

EVAR stent grafts: Ultrasound Characteristics

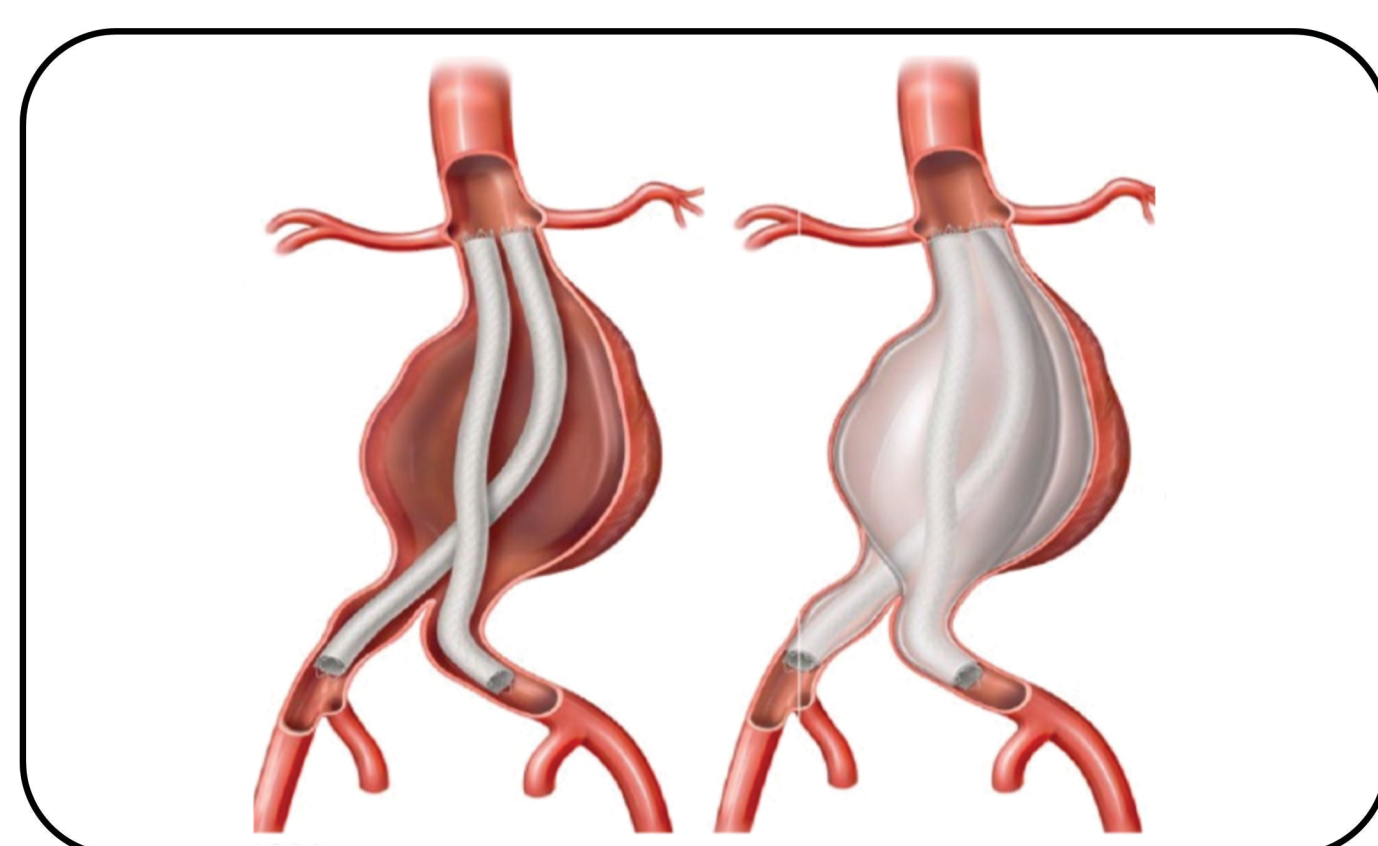
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INTRODUCTION

Management of Abdominal Aortic Aneurysm (AAA) via Endovascular aneurysm repair (EVAR) has become common practice. A range of EVAR devices are used to treat different types and shapes of aneurysms. As a result, various stent grafts are identified during post EVAR ultrasound (US) surveillance scan.

This poster identifies the various stent models that are frequently being used by Vascular Surgeons today and highlights common pitfalls that US practitioners must be aware of to avoid misdiagnosis.

ENDOLOGIX - NELLIX



DEVICE IMAGE⁶

Uses endoframes and endobags to fill the entire aneurysm sac.



2D ULTRASOUND IMAGE

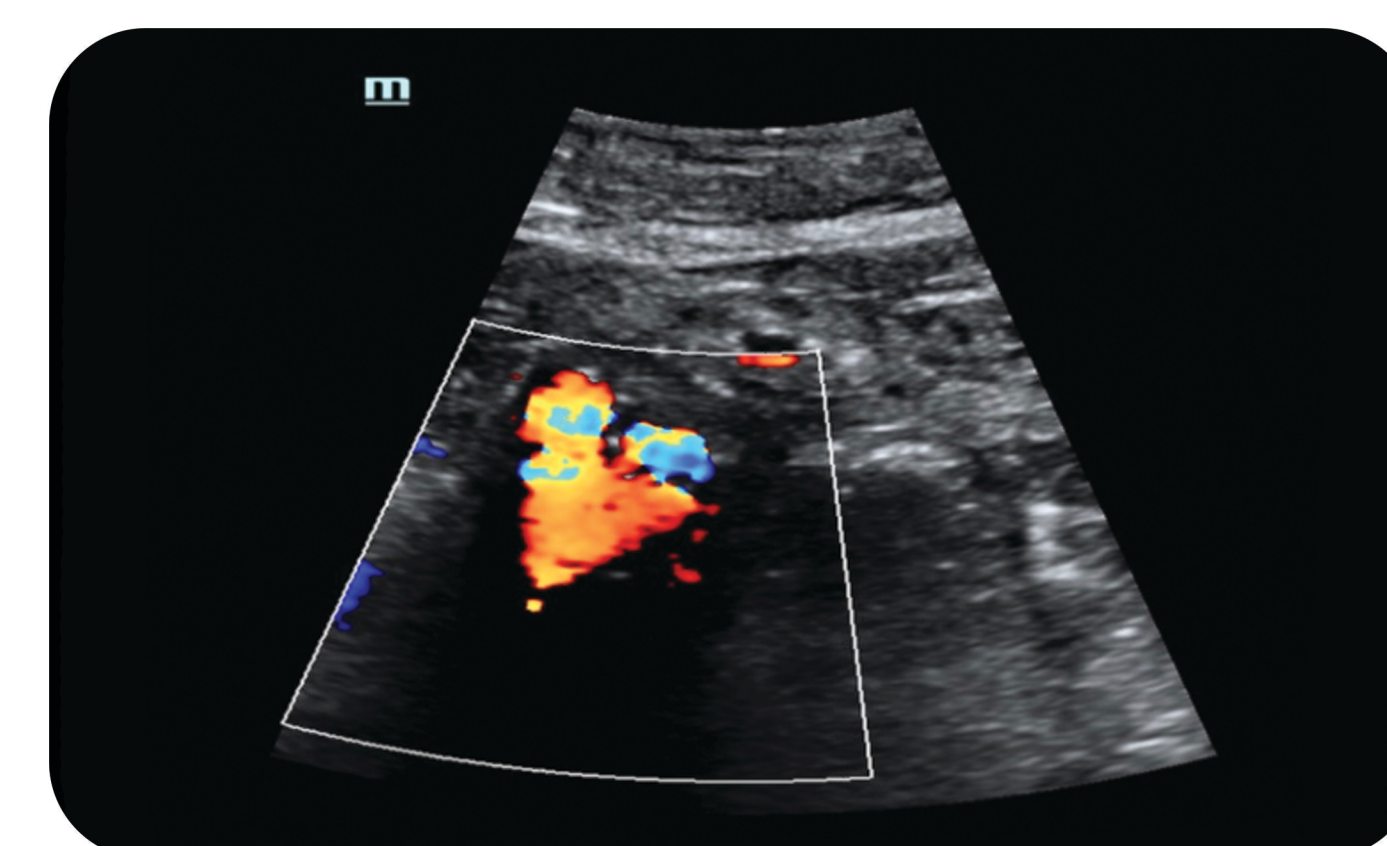
Transverse view: The image above shows a hypoechoic area (arrow) surrounding the limb of the stent graft mistaken as thrombus or dissection but is actually the endobags.

ENDOLOGIX - OVATION



DEVICE IMAGE⁶

Consists of sealing rings to avoid neck dilatation.



2D ULTRASOUND IMAGE

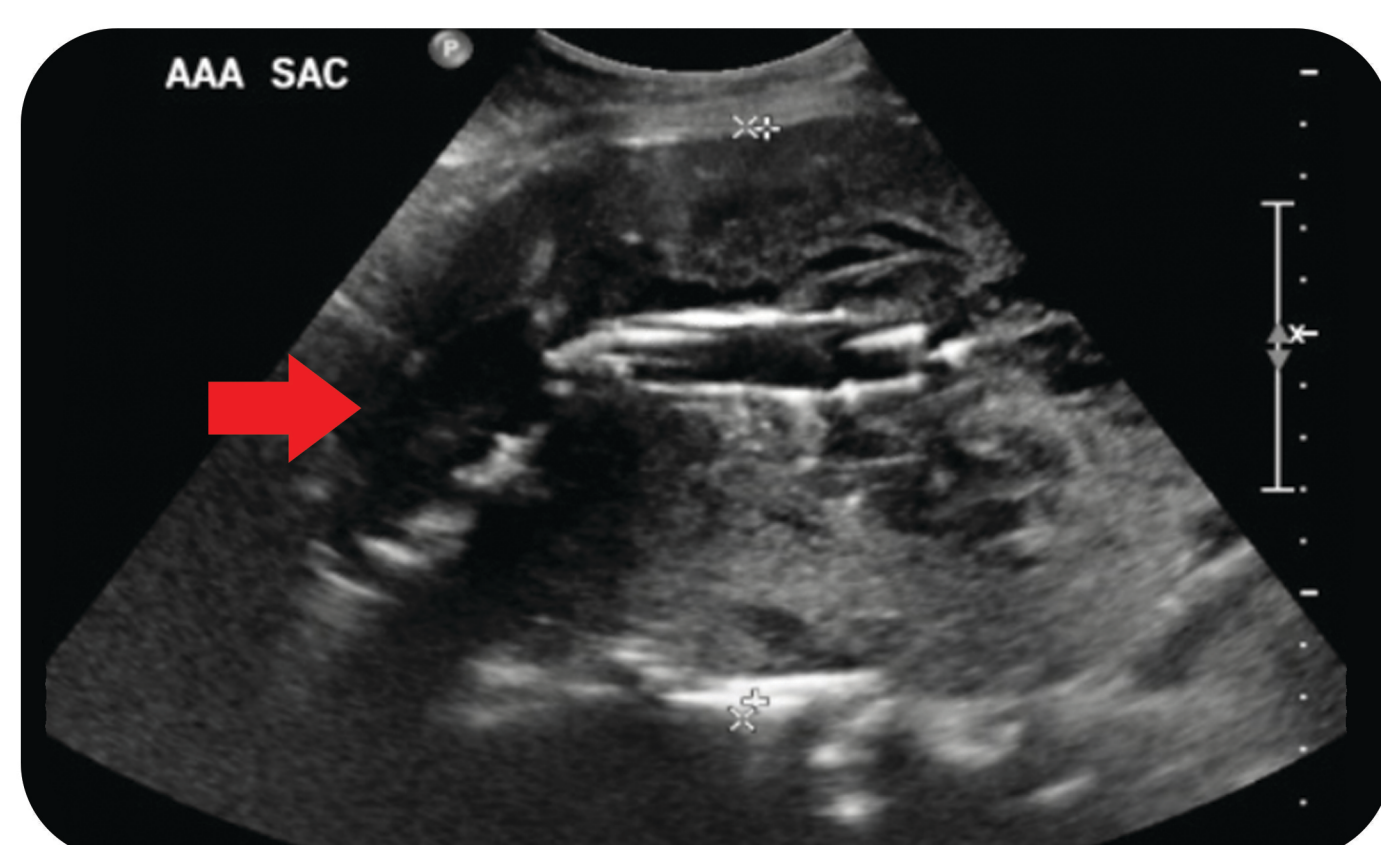
Transverse view: The image above shows colour filling surrounding the proximal attachment mistaken for a Type Ia endoleak, but is actually the pool of blood formed at the two polymer rings.

VASKUTEK - ANACONDA



DEVICE IMAGE⁴

Suitable for a highly angulated infrarenal aneurysmal neck.



2D ULTRASOUND IMAGE

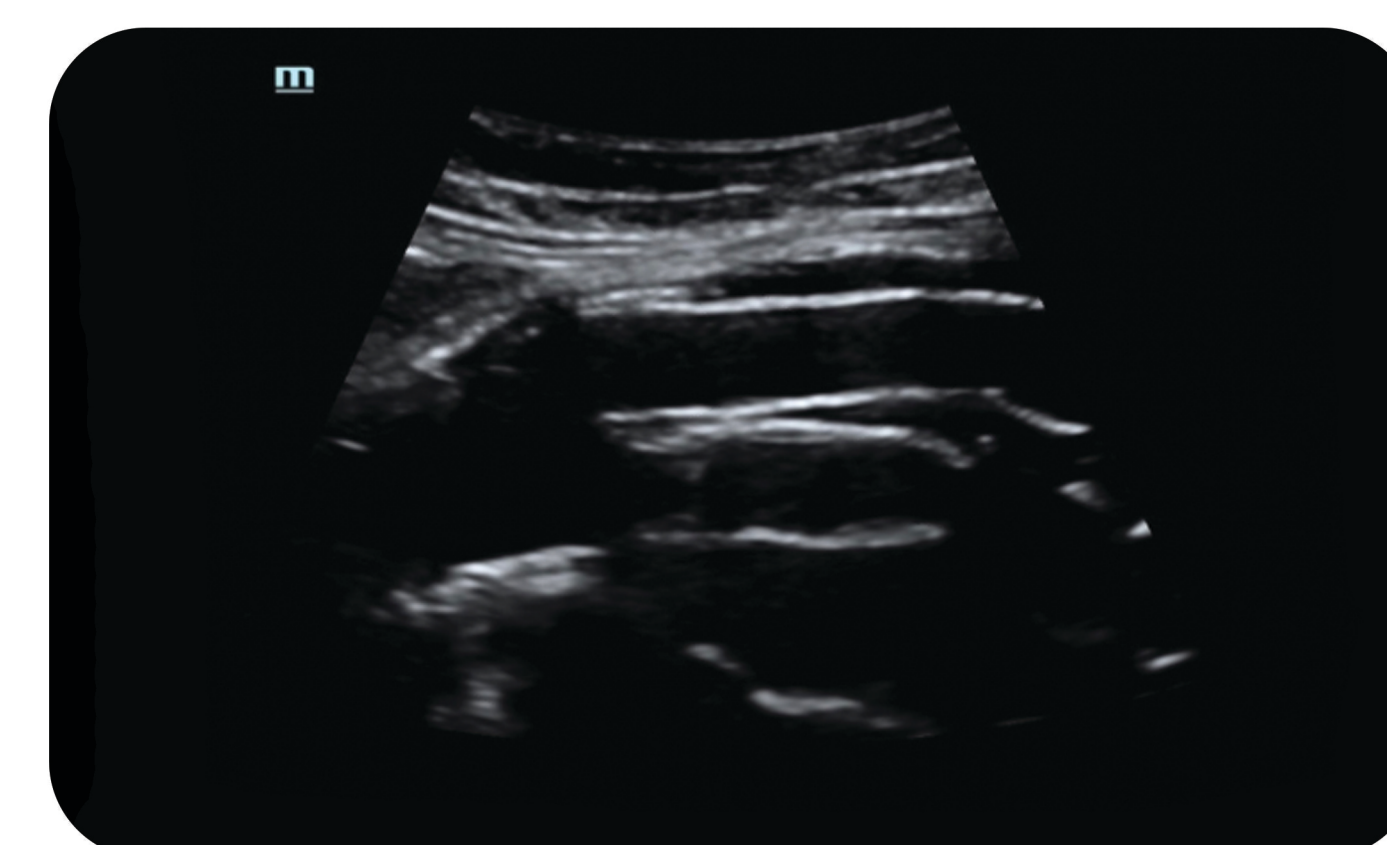
Longitudinal view: The image above shows a saddle shape configuration of infrarenal neck (arrow). This can be misdiagnosed as a kinked/fractured stent graft.

MEDTRONIC - ENDURANT



DEVICE IMAGE⁸

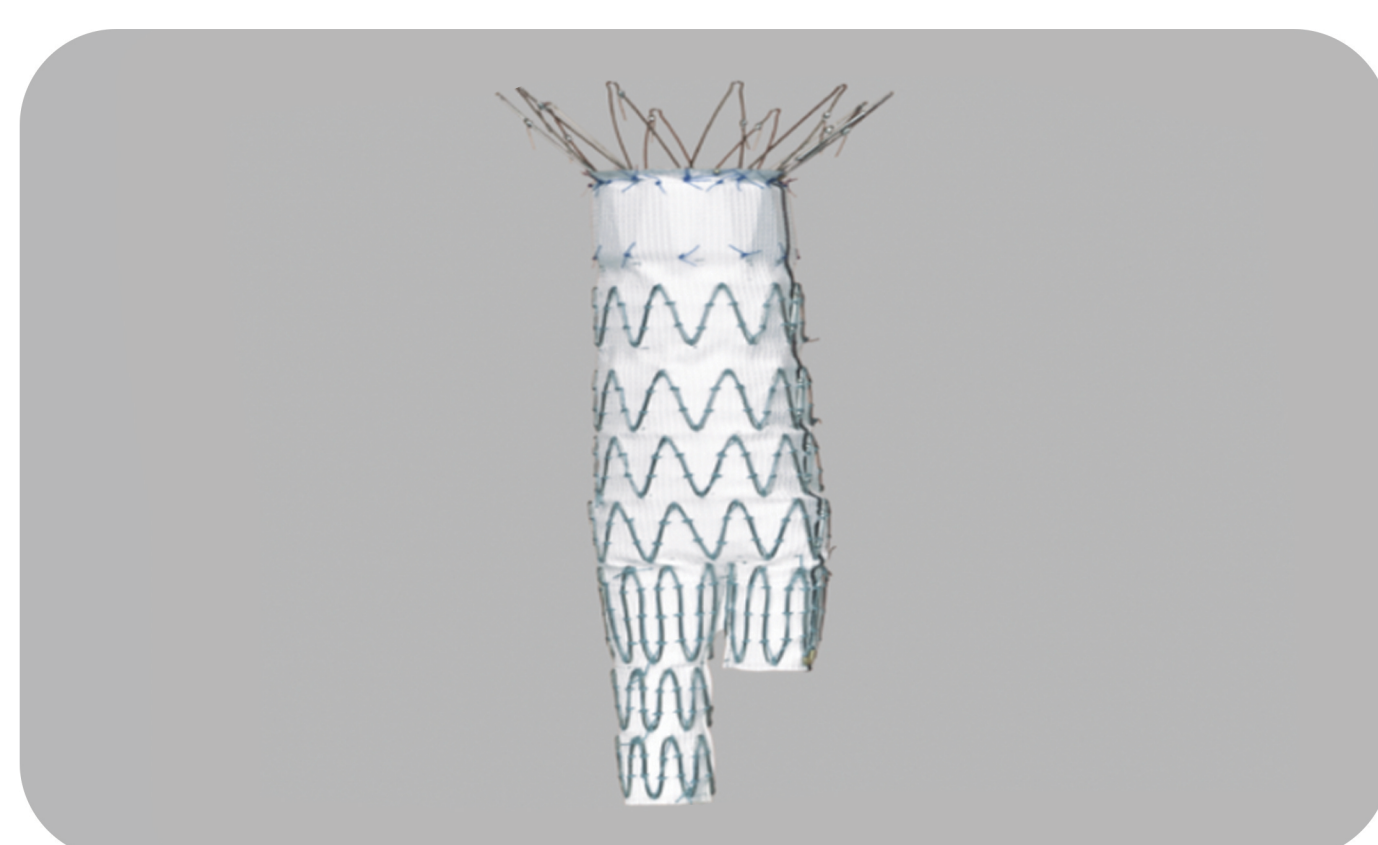
Conventional device that uses a high density multifilament material to prevent remnant sac growth and endoanchors to prevent neck dilatation.



2D ULTRASOUND IMAGE

Transverse view: The image above shows the stent graft as an echogenic wall structure. There is a low risk of misdiagnosis from this device.

COOK MEDICAL - ZENITH



DEVICE IMAGE⁷

Conventional device that uses barbs and wires for proximal and distal fixation



2D ULTRASOUND IMAGE

Longitudinal view: The image above shows the stent graft as an echogenic wall structure. There is a low risk of misdiagnosis from this device.

LOMBARD - ALTURA



DEVICE IMAGE⁵

Stent graft design has no single neck. Consists of two separate necks for easy controlled accurate deployment and fixation.



2D ULTRASOUND IMAGE

Transverse view: The image above shows the two separate necks with their characteristic "D" shaped echogenic structure. This can be misdiagnosed as a dissection or stent fracture.

CONCLUSION

The multitude of stent grafts adopted in EVAR surgery has increased the occurrence of new stent types within the EVAR surveillance.

Communication between the surgical team and surveillance team is evermore important. A good understanding of the device characteristics by ultrasound practitioners is essential to prevent misdiagnosis.

REFERENCES

1. American Journal of Roentgenology. 2014;203:W347-w357. 20.2214/AJR.13.11735.
2. United Kingdom ETI, Greenhalgh RM, Brown LC, et al. Endovascular versus repair abdominal aortic aneurysm. N Engl J Med. 2010;362:1863-1871
3. Lederle FA, Freischlag JA, Kyriakides TC, Padberg FT, Matsumura JS, Kohler TR, et al.
4. Vascutek Limited
5. Lombard Medical Limited
6. Trivascular Endologix Company
7. Vascular Studies Unit-University Hospital of South Manchester NHS Trust
8. <http://www.Medtronic.com/content/dam/Medtronic-com-my/mdt/endov/images/endurantii-brochure.pdf>

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