# Community Practice Experience with Ruptured Abdominal Aortic Aneurysm: Impact of an Endovascular First Approach

Joshua A. Balderman, MD

Megon Berman, BS

Luis R. Leon, MD

John P. Pacanowski, MD

Scott S. Berman, MD

**Pima Heart and Vascular** 

Tucson, Arizona





# No Disclosures

**Objective:** Evaluate outcomes for a community practice experience with rAAA:

- Role for regionalization of aortic care
- What are we experiencing in mortality rates for ruptured rAAA in the endovascular era?
- Historical reported mortality rates for rAAA quoted to patients are significant





# What is the survival rate of abdominal aortic aneurysm (AAA) rupture?

Updated: Mar 08, 2021 | Author: Saum A Rahimi, MD, FACS; Chief Editor: Vincent Lopez Rowe, MD more...

References



For patients who suffer rupture of an AAA before hospital arrival, the prognosis is guarded. More than 50% do not survive to reach the emergency department; for those who do, the survival rate drops by about 1% per minute. However, in the subset of patients who are not in severe shock and who receive timely, expert surgical intervention, the survival rate is good.

#### Complications

The following are potential complications of AAAs:

 Death (1.8-5% mortality for elective open repair, < 1% for endovascular repair, and 50% if the AAA has ruptured, though studies are showing that this last figure is decreased with endovascular repair)



European Journal of Vascular and Endovascular Surgery Volume 32, Issue 5, November 2006, Pages 506-513

A Randomised Trial of Endovascular and Open Surgery for Ruptured Abdominal Aortic Aneurysm – Results of a Pilot Study and Lessons Learned for Future Studies

R.J. Hinchliffe, L. Bruijstens, S.T.R. MacSweeney, B.D. Braithwaite ዳ 🖾

32 pts randomized Mortality 53% both groups Feasible to recruit into RCT

ABSTRACT | VOLUME 58, ISSUE 5, P1424-1425, NOVEMBER 01, 2013

520 rAAA, 116 randomized Death and major complications: 42% EVAR 47% OR Endovascular Repair Versus Open Repair of Ruptured Abdominal Aortic Aneurysms: A Multicenter Randomized Controlled Trial

J.J. Reimerink . L.L. Hoornweg . A.C. Vahl and the Amsterdam Acute Aneurysm Trial Collaborators

Open Archive • DOI: https://doi.org/10.1016/j.jvs.2013.09.023

ABSTRACT | VOLUME 59, ISSUE 5, P1470, MAY 01, 2014

Endovascular or Open Repair Strategy for Ruptured Abdominal Aortic Aneurysm: Thirty-Day Outcomes from IMPROVE Randomised Trial

IMPROVE trial investigators • J.T. Powell • M.J. Sweeting

Open Archive DOI: https://doi.org/10.1016/j.jvs.2014.03.264

297 open, 12% not rAAA dx 40.6% mortality 77% dc home 316 EVAR, 10% not rAAA dx 36.4 % mortality 94% dc home



European Journal of Vascular and Endovascular Surgery Volume 47, Issue 6, June 2014, Pages 593-602

#### Review

Editor's Choice – Endovascular Aneurysm Repair Versus Open Repair for Patients with a Ruptured Abdominal Aortic Aneurysm: A Systematic Review and Meta-analysis of Shortterm Survival 🛪, 🚥

S.C. van Beek ª, A.P. Conijn ª, M.J. Koelemay, R. Balm Ӓ 🖾

From a total of 3,769 articles, three RCTs, 21 observational studies, and eight administrative registries met the inclusion criteria. In the RCTs, the risk of

#### Conclusion

Endovascular aneurysm repair is not inferior to open repair in patients



## Methods:

- Retrospective review of prospectively collected VQI center data for EVAR and OAAA from January 2011 through December 2020.
- Data elements common to both modules were compared with univariate and multivariate analyses
- Statistical analysis was performed by Greg McMahon, PhD, from Kolabtree Biostatistical Consulting.



## Methods:

- Patients divided into 2 groups:
  - January 2011 through December 2015, Group 1
  - January 2016 through December 2020, Group 2 ENDOVASCULAR FIRST ERA
- Groups based upon the ready availability of EVAR devices, local device reps and enhanced fixation at the hospitals covered by Pima Heart and Vascular in Tucson, AZ



	ΟΑΑΑ	EVAR	Totals
2011-2015	69	161	230
2016-2020	44	182	226
Totals	113	343	456



	<b>Overall</b> n=41	<b>Group 1</b> n=21	<b>Group 2</b> n=20
OAAA	18	15	3
Survival	67%	73%	33%
EVAR	23	6	17
Survival	83%	67%	88%
Overall Survival	76%	71%	80%
LTFU survival (12 mos)	79% (n=29)	82% (n=17)	75% (n=12)



#### Variables available for comparison

ICU>3 days	Payer	Post op Dysrhythmia
Major Cardiac Event	Prior CABG	ICU stay
COPD	Prior PCI	Resp Complications
History of CAD	Smoking	Antibiotic stop <24h
Creatinine	Stress test	Time to Extubation
Height	Transfer	Transfusion
Ethnicity	Weight	Age
HTN	Ejection Fraction	Any Post Op Complication
Preop ACE/ARB	Lowest SBP	BMI
Preop aspirin	Max AAA diameter	Death
Preop Beta blocker	Mental Status	Length of stay
Preop Hgb	Skin Prep	Post op Length of stay
Preop Statin	Discharge Status	Surgery Day of the Week
Crystalloid	Diabetes	Gender







## **Results:**

- Open was associated with a significantly higher incidence of ICU stay > 3 days (p<0.05)</li>
- Trends:
  - The probability of death is greater with the open repair
  - Time to extubation of > 24 hours is slightly more likely when the open technique is used
  - Likelihood of any post op complication is higher with open repair



### **Conclusions:**

- Outcomes with an endovascular first approach are superior to historically quoted outcomes for rAAA
- Defining appropriate centers for management of rAAA is evolving
  - Full service EVAR program
    - 24x7 vascular call team
    - Either devices on hand or local rep available to supply on emergent basis
    - Not dependent on "academic" versus "community" practice labels
- SVS Vascular Center certification program may better/objectively define appropriate levels of vascular care



















#### pimaheartandvascular.com

**STRONGER** TOGETHER



Joshua A. Balderman, MD



Johnice Barajas, FNP-BC



Scott S. Berman, MD



Thomas W. Bobka, MD



Jennifer Clark, PA-C



Cody Kraemer, MD



Luis Leon, MD



Bernardo Mendoza, MD



John Pacanowski, MD



Joseph E. Sabat, MD

#### **STRONGER** TOGETHER

pimaheartandvascular.com