

# Endovascular Aortic Repair (EVAR)

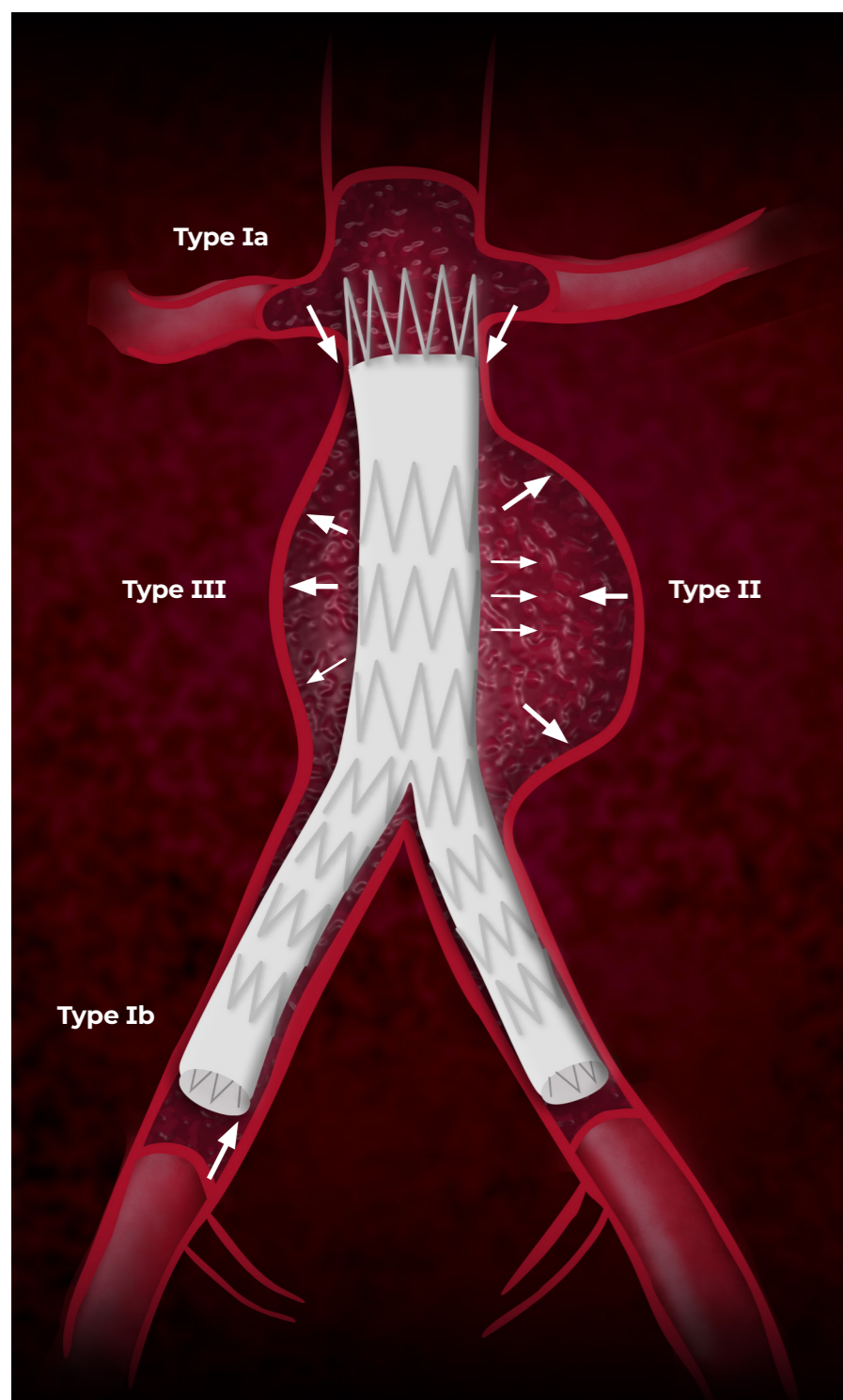
Endovascular Aortic Repair (EVAR) is a minimally invasive means of treating aneurysmal disease of the aorta. Stent grafts are implanted across dilated segments to create an alternative flow channel within the aorta which excludes blood flow to the aneurysmal sac. Abdominal aortic aneurysm (AAA) predominantly affects the infrarenal segment of the aorta. Patients that undergo EVAR require lifelong follow-up and imaging surveillance.

Abdominal duplex ultrasound is advocated in the surveillance of EVAR grafts to ensure there are no post procedural complications that may include:

- Endoleak
- Device malposition
- Access site complications
- Graft / outflow tract stenosis
- Graft fracture / kinking / tortuosity
- Graft thrombosis
- Graft dilation
- Graft migration – proximal or distal
- Aneurysm expansion

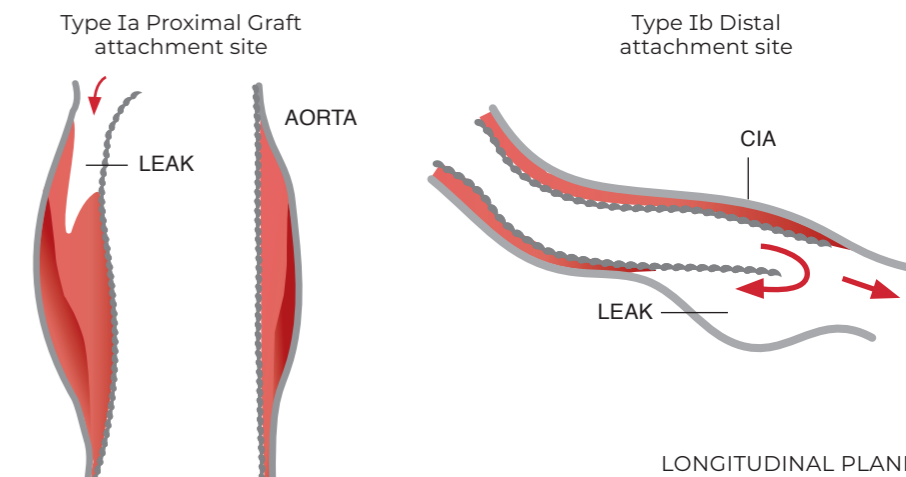
## TECHNIQUE

- 1** Locate proximal attachment site of endograft. **TIP** – watch the walls! The graft will appear more hyperechoic than the native vessel wall.
- 2** Assess for aortic and iliac limb endoleak with colour Doppler. Have colour frequency set low to detect any low amplitude channels of flow. **TIP** – for large residual sacs it may be better to use a smaller colour box and scan the residual sac in sections (a smaller box = increased sensitivity to flow).
- 3** Measure outer to outer wall of all aneurysm sacs in transverse and longitudinal planes. **TIP** – careful 2D optimisation, especially the use of dynamic range and 2D gain can sharpen the appearance of vessel walls allowing for more accurate caliper placement.



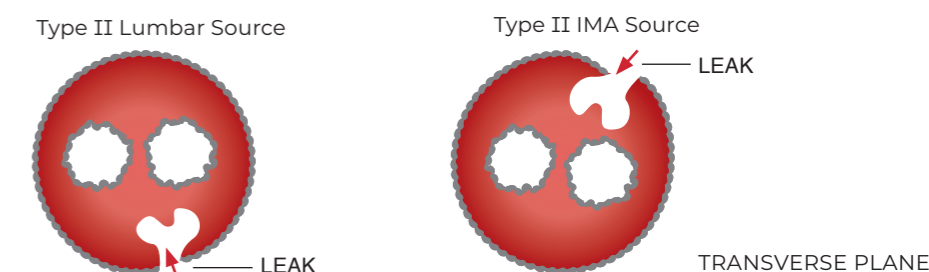
## ■ Type I endoleak

Proximal or distal graft attachment sites



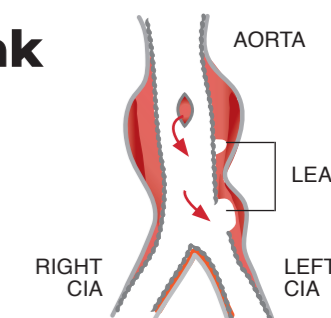
## ■ Type II endo leak

Retrograde flow into the aneurysm sac from the aortic branches; IMA or lumbar



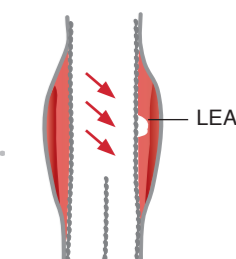
## ■ Type III endoleak

Caused by defect in the graft due to a fabric tear or disconnection of modular overlap



## ■ Type IV

Graft wall porosity



## ■ Type V endoleak

Increase in aneurysm diameter with no identifiable endoleak

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