



## Breaking down the myth



**Most Type 2 EL After EVAR Should Be Left Alone Because Treatments Have Poor Results, Complications And Do Not Improve Outcomes: What Are The Exceptions**

**Hence JM Verhagen, MD PhD**  
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## Disclosures

- Medtronic
- WL Gore
- Cook
- Abbott
- Terumo
- Artivion
- Endologix
- Philips
- Micropor

## 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

## Systematic review on 21.744 patients



BJS 2013;100:1262-70

- 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.....

**About half of these ruptures occurred in the absence of sac expansion.....**






## Type II endoleaks after endovascular repair of abdominal aortic aneurysm are not always a benign condition

Salma El Batti, MD,<sup>a</sup> Frédéric Cochenne, MD,<sup>a</sup> Françoise Roudot-Thoraval, MD,<sup>b</sup> and Jean-Pierre Bequaemin, MD,<sup>c</sup> *Critical Care*, France




- T2EL had no influence on survival
- T2EL was no predictor of rupture, even in presence of sac growth
- No ruptures in the unsuccessfully treated patients





## Incidence, natural course, and outcome of type II endoleaks in infrarenal endovascular aneurysm repair based on the ENGAGE registry data

Martijn L. Dijkstra, MD, PhD,<sup>ab</sup> Clark J. Zeebregts, MD, PhD,<sup>b</sup> Hence J. M. Verhagen, MD, PhD,<sup>c</sup> Joep A. W. Teijink, MD, PhD,<sup>d</sup> Adam H. Power, MD,<sup>e</sup> Dittmar Bockler, MD, PhD,<sup>f</sup> Patrick Peeters, MD, PhD,<sup>g</sup> Vicente Riancho, MD, PhD,<sup>h</sup> Jean-Pierre Bequaemin, MD, PhD,<sup>i</sup> and Michel M. P. J. Reijnen, MD, PhD,<sup>kl</sup> for the ENGAGE Investigators, *Arnhem, Groningen, Rotterdam, Eindhoven, and Enschede, The Netherlands; London, Ontario, Canada; Heidelberg, Germany; Bonheiden, Belgium; Barcelona, Spain; and Créteil, France*  
JVS 2020;71(3):790-89

- T2EL did not influence rupture rate
- T2EL had no influence on QOL
- **T2EL showed improved survival**




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 **Interesting issue: 17.099 patients**


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Nationwide Analysis of Persistent Type II Endoleak and Late Outcomes of Endovascular Abdominal Aortic Aneurysm Repair in Japan: A Propensity-Matched Analysis

Yoshimasa Seko, MD, PhD; Hiroshi Matsuda<sup>1</sup>, MD, PhD; Hideyuki Shimizu, MD, PhD; Shin Ishimaru, MD, PhD; Katsuyuki Hoshino, MD, PhD; Nobuaki Wakahara, MD, PhD; Yohsuke Yasunaga<sup>2</sup>, MD, PhD; Kimihito Komori, MD, PhD; on behalf of the Japanese Committee for Stentgraft Management (JCSMG)  
*Circulation* 2022;145:1056-66


- Freedom from all-cause mortality showed no significant difference between the 2 groups




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 **Is a type 2 EL dangerous?**

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- It doesn't seem to be
- Which ones need treatment and is that effective?
  - General practice globally: only treat in presence of aneurysm growth




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 **Small detail:**

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**Nobody has ever proven that treating type 2 ELs changes anything in the clinical outcome**



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 **Let's look at level 1 evidence**


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**Systematic review and meta-analysis**



**Treatment Results of Persistent Type 2 Endoleaks in the presence of AAA sac growth**

Klaas H.J. Ultee <sup>1,2</sup>, Stefan Büttner <sup>3,4</sup>, Roy Huurman <sup>5</sup>, Frederico Bastos Gonçalves <sup>6,7</sup>, Sanne E. Hoeks <sup>8</sup>, Wichor M. Bramer <sup>9</sup>, Marc L. Schermerhorn <sup>10</sup>, Hencé J.M. Verhagen <sup>11</sup>  
*Eur J Vasc Endovasc Surg* (2018) 56, 794–807




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 **Level 1 evidence !**


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- \* The firm believe of many
- \* The official guideline

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


**27 patients**



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 **Treatment based on**

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**27 pts**



Aorta and Major Branches Eur J Vasc Endovasc Surg (2021) 61, 779–786  EJVES Open Access


**Type 2 Endoleak With or Without Intervention and Survival After Endovascular Aneurysm Repair**

- Multicenter study (16 centers)
- **Standard EVAR in 2018 patients; FU > 5 years**
- **No difference in overall survival between patients with or without T2EL**
- **Intervention for T2EL showed NO survival benefit**




**Intervention for type 2 EL**  
Multicenter study (16 centers)

- **93% showed continued growth after T2EL intervention**




**Intervention for type 2 EL**  
Multicenter study (16 centers)

**93%**



**Summary of current data on Type II EL**


- Is a type 2 EL dangerous? **NO**
- Is treatment effective? **NO**
- Which ones need treatment? **NONE**



**Breaking down the myth**

~~ALL~~ **Most Type 2 EL After EVAR Should Be Left Alone Because Treatments Have Poor Results, Complications And Do Not Improve Outcomes: What Are The Exceptions**  
**There are NO exceptions**

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**Today's session on type 2 EL**


When should we reintervene for persistent type 2 EL

How to best treat type 2 EL

**Transcaval or transgraft treatment of type 2 EL**

3D fusion to help treat type 2 EL

New Taurus device to treat type 2 EL




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**Just remember**

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**Nobody has ever proven that treating  
type 2 ELs changes anything in the  
clinical outcome**



**27pts**

**Thank you for your attention**

**93%**

