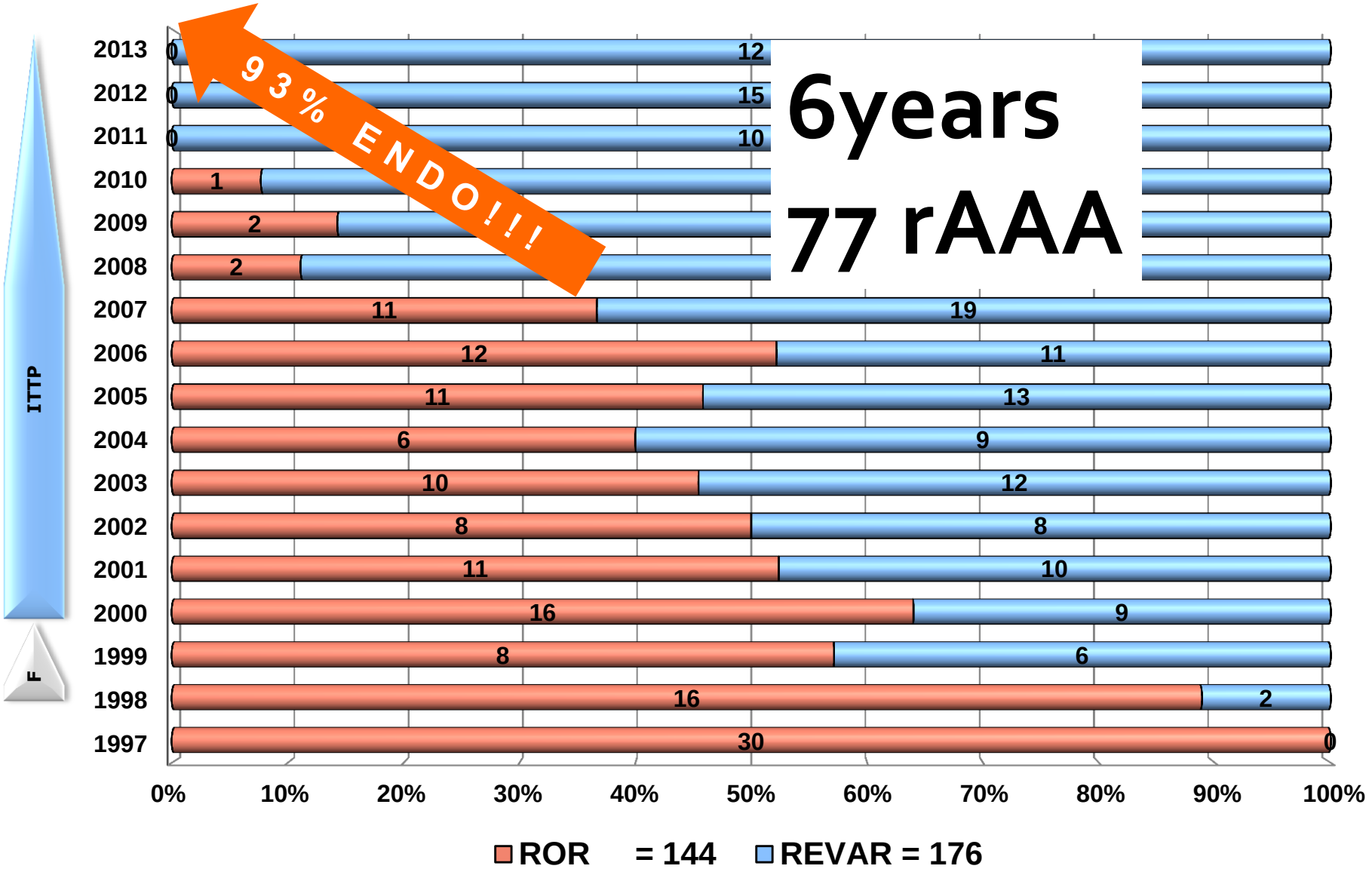
UHZ RAAA experience 1997-2013



UHZ RAAA experience 1997-2013



UHZ RAAA experience 1997-2013

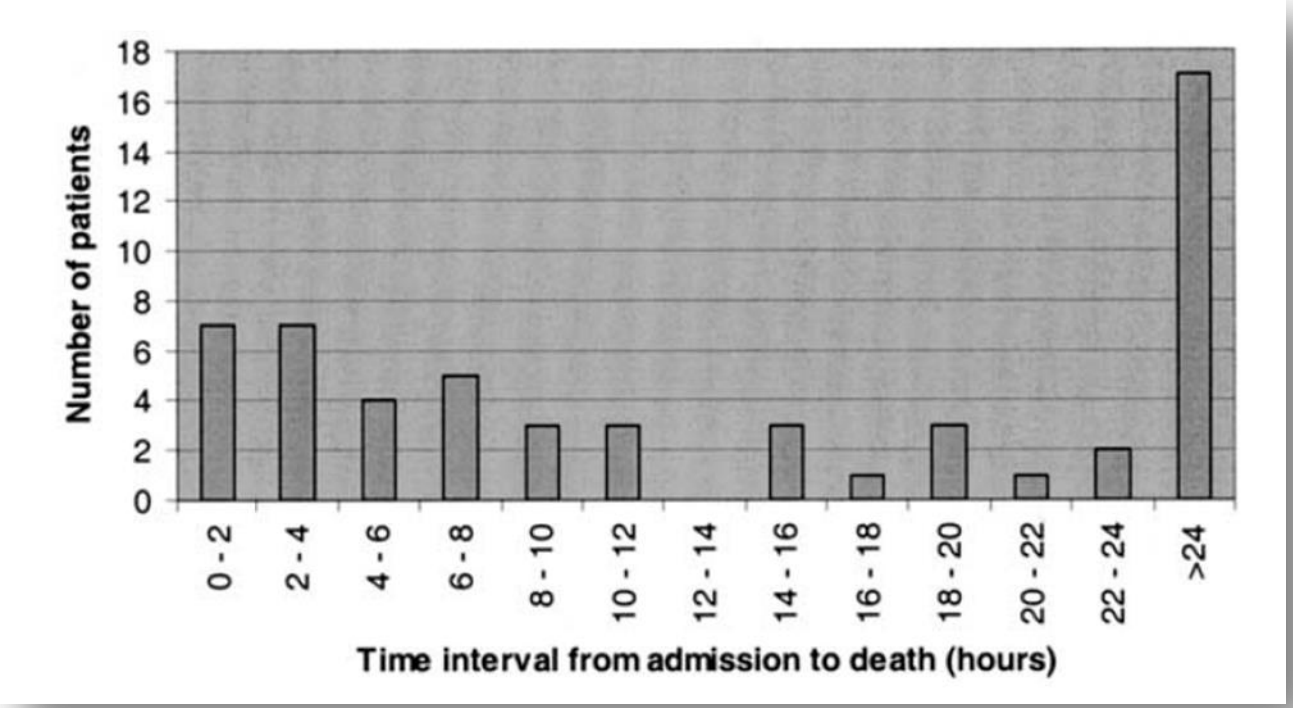


4 KEY POINTS

- Time
- Imaging
- Devices and techniques
- Endoleaks

TIME?!

“no- treatment” in rAAA patients considered unfit (56)



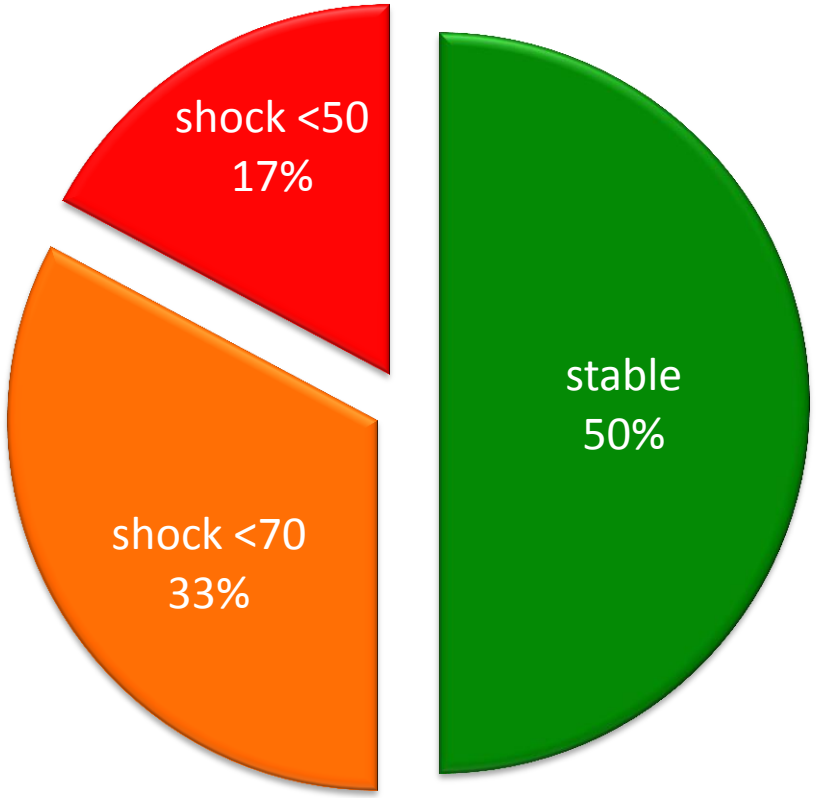
3%/hour mortality rate during first 6 hours after admission!!!

Lloyd GM et al, J Vasc Surg 2004;39,788-791

Hypotensive hemostasis

- **permissive hypovolemia**
  - **No or little infusions**

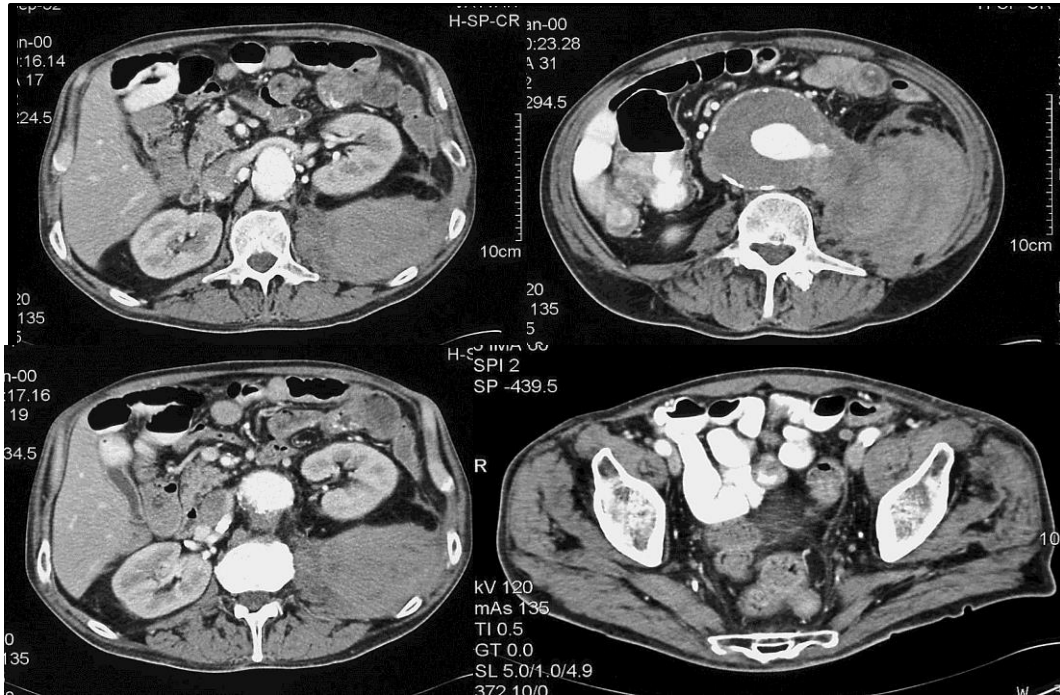
- **controled hypotension**
  - **MAP - >50 mmHg**
  - **SBP - 70mmHg**



Imaging

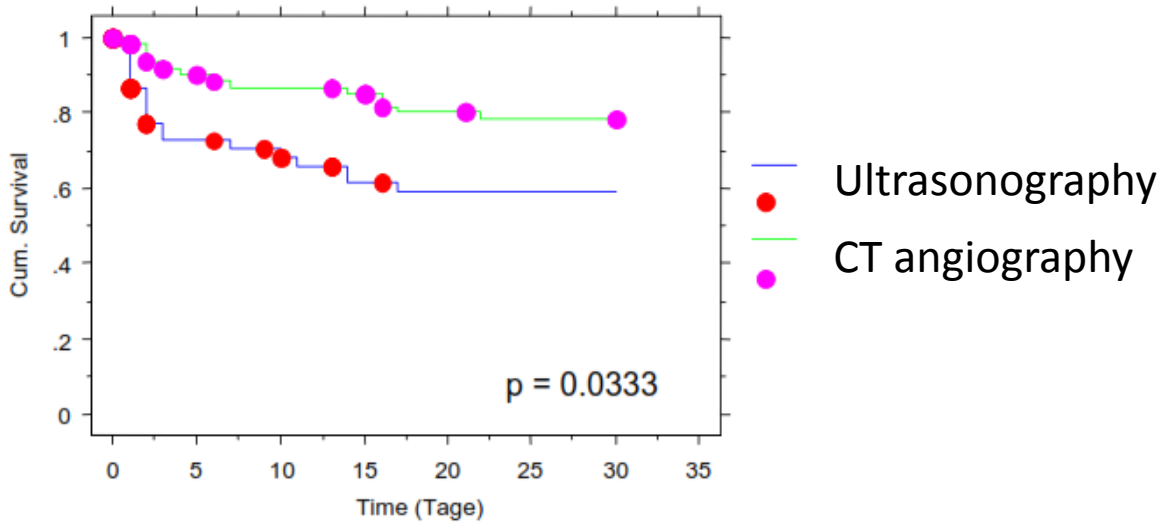
Preoperative CTA

- confirm diagnosis



Imaging type

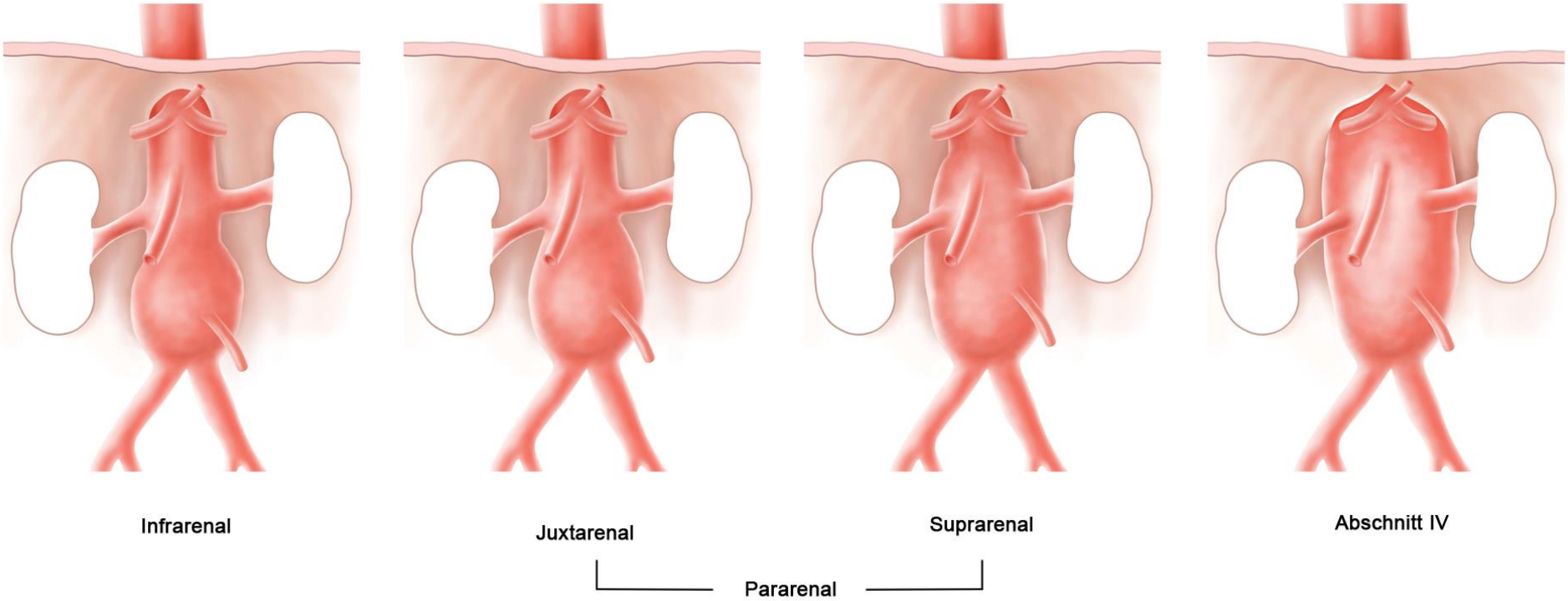
Abbildung 15: 30-Tage-Mortalität aufgeteilt nach Bildgebungsverfahren



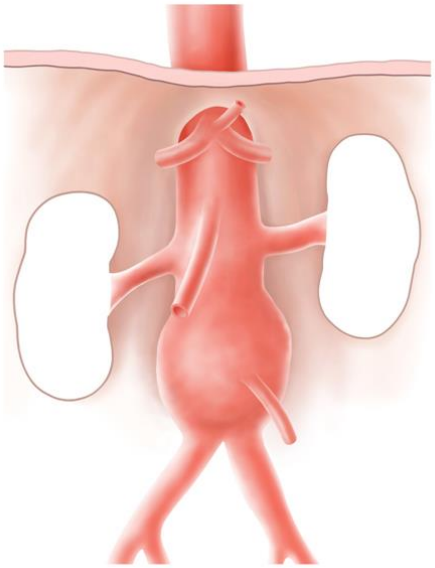
Bildgebungsverfahren	Observations	Events (Tod in 30 Tagen)
Ultrasonography	44	18 (40%)
CT angiography	60	14 (23%)

Cäcilia E Mader, Thesis 2006, RCOS 1997-2002

Type of AAA

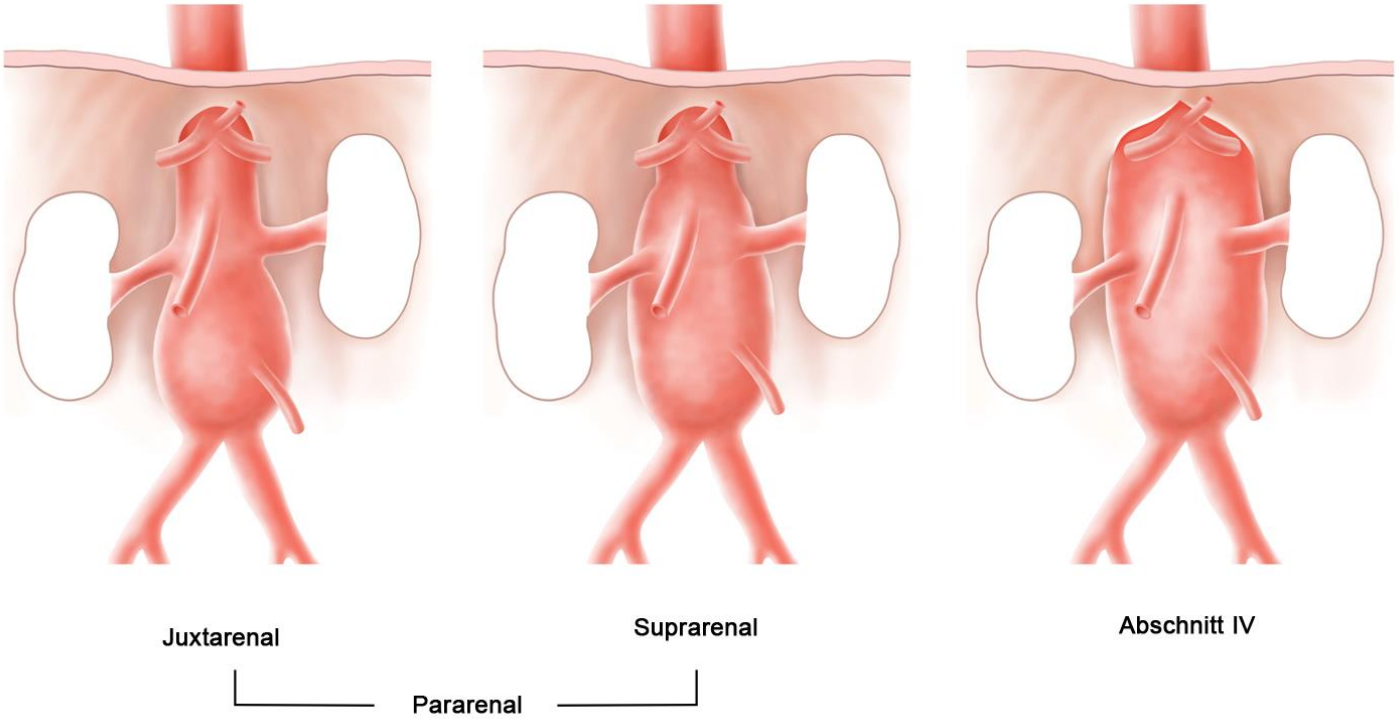

Infrarenal
Juxtarenal
Suprarenal
Abschnitt IV
Pararenal

Good anatomy 4 (r)EVAR

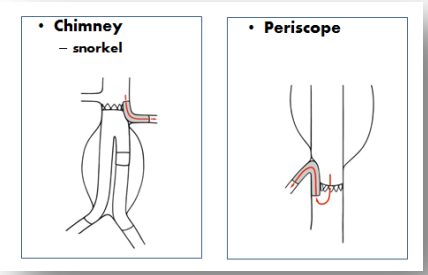


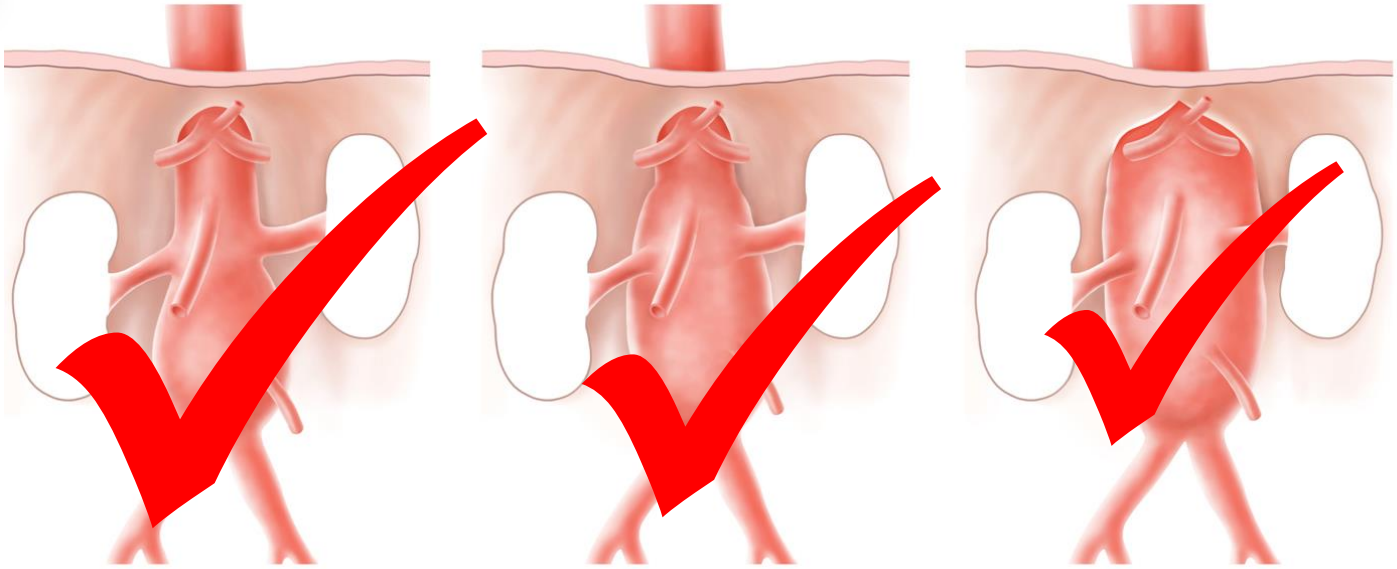
Infrarenal

Anatomical Limitations

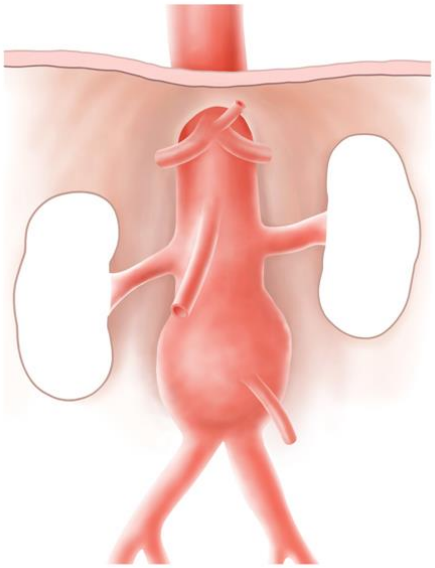


CHIMPS

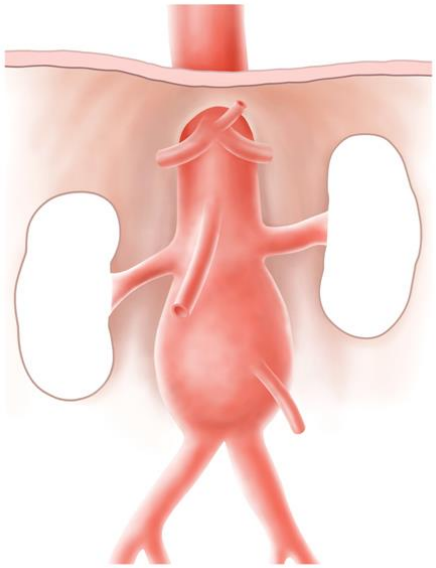

• Chimney
– snorkel
• Periscope


Juxtarenal
Suprarenal
Abschnitt IV
Pararenal

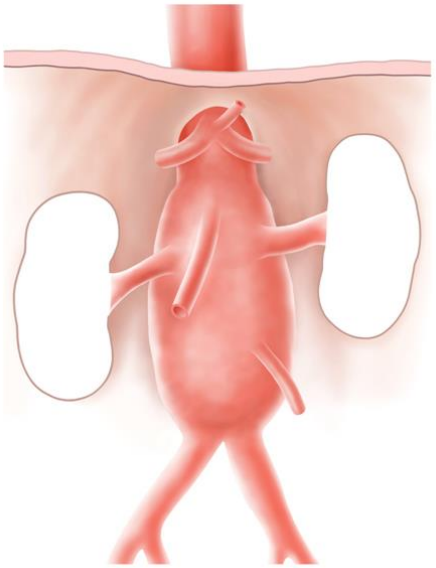
Anatomical Limitations



Infrarenal

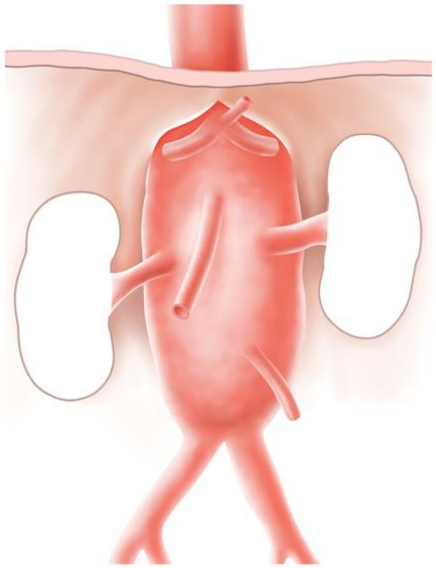


Juxtarenal



Suprarenal

Pararenal



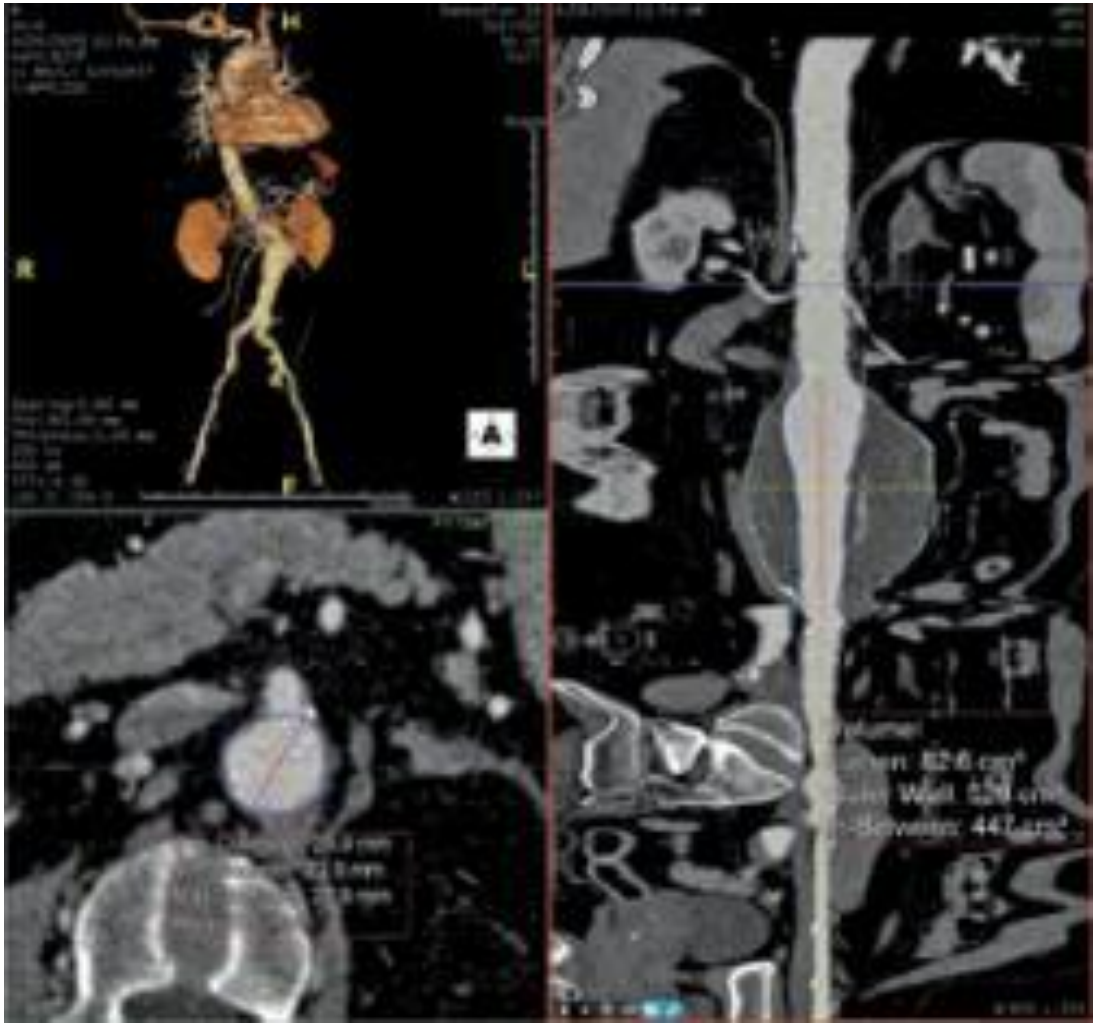
Abschnitt IV

Distal

- bilaterally o ed/ stenosed

?

Preopreative planing

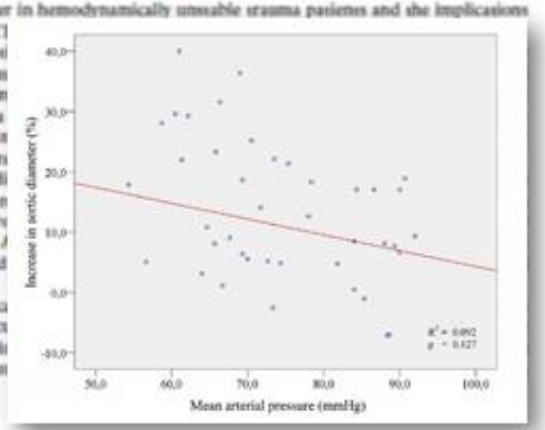


Sizing issue

Aortic endograft sizing in trauma patients with hemodynamic instability

Frederik H. W. Jonker, MD,[a] Hence J. M. Verhagen, MD, PhD,[b] Hamid Mojibian, MD,[a] Kimberly A. Davis, MD,[a] Frans L. Moll, MD, PhD,[c] and Bart E. Muhs, MD, PhD,[a] *New Haven, Conn; and Rotterdam and Utrecht, The Netherlands*

Objectives: To investigate changes in aortic diameter in hemodynamically unstable trauma patients and the implications for sizing of thoracic endovascular aortic repair (TE
Methods: We retrospectively evaluated all trauma pati
pressure <95 mm Hg and a pulse ≥100 beats/m
abdomen both at admission and at another momen
and 2009. The CT examinations were reviewed in a
levels by a cardiovascular radiologist. Differences in
and the control CTs were compared using the pair
Results: Forty-three patients were identified, includi
was 26 ± 15, the mean pulse and blood pressure wer
aortic diameter was significantly larger at the contro
hemodynamically unstable, at all evaluated levels. A
diameter was most consistent at the level of the mid
of the infrarenal aorta (+12.6%, $P = .004$).
Conclusions: The aortic diameter decreases dramatic
aortic diameter could theoretically lead to inaccu
hemodynamically unstable TTAI patients requiri
aortic diameters in individual hemodynamically u
2010;52:39-44.)



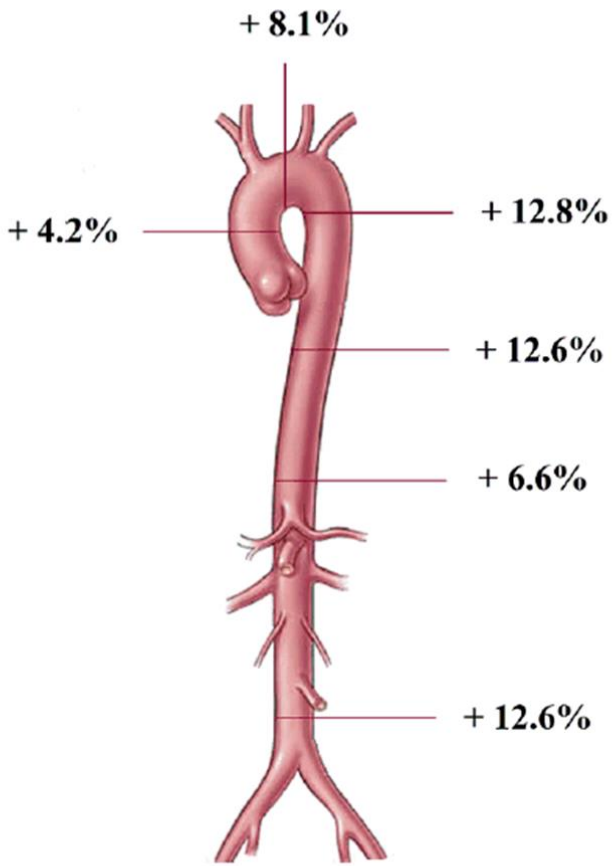


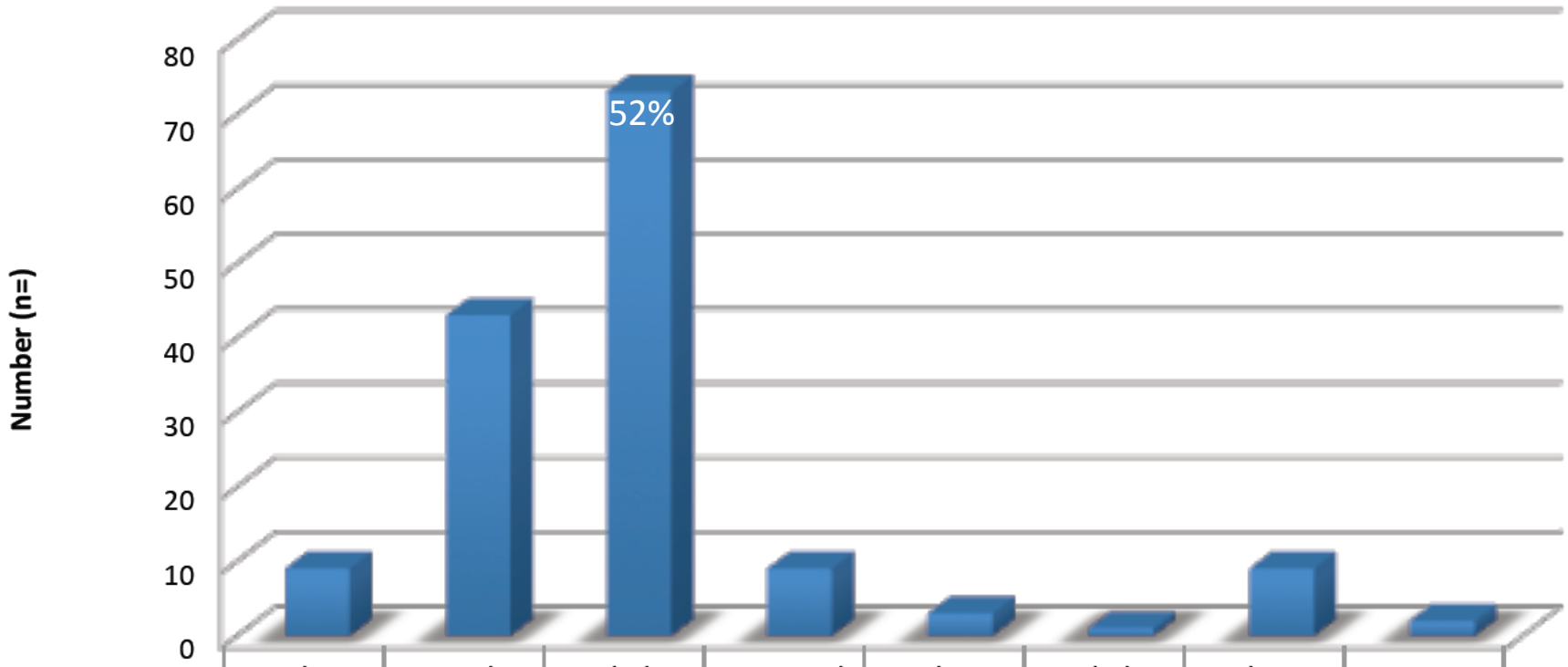
Fig 2. Mean increase in aortic diameter in patients with a pulse ≥130/min. The mean increase in aortic diameter was most consistent at the level of the mid descending thoracic aorta ($P = .003$), and at the level of the infrarenal aorta ($P = .004$), the mean increase in aortic diameter failed to reach statistical significance at the remaining levels.

Devices and techniques

Endovascular material

- Standard endovascular material
- Endoclamp
  - Reliant or E-xpand balloon
  - 12 Fr 45 cm long sheath
- **Appropriate devices**
  - Standard (off-the-shelf) devices
    - Abdominal : 36mm-30mm-26mm-22mm (n=1, short)
    - Iliac : 24-18-13 (n=2)
    - Coils
    - CHIMPS
      - Peripheral stentgrafts und BMS (relining)
      - Thoracic: 44mm-40mm (n=1, short)

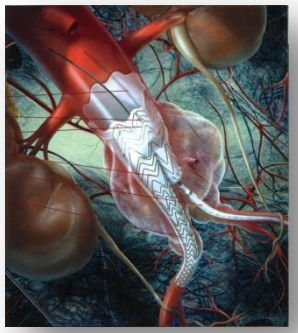
RAAA 1998-2012 UHZ



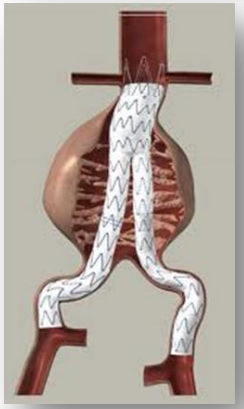
	Zenith AUI	Zenith	Excluder	Vanguard bifurcated	Talent	Excluder cuff	Endurant	Evita
Datenreihe1	9	43	73	9	3	1	9	2

Device selection

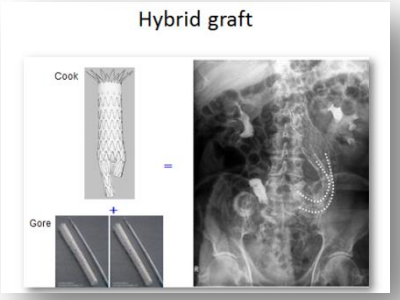
- Infrarenal fixation
  - Neck 8-15mm



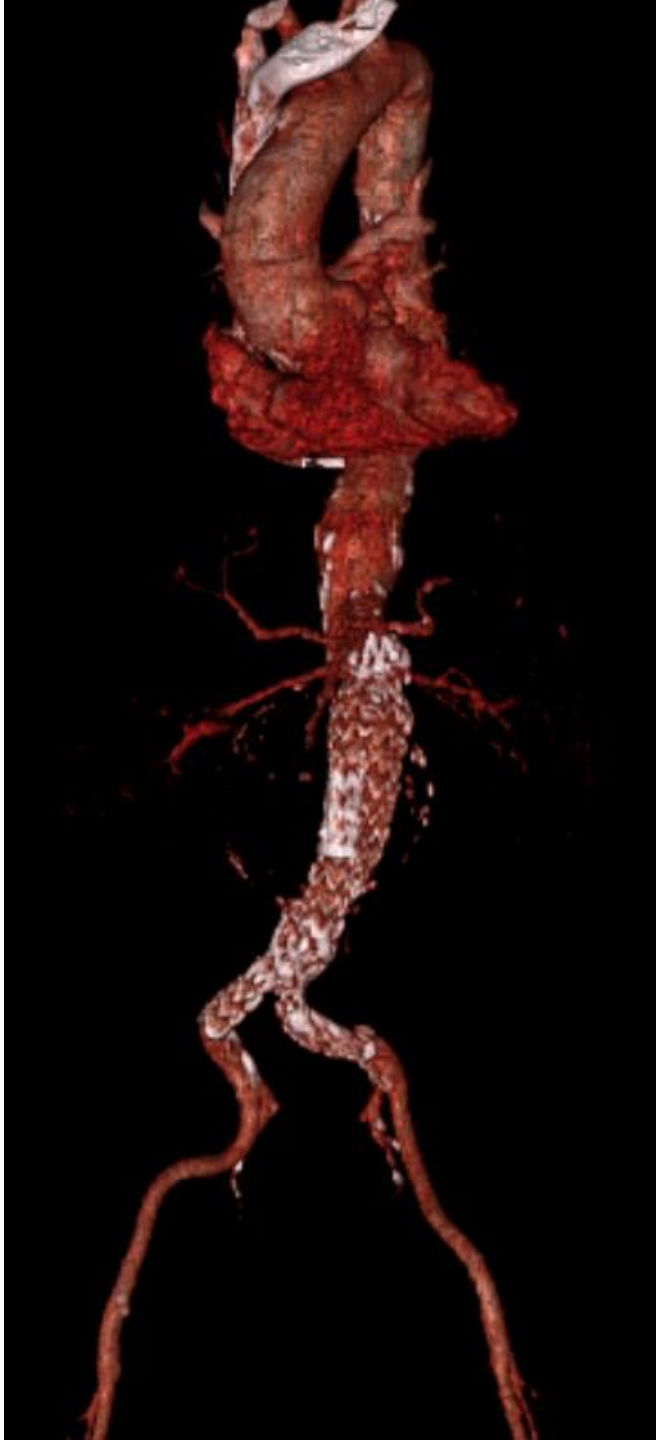
- Suprarenal fixation
  - Neck 4mm-7mm



- Hybrid devices
  - Challenging anatomy for 1 device type




I253

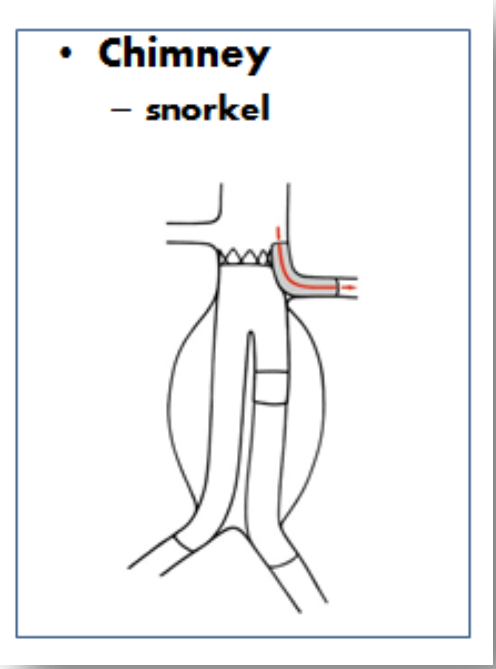


Challenging neck

Infrarenal neck IRF TRF Chimney

≤ 3mm

+



SECS

Viabahn (5cm-10cm)	Target vessel
5mm	4.0mm - 4.7mm
6mm	4.8mm – 5.5mm
7mm	5.6mm – 6.5mm
8mm	6.6mm – 7.5mm

SIZING AORTIC SG

MEDTRONIC

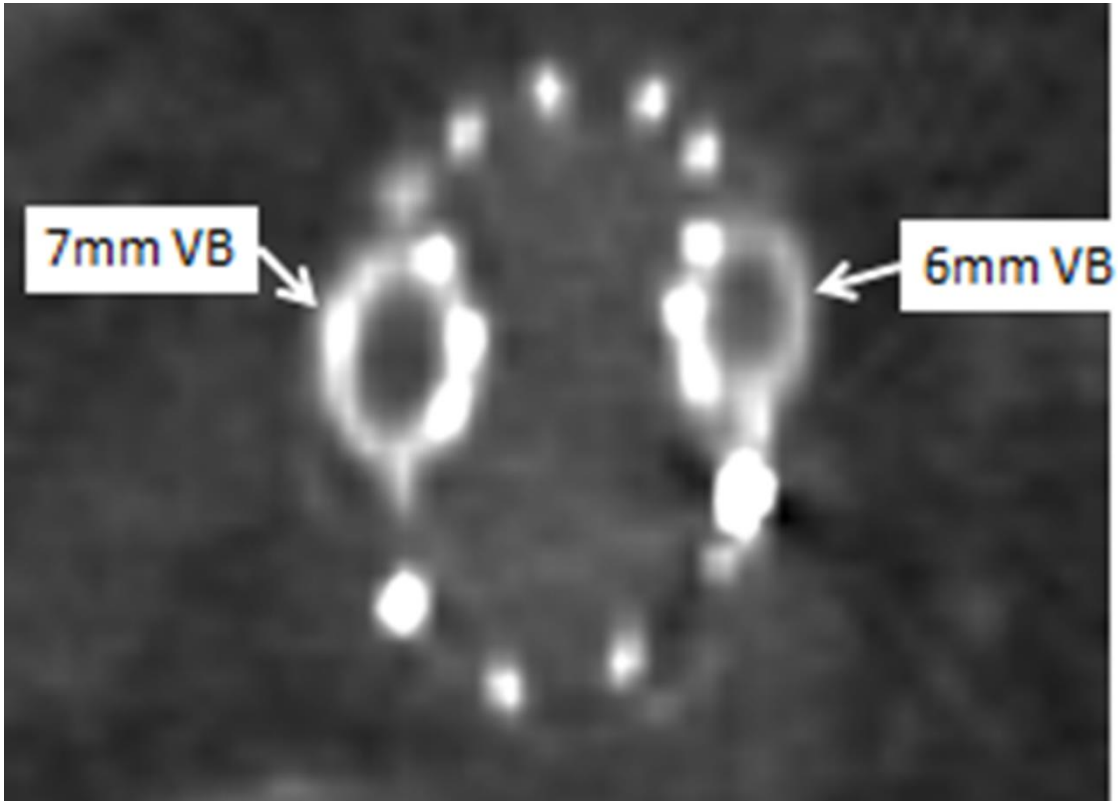
GORE

JOTEC

COOK

MAD + 1/2 PG diameter

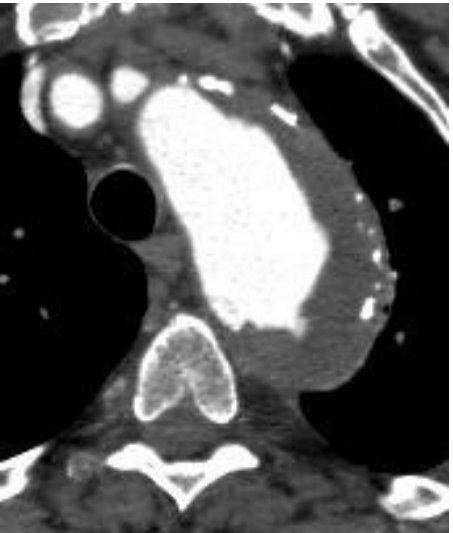
24mm+[(7mm+6mm):2]= 30.5mm

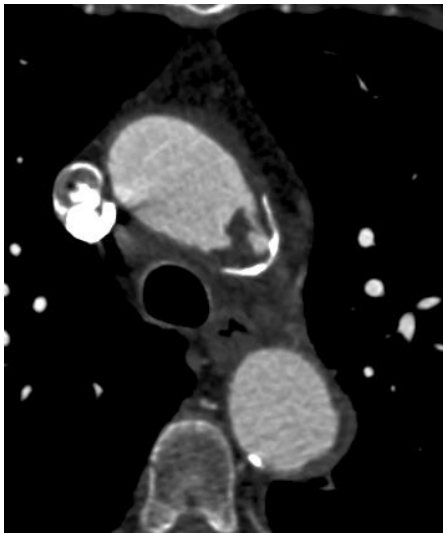
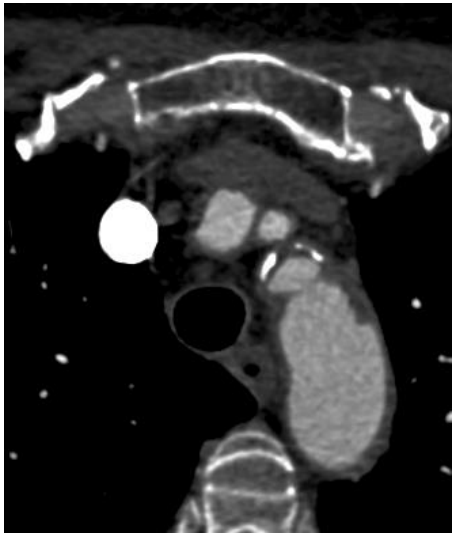


MAD : Mean Aortic Diameter

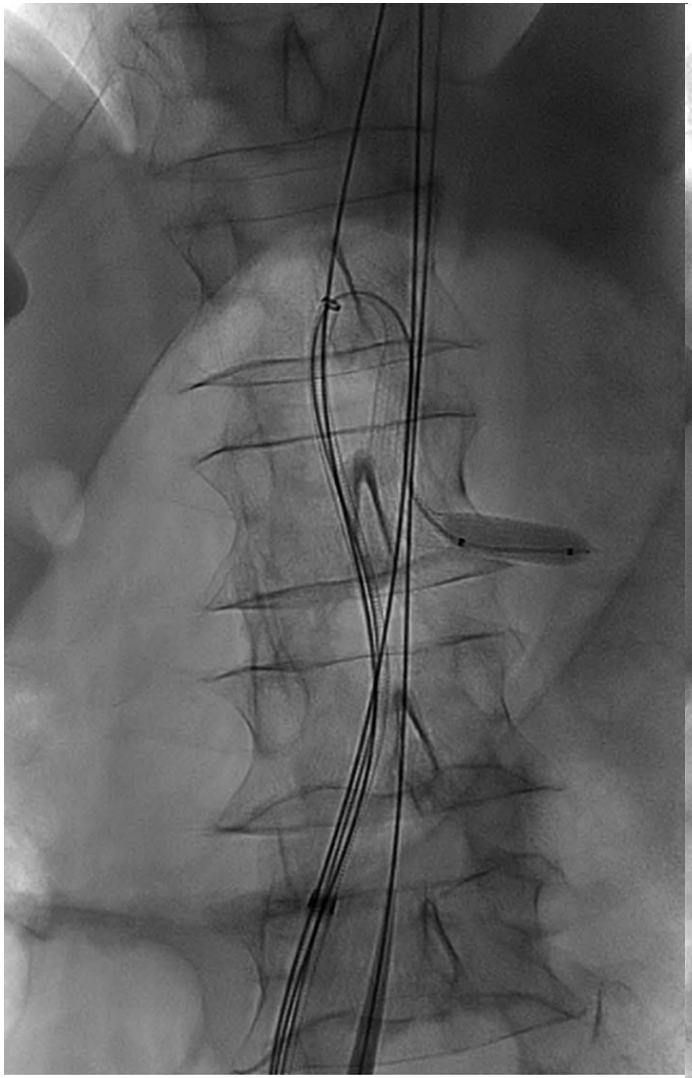
Limitations (Chimney)

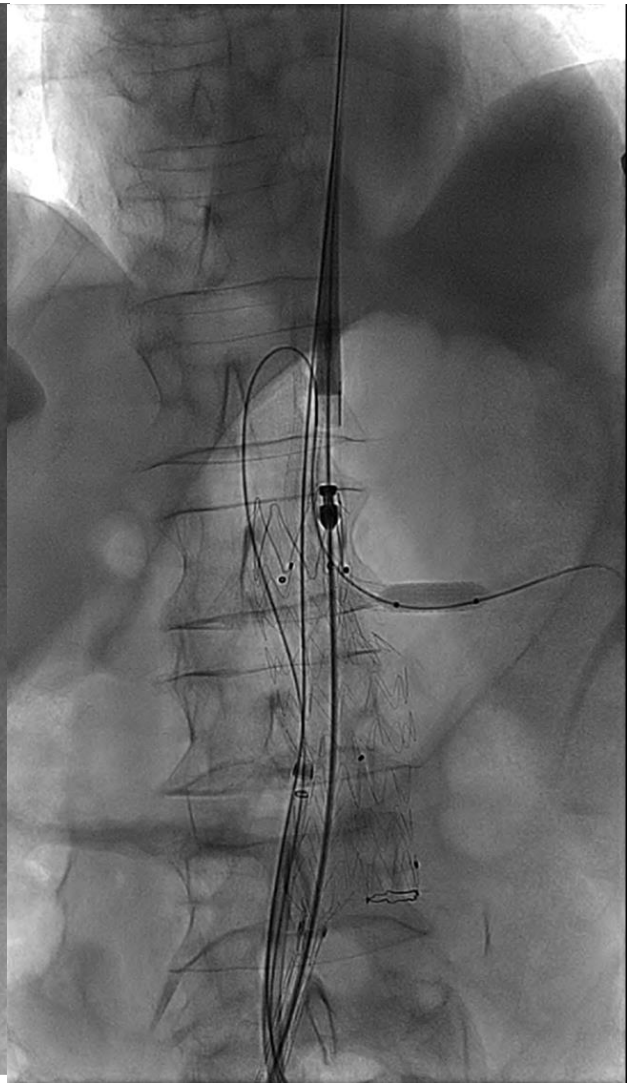
- Diseased arch and SA branches



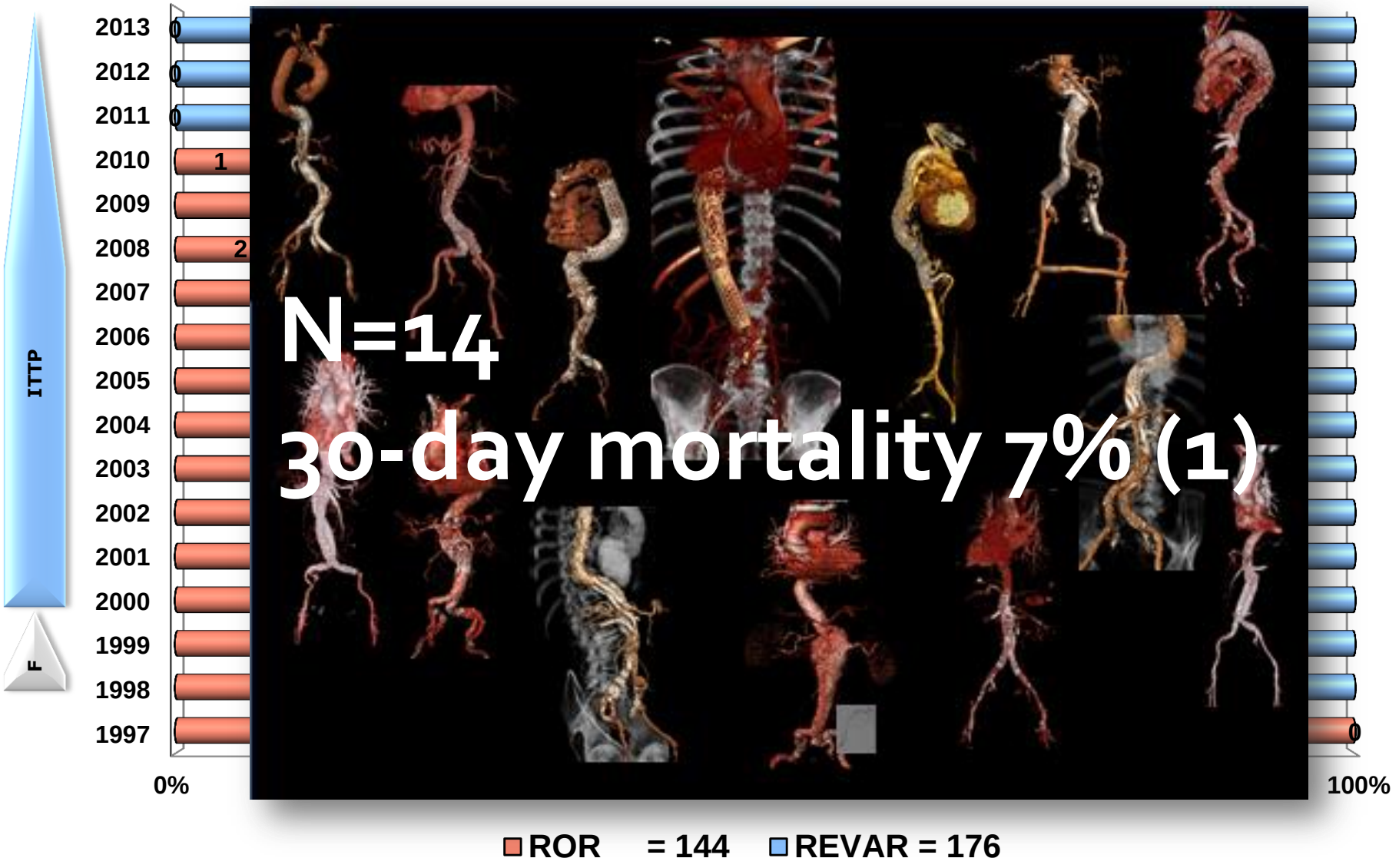




TRANSFEMORAL LIFT TECHNIQUE

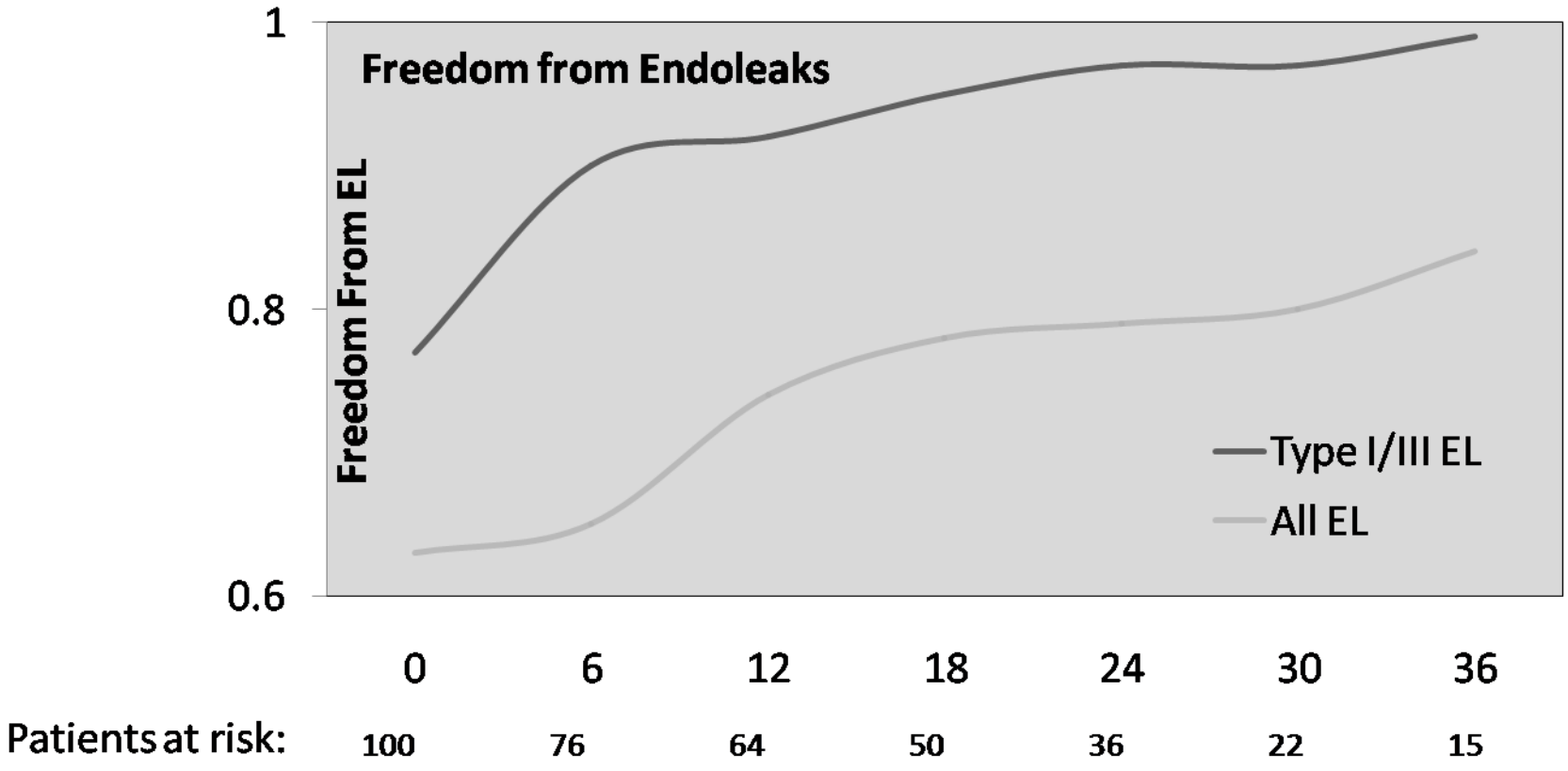




CHIMPS for rAAA 2008-2013

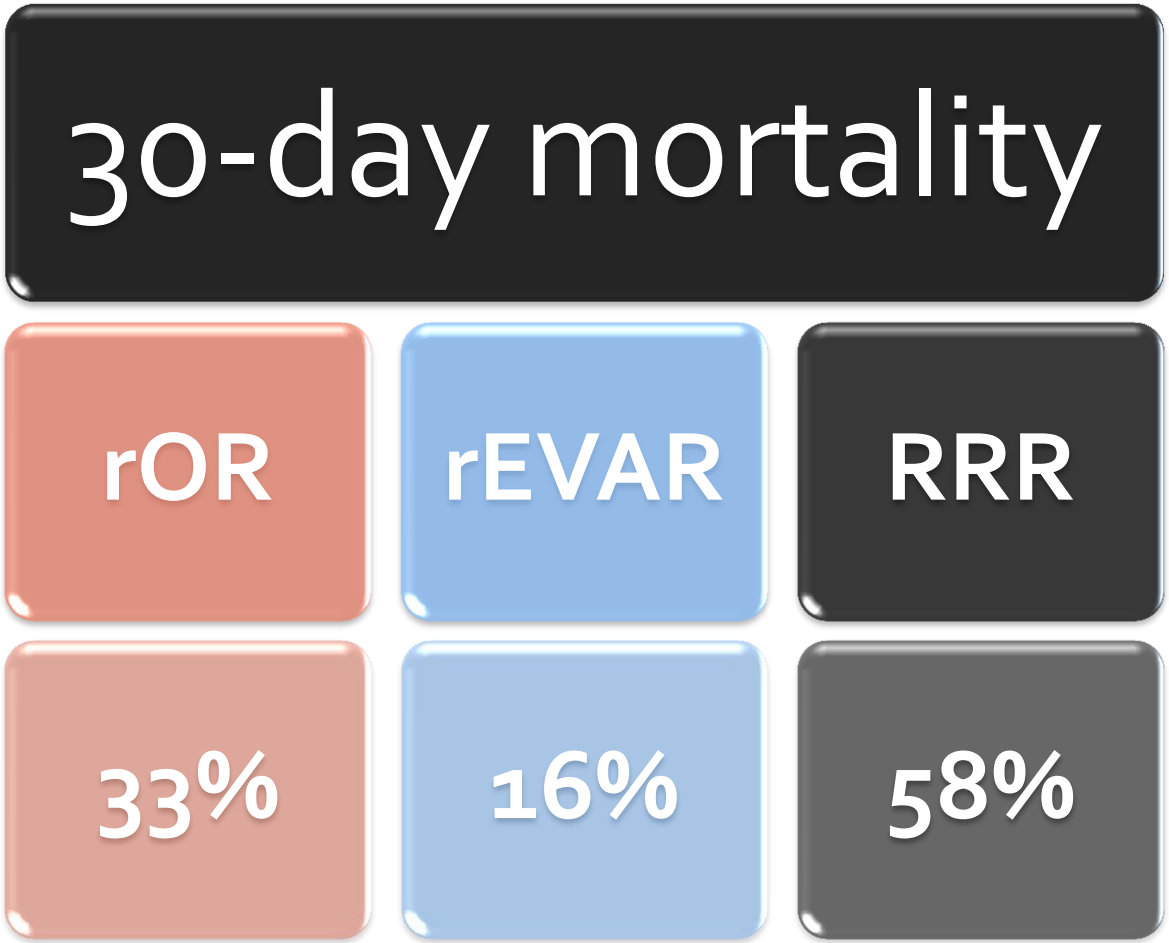


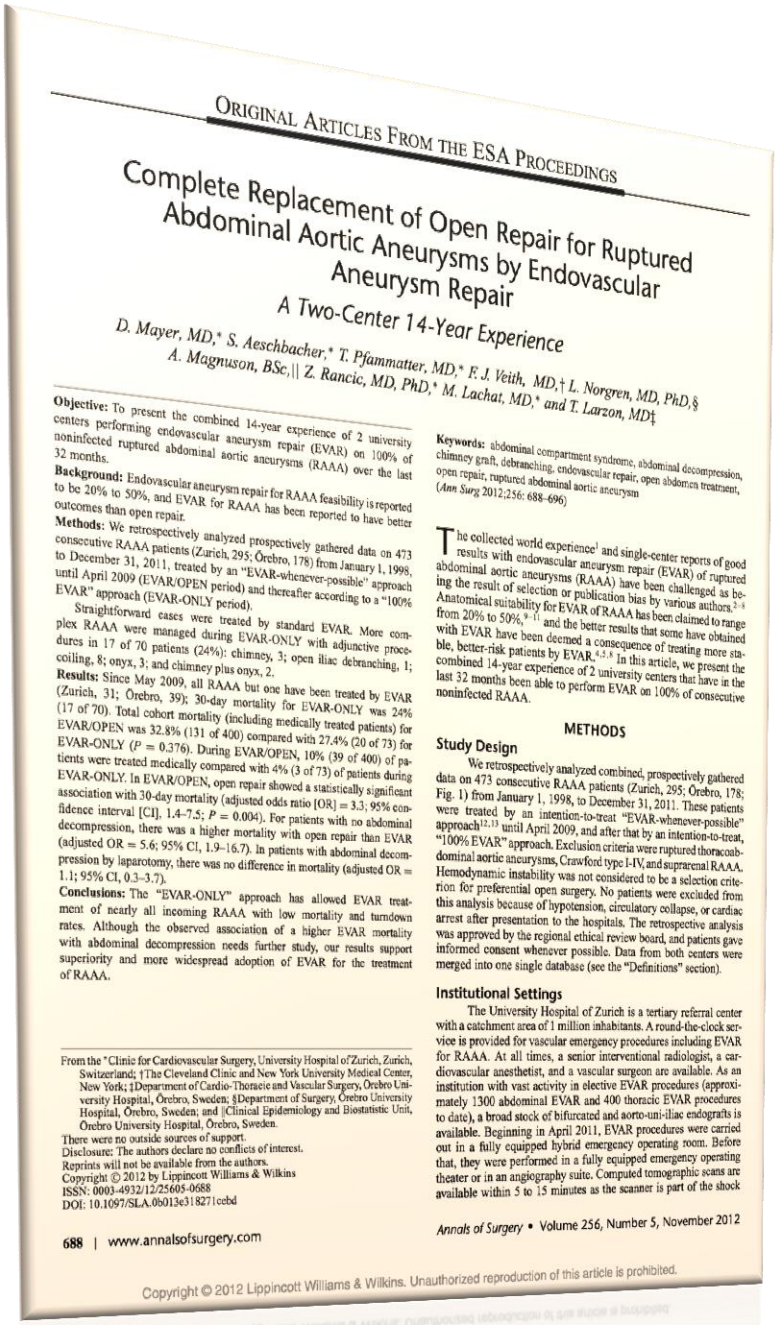
Management of ELs




Results

UHZ rAAA experience 1997-2013





ORIGINAL ARTICLES FROM THE ESA PROCEEDINGS

Complete Replacement of Open Repair for Ruptured Abdominal Aortic Aneurysms by Endovascular Aneurysm Repair

A Two-Center 14-Year Experience

D. Mayer, MD, S. Aeschbacher,* T. Pfammatter, MD,* F. J. Veith, MD,† L. Norgren, MD, PhD,§ A. Magnuson, BSc,|| Z. Rancic, MD, PhD,* M. Lachat, MD,* and T. Larzon, MD‡*

Objective: To present the combined 14-year experience of 2 university centers performing endovascular aneurysm repair (EVAR) on 100% of noninfected ruptured abdominal aortic aneurysms (RAAA) over the last 32 months.

Background: Endovascular aneurysm repair for RAAA feasibility is reported to be 20% to 50%, and EVAR for RAAA has been reported to have better outcomes than open repair.

Methods: We retrospectively analyzed prospectively gathered data on 473 consecutive RAAA patients (Zurich, 295; Örebro, 178) from January 1, 1998, to December 31, 2011, treated by an "EVAR-whenever-possible" approach until April 2009 (EVAR/OPEN period) and thereafter according to a "100% EVAR" approach (EVAR-ONLY period).

Straightforward cases were treated by standard EVAR. More complex RAAA were managed during EVAR-ONLY with adjunctive procedures in 17 of 70 patients (24%): chimney, 3; open iliac debranching, 1; coiling, 8; onyx, 3; and chimney plus onyx, 2.

Results: Since May 2009, all RAAA but one have been treated by EVAR (Zurich, 31; Örebro, 39); 30-day mortality for EVAR-ONLY was 24% (17 of 70). Total cohort mortality (including medically treated patients) for EVAR/OPEN was 32.8% (131 of 400) compared with 27.4% (20 of 73) for EVAR-ONLY ($P = 0.376$). During EVAR/OPEN, 10% (39 of 400) of patients were treated medically compared with 4% (3 of 73) of patients during EVAR-ONLY. In EVAR/OPEN, open repair showed a statistically significant association with 30-day mortality (adjusted odds ratio [OR] = 3.3; 95% confidence interval [CI], 1.4–7.5; $P = 0.004$). For patients with no abdominal decompression, there was a higher mortality with open repair than EVAR (adjusted OR = 5.6; 95% CI, 1.9–16.7). In patients with abdominal decompression by laparotomy, there was no difference in mortality (adjusted OR = 1.1; 95% CI, 0.3–3.7).

Conclusions: The "EVAR-ONLY" approach has allowed EVAR treatment of nearly all incoming RAAA with low mortality and turndown rates. Although the observed association of a higher EVAR mortality with abdominal decompression needs further study, our results support superiority and more widespread adoption of EVAR for the treatment of RAAA.

From the *Clinic for Cardiovascular Surgery, University Hospital of Zurich, Zurich, Switzerland; †The Cleveland Clinic and New York University Medical Center, New York; ‡Department of Cardio-Thoracic and Vascular Surgery, Örebro University Hospital, Örebro, Sweden; §Department of Surgery, Örebro University Hospital, Örebro, Sweden; and ||Clinical Epidemiology and Biostatistic Unit, Örebro University Hospital, Örebro, Sweden.

There were no outside sources of support.
Disclosure: The authors declare no conflicts of interest.
Reprints will not be available from the authors.

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DOI: 10.1097/SLA.0b013e31827 1cebd

Keywords: abdominal compartment syndrome, abdominal decompression, chimney graft, debranching, endovascular repair, open abdomen treatment, open repair, ruptured abdominal aortic aneurysm

(*Ann Surg* 2012;256: 688–696)

The collected world experience[1] and single-center reports of good results with endovascular aneurysm repair (EVAR) of ruptured abdominal aortic aneurysms (RAAA) have been challenged as being the result of selection or publication bias by various authors.[2–8] Anatomical suitability for EVAR of RAAA has been claimed to range from 20% to 50%,[9–11] and the better results that some have obtained with EVAR have been deemed a consequence of treating more stable, better-risk patients by EVAR.[4,5,8] In this article, we present the combined 14-year experience of 2 university centers that have in the last 32 months been able to perform EVAR on 100% of consecutive noninfected RAAA.

METHODS

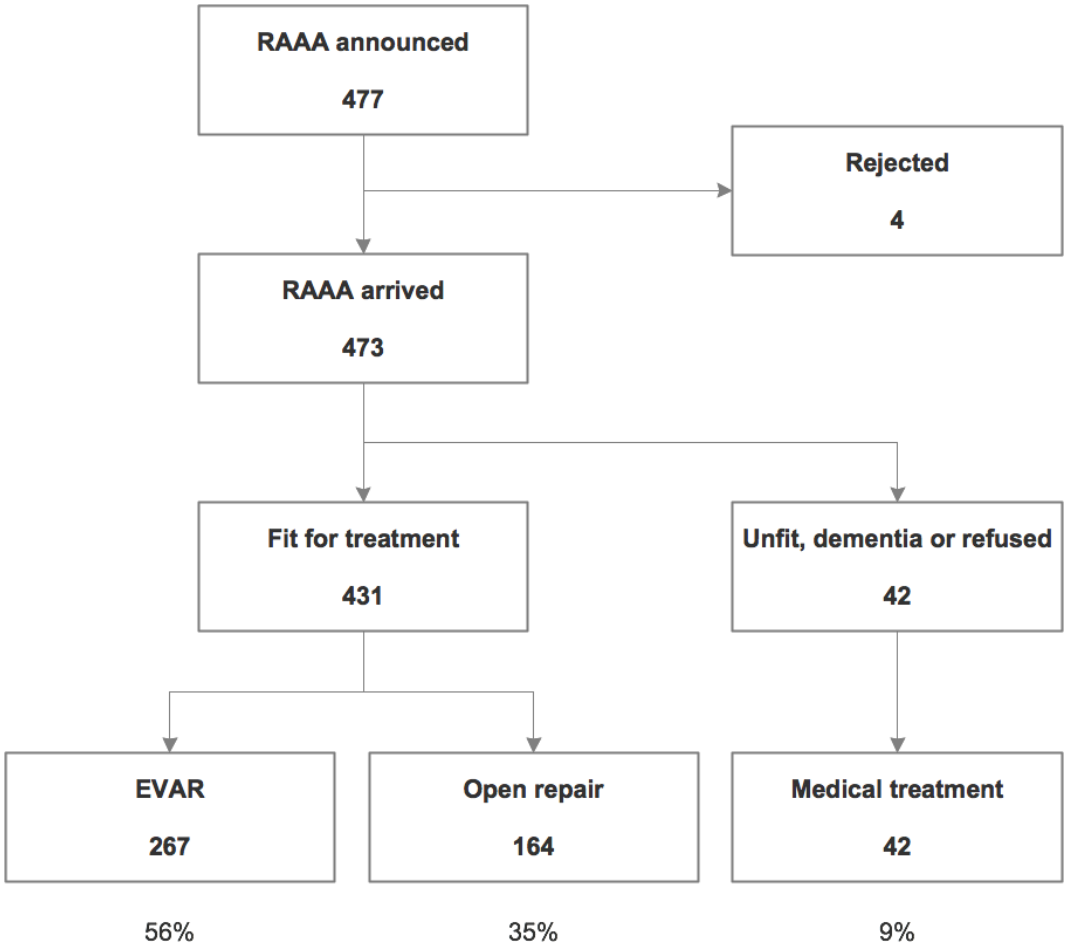
Study Design

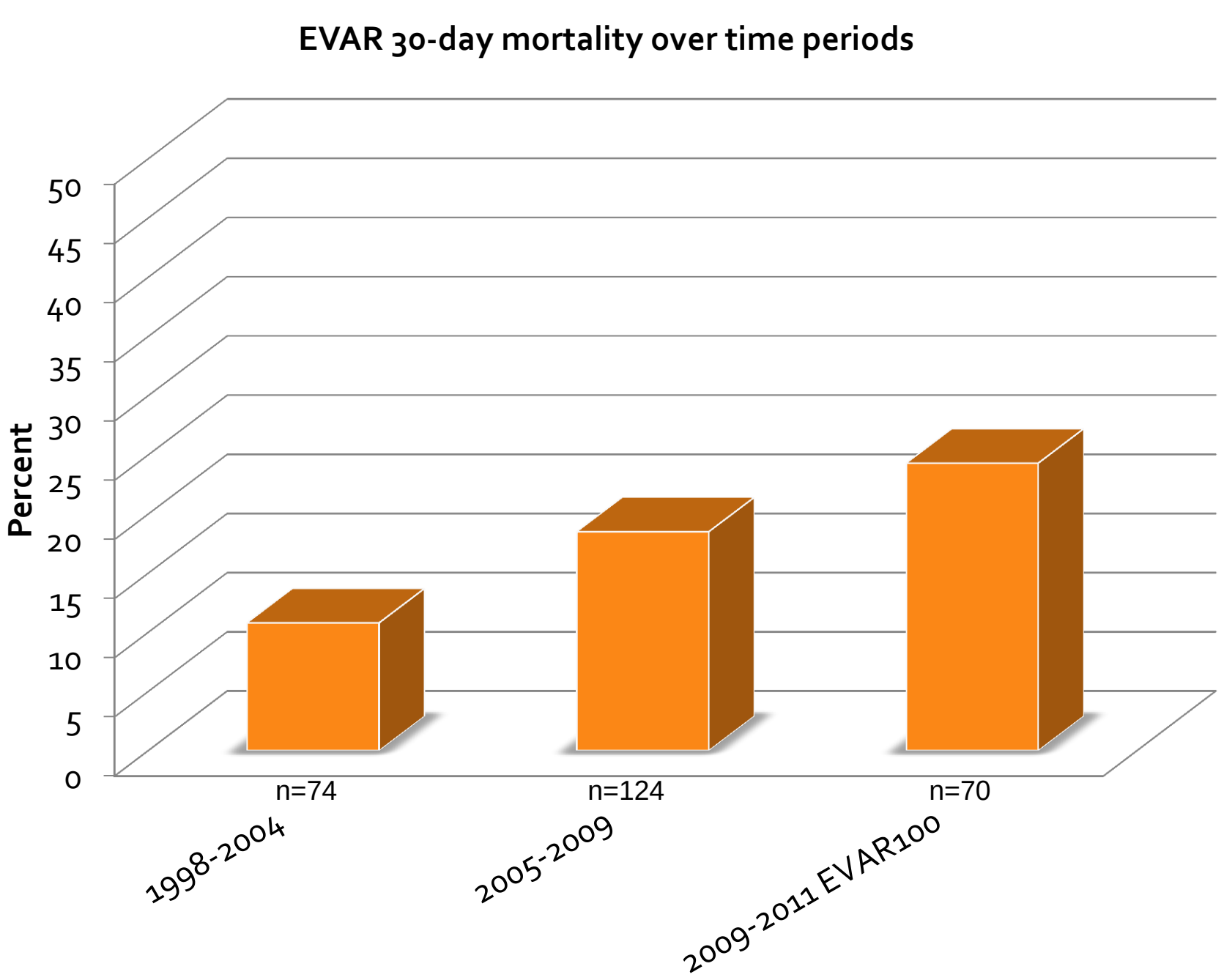
We retrospectively analyzed combined, prospectively gathered data on 473 consecutive RAAA patients (Zurich, 295; Örebro, 178; Fig. 1) from January 1, 1998, to December 31, 2011. These patients were treated by an intention-to-treat "EVAR-whenever-possible" approach[12,13] until April 2009, and after that by an intention-to-treat, "100% EVAR" approach. Exclusion criteria were ruptured thoracoabdominal aortic aneurysms, Crawford type I-IV, and suprarenal RAAA. Hemodynamic instability was not considered to be a selection criterion for preferential open surgery. No patients were excluded from this analysis because of hypotension, circulatory collapse, or cardiac arrest after presentation to the hospitals. The retrospective analysis was approved by the regional ethical review board, and patients gave informed consent whenever possible. Data from both centers were merged into one single database (see the "Definitions" section).

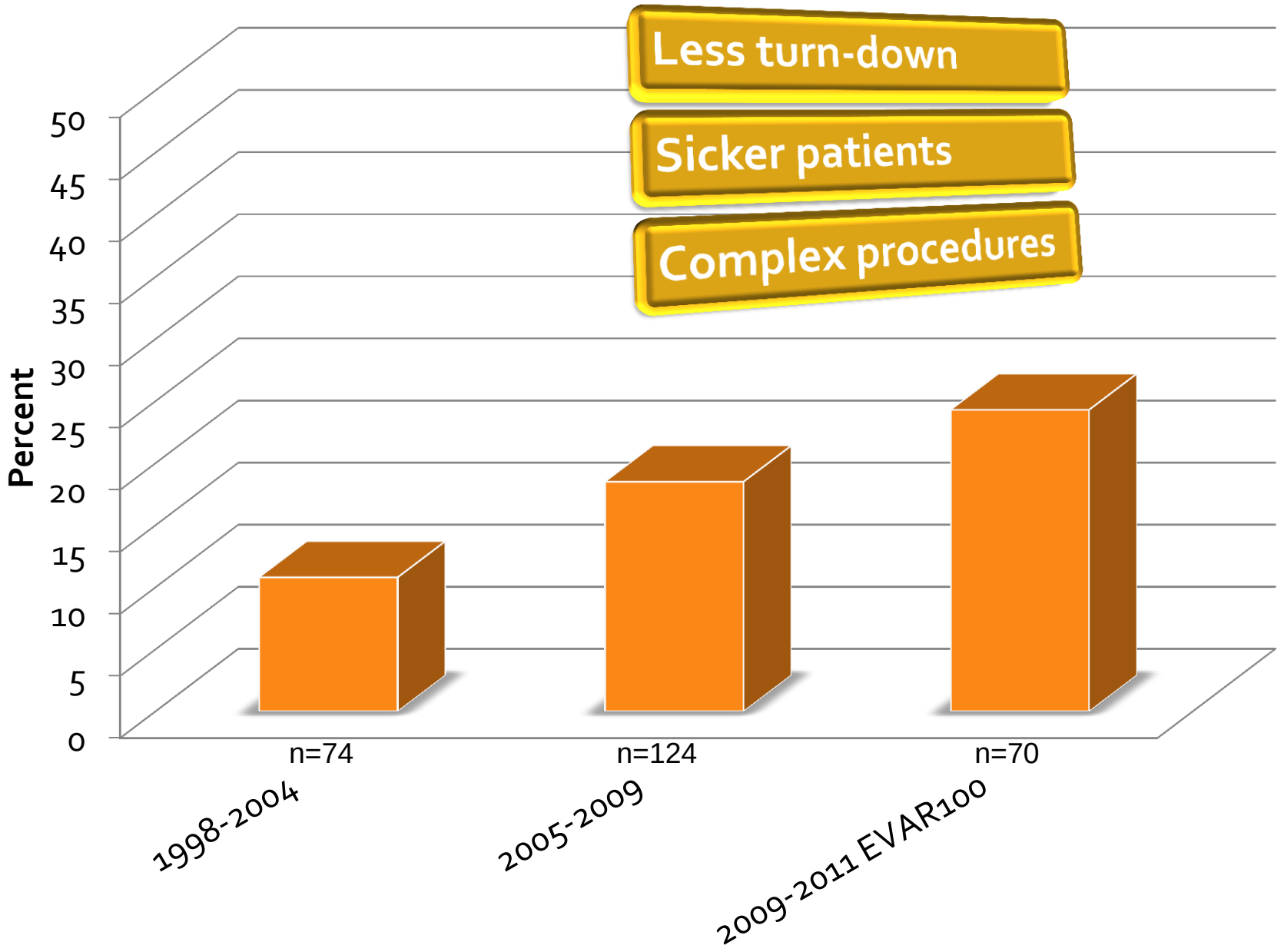
Institutional Settings

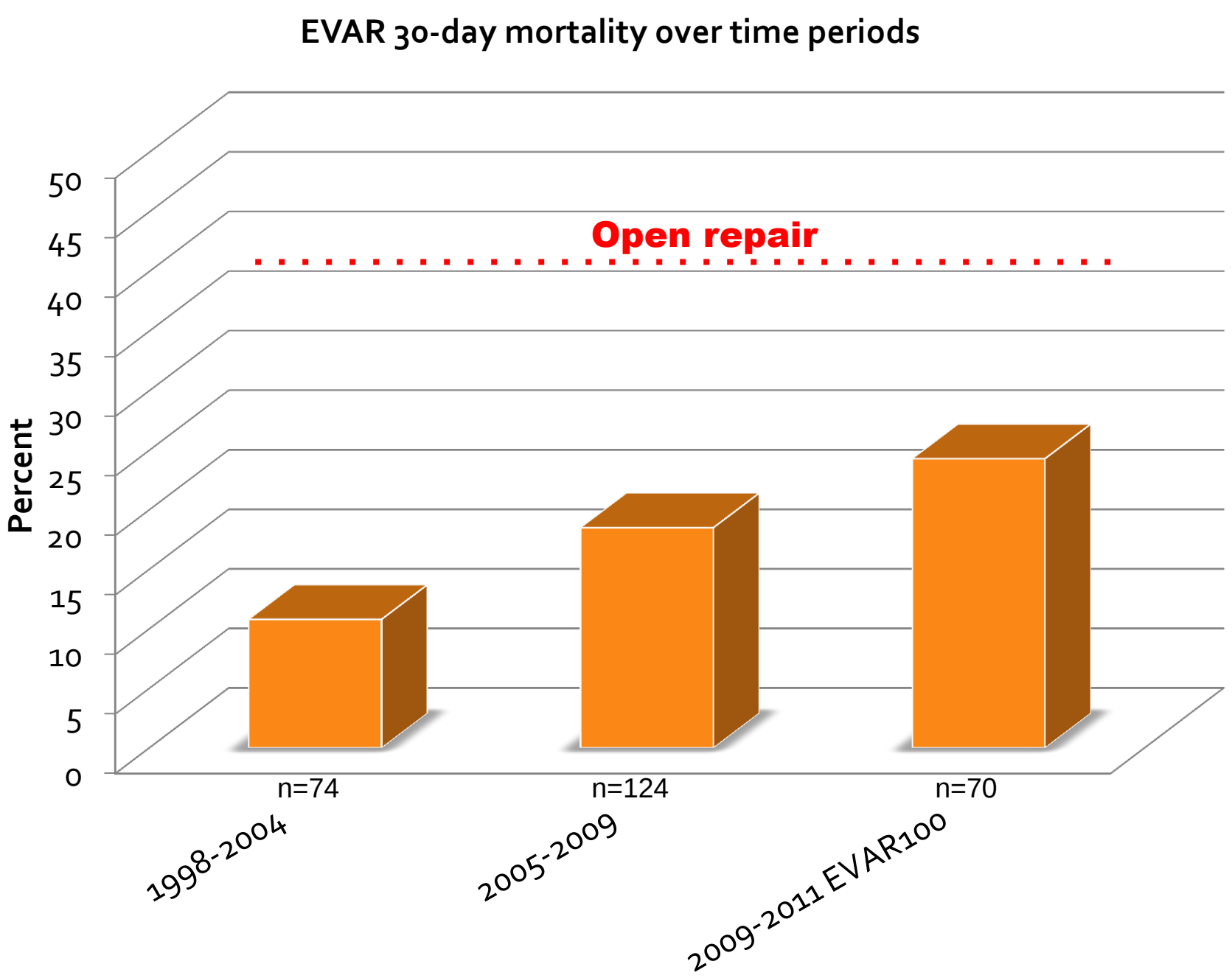
The University Hospital of Zurich is a tertiary referral center with a catchment area of 1 million inhabitants. A round-the-clock service is provided for vascular emergency procedures including EVAR for RAAA. At all times, a senior interventional radiologist, a cardiovascular anesthetist, and a vascular surgeon are available. As an institution with vast activity in elective EVAR procedures (approximately 1300 abdominal EVAR and 400 thoracic EVAR procedures to date), a broad stock of bifurcated and aorto-uni-iliac endografts is available. Beginning in April 2011, EVAR procedures were carried out in a fully equipped hybrid emergency operating room. Before that, they were performed in a fully equipped emergency operating theater or in an angiography suite. Computed tomographic scans are available within 5 to 15 minutes as the scanner is part of the shock

Overall 2C cohort 1998-2011




EVAR 30-day mortality over time periods
Percent
50
45
40
35
30
25
20
15
10
5
0
n=74
n=124
n=70
1998-2004
2005-2009
2009-2011 EVAR100

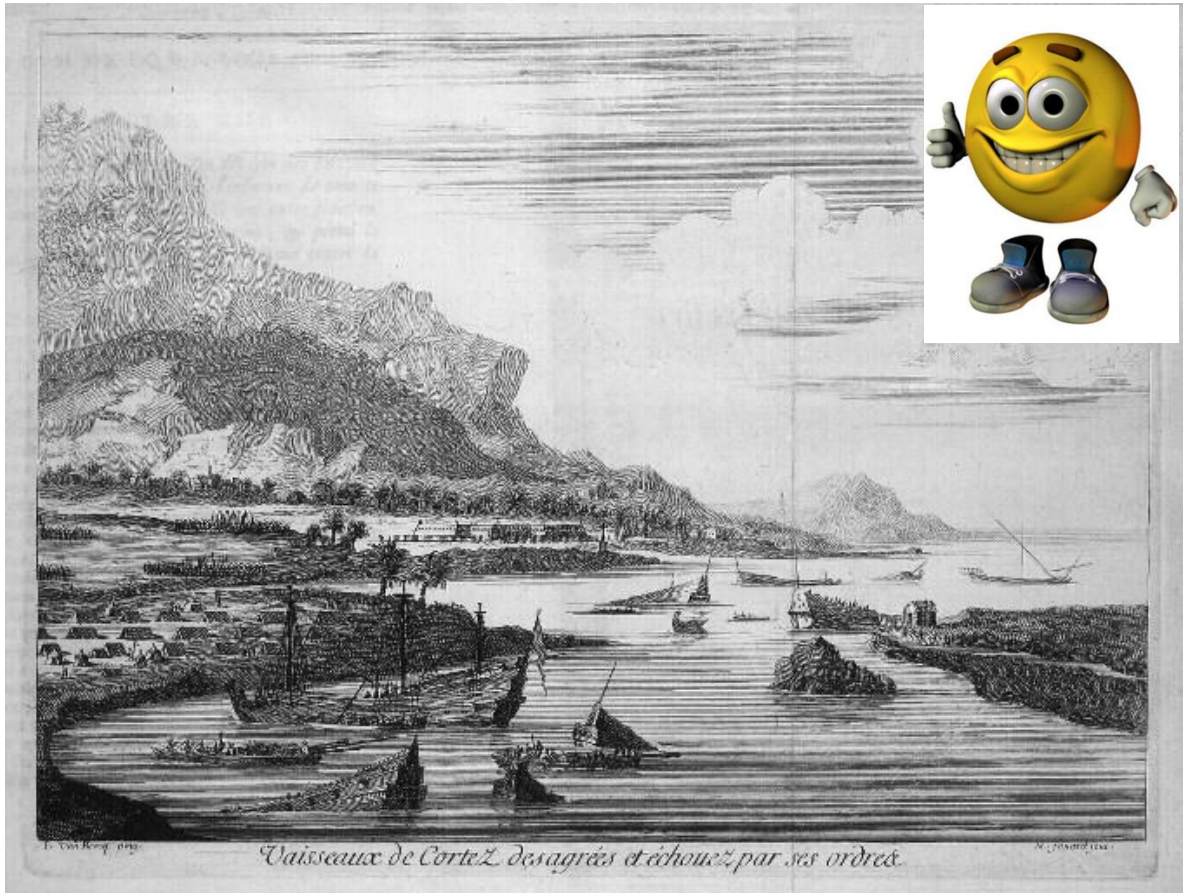

EVAR 30-day mortality over time periods
Less turn-down
Sicker patients
Complex procedures
Percent
50
45
40
35
30
25
20
15
10
5
0
n=74
n=124
n=70
1998-2004
2005-2009
2009-2011 EVAR100


EVAR 30-day mortality over time periods
Open repair
Percent
50
45
40
35
30
25
20
15
10
5
0
n=74
n=124
n=70
1998-2004
2005-2009
2009-2011 EVAR100

Conclusion: Structured approach

- Symptomatic cases with good anatomy
- Stable ruptured cases with good anatomy
- Implement strategies for unstable cases
  - Stable with permissive hypotension
  - Endoclamping
- Implement strategies for challenging necks
  - Symptomatic
  - Stable ruptured cases
- Implement strategies for challenging access(es)

100% endo - good bye open!



Van Beecq (1638-1722)

Thank You!