On behalf of the AJAX trial collaborators, Willem Wisselink, MD, FACS

The IMPROVE RCT Shows EVAR Is Superior To OR For RAAA Treatment: What About The Dutch AJAX RCT Long-Term Results Of EVAR vs. OR

Disclosures
Cook Inc: I.P. with regard to branch grafts

Any place for open surgery?
- Man, 69 yo
- Abdominal pain
- BP 80/40
- Visible pulsatile mass

June 2019
AJAX trial

Endovascular Repair Versus Open Repair of Ruptured Abdominal Aortic Aneurysms

A Multicenter Randomized Controlled Trial

• All CTA proven rupture
• If suitable for EVAR and OR: randomization
• All non-randomized patients were included in a prospective cohort AJAX trial

• meta-analysis of 3 randomized trials: IMPROVE, AJAX, ECAR
• 836 patients

THREE TRIALS COMBINED

Individual patient meta-analysis of three randomized trials comparing endovascular versus open repair for ruptured abdominal aortic aneurysm

<table>
<thead>
<tr>
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<th>EVAR</th>
<th>OR</th>
<th>Odds ratio</th>
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<tbody>
<tr>
<td>30-day mortality</td>
<td>31.3%</td>
<td>34.0%</td>
<td>0.88</td>
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<tr>
<td>90-day mortality</td>
<td>34.3%</td>
<td>38.0%</td>
<td>0.85</td>
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10-year results of IMPROVE show:

- Survival advantage
- Gain in QALY’s
- Equal re-interventions
- Less amputations
- Cost-effectiveness

LONG TERM RESULTS AJAX

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

• Observational prospective study
• Based on the AJAX-cohort
• All patients who had an operation (EVAR or OR)
• Endpoints: Re-interventions, Death within 5 years

LONG TERM AJAX

Patients who died within the observation period

Excluded n = 59
Survival duration n = 180
Mean age 69.4 ± 10.6 Years
Men p = 0.64
Women p = 0.46

Follow-up: 5 years

Re-interventions: 1 in 29
Amputations: 1 in 29
Death within 5 years: 1 in 25

IMPROVE Trial Investigators

3-year results of IMPROVE show:

- Survival advantage
- Gain in QALY’s
- Equal re-interventions
- Less amputations
- Cost-effectiveness
LONG TERM AJAX

539 patients with RAAA
72 excluded (66 no surgery, 6 missing data)
467 patients in the study
  394 Open Repair
  73 EVAR

FREEDOM of RE-INTERVENTION

All Patients

FREEDOM of RE-INTERVENTION

Patients who survived hospital stay

FREEDOM of RE-INTERVENTION

Patients randomized in AJAX

SURVIVAL

All Patients

Long-term survival after acute kidney injury following ruptured abdominal aortic aneurysm repair
Hamid Jalalzadeh, MD,a Reza Indrakusuma, MD,a Liffert Vogt, MD, PhD,b Sytse C. van Beek, MD, PhD,c Anco C. Vahl, MD, PhD,d Willem Wisselink, MD, PhD,e Mark J. W. Koelemay, MD, PhD,e and Ron Balm, MD, Ph.e
AJAX cohort

Alive at discharge
n = 267

Died during initial hospital stay
n = 90
Long-term survival after acute kidney injury following ruptured abdominal aortic aneurysm repair

Hamid Jalalzadeh, MD, a Reza Indrakusuma, MD, a Liffert Vogt, MD, PhD, b Sytse C. van Beek, MD, PhD, c Anco C. Vahl, MD, PhD, d Willem Wisselink, MD, PhD, e Mark J. W. Koelemay, MD, PhD, e and Ron Balm, MD, PhD, e Amsterdam and Rotterdam, The Netherlands

- AKI (RIFLE) after RAAA: 74%
- Hemodialysis during admission: 25%
- No difference between OR and EVAR

Long-term survival after acute kidney injury following ruptured abdominal aortic aneurysm repair

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- Hemodialysis at discharge: 1.5%
- Long-term ESRD: 3.0%

Long-term survival after acute kidney injury following ruptured abdominal aortic aneurysm repair

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- After RAAA: No independent association between AKI and reduced 10-year survival
- Probably due to relatively good recovery of kidney function after RAAA
- OR = EVAR
Conclusions

Five years after the primary intervention, EVAR compared to OR showed:

- Similar long term survival rates
- Similar re-intervention rates,
- However, in those who survived hospital stay, re-intervention rate was higher for EVAR
- Renal failure, acute and late, no difference between EVAR and OR

Altogether, the door is wide open for further exploration and application of EVAR as the, strongly preferred, minimally invasive approach for RAAA.