MAYO CLINIC

WHEN DO TYPE II ENDOLEAKS CAUSE TYPE I ENDOLEAKS AFTER STANDARD EVAR

HOW TO BEST DIAGNOSE AND TREAT THEM

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DISCLOSURES

- No Financial Disclosures

BASIC OBSERVATIONS

- EVAR has supplanted open AAA
- EVAR success is hindered by endoleaks and need for surveillance
- **We have no good understanding of the natural history of Type II endoleaks (T2EL) after standard infrarenal EVAR**
  - T2EL ≠ Sac growth/change

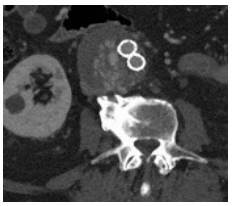
WHAT WE KNOW ABOUT T2EL

- Occur in 10-20% of elective EVAR cases
- >50% resolve spontaneously
  - Early T2EL more likely to resolve
  - Late/persistent T2EL can cause sac growth
- Risk factors for T2EL are known

Factors
Thrombus Volume
of side branches
IMA patency size >3mm
Patent lumbar arteries (>3, >2mm)
Smoking history
PAD
Larger AAA

EARLY OBSERVATION OF MOST T2EL IS SAFE

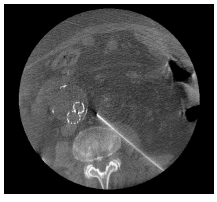
- Rate of rupture after EVAR is estimated to be 0.7 per 100 person-years from the EVAR Trials
- Rupture from Type II endoleak was seen in 1 patient from the Eurostar Registry



Fransen, et al. Eur J Vasc Endovasc Surg. 2003 Nov;26(5):487-93

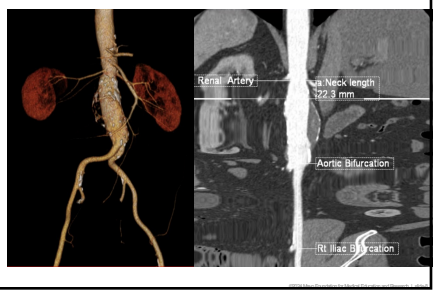
WHAT HAPPENS WHEN THE SAC GROWS…

- Reasonable to follow slow growing T2EL closely
- **Rule out Type I or Type III Endoleak**
- When and IF you treat T2EL, use method you are most comfortable with
  - Transarterial
  - Translumbar
  - Transcaval etc



WHEN DO T2EL LEAD TO T1EL

- Bad anatomy



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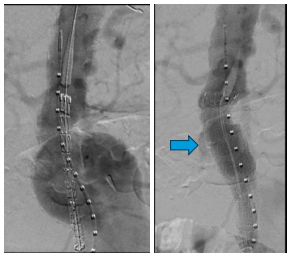
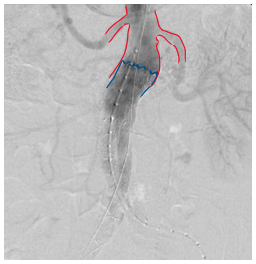


WHEN DO T2EL LEAD TO T1EL

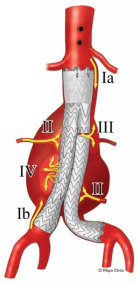
- Low deployment



MAYO CLINIC EXPERIENCE 965 EVARS

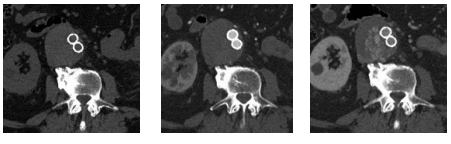
- **365 New /persistent T2EL**
- **20 Patients Develop a T1EL @ mean 3.3 years**

Type of T1EL	T1EL n=20
1a	13
1b	6
1a/1b	1
Risk Factors	
Missed T1/T3EL at EVAR	2
T3L preceding T1EL	2
High-risk neck	4
T1EL treated at EVAR	3
None	9



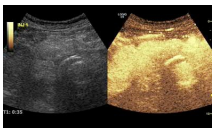
APPROACH TO TYPE II ENDOLEAKS

- What type of endoleak are you dealing with?
  - Need quality imaging
  - Typically 3 phase CT – non-con, arterial and delayed phase



APPROACH

- What type of endoleak are you dealing with?
  - Need quality imaging
  - Typically 3 phase CT – non-con, arterial and delayed phase
  - Ultrasound – depending on your lab
    - Sens – 77-98%
    - Spec –94-88%



Mirza et al Eru J Vasc Endovasc Surg. 2010

CURRENT AAA GUIDELINES

SVS 2018

We suggest treatment of type II endoleaks associated with aneurysm expansion.

Level of rec	2 (Weak)
Quality of e	C (Low)

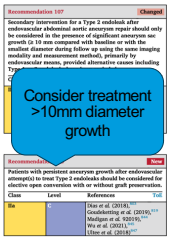
Consider treatment >5mm diameter growth

We recom… II endoleaks not associated with… aneurysm expansion.

Level of recommendation	1 (Strong)
Quality of evidence	B (Moderate)

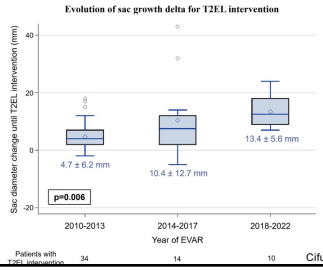
Chaikof et al. JVS. 2018

ESVS 2024



Wanhainen et al. EJVES. 2024

SAC GROWTH THRESHOLD FOR T2EL EMBOLIZATION AT MAYO CLINIC



Cifuentes, DeMartino et al. JVS 2024

WHEN DO T2EL CAUSE T1EL…

- …RARELY
  - Often in the setting of poor initial patient selection/treatment
- May happen after EVAR in <1% with no risk factors
  - Risk of rupture from T2EL <1%
- No data to support T2EL to reduce T1EL occurrence
  - Optimal treatment criteria/thresholds are unknown
- Look for T1/T3 EL in any growing AAA after EVAR
  - Multimodal imaging (DynaCT, CEUS)

THANK YOU

VEITH SYMPOSIUM
Connecting The Vascular Community