

## Long-Term Results Of The AJAX RCT Comparing EVAR With Open Repair For Ruptured AAAs: Despite Its Flaws, EVAR Wins In The End – Especially In Patients >80




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## Disclosures

Cook, Inc,  
IP related to branch grafting and contralateral limb cannulation




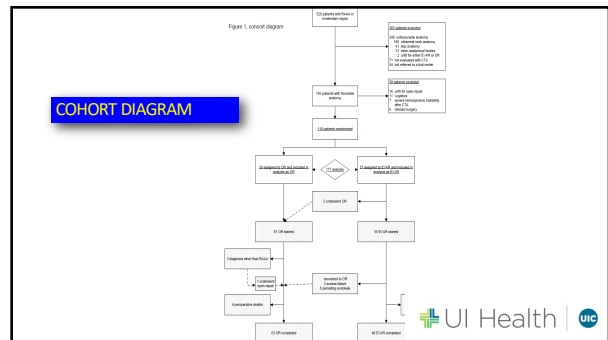
### AJAX trial

RANDOMIZED CONTROLLED TRIAL

Endovascular Repair Versus Open Repair of Ruptured Abdominal Aortic Aneurysms  
*A Multicenter Randomized Controlled Trial*


Jurik J. Reimerink, MD\*, Lisette L. Hoornweg, MD, PhD\*, Anco C. Tuijt, MD, PhD, Willem Wisselink, MD, PhD,1  
Tad A. A. van den Broek, MD, PhD,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52

- Beginning of this century
- Time proven open operation
- Compared to a revolutionary minimal invasive technique
- EVAR still in its infancy

### AJAX COHORT


- 520** patients with RAAA
- 466 evaluated in trial center
  - 71 no CTA
  - 395 evaluated with CTA
  - 240 anatomically unfit for EVAR
  - 16 unfit for OR
  - 11 logistics
  - 7 HD instability following CTA
  - 5 refused treatment
- 116** patients randomized



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78% drop out rate!



### AJAX TRIAL RESULTS

	EVAR	OR	
In-hospital Mortality	21%	25%	p=NS




### MID-TERM

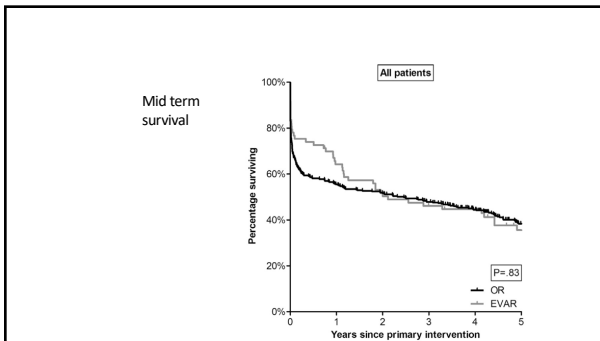
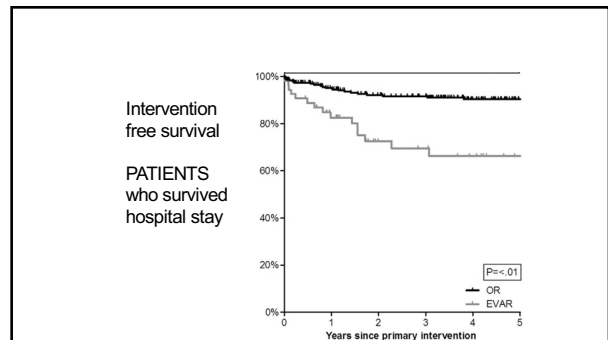
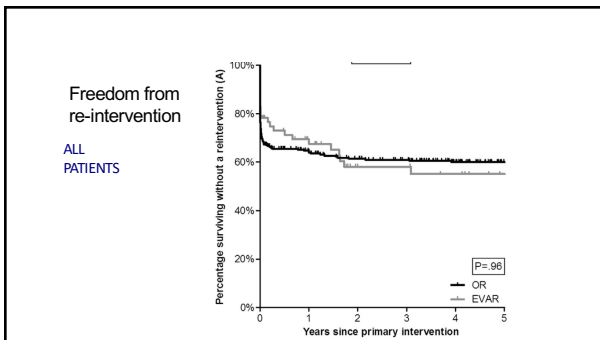
Eur J Vasc Endovasc Surg (2015) 49, 661–668

#### Midterm Re-interventions and Survival After Endovascular Versus Open Repair for Ruptured Abdominal Aortic Aneurysm

S.C. van Beek<sup>1</sup>, A. Vahl<sup>2</sup>, W. Wisselink<sup>1</sup>, J.A. Reekers<sup>3</sup>, D.A. Legemate<sup>4</sup>, R. Balm<sup>1,2</sup>, on behalf of the Amsterdam Acute Aneurysm Trial Collaborators<sup>4</sup>

- Endpoints: Re-interventions  
Death within 5 years






#### Long-term survival and secondary interventions after randomization for open or endovascular repair of ruptured abdominal aortic aneurysms

Th.G. van Schaik, MD,<sup>1</sup> M. Kaelemay, MD, PhD,<sup>2</sup> A. Vahl, MD, PhD,<sup>3</sup> D.A. Legemate, MD, PhD,<sup>2</sup> W. Wisselink, MD, PhD,<sup>1,2,4</sup> K.K. Yeung, MD, PhD,<sup>1,2</sup> R. Balm, MD, PhD<sup>2</sup>

Running title: Long-term outcomes after open or endovascular repair of ruptured abdominal aortic aneurysms.

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**Long-term survival and secondary interventions after randomization for open or endovascular repair of ruptured abdominal aortic aneurysms**

*Th.G. van Schaik, MD,<sup>1</sup> M. Koelemay, MD, PhD,<sup>2</sup> A. Vahl, MD, PhD,<sup>3</sup> D.A. Legemate, MD, PhD,<sup>2</sup> W. Wisselink, MD, PhD,<sup>1,4</sup> K.K. Yeung, MD, PhD,<sup>1,2</sup> R. Balm, MD, PhD<sup>2</sup>*

- Follow-up extending to 18 years.
- Survival and secondary interventions were analyzed based on an intention-to-treat approach with use of Kaplan-Meier analysis.




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55 OR  
58 EVAR

One-fourth of the patients survived more than ten years.




**Long-term survival and secondary interventions after randomization for open or endovascular repair of ruptured abdominal aortic aneurysms**

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After 12 years cumulative overall survival:

- 16.4% after OR
- 24.6% after EVAR

(95% confidence interval -19.4 to 3.0; p=.27).




**Long-term survival and secondary interventions after randomization for open or endovascular repair of ruptured abdominal aortic aneurysms**

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Secondary interventions at 12 years:

- 57.7% after open repair
- 21.3% after endovascular repair

(95% confidence interval 14.8 to 58.0; P=.003).




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No differences in causes of death:

- Cardiovascular
- Malignant disease

- No difference for OR and EVAR




**Long-term survival and secondary interventions after randomization for open or endovascular repair of ruptured abdominal aortic aneurysms**

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**CONCLUSIONS**

- Similar to elective aneurysm repair, stent graft durability and need for continued surveillance remain key issues



## OCTAGENARIANS?


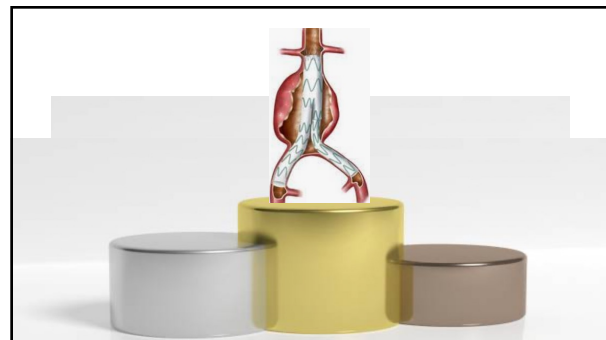
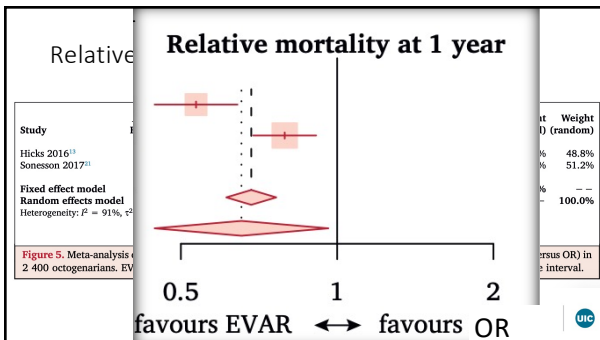
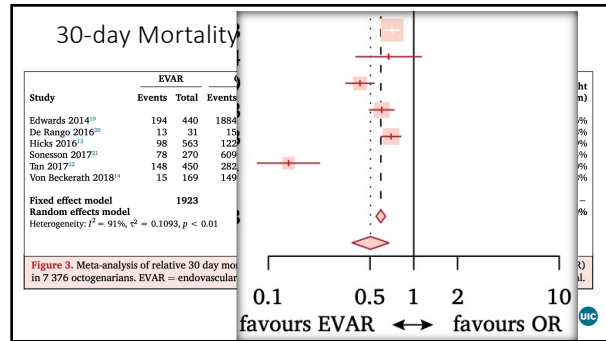
**SYSTEMATIC REVIEW**

### Outcome of Ruptured Abdominal Aortic Aneurysm Repair in Octogenarians: A Systematic Review and Meta-Analysis

Liliane C. Roosendaal<sup>a</sup>, Gabriëlle M. Kramer<sup>a</sup>, Arno M. Wiersma<sup>a,b</sup>, Willem Wisselink<sup>b</sup>, Vincent Jongkind<sup>a,b\*</sup>

<sup>a</sup> Department of Vascular Surgery, Dijkzand Ziekenhuis, Hoon, the Netherlands  
<sup>b</sup> Department of Vascular Surgery, Amsterdam UMC, Amsterdam, the Netherlands

8 out of 59 articles dealing with octogenarians were eligible for this study

New randomized controlled trial on abdominal aortic aneurysm should focus on high-risk patients

**SPECIAL ARTICLES**



A new randomized controlled trial on abdominal aortic aneurysm repair is needed

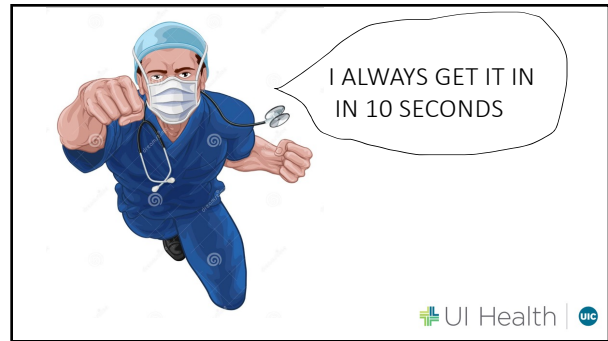
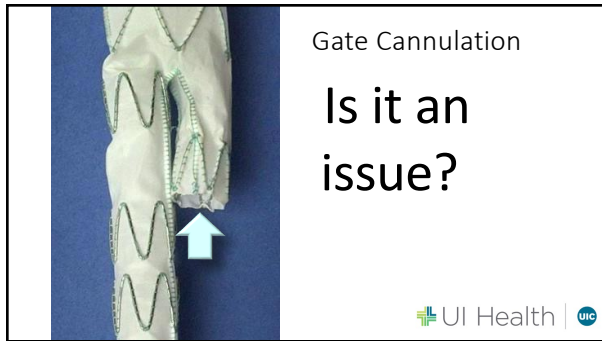
Konstantinos Spanos, MD, MSc, PhD,<sup>1,2</sup> Christian Alexander Breitenell, MD,<sup>3</sup> George Kovalenko, MD, MSc, PhD,<sup>4</sup> Athanasios D. Giannopoulos, MD, MSc, PhD, FEBVS,<sup>5</sup> and Tilo Kolbel, MD, PhD,<sup>1</sup> Larnak, Greece and Hamburg, Germany



### Artificial Intelligence

- Huge amounts of data from electronic health records and wearable devices
- Sophisticated machine learning algorithms
- May replace classic randomized trials
- Save billions
- Speed up medical advances
- Expand access to new treatments



From the Midwestern Vascular Surgical Society

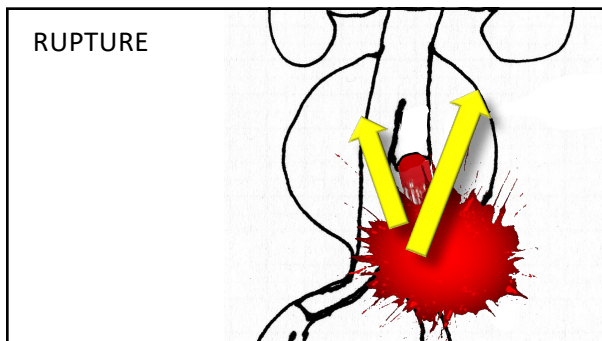
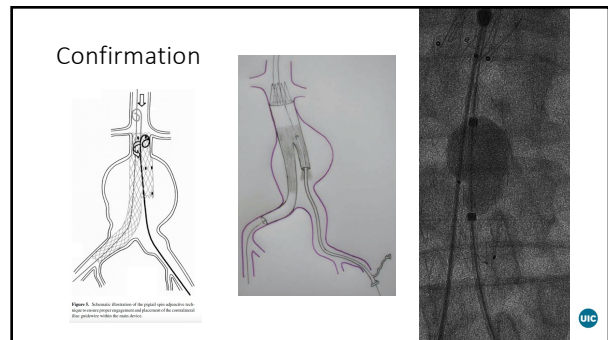
A prospective randomized comparison of contralateral snare versus retrograde gate cannulation in endovascular aneurysm repair

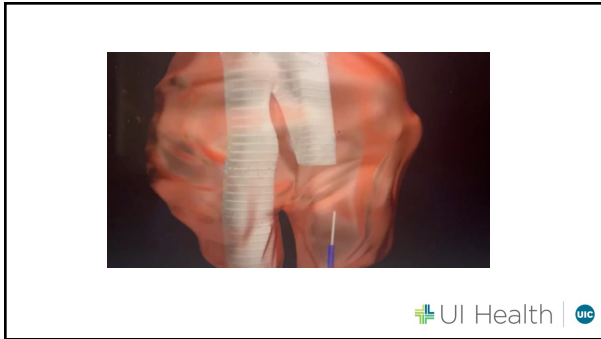
Jessica M. Titus, MD, And Elliot Stephenson, MD, M

**Table V. Analysis of long retrograde cannulation times**

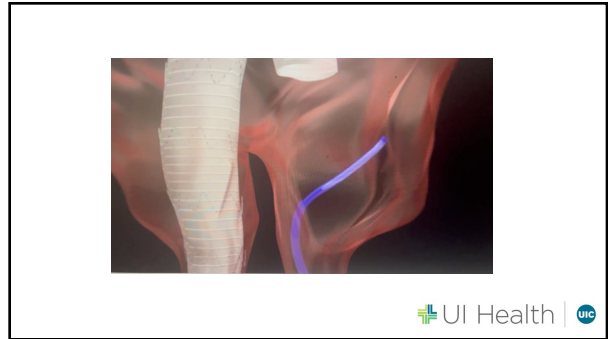
Characteristic	Median (IQR)
Retrograde	2.66 (1.11-6.40)
Snare	3.87 (2.15-6.08)
Switched from retrograde to snare	27.98 (21.15-42.27)
Switched from snare to retrograde	14.32 (14.32-16.52)
Stayed on retrograde	2.28 (1.06-5.03)
Stayed on snare	3.76 (2.15-5.90)
Retrograde >5 minutes	12.23 (8.15-18.55)
Snare >5 minutes	7.12 (6.22-11.02)

IQR, Interquartile range.





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Anaconda

J ENDOVASC THER  
2008;15:33-41

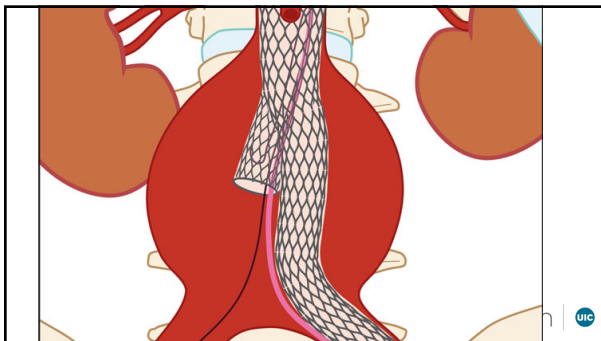
TABLE 2  
Details of Operative Procedures and Follow-up Events (>30 Days)

Operative details	
Regional anesthesia	51 (100%)
Procedure duration, min	95 (60-300)
Contrast agent, mL	160 (80-280)
<b>Fluoroscopy time, min</b>	<b>15 (10-45)</b>
<b>Contralateral stump cannulation time, min</b>	<b>4 (3-22)</b>
Events at >30 days	
Death	2 (3.9%)

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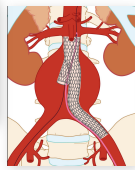
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Where are we?

(12) **United States Patent** (10) Patent No.: **US 10,646,363 B2**  
 Wisselink (45) Date of Patent: **May 12, 2020**

(54) **ENDOVASCULAR DEVICE DELIVERY SYSTEM** (56) **References Cited**  
 U.S. PATENT DOCUMENTS

(75) Inventor: <b>Willem Wisselink</b> , Bassum (NL)	2,847,415 A	8/1960	Gault	2003/64
(73) Assignee: <b>Cook Medical Technologies LLC</b> , Bloomington, IN (US)	5,171,252 A	12/1992	Amplatz et al.	
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	6,048,557 A	4/2000	Wilho et al.	
	6,990,158 A	9/2000	Wilho et al.	623,116



- Prototypes are being tested
- Average cannulation time 8 seconds

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