The approach to sac enlargement without evident endoleak

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

☒ I do not have any potential conflict of interest
Treatment versus surveillance

Question before Answer

• Is sac enlargement always benign?
• Can we always detect endoleak?
Can we always detect endoleak?

- **NO** –

  • Hidden type II
  • Hidden type I a-b, position dependent?
  • Hidden type III?
  • Fabric (micro) porosity, suture hole leakage?
  • Combination of the above
Can we always detect endoleak?

- NO -

• Detection is limited by the tools we have
• CTA, even in the delayed phase and Duplex-scan with contrast might not always be good enough for detection
Magnetic Resonance Imaging with a Weak Albumin Binding Contrast Agent can Reveal Additional Endoleaks in Patients with an Enlarging Aneurysm after EVAR

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WHAT THIS PAPER ADDS
In patients with enlarging aneurysms of unknown origin after endovascular aneurysm repair, magnetic resonance imaging (MRI) with a weak albumin binding contrast agent has additional diagnostic value for both the detection and determination of the origin of the endoleak. Therefore, MRI should be considered in patients with aneurysm growth of unknown origin in cases where computed tomography angiography imaging does not reveal a clear cause.
A patient after endovascular aneurysm repair with continued aneurysm growth with no endoleak on (A) arterial phase and (B) delayed phase computed tomography angiography, and (C) pre-contrast T1 weighted fat suppressed images. (D) The post-contrast T1 weighted fat suppressed images clearly demonstrated a type II endoleak originating from a lumbar artery. Furthermore, on the pre-contrast images a high signal is seen around the stent graft limbs, representing so called wet thrombus.
So, at this moment...

- We don’t know always whether contrast in the Aneurysm Sac is only due to type II
- Detection of type II is limited by the tools we have
- But, the choice and success of the treatment/intervention is dependent on the kind of endoleak
From the Vascular and Endovascular Surgery Society

Type II endoleak with or without intervention after endovascular aortic aneurysm repair does not change aneurysm-related outcomes or native sac growth

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Objective: There is considerable controversy regarding the use and appropriate treatment of type II endoleaks (T2Ls) after endovascular aneurysm repair (EVAR). This article presents our long-term experience with T2L management in a large multicenter registry.

Methods: Between 2000 and 2010, 1736 patients underwent EVAR, and we recorded the incidence of T2L. Primary outcomes were mortality and aneurysm-related outcomes. Secondary outcomes were change in aneurysm sac size, major adverse events, and reintervention rates.

Results: During the follow-up (median, 14.2-52.8 months; interquartile range, 14.2-52.8 months), T2L was identified in 474 patients (27.3%). There were no late deaths. Aortic aneurysm growth attributable to a T2L. Overall mortality (P = .47) and ARM (P = .26) did not differ in patients with and without T2L. Sac growth (median, 5 mm; interquartile range, 2-10 mm) was seen in 213 patients (35.5% of those patients with T2L). Of these patients with a T2L and sac growth, 36 (16.9%) had an additional type III endoleak. Of all patients with a T2L, 312 (63.4%) received reinterventions, including 39 patients who underwent multiple reinterventions; 74% of the reinterventions were performed in patients with sac growth. Reinterventions included lumbar ligation in 66 patients (52.3%), placement of additional stents in 48 (43.2%), open surgical revision in 14 (12.6%), and direct sac injection in 22 (19.8%). The reintervention was successful in 35 patients (31.5%). After patients with other types of endoleak were excluded, no difference in overall all-cause mortality (P = .57) or ARM (P = .09) was observed between patients with T2L-associated sac growth who underwent reintervention and those in whom T2L was left untreated.

Conclusions: In our multicenter EVAR registry, overall all-cause mortality and ARM were unaffected by the presence of a T2L. Moreover, patients who were simply observed for T2L-associated sac growth had aneurysm-related outcomes similar to those in patients who underwent reintervention. Our future work will investigate the most cost-effective ways to select patients for intervention besides sac growth alone. (J Vasc Surg 2015;62:551-61.)
Clinical relevance of type II

• It’s low pressure
• EVAR for RAAA works really well in the “presence” of open lumbar arteries
• But, you have to be sure that type II is the only cause of Aneurysm Sac Expansion
Is unlimited Sac Expansion harmless?

- NO –

• Large expansion may cause a new type I endoleak or dislodgement of a modular stent graft system
• This will lead to increasing risks for morbidity and even mortality
Selective Coil-Embolisation is preferred and more durable above simple thrombin/glue injection into the Sac

Techniques to enter the Sac:
- CTA guided Stereotactic Puncture and catheter/wire entrance through the puncture needle (TLA approach)
- “Classic” catheterisation of the SMA and/or Hypogastric
- Trans Caval approach and entrance of the Sac
- Access from Distal stent-graft landing zone

G.Coppi et al. EJVES, April 2014
Prevention of type II during EVAR

- Coil embolisation during EVAR (in high risk patients?) *D.Fabre et al. JVS, July 2015*

- EVAS

- Follow-up will tell us...
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- CONCLUSIONS -

• Unlimited Sac Expansion is not harmless, even QoL is involved?
• Meticulous investigation for the cause of Aneurysm Sac Expansion is mandatory to achieve a durable treatment
• Unfortunately, after treatment periodic surveillance remains necessary anno 2017
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