Breaking down the myth

The data that supports the clinical significance of type II Endoleak

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The importance of type 2 EL

• Subject of scientific discussion
• No consensus on the threshold for treatment
• Controversy on the optimal diagnosis
• Controversy on the optimal treatment

• By far the most common sec. intervention
Let’s look at level 1 evidence

Systematic review

Type II endoleak after endovascular aneurysm repair

D. A. Sidloff¹, P. W. Stather¹, E. Choke¹, M. J. Bown¹,² and R. D. Sayers¹

British Journal of Surgery 2013; 100: 1262–1270
Let's look at level 1 evidence

* Fourteen patients (0.9 per cent) with isolated type II endoleak had ruptured abdominal aortic aneurysm

Results: Thirty-two non-randomized retrospective studies were included, totalling 21,744 patients who underwent EVAR. There were 1515 type II endoleaks and 393 interventions. Type II endoleak was seen in 10.2 per cent of patients after EVAR; 35.4 per cent resolved spontaneously. Fourteen patients (0.9 per cent) with isolated type II endoleak had ruptured abdominal aortic aneurysm; six of these did not have known aneurysm sac expansion. Of 393 interventions for type II endoleak, 28.5 per cent were unsuccessful. Translumbar embolization had a higher clinical success rate than transarterial embolization (81 versus 62.5 per cent respectively; \( P = 0.024 \)) and fewer recurrent endoleaks were reported (19 versus 35.8 per cent; \( P = 0.036 \)). Transarterial embolization also had a higher rate of complications (9.2 per cent versus none; \( P = 0.043 \)).

Conclusion: Aortic aneurysm rupture after EVAR secondary to an isolated type II endoleak is rare (less than 1 per cent), but over a third occur in the absence of sac expansion. Translumbar embolization had a higher success rate with a lower risk of complications.
When reviewing the original publications thoroughly, a causal nexus is generally speculative.

The correct number should be 0.7 per cent as three ruptures were included despite being associated with type III endoleak at the time of rupture.
Systematic review on 21,744 patients

- 10% of patients had a type II endoleak
- 9 patients ruptured possibly due to a type II endoleak

0.7% of all patients with a type II endoleak

0.04% of all patients...
Is a type 2 EL dangerous?

• It doesn’t seem to be

• General practice: only treat in presence of aneurysm growth
Type 2 EL treatment
Ease of mind......
The questions remain

• Unclear ratio benefit vs risk of doing harm
• Unclear what the true success rate is
• Unclear what the definition of success is

• Unclear if type 2 EL is the cause of growth
• Unclear on what data this treatment is based
Systematic review

Treatment Results for Persistent Type 2 Endoleaks
Selection Procedure

1599 studies identified
Selection Procedure

1599 studies identified

1420 excluded based on abstract

179 studies retrieved for detailed analysis
Selection Procedure

1599 studies identified

1420 excluded based on abstract

179 studies retrieved for detailed analysis

128 excluded based on full-text
   13 Case Reports
   23 Non-English
   24 No Follow-up
   54 Variables of interest not reported
   4 TEVAR
   5 Prophylactic intervention
   7 Other

49 studies included in systematic review
(n = 911 patients)
Overall results

- Initial selection: 911 patients.
- Follow-up: 18.5 months (range: 7-50 months)
- Technical success: 89.6% (515 / 575)
- Clinical success: 60.3% (539 / 894)
However..

- Huge heterogeneity in:
  - Indication for procedure
  - Follow-up time
  - Definitions of clinical success
    (radiological resolution vs. sac diameter)
Subgroup analysis

• More homogenous with regard to

  – Indication for procedure → sac enlargement
  – Sufficient follow-up → >12 months
  – Relevant outcome measures → no sac enlargement
Selected subcohort

- Subcohort: 337 patients.
- Follow-up: 20.2 months (range: 12.0-45.6)
- Technical success: 89.0% (300 / 337)

- **Decrease or stable sac size**: 73.6% (248 / 337)
Longer follow-up is necessary

Sarac et al., J Vasc Surg, 2012
Subgroup analysis

• More homogenous with regard to

  – Indication for procedure → sac enlargement
  – Sufficient follow-up → >24 months
  – Relevant outcome measures → Sac shrinkage
Are we sure?

- 3 studies; 40 patients
- Only 27 patients showed decrease in sac size
- 27 patients receiving successful treatment?
Adverse events

- Serious complication: 3.0%
- Secondary re-intervention: 16.2%
- Conversion: 5.1%
- Rupture: 1.0%
- Intervention-related mortality: 0.5%
Adverse events

• Remember, these numbers far exceed the risk of rupture due to type 2 EL!
Limitations

- Publication bias:
  - Success rates
  - Complication rates
Conclusion

• The danger of type 2 EL seems to be very low
• Treatment is done frequently but even for AAA growth, the scientific evidence for this is exceptionally scarce with:
  – Much heterogeneity in indication & outcomes
  – Limited long-term follow-up
  – Serious publication bias
Conclusion

The firm believe of many

The official guideline

To treat type 2 EL in the presence of aneurysm growth is based on ..................

27 patients
Really ?
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