Are type 2 endoleaks dangerous? Natural History of the Untreated Type 2 Endoleak

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G. Sarwal, MD MEd FRCSC (VSx) CAiR (fellow)
Vascular Surgery & Interventional Radiology

St. Paul's Hospital
Vancouver, BC

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G. Sarwal, gautamn.sarwal@gmail.com

St. Paul's Hospital
Vancouver, BC

Disclosures

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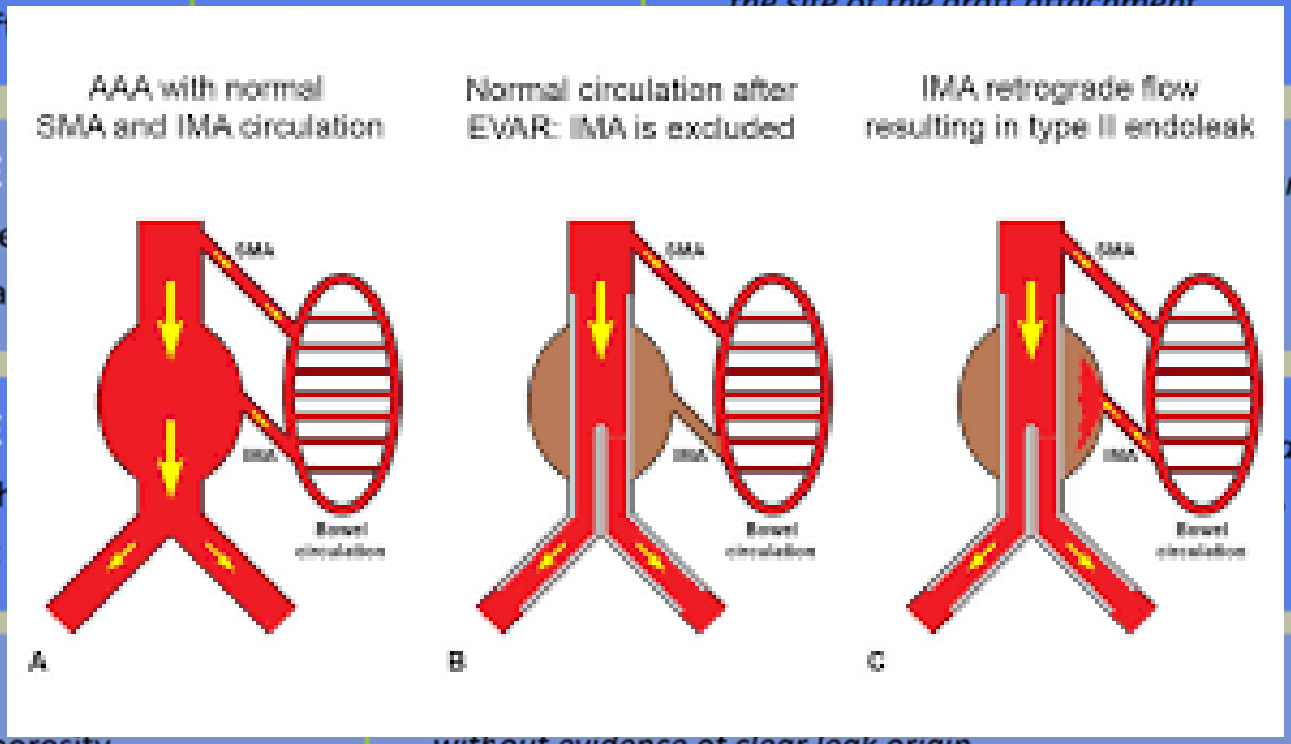
- **Consultant:** Total Flow Medical (ECMO cannulas)

Endoleaks

- **Definition**:
  - Persistent blood flow within an aneurysm sac post EVAR (AAA)
- **Incidence**:
  - 30-40% noted intra-operatively vs 20-30% in postop imaging
- the ***"Achilles heel"*** of EVAR
  - Patient vs Anatomic vs Graft factors

ENDOLEAK

TYPE I Inadequate seal at graf	**1A** *(Proximal)* **1B** *(Distal)*	*Contrast extravasation in continuity with* *the site of the graft attachment*
TYPE Retrole via bra		*nch*
TYPE Leak th defect		*tion:* *the*
TYPE Graft porosity		*without evidence of clear leak origin*
TYPE V Endotension		*Continued expansion of aneurysm sac without demonstrable leak on imaging*



Type 2 Endoleaks

- Most common type (80%)
- **Simple vs complex**
  - IMA or lumbars vs accessory renal or median sacral
- **Imaging:**
  - CTA/MRA (arterial & 90sec delayed phase)
  - Angiography (diagnostic & therapeutic)
- **RFs:**
  - Older age, patent IMA (>3mm), patent lumbars (>2.5mm), large aneurysm sac diameter
- **Complications**: aneurysm rupture ~1%

What's the dilemma?!

- T2ELs: most common (80%)
- **Early endoleaks** (onset <1yr) often resolve spontaneously (75%)
- **Late endoleaks** (onset >1yr) spontaneously resolve ~25%
- **T2EL complexity**
  - # of communicating vessels, presence of a nidus, diameter size of feeding vessels, AAA sac size
- **Aneurysm rupture rate** <1%

Consensus??

Consensus statement

- Wide variations in T2ELs
- Variable practice patterns
- Extremely low AAA rupture rate

SVS Guideline: ≥ 5mm
ESVS Guideline: ≥ 1cm
Level C evidence

Other guidelines:

- endoleak persistence >6 months
- presence of a large nidus
- >3 feeding vessels
- >4mm diameter feeding vessel
- high velocity within sac on color doppler US

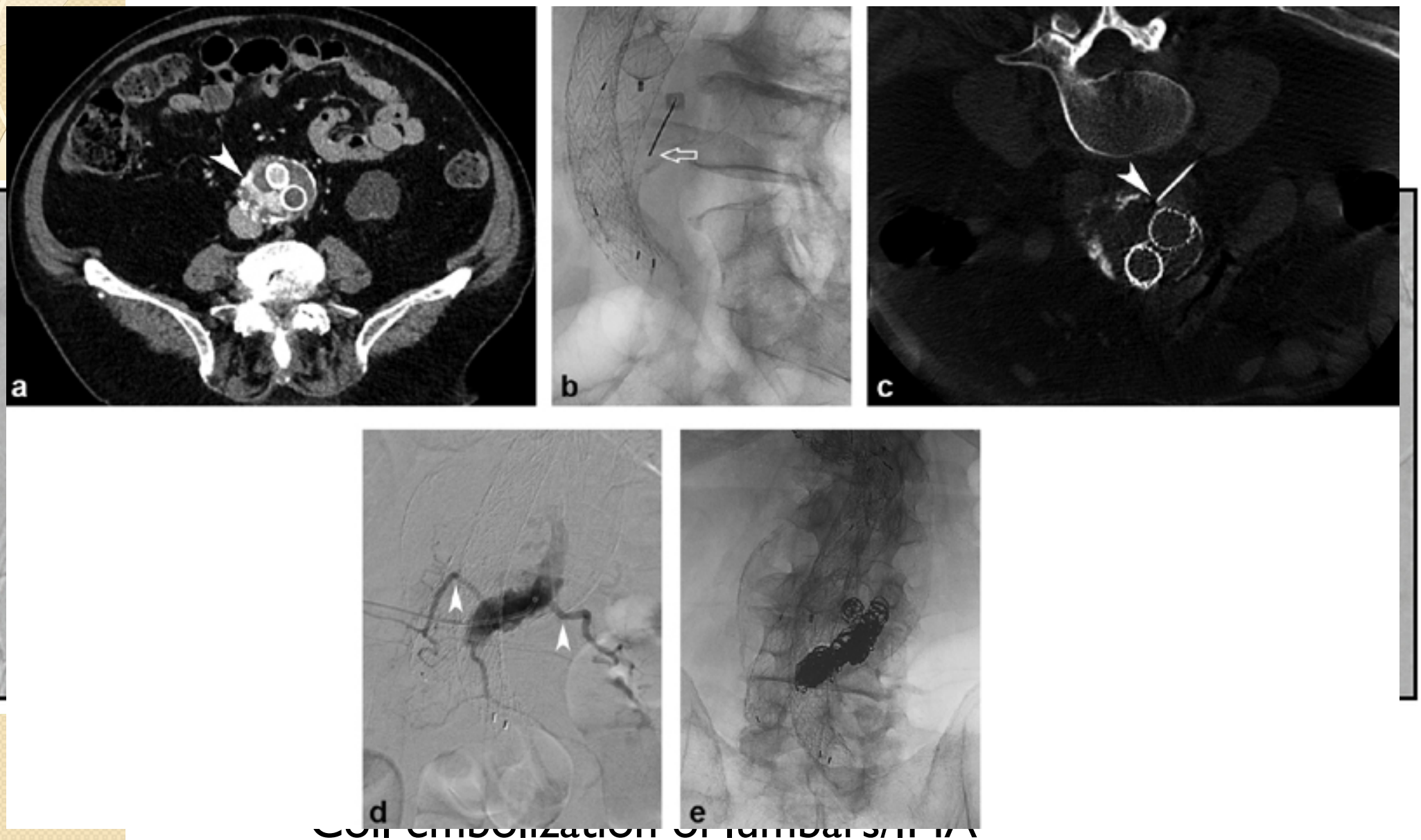
Treatment: Conservative

- **Early endoleaks** (onset <1yr)
  - Serial surveillance ~90%
  - Requiring embolization ~8-10%
  - 40-60% resolve spontaneously within first 6-12 months

- **Late endoleaks** (onset >1yr)
  - 75-80% resolve within 3-5 years
  - Requiring embolization 30-50%
  - Requiring embolization if sac growth ≥ 5mm

Pineda D M, Calligaro K D, Tyagi S, Troutman D A, Dougherty M J. Late type II endoleaks after endovascular aneurysm repair require intervention more frequently than early type II endoleaks. J Vasc Surg. 2018;67(02):449–452.

Long-term clinical outcomes of type 2 endoleak intervention and the crucial role of additional endoleak development after endovascular aneurysm repair: a single-center retrospective observational cohort study. Ann Surg Treat Res. 2025:109(4): 235-243.



Coil embolization of lumbar s/p IA

Treatment (T2EL): Surgical

If failure of endovascular attempts…

- **Laproscopic clipping**
  - IMA / lumbars
- **Exploratory Laparotomy for clipping or oversewing within the AAA sac**
  - IMA / lumbars

Summary: Natural hx of untreated T2EL

The Society for Vascular Surgery (SVS) practice guidelines recommend a conservative approach for the majority of T2EL, as many resolve spontaneously without intervention with a low risk of aneurysm rupture (1%).

- SVS guideline for intervention: ≥ 5mm
- Conservative management if no/little sac size change
- Often monitored as not urgent risk of sac rupture unlike T1 or T3 leaks
- **Surveillance protocol:** annual CTA or color duplex US

The SPH VSx / IR experience

- Preop AAA IMA +/- lumbar embolization
  - IMA >3mm & lumbar >2.5mm
  - Done in a staged fashion in IR followed by OR for EVAR by VSx

- 0-4 T2EL embolizations done annually @ SPH post EVAR
  - Embolizations mostly done by referral from surrounding centres

- **Treatment algorithm:**
  - Transabdominal/lumbar approach over transarterial vs transcaval

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