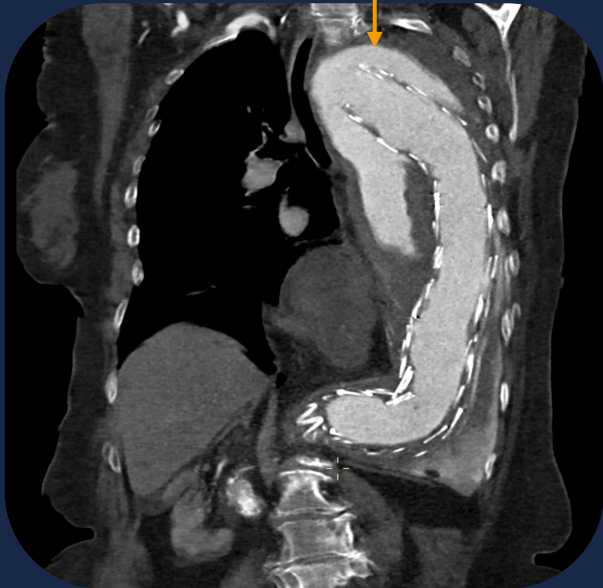


Endoleak Atlas

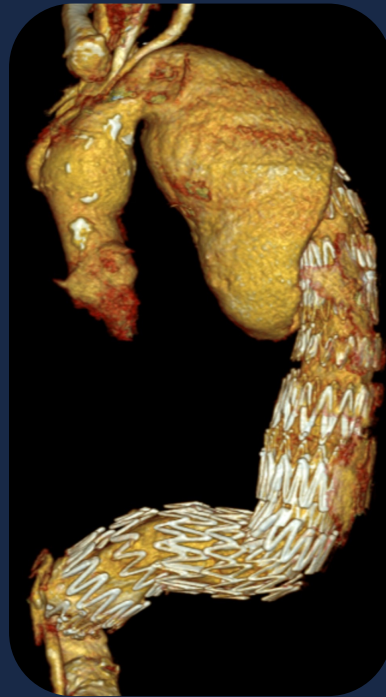


Case 1 79-year-old female underwent a CTA after EVAR.

Leak from the proximal attachment-site endograft



3D recon of the postoperative findings



Endoleak type Ia ✓

Case 2

63-year-old female presented with right groin pain. She had a PMH of EVAR. A CTA was performed.

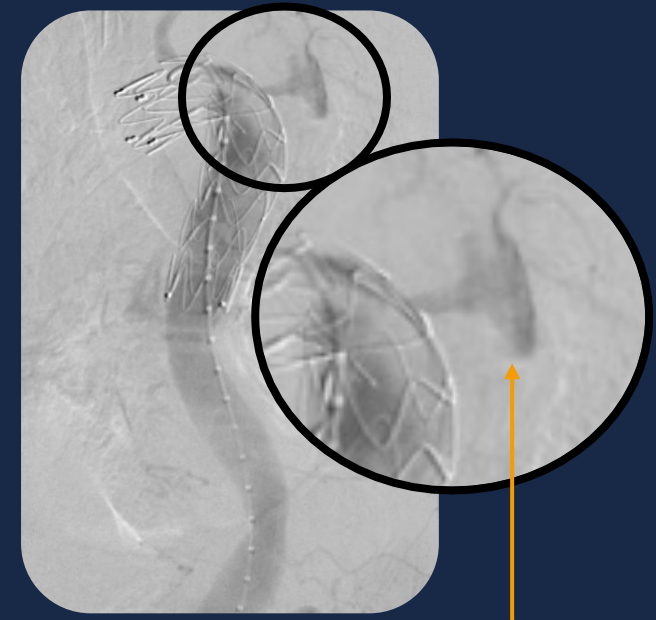


Leak from the distal attachment-site endograft

Endoleak type Ib ✓

Case 3

75-year-old male performed an EVAR. The immediate postdeployment angiography showed the following findings:



"Blush" inferring graft porosity

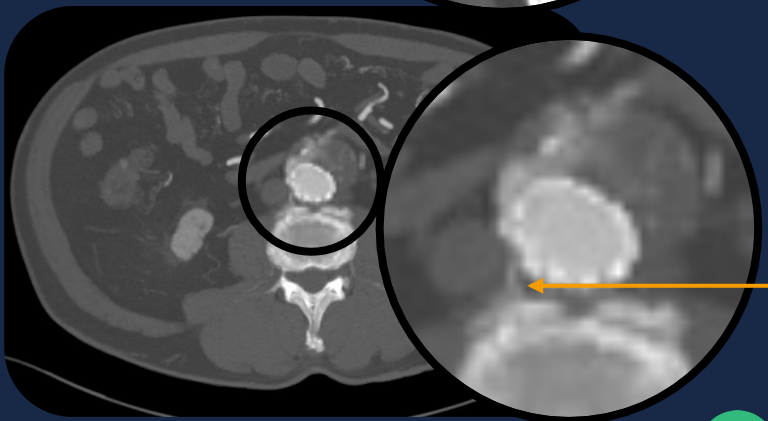
Endoleak type IV ✓

Endoleak Atlas



Case 4 71-year-old female performed a routine CTA after EVAR

Retrograde blood flow through the IMA into the aneurysm sac

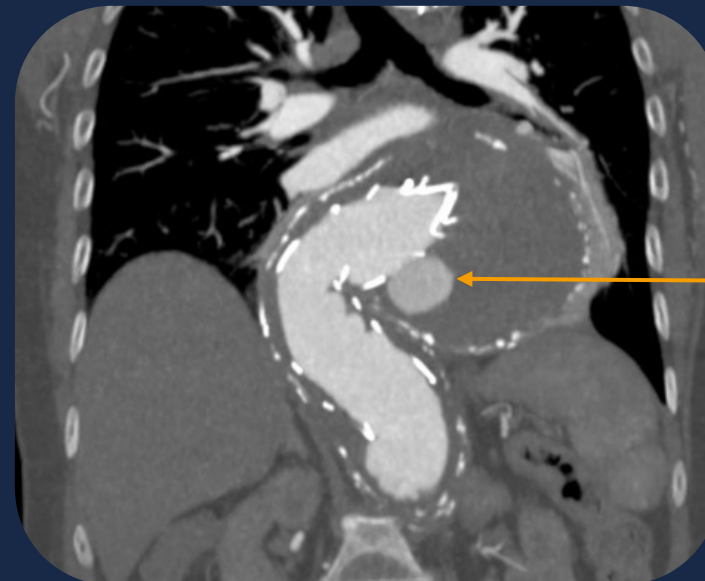


Retrograde blood flow through a lumbar artery into the aneurysm sac

Endoleak type IIb



Case 5 82-year-old male presented with an epigastric pain after EVAR



leakage of blood through the body of the stent-graft due to rupture of its material

Endoleak type IIIb



To be continued...

Endoleak Assessment after Endovascular Aortic Aneurysm Repair:

Main Concepts

First things first...

- 1** What is an AAA? Abnormal dilatation or bulging of the aorta that has the tendency to expand and rupture
- 2** When is necessary to operate? Aneurysm diameter > 5.0–5.5 cm or symptomatic, and an increase in aneurysm size > 5 mm in a 6-month interval and > 10 mm per year
- 3** What is EVAR? Minimally invasive procedure introduced as an alternative to OR in patients with AAAs. It involves placing a stent-graft in the aorta to serve as a blood flow conduit through the aneurysm sac
- 4** What is an endoleak? Leakage of blood into an excluded aneurysm sac after stent-graft placement that occurs in approximately 26% of EVAR patients
- 5** Do we need to worry? If undetected, an endoleak may progress and cause aneurysm sac expansion or rupture, which can be fatal.

Endoleak Assessment after Endovascular Aortic Aneurysm Repair: The role of imaging



CT angiography (CTA) is the most widely used imaging method for endoleak detection

High spatial and contrast resolution, allows multiplanar two-dimensional and three dimensional (3D) postprocessing, remarkable accuracy, widespread accessibility, speed, and relative noninvasiveness.

EVAR requires lifelong imaging surveillance. Recommended follow-up: 1, 6 and 12 months after EVAR and then annually thereafter.

Estimated sensitivity and specificity of 83 and 100%, respectively, for detecting endoleaks

Protocol:

Non-contrast → differentiate calcifications from contrast leakage
Early arterial phase → detect most of endoleaks (may indicate high-flow)
Delayed phase → detect low-flow endoleaks

Endoleak classification	Definition
Primary	appear within 30 days of stent-graft placement
Secondary or delayed	appear after 30 days, following at least one negative imaging finding.

Endoleak Assessment after Endovascular Aortic Aneurysm Repair:

Classification

Type	Mechanism	Management	Percentage of endoleaks
I*	a	Intervention required urgently upon recognition	12%
	b		
	c		
II	a	Observation and surveillance until resolved or aneurysm sac expansion***	76%
	b		
III*	a	Intervention required urgently upon recognition	3%
	b		
IV	Stent-graft wall porosity	Self-limited, no treatment required	3%
V	Endotension****	Unclear	6%

*: high-flow

** : most commonly the inferior mesenteric artery (IMA) or a lumbar artery

***: treatment is advisable if persists for over 6 months and if the sac expands more than 5 mm compared to preprocedural CT measurements

****: continued growth of an excluded aneurysm sac without radiologic evidence of a leak